ANCIENT CHALCATZINGO

Edited by David C. Grove

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Contents

Preface

DAVID C. GROVE

This book and the project it documents represent a decade of efforts by a great many people. Some will receive recognition through the chapters they have authored; the efforts of others will go unsung. It must be pointed out here, though, that the people most deserving of recognition are the villagers of Chalcatzingo, who worked side by side with us, with enthusiasm and skill.

The Chalcatzingo Project was initiated as a cooperative investigation by the Instituto Nacional de Antropología e Historia (INAH) in Mexico and the University of Illinois. INAH was represented in 1972 by Jorge Angulo, and in 1973–1974 by Raul Arana, while I represented the University of Illinois for all of the field seasons and lab work. Both Mexican and U.S. students and professionals participated in the joint investigation. All basic laboratory analyses were carried out in Morelos, and, when possible, specialized analyses (ceramic thin sections, fauna, etc.) were also conducted in the host country. In consultation with Angulo, then director of the Morelos-Guerrero Regional Center of INAH, important ceramics and other artifacts were placed in storage in INAH facilities in Morelos, and some archaeological material was placed on permanent display in the Palacio de Cortez museum in Cuernavaca.

The major funding for the Chalcatzingo Project came from the National Science Foundation (Grant Nos. BNS 7103773 and BNS 8013770). Supplementary funds, including those which enabled us to map the site through photogrammetry, were provided in 1972 and 1973 by the National Geographic Society. INAH likewise supplied funds, most of which went for the exploration and reconstruction of Classic and Postclassic architecture at Chalcatzingo. The Research Board of the University of Illinois provided computer time and helped support our ceramic analyses, pollen analyses, and preparation of the book manuscript with research assistantships. The National Science Foundation also granted funds (BNS 8013770) to assist in the final stages of the research and book. In addition to our gratitude to those agencies and institutions mentioned for the support they provided the project, I also want to thank Landon Clay for the funds he provided to assist us in the jade, obsidian, and iron ore analyses.

Permits for the project were granted by the Departamento de Monumentos Prehispánicos of INAH, and their support and cooperation are gratefully acknowledged. Thanks should also go to the various students from the *escuela* at INAH who frequently visited us at Chalcatzingo and ended up helping in the excavations.

A great number of scholars provided invaluable assistance to the project. B. J. Evans of the University of Michigan carried out the analysis of the iron ores. Neutron activation of the obsidian was done at the University of Illinois by Philip Hopke. Obsidian source samples were graciously provided by Thomas Charlton of the University of Iowa and by Robert Zeitlin of Brandeis University. Ceramic thin section analysis was greatly assisted by Fernando Ortega G. of the National University of Mexico (UNAM). INAH facilities in Cuernavaca were made available by Jorge Angulo, and Jaime Litvak made lab facilities at UNAM available to us as well. The Chalcatzingo faunal material was studied by Ticul Alvarez of INAH. Anthony Aveni of Colgate University provided valuable comments on site alignments, and John Carlson of the University of Maryland called my attention to the stone labeled in Chapter 11 as MCR-19 and provided the photos of that stone used in this book. Michael Coe allowed us to look at his San Lorenzo ceramics at Yale University, and Clifford Evans permitted access to the La Venta and Tres Zapotes material stored at the Smithsonian Institution. R. Barry Lewis of the University of Illinois made valuable suggestions and criticisms on the statistical and computer applications used in various chapters. Juan DuBernard of Cuernavaca was always ready to help the project in any way possible, and among the many who encouraged this research were Matt and Marian Stirling.

I felt that in a project of this magnitude, with so many diverse topics needing to be adequately covered in print, the principal publication—this book—should be written primarily by the project participants. In addition to contributions from a number of the other participants, I wrote and coauthored several chapters. I also edited every chapter submitted in order to maintain a continuity of presentation and to avoid unnecessary repetition. My editing may, at times, have seemed heavy-handed to many of the authors. It was done with the final product in mind, and I can only hope that the end justifies the means.

Among the editorial changes was my decision to renumber all burials into a sequential system, for in the field they had been separately numbered by order of discovery for every individual excavation area. I was also dissatisfied with the numbering system of the monuments and revised those as well (compare Grove 1981b to Chapter 9 in this book). Chapter 14, dealing with the figurines, was trimmed because one section of the chapter had been published in similar form elsewhere (Harlan 1979). In that instance we did, however, recognize the value of publishing the figurine attributes as an appendix (Appendix E). Also, although I had originally planned to abstract Margaret J. Schoeninger's (1979a, 1979b) work on bone chemistry for the book, I made a last-minute decision, due to space requirements, to simply refer the reader to those publications.

During the final preparation of the book I was aided by several research assistants. Susan D. Gillespie edited, typed manuscripts, wrote chapter summaries, did illustrations, brought organization to my chaotic efforts, and still found time to write Chapter 15. Lynette Norr did much of the drafting, assisted in editing, and did translations. In addition she undertook the analysis of the Tetla house artifacts and wrote Chapter 25. Cynthia Heath also assisted with the manuscript and the faunal data.

In the field and in the lab, the project's illustrator was Betsy James, who is responsible for many of the artifact illustrations in this book. Lowell Greenberg and Alex Apostolides each served one field season as photographer, and their work constitutes the majority of the photographs from 1972 and 1973. Various other project members are responsible for the other photos.

Nearly every person involved with the project deserves recognition. However, special thanks go to Susan Gillespie, Marcia Merry de Morales, and Lynette Norr for continuing to devote time and effort to the analyses and publication of these data long after funds had been depleted. Finally, if any other project member has put heart and soul into this research as much as I have, it has been Ann Cyphers Guillén, who is still as excited about these data as I am and who continues to work long hours on behalf of this research. Her contributions to our understanding of Chalcatzingo will certainly not end with this book.

FIELD PARTICIPANTS

Alex Apostolides (1973, 1976); John Bakewell (1972); Robbilee Brown (1974); David Bugé (1972, 1973); Robert Burton (1973, 1974); Susan Burton (1974); David Crampton (1973, 1974); Roberta Delevie (1972); Dan Dorsey (1974); Pat Essenpreis (1972); William Fash, Jr. (1974, 1976); Manuel Gandara (1974); Patricia Garbe (1973); Lowell Greenberg (1972); Ursula Greenberg (1972); Ann Cyphers Guillén (1972, 1973, 1976); Mark Harlan (1973); Kenneth Hirth (1972, 1973); Paulette Landis (1974); Roberta Little (1973, 1974); Teresita Majewski (1973, 1974); Floyd Mansberger (1976); Marcia Merry de Morales (1972, 1973); Miguel Morayta (1974); David Posegate (1973, 1974); Mary Prindiville (1974); Phillip Sabol (1973); Deborah Thompson (1973); Anita Warner (1973); James Wilde (1973); Kees Van Dam (1972).

LAB PARTICIPANTS

Susan Burton (1973, 1974); Rebecca Carlson (1974, 1975); Gail Celmer (1974); Ann Cyphers Guillén (Director, 1972–1975); Mark Harlan (1974); Carol Jacobson (1974); Teresita Majewski (1975); Marcia Merry de Morales (1974, 1975); Lynette Norr (1974, 1975); Paula Petry (1974, 1975); Susan Scofield (1974, 1975); Virginia Snee (1973); Teddi White (1974, 1975).

OTHERS

Raul Deal (cave art, 1976); Carolyn Doyle (ethnography, 1973); Susan Gillespie (editing, illustrations, 1979–1981); Ann Cyphers Guillén (ceramic analyses, editing, figurines, 1976–1985); Cindy Heath (editing, 1980); Betsy James (illustrations, 1973–1975); Lewis Krevolin (ceramicist, 1973); Lynette Norr (editing, illustrations, 1979, 1980); Margaret Schoeninger (bone chemistry, 1976).

1. Introduction

DAVID C. GROVE

THE DISCOVERY

According to several old men of the village of Chalcatzingo, who in their youth at the turn of the century tended cattle and cut firewood on the slopes of the Cerro Chalcatzingo, carved rocks and pieces of stone idols then lay partially exposed in the terraced fields. When playing among the large boulders on the hillside, they occasionally encountered carved rock faces but "they were not important to us, and we did not tell anyone."

Other villagers' oral tradition relating to the discovery of the first reliefs is somewhat different, but actually only involves the carving known as "El Rey" high on the mountainside. It is this carving which first attracted outside attention to the site. The tradition, as told to me by several villagers, is that one night in 1932 there was a tremendous storm. At the height of the storm, a rain serpent came over the top of the *cerro* and washed the hillside and flooded the fields. It carried a great deal of soil onto the lower fields. The next morning a group of villagers went up the hill to inspect the damage to their fields. Some children cutting wood from fallen trees on the hillside called to them. They climbed up the hill to see what the children wanted and found "El Rey."

Although "El Rey" may have been partially exposed at this time, it was another two years before it received public or professional notice, and then apparently from two different sources at almost the same time. The first is documented by a letter to the Secretaría de Educación Pública, dated February 23, 1934, on file at the Instituto Nacional de Antropología e Historia (INAH, file VIII-I [311 (724-9)]-6-1). In this letter a group of "explorers" report the finding of "hieroglyphics" on a rock face of the *cerro de la cantera* (referred to in this book by its other name, the Cerro Chalcatzingo). The letter goes on to mention that they cleared soil away from below the "hieroglyphs" and discovered an *"idolo"* (the seated personage shown on the "El Rey" relief).

In March of the same year, INAH archaeologist Eulalia Guzmán visited Chalcatzingo to see the carvings, which had been reported to her by a woman who lived in the area (Guzmán 1934:237). Her publication described not only "El Rey" (Mon. 1), but also the carvings numbered 2, 6, 8, and 16 in this book. Her illustration of "El Rey" (1934: Fig. 3) depicts the entire carving, indicating that by this time any soil deposits covering the relief had been cleared away.

Guzmán was unable to attribute Chalcatzingo's rock art to any specific Mesoamerican culture group. The pottery she examined from the site was a mix of both "Teotihuacan" and "Archaic" (Formative period) sherds. In her publication she wondered, "Should we say then that the people of an archaic culture group or early Teotihuacanos were the authors of these beautiful reliefs or must we look to other culture groups such as the Olmeca?" (1934:251; my translation).

It was nearly another two decades before Chalcatzingo received actual archaeological investigations. These were initiated in 1952 by archaeologist Román Piña Chan, who, as part of his investigations of Formative period sites in Morelos, excavated eleven stratigraphic pits on Chalcatzingo's terraced hillside (Piña Chan 1955). On the basis of the ceramic stratigraphy from that work, he concluded that the site had begun as a small farming community, that it shared the same cultural tradition as the Valley of Mexico, and that during the Middle Preclassic period an "archaic Olmec" group had coexisted with the farming population at Chalcatzingo and had lent the site its distinctive cultural character. The carvings he assigned to the Late Preclassic period, 500–200 BC.

Until the initiation of the Chalcatzingo Project, no other excavations were carried out at the site, although some looting did take place. However, the site was not ignored but gained increasing interest, and several publications on the bas-relief art appeared which also added newly discovered carvings (e.g., Cook de Leonard 1967; Gay 1966; 1972a; Grove 1968a). My doctoral research on the Formative period in central and eastern Morelos (Grove 1968b) included reconnaissance and surface collections at Chalcatzingo done in 1966 and 1967. This resulted in my own analysis of the carvings (1968a) and thoughts of the importance of the site's location (1968c), and served to stimulate the steps leading ultimately to the project reported in this book.

THE PROJECT AND THE VILLAGE

The Chalcatzingo Project began in 1972 and was a cooperative research project of the University of Illinois and the Morelos-Guerrero Regional Center of INAH. The goals of the project were oriented toward a synchronic view of the Formative period site and its local, regional, and extraregional interactions (see Fig. 1.1), rather than to a cultural historical reconstruction. The research approach is best understood against the background of change and innovation which characterized Mesoamerican archaeology in the 1960's. We borrowed greatly from the multidisciplinary approaches of the Tehuacan Valley Project directed by Richard MacNeish, the Fundación Alemana's work in Puebla and Tlaxcala, and Kent Flannery's Valley of Oaxaca Project, as well as the projects of William Sanders, Jeffrey Parsons, and Richard Blanton, who carried out large-scale regional reconnaissance in the Valley of Mexico. As the decade drew to a close, Michael Coe's excavations at the Gulf Coast Olmec site of San Lorenzo and the work of Paul Tolstoy and others in Mexico's central highlands raised serious questions about the validity of long-established ceramic chronologies and explanations of cultural development.

Thus, when the Chalcatzingo Project began its first six-month season of field work in 1972, the validity of previous data was questionable, and we worked on the assumption that we were essentially starting from scratch. We attempted to disregard all previous hypotheses regarding the site and its chronology, and worked to gather the archaeological data necessary to arrive at our own conclusions. We were also aware that our research would be of little value if restricted to the site itself. Chalcatzingo had not existed in a vacuum and to ignore its local physical and cultural setting would have been a grievous error. We were fortunate therefore that our research funding allowed us to expand some phases of our investigations throughout the valley of the Río Amatzinac. This funding also allowed us to have the site mapped by photogrammetry (Fig. 1.2), thus permitting complete concentration by field personnel on the excavations as well as insuring an accurate map.

As a cooperative, joint research venture, the project had both a Mexican and a U.S. director, as well as student field assistants from both countries. To a very large extent, however, the fortunes of the project depended upon the villagers of Chalcatzingo. Although we arrived in 1972 carrying a stack of official permits from the federal, state, and municipal governments, the people of Chalcatzingo felt far removed from those agencies and quite correctly evaluated our proposed excavations on their communal village lands in terms of their impact upon the community and its individual citizens. At an evening assembly attended by most of the village's adult males, the project was hotly debated, and even after those assembled had voted their approval, a dwindling but vocal minority remained opposed to the excavations during most of the first field season.

To be honest, the villagers' nearly unanimous approval was certainly not motivated by their perception of the scientific merits of the proposed research. It was due to the fact that the project would bring employment to Chalcatzingo during the dry season, a period of chronic village unemployment. Nearly all adult males in the village wanted to work for the project, and at the request of the village officials (the *ayudante* and the *comisario ejidal*), a rotation system for workers was instituted. This system used the village's communal work rolls. All males over eighteen years of age are obligated to carry out some work for the community during the year, such as road repairs or nightly vigilance patrols, and workers for this labor are taken from the communal labor roll. Men not carrying out their community work obligations were excluded from the rotation list provided by the village authorities to our project each Friday. While the rotation system meant that we did not control the total pool of the thirty to thirty-five workers needed weekly, we were allowed to retain certain skilled individuals as "crew chiefs" from week to week.

Of course, the rotation system was not without its problems, one of which was simply cultural. The village communal labor obligations were required only of adult males, and thus the rotation system was completely male. However, once the project began, a number of women, primarily widowed or unmarried, requested work. A hiring system was set up to accommodate them as well. Although we were not permitted to use women as excavation workers, we did have tasks which the village did not see as impinging upon male jobs, such as on-site artifact washing and cataloguing. Men and women received equal wages.

In spite of minor opposition to the project in its first few months, the villagers soon became enthusiastic supporters of the work. Monument 12, which had been discovered by a few villagers earlier and then reburied, was refound and shown to us. Several workers subsequently informed us that the brief 1955 excavations had not been quite as fortunate, for they claim that a carving was found near the small Classic period pyramid reconstructed at that time, but hidden from the archaeologists (although no one was certain exactly where). Often during our project when a significant discovery was made, work was halted so that all of the workers (usually scattered at excavations across the site) could share in the find and have its importance explained to them. Visits by villagers and classes from the village school were encouraged.

With the village's growing understanding of their archaeological site came a new pride. Where previously outsiders would hire villagers to loot the site, such outsiders are now turned away. Where it had once been common for visitors to outline certain carvings in chalk or charcoal prior to photographing them, the villagers recently forced such an individual to walk back to the site with a bucket of water and scrub brush to clean off his charcoal outlinings. And whereas prior to the project just one villager had served as guide and earned tips from visitors, now many villagers understand something of the site and offer their services.

Although Chalcatzingo had been famous as an archaeological site for years prior to our excavations, it had not been an official "national monument." Today, we hope in part due to our project, the site enjoys such status, and a guard keeps the monuments clear of weeds and protects against looting or vandalism. A cobblestone road now connects the village and the site. Unfortunately, an increase in tourism and the slow spread of urbanization outward from Mexico City affects Chalcatzingo not only positively but, on occasion, negatively as well. Today some villagers have sold their private lands between the village and the site, and on my last visit several small weekend bungalows marred the previously uncluttered and magnificent landscape dominated by Chalcatzingo's twin peaks.

The authors of the chapters in this book were, with few exceptions, active participants in the field work. Their presentations are for the most part descriptive and data-oriented. The intent in most chapters has been to present and discuss the basic data and to offer our interpretations. We have attempted to present most of the material in a way that will permit others to carry out different forms of analyses on their own. Some chapters therefore have tables and complementary appendices which provide further data. Unfortunately, those readers who desire level-by-level ceramic type or figurine tabulations will not find such data here. Although we recognize their desirability, the counts are too voluminous to present in that fashion, and alternate means of publication are being explored. Abbreviated or combined counts would be of doubtful value.

The book is essentially subdivided into seven topical sections. Chapters 2–4 introduce the site and its geographical-ecological setting. The general region, the Amatzinac Valley, and the village and

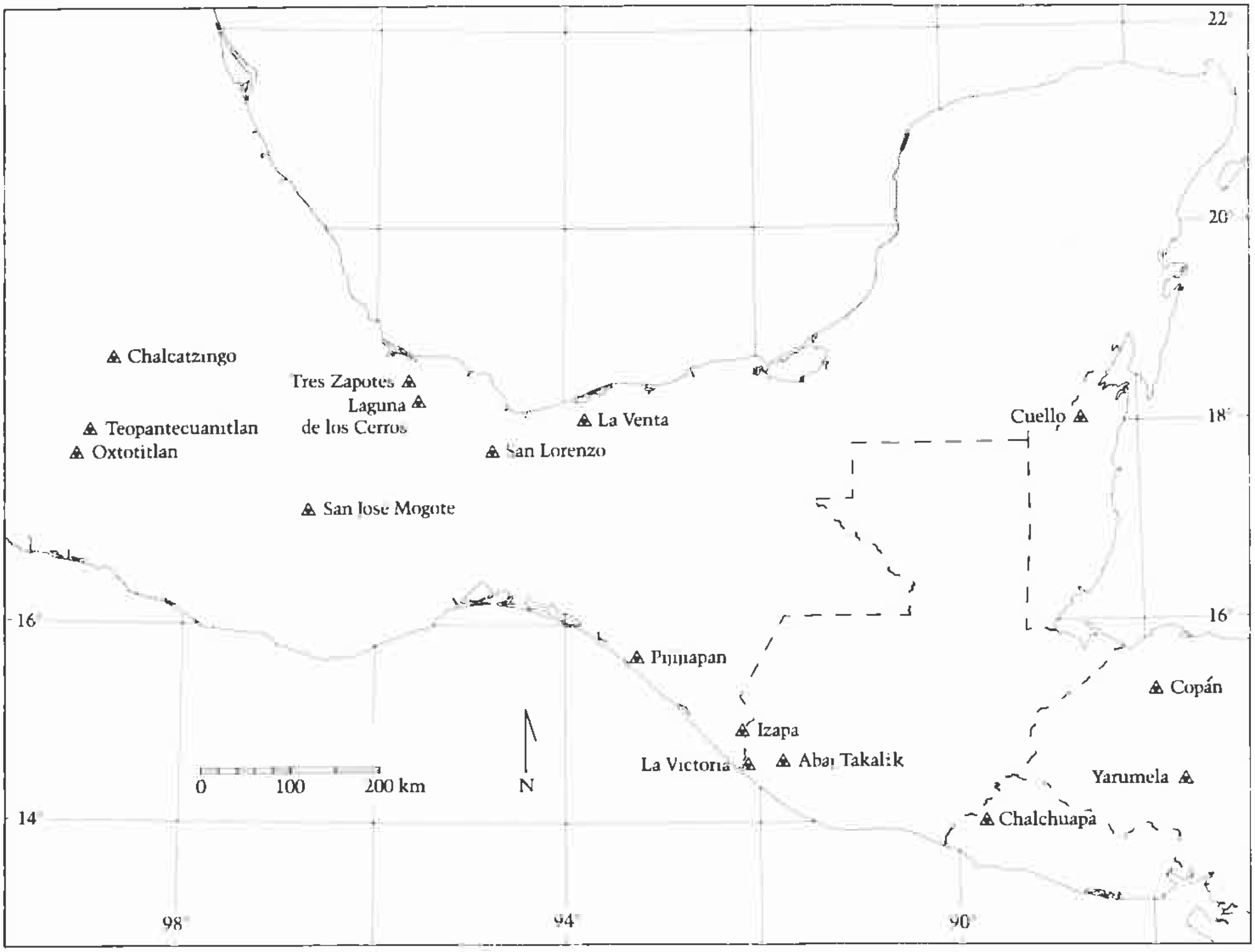


Figure 1.1. Mesoamerica, showing sites mentioned in the book.

archaeological zone of Chalcatzingo are described in Chapter 2. One aspect of the Chalcatzingo research involved a study of the ecology and paleoecology of the site, and this is discussed in Chapter 3. Chapter 4 presents comments on excavation methods and summarizes the excavations of each terrace.

Discussion of particular aspects of the site begins with Chapter 5, which deals with the construction of the chronological sequence and the more than fifty radiocarbon dates which assist in placing the three major phases in time. Public and residential architecture and the nature of the settlement are treated in Chapter 6. Chapter 7 is devoted entirely to the table-top altar and associated burials discovered on Terrace 25. Chapter 8 provides a discussion of the burials recovered by our excavations, and the burial data are used to reconstruct the social ranking within the community.

Chapters 9–12 form a section devoted to Chalcatzingo's carvings and paintings. This section begins with Chapter 9's descriptive, non-interpretive catalog of the site's carved monuments. This is followed by an interpretation of the carved art in Chapter 10. Not all carved rocks at the site can be classified as monuments, and these miscellaneous carved rocks are cataloged and described in Chapter 11. Chapter 12 offers a comprehensive description of Chalcatzingo's plentiful but little-known painted art.

Chapters 13–20 present and discuss the artifacts recovered by the excavations. Ceramics, discussed in Chapter 13, received the longest treatment. That chapter not only presents the ceramic typology, but also provides comparisons to Gulf Coast ceramic assemblages studied as part of our ceramic analyses. Figurines are discussed in Chapter 14, and Chapter 15 provides the results of a recent whole-piece analysis of the figurines. Special ceramic artifacts, as well as those of shell, iron ore, bone, etc., are documented in Chapter 16. Chapter 17 discusses Chalcatzingo's jades. Chapters 18, 19, and 20 all deal with lithic artifacts. Chapter 18 provides data on general chipped stone industries, and Chapter 19 deals specifically with the blade workshop debris uncovered on Terrace 37. All varieties of ground stone are presented in Chapter 20.

Chapter 21 begins the section focusing on Chalcatzingo's regional ties with a discussion and analysis of regional settlement. Excavations at Telixtac and Huazulco are summarized in Chapter 22, and raw material sources and their exploitation by Chalcatzingo are covered in Chapter 23.

Moving away from the Formative period concentration of the book, Chapter 24 provides a discussion of the Classic and Postclassic archaeological remains at the site. Chapter 25 continues with a description of a Middle Postclassic house excavated at the Tetla area of Chalcatzingo, and analyzes the data in terms of local and regional considerations. This is followed in Chapter 26 with a discussion of contemporary agricultural practices at Chalcatzingo. No attempt is made to discuss the ethnology of the modern village, for this has been well presented by L. Miguel Morayta (1980).

The concluding section begins with Chapter 27, which presents my comments on various aspects of the data presented in other chapters but with an emphasis on Chalcatzingo as a site and its local interactions. In Chapter 28 the site is discussed from the viewpoint of regional interactions. It is in this last chapter that the archaeological data are discussed in terms of various models proposed to "explain" Chalcatzingo, and the chapter ends with my own views on the site and its development.

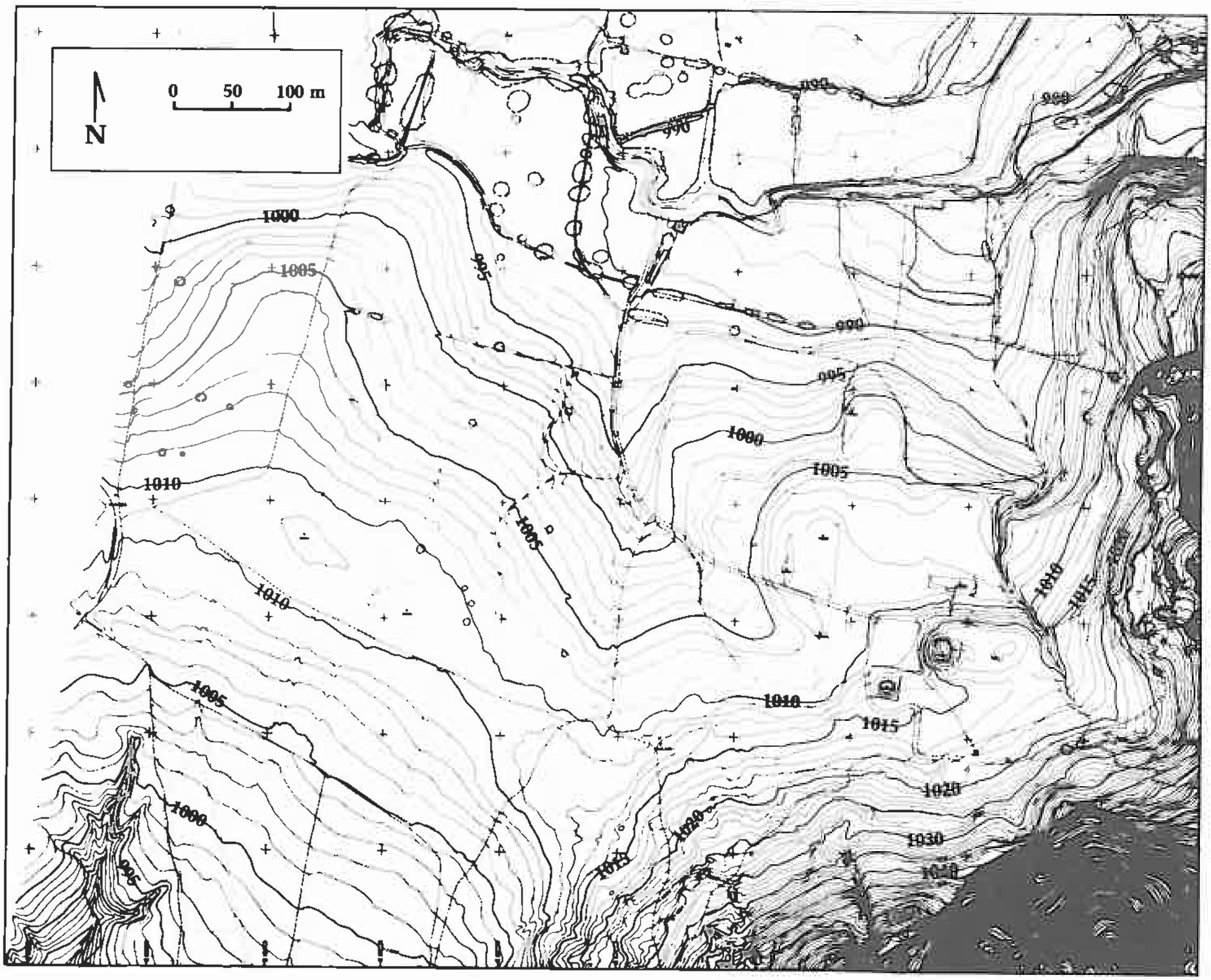


Figure 1.2. Topographic map of Chalcatzingo's Formative period site area. Contour interval 1 m.

RESUMEN DEL CAPÍTULO 1

El sitio arqueológico de Chalcatzingo, Morelos, es conocido por sus bajorrelieves desde los años treinta, cuando por primera vez tuvieron noticia de su existencia las autoridades del INAH. El sitio fue visitado por Eulalia Guzmán en 1934, pero las investigaciones arqueológicas empezaron sólo en 1952 bajo la dirección de Román Piña Chan, quien excavó once pozos estratigráficos en las terrazas de las laderas del cerro.

El proyecto Chalcatzingo comenzó en 1972, como un proyecto de investigación conjunte de la Universidad de Illinois y el Centro Regional de Morelos-Guerrero del INAH. Este proyecto tenía por objectivo el llegar a obtener una visión sincrónica del sitio, en el período Formativo, y de sus interacciones a nivel local, regional, y extra-regional. Otro objetivo consistió en esclarecer la posición de Chalcatzingo dentro de la secuencia cronológica del período Formativo en el Centro de México.

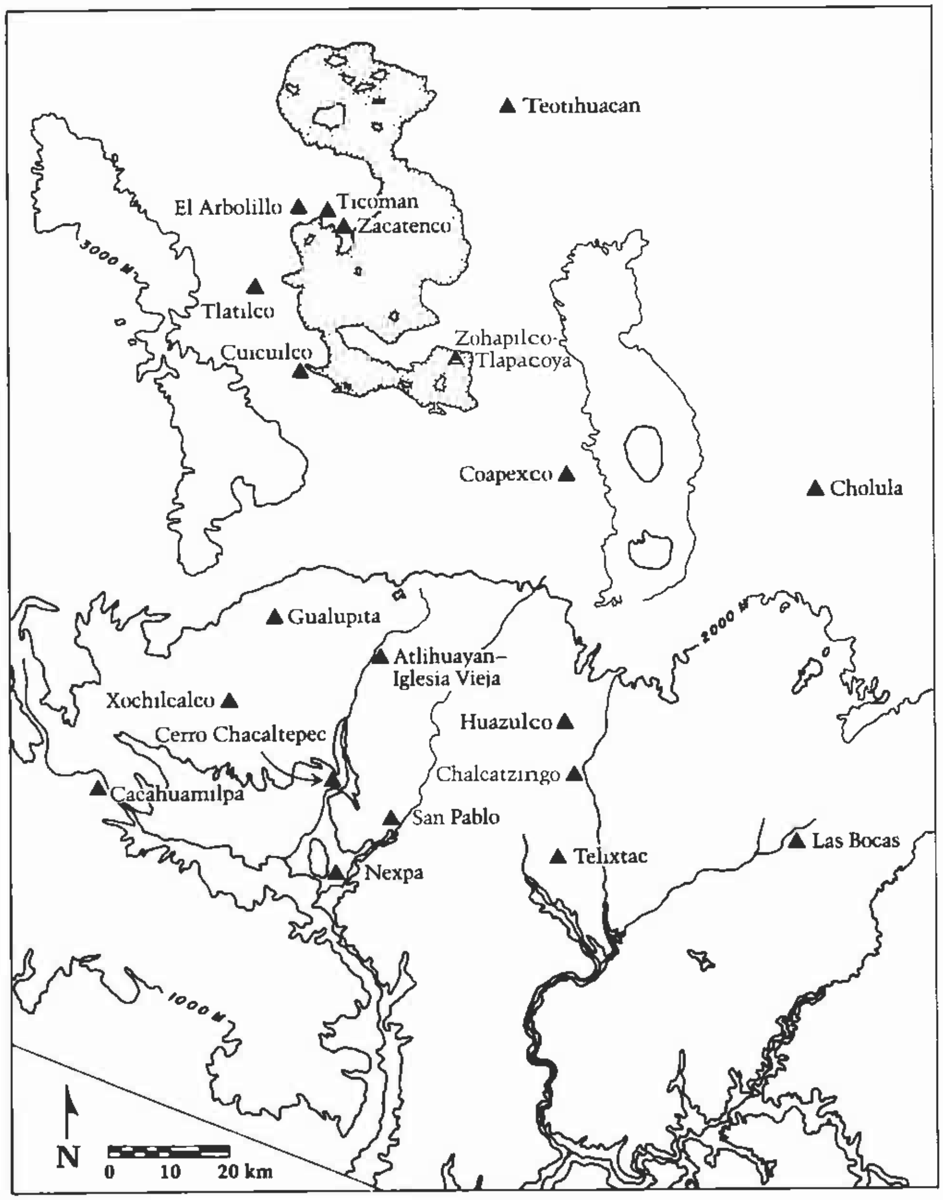


Figure 1.3. Central Mexico, showing archaeological sites mentioned in the book.

2. The Physical and Cultural Setting

DAVID C. GROVE, KENNETH G. HIRTH, and DAVID E. BUGÉ

The village and site of Chalcatzingo are located in the center of the valley of the Río Amatzinac-Tenango* near the eastern border of the state of Morelos, approximately 70 km southeast of Chalco and 100 km southeast of Mexico City (Fig. 2.1). Access today to the village and archaeological zone is not difficult (Fig. 2.2). Mexico's Highway 160, running between Cuautla, Morelos, and Izúcar de Matamoros, Puebla, is a major auto route south to Oaxaca. This highway passes only 2.5 km (1.5 miles) north of the site, and from here the site, at the foot of the two massive stone peaks dominating the landscape to the south of the highway, is visible. A secondary paved road running south to Atotonilco and Tepalcingo provides access to the road into the village. Recently an all-weather road has been constructed to the base of the site itself.

The research presented in this book analyzes Chalcatzingo's relationships on various regional levels: Mesoamerica, the Gulf Coast, central Mexico, and the Amatzinac Valley. As an introduction to Chalcatzingo's physical and cultural setting, the state of Morelos and the Amatzinac Valley are briefly described in terms of their physiography, topography, climate, hydrology, soils and vegetation, and geologic resources. The chapter concludes with a description of the modern village of Chalcatzingo and the archaeological site.

MORELOS

The region which is today the state of Morelos coincides fairly closely with areas controlled (at the time of the Spanish conquest) by two major provinces, Cuauhnahuac (western Morelos) and Huaxtepec (central and eastern Morelos) (Barlow 1949:75–81). The actual political situation within this region in 1519 was far more complex, with central and eastern Morelos composed of a number of independent *señoríos* tributary to Cuauhnahuac or Huaxtepec (and ultimately to the Aztec Triple Alliance) (Gerhard 1970). Chalcatzingo, in the southeast, was part of an area known as Tlalnahuac, of the *señorío* of Yacapichtlan (Yecapixtla) (Gerhard 1970:38–39; Barreto M. 1975).

The *cabecera* (main town) of the province of Cuauhnahuac is today the city of Cuernavaca, the state's capital and largest population center. Secondary population centers in the state today include Jojutla (in southern Morelos, once part of the western province of Cuauhnahuac) and Cuautla (prehispanic Cuauhtlan, part of the province of Huaxtepec) in central Morelos. Cuernavaca, Jojutla, and Cuautla serve as market centers for their respective areas of this agriculturally oriented state.

Morelos lies to the south of the Valley of Mexico, and is separated from that physiographic province by the Sierra de Ajusco mountains. This east-west trending mountain mass is part of a Quaternary volcanic chain which stretches from west Mexico, across central Mexico, into northern Veracruz. The volcanic chain contains a number of extinct and dormant volcanos, of which one, Parícutin in west Mexico, was active in 1943. Two of Mexico's largest volcanos, Ixtaccihuatl (5,300 m; 17,400') and Popocatepetl (5,400 m; 17,700') form the eastern end of the Sierra de Ajusco. Both are inactive, although steam is occasionally seen venting from the crater of Popocatepetl. There is good evidence to indicate that significant vulcanism occurred in the Sierra de Ajusco during the Formative period, with lava flows covering sites such as Copilco and Cuicuilco in the Valley of Mexico, as well as settlements near Cuernavaca (Grove 1967:33–34). Such volcanic activity not only would have caused population displacements, but probably also would have affected local belief systems.

The northern border of Morelos runs along the crest of the Sierra, generally at altitudes of over 3,000 m (9,800'), but the mountains drop precipitously nearly 1,500 m to the long, sloping alluvial plains that characterize much of the state. North-south running groups of hills divide Morelos into western (prehispanic Cuauhnahuac), central, and eastern regions (these latter two essentially equivalent to the province of Huaxtepec). The long alluvial plains of each of these regions follow the state's major rivers, the Río Xochitepec in the west, the Río Yautepec and Río Cuautla in central Morelos, and the Río Amatzinac in the east. All of these rivers are tributaries of the Río Balsas of Guerrero. The Balsas drainage, covering a tremendous area of west and central Mexico, is Mexico's largest. Most of Morelos has a natural abundance of water. Some rivers begin as small streams in the Sierra de Ajusco but are greatly enhanced by water from the state's many natural springs. Such springs are obvious focal points for settlements, and the springs at Gualupita (today suburban Cuernavaca), Huaxtepec, Cuautla, and Xochimilcatzingo (among many) were the locations of prehispanic villages. However, many of the springs are now being developed into recreation areas or incorporated into vacation communities, and the prehispanic remains are being destroyed.

Morelos also has an abundance of highly fertile alluvial soils along its river valleys. Agricultural potential is further enhanced by high humidity in the valley bottoms. These factors plus a subtropical climate, elevations ranging from about 1,000 to 1,500 m, and good yearly rain-

* In its northern portions, this river is termed the Amatzinac; south of Chalcatzingo, it is called the Tenango. In this book, the former term will be used exclusively.

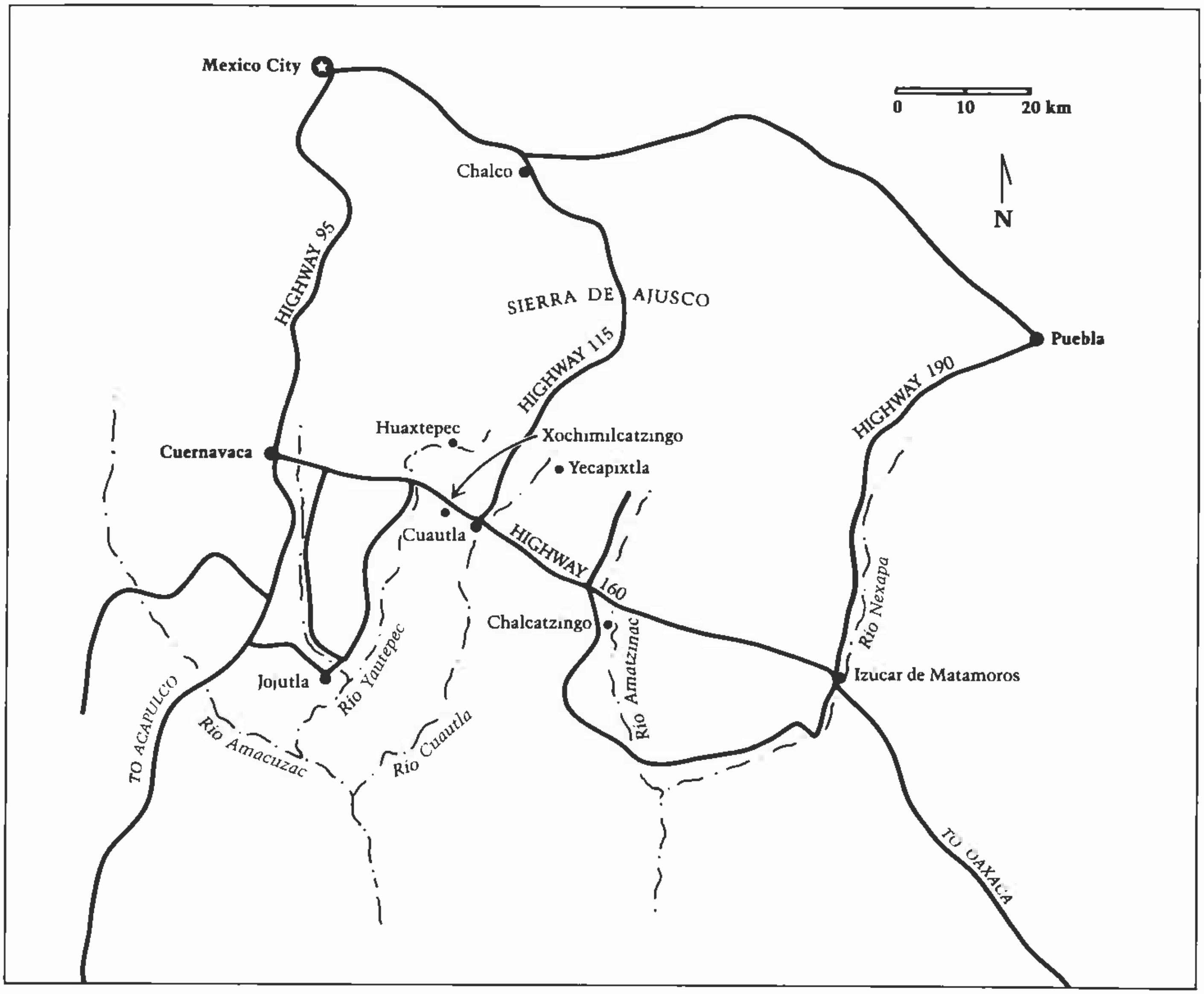


Figure 2.1. Morelos and western Puebla, showing major cities and roads and the location of Chalcatzingo.

falls, have combined to make Morelos an important agricultural region for nearly three thousand years. Although direct archaeological evidence is scarce, it is probable that irrigation of river valley lands was begun during the Formative period. Postclassic irrigation systems are known for the Río Amatzinac valley area north of Chalcatzingo (Armillas 1949; Palerm 1954).

Ethnohistoric tribute lists (Barlow 1949:75–81; *Codex Mendoza* 1978) suggest that major agricultural products in Morelos included maize, beans, chia, *huauhtli* (amaranth), and cotton (given in tribute as already woven garments). Today, with international markets influencing Mexico's economy, tomatoes compete with sugarcane for the fertile river bottom lands, and onions, melons, and rice are gaining in popularity as cash crops. Maize and beans are subsistence crops grown on a household basis. Chia and *huauhtli* are no longer grown in any significant quantity, and cotton is raised in only a few areas in southern Morelos.

Sugarcane was introduced into Morelos soon after the Spanish conquest. Production was under the control of a limited number of haciendas, and by the late nineteenth century this crop dominated the state's best agricultural lands. This situation was the major cause of the 1910 Revolución del Sur led by Emiliano Zapata. The revolution devastated Morelos. Federal armies burned numerous villages suspected of *zapatista* sympathies and forcibly resettled their inhabitants. Cultural continuities which may have existed between the colonial or prehispanic past and the present were virtually wiped out because so much and so many perished. Population loss due to death or migration has been replaced by post-revolution immigration from other states. In central and eastern Morelos the immigrants appear to have come principally from Guerrero and Puebla.

THE RÍO AMATZINAC VALLEY

The valley of the Río Amatzinac (Fig. 2.2) can be considered as an isolated topographic unit, and as such it formed a significant physiographic unit of analysis for the Chalcatzingo project. Approximately 50 km (31 miles) long and with a maximum width of 15 km (9 miles), the valley is bounded on the north by the foothills of Popocatepetl, on the east and south by the hills of the state of Puebla, and on the west by hills and a sparsely populated plain extending westward to the lush valley of the Río Cuautla.

When one attempts to delimit Chalcatzingo's local interaction area, the valley likewise appears as the logical unit, surrounded as it is by lightly inhabited areas of low agricultural potential which today yield no indications of any greater prehispanic settlement densities. The archaeological data recovered during our project confirm this supposition for the Middle Formative period. Certain artifacts, such as Peralta Orange ceramics and C8 figurines, occur in greatest abundance in Middle Formative sites in the valley, but are lacking or have a restricted distribution outside of the valley.

The valley, composed of alluvial and underlying pyroclastic deposits derived from Popocatepetl, is relatively flat with few features of high relief but is marked by numerous deep barrancas in the north and central parts. The dominating topographic features are three large granodiorite rock masses in the center of the valley, each rising over 300 m above the flat valley floor. These ancient intrusions today are landmarks and are visible from many parts of Morelos. The northernmost massif is the Cerro Jantetelco, which rises nearly 500 m above the valley floor. The southernmost of the three, 10 km further south, is the Cerro Tenango. Midway between these mountains are the twin peaks of the Cerro Delgado and Cerro Chalcatzingo (or Cerro Gordo). These two mountains are an integral part of the Chalcatzingo archaeological zone.

Eastern Morelos and the Amatzinac Valley are drier than the more western parts of the state and lack the breadbasket aspects of those areas. Moreover, the Amatzinac offers little easily accessible water and no significant expanse of alluvial bottomland except in the southern area of the valley. Throughout the northern and central valley the river is deeply etched through the alluvium and

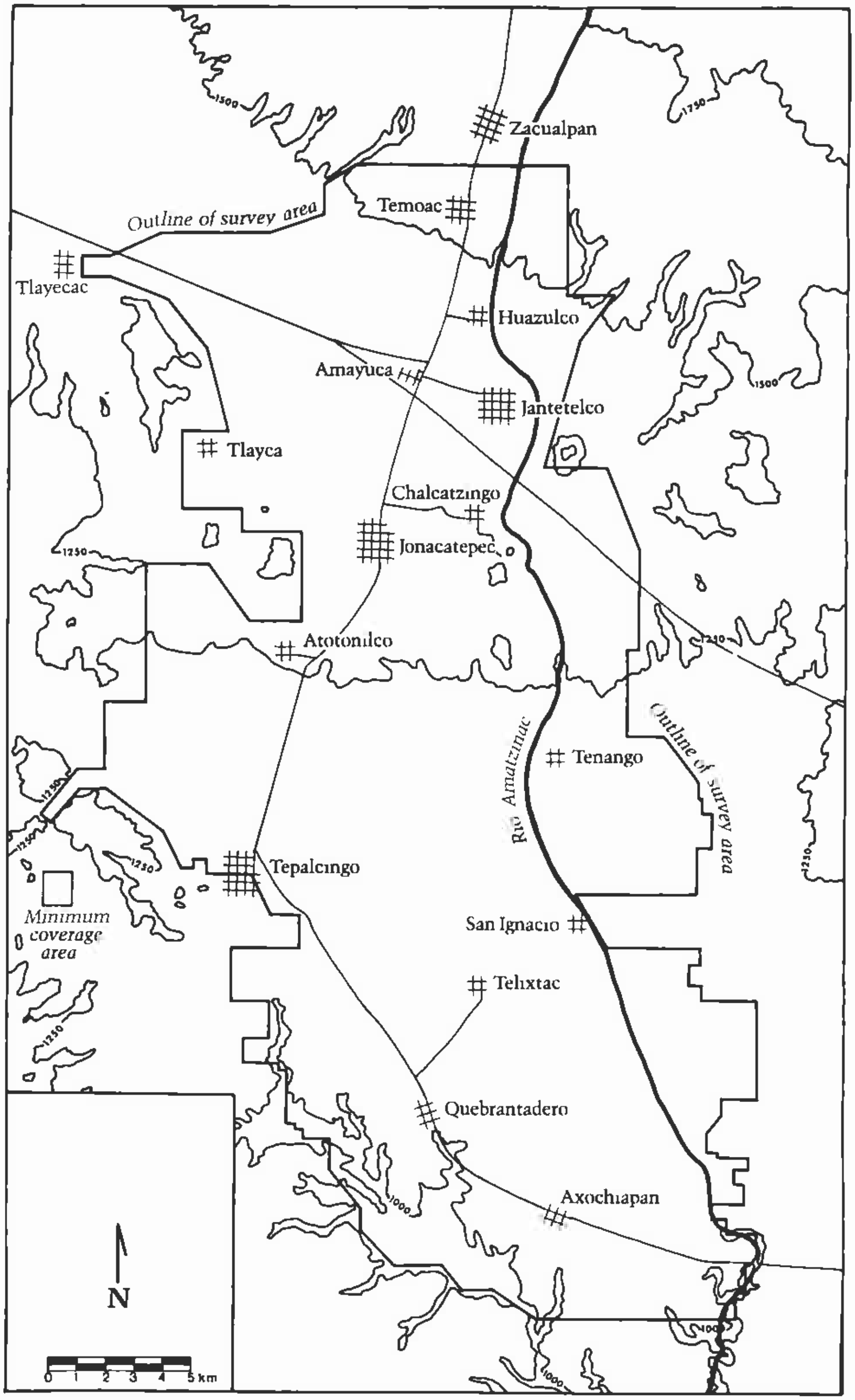


Figure 2.2. The Amatzinac Valley, showing modern roads and major towns.

underlying pyroclastics. The steep-sided barranca cut by the river averages 20–30 m in depth and about the same dimensions in width. It is not until near San Ignacio (Fig. 2.2) that the river emerges onto a broader valley floor. From San Ignacio until the river's junction with the Río Nexapa at the Puebla border, there are good expanses of alluvial bottomland. Nevertheless, for reasons given below, the northern valley is the most agriculturally productive.

Soil, vegetation, areas of natural humidity, rainfall, and access to water for irrigation are highly variable within the valley, but there is a general north to south trend in terms of decreasing agricultural potential. The agricultural potential obviously affected settlement patterns in the valley's prehispanic past, just as it does today. According to 1960 census data, only fourteen valley towns had populations greater than 1,000, and only four of these fourteen had populations exceeding 2,000. Today those figures must be considerably greater, but the general pattern remains similar. Of the fourteen towns, five are in the northern valley, four in the central valley, and five in the southern valley. That 64 percent of the population is in the northern and central valley area is significant, for it is the north-central region that has better soils and more abundant water supplies. This is essentially the area of the Pithecellobium Woodland vegetation zone (see below and Chapter 3).

The settlement pattern today differs between the northern and southern valley. In the north, both modern and prehistoric towns are situated near the center of the valley, whereas in the south, with few exceptions, the major towns today are located along the perimeter. This modern southern pattern does not mirror prehistoric patterns. The factors related to the settlement pattern are discussed briefly below and in greater detail in Chapter 21.

Almost the entire valley falls within the *tierra templada*, or temperate zone, a zone usually defined as lying between 1,000 and 2,000 m in elevation and with average temperatures of 15–20° C (59–68° F). The valley (and Morelos in general) lies in a transitional position between the cool *tierra fría* uplands of the Valley of Mexico and Sierra de Ajusco, and the hot and dry *tierra caliente* mountains of southwestern Puebla and southeastern Guerrero. In terms of the Koppen classification, the valley north of the 1,250 m contour (Fig. 2.2) is within the Cw climate zone (temperate humid with summer rains), and the region to the south is within the Aw zone (hot subhumid with summer rains) (Mosiño 1974:118–120; Vivó Escoto 1964:205–211).

Precipitation decreases from north to south in the valley. Only the valley's extreme north receives more than 1,000 mm (39.4") of rain yearly. The recording station in the northern valley at Zacualpan shows an average yearly precipitation of 1,126 mm. Of this quantity, 944 mm or about 84 percent falls during the rainy season (June to October). The mean annual temperature at that recording station is 19.7° C (67.5° F).

In contrast, the station at Tepalcingo in the southern valley receives an average yearly rainfall of only 848 mm (33.4"), of which 90 percent falls during the rainy season. In 1972 only 479.5 mm of rain fell at Tepalcingo during the entire year, and 81 percent of this was during the June to October rainy period. The following year, 1973, 819.5 mm fell at Tepalcingo, all of it during the rainy season. The annual mean temperature at Tepalcingo is 23.6° C (74.5° F).

An additional contrast between northern and southern sections of the valley can be seen in the annual evaporation rates. Zacualpan's annual rate is 1,696 mm, while Tepalcingo's is 2,096.6 mm. This latter evaporation rate is more than double the amount of rainfall received during the rainy season.

Rainfall, evaporation, and temperature are all significant factors in terms of agricultural productivity. Their fluctuations in the southern valley bring about moisture stress in the crops. Such fluctuations are not as severe in the northern valley, an area which today, as during at least the Postclassic, also benefits from the leveling influence of irrigation.

The Río Amatzinac is the valley's main river. The Río Frío, which runs through the western valley to join with the Río Tepalcingo, is relatively minor. The small Río de las Palmas in the east is likewise of secondary importance. The Río Nexapa borders the survey area in the far southeastern portion of the valley. Only two major springs occur in the valley, one at Atotonilco in the west, the other at Ixtlala in the southeast. Minor springs occur at or near various archaeological sites in the northern and central valley, including Las Pilas (Martínez Donjuan 1979:15) and Chalcatzingo.

Complicating the hydrography today are remnants of prehispanic and colonial irrigation systems, as well as systems constructed during this century. One such system brings water from near Cuautla (almost 22 km to the west) to irrigate land near Tenango and Atotonilco. Discharge from this recent system enters the barrancas in the southern valley, creating a greater flow of water in these streams than is normal.

No formal soil studies have been published for the valley. Therefore, the soils will be treated in terms of the two-part classification used today by farmers in the area, *tierra negra* and *tierra amarilla*. This classification is described in Chapter 26.

The ecological research carried out by the Chalcatzingo Project has defined eight major vegetation zones within the valley (Bugé 1978:57–69). These zones and their corresponding soils have significant relationships to the settlement history of the valley. They are listed here and described in detail in the following chapter: Upland Forest, Pithecellobium Woodland, Barranca, Huizache Grassland, River Bottomland, Interior Valley Cerros, Cuajiotal, and Tetlaleras.

The geology of the Amatzinac Valley is not complex (Fries 1966). The majority of the region is alluvial plain, with source material deriving from the slopes of Popocatepetl. Where the barrancas have cut through this stratified Pleistocene volcanic alluvium, they have exposed pyroclastics containing a wide size range of igneous rocks and boulders. These have provided an almost limitless source of material for grinding stones and building purposes.

Our investigations discovered veins of iron-rich deposits in the barranca of the Río Amatzinac immediately to the north of Tetla. At least two small cave-like excavations along this vein, one of which has prehispanic remains, indicate that these veins were probably mined for their red pigment in prehispanic times. This area has the highest concentration of iron oxide (Fe_2O_3) of the twenty-eight localities in Morelos sampled by Carl Fries (1966: Table 1, sample F63-85).

The hills marking the western valley border contain mines of hematite, magnetite, and limonite (yellow ochre) (Instituto Geológico de México 1923a:92; Velasco 1890:22–23, 90), and mining of some of the sources is still carried out intermittently on a minor scale today. The first iron smelter established by the Spanish in Mexico was located at the

Rancho Tepoxtitlan, just a few kilometers west of Tlacotepec in the northern valley. Ore for this smelter came from the Galván mine on the Cerro Cacalote, in the southern valley (Velasco 1890: 22, 90). Several of the iron ore sources were located and sampled by our project (Chapter 23).

No known obsidian deposits occur on the slopes of Popocatepetl or within the valley. The nearest known source is Otumba, in the Teotihuacan valley, 115 km to the north. One chert source was found by the project survey crew in the southern valley (Appendix H:RAS-108).

Various sources mention the presence of kaolinite clay near the southern base of the Cerro Chalcatzingo (Instituto Geológico de México 1923a:92; Mazari 1921; Velasco 1890:23), but despite numerous efforts, we have yet to locate and sample this source. It was apparently last exploited in the 1920's. Villagers and officials in Chalcatzingo and Jonacatepec were unaware of the kaolinite, and the only person in the area today who remembers the source is over ninety years old and unable to take us there. A second, smaller source, on the east side of the Cerro Chalcatzingo, was sampled by Grove in 1976. A possible kaolin deposit in the extreme west of the valley near Tlayecac was, according to informants in Tlayecac, sampled by geologists within the past decade. We were unable to locate this deposit.

CHALCATZINGO

The Modern Village

The village which lends its name to the archaeological zone of Chalcatzingo is situated west of the barranca of the Río Amatzinac and to the northwest of the site (Fig. 2.3). It is not located adjacent to any easily accessible surface water source. The village is some distance north of the small spring located at the foot of the archaeological site, and the village center is nearly 0.5 km west of the barranca. It is only recently that the village has expanded eastward toward the barranca. Easy access to the river, deep in the barranca, is possible in one location directly east of the village plaza. Our research into site locations (Chapter 21) suggests that some other sites are located at points along the river where the river and barranca can be crossed.

The name Chalcatzingo is Nahuatl, and has been translated as "area of the esteemed Chalcas" (Piña Chan 1955:6). There are however equally viable spellings such as Chalcacingo and Chalcatzinco, as well as several alternative translations of the word. For example, the *-zingo* (or *-cinco*) suffix is a diminutive and the name can thus be translated as "little place of the Chalca," a translation which some scholars have taken to suggest that Chalcatzingo had been tributary at some time during the Postclassic period to the town of Chalco in the southeastern Valley of Mexico. Ethnohistoric documents indicate periodic conquest and subjugation of towns in Morelos by Valley of Mexico city-states, including Chalco, so such a translation is not without some merit. However, archaeological evidence for a Late Postclassic settlement of any appreciable size in the immediate vicinity of the archaeological zone or modern village is lacking.

With such a lack of archaeological evidence in mind, alternative translations must be considered. For instance, the *-zinco* suffix is not merely a diminutive but also a reverential suffix, and the word can be read as "the revered place of the Chalca." Such a translation has no implications of a Late Postclassic habitation nor of tribute payments. Arguments supporting the possible sacred nature of the site and its hills appear in Grove 1972b and in Chapters 10 and 27 in this book. The word Chalco likewise has various translations and need not refer to a specific town, for it derives from *chalchihuitl*, a word which can mean both "jade" and "sacred water." If the latter meaning is used, Chalcacingo may be rendered as "the revered place of sacred water," a translation more befitting the sacred nature of the site's rock carvings and particularly Monument 1, "El Rey" (Chapters 9, 10). If the suffix is really *-tzinco*, an ending meaning "at the base of," the name can be read as "at the base of (or below) the place of sacred water," again a translation more in keeping with the nature of the archaeological zone and the present village at the foot of the mountain and its sacred carvings. In fact it is quite probable that the various alternative translations for the word are not in conflict nor coincidental, but were purposely intended for their double meanings.

Chalcatzingo's economy is based upon plow agriculture. Crops generally planted are those common to most of Mesoamerica: maize, beans, and squash, as well as some cash crops (see Chapter 26) planted primarily on *ejido* (communal) land. *Ejido* lands include the terraced fields of the Formative period archaeological zone and the archaeological zone of Tetla (see below). The *ejido* land of the archaeological zone is highly prized and is held by a limited number of older villagers and their descendants. Many of the younger village men desiring *ejido* must settle for land east of the barranca. The only consistently irrigated land lies alongside the spring at the base of the archaeological zone and is privately owned. A small dam and simple gravity flow canal make up the irrigation system (Fig. 2.4).

Chalcatzingo's population was estimated at about two thousand individuals by village authorities in 1974. Most villagers live in substantial one- or two-room houses constructed of adobe brick, which can have either sloping, flat, or thatched roofs. As is common in much of Mexico, the houses present a blank wall to the street and face inward onto a walled yard area. Cooking is normally done in a separate small building which contains a raised cooking platform (*tlecuil*). While the government has installed a basic water system to provide water to faucets at the corner of every village block, many of the village's older homes have their own wells. Typical of nearly every house lot in the village is the *cuexcomate* (Fig. 26.3), a style of granary with a limited distribution in Morelos, Puebla, and Veracruz.

While substantial adobe brick houses are today in the majority in the village, thatched huts with cane and branch (wattle) walls often occur on the same house lots, or in marginal areas of the village. This latter house type reflects the older construction style, not only in Chalcatzingo but throughout much of Morelos, western Puebla, and northern Guerrero. Status today, however, is reflected in adobe brick houses.

The village is too small to have a market area, and the nearest market is Jonacatepec, 3 km to the southwest. However, most villagers prefer to travel to Cuautla, 25 km to the west, where a large public market and numerous stores provide far more facilities. Several small family "window" stores and a recent CONASUPO store provide basic essentials to the villagers. Meat is purchased either outside the village or from villagers who slaughter animals occasionally. Some villagers still depend upon hunting to supplement their families' diets, although today only rabbits and

Figure 2.3. Aerial view of Chalcatzingo, showing the modern village, the Amatzinac barranca, and other geographic features mentioned in the book.

small birds occur locally in any quantity. Deer were apparently more common in the past but are no longer found in the immediate region.

As noted briefly in the general discussion of Morelos, the revolution which began in 1910 permanently altered the way of life in rural Morelos. Chalcatzingo had strong *zapatista* allegiances. In times of severe federal harassment, the caves of the Cerro Delgado served to hide villagers, corn supplies, and even local rebels. The *cerros* also provided commanding views of much of eastern Morelos. In 1913, as a consequence of the town's *zapatista* sympathies, the federal government temporarily but forcibly resettled the people of Chalcatzingo in nearby Jonacatepec (Morayta 1980:56–57).

Nahuatl appears to have been commonly spoken in Chalcatzingo at the time of the revolution. By 1974, although the villagers spoke Spanish entirely, those in their sixties or older could speak Nahuatl (although they seldom did), those in their late forties and fifties could understand Nahuatl, and younger villagers neither understood nor showed any interest in the language. This suggests that soon after the disruption caused by the revolution, and as eastern Morelos became linked by roads to other areas, Spanish quickly superseded Nahuatl.

Governance of the village is in the hands of the *ayudante municipal* and his

Figure 2.4. Modern gravity-fed water system below the site.

Figure 2.5. The Tetla area, showing hill with pyramids (*center*) and the Cerro Jantetelco (*background*). Cleared area in foreground is *ejido* land which is plowed and planted regularly.

suplente. *Ejido* lands are administered by the *comisario ejidal* and his *suplente*. These positions are elective. Decision-making and elections are carried out by town meetings of all adult males. Each male over eighteen is required to participate in village work projects and *vigilancia* (patrolling the village at night). Work duties rotate around the village, and this rotation provided the basic pattern through which workers were hired on our project (see Chapter 1). Although the communal labor *tequio* system still prevails at Chalcatzingo, there is at present no civil-religious hierarchy. Today institutional religion plays a minor role in village life. A priest visits the village only irregularly, and while three churches were once active, two now stand in ruins.

The Archaeological Zone

The Cerro Delgado and its larger companion, the Cerro Chalcatzingo, essentially mark the center of the Chalcatzingo archaeological zone, a zone minimally encompassing Early to Late Formative and Late Classic to Middle Postclassic occupations and associated structures. These occupations vary in size and spatial distribution. The Formative period zone, for which the site is best known, consists of a series of artificial terraces created from the long, low hill slope that extends northwestward from the *cerros*.

The point of demarcation between the steep, rocky talus slopes of the Cerro Chalcatzingo and the long, flat expanses of the terraced fields is easily noted on Figure 1.2 at the 1,020 m contour. From here the terraces extend northward about 400 m in three long, decreasing steps. A drop of about 30 m (ca. 98.5′) occurs over this distance. At the foot of the lowest terrace a flat expanse continues northward another 100 m to the *barranquilla*, a small spring-fed stream which for most intents and purposes marks the northern limit of significant occupation (some exceptions will be noted in Chapter 4). Because artifact scatters continue (in greatly reduced amounts) north of the *barranquilla*, the site's northern boundary is vague, yet the western boundary is quite sharp and distinct above the 995 m contour line.

The majority of the terraces are Formative period constructions. A few, however, may constitute Late Classic rebuilding atop Formative terraces. Exact dating and further discussion of terrace building are found in Chapters 4 and 6.

The terraces are now utilized for agricultural purposes and are part of the village *ejido* land; field boundaries generally follow terrace boundaries. The presence of Cantera phase house foundations in the modern plow zone indicates that after many centuries of erosion and deposition, the present ground surface level is essentially the same as that during the Middle Formative occupation of the terraces. The result is that house floors and house foundations have usually been destroyed by plowing. Farmers have also removed boulders or stones in their fields which have interfered with their plowing and farming, or have taken them for building activities. A number of stone wall features have been destroyed in this manner, and the same fate may have befallen stelae, as will be documented later.

The first archaeological features normally seen by visitors hiking up the terrace slopes onto the site consist of a Late Classic plaza with two mounds and a nearby ball court. These lie at the north end of the site's uppermost large terrace (T-1). Chalcatzingo's famous bas-reliefs occur on the face of the Cerro Chalcatzingo and on a line of boulders on the *cerro*'s talus slopes. Relatively simple paintings are found on rock faces just below the saddle connecting the two *cerros*, and caves high on the upper slopes of the Cerro Delgado contain paintings as well as artifactual material (Chapter 12).

Besides the main Formative period zone on the western slopes of the *cerros*, occupation continues northward around the Cerro Delgado onto its eastern slopes as well. This occupation, dating primarily to Late Classic through Middle Postclassic, is designated Tetla (from the Nahuatl: "rocky place"; see Figs. 2.3, 2.5). It extends to the *barranca* of the Río Amatzinac. Tetla's surviving constructions include many small and several large terraces, a ceremonial zone with a number of large mounds, and a ball court (Chapter 24). Excavations of a residence at Tetla are described in Chapter 25. In contrast to the western (main) zone of Chalcatzingo, Tetla's original terraces and fields are broken up by many recent stone wall lines.

An aged villager informed us that when he was a child, before the revolution, the upper terraces of the main site area had numerous stone "*idolos*." Today, of course, these no longer remain. Many have been removed by collectors or villagers, but it should also be noted that Chalcatzingo is continually "mined" for stone. It is an understatement to say that the terraced agricultural fields of the site are rocky. A rock count conducted by Grove on five different terraces (T-2, T-11, T-21, T-31, and T-37) found 2–10 stones over 20 cm in diameter per m^2, with total stones (all sizes) varying from 6 to 40 per m^2.

The site average is 15 stones per m^2. Of these, often up to 80 percent are not the local granodiorite from the *cerros*, as one would expect, but river-rounded igneous cobbles brought up to the site by past inhabitants. If stone counts could be made over the site, a correlation between building (or other) activity and stone might be found to exist. However, these stones also provide an abundant source for villagers desiring stones today for a number of purposes (e.g., wall building, house foundations, fill material). Ground stone artifacts and occasional faced stone blocks make their way into village construction in this manner.

A second form of mining is directed at the granodiorite of the hill itself. The natural stone (*cantera*) from the *cerro* and site area was utilized by the site's prehispanic occupants for construction and monuments (see Chapter 11, MCR-12; and Chapter 23), but there are no data at present to indicate that it was also traded or exchanged with other sites in the valley. This *cantera* "mining" continued during the hacienda period, and it is our understanding (without any serious petrological analysis) that the ex-hacienda Santa Clara (Monte Falco) is constructed with *cantera* from Chalcatzingo. Some houses in the village of Chalcatzingo have doorways framed with blocks of *cantera*, and the mining of *cantera* has apparently diminished significantly only since the 1950's.

Most of the mining has not concentrated on the *cerros* but instead has been directed toward large boulders or small outcrops on the talus slopes or along the edges of some terraces (terraces were usually shaped so that very large boulders were avoided). These stones have been scarred by drill holes and shattered by dynamite. The fragments of this mining activity have been hauled away. Regrettably, at least one stone of archaeological interest (MCR-25, Chapter 11) has been badly damaged by mining.

RESUMEN DEL CAPÍTULO 2

Chalcatzingo está situado cerca del centro del valle del Río Amatzinac. En el tiempo de la conquista española, Chalcatzingo estaba incluído en el área conocida como Tlalnáhuac, parte del señorío de Yacapichtlan. Sistemas de riego post-clásico han sido reportados en la parte norte del valle.

El valle empieza en las laderas al sur del volcán Popocatepetl. Las tierras anchas y planas del valle están constituidas por sedimentos volcaniclásticos y las cortan barrancas profundas y abruptas. El valle está situado en tierra templada. La lluvia, humedad, y calidad del suelo aumentan de sur a norte; por lo tanto, el potencial agrícola es mayor en la parte norte del valle. Esta situación se refleja tanto en los patrones antiguos como modernos de asentamiento.

La configuración plana del valle se ve interrumpida por tres cerros rocosos y altos. De estas tres masas rocosas, la central se compone de los picos gemelos, el Cerro Chalcatzingo y el Cerro Delgado. La zona arqueológica de Chalcatzingo yace al pie de estos cerros, y la población moderna se localiza cerca de un kilometro hacia el nor-poniente. El sitio arqueológico se presenta como una serie de terrazas hechas por el hombre las cuales forman parte hoy día de las tierras del ejido de la población. Las esculturas en bajorrelieve que han dado fama a Chalcatzingo se encuentran en el Cerro Chalcatzingo, en tanto que los demás monumentos se han descubierto en las terrazas. Datos que evidencian el poblamiento prehispánico se extienden a lo largo de los lados norte y oriente del Cerro Delgado, dentro de un área hoy conocida como Tetla.

3. Plant Ecology and Paleoecology

DAVID E. BUGÉ

The study of the modern vegetation of the Amatzinac Valley and the palynological reflection of prehistoric vegetation provide a background for the interpretation of settlement patterns through time. Thus, the valley's plant ecology and paleoecology were analyzed with two goals in mind: discovering the potential ecological determinants of site location, and identifying changes in environmental factors which may have led to cultural adaptations. These data complement other aspects of the physical setting (Chapter 2) and served as major ecological factors in the analysis of the Formative period settlement patterns in the valley (Chapter 21).

An initial hypothesis was that sites were located to maximize access to agricultural land. It was assumed that groups entering the valley during the Formative period were fully agricultural and settled in areas which were optimal. A research strategy was developed to determine the agricultural potential of different areas within the valley. The present distribution of vegetation communities was found to be highly indicative of agricultural potential, since "natural" plant communities respond to the same environmental factors as cultivated crops.

These present vegetation communities, while reflecting the influence of climatic factors, are clearly determined by the distribution of soil types within the valley. Although no formal studies of soils have been made, the two-part classification made by local farmers is adequate to differentiate the factors controlling the distribution of vegetation and agricultural productivity throughout most of the valley (see also Chapter 26).

The soils with the highest recognized agricultural potential and productivity are the *tierra negra* soils, found in the central portion of the northern valley and as streamside alluvial deposits in the southern valley. These soils are fine-grained, organic clays which are slightly acidic. The second and more common are the *tierra amarilla* soils found throughout the southern valley and on the borders of the valley in the north. *Tierra amarilla* soils were used extensively only during the period of maximum agricultural extension of the haciendas in the late nineteenth century and then only with the construction of large-scale irrigation systems.

Eight major vegetation zones were defined for the valley by the Chalcatzingo Project (Fig. 3.1; Bugé 1978:57–69). They are described in the first part of this chapter. These zones were delimited on the basis of indicator species which had restricted distributions. Agricultural production for the different zones was determined through interviews with farmers and, in some cases, by measurements of corn in the fields (see also Chapter 26 for agricultural production at Chalcatzingo).

Once the present vegetation zones were determined, surface pollen samples were collected from each plant community in order to determine their pollen representation. These samples provide reference points for the interpretation of pollen spectra from archaeological deposits. Pollen spectra in fossil samples can be referred to specific plant communities, and, by inference, the determining environmental factors for settlement and adaptation can be identified. Samples of fossil pollen were collected at Chalcatzingo, and the results of their analysis are given in the second part of this chapter.

VEGETATION ZONES

Upland Forest

The Upland Forest Zone, which lies above 1,700 m in elevation (and thus is *tierra fría*) did not fall within our research area. It is significant, however, that wind-borne pollen from this zone appears in the Chalcatzingo pollen record.

In the Amatzinac Valley, the Upland Forest zone extends essentially from Tlacotepec northward. Because this zone occurs on the steep foothill flanks of Popocatepetl, the vegetation is complex. Pine (*Pinus* spp.) and oak (*Quercus* spp.) occur together in the upper elevations, but pine does not appear below 1,800 m. Oak, on the other hand, extends into the lower elevations as well.

In areas of high humidity, the Upland Forest vegetation takes on a tropical aspect (Miranda's Mesophyllic Mountain Forest; see Miranda 1942), dominated by *Meliosma dentata* and *chilacuate* (*Styrax ramirezii*). Other important species are *Ternstroemia pringlei*, *xochilcorona* (*Cornus disciflora*), and *jaboncillo* (*Clethra mexicana*). Temperate trees occurring within the zone are *palo blanco* (*Carpinus caroliana*), *tilo* (basswood, *Tilia* sp.), and *Fresno* (ash, *Fraxinus* sp.).

The Upland Forest was economically important for the Amatzinac Valley, for forest products constitute important exchange items today and probably did in the past as well. We recognize that while our research did not extend into the Upland Forest zone, prehispanic settlements did exist there (e.g., Tolstoy and Fish 1975).

Pithecellobium Woodland

Located in the central section of the northern valley and extending from Tlacotepec southward to Jonacatepec and Chalcatzingo, the Pithecellobium Woodland zone appears to have been the major agricultural area of the valley from the Formative period until the present. It is the most productive zone in both wild plant and agricultural resources. The soil of this zone is uniformly *tierra negra*.

Although millennia of land use have destroyed most of the original woodlands, the long-standing practice of leaving some natural vegetation along field borders, for both shade and resources, allows a reconstruction of original species. Most trees characteristic of this zone have edible products: *guamuchil* (*Pithecellobium dulce*, edible fruit), *ciruela* (hog plum, *Spondias purpurea*, edible fruit), *pochote* (*Ceiba parvifolia*, tree cotton and edible root), gray *amate* (*Ficus padifolia*, bark paper and edible fruit), and *guaje* (*Leucaena esculenta*, edible fruit). Also found within the zone are *ceiba* (*Ceiba pentandra*), *casahuate* (*Ipomoea muricoides*), *venenillo* (*Thevitia ovata*), *chipile* (*Coursetia glandulosa*), *cuaulote* (*Guazuma ulmifolia*), and numerous species of *Bursera*. Field borders are also thick with herbs and grasses. Many of the plants of this zone are recognized by the present rural population as having medicinal properties.

Barranca

Within the deep, narrow barrancas cutting down through the alluvium and pyroclastics in the northern and central regions of the valley are very restricted ecological zones of high humidity which contain distinctive plant communities. The upper slopes of the barrancas are characterized by *Bursera* species, maguey and agave (*Agave* sp.), *nopal* cactus (*Opuntia lasiacantha*), *organo* cactus (*Pachycerus marginatus*), and *guaje*. The humid barranca floors contain *amate*, *guamuchil*, *ciruela*, and *copal* (*Bursera jorullensis*).

The plants from the barranca floor are all of value for their fruits or other products, and their dominance among the barranca vegetation is probably the result of human maintenance over the centuries. This is also true for some areas of other vegetation zones near settlements, where selective cutting of trees of low economic value for firewood has eventually left only species of economic value.

Near settlements the barrancas also include fruit trees such as *guayaba* (guava, *Psidium guajava*), *aguacate* (avocado, *Persea americana*), and *mamey* (*Mammea americana*). Due to the lack of sufficient alluvium, the barrancas have never been important for agricultural activities. Fish from the rivers flowing in the barrancas provide only a very minor protein source today, and no archaeological data suggest any different situation in the past.

Huizache Grassland

Grasses and thorn-bearing bushes dominate the Huizache Grassland zone. The most characteristic plant, which gives the zone its name, is the *huizache* (thorn acacia, *Acacia farnesiana*). Also present are *tehuistle* (*Acacia bilimekii* var. *robusta*), *venenillo*, and *casahuate*. Numerous species of cacti are seen, often marking archaeological sites, where they appear to favor the loosely consolidated rubble of pyramid mounds and other structures. Rarely, *guamuchil* trees occur, marking deeper soil or more subsurface moisture.

The Huizache Grassland zone is associated with *tierra amarilla* soils. These soils are usually shallow, and are underlain by caliche. Although the Huizache Grassland zone in the southern valley was apparently intensively cultivated during the hacienda period and possibly the Classic period as well, it is largely uncultivated today because it requires irrigation for consistent agricultural production.

River Bottomland

This relatively small zone is limited to certain areas of the southern valley where the rivers emerge from the deep, restricted barrancas and have created narrow bands of fertile alluvium within the area of huizache grasslands. The river bottom soil is *tierra negra*. Vegetation today seems to represent the remnants of a gallery forest which included *ceiba*, *pochote*, *guamuchil*, *amate*, *mamey*, *aguacate*, *sapote*, and *annona*. Although some of these species are cultivated, they are also native to this subtropical zone. Small remnant stands of willow (*Salix* sp.), cattail (*Typha latifolia*), and various reeds and rushes indicate that prior to agricultural clearing these species were more widespread.

Interior Valley Cerros

The three massive granodiorite hills in the center of the Amatzinac Valley contain a specialized and highly diversified vegetation zone, selected and modified by several thousand years of alteration by local human populations. This is particularly true of the Cerro Chalcatzingo and Cerro Delgado, the two hills within the Chalcatzingo archaeological zone. The steep slopes of these *cerros* and their close proximity to the barranca of the Río Amatzinac have created a situation in which the other five vegetation zones of the valley, excluding the Upland Forest zone, are compacted into a relatively small area. These hills therefore have a limited number but broad variety of plant species, including useful species.

Chalcatzingo informants mention the *cerros* as a favored area for collecting medicinal plants. The villagers use the *cerros* as their major source of firewood in a way which may replicate prehispanic practices, concentrating on trimming trees of little or no economic value in terms of fruit or other products. One of the first lessons learned by youngsters sent to cut firewood is to distinguish valuable from nonvaluable plants. Social sanctions are brought to bear upon villagers who cut valuable plants for firewood.

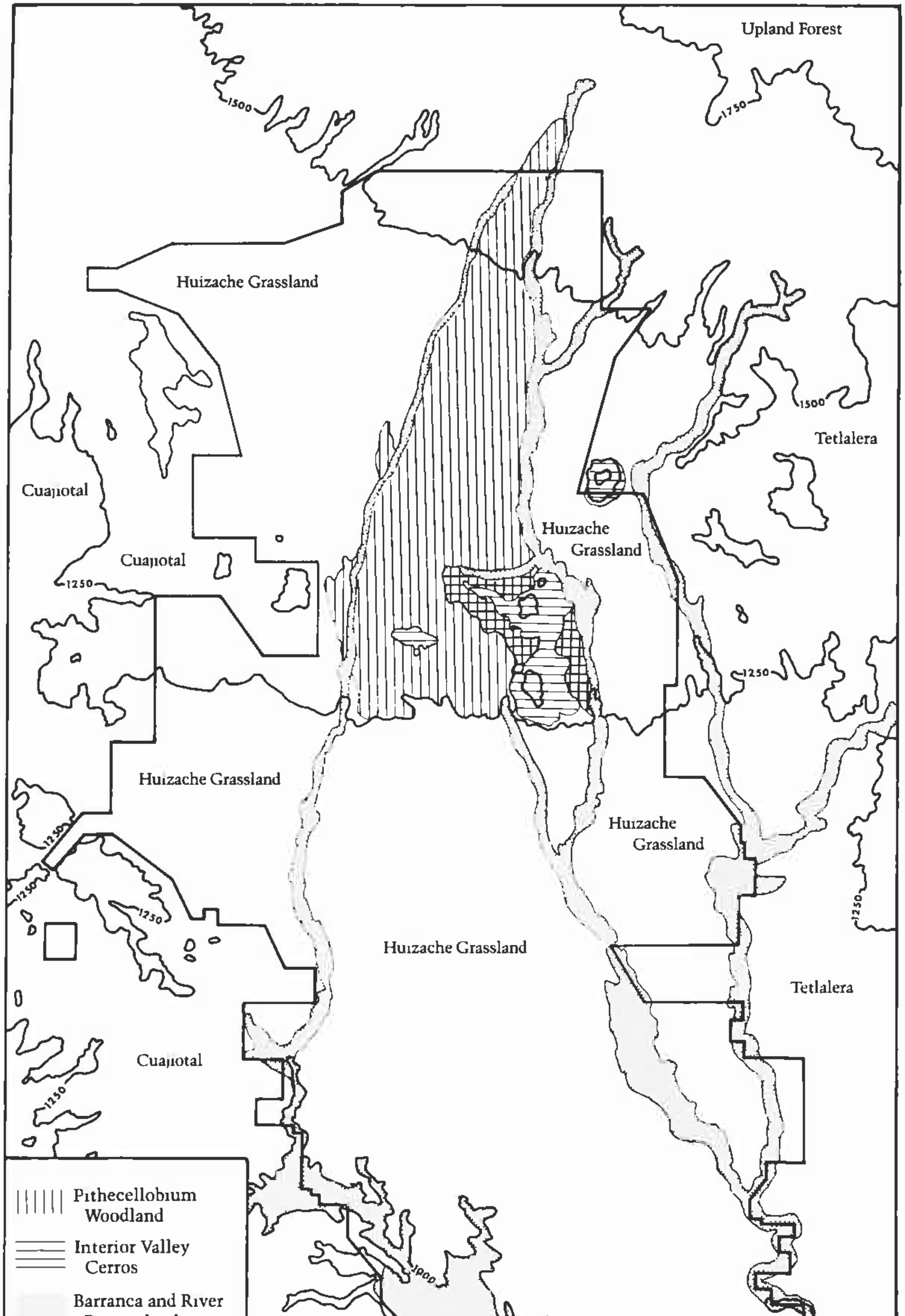
Copal trees are common in this zone, particularly at Chalcatzingo, where even today the resin is collected for use as incense. *Cuajiote amarillo* (*Bursera odorata*), *cuajiote colorado* (*B. morelense*?), and *cuajiote blanco* (*Pseudosmodingium perniciosum*) occur, along with the yellow *amate* (*Ficus petiolaris*), a tree which clings to rock exposures and cliff faces. *Nopal*, *organo*, and *garambullo* (*Myrtillocactus geometrizans*) cacti are also common and are exploited for their fruits. *Casahuate*, *guamuchil*, and *ciruela* can be found on the lower hillslopes, while in humid areas gray *amate*, *pochote*, and *guamuchil* often occur in dense stands. In addition to herbs and grasses, the underbrush on the hillsides includes *huizache*, *cuvata* (*Acacia cochliacantha*), and *uña de gato* (*Mimosa lacerata*), a thorny plant which is hard to forget once you have come into contact with it.

Cuajiotal

The Cuajiotal zone is associated with the hills on the west-central margins of the valley: Cerro Colorado, Cerro Coachic, Loma de la Plaza, etc. The zone is dominated by species of *Bursera*, principally *cuajiote* (*B. longipes*), *cuajiote amarillo*, and *copal*. With the exception of *copal* resin and firewood, this zone has little resource value. There is no evidence that this zone was ever utilized for agriculture.

Tetlaleras

Finally, there is a zone of thorn scrub vegetation growing upon stony (*tetlalera*) soil. It is characterized by leguminous species including *huizache*, *tehuistle*, *cuvata*, and *guaje*. Cacti occasionally occur in the heavily rocky areas, and



Upland Forest
1500
1750
Huizache Grassland
1500
Tetlalera
Cuajiotal
Huizache
Grassland
Cuajiotal
1250
1250
Huizache Grassland
Huizache
Grassland
1250
1250
1250
1250
Huizache Grassland
Tetlalera
Cuajiotal
1250
Pithecellobium
Woodland
Interior Valley
Cerros
Barranca and River
Bottomland
1000
N
1000
1000
0 1 2 3 4 5 km

guamuchil in the humid areas.

The zone extends along the eastern border of the valley. Settlements and agriculture within the zone are limited to small areas of alluvial land located where streams emerge into the valley from the low hills to the east.

POLLEN ANALYSIS

Ecology of Pollen Indicators

A major problem in comparing modern and archaeological pollen samples is that few species are represented in the archaeological samples. Thus, paleoecological interpretations are based on the ecology of the species found rather than on complexes of pollen reflecting vegetational communities. Because there are fewer data available from the pollen samples, conclusions of their analysis must be considered tentative. Nevertheless, certain general statements can be made concerning the paleoecology of archaeological sites and the reconstruction of paleoclimates.

Chenopods and amaranths (cheno-ams) are common in archaeological pollen samples. Their ecology is distinctive: they prefer fine-grained alkaline soils and recently disturbed earth (Martin 1963:49). These plants are frequently found growing wild in cultivated agricultural fields, where they may even be encouraged as potherbs and medicinal plants. As soon as fields are abandoned, however, cheno-ams are rapidly out competed by grasses (Gramineae) and composites (Compositae).

Composites are aggressive intruders into agricultural land. Their seeds sprout at the first rain of the season, and the seedlings are able to endure several weeks of drought. Composites do equally well in rich or poor soils, the only difference being in their vitality and density. They are found on steep *cerro* slopes, where in pollen production though not in number they are dominant over the arboreal vegetation.

Grass is also an invader of abandoned fields, but it is not as aggressive as the composites. Within ten to fifteen years of abandonment, however, grass is dominant, and composites are found only in continuously disturbed areas. The presence of grass normally indicates dry conditions or thin soils. In deeper soils, grass

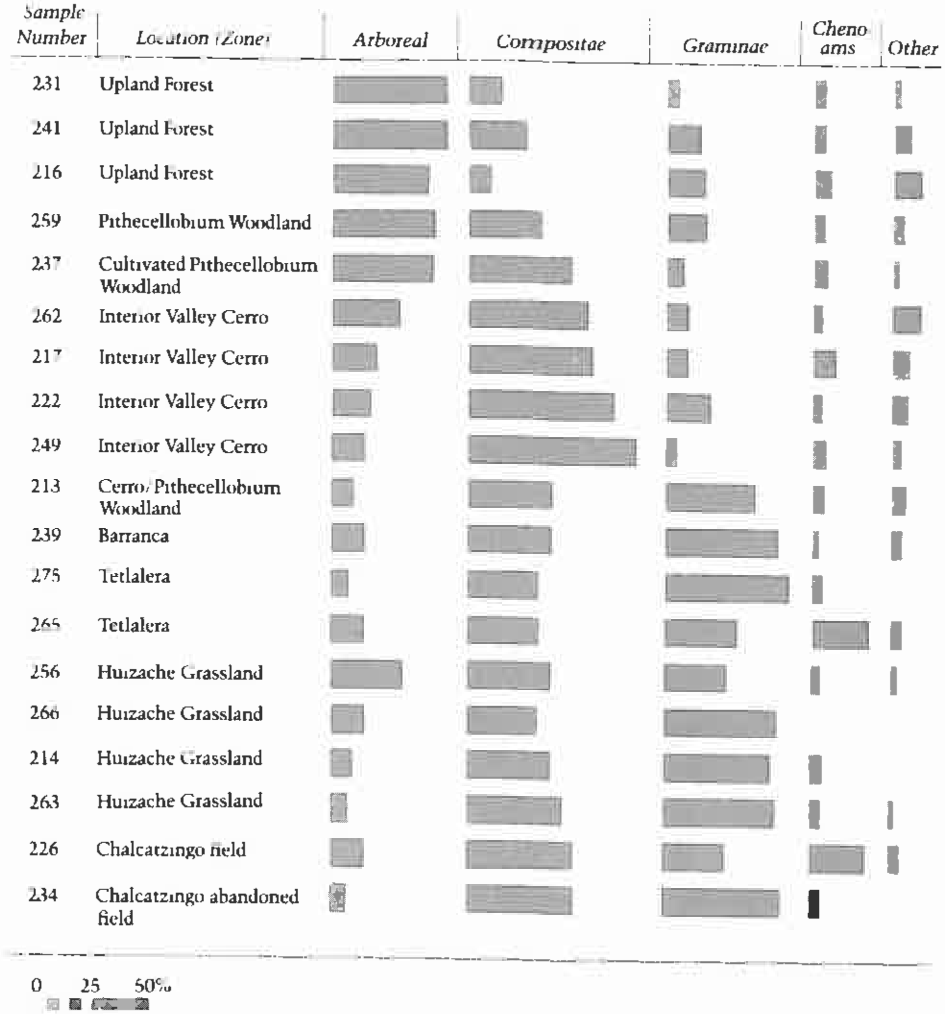


Figure 3.2. Surface pollen spectra from various locations in the Amatzinac Valley.

is present but is not well represented in pollen spectra since other plants produce more pollen.

From our surface transect samples (see below), it is obvious that both grasses and composites are indicators, in this valley, of dry conditions. Comparing pollen spectra for only these plants, high percentages of composites indicate slightly more mesic conditions, while high percentages of grass indicate the driest situation. Cheno-ams, which are found in low numbers throughout our surface samples, seem to be definitive indicators of disturbance.

Surface Pollen Samples

I collected nineteen surface pollen samples from the Amatzinac Valley. The spectra from these samples are shown in Figure 3.2, which shows the vegetation zone from which each sample was taken. With the exception of sample numbers 226 and 234, the spectra represent a north to south transect of the valley through *tierra negra* soils from Hueyapan, in the far north, to Tenango, a few miles southeast of Chalcatzingo. Since the samples were taken from the same soil type, variability in the spectra largely reflects differences in precipitation and temperature. The pollen was classified as arboreal (AP in Fig. 3.2), Compositae, Gramineae, Chenopod-Amaranth, and Other, this last category including species which occurred in numbers too small to be of value in distinguishing vegetation zones.

The Upland Forest vegetation zone is characterized by high percentages of arboreal pollen, primarily pine and oak. The zone is clearly differentiated in the

Figure 3.1. Vegetation zones of the Amatzinac Valley.

record from the Pithecellobium Woodland zone (also relatively high in AP) by the presence of pine.

The pollen of the Interior Valley Cerros zone is distinguished by low AP values. Although trees dominate this zone's vegetation, they are almost all insect-pollinated and thus are not well represented in the pollen counts. As should be expected, AP values decrease concurrently with the distance from the Upland Forest and Pithecellobium Woodland zones.

The Barranca and Tetlaleras zones have variable samples which show relatively high percentages of grasses, indicating that they are undisturbed and fairly xeric (arid). Although the margins of the barrancas are moist locations, they also support primarily insect-pollinated species and thus appear drier in the pollen record than they actually are.

Huizache Grassland shows high counts of grasses and composites. Since both plants invade fields within a few years of their abandonment, abandoned fields frequently show pollen profiles similar to that of this zone.

Fossil Pollen

A stratigraphic sequence of pollen samples was collected at Chalcatzingo from the main cross trench in the Plaza Central. Of the nineteen samples in the series, only seven samples (from five levels) produced statistically reliable counts. Other samples were not productive due in part to the depositional environment, which was not conducive to the preservation of pollen, and to the probable high percentage of insect-pollinated species.

In all of these samples, 100-grain counts were made. They were compared with reliable samples from other site areas and with samples with little pollen and thus of dubious reliability. In all cases the counts were in agreement, indicating that a 100-grain count was apparently an adequate representation of the pollen spectrum.

The pollen curves for the sequence are shown in Figure 3.3. Except for sample 131, the sequence has insignificant amounts of arboreal pollen, so only composites, cheno-ams, and grasses are included in this figure. The shaded bar running vertically down the diagram is the 0.95 confidence interval (Maher 1972) calculated from the surface sample, which is indicated at the top of the column. Pollen percentages which fall inside the bar are not considered to show statistically significant differences from the modern vegetation, implying a vegetation assemblage similar to that on the site today. Percentages which fall outside the bar represent significant deviations from the present conditions.

The pollen samples come from good stratigraphic contexts and have been dated by their associated ceramics. The earliest sample is no. 124, which is Late Barranca subphase and shows drier conditions than found on the site today. Composite percentages in the sample are low, while grasses and cheno-ams are high. In addition to greater aridity, the low percentage of composites and high cheno-ams indicate some disturbance as well.

Early in the Cantera phase (samples 129 and 131) the frequency of cheno-ams increases and grass decreases. Taken alone, the percentages for grass suggest a gradual increase in moisture by 700 BC. However, since the curves are proportional, the decrease in the grass percentage is influenced by the large increase in the percentage of cheno-ams. Clearly the pollen is reflecting both increasingly moist climatic conditions and extensive disturbance of the site.

Additional evidence for this disturbance is the higher than normal percentage of AP in sample 131, the majority of which was pine, indicative of long distance wind transport. Apparently the destruction of the vegetation at that time was so complete that only cheno-ams, adventitious composites, and pine are well represented. Continuous clearing of the Plaza Central, the settlement's public area (Chapter 7), maintained the high percentages of cheno-ams through time.

Also during the Cantera phase the pollen spectra of sample 132 indicate a major event which cannot be interpreted simply by comparison to the surface pollen samples collected throughout the valley. Grass and composites should not both show high values, since they indicate opposite climatic conditions. A possible interpretation is that disturbance of the settlement's vegetation continued to be so intense that it effectively masked climatic conditions. The increased percentage of grass may also indicate a drier climate, while the percentage of composites reflects intermittent disturbance.

After the event reflected in sample 132, a gradual decline of grass seems to continue along with the decline in cheno-ams (no. 133). The vegetation again indicates drier than present conditions, with greater than modern percentages of cheno-ams.

Considering the total counts of the samples, a diverse vegetational community is indicated by sample 124, with pine, oak, legumes, cactus, acacia, and agave all occurring in the sample. This diversity indicates a relatively unmodified vegetational community. Succeeding samples become increasingly less diverse, as would be expected with disturbance and agricultural activity. The latter is evidenced by grains of *Zea mays* in samples 131 and 138. Samples from other areas of the site which date from the same time period confirm the Plaza Central sequence, including the period of disturbance and the occurrence of agricultural pollen types.

Comparison of Chalcatzingo and Oaxaca

A comparison of pollen sequences from Chalcatzingo and Oaxaca is shown in Figure 3.4. At 800 BC the two sequences seem to show opposite climatic conditions, while by 700 BC both areas had conditions similar to the present. At Chalcatzingo, the period of construction which occurred about 600 BC produced a vegetation community which seems to indicate dry conditions, but in fact is representative only of human activity. The underlying climatic situation is difficult to determine, as it is effectively masked by the large quantities of pollen which indicate disturbance. The period of building activity is followed by a return in the pollen spectra to indications of climatic conditions like those today at the site and in Oaxaca.

As Kent Flannery and James Schoenwetter (1970) argue, their Oaxacan pollen sequence seems little affected by human disturbance and clearly shows the influence of climate on the vegetation. The case is different, however, at Chalcatzingo, where there is little evidence of stable conditions or more gradual transitions between plant communities. Each sequence needs to be interpreted in terms of its own ecology, rather than assuming that both indicate climatic conditions or effects of human disturbance.

As vegetation was cleared for the construction of terraces, houses, and monuments at Chalcatzingo, the vegetation became less diverse and more characteristic of early successional stages which tend to fluctuate rapidly in character. The return to like-normal conditions at 550 BC may indicate a xeric vegetation

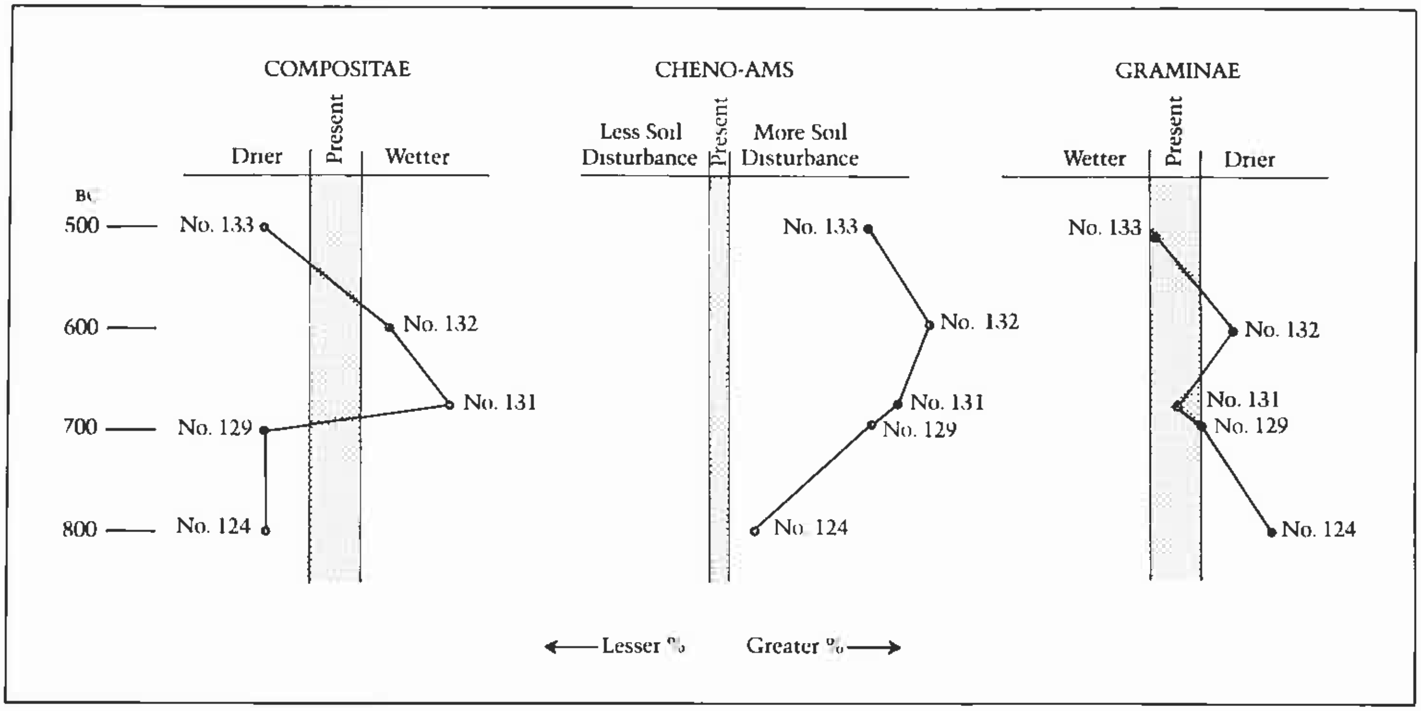


Figure 3.3. Pollen spectra from the Plaza Central transect trench.

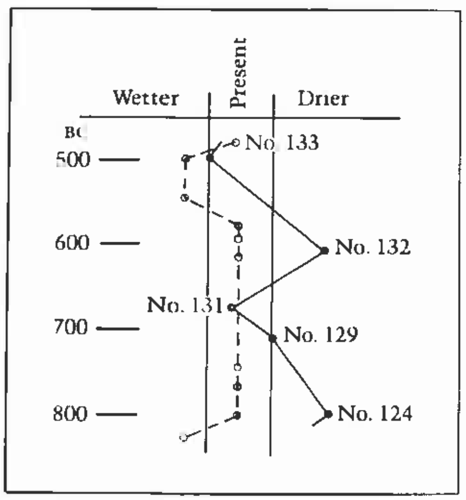


Figure 3.4. Comparison of moisture fluctuations, Oaxaca (*dashed line*) versus Chalcatzingo (*solid line*).

resulting from disturbance rather than climatic change. Construction activities would have produced a situation favoring increased erosion, greater solar radiation inputs, and increased evaporation, all of which would have put more moisture stress on the vegetation—including crops.

Tierra negra soils would have been less affected by clearance compared to the thin soils of the hillslopes. Terrace construction, using soil brought from the valley floor, would have preserved the productivity of the land while easing the problems of erosion.

PLANT MACROFOSSILS

Another form of evidence aiding the understanding of the prehistoric ecology of Chalcatzingo is plant macrofossils. Although no good macrofossil samples were recovered from the major excavation units, even though flotation samples were processed, two dry caves on the Cerro Delgado did yield interesting collections. The collection from Cave 8 was derived from project excavations, while the abundant Cave 2 sample came primarily from screening a backdirt pile left by looters. The Cave 8 sample is probably Middle Postclassic in date, while that from Cave 2 seems to date from the Middle Postclassic to perhaps the recent period.

The plant data are detailed in Appendix A. Plant names were provided by informants, and botanical names are given where the specimens could be identified. Wood and fiber artifacts recovered from Cave 2 are described in Chapter 16.

The plant remains represent a broad spectrum of the vegetation of the area. Most specimens were from plants which are edible or have specific uses. *Jicamilla, chupandilla* seeds, *ciruela* pits, *guajes, cacachis*, avocados, and squash were all found in quantity. Today these are preferred supplementary foods. No large quantities of any one species were found that would indicate storage or intensive consumption. The material indicates that a considerable range of wild foods were eaten and used prehistorically, but none in great quantities. This compares favorably with modern practices and statements by farmers that agricultural production is never so low that families have to rely on gathered food. Wild plant products are eaten today in the fields and may provide significant amounts of calories, but only as supplements or "snacks."

Stability of the agricultural system is indicated by the lack of wild plant use. If agriculture were risky and production variable, more reliance on gathered foods would be expected among agricultural peoples. The macrofossils, therefore, indicate that agriculture has probably been consistently able to satisfy the needs of the community and that there was little reason for intensive gathering.

Also of interest is the large quantity of cotton from Cave 2. Cotton is no longer grown in the vicinity of Chalcatzingo, due apparently to problems with disease. Most local farmers have had some experience with cotton and stated that the rainy season was too wet for it to be successful. They did indicate that the southern part of the valley, with its higher temperatures and lower rainfall, was more favorable. However, no cotton was seen growing anywhere in the valley.

It is likely that cotton was an important crop in the past (Classic or Postclassic), but that economic conditions now prevent it from being profitable. Cotton may have been a major factor in the Classic period reorientation of settlement patterns in the valley under the conditions of Teotihuacan contact, but whether or not the valley was a major cotton-producing center remains to be proven.

CONCLUSIONS

Based on the analysis of modern vegetation and prehistoric pollen samples, the Formative period ecology of the Amatzinac Valley can be tentatively reconstructed, providing necessary data for the interpretation of settlement patterns. Initial settlement of the valley during the Amate phase occurred during a time of dry climatic conditions. This explains, in part, the location of sites near permanent water sources and the attempt by the early inhabitants to maximize their access to *tierra negra* soils (Chapter 21). With the increased population of the Barranca phase and the increased rainfall indicated by the pollen sequence, settlement spread to less than optimal areas. At Chalcatzingo, the increase in rainfall may have stimulated the terracing of the hillside in order to prevent erosion and to protect the fields below the central portion of the site from damaging runoff. Decreasing moisture during the succeeding Cantera phase would have made agriculture more risky, but crop losses in one area may have been buffered within the hierarchical settlement system.

Throughout the past, vegetation in the valley was much as it is today and there is no evidence for drastic change. Prior to settlement, the central part of the northern valley was probably heavily forested. This zone would have been favorable for both agriculture and plant gathering. On both margins of the central zone, the grassland was much the same as now, possibly with more acacia and other thorny trees. The *cerros* and barrancas were characterized by a diverse community of plants, many of which provided gatherable products.

Comparison of the Chalcatzingo and Oaxacan pollen sequences reveals two conclusions. First, the pollen sequence at Chalcatzingo reflects local disturbances of the vegetation more clearly than does the Oaxacan sequence. This is probably due to the fact that the Chalcatzingo sequence was collected in the center of the site, where disturbance had maximum effect. Second, the Chalcatzingo pollen sequence indicates the damping effect which the rich soils of the central valley have on climatic variation. This is, of course, of critical importance for farmers seeking to minimize the risks of agriculture within a variable environment.

RESUMEN DEL CAPÍTULO 3

La vegetación comprendida en el valle del Río Amatzinac está determinada claramente por la distribución que presentan los tipos de suelo llamados tierra negra, el cual es un barro rico en materiales orgánicos que se encuentra fundamentalmente en la porción central de la parte norte del valle, y de los llamados tierra amarilla, el cual es un suelo común en la parte sur del valle y de contenido más pobre.

Dentro del valle existen ocho zonas mayores de vegetación: Bosque de Tierra Alta, Bosque Pithecellobium, Barranca, Pastizal de Huizache, Tierras Bajas de Río, Cerros del Interior del Valle, Cuajiotal, y Tetlaleras. La zona más productiva se encuentra en el Bosque Pithecellobium. Ahí, el suelo está compuesto uniformemente de tierra negra. Esta es la zona que ha tenido la actividad agrícola mayor en el valle desde el período Formativo hasta el presente.

Chalcatzingo, el cual se encuentra en el centro del valle y en el área de transición entre el Bosque Pithecellobium y las zonas de Pastizal de Huizache, tiene vegetación de tipo Cerros del Interior del Valle. Sin embargo, la ubicación del sitio permite que desde ahí se tenga accesso a todas las otras zonas de vegetación, excepto a la de Bosque de Tierra Alta.

Se tomaron muestras de polen en estas zonas de vegetación modernas y se compararon con el polen arqueológico proveniente del sitio. Esto permitió la reconstrucción de los paleoclimas y también produjo importantes testimonios que sirvieron para determinar los acontecimientos mayores de perturbación de suelo en la prehistoria de Chalcatzingo.

Los datos de polen sugieren que durante la fase Barranca tardía, el área era más seca que ahora. El polen de la fase Cantera temprana reveló dos cambios mayores: aumento de humedad (lluvia) y extensa perturbación de la ladera. El polen de la fase Cantera tardía indica un retorno a las condiciones secas.

4. The Excavations

DAVID C. GROVE and ANN CYPHERS GUILLÉN

The project's research approach combined excavations with large-scale regional survey and supplemented these data with analytical techniques such as palynology, bone chemistry, and raw material characterization of trace minerals. The excavations are the subject of this chapter, which provides a brief summary of the excavations for each of the major site areas. Some of these areas are discussed in further detail in other chapters.

MAPS, MAPPING, AND GRIDDING

Before initiation of field work, an aerial photograph of the site and its immediate area was acquired from the Mexican government agency CETENAL (Comisión de Estudios del Territorio Nacional). This photo was projected to a scale of 1:800, and tracings were made of each agricultural terrace and field. The resulting seven maps were then used as a basis for providing numbers for each field on the site and in the immediate surrounding area. The fields on the main site zone closely follow the Formative period terraces and subterraces. These received identification numbers preceded by the prefix T (e.g., T-2, T-27, etc.). Using a small drainage cutting through this site area as a dividing line, fields west of the drainage received even numbers, those to the east odd numbers (Fig. 4.1). N (north) and S (south) prefixes were used for fields in unterraced areas peripheral to the main zone. The Tetla zone behind the hills received its own numbering at a later date.

During the first field season a basic site map was made using an alidade. This map was based on a bench mark we established on a long elevated area running eastward from the Classic period pyramid. It was soon recognized that this elevated area was an earthen platform mound, now designated PC Structure 4. As field work began, it became apparent that creating a total site map with an alidade would be quite time-consuming and impractical since we did not have a full-time cartographer. A National Geographic Society grant provided funds for the second field season which allowed the Compañía Mexicana Aerofoto, S.A., to make photogrammetric site maps with contour intervals of 1 m and a scale of 1:1,000 (shown in a reduced version in Figs. 1.2, 4.2, and 9.2).

The site size and terraced surface area of Chalcatzingo are such that a total site grid would be cumbersome and difficult to manage. It was therefore decided to consider each terrace as essentially a subsite, with its own datum and grid.

When a decision was made to begin excavations on a particular terrace, a cement datum point was established and tied in to the master bench mark atop PC Structure 4. A grid of 1 × 1 m squares oriented to magnetic north was laid out on the chosen terrace. Since the termination of the project, several datum points, including the master bench mark, have been vandalized and/or removed.

CLEARING

Although many of the terraces on the sites were plowed yearly, inter-terrace slopes, talus slopes, and some fallow terraces were heavily overgrown with vegetation, primarily tall sunflower-like Compositae or tall grass. It is probable that some non-agricultural areas had not been cleared for hundreds of years. Before survey or excavation began, the entire site was cleared of overgrowth, exposing a number of small terraces and some unsuspected archaeological features. Clearing was repeated prior to the start of each field season.

SURVEY, LOCAL AND REGIONAL

Following the clearing of the site at the beginning of the initial field season, a program of surface survey began, at first limited to obtaining a basic understanding of the site (boundaries, large-scale artifact distribution patterns, etc.). These first surveys did not collect artifacts, for their purpose was only to gain preliminary information. Artifacts were left on the surface for the more intensive surveys which followed.

Intensive surveys were carried out primarily during the first and second field seasons. In addition to intensive surveys of the entire site, during the second field season a group of fields between the village and the main site zone covering 7 ha were regularly studied and intensively surveyed and collected three times during an eight-month period. The purpose of this study was to determine the effects of plowing and other forms of surface disturbance on surface artifact patterns. The results of this study have been published by Kenneth Hirth (1978c).

A major focus on the second field season was the large-scale surface survey of the entire Amatzinac Valley, from the foothills of the volcano Popocatepetl in the north to the Guerrero border in the south. This survey, which took six months, did not sample selected areas but instead covered every field within the approximately 454 km^2 area. Over 450 sites ranging from the Formative through the Postclassic were recorded. The analysis of these data is presented in Chapter 21 as well as in several publications (Hirth 1974, 1978b, 1980). Descriptions of the Formative period sites are provided in Appendix H.

EXCAVATION TECHNIQUE

Excavation unit size varied and usually is mentioned in the description of the excavations of each site area (below). Most commonly, trenches were 1 × 3 m, and excavations to clear particular features were 2 × 2 m (one unit of a 2 × 2 m grid). When possible, all excavations followed the natural stratigraphy. Measurements were always taken in the metric system. All excavated material was screened on a ¼" mesh screen, and finer screens were available when considered necessary. Soil samples were collected from appropriate features for flotation, and pollen samples were collected both from stratigraphic levels and from features such as house floors.

ARTIFACT PROCESSING

The project laboratory was established in a large house in the town of Cuautla, about 24 km west of Chalcatzingo. A permanent lab crew worked on artifact analysis on a year-round basis. However, basic processing of all artifacts was carried out at the site. Sherds were washed, dried, and catalogued before being transported to the lab.

Artifacts requiring special analyses were taken, with INAH permission, to labs in Mexico City and elsewhere. Radiocarbon samples were processed by Rikagaku Kenkyusho, of the Institute of Physical and Chemical Research in Japan. Faunal remains were analyzed in Mexico by Ticul Alvarez (Appendix J) and ceramic thin sections by Ann Cyphers Guillén at UNAM (Chapter 13). Bone chemistry analysis was carried out by Margaret Schoeninger at the University of Michigan (Schoeninger 1979a, b), as was the analysis of iron ore samples by B. J. Evans (Chapter 23). Pollen and obsidian samples were analyzed at the University of Illinois (Chapters 3 and 23).

SUMMARY OF THE FIELD SEASONS

The Chalcatzingo Project's first field season in 1972 was in the nature of a pilot project and was conducted with relatively limited funding. The research design was constructed to gain basic information about the site, such as its extent, its major cultural periods, and the basic distribution of Middle Formative cultural features including surface concentrations of sherds, raw materials, stone features, and visible architecture. This study was carried out by surface survey and excavation.

The original plan had been to select excavation areas according to statistical sampling and random numbers, but several factors, including site size and limited first-year funds, caused us to alter that approach. By 1972 the long-standing Formative period chronology for central Mexico had been seriously questioned (Tolstoy and Paradis 1970), and the proposed revisions were not in agreement with Chalcatzingo's published chronology (Piña Chan 1955). It was clear that a clarification of chronology was important to the more synchronically related goals of the project, and such clarification became a major priority of the initial field season. Thus, a long and deep stratigraphic trench was excavated across T-1 (the "Plaza Central"). This area was chosen because it was the uppermost central terrace, would be one of the least affected by mixing (through its location), was apparently a central focus of the site (a subjective observation made on the basis of visible features), and had been the primary area contributing to Piña Chan's 1955 chronology.

The initial surveys showed that the site's uppermost terraces generally had a random distribution of Formative, Classic, and Postclassic surface sherds. While Early Formative sherds occurred in highest quantities in the northeast area of T-1 and the northeast area of T-15, white sherds with rims decorated with the double-line-break motif, a general Middle Formative marker, were common in the overall surface scatter. But away from the few upper terraces, white sherds also appeared in nonrandom distributions, consisting, on most terraces surveyed, of a sherd concentration of approximately 8–10 m in diameter, normally located near the terrace's upper edge. The distribution pattern suggested that these sherd clusters might be surface indications of Middle Formative house areas, and as the Plaza Central trench neared completion, one of these areas (T-9A) was tested.

Because of our interest in surface artifact distribution as it related to subsurface remains, a relatively small terrace, T-4, was selected, gridded, and subjected to a 100 percent surface collection prior to beginning excavations. The T-4 excavations encountered a quantity and confusion of stone wall lines, and were continued into the second field season. Ultimately the analysis of T-4 materials showed no clear relationships between surface artifact distribution and the subsurface architecture, possibly because of the small size of the terrace in comparison to the almost ubiquitous features.

The only other area excavated during the first season was along the southwest side of the Plaza Central and consisted of Cantera phase structures (PC Str. 1 and PC Str. 2). Both of the excavations continued into the second field season. At the close of the field work, Hirth took core samples across several terraces and ran phosphate tests on the cores. All showed strong evidence of human occupation (Hirth 1972). His data were not utilized in determining areas to be sampled during the other field seasons.

The second and third field seasons were directed primarily toward the excavation of Middle Formative house structures, the locations of which were correctly presumed to be marked by distinct surface concentrations of artifacts. As commented upon elsewhere in this book, this approach obviously provides a sample which may be biased. Areas of this type excavated in 1973 included T-11, T-24, and T-29. The 1974 field season continued with house excavations on T-9B, T-23, T-27, S-39, and N-2.

During both of the latter field seasons, other structures and features were also excavated, including the water control "dam" on the northeast corner of T-15; a table-top altar, walled patio, and stone-faced platform on T-25; a heavy obsidian concentration on T-37; the PC Structure 4 earthen platform structure; stelae and stone-faced platforms on T-15 and T-6; and a number of caves on the Cerro Delgado. Some Classic period structures, including a ball court (T-15 Str. 2) and a round pyramid (T-3 Str. 1), were partially excavated in 1973. In 1974, Huazulco and Telixtac, two minor Middle Formative sites located during the reconnaissance, were tested. A Middle Postclassic house in the Tetla site area was excavated.

Three weeks of field work were carried out in 1976 for the purpose of clarifying the stratigraphy of certain site areas. Two of the deep trenches which had been excavated on PC Structure 4 in 1973 were reopened and one new trench excavated. Excavations were begun in front of T-6 Structure 1 to gain a larger sample from Amate phase stratigraphic levels. An Amate phase structure, T-6 Structure 3, was discovered but not excavated due to the short field period. With these excavations the field work at Chalcatzingo was terminated.

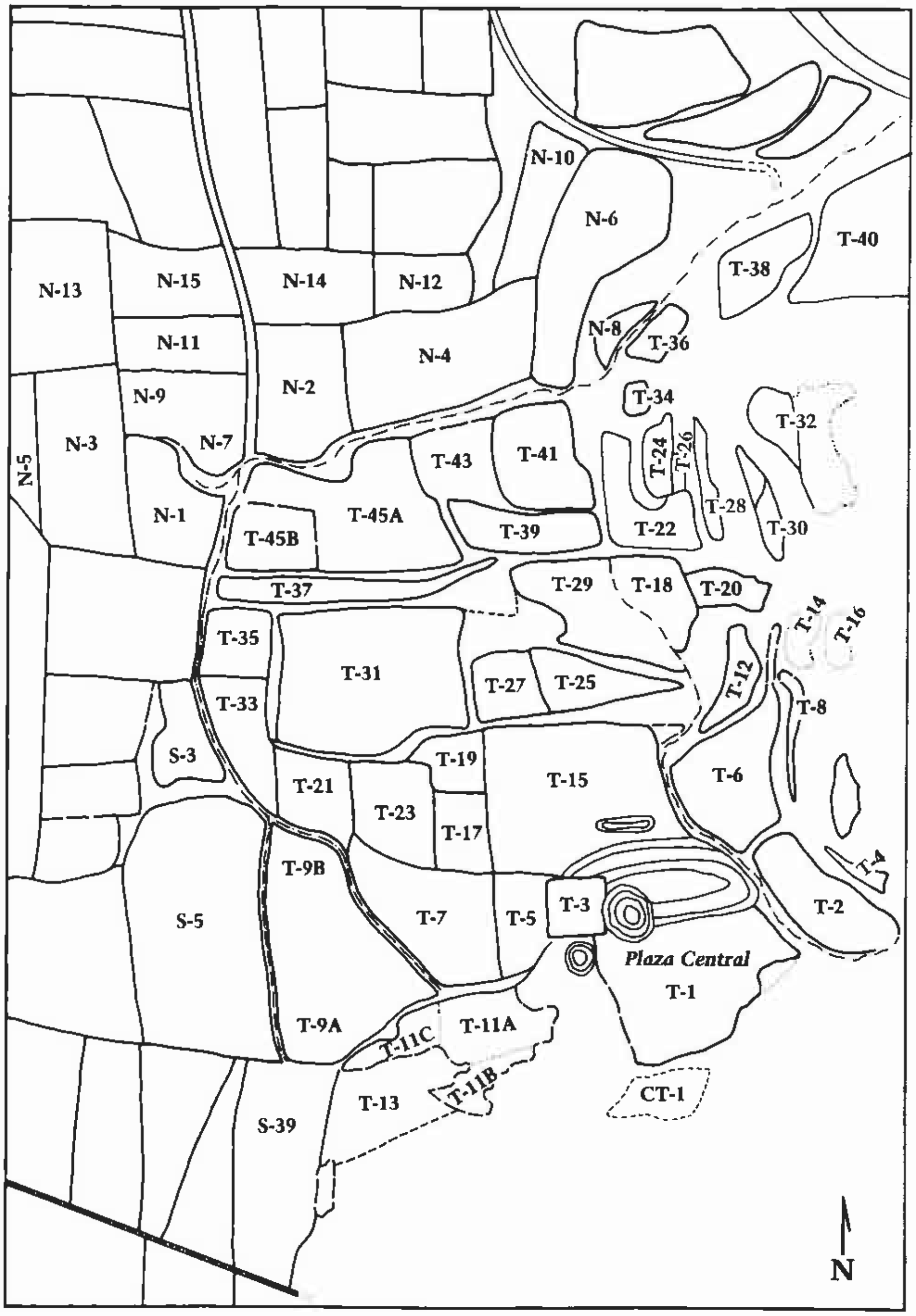


Figure 4.1. The project numbering system for Chalcatzingo's terraces and fields. Not all areas were excavated.

CHALCATZINGO EXCAVATION SUMMARY

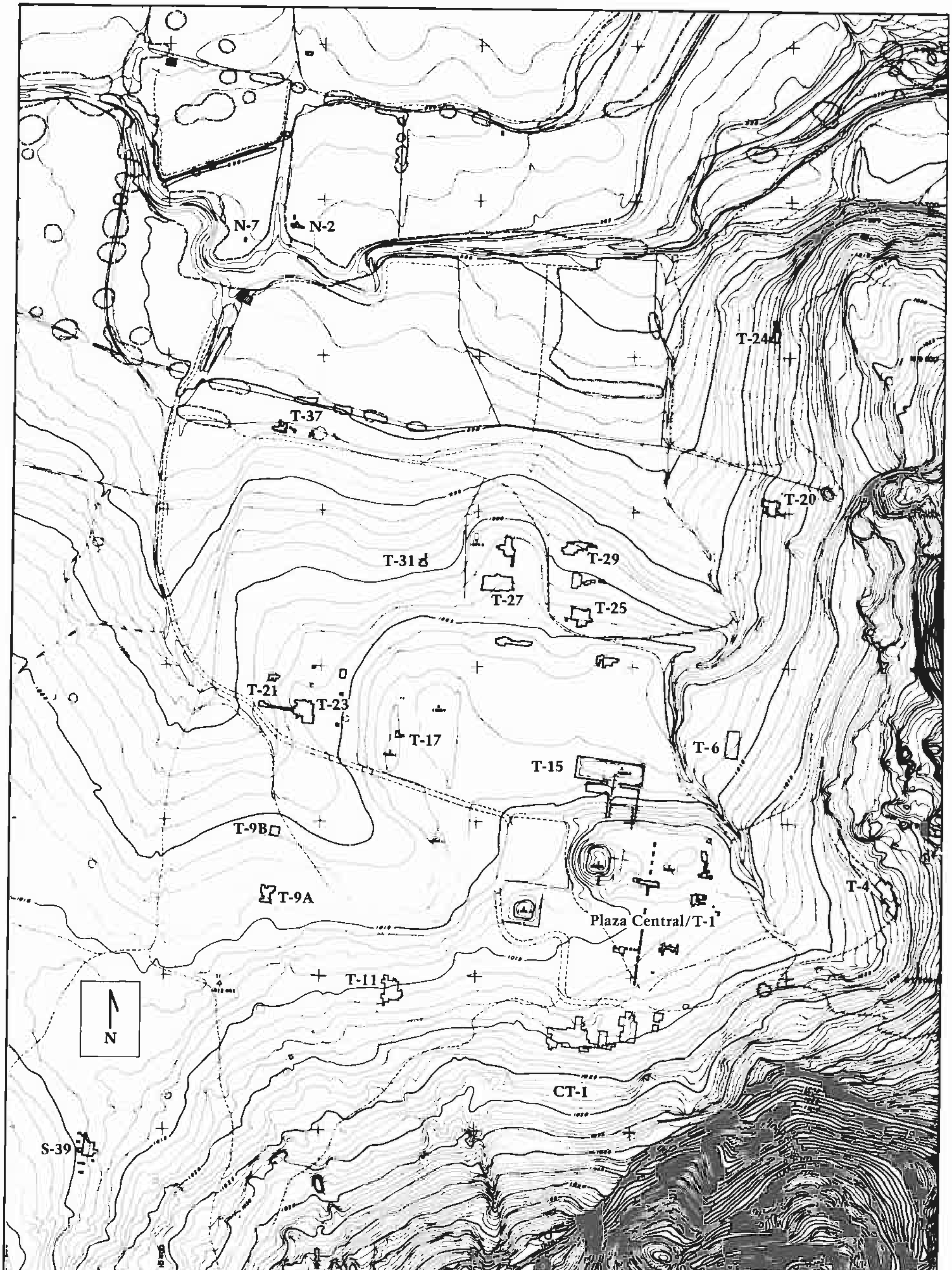
This section provides a terrace-by-terrace summary of the excavations. The field seasons during which the excavations were conducted appear in parentheses following the terrace number (e.g., FS 1972–1973). The excavation units across the site are shown in Figure 4.2. Table 4.1 provides data on the magnitude of each major excavation as the volume of material excavated, in order to prevent misleading comparisons of artifact quantities between excavation units. Excavation volume by phase is found in Table 4.2. Details of the stratigraphy used for chronological reconstructions can be found in Chapter 5 and Appendix B.

Terrace 1/Plaza Central (FS 1972–1974, 1976)

The project's initial excavations began on Terrace 1, commonly referred to as the Plaza Central (PC), a large rectangular field slightly over 1 ha in area. This field was also the location of most of the stratigraphic pits excavated in 1953 by Román Piña Chan (1955). The uppermost of the central terraces, it is bounded on the south by the talus slopes of the Cerro Chalcatzingo. It is therefore the terrace closest to the site's large boulder and bedrock bas-reliefs. The northern boundary includes the Classic period mound-plaza complex (T-3) and the long Middle Formative platform mound (PC Str. 4), which extends eastward from behind the largest of the Classic pyramids (T-3 Str. 1). The eastern side of the Plaza Central field is marked by a small streambed which we refer to as El Paso Drainage, while the western side is defined by an unfarmed rocky area.

Following the establishment of the site's bench mark atop PC Structure 4, a 100 m long line was run south from the bench mark (which also served as the terrace datum point) and staked at 10 m intervals. Then 1 × 3 m pits were begun at the 40, 70, and 90 m stakes (e.g., 87–90S/0–1E), and when these units reached bedrock (at ca. 4 m depth), they were expanded north and/or south, and other units also begun at other of the 10 m interval stakes, until a nearly complete 60 m long transect section was exposed (Fig. 4.3).

With the exception of the upper 60 cm of deposits, which included Classic and Postclassic artifacts, the stratigraphy exposed by the transect was Middle For-



N-7
N-2
T-24
T-37
T-20
T-31
T-29
T-27
T-25
T-21
T-23
T-17
T-6
T-15
T-9B
T-4
T-9A
Plaza Central/T-1
T-11
N
CT-1
S-39

***Table 4.1.* Excavation Volumes (in m³)**

Terrace	*Formative*	*Classic*
PC Str. 1	174	
Str. 2	200	
Str. 3	65	
Str. 4	110	
Str. 6	57	
Main trench	111	
Other	66	
Pyramid		38
El Rey Drainage	37	
T-4	ca. 194	ca. 15
T-6 Strs. 1 & 2	70	
Round altar area	15	
Str. 3	22	
T-9A	50	5
T-9B	12	
T-11 Strs. 1 & 2	65	
Trash pits		7
T-15 Str. 1	78	
Str. 2		184
Str. 3	8	
Str. 4		15
Str. 5	50	
T-17	3	8
T-20	5	50
T-21	29	
T-23 Str. 1	96	4
Other	22	8
T-24	44	
T-25 Altar & patio	105	
Behind altar	6	
Str. 2	13	
T-27 Str. 1	66	
Str. 2		31
T-29	62	
T-31	6	
T-37	18	
S-39	37	
N-2	13	
N-5	7	
N-7	7	
CT-1	23	
CT-2		12

***Table 4.2.* Approximate Excavation Volumes by Phase (in m³)**

Phase	*Volume*
Amate	108
Barranca	200
Cantera	1,638
Classic	377
Total	2,323

Figure 4.2. Topographic map of the main site area, showing the location and extent of the excavation units.

mative. The upper levels relate to the Cantera phase and the lower levels to the Barranca phase (Appendix B, SSU 31). Only one small area of Amate phase (Early Formative) deposits was uncovered by the excavations, at the extreme downhill (north) section of the trench (40–43S; Appendix B, SSU 29) in a cut penetrating the large platform mound (PC Str. 4). A high water table prevented excavation of these deposits.

The lowest deposits overlying sterile hardpan (*tepetate*) over most of the transect trench are Late Barranca subphase, although they contain earlier Barranca and Amate phase materials as well. The mixed nature of these deposits appears to explain the discrepancy between their radiocarbon and ceramic dates (Chapter 5). The presence of Late Barranca subphase deposits atop sterile *tepetate* over most of the transect but with an Amate phase deposit at the north end of the transect indicates a great deal of disturbance and earth moving which removed in situ Early and Middle Barranca subphase deposits.

Data from other terraces indicate that the site's terraces were constructed during the Early Barranca subphase, and that the Late Barranca subphase earth movement is unrelated to initial terrace-building. The data suggest that the Amate phase occupation occurred on the unterraced hillslopes. The Early Barranca subphase terrace building was a cut-and-fill operation which in some areas removed soil to *tepetate* and moved it downhill to be placed over the existing ground surface. Thus, Early Barranca deposits overlie the exposed bedrock of uphill sections of terraces, while the more northern (downhill) areas of terraces are composed of a mixed Early Barranca–Amate phase fill overlying the original Amate phase deposits (and of course covered by later Barranca and Cantera phase deposits).

While the original Plaza Central terrace was undoubtedly constructed in this manner as well, the Late Barranca subphase earth removal seems to have served another purpose, the resurfacing and enlargement of PC Structure 4, the long earthen platform mound which delimits the north side of the terrace.

Three stone features and a small section of stone pavement were exposed by the transect. One, a wall-like stone feature resting on *tepetate*, was uncovered in section 77–84S of the trench. This feature, which extended westward into the sidewall of the excavation, may have been the foundation of a Barranca phase house. In the same general trench area, 40 cm above the foundation stones, another stone wall ran perpendicular across the trench cut. This latter wall appears to have been some type of retaining wall for a low terrace extending southward. While the low terrace began in the Barranca phase, it was maintained into the following Cantera phase and was the location of at least two residential structures (see *Structure 1*, below).

An unusual stone construction was found in transect section 67–70S again running essentially perpendicular to the trench line (therefore parallel to the axis of the terrace). This structure (PC Str. 5) was constructed of rounded river cobbles, and is 2.6 m high and over 4 m in width (Fig. 4.4). The south or rear of the construction is vertical, while the north or front face has a slope of ca. 30°. While this structure could represent a fairly elaborate facing of an earlier subterrace, the stratigraphy abutting its rear suggests that it was a free-standing construction and that the levels behind it built up over time. The structure sits atop the first soil level (Late Barranca subphase) above *tepetate* and is clearly a Barranca phase construction. The structure's top section occurs within a level with a mixed Cantera phase–Classic period sherd content, indicating that at least the top of this construction remained exposed for perhaps 1,500 years after its original creation.

No serious attempt was made to expose the entire extent of PC Structure 5, although some cross trenching was carried out. The sloping front face of the structure faces the south slope of the PC Structure 4 platform mound 17 m to the north. Therefore, in the transect profile (Fig. 4.4) the two structures are reminiscent of ball court profiles. However, neither of these structures has been adequately excavated, and any interpretation suggesting that the structures are functionally related in any way is premature.

Figure 4.3. The 1972 Plaza Central (T-1) transect trench. Photo faces north. The large Middle Formative earthen platform mound (PC Structure 4) with a Classic pyramid (T-3 Structure 1) on its west end crosses the center of the photo.

Structure 1

The original transect trench extended only to 90 m south of the terrace datum. It was decided during the course of excavations to test another 30 m farther along the transect line, on a slightly elevated area immediately adjacent to the talus slopes of the *cerro*. As the plow zone level of these new test squares was being cleared, stone features, fragmentary bones, and nearly entire but smashed pots were uncovered. Additional test squares were cleared to below plow zone level, and similar bone and sherd concentrations were discovered. Although highly weathered, fragmentary, and difficult to identify, the bone was human. The ceramics were Middle Formative in date, belonging to the Cantera phase. While previous transect excavations had been in the nature of stratigraphic pits, the concentration of human bones at the base of (and within) the plow zone dictated the necessity of abandoning that procedure in this area.

The human bones obviously signified possible Middle Formative burials. Although the excavation of a Middle Formative area of burials was not originally anticipated as one of the priorities for the first field season, it was decided to pursue the excavation of this section of T-1 because of the potential of gathering a variety of data here which would be relevant to our first season goals. Drawing from the case of the Early Formative

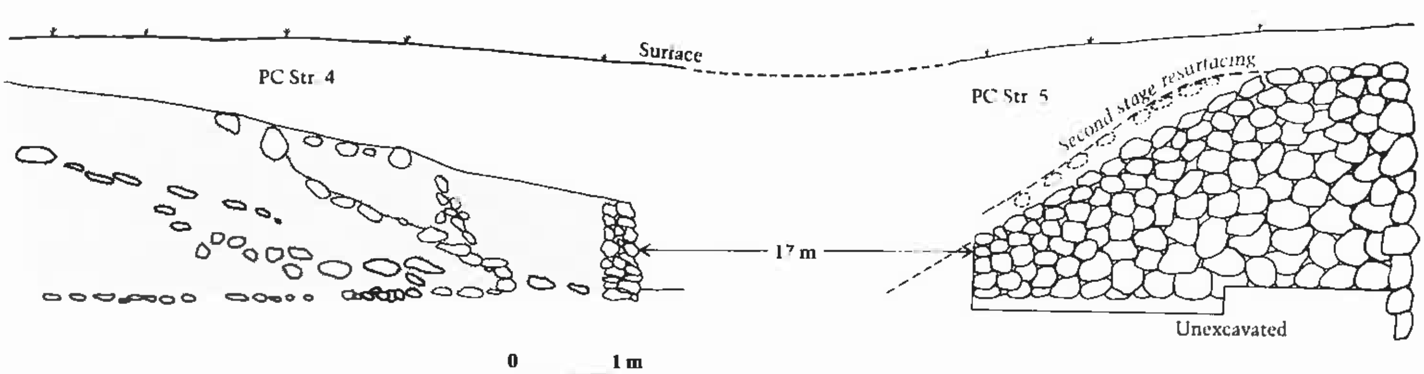


Figure 4.4. Profile of PC Structures 4 and 5.

burials at Tlatilco in the Valley of Mexico, where associated structures may have gone unnoticed, the decision was made to clear the plow zone level of this area, working square by square laterally out from our test squares.

As this clearing progressed, it became evident that the human bone fragments were indeed the remains of highly eroded burials and that they occurred within an area bounded at least on the east and south sides by stone walls. The eastern wall section was 7 m long and 1 m wide, and formed a distinct corner with the 6 m long and 0.7 m wide southern wall (Fig. 4.5). To the north, wall-like remains of stone, obviously disturbed by plowing, apparently delimited another boundary of the area of burials.

The first season of excavations opened about 170 m^2 of this area. When the lateral extent of the distribution of burials had been determined, excavations began downward. In the two field seasons of work in this area, a total of thirty-eight burials were recovered. These, together with other burials found on the site, are discussed in Chapter 8 and described in Appendix C.

As data became available from other excavations at Chalcatzingo, it became apparent that the walls bordering the PC Structure 1 burials were typical of Cantera phase house foundation walls and that Middle Formative burials on the site were commonly placed beneath floors of the houses. This fact and other data (discussed in Chapter 6) indicate that Structure 1 was a residence. The attributes of many of the burials suggests these individuals enjoyed a high status in the community; hence this was probably an elite residence (see Chapter 8).

The burials in Structure 1 (Fig. 8.5) all occur between the plow zone and 85 cm below surface. Scattered wall segments within that same area suggest that earlier Cantera phase structures (Str. 1b and 1c; Figs. 8.6, 8.7) once existed in this same location but were destroyed prior to the construction of Structure 1d (the stage of the structure associated with the burials). Other evidence of earlier constructions is an area of mud-plaster floor and postmolds (Str. 1a) at 130 cm in depth, nearly 50 cm below the deepest burials. This structure can be dated as Early Cantera subphase. An intrusive Late Cantera trash pit containing several metate fragments and a stone sculpture (Fig. 20.12) was found nearby.

Erosion in this area of the site is such that the Structure 1 house floor has been within the plow zone for at least several decades (if not centuries). The plowing is responsible for destroying sections of the house walls and the house floor (if not already removed by erosion), and for disturbing stone features associated with some burials. The proximity to the surface created extremely poor conditions for the preservation of human bone.

Structure 2

The wall lines of PC Structure 2 were found in the southeast corner of the Plaza Central while attempting to trace the course of El Rey Drainage (Fig. 4.6). Most of the foundation stones occur at the base of the plow zone, and it is probable that other walls have been destroyed by plowing. One protruding stone with a carved rectangular depression (MCR 4) occurs within one of the wall lines. This stone has been published previously (Gay 1972a:80).

As happened so frequently during the project's excavation of house structures, the floor area of the structure (or the uppermost structure) was found to have been within the plow zone and destroyed. The plow zone in this area was removed over an area of approximately 100 m^2. The foundation walls exposed revealed a long line of rectangular room areas extending for approximately 20 m (Fig. 4.7). Two structures (2-1 and 2-2) are probable. A few stones and artifact clusters several meters farther north in an area of very shallow soil suggest the possibility that a third structure, now completely destroyed, once existed. Only Structure 2-1 contained data significant enough to be discussed here.

The excavations within Structure 2-1 uncovered two well-defined floor levels below the plow zone (and evidence of a presumably destroyed upper floor). Both of these floors were of hard-packed earth, with no base of sand or pebbles (as occurred in some other structures at the site). Six vessels, all Cantera phase, had been laid out upside down and in an orderly manner on the upper floor. The lower floor level was found only at the western end of the Structure, a small portion of it having been preserved by burning. Burned wall daub fragments found on the floor indicate that the entire structure was burned at this time (whether purposely or accidentally is discussed in conjunction with other burned dwellings in Chapter 6). The presence of at least one floor level above the burned floor shows that the structure was later rebuilt, a phenomenon also found with other burned structures at Chalcatzingo.

Archaeomagnetic samples from the burned floor area were taken by archaeologist Daniel Wolfman and analyzed by Robert DuBois at the University of Oklahoma. The results (Wolfman, personal

Figure 4.5. PC Structure 1 looking north.

Figure 4.6. Excavations of PC Structures 1 (*lower left*) and 2 (*right center*). Photo faces southwest from Cerro Delgado.

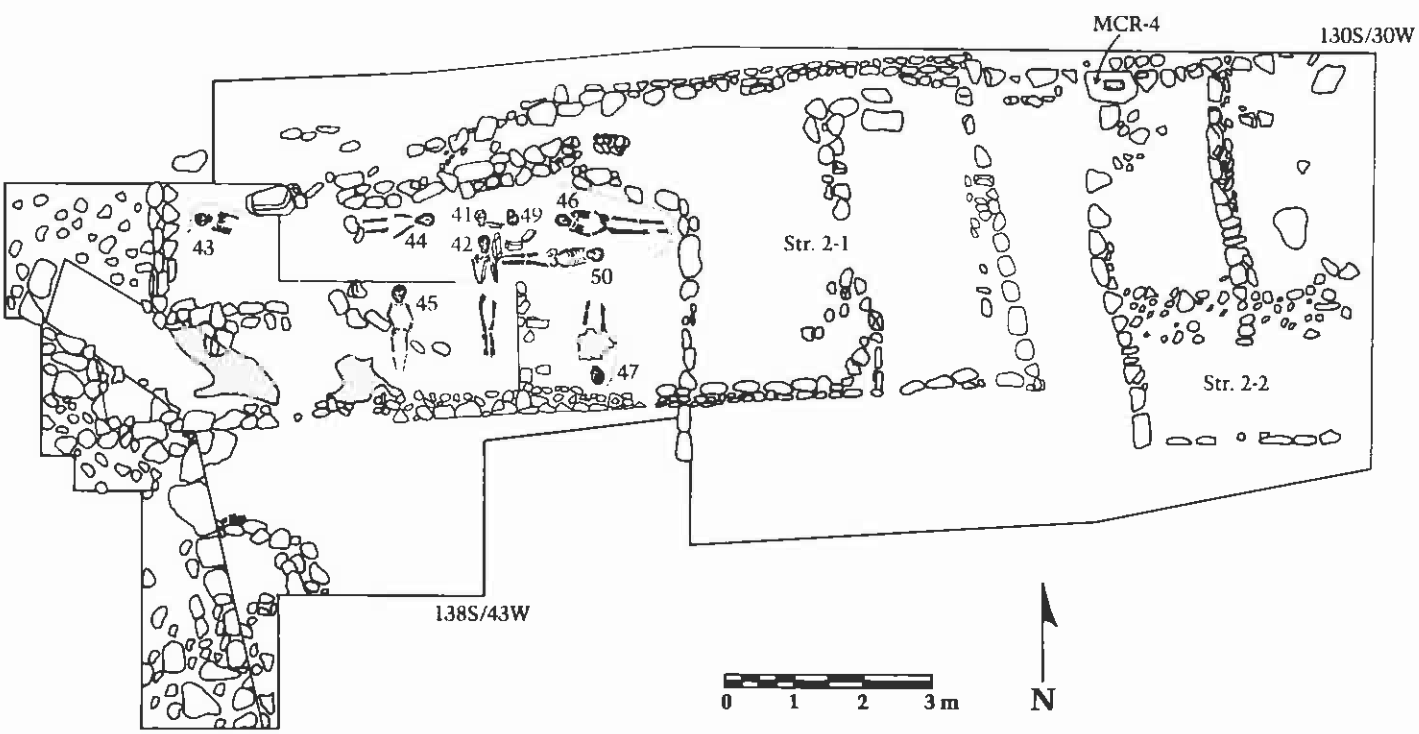


Figure 4.7. Plan map of PC Structure 2, showing Burials 41–50. Burial 48 (fragmentary) not marked.

communication) indicate a magnetic deviation of 5.6° ± 4° from true north at this time period. Radiocarbon dates (N-1707, N-1708; Table 5.1) provide uncorrected readings of 620 and 630 ± 80 BC for Structures 2-1 and 2-2.

Ten burials were found beneath the lower floor level of Structure 2-1. All of them occurred on the same level (ca. 160 cm below surface) and within a limited area of the structure. This is a markedly different pattern from PC Structure 1, where burials occurred throughout the subfloor area and at varying depths. While the burial grouping may be important, the consistency in burial depth appears to be related to the shallowness of the *tepetate* in that area.

A general lack of grinding stones and household artifacts in association with PC Structure 2 (except as burial furniture), the narrow and elongated form of these structures in comparison to excavated house structures (Chapter 6), and the presence of the vessels laid out on one of the excavated floors combine to suggest that these structures may not have had a primary residential function, or at least not in the same manner as other excavated houses. Because the common burial pattern is beneath house floors, however, these structures may well have been houses, but the artifacts recovered from this structure group indicate that these buildings had a special function when compared to other structures. Quantities of hematite and magnetite ore fragments were recovered in the interior fill and in front of the buildings. A few of these have coarsely ground surfaces indicating they had been used to make red pigment. Hollow clay spheres (see Fig. 16.16) also occur in abundance here, and a carved handstone (Fig. 20.9) was found at the rear of Structure 2-1.

Structure 3

Following the discovery of the Structure 2 group to the west of PC Structure 1, tests were made 10 m east of Structure 1 to ascertain whether architectural features existed in that area as well. Stone alignments were found just below the plow zone and also at a slightly greater depth. All of these alignments were incomplete and may have belonged to a structure which was purposely dismantled. Their original form and nature could not be determined. The lack of manos and metates in this area suggests the possibility that the function of these now incomplete structures was other than residential.

Figure 4.8. PC trench, section 40–50S, showing rock facing of PC Structure 4 mound. Arrow points south.

Structure 4

The largest architectural construction at Chalcatzingo is PC Structure 4, a long, low earthen platform mound. The original length of this structure, which forms the northern edge of the Plaza Central terrace, is difficult to ascertain, since its western end is covered by the T-3 Structure 1 Classic period pyramid. The length, estimated by the slight changes in the mound's topographic contours in the area of the pyramid to delimit the western end, is between 70 and 80 m. The width is harder to define because it is difficult to determine where the mound's sloping south side originally ended and the terrace edge began. Using the 1,011 m contour on the mound's north side as its northern limit, and 46 m south of datum as the southern limit (see profile, Fig. 6.2), the width is approximately 71 m. While width essentially equals length, it must be remembered that the east-west length is at essentially the same elevation, while the north-south profile is primarily characterized by sloping sides, with a relatively flat upper surface ca. 30 m wide.

During the second field season two 1 × 3 m strata pits, aligned along the Plaza Central transect line, were excavated into the top of the platform mound at 0–3N (Fig. 8.18) and 9–12S. Both excavations reached sterile *tepetate* at ca. 5 m. These pits were briefly reopened in 1976 to check certain stratigraphic details, and at that time two additional pits, 3–6S and 15–18S, were excavated to provide further data. These four units, together with the 40–50S transect trench which was partially cut into the mound's south side during the first field season (Fig. 4.8), provide a general picture of the platform mound's construction and chronology.

The mound as visible today is primarily an earthen construction dating to the Cantera phase. A thin layer of Clas-

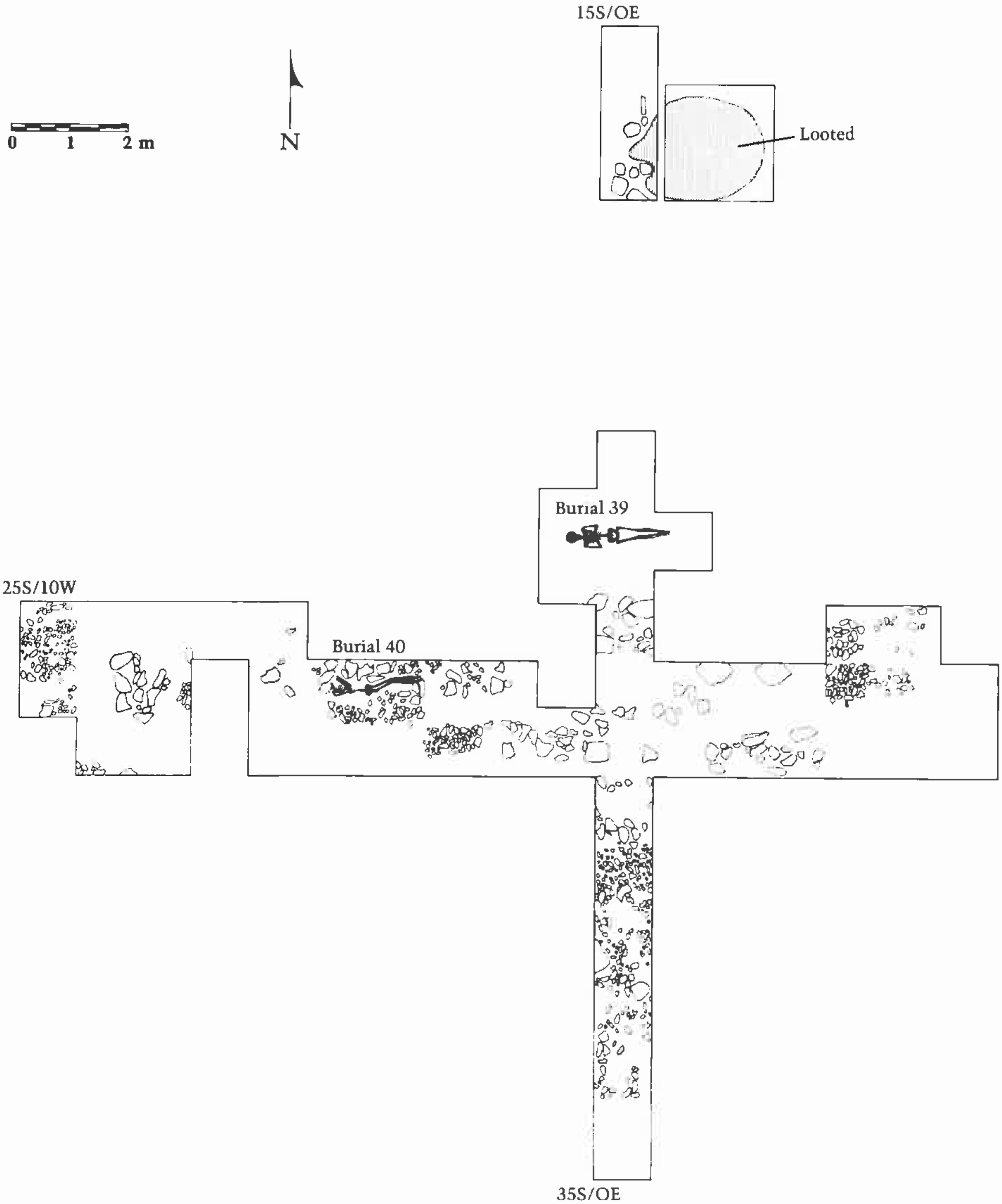


Figure 4.9. Plan map of PC Structure 4 excavations.

Figure 4.10. Tomb on east end of PC Structure 4.

sic period material covers the upper west surface at the rear of the Classic pyramid (T-3 Structure 1). Stratigraphic profiles indicate that this Cantera phase construction is itself built over several earlier construction stages, the earliest of which may be Amate phase (Figs. 6.2, 8.18 level VI; Chapter 6). Because we are dealing with limited data from only a few strata pits, the forms and dimensions of the various earlier mounds remain to be determined. The outer surface of the earliest mound appears to have been plastered with a surfacing of dark brown clay. Although the very few sherds recovered from within the inner mound are Amate phase, and the mound was apparently built over an undisturbed Amate phase ground surface, the exact dating of this inner structure is still unclear. It could possibly be an Early Barranca structure contemporaneous with the terrace building. The mound stages are discussed further in Chapter 6.

Two burials were uncovered on the top of PC Structure 4. Burial 39 was found when a strata pit was started along the north-south transect line at 22–25S. This pit was not completed due to the discovery of the burial. The interment (Fig. 8.3) was covered by an irregularly shaped mound of rocks. Of particular importance is the fact that the individual had been adorned with jade jewelry at the time of interment. Burial 40, found nearby, was similarly adorned with jade jewelry and also an iron ore mirror (Fig. 8.4). Burial 40 may have originally been interred within a stone-lined grave, and most of the stones were probably removed by plowing. Our 1976 excavations revealed one (and possibly two) looted stone-lined graves nearby (Fig. 4.9).

We consider both Burials 39 and 40 to represent high-ranking individuals. That PC Structure 4 was an important location for the burial of such individuals was further confirmed by excavations carried out near the east end of the mound. In addition to the uncovering of two large faced stones (MCR-6, -7), a stone wall was encountered in units 12-15S/35E. The wall, ca. 1.1 m tall, faces east and contains a small stone-filled, door-like opening (Fig. 4.10). The "door" within this unusual wall feature was intriguing, and the excavation units were enlarged westward to expose the area behind the wall.

The expansion uncovered a low mound of stone, about 2 m long and 1.5 m wide. The combination of a wall, sealed "door," and mound strongly implied a special tomb structure unlike any previously known for this time period or region. Unfortunately, as the excavation of this feature progressed, an area of disturbed earth was found adjacent to the north side of the low stone mound. Our worst fears were soon realized, for the disturbed soil turned out to be the result of relatively recent looting which had rifled the tomb and its contents. The only materials recovered by our excavations were fragments of human bone and a piece of jadeite, apparently from a mosaic (Fig. 17.14*c*). By context the tomb can be dated as Cantera phase. Villagers informed us that the looting had taken place about 1970 and had been carried out by a dealer from Izúcar de Matamoros. Our informants stated that they had seen the looters (apparently assisted by several hired villagers) remove a "stone statue" from their excavation.

The Classic pyramid, T-3 Structure 1, was built onto the west end of PC Structure 4. In addition, some Classic period rebuilding was also carried out on the mound's northwest side. This area of the mound, which slopes down to T-15, formed the south range of the Classic period T-15 ball court. Some wall structures were built onto the northern slope of PC Structure 4 (Chapter 24), and the added construction appears as a minor bulge in the mound's topography (Fig. 4.2).

Structure 5

PC Structure 5 is described in the discussion of the transect trench above; for a profile, see Figure 4.4.

Structure 6

Excavations near the southeast end of PC Structure 4 uncovered several stone wall lines and the partially destroyed subfloor pavement of a house-like structure (PC

Figure 4.11. Plan map of PC Structure 6b.

Str. 6b; Fig. 4.11). Portions of the last two field seasons were devoted to excavating in this area. The relationship of this house-like structure to Structure 4 is unclear at this time. Its orientation (ca. N2½W) is within a few degrees of the probable alignment of Structure 4 (see Chapter 6), but more enigmatic is the fact that it sits partially on the side of the mound. Dating of the structure is therefore also problematical because Amate and Barranca phase sherds from the Structure 4 fill are abundant on the floor of the structure. Some pottery, as well as the structure's position, strongly suggests a Cantera phase date.

Structure 6b partially overlies a long Amate phase wall (Str. 6a; Fig. 4.12), nearly 50 cm high and 13.5 m long. The function of the wall is unclear, although it may be related to the inner Structure 4 mound. Its orientation, N5½W, is relatively close to that of Structure 4 and 6b. Two Amate phase bird burials, one an oriole (*Icteridae*) and the other a crow (*Corvidae*), were associated with the wall. The oriole burial had an Amate phase bottle in association, the only complete Amate phase vessel recovered during the project (Fig. 4.13).

El Rey Drainage **(FS 1972)**

The clearing of the site at the beginning of the first field season exposed archaeological and topographical features previously hidden by the extensive cover of overgrowth. One such feature was a deep channel or gully cutting down the talus slopes of the Cerro Chalcatzingo. Although rock-filled and narrow on the upper portion of the *cerro*, the channel is deeply incised after passing the foot of Monument 1, the "El Rey" bas-relief. This channel, which is one of the major collectors and outlets of rainwater runoff from the *cerro*'s northern face, we have termed El Rey Drainage (see site maps).

This drainage is important because as the major collector of rainwater runoff it also sits above the site's artificial terraces. If unchecked, a heavy runoff of water would severely damage the terraces. It is therefore highly significant that near the foot of the talus slopes the channel is diverted almost 90° eastward by a large dam-like construction of boulders and earth. This construction, like a similar diversion dam on the northeast corner of T-15 (Str. 1), served to control runoff and direct it away from the terraces.

Eight trenches were placed across the drainage and possible "outlet" points in order to view the channel, trace its course, and date the dam-like construction. Trench 1 exposed a U-shaped channel with a surface of hard-packed gray clay (Fig. 4.14). Alternating layers of sand and clay above this well-defined floor indicate periods of fast and slow runoff, apparently related to storms of varying intensity. However, the layering might also suggest occasional blocking of the channel downstream. Because the hard-packed channel of grey clay suggests evidence of long-term maintenance, blocking of the drainage may have occurred after the channel fell into disuse.

Figure 4.12. PC Structure 6c, Amate phase wall, looking east.

The diversion construction, over 30 m long, parallels the west side of the natural drainage for nearly 10 m before turning it eastward. The construction is about 3 m in width and is made from boulders averaging ca. 2 m in diameter, with a few as large as automobiles. In some places it appears that, in addition to earth, smaller stones were placed as fill between the boulders. Dating of the construction remains tenuous, but by analogy to the T-15 construction it can be associated with the period of terrace building in the Early Barranca subphase. Sherd material was rare within the construction, and the few sherds present were highly eroded. Many were Amate phase sherds, and a few could be identified simply as generalized Middle Formative, again suggesting (by the quantity of Amate phase materials) a chronological placement contemporaneous with the terrace building.

Attempts to trace the course of the major canal past the dam structure were unsuccessful, probably because of heavy erosion on the talus slopes. One smaller canal which could be followed ran onto the Plaza Central at its southwest corner. This canal may be natural, formed following the abandonment of the large system. It flows over a Cantera phase house structure (PC Str. 2), further suggesting that it is unrelated to the larger Formative period diversion system.

Figure 4.13. PC Structure 6, Amate phase Exotic Bottle.

***Terrace 3* (FS 1973)**

While it was not the original intention of the project to investigate Classic period structures to any extent, this time period was of interest to project codirectors Raul Arana and Jorge Angulo, and when additional funds for the reconstruction of some of the site's architecture became available, minor excavations were carried out.

Structure 1

Piña Chan (1955: 7–8, Map 2) conducted excavations on one of two Classic period structures which face a small plaza area at the northwest corner of T-1. Those data are briefly mentioned in Chapter 24. The largest of the two mounds is built onto the west end of PC Structure 4 (Piña Chan's Mound B, our T-3 Str. 1). This mound was not excavated by Piña Chan, and was selected for partial excavation and reconstruction by our project. Trenches were excavated into the front and rear of the mound until construction features were found, and these features were then cleared and followed. These trenches uncovered the front stairway, balustrade, and sloping stone sides of the pyramid, with some areas of plaster remaining, and the rear walls and a semicircular stone pavement extending eastward over the western upper surface of PC Structure 4 (Figs. 24.2, 24.3). This work revealed that the pyramid was a round structure ca. 35 m in diameter and slightly over 9 m in height. The areas of the pyramid uncovered by our excavations were consolidated and where necessary were reconstructed (Fig. 24.1).

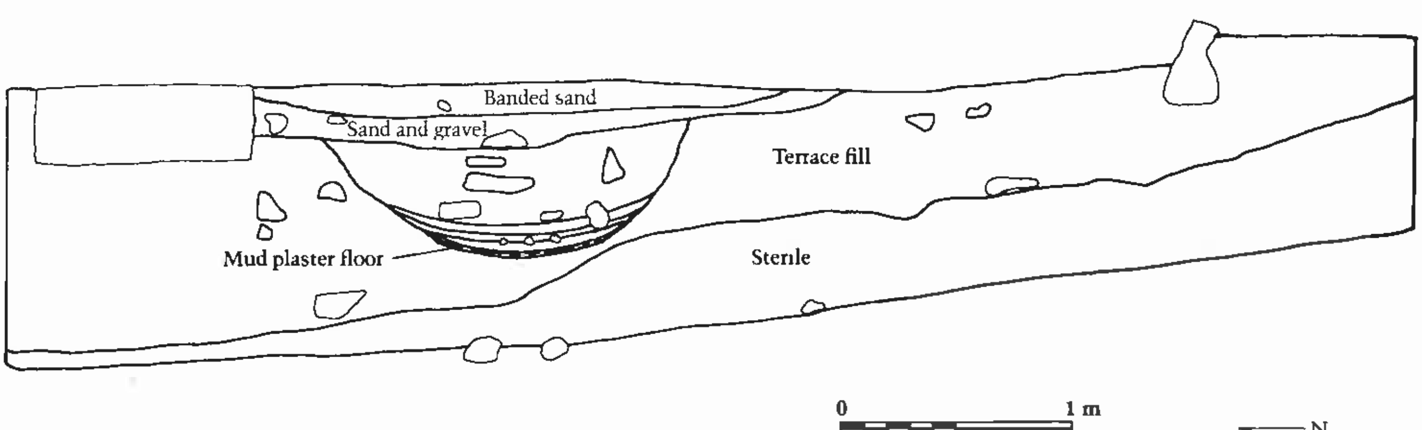


Figure 4.14. El Rey Drainage, Trench 1, profile.

***Terrace 4* (FS 1972, 1973)**
T-4 is a long, thin hillside terrace on the lower slopes of the Cerro Delgado, about 60 m east of the Plaza Central terrace. Due to the quantity of artifacts recorded on T-4 by the preliminary site survey, it was chosen as one of the few terraces to be excavated the first field season.

Although almost every other excavation on the main site area had the excavation grid oriented magnetic north-south, the T-4 grid was an exception and was oriented along the terrace's narrow axis (N53E). Prior to excavation the entire terrace was staked and a complete surface collection made from each square. This was done to test surface distributions against subsurface remains. As mentioned earlier, the results of this test showed no clear relationship between surface distributions of artifacts and subsurface architecture. Excavations over two field seasons revealed a complex series of Cantera phase wall features, many of which were intruded and/or destroyed by Classic period constructions (Fig. 4.15).

Structures 1 and 2
Two partial Cantera phase structures, T-4 Structures 1 and 2, were discerned. While structural remains were abundant on T-4, subfloor burials were not. This scarcity of burials may be a function of sampling or preservation, but it is also possible that these were not residential structures and that, therefore, burials should not be expected.

Structure 3
The Cantera phase wall features, one of which has the remains of burned mud plaster still adhering, present a confusing jumble. Adding to this confusion is the Classic period reuse of terrace, as exemplified by T-4 Structure 3. This structure, on the south end of the terrace, is a low stone-faced Classic period platform. Its upper surface lies within the plow zone, and its base is ca. 70 cm below the surface. The platform contains several floor levels, but these are Cantera phase floors. One floor surface has two partial Cantera phase vessels resting upon it. As explained in Chapter 24, the Classic platform was apparently constructed by cutting away the surrounding soil (Cantera phase deposits) to create the low platform. This exposed raised mound was then faced with flat stones.

Structure 4
Excavations further to the north uncovered a large stone circle which appeared in four of the 2 × 2 m squares. This feature (T-4 Str. 4) extends downward, slopes inward, and has its stone facing also toward the feature's interior. The excavation of this construction, which we have identified as a Classic period lime kiln, is discussed in Chapter 24 (Figs. 24.10, 24.11).

***Terrace 6* (FS 1973, 1974, 1976)**
T-6 (Fig. 4.16) had not been farmed for several years prior to our project, and for this reason surface artifacts were not as abundant as on regularly plowed terraces. Because no ceramic cluster indicative of a subsurface house was present, no excavations had been planned on T-6.

Monuments 25 and 26
In 1973, attention was drawn to a large flat stone, partially exposed within the plow zone on the north side of the terrace. The plow zone was cleared away, revealing the stone to be circular, with carvings around its circumference. The immediate area was gridded, and the round "altar," now labeled Monument 25 (Fig. 9.23) was cleared. Adjacent to and southwest of Monument 25 was a large

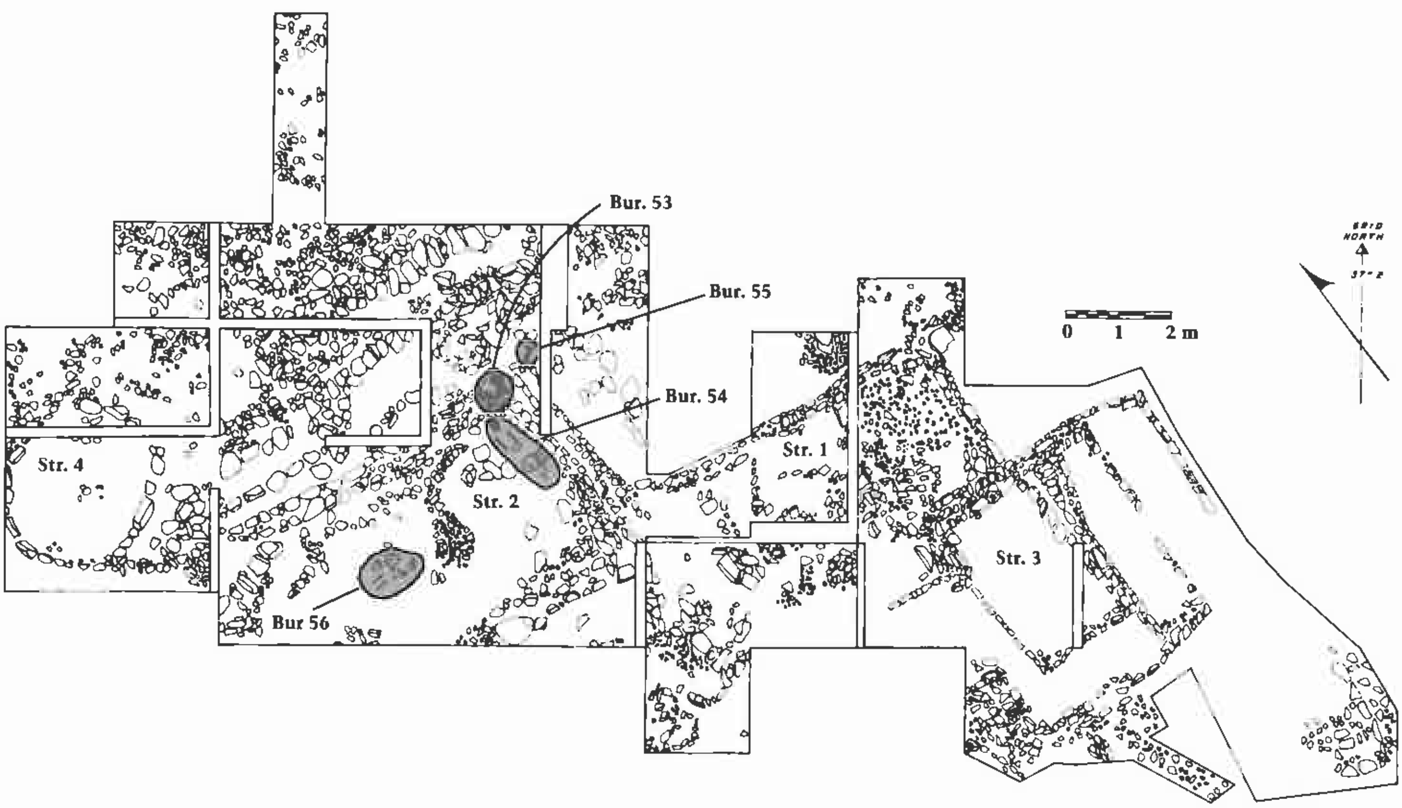


Figure 4.15. Plan map of T-4 excavations.

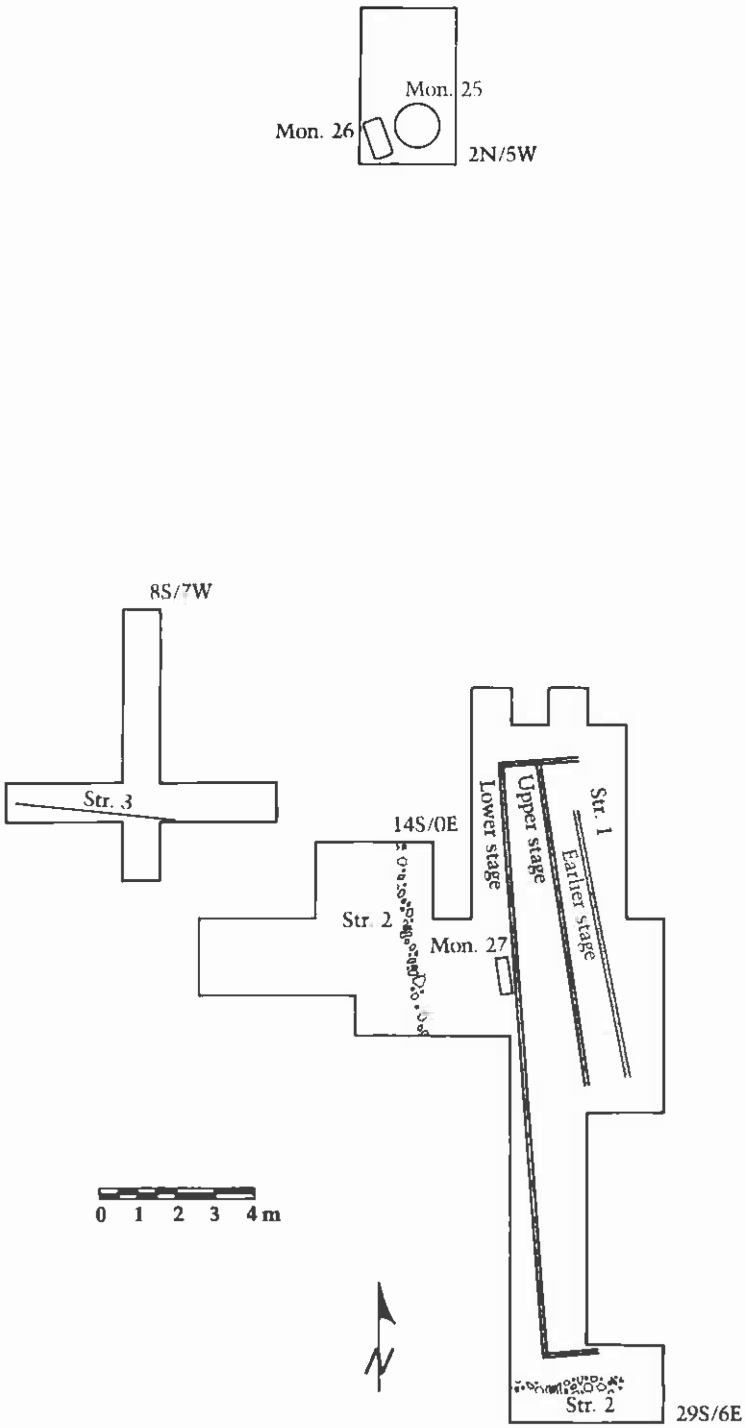


Figure 4.16. Plan map of T-6 excavations.

broken stela base, Monument 26 (Fig. 9.24). Excavations revealed several smaller rocks near the base of Monument 25, but no definite features such as wall lines were apparent. It is highly significant that this round altar was directly associated with a stela (now broken), for such stela-altar complexes are essentially a southern Mesoamerican phenomenon.

The round altar rested about 50 cm below the present terrace surface. The base of the stela was at nearly 100 cm below the present surface. There seems little doubt that their positions when found were essentially in situ. Both monuments are described and discussed in greater detail in Chapter 9.

Priorities at the time these monuments were found did not permit further explorations of this section of T-6 to search for possible associated structures or other features. Because the monuments could not be left in situ without the risk of future destruction by plowing, etc., it was decided (in consultation with the director of the INAH Regional Center in Morelos) to move the two monuments ca. 10 m north, to the edge of the terrace. There a special platform and roofed structure were built for them.

Monument 27 and Structure 1

In spite of the discovery of the two monuments in 1973, T-6 remained a low-priority terrace (residences, and not monuments, were the top priority). However, soon after the beginning of the 1974 field season, the farmer whose *ejido* land includes T-6 pointed out a stone which protruded slightly from the terrace surface. This stone was well hidden as one of literally thousands to be seen on the surface (ca. 12 per m^2), but upon close examination it showed a small weathered area of relief carving. Using the 1973 datum established for the excavations of Monument 25 and 26, the area surrounding this new carving, Monument 27, was gridded and a crew put to the task of excavating the monument.

The excavations revealed the protruding stone to be the upper tip of a large stela. The stela had been broken in half laterally and the upper portion, leaning slightly to the rear, was also broken vertically and missing the left hand section (Figs. 4.17, 9.25, 10.22). As the clearing of the stela progressed, a stone wall was found directly behind it. The excavations were expanded to follow the ca. 85 cm tall wall, and these disclosed that the wall continued ca. 5 m to the north and 10 m to the south. At each end the wall turned a corner eastward. This structure, T-6 Structure 1, is a Cantera phase platform mound constructed with a facing of river cobbles and field stones. The naturally flat or smoothed sides of the rocks have been placed to face outward.

Continued excavations discovered a second, upper, stage, 1.2 m behind the front wall, making this a stepped platform. This second stage rises 50 cm, but its top extends into the plow zone, so its original height may have been greater. The second stage wall also extends down another 70 cm (nearly to the base level of the front wall). This means that the lower or front stage of the platform structure is a superposition over an earlier platform whose 1.2 m tall, slightly sloping front wall now constitutes part of the second, upper stage. Other stone alignments, paralleling the first walls, occur behind them and may represent even earlier constructions.

The stratigraphy underlying Structure 1 is a series of sloping Barranca and Amate phase levels. The original Barranca phase terracing apparently had a northward-sloping surface. During the Cantera phase the area was remodified by excavation and leveling, and the platform was built atop the modified surface. This modified surface, when projected northward, corresponds to the surface level of Monument 25, the round altar. Based upon this evidence, the altar-stela complex can be hypothesized to have been contemporaneous to the final Structure 1 configuration and standing stela.

Structure 2

The excavations of Structure 1 uncovered a third wall 2.5 m in front of the platform (Fig. 4.17). This wall, T-6 Structure 2, apparently not part of the Cantera phase rebuildings of the structure, is slightly curved and arcs around the front and sides of Structure 1, effectively covering the platform and stela. Fill between this latter wall and Structure 1 includes a few Classic period sherds. Two radiocarbon assays from charcoal recovered in the fill provide divergent post–Cantera phase dates (N-1948: 290 ± 90 BC; N-1949: 900 ± 65 AD). The outer wall is constructed of cobbles and boulders larger than those used in facing the Cantera phase platform. The wall's purpose is uncertain. It may represent a raised Classic period platform. Because its upper surface is within the plow zone, any superstructures have long since been destroyed. A Classic period trash pit intruding into T-6 Structure 1 provides further evidence that this area was utilized at that time.

Monument 28

A large boulder protruding from the southwest corner of T-6 into the El Paso Drainage was discovered to have an eroded bas-relief carving on its underside. The area around the boulder was gridded and excavated to uncover the monument (Mon. 28, see Figs. 10.23, 10.24). There were no associated features, and from its position it is clear that the monument was purposely buried. Whether it was moved prior to burial cannot be determined, but this seems probable.

Structure 3

The 1974 excavations of T-6 Structure 1 had yielded the best Amate phase stratigraphy on the site. However, a larger sample was desired to clarify the stratigraphic sequence, and several pits were opened on T-6 (Fig. 4.18) during a brief excavation program in 1976. The first pit encountered a buried stone-faced Amate phase platform structure (T-6 Str. 3), one of the earliest examples of Early Formative period architecture known in central Mexico. Due to lack of sufficient time for an adequate excavation of this important feature, the excavations were halted and backfilled. Additional excavations in the same general area yielded the stratigraphic data originally sought.

***Terrace 9A* (FS 1972)**

Our initial surveys had indicated that two possible house areas existed on Terrace 9, one on the field's upper slope (T-9A) and the other in the lower section (T-9B).

Structure 1

The first remnant house structure to be excavated by the project (Str. 1) was characterized on the surface by a slight raised area with a heavy clustering of Middle Formative white potsherds. The T-9A datum was established in the field itself but tied to a second bench mark at the south end of the terrace. Both the datum and bench mark were then tied to the main site datum atop PC Structure 4. A north-south line was laid out bisecting the low rise, and a series of 2 × 2 m squares were cleared to the base of the plow zone. Stone alignments were uncovered by this initial clearing. These alignments, the subsurface foundation walls for the original house structure (Str. 1), had served to retard erosion in this area of the field and were thus responsible for the low mound marking this structure. This also unfortunately means that the house floor and many of the foundation walls had been destroyed by erosion and plowing.

Within the area delimited by the foundation wall lines (Fig. 4.19), an area we presume to be the structure's interior subfloor, were five human burials as well as a dog burial. Also in this area there was a minor wall line which included a large flat stone. This slab, approximately 85 × 50 cm, was marked with an engraved rectangular design (Figs. 11.5, 11.6) and has been designated MCR-9. It is the only carving of this type found at the site. Two Cantera phase vessels, a Carrales Grey composite silhouette bowl and an Amatzinac White hemispherical bowl, were recovered immediately to the south of this slab. At the end of the field season, when MCR-9 was removed prior to backfilling, two additional Cantera phase vessels were found, an Amatzinac White spouted tray and small shallow bowl. Recent reanalysis of the data suggests that the vessels had probably been associated with a burial which had been disturbed by Classic period activities in this area or which was missed by the excavations. It is also possible that the MCR-9 slab was part of a cover stone for a stone-associated grave (see Chapter 8 for Chalcatzingo grave types). To the south and outside of the house a definite sixth human burial and the burial of two small collared peccaries were found.

The dating of the T-9A walls and burials is highly problematical. Confusing the dating is the presence of some Classic period intrusive pits in the area. Two of the four radiocarbon dates from T-9A fall within the Classic period, and none of the dates (N-1414–N-1417, Table 5.1) fall within the Cantera phase.

The excavated material is derived from subfloor fill, and although most is Early Cantera subphase, there is some Early Barranca material as well. This latter material may predate the construction and be contemporaneous with the T-9B structure farther down the hill. Most of the stone foundation walls are similar in construction to Cantera phase house foundations (Chapter 6). A few boulder-like stones, however, are similar to the Barranca phase T-9B house walls and may be the remnants of an earlier Barranca phase dwelling here. All but one subfloor burial lack ceramic offerings, and the *cantarito* associated with Burial 62 could be either Barranca or Cantera phase. It is most probable that T-9A

Structure 1 is an Early Cantera subphase structure.

***Terrace 9B* (FS 1974)**
Structure 1

T-9B lies downhill, 45 m north of the T-9A excavations. While it is not marked by a high concentration of surface artifacts, our attention was drawn to this area by a group of large rocks protruding above the surface outlining a rectangular area of about 5.5 × 5 m. Although it is common practice at Chalcatzingo for farmers to excavate and remove large boulders from their fields, this group somehow remained relatively untouched.

The area was gridded separately from the T-9A grid, and the plow zone was carefully removed, exposing further sections of the stone wall lines designated T-9B Structure 1 (Fig. 4.20). Three separate room areas can be identified, but no floor was easily discernible. Several whole and fragmentary vessels were found at the 45–50 cm level, suggesting a possible floor zone.

The ceramics from Structure 1 securely date it to the Barranca phase. Features within the structure include a small trash pit and a stone circle with areas of burned earth in its interior but lacking ash or charcoal. Three "burials" were uncovered. Preservation in the T-9B area is quite poor, and in reality two of the burials (nos. 63 and 64) were simply fragmentary pieces of human bone. Burial 65 was intruded into the east wall of the structure. A Cantera phase *olla* found in association with this burial shows it to postdate the house structure.

***Terrace 11* (FS 1973)**
Structures 1 and 2

Survey recorded a large concentration of Middle Formative ceramics near the midpoint of T-11, and alignments of stone protruding from the surface could also be noted. A datum was established near the center of the ceramic concentration and a secondary datum set up on the terrace's south edge. Excavations began as a series of 1 × 4 m trenches, searching for visible features at the base of the plow zone. Wall features appeared at ca. 40 cm below the surface and were typical of Cantera phase foundation walls (see Chapter 6). These walls outlined a large rectangular structure approximately 6.5 × 8 m (T-11 Str. 1). Wall lines a few meters to the south indicate the presence of a second structure (Str. 2,

Figure 4.17. T-6 Structure 1 with stela in situ (*center*) and Structure 2 wall line (*foreground*).

Figure 4.18. T-6 Structure 3 wall exposed by excavation.

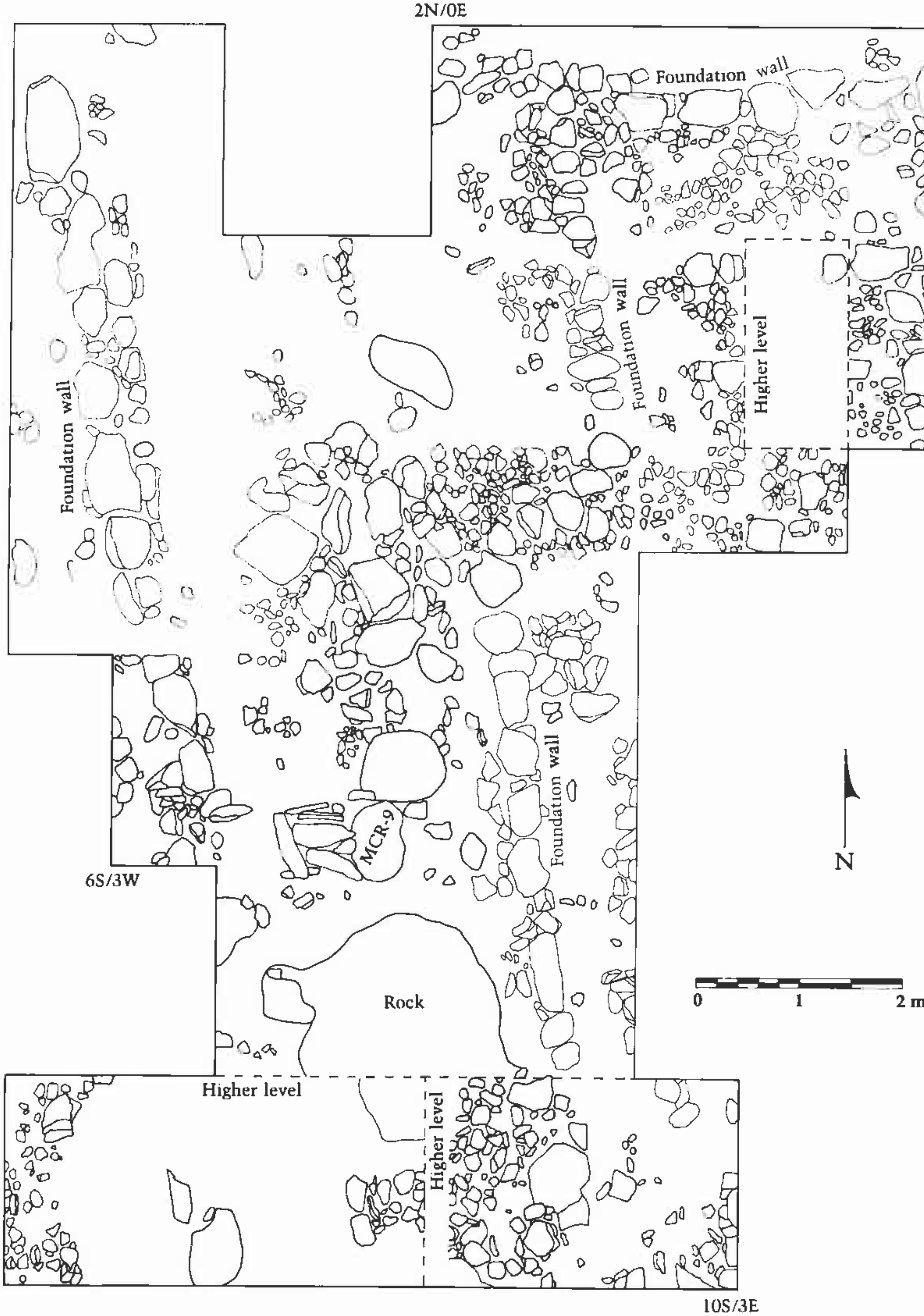


Figure 4.19. Plan map of T-9A excavations.

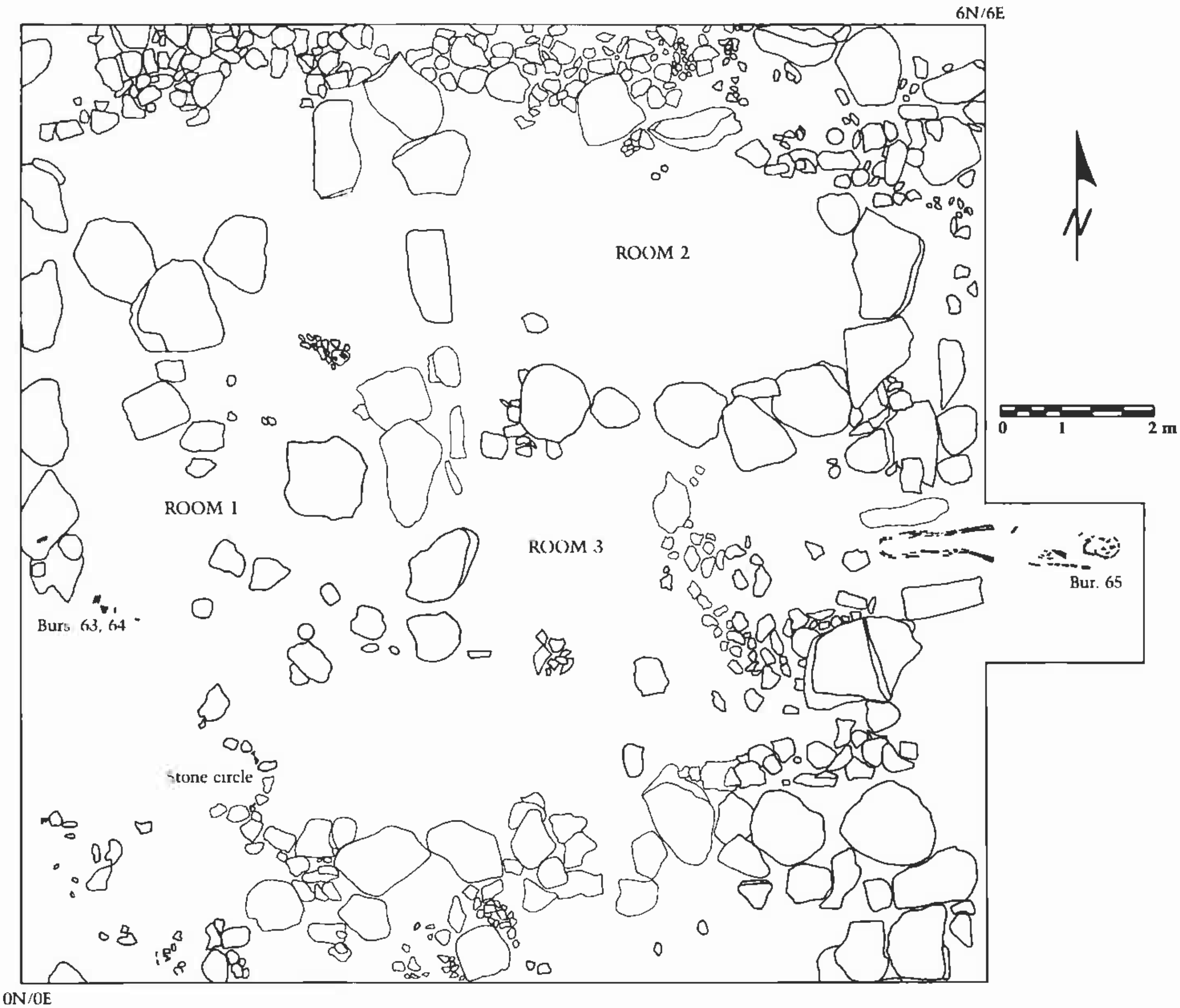


Figure 4.20. Plan map of T-9B excavations.

probably separate but possibly an extension of Str. 1; see Fig. 4.21).

Within Structure 2 a possible floor at ca. 50 cm depth is defined by the presence of some whole vessels atop an area of soil marked by a different color (soft yellow-brown soil). In contrast, the interior of Structure 1 is heavily intruded by pit features, and a "floor" level is difficult to ascertain.

A carved stone, Monument 20, was found within a wall line fragment near Structure 2. From its context and style the carving is presumed to be Cantera phase (Chapter 9). Whether at one time the carving, a decapitated "statue," was associated with an inhabitant of this structure cannot be determined from the data available.

Only one burial (no. 66), outside of the structures defined by the walls, was found during excavations. The skeleton, partially destroyed by intrusive Feature 1, rests upon *tepetate* and is associated with two Cantera phase vessels. No burials were recovered from within either structure, possibly due to sampling (the subfloor areas were not completely excavated), to disturbance by intrusive pits (unlikely), or to an actual absence.

Fourteen pit features were found during the T-11 excavations. Most of these features had surface areas covering 4–6 m^2. All are intrusive from slightly above the Cantera phase surface level. Thus the high quantity of Middle Formative ceramics found by our survey in this area of T-11 can be accounted for by plowing, which distributed the ceramic refuse from the intrusive pits.

Six of the pit features were cross-sectioned. All share a general pattern of stratification. The upper layer in each is a soft, granular, whitish soil, very mottled and with distinct lensing. Underlying this is a soft, fine-grained yellow-brown soil level. This second level overlies a layer of rocks, apparently tossed into the pits. The rock layer is underlain in turn by another layer of yellow-brown soil, but in several pits this lower yellow-

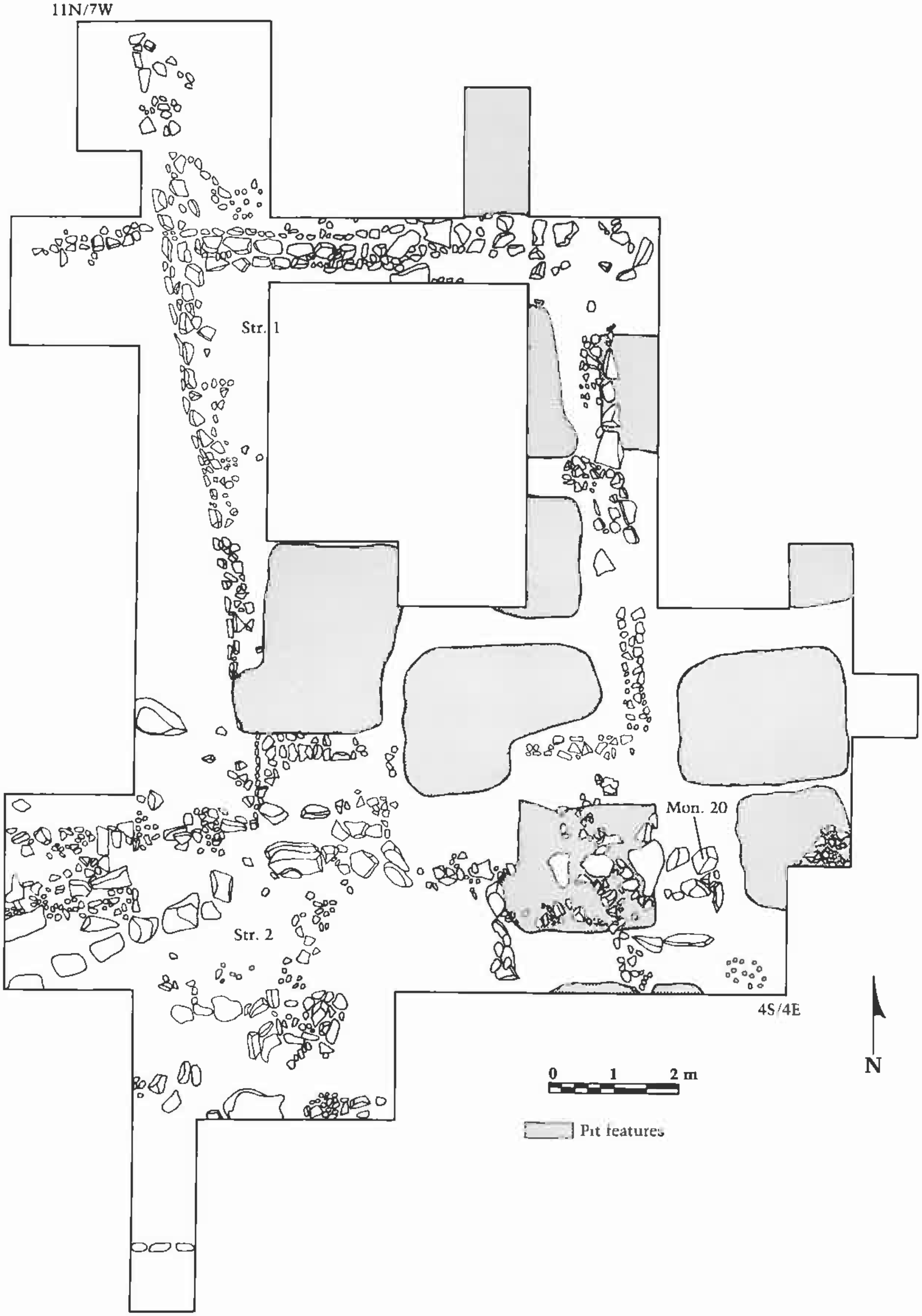


Figure 4.21. Plan map of T-11 excavations; shaded areas represent intrusive pit features.

Figure 4.22. El Paso Drainage between T-6 (*left*) and T-15 (*right*).

Figure 4.23. T-15 Structure 1, water control structure, facing west.

brown layer included charcoal fragments and fragments of burned clay. The only evidence of fire within the pits was found in Feature 3, in which the lower walls of the pit were baked. It is possible that these features represent food preparation pits. They were not firepits, and if they were used for food preparation, then heating was done by means of heated stones. No seed remains were recovered in flotation samples taken from these pits, but deer and dog bone fragments were found.

Dating of the features is problematical. They are obviously post–Structure 1 since they intrude through that structure's walls. The sherds within the features are Cantera phase, and Xochitengo Polychrome sherds, a Late Cantera subphase diagnostic, occur in the upper levels. While this should date the intrusive pits as Late Cantera subphase, one probable Late Classic sherd was recovered from level IV of Feature 1. Since only one sherd of this time period was recovered, its presence could be due to rodent action or other undetected disturbance, yet it casts doubt on a Cantera phase dating for the features.

Terrace 15 **(FS 1973, 1974)**
Structure 1

The watercourse we have named El Paso Drainage cuts northward across the site from the saddle connecting the site's two *cerros* and runs along the east edges of the Plaza Central and T-15 to the base of the hill and eventually to the *barranca* of the Río Amatzinac. This relatively narrow gully is in places etched ca. 2 m into the *tepetate* underlying the adjoining terraces (Fig. 4.22). While it is normally dry, a heavy rain can create a deep torrent of water in the drainage.

The drainage runs north and downhill between the Plaza Central and T-2, and between T-15 and T-6. It then makes a sharp 90° eastward turn at the north end of these latter two terraces. Some 30 m further it makes another sharp right-angle turn downhill again. These sudden diversions are caused by a large earthen "thumb" which projects eastward from the northeast corner of T-15. This thumb is a purposeful water control structure, T-15 Structure 1 (Fig. 4.23).

The structure is about 35 m long and 7 m high. It is constructed primarily of earthen fill, although lines of stones were found along its south side, apparently to resist the erosive force of the water being diverted eastward. Several looters' pits have disturbed its surface. Four trenches were excavated on the structure in 1973 for the purpose of gaining data on its construction and temporal placement. These excavations revealed that the structure had been built of basketloads of fill over a small stone core. The construction had been done in one operation and was an integral part of T-15 contemporaneous to the T-15 terrace construction (Early Barranca subphase). One of the trenches was run along the structure's south side to discover whether the construction overlay an earlier channel running straight down the hillside. As suspected, the original natural drainage channel was covered by the structure.

The surface of the structure is crisscrossed with stone lines, apparently placed to retard erosion. Although Structure 1 contains quantities of Amate phase and some Barranca phase sherds throughout its interior, a minor amount of Cantera phase sherds occur within the surface level, suggesting a possible Cantera phase resurfacing.

The function of this structure is obvious. If left uncontrolled, the infrequent but torrential rain runoff in the drainage would have damaged the lower terraces and lands at the base of the hill. Diverting the water flow sharply, twice, serves to slow it down and alleviates the dangers of washouts farther down the hill. The inclusion of this structure as part of the terrace building demonstrates a considerable foresight on the part of the site's Early Barranca subphase inhabitants.

Figure 4.24. Excavations at T-15 Structure 2, ball court, facing southwest from the Cerro Delgado.

Structure 2

With the initial clearing and survey of the site in 1972, a number of architectural features became apparent. Among these was T-15 Structure 2, a long low mound 10 m north of PC Structure 4 and paralleling that structure. T-15 Structure 2 was considered to be a possible ball court structure.

In 1973 a datum point was established atop this mound and a north-south trench laid out which cut across the structure at its estimated midpoint. The trench was excavated only to the surface of the actual architecture and served to locate wall lines, floors, etc. (Fig. 4.24). No attempt was made to cut into the structure itself. As the architectural features were uncovered, the excavations were expanded until much of the structure was cleared.

Structure 2 represents the northern range of an east-west–oriented ball court (Figs. 24.4, 24.5). The playing alley lay between Structure 2 and the northern slopes of PC Structure 4. Sherds securely date the ball court to the Late Classic, making it contemporaneous with the pyramid-plaza group of T-3 a few meters to the southwest. The structure is 41.5 m long and 12.3 m wide. Its maximum height is ca. 2 m. The south side of the structure is dominated by the low sloping playing wall; the north side by a wide stairway.

The southern range of the ball court presents a problem because it was constructed onto the northern slope of PC Structure 4. Cross trenches were excavated into this slope. They located the low stone wall forming the base of the southern playing wall and, midway up the slope of PC Structure 4, a 90 cm tall wall apparently representing the rear of the south range (Fig. 24.6). However, be-

Figure 4.25. T-15 Structure 3 wall line.

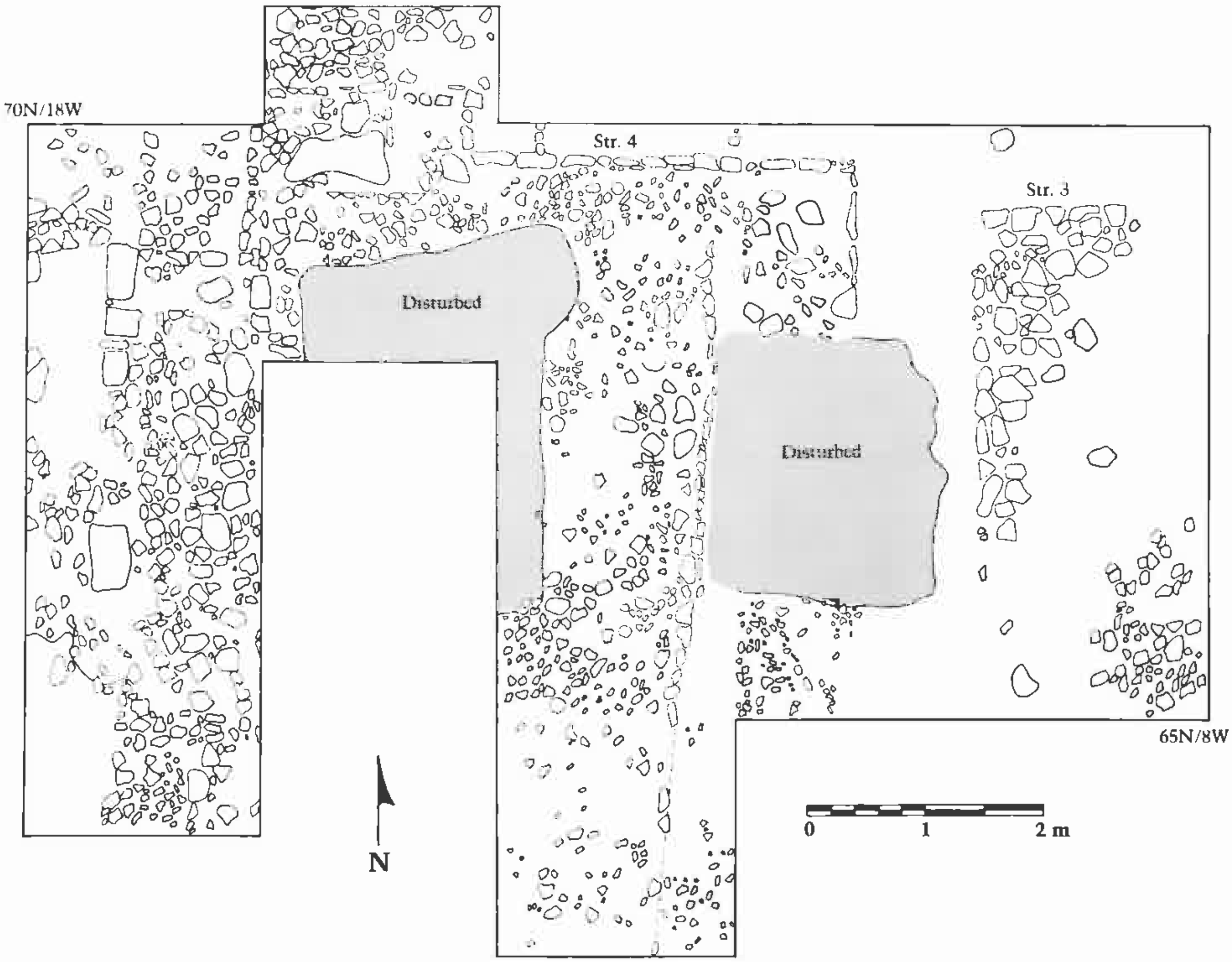


Figure 4.26. Plan map of T-15 Structure 3 and 4 excavations.

tween the two walls which delimit this range, most intervening architecture appears to have long since been destroyed by erosion and farming. The ball court is discussed in greater detail in Chapter 24.

Structure 3

Heavy Middle Formative sherd concentrations led to our decision to excavate in the northeast section of T-15. Structure 3 was uncovered by these excavations. This Cantera phase structure, just below the plow zone and probably partially destroyed by plowing, is represented by a small section of stone wall foundations. Only a small area of the structure and floor remained (Fig. 4.25). Excavations below Structure 3 uncovered a few fragmentary Barranca phase stone alignments of unknown function. These rest atop a mixed Amate–Barranca phase fill which may be the original terrace fill surface in this area.

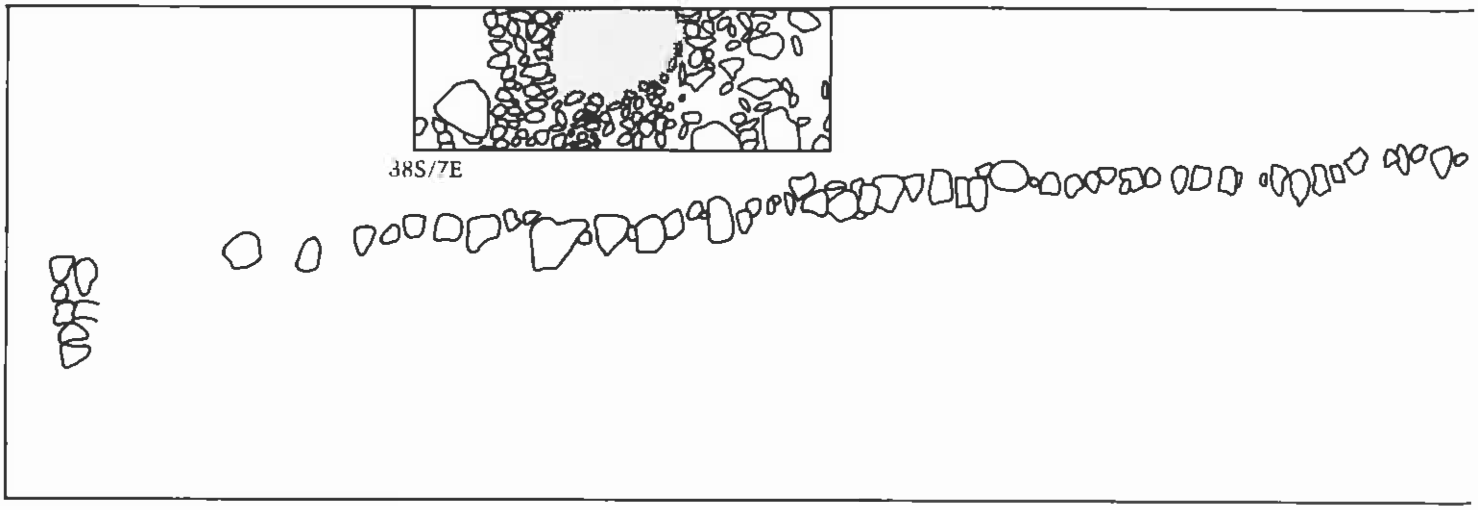
Structure 4

Only 3 m west of Structure 3 is a Late Classic rectangular structure ca. 7 × 7 m in dimension (Str. 4; Fig. 4.26). It is discussed in detail in Chapter 24.

Structure 5

The decision to excavate on the northwest portion of T-15 (designated T-15 West) was based on the discovery there of a stela (Mon. 21; Fig. 9.21) lying face down and almost entirely buried within the plow zone. The excavations at this location were primarily to test for the presence of architecture associated with the stela. Because the planned excavation area was close to the ongoing T-27 excavations, the T-27 datum was used for this excavation also. Prior to beginning the excavations, the monument was moved to the north edge of the terrace. A special shelter was constructed for it, and visitors to the site can see it there today.

Excavation units were opened where the head and foot of the stela had lain. These units uncovered wall features at the base of the plow zone. As the excavations were expanded, it became clear that the features were part of a stone-faced platform mound. Like the T-6 platform, T-15 Structure 5 was constructed of river cobbles and field stones set with their smoothest face outward. In form Structure 5 (Fig. 4.27) is like the inner structure of T-6 Structure 1, rectangular with



a slightly sloping front wall which varied in height from 70–100 cm. The platform is 19.5 m long. A small ring of stones, apparently the support stones for Monument 21, seems to mark the monument's original position.

The platform is a Cantera phase construction, although our current data cannot determine its temporal relationship to the T-6 platform (T-6 Str. 1). T-15 Structure 5 is overlain by Classic period debris and is underlain by wall lines that are apparently Amate phase. The context of a Cantera phase structure built atop Amate phase deposits is similar for both the T-6 and T-15 platforms and indicates that excavation and leveling were carried out prior to the building of each platform.

***Terrace 17* (FS 1974)**

T-17 is a large rectangular terrace raised 1–2 m above the neighboring fields. Areas of sherd concentrations occur near the terrace's western edge, and test excavations were begun here to investigate these concentrations. These excavations revealed the reason for the terrace's raised appearance. A Classic period platform wall running north-south 35 cm below the present surface was found in the first test trench. The wall, constructed of flat stone slabs set in a mud mortar, is 70 cm in height and has a slope of about 50° from horizontal and an orientation of N6½E. Although our trench exposed only 2 m of the wall, its position at the western edge of the field suggests that the entire terrace is a Classic period platform.

The possibility that this terrace is a later Classic period construction is reinforced by the stratigraphy underlying the platform wall. The test trench, excavated down to *tepetate*, included Cantera and Barranca phase levels beneath the platform feature (Appendix B, SSU 11). T-15 and T-17 were probably a single large flat terrace until the Classic period, when the platform construction (now T-17), was added to that terrace's western end.

***Terrace 20* (FS 1974)**

Survey on T-20, a sloping agricultural field on the western flanks of the Cerro Delgado, indicated a heavy concentration of Middle Formative sherds midway down the slope. A slight leveling in the topography at that point and the data obtained from our subsequent excavations indicate that this mid-point of the field had been level (terraced) until at least the Late Classic and that it has since been heavily eroded into its present sloping configuration.

Structure 1

Excavations in the area of the Middle Formative sherd concentration revealed three sets of stone wall features (Fig. 4.28). The deepest wall encountered was constructed of irregular field stones in a manner common to Cantera phase constructions. Only a 4 m segment of this east-west oriented wall, designated Structure 1, still remained. One meter north of the wall a Middle Formative burial (no. 73) was found. The burial and wall association, together with the ceramics from this level, indicate that the wall is in all probability the southern foundation wall of a Cantera phase house. Burial 73 appears to have been a subfloor burial within that structure.

Structure 2

Two sets of Late Classic walls, the remains of two structures, occur 80 cm stratigraphically higher (and slightly uphill). T-20 Structure 2 is constructed of large field stones and river rocks and forms a low stone platform and floor pavement covering an area of 3 × 2.5 m. Three corners of this rectangular floor are clearly defined. A large pit feature, apparently the result of relatively recent looting, intruded and destroyed the northwest quarter of the floor.

Structure 3

Touching the northeast corner of Structure 2 is Structure 3, composed of east-west and north-south walls. The south face of the east-west segment is built of flat field stones set at a slight tilt (Fig. 23.12). This construction technique is also found on other Late Classic Structures (T-4 Str. 3 and T-15 Str. 4). The sloping wall of T-20 Structure 3 is ca. 2 m long but ends abruptly at its east end without apparent reason. The western end of the wall forms a corner with the stone line forming the north-south wall segment. A floor of cobble-sized rocks occurs within Structure 3. Classic period burials were recovered inside and outside Structure 2 and 3 (see Chapter 8 and Appendix C).

***Terrace 21* (FS 1974)**

In realization of the built-in biases of our sampling strategy during the excavation

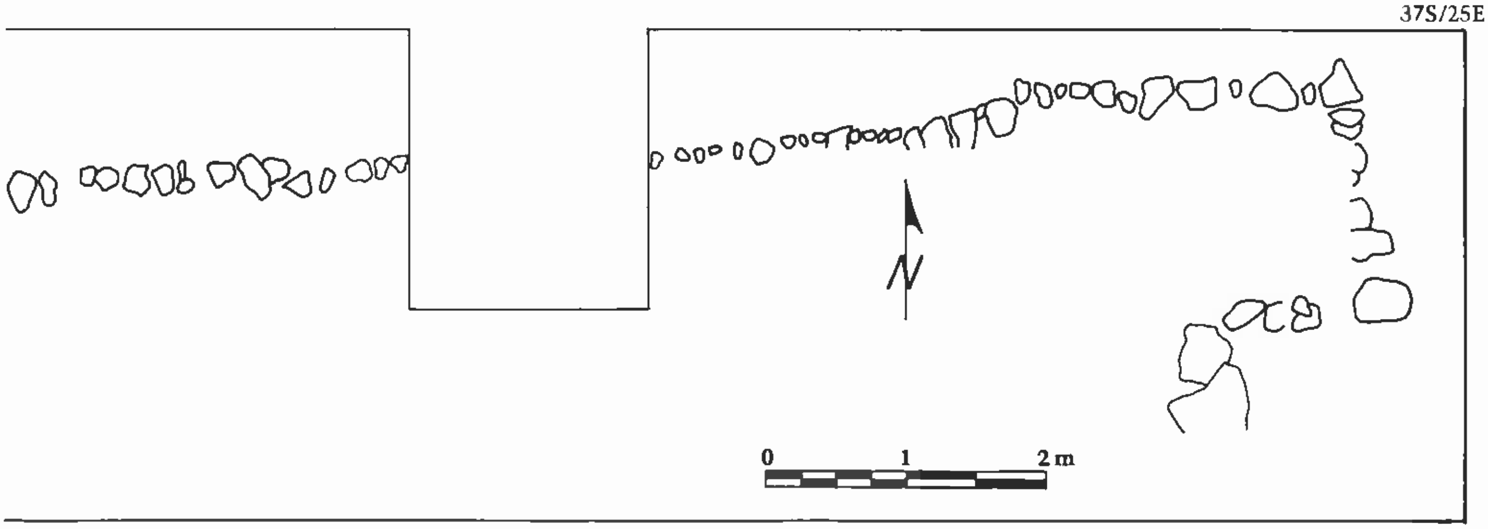


Figure 4.27. T-15 Structure 5; shaded area shows original location of Monument 21.

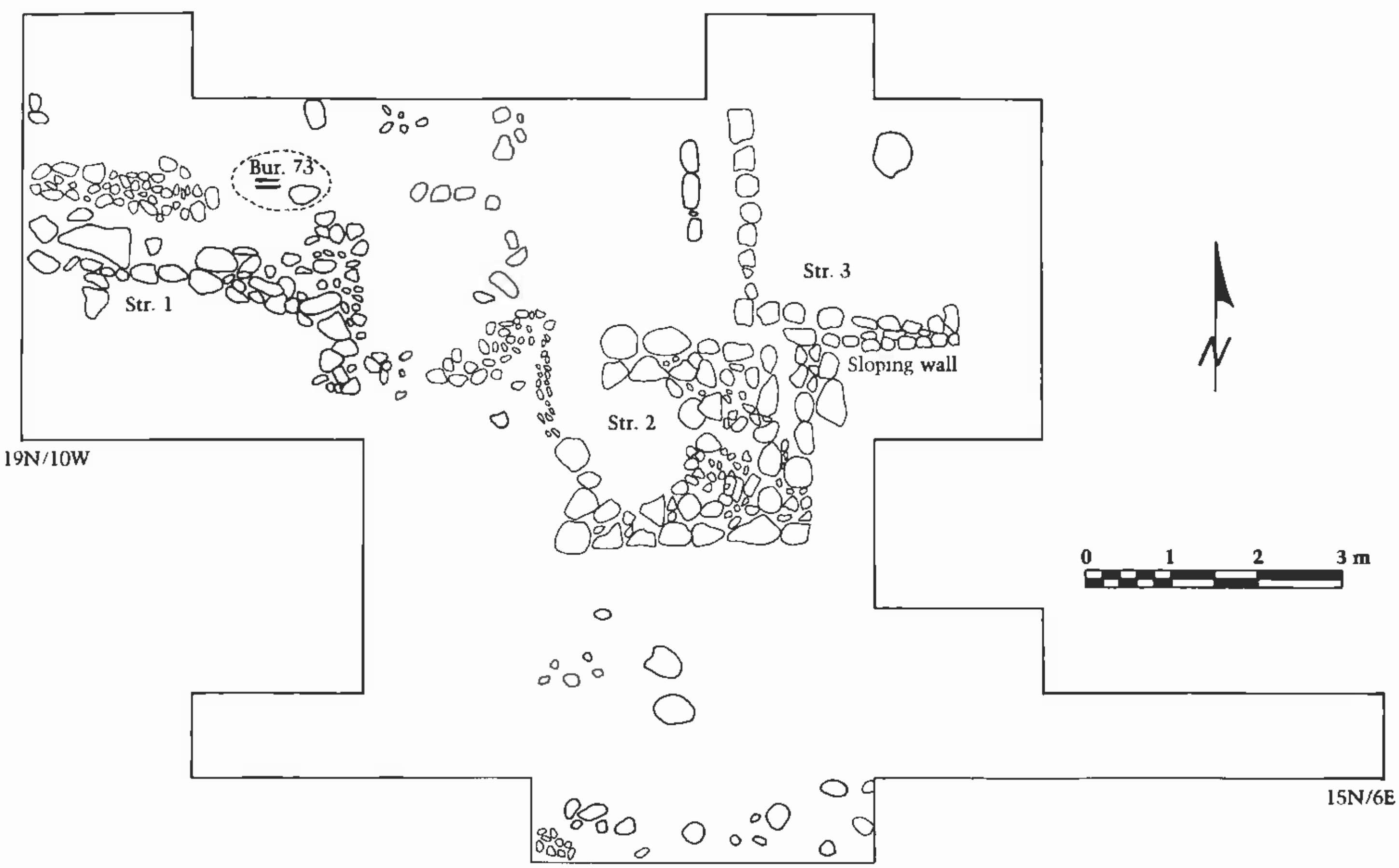


Figure 4.28. Plan map of Classic period structures on T-20.

of T-23 Structure 1 (see below), tests were run in several adjacent areas for the possibility of features related to the structure. One of these tests involved the excavation of an area ca. 20 m northwest of T-23 Structure 1 on the adjacent terrace, T-21.

Feature 1

This T-21 excavation encountered the edge of an apparent Cantera phase trash deposit. The test pit, taken down to *tepetate*, sliced into the trash deposit's western end and provided a profile of the accumulated trash, which appears to have been dumped into a shallow surface depression (Fig. 4.29). The trash was composed of Cantera phase sherds, rocks, animal bones, obsidian chips and blades, and a small stone animal figure (Fig. 20.8*d*). The deposit was composed of a series of concave layers (Appendix B, SSU 8) and was excavated by these natural layers. Analysis of each individual layer detected no apparent chronological change within the ceramics, and the entire deposit must span a relatively short period of time.

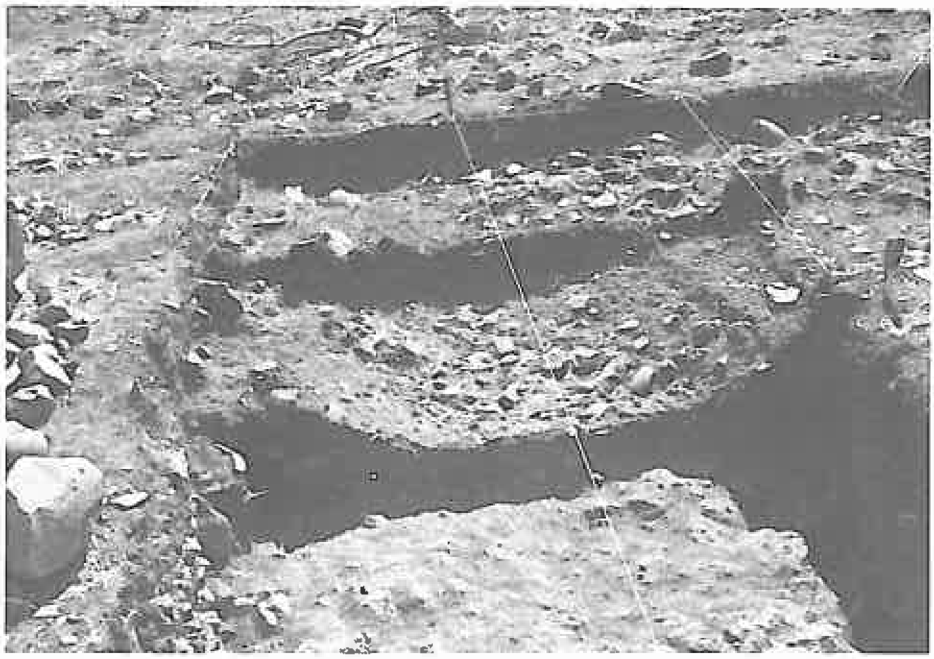


Figure 4.29. T-21 Middle Formative trash pit excavations.

The trash deposit most probably is related to T-23 Structure 1 (see Chapter 6). This house structure has at least three definable construction periods, but at present we cannot assign the T-21 trash pit to any particular one of these. Underlying the northern edge of the trash at *tepetate* level (90 cm below surface) were the disturbed remains of a human burial (no. 78). The fragmentary skeleton was flanked on each side by a large stone. Six Cantera phase vessels found below the trash pit and also resting upon *tepetate* are believed to have been associated with the burial.

Feature 2

A second test excavation on T-21 took the form of a 23.4 m trench run from the T-23 excavations westward across a portion of T-21. Two coarse stone lines were uncovered. Both are clearly Cantera phase in date, and probably functioned for erosion control.

***Terrace 23* (FS 1974)**

Structure 1

The only Cantera phase house remains in our sample not severely damaged by plowing or erosion were found on T-23. At least three construction periods (Str. 1a, 1b, 1c) can be ascertained within the abundant wall features which crisscross the southwest area of T-23 (Figs. 4.30, 4.31, 6.9–6.11). The excavated structures provide some of the basic data on houses at Chalcatzingo and are discussed in greater detail in Chapter 6.

Testing other areas of the terrace for possible features associated with Structure 1 not identifiable through surface artifact concentrations uncovered some stone wall lines of uncertain date (T-23 Str. 2) to the northeast of Structure 1. Classic period features were also found on T-23, and as in the case of the T-4 excavations, they tend to confuse and destroy Formative period constructions. Two Classic period lime kilns intrude into T-23 Structure 1. The largest of these (Feature 4) occurs in the northwest section of Structure 1. A smaller kiln (Feature 7) occurs on the west side of Structure 1.

Feature 1

Excavations on the south end of the terrace uncovered a small circular stone feature, ca. 135 cm in diameter, with a burned interior. The dating of this feature, T-23 Feature 1, is uncertain because its upper surface sits within the plow zone and thus is associated with a mix of Middle Formative and Classic period sherds. We believe that this feature probably dates to the Classic period. Its function is uncertain, but our workmen thought that it was probably the firepit for an impermanent sweatbath structure (*temescal*).

***Terrace 24* (FS 1973)**

T-24 was the northernmost of the fields of the main site area excavated during the project. A heavy ceramic distribution suggested an occupation area at the top of this long sloping hillside. Close inspection showed that the Middle Formative ceramic debris was in situ and not the result of erosion from fields above T-24.

Structure 1

Excavations disclosed one major east-west wall feature and several north-south wall lines (Fig. 4.32). These apparently represent the remaining east and south sections of a Cantera phase house structure (T-24 Str. 1) which had been built (like nearby T-20 Str. 1) on a relatively small terraced area of the steep hillside. Subsequent erosion and recent plowing of the hillside have removed the western portion of the house and associated features.

While most of the walls are probably associated with a rectangular house structure dating to the Cantera phase, one northern group of stone alignments forms a set of three steps, each ca. 20 m high. To the west of the steps is a burned area, possibly an intrusive Classic period fire pit. The dating of the steps is problematic, but their alignment is similar to the Cantera phase foundation walls.

Seven burials were recovered during

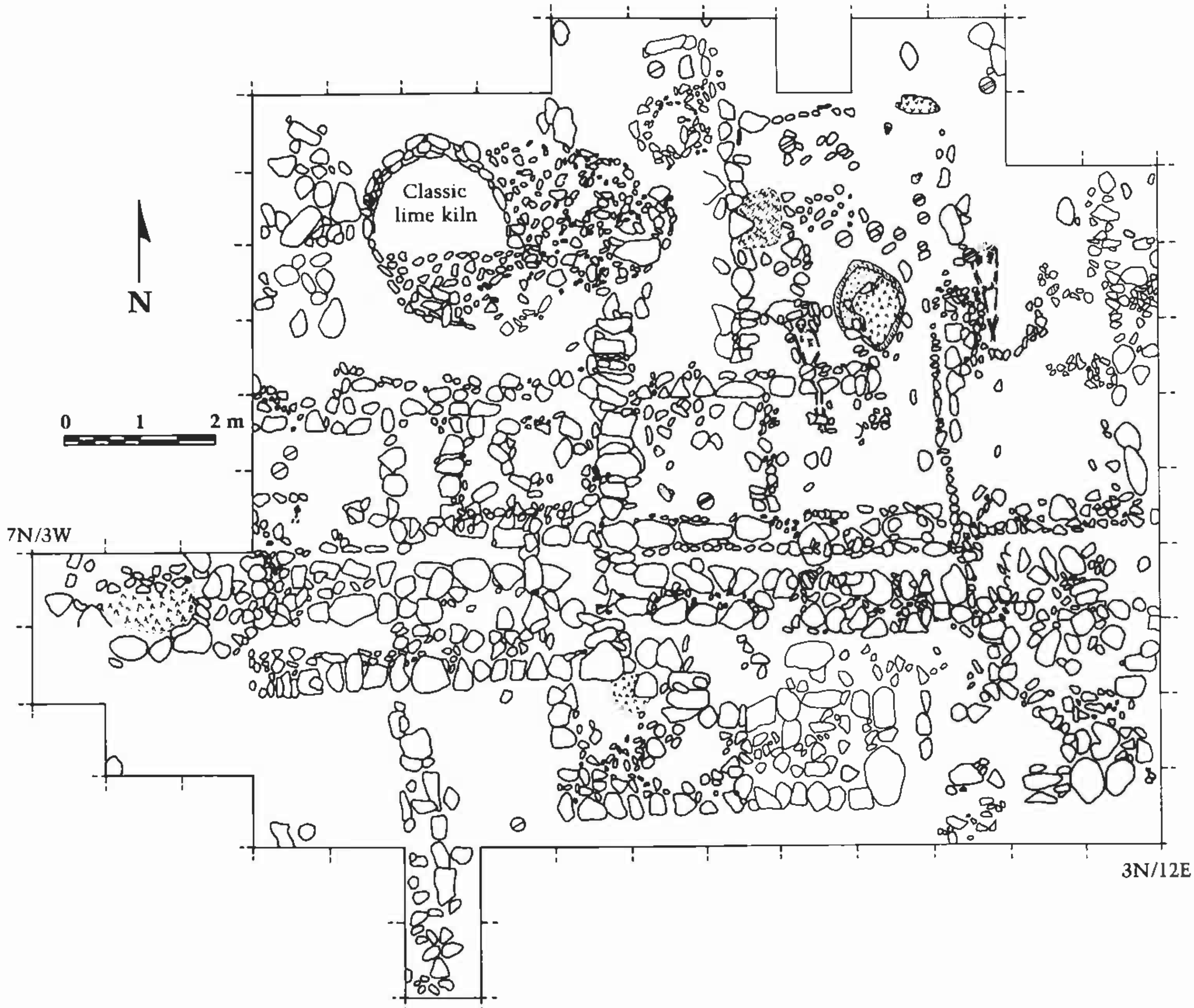


Figure 4.30. Plan map of T-23 excavations, showing totality of wall lines and features.

Figure 4.31. T-23 foundation walls.

the excavations. Six of these date to the Cantera phase, but the seventh is a Classic period intrusion. Other intrusive pits, possibly Classic period, cut into Structure 1. Some of these may be the result of looting, however.

Terrace 25 **(FS 1973, 1974)**
Monument 22 and Structure 1
Excavations were begun on T-25 when an alignment of faced and carved stones was discovered exposed in a plow furrow. These were found to pertain to the upper ledge of a table-top altar (Mon. 22), built against the south end of a sunken walled patio area (Fig. 7.1). A large number of burials were found beneath the patio surface. The altar, patio, and most burials date to the Cantera phase. A minute section of a house floor (Str. 1) and a large trash pit excavated into *tepetate* are Barranca phase. Near the north edge of the terrace a low stone-faced platform (Str. 2) with the broken remnant of an associated stela (Mon. 23) postdates the altar and patio, but is likewise Cantera phase (Fig. 7.23). A minor amount of intrusive Classic period material occurs in the platform area. The excavations of T-25 are detailed in Chapter 7.

Terrace 27 **(FS 1974)**
The rectangular terrace known as T-27 is a modification of a small ridge which projects northward from between T-25 and T-31. The field today rises a meter or so above these terraces. T-27 was chosen for excavation because of its proximity to the T-25 altar and its highly visible geographic position. The excavations are summarized below and by David Crampton (1976).
Structure 1
A north-south trench was laid out across the center of T-27 and the plow zone cleared. This preliminary work revealed east-west–oriented stone alignments and clusters of ceramics and human bones. The cross-trench excavations were halted, and work was concentrated on clearing and delimiting the area of wall lines and burial features. This disclosed that although the burials were Late Formative, they were intruded into a Cantera phase platform construction (Str. 1) which exhibited several building stages (Fig. 4.33).

The earliest architectural feature uncovered is Structure 1a (unillustrated), defined by three foundation walls forming a rectangular structure 2 m wide, with a compacted floor. These walls appeared between grid coordinates 0–3S/5–

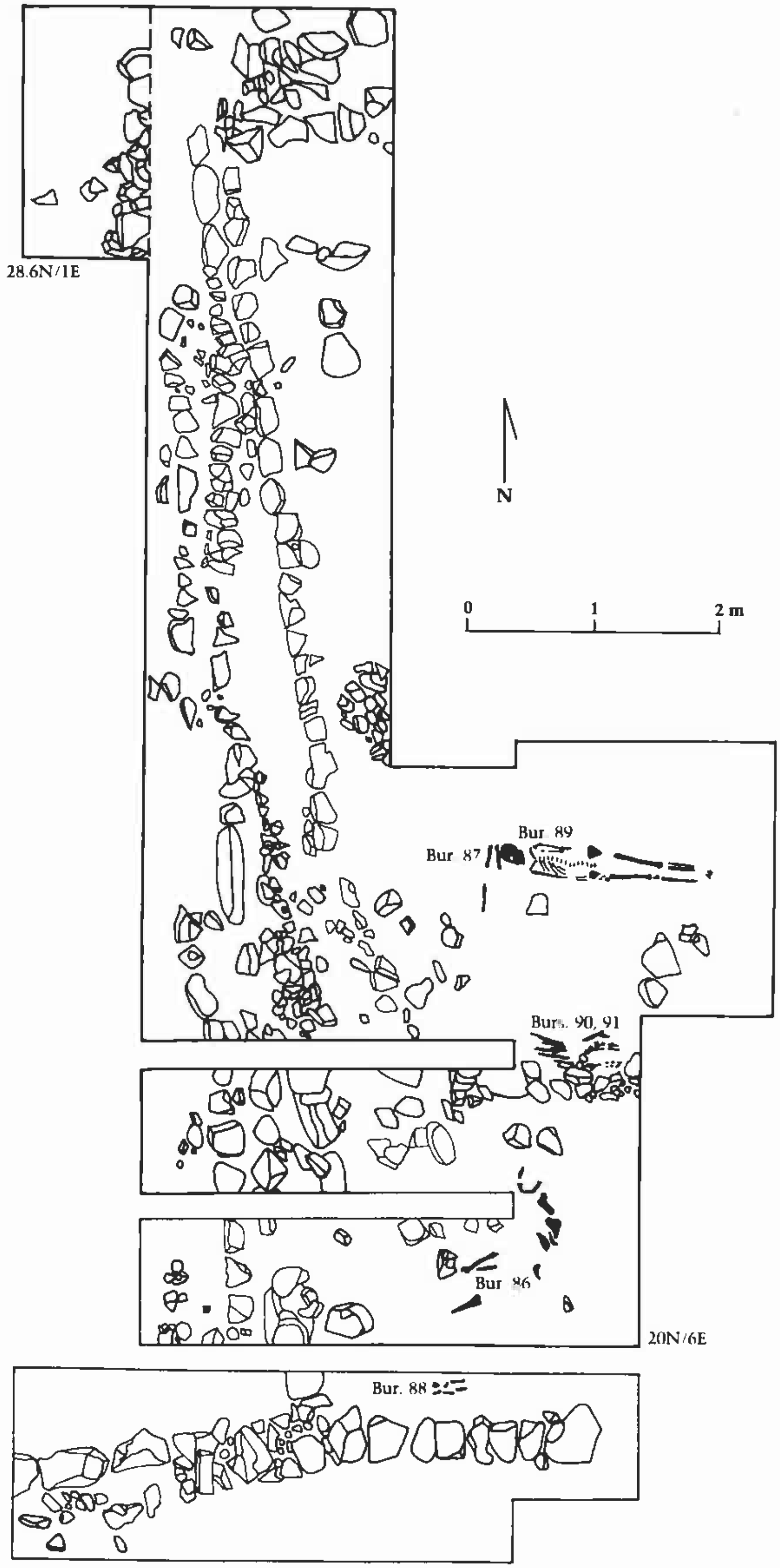


Figure 4.32. Plan map of T-24 excavations. Burial 92 not shown.

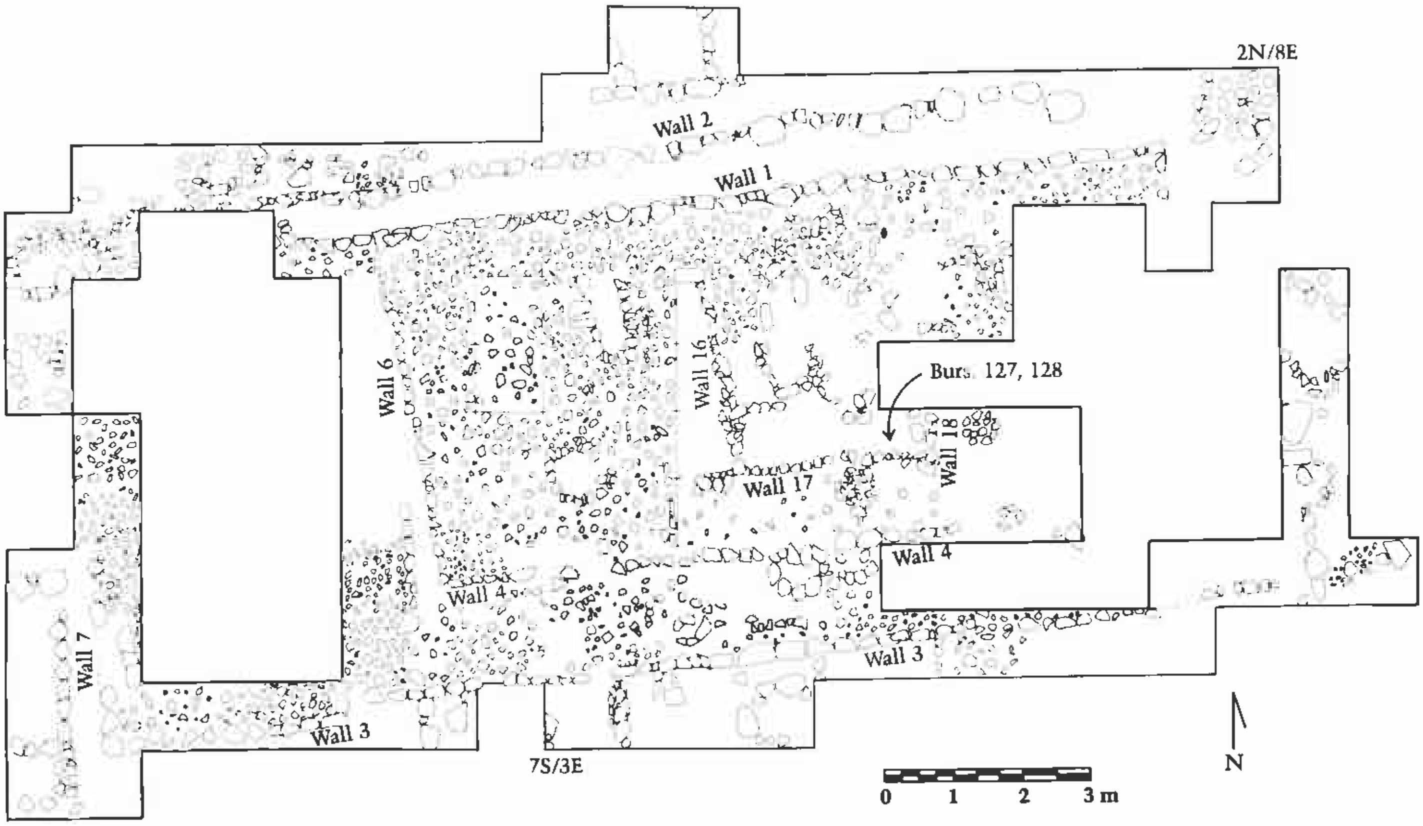


Figure 4.33. Plan map of T-27 Structure 1 excavations.

6W, and only a portion of this early structure was exposed by our excavations. Although Structure 1a walls rest just above *tepetate*, associated ceramics indicate it is a Cantera phase construction. A second small Cantera phase structure, 1b (also unillustrated), lies 5 m to the east.

The earliest platform structure, 1c, is delimited by Walls 1, 4, and 6, and covers most of Structure 1a and all of 1b. Wall 1, 65 cm high, forms the platform's sloping front face. The platform was originally 11.7 m long and 5.3 m wide. In time it was enlarged to the west and south by the additions of Walls 3 and 7. This larger platform is Structure 1d. A pavement of small stones covers the upper surface of Structures 1c and 1d. Structure 1e is defined only by Wall 2, a new front wall to the platform (of indefinite length). Structures 1c, 1d, and 1e are all Late Cantera subphase. The Late Formative burials intruded the stone pavement of this 1c–1e platform. However, two burials which did not intrude the pavement, nos. 127 and 128, are Cantera phase interments, probably contemporaneous with the platform.

Structure 2

Excavations to the north of Structure 1 uncovered a rectangular area of stone "floor" delimited by walls (Str. 2; Fig. 4.34). Other wall lines extend to the west, north, and east from the floor area. Burial 121 was found beneath the floor, and Burial 125 occurred within one of the westward extending wall lines. Most walls face in toward the floor area, suggesting a patio-like arrangement with the structure at the patio's northeast end. A wall to the south and east contained a rectangular crypt which contained the fragmentary remains of Burial 135 and thirteen Teotihuacan IV vessels, seven of which were Thin Orange ring-based bowls (Fig. 24.13). An intrusive trash pit (Fea. 1) which contained a Mazapan figurine fragment was also uncovered.

***Terrace 29* (FS 1973)**

Structure 1

A concentration of Middle Formative ceramics was located by survey at the upper end of T-29 immediately adjacent to T-25. We placed an excavation grid parallel to the T-25–T-29 terrace edge (N15E) rather than use the north orientation. The clearing of the plow zone uncovered walls, designated Structure 1, within this disturbed surface area (Fig. 4.35). The overall construction is a series of east-west walls crosscut by north-south walls to form a series of rectangular areas each of which covers ca. 2 m^2. This appears to be the foundation of a terrace or platform ca. 20 m long and 4–5 m wide, built outward from T-25 over the sloping surface of T-29.

One burial (no. 159) lacking associated ceramics was found at the south end of the structure. The stratigraphy and fill related to Structure 1 are completely Barranca phase in date. If Structure 1 served as the foundation for some superstructure, erosion and plowing have removed all such traces.

***Terrace 31* (FS 1974)**

Brief test excavations were conducted on T-31 in the area immediately adjacent to T-27 for the purpose of ascertaining whether any structure complementary to the T-25 altar stood in a symmetrical association on this side of T-27. Nothing of archaeological interest was recovered.

Terrace 37 **(FS 1974)**

A relatively flat field, T-37 lies at the foot of Chalcatzingo's terraced hillside. A modern stone wall along its northern side marks the boundary between the terraced *ejido* land and the privately owned lands which border the spring-fed stream. A few years prior to our project, looters attempted some excavations on this field but found little more than quantities of obsidian and abandoned their efforts. Our survey located two areas of obsidian surface concentrations, and these areas were gridded for excavation.

Obsidian Deposit

Excavations demonstrated that T-37 is quite shallow, with *tepetate* lying 24–56 cm below the surface. The major discovery was a Cantera phase obsidian refuse dump which covered an area of ca. 3 × 2 m and extended from the surface to *tepetate* for a total depth of 40 cm. This obsidian deposit yielded 42.5 kg of obsidian blades and flakes, with ca. 27,000 pieces larger than 1 × 2 cm (Chapter 19; S. Burton 1974:6). Human burials, most extremely deteriorated, were found both within and near the obsidian concentration.

Features 1 and 2

Two superimposed features are located east of the obsidian refuse. The uppermost, Feature 1, is a curved single line of large stones. A concentration of adobe fragments occurs along one area of this stone line, suggesting it is a wall feature. Another adobe fragment concentration surrounds a rock cluster to the south. Underlying the curved wall is a depression in the *tepetate* which includes three postholes running in a north-south direction (Fea. 2). These cross beneath the stone wall and therefore can be presumed to be unrelated to it. The postholes appear to relate to a structure long since destroyed.

Field South 39 **(FS 1974)**

The S-39 field marks the southern limit of surface artifacts on the site. It lies ca. 90 m southwest of Monument 12. This field was of interest because of its extreme southwest location and its main surface feature, three boulder lines which form a rectangle ca. 15 × 6.5 m with the open side facing south (Fig. 4.36). The boulders vary from 50 cm to 1.5 m in horizontal length, 40 to 50 cm in width, and jutted up to 60 cm above the surface. Subsurface depth ranged from 20 to 60 cm, but none extended to *tepetate*. An east-west trench excavated across the feature uncovered a brown soil layer heavy with Cantera phase sherds. This level overlies an extensive deposit of manufactured lime. The north-south extent of the lime layer is approximately 25 m, and its maximum thickness is ca. 50 cm. The western and northern limits of the deposit are those of the boulder rectangle. The distribution of the lime makes it clear that it was a purposeful rather than a natural deposit.

The function of the S-39 area is uncertain. The lime deposit, which is clearly human-made, is unusual for several reasons. The nearest source of limestone is 7 km to the west. The use of lime is unrecorded during the Middle Formative in central Mexico, although it was used in Oaxaca. The lime was not apparently

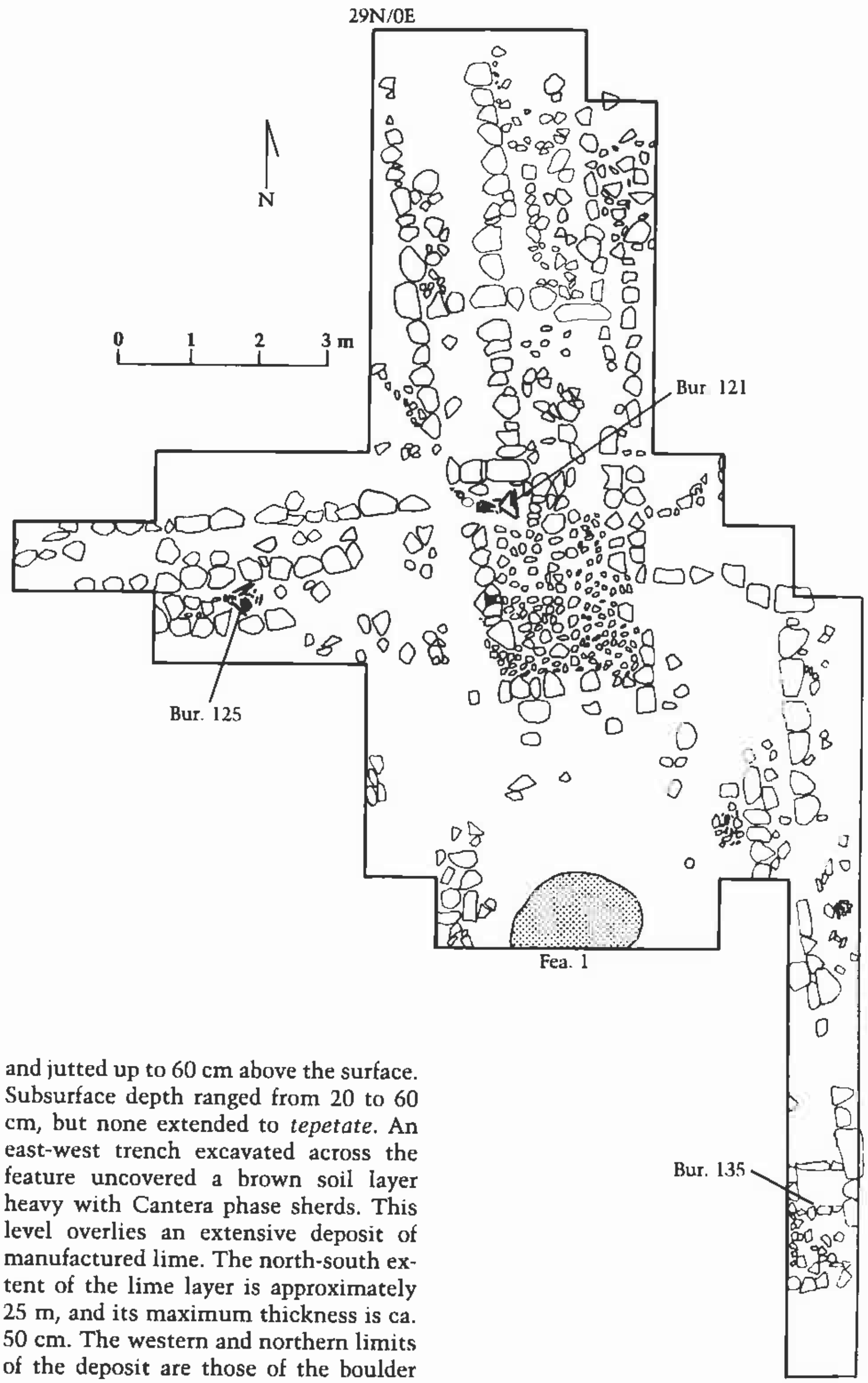


Figure 4.34. Plan map of T-27 Structure 2 excavations.

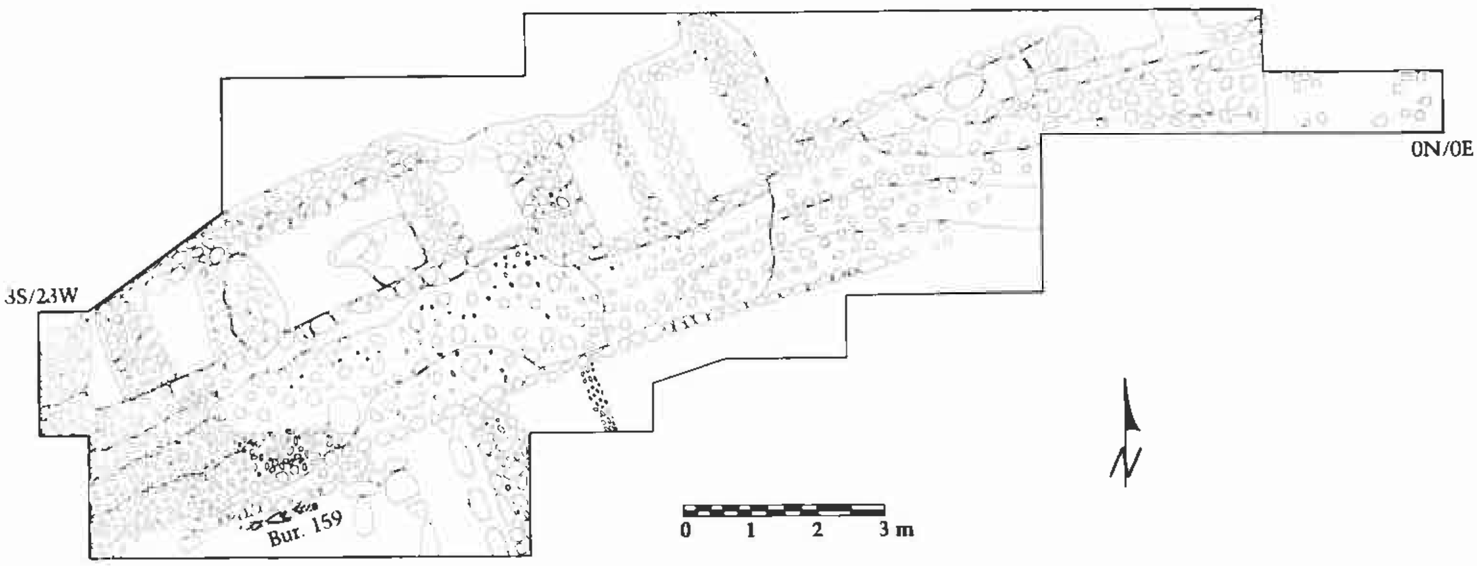


Figure 4.35. Plan map of T-29 excavations.

used as whitewash for the adobe-walled house structures since the few traces of white we have found on adobe fragments seem to be kaolin. Likewise, the white slip of the nearly ubiquitous white ware Middle Formative ceramics at the site again seems to be kaolin (Chapter 23). The lime could have been used in the preparation of corn *masa*, but there is no archaeological evidence to confirm such a hypothesis.

Seven burials were found during the excavations, all dating to the Cantera phase. The presence of burials suggests that some residential functions were associated with the area. Adobe daub fragments indicate that a structure had been built here, although no other evidence for the structure was found.

The artifacts from S-39 differ somewhat from those recovered at other areas of the site. Clay "bananas" and ceramic bars (see Chapter 16) occur in greatest frequency here. There is also a comparatively larger quantity of shallow Amatzinac White dishes. The bars and "bananas" may be pottery working tools, and S-39 could have been a pottery manufacturing area. No traces of kilns were found, but these may have been located away from the workshops. The massive boulder walls and the lime deposit remain to be explained.

Field North 2 (FS 1974)

The N-2 field lies on the north side of the spring-fed stream which runs near the base of Chalcatzingo's terraces and to the east of the road running from the site to the village. A small erosion gully between the road and the field has exposed about 50 cm of Middle Formative deposits, including a large brazier fragment found eroded from the exposed cut following a heavy rainstorm. According to villagers who worked for or witnessed Piña Chan's 1953 excavations at the site, the roadway beside N-2 was the location of his Pozo 9 (1955:9, Map 2).

Structures 1 and 2

Two units were opened on the field (Fig. 4.37). The first encountered stone features which seem to be the remnants of a Late Barranca subphase structure, N-2 Structure 1. The second encountered a wall of large irregular field stones, N-2 Structure 2. Two of the wall's stones lie over the feet of a human burial (no. 149). Although no vessels were in direct association with this burial, two Early Barranca subphase vessels were found immediately above the burial in the subsequent level. Thus, both Structure 2 and Burial 149 are apparently Early Barranca subphase in date. Levels underlying the burial include Late Amate subphase deposits.

Field North 5 (FS 1974)

Two test trenches were placed in the N-5 field, which lies on the northwest periphery of the site. The purpose was to test for occupation west of the main site area in an area of limited surface artifacts. Our first trench uncovered a floor-like layer of small rocks at ca. 40 cm in its southeast quarter. No other features were found until the upper torso and skull of a human burial (no. 150) were uncovered at ca. 95 cm. The skeleton, in poor condition, continued into the west sidewall. It lay in a shallow depression excavated into *tepetate* and lacked associated artifacts.

To recover the entire burial, the excavation unit was extended to the west by another meter. This unit, although excavated to *tepetate*, did not find the remainder of the skeleton, which was incomplete and ended at the sidewall of the original trench. The stratigraphy within the extension unit had been badly disturbed by an animal burrow, which apparently disturbed the burial as well.

The second trench did not yield significant data. Lack of time and the low priority given to this area halted further excavations.

Field North 7 (FS 1974)

Because more data were desired concerning the periods of occupation of the fields directly north of the stream, a 1 × 3 m test trench was excavated on N-7, a field across the roadway from N-2. No features were found during this limited excavation. The natural levels here are quite thick (Appendix B, SSU 3). The upper two levels are Cantera phase, and these overlie Amate phase deposits. No Barranca phase levels were found in this stratigraphic sequence, although there are heavy Barranca phase deposits on N-2.

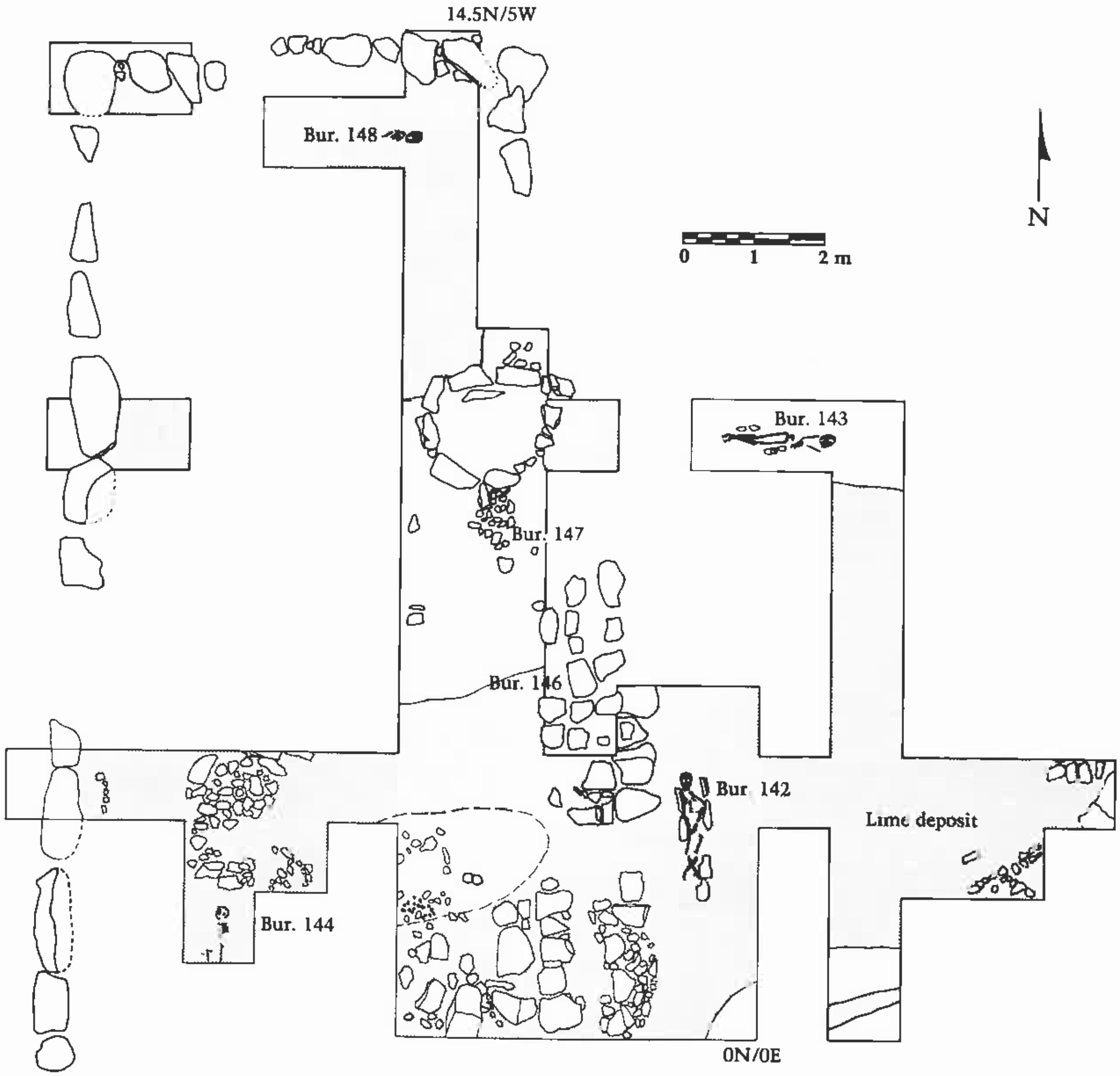


Figure 4.36. Plan map of S-39 excavations; shaded area indicates lime deposits. Burial 145 not shown.

Cerro Terrace 1 (FS 1973)

The clearing of the site of its overgrowth revealed archaeological and topographical features previously unknown. One of these was a small terraced area on the hillside talus slope south of the Plaza Central. Because this terrace lies between the Plaza Central (location of monumental architecture and an elite residence) and the bas-relief carvings on the *cerro*, the terrace was test excavated. It was immediately obvious that the terrace had been heavily eroded, as most of the ceramic debris was very weathered.

Several fragmentary stone alignments were found within the test pits, but no structures could be defined. Peralta Orange sherds, a good Cantera phase marker, appeared to be present in greater than normal quantities. This ceramic type is restricted essentially to Chalcatzingo and sites in the immediate vicinity (Chapter 13). Its abundance on CT-1 may indicate a special meaning to the terrace, although exactly what cannot be ascertained at this time.

Cerro Terrace 2 (FS 1973)

Structure 1

A villager cutting down a dead tree to the west and uphill from CT-1 found a metate in the tree's root system. Other surface features suggested that a structure might be present there, and a test excavation was made and eventually expanded. This disclosed a small rectangular stone platform ca. 3 × 3 m in size with a maximum height of 45 cm. The tree had grown in the platform's front (north) wall. The structure's upper surface had a floor of small and medium stones. At its uphill end the base of the platform rests upon *tepetate*, while its front side, downslope, sits upon a layer of black soil.

The dating of the platform remains tenuous, but it is probably Classic period. It is underlain by Middle Formative sherds but surrounded by Classic period sherds. A complete Late Classic vessel was recovered 1 m north of the platform, and a metate found within the structure is unlike those from Cantera phase contexts. The structure lacks stucco and the sloping basal stones characteristic of other Classic period platforms on the site (T-4 Str. 3, T-15 Str. 4), but is likewise dissimilar to Cantera phase constructions.

Cerro Delgado Caves **(FS 1973, 1974)**
Only two routes, both accessible with great difficulty, are known to lead to the upper slopes of the Cerro Delgado, where a number of small caves are located. Along these routes are numerous hand and footholds, presumably prehistoric, carved into the steep rock faces to aid in climbing. Despite the limited access, our investigations show that the Cerro Delgado was used extensively in the past, beginning as early as the Middle Formative but with maximum use in the Middle Postclassic. An area of the eastern summit slopes has been occasionally planted in recent years, and one accessible cave (no. 1) had been utilized for storing grass cut for fodder just prior to our excavations.

During the 1973 and 1974 field seasons, excavations were conducted within two caves on the *cerro*, and samples from eight other caves were obtained from test pits. Surface samples were collected from an additional fifteen caves as well as seventeen terraces on top of the hill. Summary data on these caves is taken from Robert Burton (1974). Because the cave data are still under analysis, they are not reported in any greater detail here but will be the subject of a separate report.

At least twenty-five of the Cerro Delgado caves had been utilized, either as habitation sites or as possible water storage caves. Two of these latter caves have carved channels in the rock that we interpret as devices constructed to direct water to the interior, where natural depressions would have retained it. No other artificial water control devices were found, even though in several instances watermarks on the cave walls indicated that water had once been retained at a higher level than is possible now. Because our excavations were carried out in the dry season, we do not know whether these possible water storage caves collected water naturally; only one is known to hold water throughout

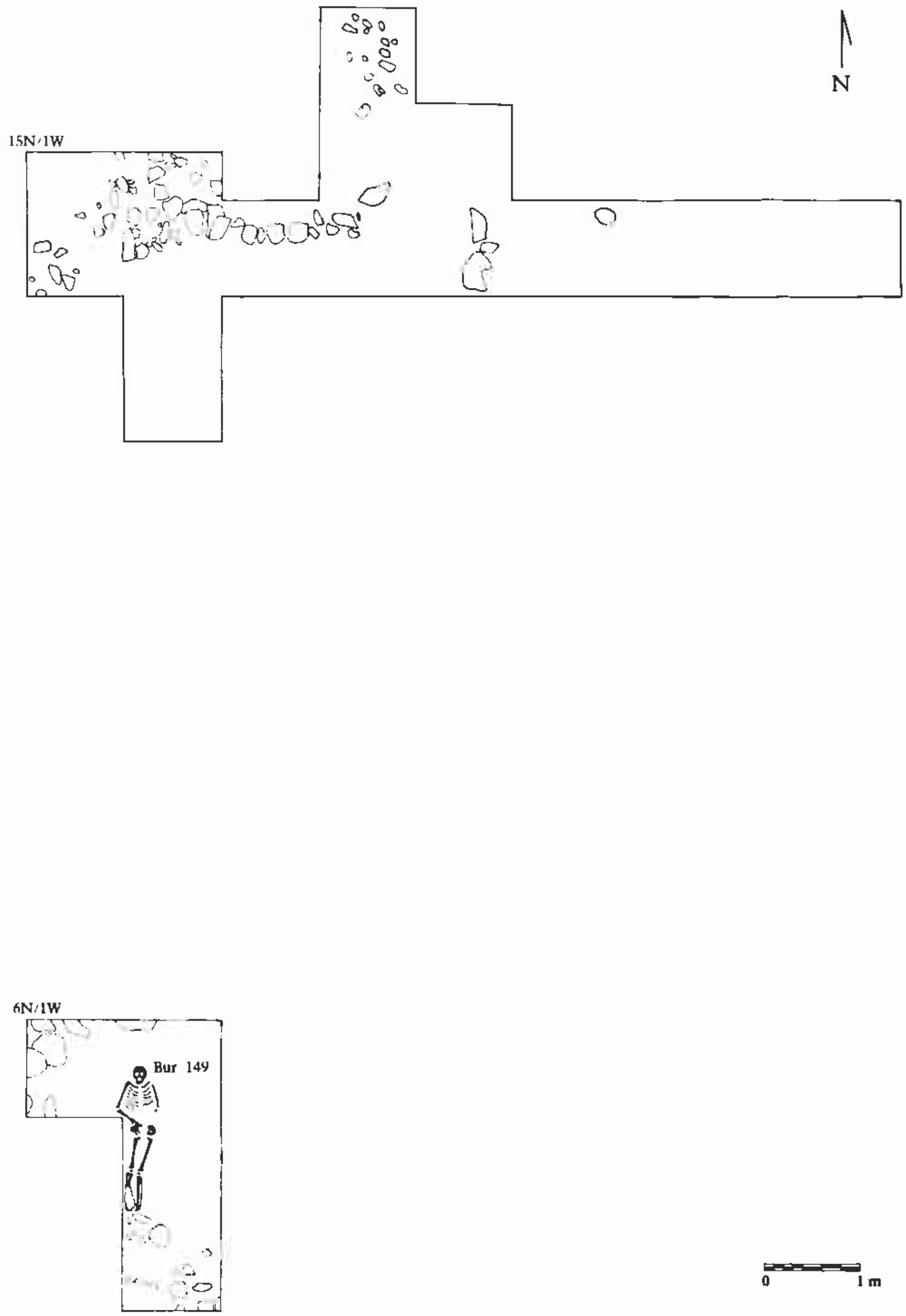


Figure 4.37. Plan map of N-2 excavations.

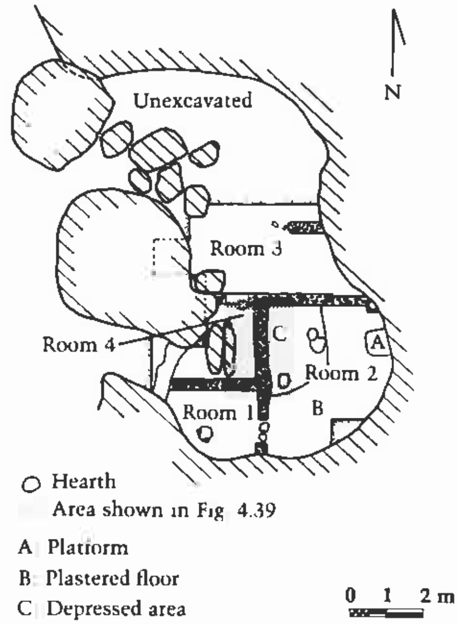


Figure 4.38. Plan view of Cave 4, Postclassic.

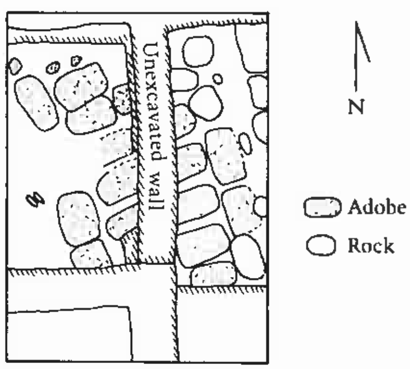


Figure 4.39. Plan view of Cantera phase adobe brick floor, Cave 4.

the year. The possible water storage caves tend to have a higher incidence of pictographs than do habitation caves.

Habitation debris was found in fourteen of the caves. It is certain that these caves were used for habitation, since they contained hearths, manos, metates, and tools of both chert and obsidian. Ceramics found were primarily utilitarian wares, but some decorated vessel sherds were also found. Prepared floors and partitioning walls are present in several of the caves. Caves 1 and 4 were excavated extensively enough to provide a good sample of their contents. In Cave 2, looters' backdirt was screened to recover dried plant remains (cotton, maize cobs, etc.; Appendix A) and wooden implements (Chapter 16).

The Cave 1 excavations uncovered Middle Postclassic, Classic, and Middle Formative deposits. These deposits, still under analysis, included clay and plaster floors, the remains of two walls, as well as a probable Late Formative burial (no. 151) and Middle Formative Cantera phase burials (nos. 152–155).

Cave 4, high on the western face of the *cerro*, contained a small Postclassic mud brick structure with four rooms (Fig. 4.38). A painted plaster floor in Room 2 was associated with a small raised platform and a depressed central area containing two hearths. The two doorways found had both been closed off with additional mud bricks. Collapsed walls indicated that the structure had fallen to ruin prior to rockfall from the cave's ceiling which partially blocks the cave entrance. Beneath the Postclassic structure in Cave 4 are 50 cm of Formative period deposits, within which were three Cantera phase burials (nos. 156–158). At the base of the deposit, just above bedrock, was a floor of adobe bricks (Fig. 4.39). This floor is apparently Cantera phase.

Tetla (FS 1974)

The villagers of present-day Chalcatzingo refer to the agricultural fields and terraces on the northeast side of the Cerro Delgado as "Tetla" (from the Nahuatl *tetlan*, "rocky place"). The Tetla zone, described in more detail in Chapter 24, is characterized by mound architecture apparently dating to the Late Classic and Middle Postclassic periods. The surface sherds are also predominantly from those periods, although Middle Formative sherds have been found on fields in the flatland area and in our excavations.

Our investigations included yearly surveys of Tetla. In order to obtain a stratigraphic sample from that zone and to test for the possibility of Middle Formative occupation there, two fields, Tetla-1 and Tetla-11 (Fig. 24.16), were chosen for testing during the 1974 field season.

Tetla-1

This field lies to the south of the old colonial road (still used today) which winds through the zone. The field is ca. 150 m long and has a maximum width of ca. 75 m. Two areas were tested, both with negative results. These tests dramatized to us the fruitlessness of attempting to quickly test a large area with a few test pits.

Tetla-11

At the base of an enormous boulder, this field was heavily overgrown with *huizache*, indicating it had not been farmed in years. Initial investigations quickly uncovered wall lines and plaster floors just below the surface. These are the remains of a Middle Postclassic house which is described in detail in Chapter 25.

A stratigraphic pit was also excavated to the northwest of the house. The upper levels of this 3.4 m deep pit were Middle Postclassic. Included in these levels were two vessels which had been placed mouth-to-mouth. Inside the vessels were fragments of human bone and an unusual shell necklace. Underlying the Middle Postclassic levels was nearly 2 m of mixed fill containing Middle Postclassic, Late Classic, and Late Formative sherds. Middle Formative levels began at ca. 3 m. The fill indicates that Tetla 11 is a Middle Postclassic terrace. Our project did not attempt to date the hillside terraces of Tetla, but since Middle Formative sherds were not found on these hillside areas during our surveys, the terracing may not be contemporaneous to the Barranca phase terracing within what we term the main site zone on the west side of the hills.

RESUMEN DEL CAPÍTULO 4

Las excavaciones en Chalcatzingo se llevaron al cabo fundamentalmente durante tres temporadas de seis meses cada una, en 1972–1974. Se acompaño esta investigación con reconocimientos a niveles local y regional. Dadas las medidas del gran sitio y sus múltiples campos y terrazas, cada campo actual se consideró como una unidad de subsitio y le fue dada su respectiva numeración para identificación, inventario, y proceso de excavación. Las excavaciones de prueba consistieron generalmente de trincheras de 1 × 3 m, en tanto que las excavaciones con miras a obtener objetos en particular se hicieron de 2 × 2 m (correspondientes a nuestra unidad básica de cuadriculación). En tanto fué posible, las excavaciones siguieron la estratigrafía natural. Todo el material recibió el proceso de colado por malla. Muestras de flotación y de polen fueron tomadas frecuentemente también. Todos los artefactos fueron objeto de limpieza y catálogo en el sitio, y se procedió después a moverlos a nuestro laboratorio en Cuautla para su análisis.

La investigación fué diseñada para obtener información básica del sitio, tal como cúal fué la extensión total, cúales sus períodos culturales mayores, así como qué distribución básica tuvieron los rasgos culturales correspondientes al Formativo Medio. Se pensó que fueran secundarias, y en última cuenta derivativas de los datos pertenecientes al sitio mismo, las consideraciones acerca del papel que tuvo Chalcatzingo en el juego de intercambio regional, y la naturaleza de sus contactos con la cultura Olmeca de la Costa del Golfo.

Se buscó aclarar la cronología del Período Formativo Mexicano Central, mediante el uso de los datos provenientes del Chalcatzingo, dado que la primera temporada de excavaciones coincidió con el año en el que dicha cronología fué puesta en duda seriamente. Por lo tanto, una de las primeras unidades excavadas fué una trinchera estratigráfica larga y profunda al través de la terraza (T) 1 (conocida después como la Plaza Central, PC).

Dado que las excavaciones de la estructura de las casas formaban parte importante de los objetivos del proyecto, las cuatro estructuras, PC Str. 1, Str. 2, T-9A, y T-4 resultan ligadas a las otras áreas excavadas durante la primera temporada de trabajo de campo. T-9A fué excavada para probar la hipótesis de que los grupos de tepalcates del Formativo Medio, los cuales se encontraron presentes en cada uno de los reconocimientos de superficie en cada terraza (generalmente uno por terraza) resultaran ser indicativos de las estructuras de las casas. Esto resultó ser cierto, y las posteriores excavaciones no fueron escogidas al azar sino que fueron hechas en función de la atención dada a estas concentraciones de tepalcates.

Las temporadas segunda y tercera consistieron primariamente de las excavaciones dirigidas a conseguir las estructuras de las casas (T-11, T-24, y T-29 en 1973; T-9B, T-23, T-27, S-39, y N-2 en 1974). Además, se investigaron otras estructuras y rasgos durante estas dos temporadas, las cuales incluyeron la "presa" de control de agua en T-15, un altar estilo Olmeca en T-25, una abundante concentración de obsidiana en T-37, el montículo plataforma (Str. 4) en la Plaza Central, las plataformas de cara de piedra y las estelas en T-15 y T-6, así como algunas de las cuevas del Cerro Delgado. En 1973 se excavaron algunas estructuras del Clásico, las cuales incluyeron un juego de pelota en T-15 y una pirámide redonda en T-3. En 1974 se probaron dos sitios pequeños del Formativo Medio del valle, Huazulco y Telixtac, para hacer una comparación con Chalcatzingo, y se excavó una casa del Postclásico en el área de Tetla en Chalcatzingo.

Se llevaron al cabo tres semanas de trabajo de campo, en 1976, con objeto de aclarar problemas de estratigrafía de algunas áreas del sitio, PC Str. 4 y T-6, en las cuales había materiales de la fase Amate. Una plataforma con cara de piedra de la fase Amate, T-6 Str. 3, fué descubierta pero no se procedió a su excavación dado el corto tiempo de la temporada de trabajo.

5. Chronology and Cultural Phases at Chalcatzingo

ANN CYPHERS GUILLÉN and DAVID C. GROVE

The Chalcatzingo chronology was derived from an intensive analysis of ceramic stratigraphy and placed within a framework of absolute dates provided by fifty-seven radiocarbon assays. We did not attempt to define phases or chronological sequences by comparisons with established sequences elsewhere. Instead, the chronology and phases which follow are based primarily upon the data from Chalcatzingo.

None of the units excavated at Chalcatzingo provided a long stratigraphic section encompassing the total Formative period occupation span of the site. The majority of the units had stratigraphy which covered only a maximum of three subphases (as they were later to be defined). Some had only one or two natural levels corresponding to a single subphase. But, because many columns had overlapping cultural stratigraphy, it was possible to link them together for a continuous stratigraphic sequence.

The ceramic chronology and phases described below are based on a restricted and relatively "pure" sample from thirty-eight excavation units. Each of the thirty-eight units selected was part of the overall intensive excavation of individual site areas and presents the best stratigraphy for its area. These units are special ones in terms of our sequence and will be designated as Selected Stratigraphic Units (SSU) in the text. They are described and illustrated in Appendix B.

Within the thirty-eight Selected Stratigraphic Units there were 149 stratigraphic levels. In order for a level to be included in the analysis, its depositional conditions had to qualify as undisturbed. All plow zones, erosion zones, areas of fill, and areas with obvious or even possible disturbance were eliminated. Levels containing more than 25 percent eroded sherds were considered disturbed and were rejected. Twenty-five percent was used as a cutoff because it was found that the lowest percentage of eroded materials in plow zone levels coincided with that figure.

The 105 levels that remained after the disturbed ones were weeded out contained nearly 120,000 sherds and provided the basic data for the phasing and subphasing discussed here. For descriptions of the stratigraphy of the selected units, together with excavation profiles, see Appendix B.

Although we have attempted to minimize the effects of disturbance in analyzing the stratigraphic record, it is always difficult to deal with "floating" artifacts (artifacts from earlier levels which, through various processes, turn up in later levels). Such "floating" may be a major cause of the difficulty we have had in determining the upper temporal limits of some ceramic types. The time of appearance of a new ceramic form or type is seldom questionable, but due to "floating" it is often difficult to ascertain when the form or type ceased to be utilized.

Radiocarbon dates from the Selected Stratigraphic Units and also from a wide range of contexts were used to provide a chronological framework for the phases. All of the radiocarbon samples are described in Table 5.1, and most dates are displayed in Figure 5.1. At no time were the C-14 dates used to place a particular level or feature within a phase or subphase.

Of the fifty-seven radiocarbon assays submitted by the project, forty-three were from Formative period levels and/or features. As is probably to be expected, some of the dates appear to be erroneous and were eliminated from consideration.

At this time there is a lack of consistency in the way in which archaeologists handle and publish corrected radiocarbon dates. Thus, it is frequently difficult to compare cultural chronologies among sites or areas. In this text, we have decided to use the more accurate radiocarbon 5730 half-life. Dates discussed were converted to years BC or AD by subtraction from AD 1950. No other correction factors have been applied to the dates.

Figure 5.2 provides a general correlation of the phase sequences from Chalcatzingo and major Mesoamerican areas discussed in this book.

AMATE PHASE, 1500–1100 BC

This phase is represented by the earliest cultural materials found at Chalcatzingo. Its time span is estimated by three radiocarbon assays (Fig. 5.1), two of which come from Selected Stratigraphic Units. All are problematical.

No carbon sample was found from an Early Amate subphase context. Date N-1698, 1660 ± 90 BC, is the oldest date from Chalcatzingo and derives from SSU 28, Level VII-C. Although the associated cultural materials, principally ceramics, date to the Late Amate subphase, the sample may represent an Early Amate occupation owing to the fact that its level is not a secure primary deposition. Level VII-C represents a pre–PC Structure 4 mound occupation; however, this level occurs only in the bottom of a 3 × 1 m test unit perforating the mound. In this instance, the character of the deposit is difficult to determine.

Date N-1413, 1470 ± 80 BC, is associated with Amate phase ceramics which did not contain sufficient diagnostic attributes to assist in delineation of the subphase. Date N-1955 derives from SSU 3, Level V, which contains definite Late Amate subphase artifacts. On the basis of the associated cultural materials, the date appears to be too recent.

The dispersed nature of the Amate phase dates does not lend itself to a secure temporal bracketing of the phase. Principally on the basis of N-1413, the lower limit of the Amate phase was placed at 1500 BC. The upper limit, 1100 BC, is arbitrary, since no reliable dates derive from Early Barranca subphase contexts.

Early Amate Subphase, 1500–1250 BC

The Early Amate subphase represents the earliest cultural material found at Chalcatzingo and includes the major ceramic types Cuautla Brown, Cuautla Red-Slipped, Atoyac Unslipped Polished III, Arboleda Coarse, and Tadeo Coarse. These types are found at Amate phase sites within the Amatzinac Valley. At this time, no externally introduced pottery is clearly evident in the assemblage.

Late Amate Subphase, 1250–1100 BC

The five major ceramic types of the Early Amate subphase continue into this subphase, which is characterized by the appearance of two additional ceramic types, Del Prado Pink and Carved Grey. Del Prado Pink is a minor type at the site, and petrographic analysis shows it to be nonlocal. Carved Grey ceramics share the carved exterior and the iconography of Calzadas Carved of the San Lorenzo phase at San Lorenzo, but at the same time according to petrographic study (Table 13.1) represent an undoubtedly locally manufactured ceramic type.

Kaolin ceramics first appear in this subphase, but in very small amounts. A few sherds also occur in Barranca and Cantera phase levels. The quantity is too minor to ascertain their true temporal range. Whether this pottery is manufactured from the local kaolin clay or is imported has not yet been determined, but the very small quantity of sherds recovered may imply that this is a nonlocal, imported ceramic type. A few sherds of Amatzinac White ceramics, a popular type beginning with the Barranca phase, also have been found in levels from this phase.

Although Grove (1974b:114) has pointed out that *tecomates* (see glossary at end of Chapter 13 for definition of this and other forms) never occur in significant quantities in Formative period central Mexican assemblages, some are present in this subphase in Cuautla Brown, Cuautla Red-Slipped, and Arboleda Coarse ceramics. In addition, Cuautla Red-Slipped bowls often have an incised or true grater-bottom interior. Vessel supports from this time period include solid round supports and elongated spider-leg supports.

A minor quantity of bottle sherds are found in this subphase. However, only one example of an Exotic Bottle style vessel was recovered by our excavations (Fig. 4.13).

The lack of such Exotic Bottles, which are so abundant in Early Formative burials in central Morelos (Grove 1970b, 1974a, 1974b) and the Valley of Mexico (Piña Chan 1958; Porter 1953), could be inferred to mean that Chalcatzingo is peripheral to these regions. This may or may not be the case, but is not demonstrated by our data, for no Amate phase burials were recovered by our excavations, and our sample is therefore not comparable. Exotic Bottle sherds are not common in nonburial contexts at any central Mexican Early Formative site.

BARRANCA PHASE, 1100–700 BC

The Barranca phase C-14 dates from Chalcatzingo, including those from Selected Stratigraphic Units, run from 1170 to 670 BC in terms of absolute dates and from 1305 to 570 BC with the corresponding one-sigma ranges. Taking into account this complete array, the dating of the Barranca phase was placed at 1100–700 BC. The internal dating of the subphases has been arbitrarily determined and the subphases fairly evenly spaced within that total span.

Only one date, N-1704, is available from an Early Barranca subphase context in a Selected Stratigraphic Unit. It appears to be much too recent in terms of its corresponding cultural context.

Three dates are available from Middle Barranca contexts in Selected Stratigraphic Units: N-1710, N-1711, N-1702. It is important to note that both N-1710 and N-1702 come from an intrusive pit feature; however, N-1710, 1070 ± 85 BC, the earlier date, comes from the upper level, and N-1702, 670 ± 100 BC, comes from the lower level. The age discrepancy is four hundred years.

Six dates come from Late Barranca subphase contexts in Selected Stratigraphic Units: N-1416, N-1409, N-1407, N-1412, N-1705, and N-1954. The absolute values of the dates range from 1170 to 770 BC.

If, as has been suggested elsewhere (Chapter 6), the majority of terrace construction at Chalcatzingo occurred during the Barranca phase, disturbances caused by this activity could account for the inconsistency of the Barranca dates. This also casts suspicion on the validity of the stratigraphy for the internal Barranca subphasing.

Early Barranca Subphase, 1100–1000 BC

The criteria for the separation of Late Amate and Early Barranca subphases is based on several significant changes in ceramic types and forms. These changes are most apparent in decorated ceramics. While Cuautla Brown and Cuautla Red-Slipped ceramics continue, the new types, Tenango Brown, Amatzinac White, White-Rimmed Black, Laca, and Peralta Orange ceramics become important for the first time. All five types appear to be locally manufactured. Peralta Orange ceramics, present in significant quantities, are essentially restricted to the Amatzinac Valley and for that reason represent an important type. This type continues into the Cantera phase, at which time its forms are considered to be good temporal markers. A sixth type, Pavón Fine Grey, appears to be a nonlocal ware (see Chapter 13).

Among the form changes, slightly rounded bowl bottoms begin during this subphase. These are contemporaneous with flat-bottomed bowls, which continue in popularity. The appearance of rounded bowl bottoms begins a Barranca phase trend toward deeper bases as the phase progresses. The true grater-bottom vessels found in Amate phase Cuautla Red-Slipped ceramics are now displaced by the purely decorative pseudo-graters of Amatzinac White, Laca, and White-Rimmed Black vessels.

Although spider-leg and round solid vessel supports were present during the Amate phase, supports of any type are nonexistent in the Barranca phase assemblage.

Ovate bowls (RB-16) and collared ollas (RO-1) (see Appendix D for explanation of these form abbreviations) make their appearance at this time. The peculiar convex neck of the collared olla may indicate a function for these vessels distinct from that of the normal flared (concave) neck olla. *Tecomates* decline in quantity.

Various plate-like forms also begin in the Early Barranca subphase. These are flat to slightly concave in form with slipped and polished interiors and roughened exteriors. They appear similar to *comales* used in later periods for tortilla preparation.

Table 5.1. Radiocarbon Dates

Lab No.	BP 5568 Years	BP 5730 Years	Corrected Date	Provenience and Comments
N-1402	2620±80	2690±85	740±85 BC	PC Str. 1, 112–114S/0–2E, 57 cm. SSU 35–36, Level II. Late Cantera subphase.
N-1403	2480±80	2550±85	600±85 BC	PC Str. 1, 112–114S/2–4E, 20–40 cm. Adjacent to SSU 35–36, level correlates to I. Late Cantera subphase.
N-1404	2580±65	2660±70	710±70 BC	PC Str. 1, 114–116S/0–2E, 40–60 cm. SSU 35–36, Level II. Late Cantera subphase.
N-1405	2700±85	2780±100	830±100 BC	PC Str. 1, 114–116S/2–4E, 40–60 cm. Adjacent to SSU 35–36, level correlates to II. Late Cantera subphase.
N-1406	2890±100	2980±105	1030±105 BC	PC Str. 1, 118–120S/0–2E, 90 cm. Early Cantera subphase.
N-1407	2690±80	3040±85	1090±85 BC	PC transect trench, 87–90S/0–1E, 360–380 cm. SSU 31, Level VII. Late Barranca subphase.
N-1408	2800±80	2880±85	930±85 BC	PC transect trench, 80–84S/0–1E, 200–220 cm. Barranca phase.
N-1409	3010±95	3090±100	1140±100 BC	PC transect trench, 71–75S/0–1E, 370–390 cm. SSU 30, Level VII. Late Barranca to Early Cantera subphase.
N-1410	2620±90	2690±90	740±90 BC	PC transect trench, 60–63.5S/0–1E, 233 cm. Associated with PC Str. 5. Barranca phase.
N-1411	2840±95	2920±100	970±100 BC	PC Str. 3, 110–112S/16–18E, 60–80 cm. SSU 37. Late Cantera subphase.
N-1412	2910±130	2990±135	1040±135 BC	PC Str. 3, 110–112S/16–18E, 190–210 cm. SSU 37, Level IV. Late Barranca subphase.
N-1413	3320±80	3420±80	1470±80 BC	PC Str. 4, 14–17.5S/39–40E, 200–220 cm. Amate phase.
N-1414	1390±75	1440±80	AD 510±80	T-9A Str. 1, 0–2S/0–2E, 20–40 cm. From possible Classic period intrusion.
N-1415	1350±75	1390±80	AD 560±80	T-9A Str. 1, 4–6S/0–2W, 31–40 cm, Zone B. From probable Classic period intrusion.
N-1416	3030±130	3120±135	1170±135 BC	T-9A Str. 1, 8–10S/0–2W, 140–160 cm. SSU 4, Level IV. Late Barranca subphase.
N-1417	2720±80	2800±85	850±85 BC	T-9A Str. 1, 8–10S/2–4W, 60–80 cm. Adjacent to SSU 4. Late Cantera subphase.
N-1694	1230±75	1260±80	AD 690±80	T-4 Fea. 1, Classic period lime kiln, 295–320 cm, interior of feature.
N-1695	1760±100	1810±100	AD 140±100	T-4, Square 162A, 220 cm. Associated with Middle Formative stone walls. Date is too recent.
N-1696	2690±95	2760±100	810±100 BC	T-11 Str. 2, 4–6S/2–5W, 50 cm. Level correlates to Level I of SSU 5. Late Cantera subphase.
N-1697	2460±80	2530±85	580±85 BC	T-11 Fea. 1, section B. Intrusive pit feature.
N-1698	3510±85	3610±90	1660±90 BC	PC Str. 4, 0–3N/0–1E, 555 cm. SSU 28, Level VII. Late Amate subphase.
N-1699	1260±75	1300±75	AD 650±75	Cave 1, 3–4S/2–3E, 62 cm. Classic level.
N-1700	2590±185	2660±190	710±190 BC	T-25, 1–3S/2–3W, Level IV, interior of altar. Cantera phase.
N-1701	2490±95	2560±100	610±100 BC	T-25, 1–3S/6–7W, Level V. From the contact level of altar base and earlier ground surface. Cantera phase.
N-1702	2540±95	2620±100	670±100 BC	T-25, 0–1S/0–1W. SSU 16–19, *pozo*. Middle Barranca subphase. Date is too recent.
N-1703	2460±95	2530±100	580±100 BC	T-25, 0–1S/8–9W, Level VI. Sample in association with two child burials (nos. 98, 99). Adjacent to SSU 16–19. Cantera phase.
N-1704	2110±94	2170±95	220±95 BC	PC Str. 1, 114–116S/0–2E, 340 cm. SSU 35–36, Level XIII. Early Barranca subphase context. Date is too recent.
N-1705	2690±95	2770±100	820±100 BC	PC Str. 1, 114–116S/0–2E, 240 cm. SSU 35–36, Level VIII. Late Barranca subphase.
N-1706	2810±80	2890±85	940±85 BC	PC Str. 2, 134S/32W, 90 cm, Room 4. Cantera phase.
N-1707	2500±80	2570±85	620±85 BC	PC Str. 2, 132S/28W, 80 cm, Room 2. Cantera phase.
N-1708	2510±80	2580±85	630±85 BC	PC Str. 2, 130S/38W, 35 cm, floor. Cantera phase.
N-1709	2510±105	2580±110	630±110 BC	T-11 Str. 1, 1–2N/0–2E, 110–130 cm. SSU 5, Level IV. Early Cantera subphase.
N-1710	2930±85	3020±85	1070±85 BC	T-25, 0–1S/0–1W. SSU 16–19, Level X. From upper level of *pozo*. Middle Barranca subphase. Date seems too early.
N-1711	2640±85	2720±85	770±85 BC	T-25, 0–1N/0–1W, Level VII. Associated with Burial 96. Middle Barranca subphase.
N-1712	2820±85	2900±85	950±85 BC	T-29 Str. 1, 4–6S/18.5–20W, 120 cm. Early Cantera subphase.
N-1713	2710±80	2790±85	840±85 BC	PC Str. 1, 122–124S/2–4E, 75 cm. Early Cantera subphase.
N-1946	2770±75	2850±85	900±85 BC	PC Str. 4, 24.1S/4.7W, 40 cm. Associated with stone line. Late Cantera subphase. Date seems too early.

Table 5.1 **(continued)**

Lab No.	BP *5568 Years*	BP *5730 Years*	*Corrected Date*	*Provenience and Comments*
N-1947	2870±90	2950±90	1000±90 BC	T-6 Str. 1, 11–12S/1–2E, SSU 2, Level IV. Sample is from an apparently undisturbed level, predating the stone-faced platform and Mon. 27. Date seems too recent in terms of cultural context. Late Amate subphase.
N-1948	2180±85	2240±90	290±90 BC	T-6 Str. 2, 16–17S/0–2W, Level IV. From fill of structure covering Str. 1 and Mon. 27.
N-1949	1020±65	1050±65	AD 900±65	T-6 Str. 1, 19–21S/2–3E, Level III. From a Classic period intrusion.
N-1950	2700±85	2780±85	830±85 BC	T-21, 25–27N/72–73W, Fea. 1. SSU 8, Level IV. Late Cantera subphase.
N-1951	2490±70	2560±70	610±70 BC	T-23 Str. 1b, Fea. 2, firepit. Late Cantera subphase.
N-1952	2500±80	2570±85	620±85 BC	T-23 Str. 1b, Fea. 6, firepit. Late Cantera subphase.
N-1953	2530±90	2600±95	650±95 BC	T-37. Sample associated with Burial 136. Cantera phase.
N-1954	2640±95	2720±95	770±95 BC	N-2, 3–6N/0–1E, 164–174 cm. SSU 1, Level III. Late Barranca subphase. Sample from context sealed by floor. Very reliable date.
N-1955	2930±70	3020±75	1070±75 BC	N-7, 11–13N/0–1W, 240–250 cm. SSU 3, Level V. Late Amate subphase. Date seems too recent.
N-1956	2530±65	2600±70	650±70 BC	Telixtac. Cantera phase.
N-2271	920±70	954±75	AD 996±75	Cave 1, 3–4S/1–1.8W, 0–11 cm. Postclassic.
N-2272	1230±80	1260±85	AD 690±85	Cave 1, combined sample from Classic period levels.
N-2273	860±75	885±80	AD 1065±80	Cave 2, Level D. Classic period. Date seems too recent.
N-2274	2570±180	2640±185	690±185 BC	Cave 4, 1–2N/0–1W, 100–115 cm. Carbon sample scraped from sherds. Dates the upper portion of the Middle Formative deposit.
N-2275	3340±160	3440±165	1490±165 BC	Cave 4, combined sample, 130–149 cm. Dates the lower portion of the Formative deposit.
N-2276	1020±75	1050±75	AD 900±75	Cave 8, 11–12N/0–1W, 85–92 cm. Sample dates the upper levels of cave occupation. Postclassic.
N-2277	2720±65	2800±65	850±65 BC	Cave 8, 9–10N/1–2E, 111–123 cm. Possibly Cantera phase.
N-2278	2570±70	2640±70	690±70 BC	Cave 22, Test 1, 83–88 cm. Classic period. Date in error.
ISGS-508	700±75	720±75	AD 1230±75	Tetla-11, 6–7S/1–2W, house floor. Middle Postclassic.
ISGS-509	595±75	610±75	AD 1340±75	Tetla-11, 5–6S/0–2E, Level IV. Intrusive oven, Middle Postclassic.

Middle Barranca Subphase, 1000–850 BC

The types and forms of the Middle Barranca subphase are nearly identical to those of the previous subphase. The distinction between these subphases occurs primarily in the decorative motifs on Amatzinac White ceramics, since the plastic decoration on this type changes rapidly (see Chapter 13).

Late Barranca Subphase, 850–700 BC

The major changes which define the Late Barranca subphase are the increase in Peralta Orange ceramics and the increased variety of forms for both Tenango Brown and Peralta Orange types. White-rimmed Black, Laca, and Pavón Fine Grey ceramics continue as before. A new type, Carrales Coarse Grey, begins to appear in significant quantities during this subphase.

There is a greater variety of forms in Amatzinac White, including the appearance of spouted trays (RD-9), everted rim bowls (RB-20, 21, 22), and flower pot bowls (RB-62). The Late Barranca subphase is the last subphase in which pseudo-grater bottoms are abundant. Pseudo-graters in all ceramic types decrease in popularity in the subsequent subphases.

CANTERA PHASE, 700–500 BC

The dating of the Cantera phase is based on twenty-four radiocarbon assays, four of which come from Selected Stratigraphic Units.

Only one date is available from an Early Cantera subphase context in a Selected Stratigraphic Unit, N-1709, dating to 630 ± 110 BC.

Three dates, N-1950, N-1402, and N-1404, derive from Late Cantera subphase contexts in Selected Stratigraphic Units. The absolute values of these dates fall slightly outside the established dates for the phase. N-1402 and N-1404 come from an area of Cantera phase burials; however, the carbon samples were not in direct association with those burials but rather are from the surrounding matrix. This indicates the possibility that the carbon could be dating an earlier, undetermined occupation. N-1950 comes from a refuse feature whose artifacts are Late Cantera subphase, but, again, whether the carbon was used at the same time as the artifacts is indeterminable.

The total array of Cantera phase dates spans from 1030 ± 105 to 580 ± 100 BC. Importantly, eleven of the twenty-four dates cluster closely in the 700–500 BC range, whereas the remaining dates are spread from 1030 to 710 BC.

Five dates can be considered extremely reliable for the dating of the Cantera phase because of their association with activity features of limited temporal duration: (1) N-1703, 580 ± 100 BC, is associated with two Cantera phase burials; (2) N-1707, 620 ± 85 BC, is associated with a residential structure floor and ceramics dating to the Cantera phase; (3) N-1708, 630 ± 85 BC, comes from the same structure floor as N-1707; (4) N-1951, 610 ± 70 BC, derives from a firepit within a Cantera phase residential structure; and (5) N-1952, 620 ± 85 BC, derives from another firepit within the same Cantera phase residential structure as N-1951. As can be easily noted, these five dates closely cluster at approximately 600 BC. By taking into account the one-sigma ranges, the upper temporal limit of the Cantera phase can be placed at 500 BC.

Early Cantera Subphase, 700–600 BC
During this subphase Laca and White-Rimmed Black ceramics diminish in frequency, while Peralta Orange surpasses Tenango Brown in popularity. Carrales Coarse Grey ceramics are abundant, but this type has little elaborate decoration until the Late Cantera subphase. There is one new type, Xochitengo Polychrome.

Amatzinac White acquires a series of new forms and design motifs beginning in this subphase which make it very distinct: double-loop handle censers (RB-101), small shallow bowls (RB-70), and highly outcurving wall bowls (RB-90) with wide *raspada* interior rim incising. All of these new forms are found in both burial and midden contexts.

After a long period of minimal change in olla forms, Early Cantera subphase ollas in Peralta Orange and Tenango Brown evidence new forms with rolled lips and short necks. Plain handles on ollas are present during this time. Peralta Orange composite silhouette bowls (RB-45) with shoulder punctuation first occur in this subphase's assemblage.

Other noteworthy forms are bowls with basal ridges (RB-85) in Carrales Coarse Grey, and three-prong braziers. Although these braziers are also found in Barranca phase contexts, they appear in greatest quantity beginning with the Early Cantera subphase.

Late Cantera Subphase, 600–500 BC
Three new pottery types occur in this subphase. Two of these, Amayuca Ruddy and Mingo Fine Brown, first appeared in minute quantities at the end of the Early Cantera subphase. The third type, Santa Clara Orange, is restricted to the Late Cantera subphase.

Pavón Fine Grey reaches its maximum frequency during this time. Carrales Coarse Grey, possibly a local imitation of Pavón Fine Grey, likewise reaches its peak of frequency. Xochitengo Polychromes continue, and except for the addition of the twisted handle on Peralta Orange ollas, Tenango Brown and

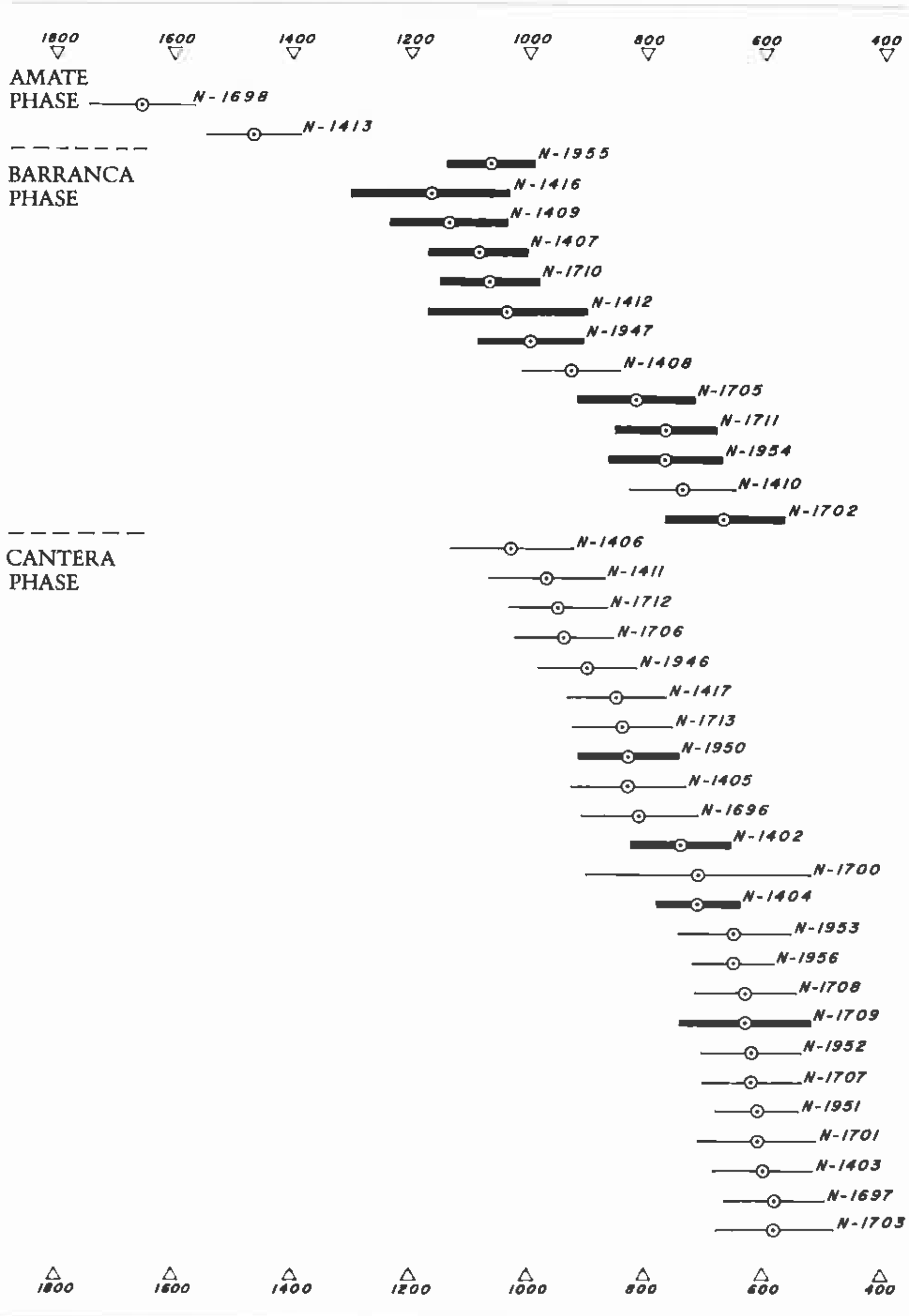


Figure 5.1. Radiocarbon dates. Wide lines are SSU units (Appendix B); line length equals the 1 Sigma variation range. Highly aberrant samples not included in this chart.

Peralta Orange ceramics remain essentially unchanged. However, Laca and White-Rimmed Black types have virtually disappeared.

Cantaritos and shallow miniature bowls (RB-67) are Late Cantera subphase form markers and are common burial furniture, in addition to being found in midden and household contexts. The predominant form for Amatzinac White is the highly outcurving wall bowl (RB-90) with wide *raspada* interior incising, but there is no innovation in Amatzinac White from the Early Cantera subphase.

LATE AND TERMINAL FORMATIVE PERIODS, 500–150 BC, 150 BC–AD 150

Our archaeological sample from the time period following the Cantera phase is small and certainly insufficient to allowing any phasing. The small artifact sample from the Late and Terminal Formative is highly differentiated. It includes sherds recovered during the regional survey, figurine heads from survey and from excavations at Chalcatzingo, and sixteen vessels which were grave furniture for burials from this time period. Two radiocarbon assays yielded dates placing them within the Late and Terminal Formative (N-1695, AD 140 ± 100, and N-1704, 220 ± 95 BC), but neither has a secure association with unmixed Late or Terminal Formative period artifacts.

Late Formative figurine heads were occasionally recovered in the upper levels of excavations on the main, terraced site area, as well as in mixed Formative-Classic period fill from the Tetla-11 strata pit excavations (see Chapter 25). These were primarily E and G figurine types (e.g., Vaillant 1930: 130–133; Noguera 1975: Fig. 30). Chronologically such heads fall within the Ticoman I and II subphases in the Valley of Mexico (Tolstoy 1978: 259; Sanders, Parsons, and Santley 1979: 441–444).

On the other hand, the burials uncovered on T-27 appear to postdate the small sample of figurine heads. Interestingly, no Late Formative figurine fragments were recovered during those excavations, although three whole figurines, unclassifiable within the Vaillant typology, were associated with Burial 117 (Fig. 8.17). Darlena Blucher kindly examined illustrations of the burial vessels and is of the opinion (personal communication to Grove) that they have attributes similar to the Terminal Formative Tezoyuca and Patlachique phase ceramics from the Teotihuacan Valley.

The material at Chalcatzingo does not suggest any important occupation of the site during the Late and Terminal Formative. Ceramically, there is no transition from the Late Cantera complex to the Late Formative. This may certainly indicate a break in the occupation following the Late Cantera subphase. Late Formative artifacts do indicate occasional minor occupation, possibly in the nature of a few isolated residences (for a contrasting view, see Chapter 21 and Appendix H). At any rate it is possible to say that Chalcatzingo's importance as a regional center ended with the termination of the Late Cantera subphase.

RESUMEN DEL CAPÍTULO 5

La cronología de Chalcatzingo se deriva de un análisis de la cerámica proveniente de 38 Unidades Estratigráficas Selectas (SSU), las cuales contenían 105 niveles sin perturbación. También proveen datos cronológicos los ensayos de radiocarbón, en total 57, de los cuales 43 son del período Formativo, pero la cerámica y no los fechamientos de C-14 fué utilizada para ubicar los niveles o rasgos dentro de las fases.

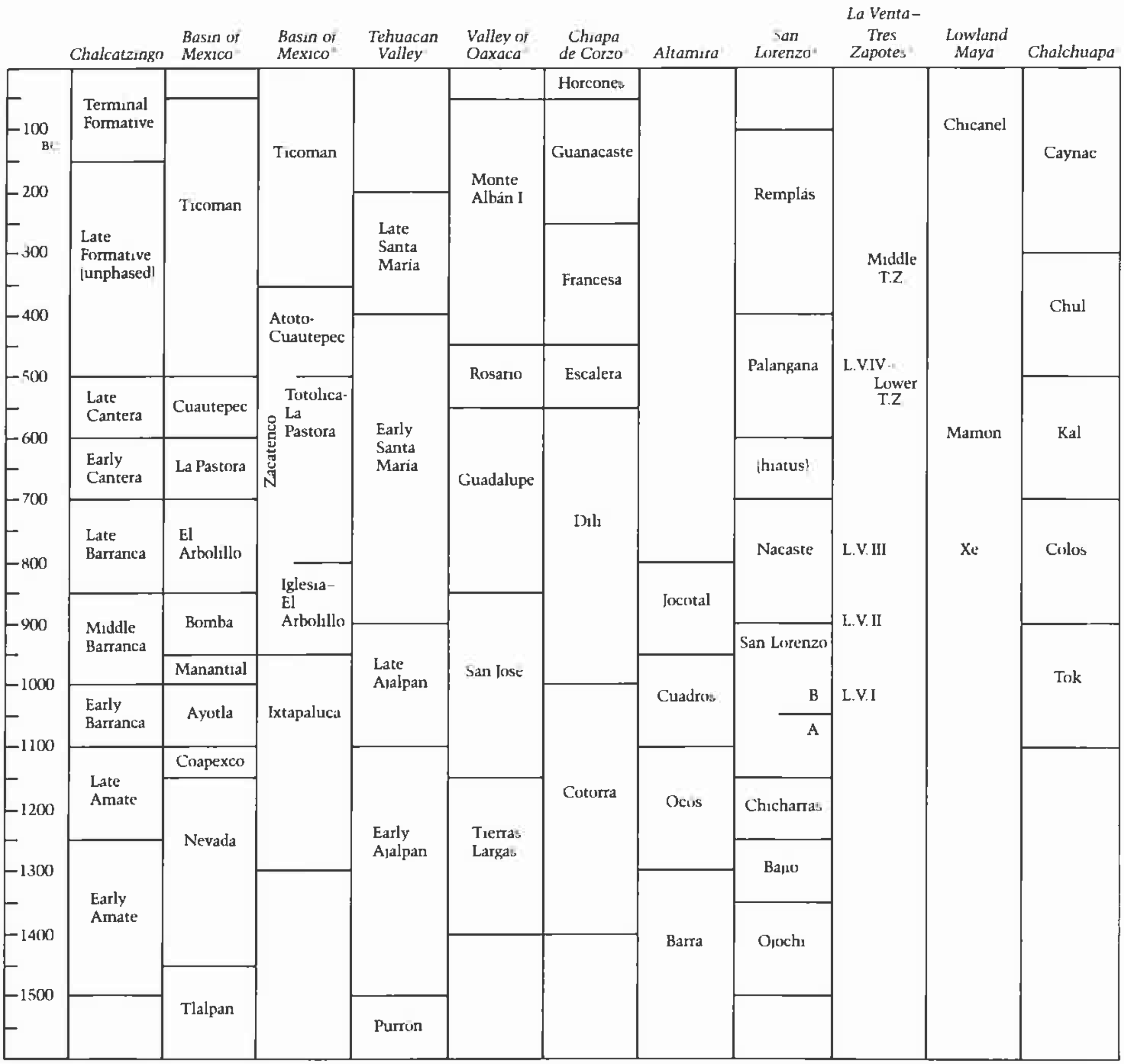
Los períodos Formativo Temprano y Formativo Medio se subdividieron en tres fases. El componente Formativo Temprano tiene el nombre de fase Amate (Temprano, 1500–1250 AC; Tardío, 1250–1100 AC). La subfase Amate Temprano representa la primera ocupación en Chalcatzingo. Los tipos de cerámica principales son los Cuautla Café, Cuautla Engobe Rojo, Atoyac sin Engobe Pulido III, Arboleda Burdo, y Tadeo Burdo. La subfase Amate Tardío continua estos tipas, y añade dos nuevos, Del Prado Rosa y Gris Esgrafiado. Añadidos menores son las cerámicas de kaolín, los tecomates, y los botellones.

El Formativo Medio está dividido en las fases Barranca (Temprana, 1100–1000 AC; Media, 1000–850 AC; Tardía, 850–700 AC) y Cantera (Temprana, 700–600 AC; Tardía, 600–500 AC). La subfase Barranca Temprana se diferencia de la fase Amate precedente por la ocurrencia de varios tipos importantes: Tenango Café, Amatzinac Blanco, Negro con Borde Blanco, Laca, Peralta Naranja, y Pavón Gris Fino. Pavón Gris Fino es un tipo que no es local. Durante esta subfase ocurren primero las vasijas con fondo redondo así como las formas de plato de comal. La subfase Barranca Medio se caracteriza fundamentalmente por cambios que presentan las vasijas Amatzinac Blanco en sus motivos decorativos. La subfase Barranca Tardía se define por un aumento en la cerámica Peralta Naranja y un aumento en la variedad de formas de este tipo, así como la presencia del Tenango Café. El Carrales Gris Burdo aparece simultaneamente.

La fase Cantera es el tiempo de población máxima en Chalcatzingo. La subfase Cantera Temprana se caracteriza por la presencia de un nuevo tipo, Xochitengo Policromo, y por un aumento en las formas del Amatzinac Blanco, las que incluyen incensarios de asa doble, pequeños tazones de cajete, y tazones de pared bastante divergentes con decoración de bordes interiores de ancho raspado e incisiones. Otras inovaciones importantes de forma incluyen las ollas Peralta Naranja y Tenango Café con cuello corto y labio rolado.

Aparecen tres nuevos tipos menores de cerámica en la subfase Cantera Tardía—Amayuca Rojizo Mingo Café Fino, y Santa Clara Naranja—en tanto que desparecen Laca y Negro con Borde Blanco. Los tipos principales de las fases Barranca y Cantera Temprana persisten. En esta subfase los marcadores de forma incluyen cantaritos y tazones miniatura en cajete.

Las ocupaciones en Chalcatzingo del Formativo Tardío y Final son pequeñas y a estos períodos no se les ha asignado fases.



a. Tolstoy 1978. b. Tolstoy and Paradis 1970. c. MacNeish, Peterson and Flannery 1970. d. Drennan 1976. e. Green and Lowe 1967. f. Green and Lowe 1967. g. Coe and Diehl 1980. h. Coe 1970. i. Lowe 1978. j. Sharer and Gifford 1970.

Figure 5.2. Comparative chronological sequences.

6. The Settlement and Its Architecture

MARY PRINDIVILLE and DAVID C. GROVE

There are several sets of data useful in reconstructing the nature of the settlement at Chalcatzingo. The most important of these are the residential and public architectural features and their distribution across the site. In this chapter the residential and public structures are described and discussed separately, and then the data are combined to provide an overall view of the site during each major cultural phase.

PUBLIC AND SPECIAL ARCHITECTURE

Early and Middle Formative period mound architecture is virtually unknown in central Mexico, and it was unreported at Chalcatzingo prior to this project. However, eight structures at the site, ranging in time from Amate to Cantera phase, can now be identified as public and/or special architectural constructions. These architectural features differ greatly from the site's residential structures in form, construction, and presumably also in function. The basic details of these structures, as well as the residential structures, have been presented in Chapter 4. Here they will be discussed in the context of the settlement.

Public Architecture

PC Structure 4

The largest and most visible architectural construction at Chalcatzingo is PC Structure 4, a 70 m long earthen platform mound forming the northern edge of the Plaza Central (T-1) terrace. The north side of this mound rises nearly 8 m above the surface of T-15 (Fig. 6.1). The platform mound is one of the few structures at the site which can clearly be identified as public architecture. Its five discernable construction stages, four of which range from Amate to Cantera phase, indicate that the mound, and by implication the Plaza Central terrace as well, was important throughout the site's history.

The earliest construction (Stage a; Figs. 6.2, B.18 level 6) is an earth and clay mound with stone facing on its lower sides. This structure, which apparently dates to the Amate phase, is over 15 m long (in the profile cuts) and 2.2 m tall. A further Amate phase rebuilding (Stage b) added another 2 m of height and perhaps enlarged the structure to the south with a further stone construction. A stone pavement extended at least 30 m southward from the mound.

No clearly identifiable Barranca phase building stage was found in our limited mound excavations. However, the proximity of the mound to Barranca phase PC Structure 5 implies a continued importance of the Plaza Central and PC Structure 4.

Building Stage c is difficult to date due to the limited data yielded by the few pits excavated into the mound. While probably Late Barranca phase, it may actually encompass several rebuildings. Stage d represents one or more Cantera phase rebuildings. Because our tests were limited to one restricted area of the mound, they do not provide data on the structure's east-west development. A fifth building stage (e) during the Classic period added a pyramid structure (T-3 Structure 1), an area of pavement, and some ball court construction to the mound's west and northwest sides (see Chapter 24). Nevertheless, the platform as it appears today is primarily the Late Cantera subphase (Stage d) configuration.

The mound today is over 70 m in length (east-west) and may be nearly as wide (see Chapter 4 for an explanation of the problems in determining the true size). It rises 5 m above the base of the original Amate phase (Stage a) mound. The upper surface (Stages d and e) covers an area of over 2000 m^2.

Our archaeological data indicate at least two functions served by the mound. First, it served as a substructure for carved stone monuments. There is no doubt that one carving, and possibly more, stood on the upper surface of the Late Cantera subphase platform. Monument 9, a large rectangular slab with a bas-relief earth-monster face (Chapter 9), was uncovered by looters on the mound's northern edge. Our excavations revealed several large faced stone blocks (MCR-5, -6, and -7; Chapter 11) on the upper east end of the platform, and fragments of several similar blocks lie beside the path which crosses the structure's east end (Fig. 6.3). From their location today it can be inferred that these latter large worked stone blocks had once been positioned atop the platform's upper surface, although their configuration is unknown. The possibility must also be considered that Monument 16, originally found by Guzman on the west (T-15) side of the El Paso Drainage, slightly downhill from PC Structure 4, was also originally placed on top of the platform.

A second definite function for the Late Cantera subphase platform was that of burial location for the community's highest ranking individuals. These are exemplified by Burials 39 and 40 (Chapter 8), the only known individuals interred at Chalcatzingo wearing jade jewelry. Our excavations also revealed a looted tomb and a crypt within the platform (Chapter 4, Figs. 4.9, 4.10).

A third possible function for the mound remains untested, namely, that it served as the foundation for public buildings. Classic period disturbances and recent plowing of the upper surface may make it difficult to ever test this possibility.

PC Structure 6

A house-like structure, PC Structure 6 is located at the southeast edge of the PC Structure 4 platform (Figs. 4.11, 4.12). At this time, it is difficult to ascertain what relationship this Cantera phase structure

Figure 6.1. PC Structure 4 mound, with T-3 Structure 1 pyramid.

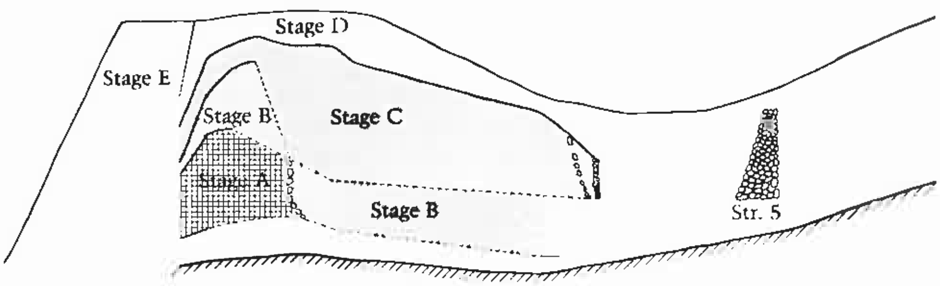


Figure 6.2. Profile drawing of PC Structure 4 construction stages; PC Structure 5 to the right.

Figure 6.3. Large worked stones at the eastern end of PC Structure 4.

had with the mound and its function. It is possible that Structure 6 was a public building functionally related to activities on the platform, but it is tentatively being categorized as a house structure (see below).

PC Structure 5

The only Barranca phase structure at the site identifiable as public architecture is PC Structure 5, an all-stone and apparently free-standing mound 18 m south of PC Structure 4. Because this structure was assigned low priority at the time of its discovery in the PC transect trench, it was not completely excavated, and therefore its exact dimensions remain unknown. It is approximately 2.7 m in height, 5 m in width (N-S) and over 13 m in length (E-W), although its western extremities are badly damaged. The structure's profile, complete with a long sloping northern face, is reminiscent of ball court ranges. PC Structure 5 is parallel to the PC Structure 4 platform, and is probably contemporaneous with Structure 4c. The sloping earth and stone construction stage on the platform (Fig. 6.2) does appear to be very similar to that of Structure 5 in size and profile, but the actual association between the two structures is uncertain, and their similarities and ball court–like appearance may be coincidental. Their exact stratigraphic relationship remains undetermined. The sloping Structure 4c face is covered with a later rebuilding which slopes downward to end at a vertical stone wall, which also has its base at the Structure 5 level (Fig. 6.2). Two inferences can be made from this later construction: first, because it sits at the same elevation, the area between the two structures was level in the past; second, the building of the vertical stone wall destroyed any real or coincidental symmetry. The identification of PC Structure 4 and 5 as related to a Barranca phase ball court remains to be settled by future archaeological investigations.

Platform Architecture

We hesitate to characterize the five known stone-faced platforms as public architecture because their exact function remains uncertain. Because they are raised platforms, they are obviously special. But it remains to be determined whether they were truly public architecture in the sense of being substructures for public buildings, or if special residences were constructed on them. Although the upper surfaces of most of them lie within the plow zone and remnants of possible superstructures have long since been destroyed, there are data which suggest that at least some of the structures may have had a residential function. It is likewise significant that three of the five platforms have associated stelae, and this perhaps assists in assessing the character of these constructions.

T-6 Structure 3

The earliest of the platform constructions is T-6 Structure 3, an Amate phase platform only partially exposed during a brief field season in 1976 (Fig. 4.18). Because the structure lies well below the plow zone and its upper surface may be undisturbed, we did not attempt to clear the platform in the short excavation time available but left it virtually untouched for future research. Only 4 m of the platform's eastern side was exposed, revealing a facing of field stones ca. 1 m in height. This platform and PC Structure 4 (Stages c and d) represent the earliest monumental architecture known at Chalcatzingo and some of the few examples reported in central Mexico.

T-6 Structure 1

The remaining four platforms are all Cantera phase constructions. The largest and most impressive of these also is located on T-6 (Str. 1), a few meters east of its Amate phase counterpart. The platform's outer face, 15.7 m long with sides ca. 3 m long, rises in two stages (Fig. 6.4), 80 cm and 50 cm in height, and represents the final form of apparently many rebuildings. The wall of the stepped second stage of the platform is also the front wall of the previous platform, with only its upper 50 cm exposed today. Other possible wall lines to the rear may be walls of earlier structures. Our excavations did not reveal a definite back wall to the platform; thus it may have been three-sided rather than a definite rectangular construction.

T-6 Structure 1 is important not only because it is a large stone-faced platform mound, but also because it is one of the few Middle Formative period structures in Mesoamerica to have a stela (Mon. 27) standing in situ in front of it. The stela, carved in bas-relief, is described in Chapter 9. Grove (1981b) believes that stelae such as Monument 27 are portrait representations, most probably of a site's chief, and that the monuments in some way commemorate those individuals. If this assumption is true, then the three platforms at Chalcatzingo with stelae in association (see below) are probably not generalized "public architecture" but are in some manner associated directly with the personage portrayed. The (possible) superstructure on the platform may have served as a residence of that personage, or as a public building used by the personage and/or his or her lineage. Likewise the entire terrace may have had a similar association with the person or lineage.

T-15 Structure 5

A platform (Str. 5; Fig. 4.27) sits near the northern edge of T-15, overlooking T-27. It is in relatively poor condition. While its length can be determined as 19.5 m, its width is uncertain, since our limited excavations concentrated on the slightly sloping front face. This face, like the other walls, is constructed of unfaced field stones and river cobbles, and varies in height from 70 to 100 cm.

Monument 21 once stood in front of this raised platform, and its original location can be determined by the stone cluster which once surrounded this now-fallen stela. This stela is important in that it depicts a female personage. Its implications are discussed in Chapters 10 and 27.

T-25 Structure 2

The third and final platform with an associated stela is T-25 Structure 2 (Fig. 7.23), a Late Cantera subphase construction which postdates the T-25 altar and patio area (see Chapter 7). The structure is 16.5 m long, 4.5 m wide, and ca. 50 cm tall. Unlike the platforms described above, it is clearly a low, raised rectangular platform, i.e., it is four-sided. It is further distinguished from the other platforms in that its associated stela (the basal stump of Mon. 23) is located by the rear of this platform's southwest corner instead of standing at the "front" (north, downhill) face of the platform.

Daub and amorphous adobe chunks imply the presence of a superstructure on the platform, and two Cantera phase trash areas suggest that the superstructure may have been a dwelling. However, the raised platform and associated stela also serve to identify this structure as special and distinct from the site's regular residences.

T-27 Structure 1

The platform excavated on T-27 (Str. 1; Fig. 4.33) is like T-25 Structure 2 in that both are definitely rectangular raised platforms and in form are more like

Figure 6.4. T-6 Structure 1 with broken stela (Mon. 27) in situ (wall in background built by project to protect the structure and stela).

raised house foundations than T-6 Structure 1 or T-15 Structure 5. T-27 Structure 1 is 18 m long and 7.5 m wide. There is evidence that the platform's original height may have been over 1 m and that erosion and plowing have reduced its height today to ca. 70 cm. Incomplete wall lines within the structure suggest that there have been several building stages. Daub and amorphous clay fragments recovered in the excavations provide evidence of a superstructure. However, no trash pits were located, nor is there evidence of a stela or other monuments on this terrace.

Other Special Architecture

T-29 Structure 1

An architectural construction which is difficult to categorize is the Barranca phase wall complex which projects northward from the upper edge of T-29 (Str. 1; Fig. 4.35). This structure apparently served as the foundation of a small artificial "terrace" ca. 20 m long and 5 m wide which jutted over the sloping T-29 hillside.

As is so often the case at Chalcatzingo, the structure's upper surface has been stripped away by erosion and plowing. The only evidence that this small terrace may have supported a structure are the fragments of clay daub and amorphous clay lumps found in the excavations. Because of the destruction of the upper surface, there is no way to ascertain the function of the presumed superstructure as a public or residential building.

T-29 Structure 1 is a Late Barranca subphase construction. On its southern side it extends slightly on to T-25 (Fig. 4.2). It perhaps can be taken as evidence of an expanding population and the need for some flat area on T-29 on which to construct a building (of whatever function). Or the construction can conversely be viewed as an expansion of T-25, perhaps related to activities involving the altar (Mon. 22) which played such an important role on T-25 during the Cantera phase.

Comments

Mound architecture and the kinds of special structures discussed above are generally unknown elsewhere in central Mexico. A few mounds and platforms, perhaps Middle Formative in date, have been reported at Cuicuilco (Heizer and Bennyhoff 1972:97–98), and a circular stone-faced Early Formative structure was identified at San Pablo in southern Morelos (Grove 1970b). It is this rarity that makes Chalcatzingo's structures so important.

Although it was limited during the Early and Middle Formative in Mexico's central highlands, public architecture was becoming more abundant to the south at this time. Adobe platforms occur at San José Mogote, Oaxaca, in the late Early Formative and Middle Formative. The late Middle Formative Rosario phase at that site includes a large plaza flanked by low platform mounds, with an elite residence at one end of the plaza and a major mound at the other end (Flannery and Marcus 1976a). Further south, both coastal and highland Chiapas have Middle Formative sites with mound architecture arranged around plazas (Lowe 1977:224–226).

Early Formative architecture at Gulf Coast Olmec centers is poorly known, but the record from Middle Formative San Lorenzo and La Venta is impressive. The rectangular plaza and its long flanking platform mounds appear to have been major architectural features at both sites (Coe and Diehl 1980:29, 388, Map 2; Diehl 1981; P. Drucker, Heizer, and Squier 1959: Fig. 4). Most of these structures seem to be earthen, but adobe brick construction and some minor use of stone facing occurs with the La Venta Complex A mounds (P. Drucker, Heizer, and Squier 1959:80, Figs. 25–28).

Chalcatzingo shows no close parallels to either the Oaxacan or the Gulf Coast architecture except in one regard. All three areas have major Middle Formative public architecture in the form of long earthen platform mounds. The upper area of the PC Structure 4 platform was the location of monumental stone carvings and the burials of high-ranking individuals. Whether such functions likewise were related to the Gulf Coast platform mounds (in particular) remains to be answered by future research.

HOUSE STRUCTURES

Sixteen incomplete structures, the majority of them apparently houses, were excavated by the project. Eleven of these date to the Cantera phase, two to the Barranca phase, two were Classic, and one was Postclassic. While the raised stone-faced platforms previously discussed may have been substructures for residences, only Formative period structures with ground level foundations will be dealt with here.

Most of Chalcatzingo's terraces have one restricted area which is heavy in Cantera phase sherds. The project's investigations into residences and residential patterns focused attention on these sherd concentrations, which were hypothesized to represent house debris and to be surface indications of houses.

Random sampling, such as was carried out in Oaxaca by Marcus Winter (1972) at Tierras Largas, was not used as a primary means of locating houses, since the project's approach was to maximize the data yield, and a Cantera phase structure was virtually assured each time a terrace's sherd concentration was excavated. This approach, on the other hand, clearly provided a sample biased in favor of Cantera phase structures. Structures with low ceramic associations or lacking surface indications may have been neglected because of this strategy.

During the excavation of structures, the major time and effort were directed to the area within the structure's foundation walls (the interior), and excavations were seldom expanded any great distance to the outside. This sampling technique may have missed features external to the main structure. A testing program was conducted on T-23 to check for features external to the houses and for other possible structures missed through the sampling biases (see below).

A basic problem encountered during the excavation of structures was simply the destruction and/or lack of preservation of the house remains. As mentioned previously, the terraces of Chalcatzingo have suffered the effects of heavy erosion. At the same time, alluvial redeposition (from higher areas on the site) has taken place. These two forces have apparently equaled each other, and over most of the site the modern surface is essentially at the same level as the Cantera phase surface. This means that Middle Formative house structure remains (walls and floors) lie within the modern plow zone, and what has not been destroyed by erosion has become the victim of the yearly plowing and planting.

No complete Cantera phase dwelling was recovered. The foundation walls have been at least partially scattered, the floors plowed away, and any artifact patterns destroyed. As will be mentioned, however, some of this destruction probably took place during the Cantera phase as well. Thus, the descriptive data presented in the following pages are generalized from all of the structures.

House Construction Size

A major feature setting Chalcatzingo's Cantera phase house structures apart from other reported Middle Formative period houses is size. The estimated average floor area within a Cantera phase house is 63 m², more than twice the area of other known Mesoamerican dwellings (e.g., Flannery 1976a).

Archaeologists have attempted to use house floor area as a means for estimating the number of people who inhabited the structure. Unfortunately, there is lack of agreement as to the appropriate figures to use for these calculations. Raoul Naroll (1962) suggests a figure of 10 m² per person. This estimate seems too low to other investigators (e.g., LeBlanc 1971:211; Winter 1972:166). Using Naroll's "low" figure would provide an estimated household population of six to seven individuals. Estimates of this type, when based upon household floor area, rest on the assumption that the entire structure functioned as a residence. That assumption has not been demonstrated for Chalcatzingo's Formative period houses (see below).

T-9B Structure 1 is the only Barranca phase house for which any good data are available. Its floor area, ca. 27.5 m², is considerably smaller than that of Cantera phase structures. If this house, which is Early Barranca subphase in date, is typical of the phase as a whole (and the fragmentary N-2 house suggests T-9B Structure 1 should not be considered typical in terms of construction), then there was a substantial increase in average house size between Early Barranca and Cantera phases.

Walls and Wall Foundations

Two types of stone foundation walls are characteristic of Late Cantera subphase houses. They are typically found together in the same house structure and seem distinctive enough to serve to differentiate Late Cantera subphase walls from those of other periods.

One type of foundation wall is characterized by an alignment of small cobbles (ca. 20–40 cm diameter). Although these walls can be up to three rows in width, a single row is the common practice (Fig. 6.5). These foundation lines appear to correlate with wattle and daub wall construction. Norman Thomas (1974:7, Fig. 5), using ethnographic examples, shows that such stone lines are usually placed at the base of wattle and daub walls to retard erosion. Our excavations did not find any postmolds or wall trenches adjacent to the stone lines, but daub fragments were often recovered.

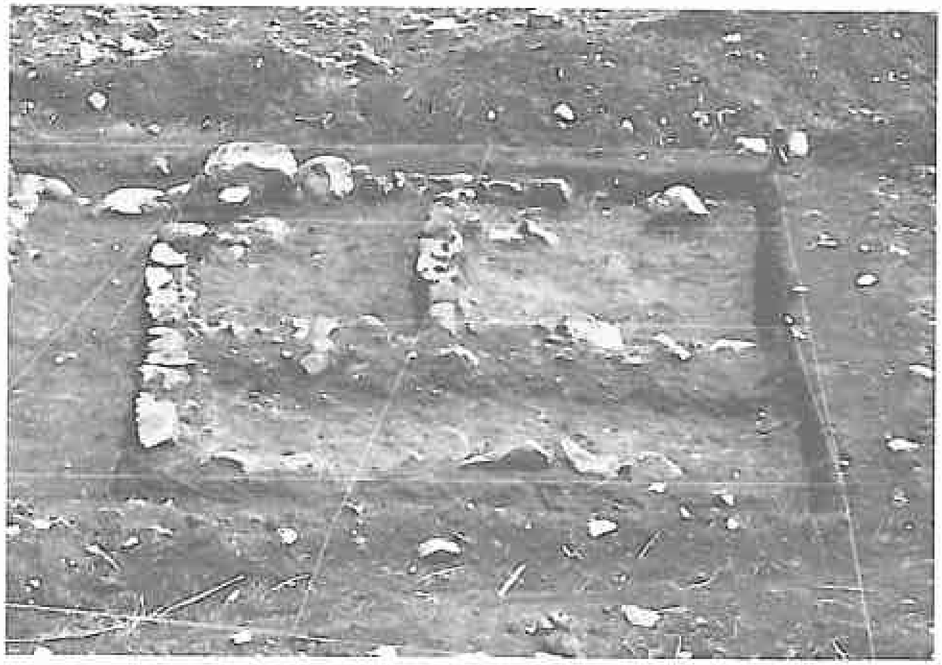


Figure 6.5. Wall line composed of a single row of stones, PC Structure 2.

The second and more common foundation wall type is constructed of large (50–80 cm) stones laid to present a relatively flat upper surface (Fig. 6.6). This larger and heavier foundation seems to have served as the base for adobe brick walls. There are three variations to this wall type: (1) one row of large stones edged on both sides by smaller cobbles; (2) one row of cobbles edging a row of large stones; and (3) a double row of large stones. This last variation is often two courses high.

The data strongly suggest that both wall types appeared together in Late Cantera subphase houses. PC Structure 1d has two foundation walls built of large stones, indicating that these supported adobe brick walls. The missing north wall is presumed to have been of similar construction. The west wall line, largely destroyed, was constructed of small stones, implying that the wall was of wattle and daub. Numerous associated burned daub fragments support this assumption. Data available from other Late Cantera subphase house remains confirm that the common construction pattern must have been three walls of adobe brick and a fourth wall of wattle and daub. A possible exception to this is PC Structure 2, which may have had only wattle and daub walls.

According to an informant from the village, present-day weather patterns bring cold, rain-laden winds and storms from the northeast, while winds during the hot dry season originate from the southwest. For that reason the east sides of houses today are constructed of heavy adobe brick walls to block the cold and rain, while more open walls on the west side catch breezes during the hot months.

Unfortunately, most excavated houses were not complete enough to ascertain the entire wall pattern (see Chapter 4 maps). However, several good examples, such as PC Structure 1d, T-23 Structure 1b and c, and T-4 Structure 1, all seem to have their long adobe-walled sides (as ascertained by stone wall foundations) oriented toward the north and east (against the cold rains) and their more open sides facing westward.

T-23 Structure 1b was the only house in which firepits were discovered. The firepits were located in the vicinity of the wattle and daub wall (its hypothesized location), suggesting that this side of the house was at least partially open for ventilation purposes.

The remnants of an Early Cantera subphase house floor with 3.5 m of wall base remaining (PC Str. 1a) were found at 140 cm below PC Structure 1d. In contrast to the Late Cantera foundation walls, this wall was constructed of a double row of irregular cobble-sized stones. Five post-

Figure 6.6. Wide foundation wall line, PC Structure 3.

Figure 6.7. T-9B house excavations showing wall line boulders protruding into plow zone.

molds were found within this foundation, showing the upper wall to have been of wattle and daub (other data indicate this as well).

The Barranca phase structures found on N-2 and T-9B likewise show different foundation construction techniques. The T-9B house is outlined by a wall composed of large stones set side by side but not laid out to create a flat upper surface. The impression given is simply of stones set side by side (Fig. 6.7). The wall is single in some areas and double in others (Fig. 4.20). Within the structure apparent room areas are also delimited by rows of the irregular large stones. On the other hand, the few segments of walls remaining of the N-2 structure were single rows of small cobble-size stones (Fig. 4.37). Both the T-9B and N-2 structures were probably of wattle and daub, since daub fragments were found in the excavations of both areas and no regular stone foundations occur.

The only further point of comparison that can be made is with a segment of a Barranca phase wall uncovered in the Plaza Central cross trench. This wall, which sits upon *tepetate*, is constructed of large stones in the manner of the T-9B walls. It is highly possible that foundation wall construction changed during the Barranca phase, and the T-9B and N-2 walls may be reflections of these differences, the N-2 walls being far more similar to those of the Cantera phase.

Three types of evidence were found relating to the construction materials of the upper walls: adobe bricks, amorphous adobe chunks, and daub fragments. There is strong evidence for the manufacture and use of rectangular adobe bricks during the Cantera phase. One unusual and surprising set of evidence comes from Cave 4, high on the western face of the Cerro Delgado, where excavations revealed a Cantera phase artificial floor of adobe bricks (Fig. 4.39). Rectangular adobe bricks were also found in our regular excavations, including a complete brick recovered from T-23 Structure 1a.

A second type of artifact which serves as evidence of the use of adobe bricks is the large and often amorphous chunks of adobe recovered during house area excavations. These chunks lack plant impressions (so common in daub). An obvious problem in identifying adobe bricks is that they are only sun dried and tend to "melt" if exposed to rain. In some instances these melted bricks can be identified as such, while at other times they may simply appear as amorphous lumps.

While some Cantera phase bricks were

made of pure adobe clay, our data indicate that others were manufactured around a core of *tepetate*, or were tempered with pieces of *tepetate*. Older villagers at Chalcatzingo remember when such techniques were used in adobe brick making several decades ago. While lacking cane impressions, recovered adobe chunks had grass impressions and, in addition to *tepetate*, inclusions of charcoal fragments, pieces of burnt clay (daub), and sherds. Some chunks in our sample have finger impressions left during the manufacturing process. The presence of charcoal, daub, and sherds within adobes suggests that they were manufactured from soil gathered near dwellings as opposed to the practice today of gathering the soil outside of the village. The implications of this hypothesis are discussed below.

The mud plaster or daub placed over the cane sides of the houses is easily identified when found in archaeological contexts because of the cane impressions left in the mud fragments (Fig. 6.8). At Chalcatzingo the impressions serve to identify the cane as *Tithonia tubaeformis* of the Compositae family. These plants are abundant along field borders and the hillslopes of Chalcatzingo. Today, as in the past, their tall stems are often as thick as a human thumb.

Figure 6.8. Daub fragments in situ, T-23 Structure 1.

Most daub fragments show only one row of canes. However, some thicker fragments (ca. 20–25 cm thick) appear to have covered a double row. Daub fragments with concave corners demonstrate that structures were plastered not only on the outside but on the interior as well. Some fragments also show the plastering to have curved down from the wall and onto the floor area. This is confirmed by the mud plaster found in situ at the floor-wall junction of PC Structure 1a.

It is important to mention that the majority of the daub fragments recovered were at least partially hardened by heating. This, along with other data, indicates that those structures had burned at one time.

Traces of white pigment were found on the outer surfaces of many Cantera phase daub fragments, showing that the structures had been painted. Tests with hydrochloric acid indicate that the white pigment is not a lime (calcium) based paint. It is highly probable that the pigment is kaolin clay. A kaolin source exists very near to Chalcatzingo (Chapter 23) and was apparently exploited during the Middle Formative.

Daub fragments are occasionally found adjacent to the stone foundation lines which we believe supported adobe walls. It is possible that the daub fragments became scattered throughout the structure during its burning, destruction, and the subsequent removal of the debris. The possibility must also be considered that portions of these walls were also wattle and daub; the adobe wall may not have run completely from floor to roof, but could have been topped by a wattle and daub section. We prefer the former explanation.

Roofing

No good archaeological evidence was found to indicate the type of material used for roofing the Cantera phase house structures. Occasional daub fragments with grass rather than Compositae impressions could be from wall areas adjoining a grass-thatched roof, but may also simply be from grass growing along the base of the wall and accidentally caught up during plastering. Both grass and Compositae are abundant on the site. They may have been used together as roofing material, or grass thatch may have been used alone.

Floors

House floors were rarely preserved at Chalcatzingo. Although we were able to distinguish three different types of floors within Cantera phase structures—(1) dirt with a subfloor of small stones, (2) hard-packed dirt with no subfloor layers, and (3) mud plaster—in most instances the house floors could not be identified. For example, although we knew exactly where the floor in PC Structure 2-1 should have been because we had a preserved burned section present, no floor could be identified even immediately next to the preserved floor area. It is quite possible that in many instances the house floors were purposely destroyed. Data leading to this hypothesis are presented in the discussion of house destruction, below.

Room Differentiation and Activity Areas

Interior walls within several house structures provide evidence that both Barranca and Cantera phase houses were divided into rooms. These walls were probably of mud-plastered cane, since Compositae-impressed daub fragments were found near the junction of two interior walls of T-9B Structure 1. In a few instances, minor variations in artifact patterns among the different rooms can be ascertained, allowing some speculation as to room use and activity areas.

Three room areas can be differentiated within the Barranca phase structure T-9B

Structure 1 (Fig. 4.20). Room 1 runs the entire length of the house's west side. Obsidian fragments and core flakes within this room indicate that obsidian working or an activity requiring obsidian tools was conducted here.

An area of burned earth is found midway in the room, near the threshold stone marking the door to Room 2. No ash or carbon was associated with the feature. We cannot assume that this area of burned earth is a hearth, especially since hearth features, either as firepits or raised hearths, are rare at Chalcatzingo. However, all house structures contain brazier fragments, and those at T-9B Structure 1 are found in rooms other than where the burned earth was found.

These braziers are apparently cooking braziers and were the common means of cooking during the Barranca and Cantera phases. Brazier fragments are frequently found in association with charcoal flecks in the surrounding soil. These braziers are unusual in that the tripod supports which serve to hold vessels above the coals are zoomorphic (Fig. 13.68).

Rooms 2 and 3 of the structure contain ceramic vessels, both whole and broken, found on or slightly below the estimated floor level (apparently destroyed by plowing). One vessel was found within the exterior foundation wall of Room 2. Both Rooms 2 and 3 lack the quantity of obsidian found in Room 1, implying that they functioned for activities such as sleeping or storage, or for activities which required constant cleaning. The presence of vessels in these rooms tends to imply a storage function.

While it is not certain that the PC Structure 2 complex had residential functions, it, too, is clearly divided into separate room areas. Three rooms occur in Structure 2-1 and at least two more in Structure 2-2. Room 2 of Structure 2-1 (Fig. 4.7) is the largest of the identifiable rooms. It may even have contained a small partition wall at its western end. The only subfloor burials (nos. 41–50) in the PC Structure 2 group are located beneath Room 1.

Obsidian cores were found in Rooms 2 and 3. Rooms 1, 2, and 3 all contained in the room fill a scatter of both worked and unworked jade fragments and drill cores. Room 4 had two anthropomorphic heads from cooking braziers, and a scatter of charcoal. These latter artifacts indicate a possible cooking function for this room.

The data from the PC Structure 2 complex suggest that workshop activities were carried out here. The presence of subfloor burials and the fragments of cooking braziers indicate a possible residential use as well.

T-23 Structure 1 represents the intermixed remains of at least three Cantera phase houses (essentially rebuildings of the same structure). Each rebuilding destroyed portions of the previous structures, and Classic period intrusive features further complicate the interpretations (Figs. 4.30, 6.9–6.11).

Only the southern portion of T-23 Structure 1a, the earliest of the three houses, is preserved (Fig. 6.9). Three probable room areas can be defined by the presence of interior walls 12 and 13. Two complete vessels, as well as fragments of hollow ceramic spheres and an obsidian "blood-letter," were found on the "floor" of the westernmost room (Room 1). The 4 m wide middle room (Room 2) still has a stone subflooring present in some areas. There is one subfloor burial (no. 80), and two manos and an obsidian scraper were found at the approximate level where the floor should have been. The eastern room (Room 3) lacked stone artifacts. In the area where the northern end of the house once existed, excavations uncovered obsidian workshop debris including cores, blades, and debitage. The overall distribution of artifacts for Structure 1a suggests domestic activities (vessels and grinding stones) in the area where wall remains still exist and workshop activities in the area immediately to the north.

The second of the three structures, Structure 1b, is somewhat more complex, with two east-west walls, a small raised "platform" structure on the east side, and one probable room partition (Fig. 6.10). While there may be two structures here, possibly even structures with different functions (due to the small, low platform), we cannot unequivocally classify them as separate and thus are tentatively considering them together.

The structure contains two firepit features (Feas. 2, 6). These features, located at the north end of the house (which we hypothesize to have had a wattle and daub wall), appear as shallow pits lined with burned rock. The interiors of the pits contained lenses of charcoal and ash, small stones, and sherds. Both pits had been filled in to the top with additional small stones. The circumference of each pit and the floor area of the immediate periphery had been baked by heat. An area of burned earth was found between the firepits, adjacent to the foundations of Wall 7 (see below).

No seed or bone remains were recovered in the flotation samples taken from the firepits and surrounding areas, and their exact function (cooking or otherwise) remains uncertain. Charcoal from each feature was radiocarbon dated. The date from the Feature 2 sample (N-1951) is 610 ± 70 BC, and that from Feature 6 (N-1952) is 620 ± 85 BC. The features are separated by Wall 7 (implied by the foundation stones). This fact may be insignificant, since the firepits may not have been used at the same time, or again it may reflect a separation of activities.

Two firepits, used at the same time and separated by a partition, would have interesting implications for the composition and structure of the household, suggesting perhaps two families within the structure. However, we have not carried out an exhaustive search of the ethnographic record looking for modern parallels. It is also possible that neither firepit functioned for cooking, particularly in view of the presence of brazier fragments within this house. Whatever the function of the firepits, the fact that they are located in the eastern portion of Structure 1b, while obsidian debitage and cores were found in the structure's western area, does imply a separation of activities.

Structure 1c, the uppermost of the T-23 houses (Fig. 6.11), has interior dividing walls, but again no floors are clearly identifiable. The most interesting feature within the house is Feature 5, a stone circle filled with ash, small heat-cracked stones, and quantities of daub fragments with Compositae imprints. The feature is not a firepit because the earth within the stone ring is not burned or baked, and daub fragments would not normally occur within a firepit.

We believe that Feature 5 represents the remains of a collapsed *tlecuil*, a raised cooking hearth with a stone foundation and mud-plastered cane sides. Raised cooking hearths, constructed of stone or adobe, are still used in Chalcatzingo and throughout much of rural Mexico today. Whether the presence of firepits, cooking braziers, and a raised *tlecuil* within the three Structure 1 houses is significant in terms of an "evolution" of cooking methods is doubtful. Cooking braziers appear to have been the common means of food preparation throughout the site.

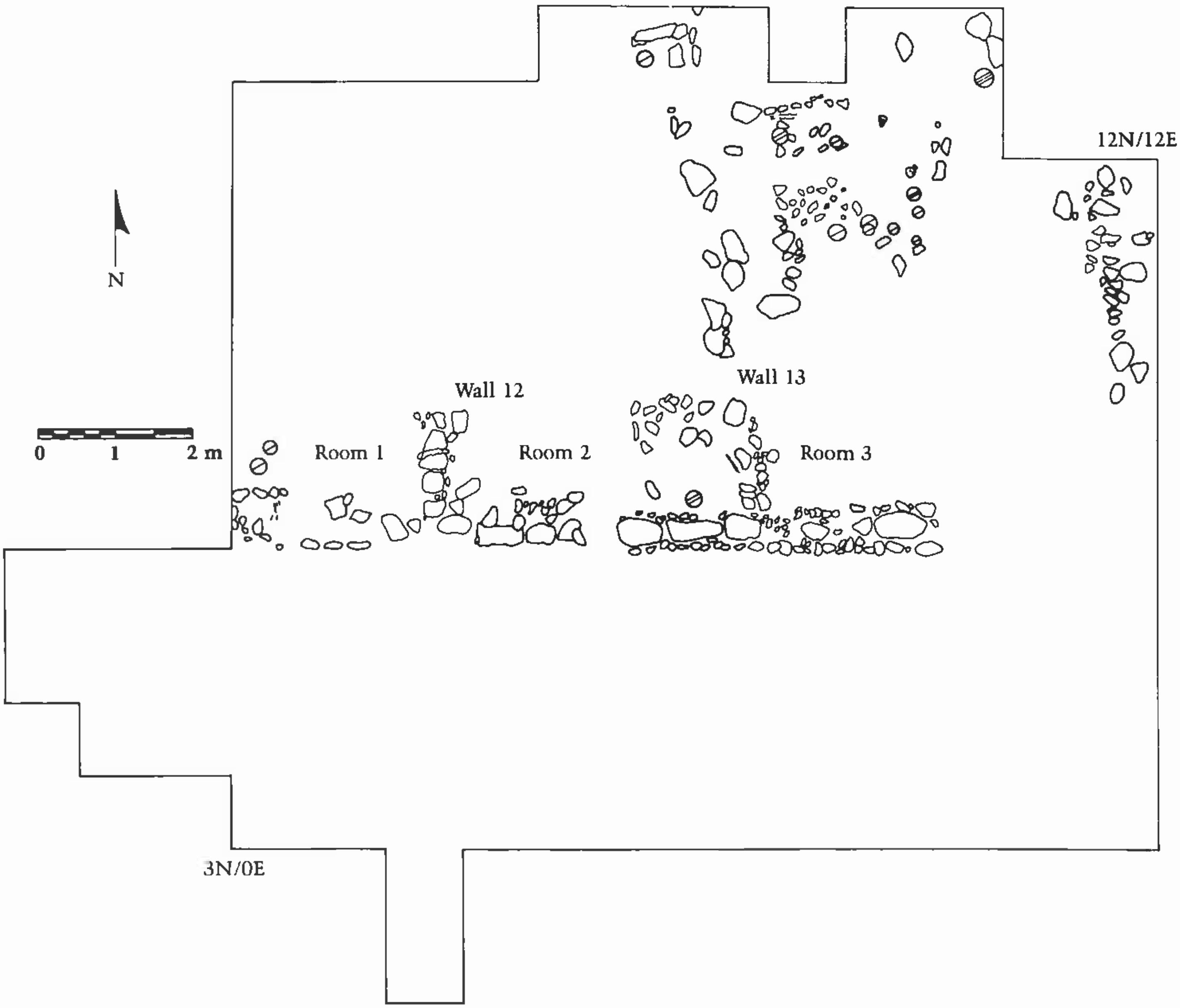


Figure 6.9. Plan map of T-23 Structure 1a.

Activity areas within Structure 1c are difficult to define, as the structure sits close to the plow zone and has been damaged both by plowing and by Classic period disturbances.

The Cantera phase structures on T-11 (Strs. 1 and 2; Fig. 4.21) demonstrate a different type of hearth area, in this instance separated from the main house structure. The main structure is Structure 1, while Structure 2 is a smaller building adjoining Structure 1 to the southeast. Structure 2 includes a feature composed of an area of burned rocks within which smaller rocks are patterned in a manner to suggest that they may have functioned as fire dogs. Charcoal specks, a burned stick, three vessels, and a broken metate were also found here. We know that cooking areas detached from the main house structure are common in central Mexico during the ethnographic present, but this is our only example at Chalcatzingo.

Nonsubterranean Storage Areas

In speaking of storage facilities, two different types of storage need to be considered. The first is the regular household storage of goods needed as part of the normal daily activities. Included within this category would be the storage of agricultural products such as corn. The second type of storage can be called "warehousing," meaning the storage of quantities of an item or items for exchange purposes. This latter type of storage must be considered when attempts are made to explain the large surface area covered by Cantera phase houses. Part of their interior space may have been utilized for warehousing if the site was heavily involved in redistribution and/or exchange networks.

The possibility that agricultural products were stored within house structures was tested by taking pollen samples from room "floors" in various structures

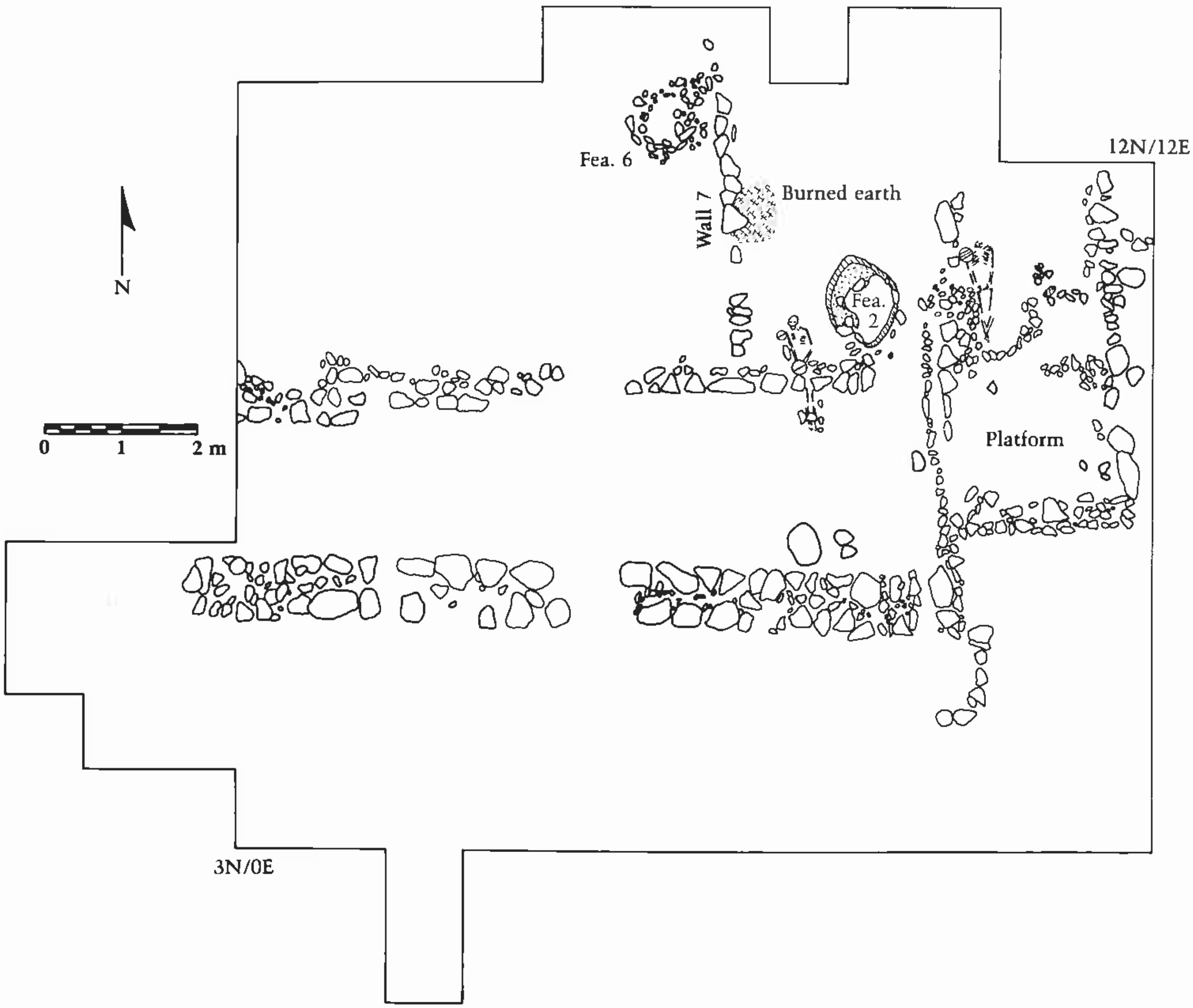


Figure 6.10. Plan map of T-23 Structure 1b.

(PC Str. 1, T-9B Str. 1, T-23 Str. 1a). The results show no appreciable difference in the pollen counts, suggesting that corn (in particular) was not stored within the rooms tested. Some rooms (e.g., T-9B Str. 1, Room 3) contain minor quantities of whole vessels, possibly implying the use of such rooms for storage.

Storage structures external to the residence are also probable. T-11 Structure 2, which may have served for cooking, also has an area which contained three vessels, two metates, and two manos. Due to the nearness to the presumed cooking area, this area was probably used to store food preparation artifacts. Other evidence of external structures is tenuous. Small wall segments north and west of PC Structure 1d may represent the flimsy foundations of short-term constructions used for storing corn or other items.

Trash Deposits

Trash disposal is obviously an important activity in any household, and features related to trash disposal are often part of what Winter (1976) has termed the "household cluster." Whether due to cultural reality or sampling biases, our only example of a subsurface pit excavated into bedrock comes from T-25 (Fig. 6.12), where it had been associated with a Barranca phase house. It may have originally functioned as a storage pit, but when excavated it contained trash and a human burial (no. 103). While such pits were commonly used for trash disposal at other Formative period sites, few were found at Chalcatzingo.

A subfloor trash pit (Fea. C-1) related to PC Structure 1c intruded downward (into subfloor fill) from about 60 cm below surface, a level which may have been an earlier floor. Included in the trash deposit were sherds, amorphous adobe lumps, two metates broken in half, and a stone sculpture (Fig. 20.12).

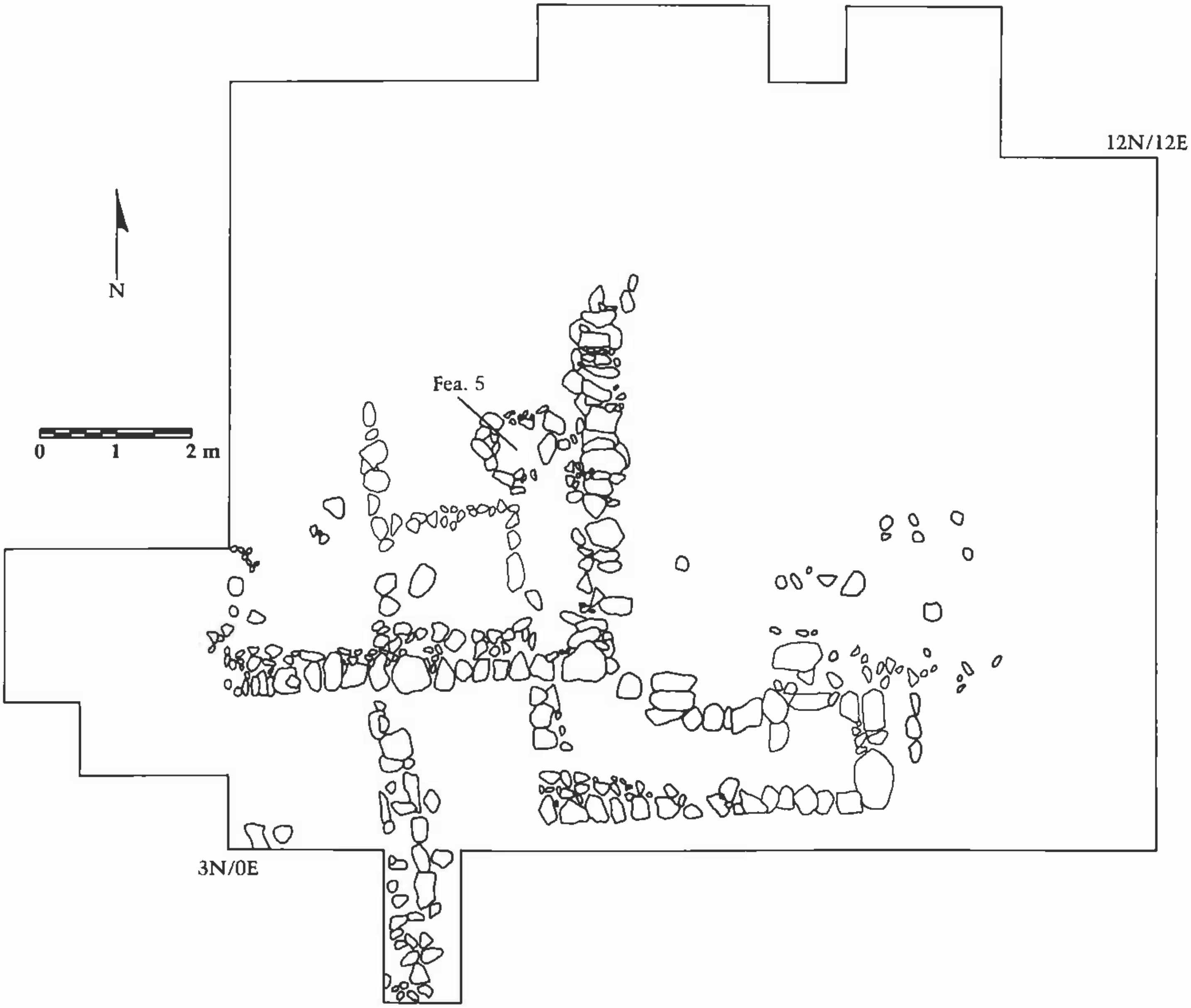


Figure 6.11. Plan map of T-23 Structure 1c.

The trash deposit associated with the T-23 Structure 1 complex is different from those above, since it apparently represents trash taken from Structure 1 and dumped in a low area (T-21) downhill from the house (Fig. 4.29). The deposit is stratified but exhibits no discernible temporal differences. It contained sherds, figurine fragments, worked stone, and animal bone, and it covered a disturbed burial (no. 78). A radiocarbon date on charcoal (N-1950; 830 ± 85 BC) is earlier than dates recovered from the firepit features of Structure 1b. However, the ceramics excavated from within the Structure 1 houses show no temporal differences from those of the trash pit, and they are clearly contemporaneous and related.

Burials

The majority of Chalcatzingo's Cantera phase burials occur beneath house subfloors and are presumed to be the remains of people who inhabited those houses at least sometime during their life. A sharp distinction in the quality of the grave and the mortuary furniture exists between the subfloor burials of PC Structure 1d and those of other houses. This is one major factor in the identification of Structure 1d as an elite residence during the Cantera phase (see Chapter 8).

Several anomalies exist in attempting to relate burial data to data gathered from the house excavations. Not all Cantera phase burials were within house subfloors (see Appendix C). Over twenty burials found on T-25 are unassociated with a house. Did these people come from various households? Also there is clearly a marked discrepancy between the quantity of burials found with PC Structure 1 (thirty-eight) and other houses (e.g., T-23 Structure 1 has seven burials).

If all members of a household were buried beneath the house floors, then

***Table 6.1* House Population Estimates Using Floor Area (Based on Naroll's 10 m²/person)**

Structure	*Floor Area (m^2)*	*Estimated Population*	*Subfloor Burials*[a]
T-9B Str. 1	36	4	3
T-11 Str. 1	5	5	1
T-23 Str. 1c	63	6	7
PC Str. 1d	84	8	38[b]
PC Str. 2	63	6	10
T-4 Str. 2	49	5	5

[a]This table is worthwhile only if the tenuous assumptions are made that all individuals within a house unit were eventually buried within that unit and that all burials are essentially contemporaneous with that house floor.

[b]Shows either great time depth or that this was a special burial location.

Figure 6.12. Subterranean storage pit, T-25.

perhaps a greater number of burials should be expected, but in fact few were found. The correlation between household burials and Naroll's formula for estimating household populations is close (see Table 6.1), but using such a correlation would imply a house usage of the lifetime of one family.

It is unfortunate that most burials were in such poor condition that they could not be analyzed to determine age and sex. It might be that persons of certain age sets or sex received burial elsewhere. The same could apply to individuals of a certain descent group or lineage. Such differences are reflected in the Early Formative burial data from Oaxaca (Flannery and Marcus 1976b:381–382) but have yet to be as clearly defined in the Chalcatzingo data.

House Destruction and Rebuilding

Chalcatzingo's houses are like those of many other Formative period sites in Mesoamerica in one important aspect—they were destroyed by burning. The evidence for this is the quantity of burned daub recovered in excavations. Every Formative period house excavated at Chalcatzingo had fire-hardened daub fragments in association. In houses which show several rebuildings (e.g., PC Str. 1, T-23 Str. 1), the foundation walls of *each* building stage have burned daub associated with them.

These data indicate that the burning of house structures was a common occurrence. It is unreasonable to assume that houses burned down accidentally with regularity, or that the houses were periodically put to the torch due to hostilities. No burned artifacts are ever found within the houses, as should be in the case of houses which were set afire without the consent of the occupants. The burning of house structures thus appears to have been an intentional act by the inhabitants. As important as the destruction is the fact that a new structure was quickly rebuilt in the same location.

A basic sequence of destruction and rebuilding can be deduced from the data from the excavation of T-23 Structure 1, the complex set of house foundations which represent a Cantera phase structure burned, rebuilt, and enlarged at least twice. The sequence is based on changes in house foundations as evidence of rebuilding. However, it is highly possible that houses were burned and then rebuilt on exactly the same foundation walls, with no such changes as exhibited in T-23 Structure 1. For example, while T-9B Structure 1 reveals no clear evidence of rebuilding, burned daub fragments occur in the subfloor fill, and there is no reason to believe that this daub is not from an earlier rebuilding of the structure. Therefore, while we can delimit two rebuildings of T-23 Structure 1 (three sets of foundations), this should be taken as a minimal number.

As mentioned, there is no evidence to indicate that the houses which were burned contained household (or other) objects at the time of the fire. The contents of the structure were removed prior to setting the structure afire. How much the house was dismantled at that same time cannot be determined. It is possible that the major roof support poles and beams were removed for reuse (their burned remains were never found in the excavations), and the roof allowed to collapse into the interior of the house before burning. Adobes from the walls may also have been removed and only broken fragments left in the fire area, since fired broken fragments are found, while baked complete bricks are rare. It is obvious that the wattle and daub walls were left to burn.

Following the fire, the entire area was cleaned thoroughly and the trash deposited somewhere away from the house site. The trash deposit on T-21 (a deposit related to the T-23 structure) included burned daub, although these fragments could represent minor debris which became included in the trash over a period of time. The subfloor trash pit (Fea. C-1) in PC Structure 1c likewise contained some burned daub. The floor area preserved by burning in PC Structure 2-1 ends relatively abruptly, suggesting that at this time sections of the floor may have been torn up. An alternative possibility is that the floors were removed prior to burning, possibly when the roof supports were taken down. Because foundation walls on various structures at the site in addition to T-23 Structure 1 are missing, it is probable that at this time too some stone foundations were dismantled and the stones reused in constructing the foundations for the new structure.

Following the clearing of the major debris from the house area, the area was leveled, leaving a cap of ca. 10–20 cm of fill overlying the foundations of the old structure. This fill material is white with ash and contains burned daub and adobe fragments, indicating that it derives at least partially from the area of the fire. Surprisingly, the fill lacks significant quantities of charcoal.

Although a cap of fill normally overlies the old foundation walls, some of these foundations were occasionally reused for the new structure. T-23 Structure 1 shows that with each rebuilding the structure enlarged to the south, suggesting that one possible factor in demolishing and rebuilding a house was the need for increased floor area.

In addition to the desire for a structure with greater space, other factors could lead to the decision to rebuild. One factor is obviously that neither adobe nor wattle and daub structures have great longevity. Evon Vogt (1969:90), using data from Zinacantan, estimates that a wattle and daub structure in that region will last twenty-five years, and an adobe house perhaps a decade longer. Adobe structures in eastern Morelos could have had a slightly greater life span because of the area's drier climate. Some adobe houses in the area have been standing for half a century, and while periodically reroofed and replastered, they are rebuilt only when the occupants desire a larger or more "modern" house.

As Vogt's data indicate, wattle and daub houses are less durable and cannot be rejuvenated with simply another coating of mud plaster (as adobe structures can). The estimate of twenty-five-year life span for wattle and daub structures in Zinacantan is related to structures in which the wattle is wooden sticks and poles. Chalcatzingo's constructions utilized Compositae stalks, which deteriorate quickly, and the structures would probably last no more than a decade at the most.

In addition to normal deterioration, wattle and daub constructions and the thatched roofs of adobe structures soon become the home of a variety of insects and vermin. Although this may not have been a primary factor in the decision to rebuild, it could have been contributory. There are obviously other factors which may have entered into the decision, some of which may not be revealed by the excavation data. A hypothetical example can be made through an analogy to Grove's explanation (Grove 1981b) of Olmec monument mutilation. Grove believes that at the death of a site's chief, monuments related to the chief were ritually destroyed. It is likewise possible that a house was destroyed at the death of the head of the household, although archaeologically this would be difficult to test on the basis of the present data.

Comments

Because Chalcatzingo's house structures can best be understood within the perspective of the overall settlement pattern at the site, a detailed discussion is provided later in this chapter, and only a few comments need be made here.

The house structures at Chalcatzingo during the Cantera phase are considerably larger than others reported in the literature for Mesoamerica. The average floor area is slightly over 60 m^2. A study by Barbara Ayres and John Whiting (1968:124) has demonstrated that 96 percent of the societies in which house floor area exceeds 200 ft^2 (18.5 m^2) are characterized by extended families, status distinctions, or both. The status distinctions (or social ranks) at Chalcatzingo are best defined by burial differences and are discussed in Chapter 8. That Chalcatzingo's unusually large houses were occupied by extended families may be a further logical assumption.

The possibility that Chalcatzingo's houses were large because they also served a warehousing or storage function must not be overlooked. The fact that the excavations of these structures did not uncover caches of nonperishable artifacts or raw materials does not negate the possibility that some areas of the structures functioned for storage. In fact, it is highly improbable that any stored items would have been left to be later found by archaeologists, because a structure was emptied prior to its destruction and also because floor areas are seldom preserved.

Within the houses, general activity areas have been identified. Each house, including PC Structure 1 (the elite residence), showed evidence of obsidian working areas, indicating that each household made many of its own tools. Blade production may have been more restricted, however. Robert Santley (1977a) has suggested that one or two part-time obsidian specialists could have produced a sufficient supply of obsidian tools for a population the size of Chalcatzingo's (see below), and thus it is possible that any additional obsidian knapping at Chalcatzingo was being done on a scale to permit export of the finished blades.

The large concentration of debitage found on T-37 (Chapter 19) is clearly the debris from an obsidian workshop which was probably located near the concentration. This great quantity of debitage may imply that if an export workshop was located at Chalcatzingo, it was related to only one or a few house structures, and that the obsidian knapping activities within the other houses were primarily for the use of those households.

The tentative identification of other activities with specific structures can also be made. PC Structure 2 appears to have been involved in the processing of iron ore into red pigment and in the manufacture of green stone objects (Chapter 23). S-39 may have been an area of ceramic manufacture (Chapter 16), and Mark Harlan (1979:488) has suggested that T-24 had a figurine workshop.

ARCHITECTURAL ORIENTATIONS AND ASSOCIATIONS

There is increasing interest today in the orientation of sites and the various buildings within a site. The best data obviously come from Classic and Postclassic period centers, for not only do they have greater quantities of architecture than Formative period sites but they have also undergone more intensive excavations and thus have more data available. Data on Formative period sites are still rare, and the nature of the site orientations therefore poorly understood. While there is a general assumption that the site alignments are probably astronomical, there have been suggestions that a lodestone compass may have been used on the Gulf Coast (Carlson 1975). This hypothesis remains to be stringently tested against regional magnetic declination differences and changes through time.

Chalcatzingo's alignments are presented in Table 6.2. Several explanations are possible for the various orientations, but we have yet to subject any to the rigorous testing they would need. Our one attempt (1972) to observe the sunrise of the summer solstice was frustrated by a cloud-laden sky and a drenching rainstorm.

The greatest problem in dealing with possible astronomical orientations at the site is that of the horizons. The eastern horizon for the main site zone is the Cerro Delgado, and the southern horizon is similarly dominated by the Cerro Chalcatzingo. Only the northern and western horizons are unobstructed, as of course is the view from atop the Cerro Chalcatzingo. The saddle between the two *cerros* could also have been important in astronomical observations.

Orientations do not have to be astronomical. The persons responsible for erecting the houses and/or public/elite structures could have oriented them to a landmark, although this is unlikely since orientations are not consistent. A major landmark, the volcano Popocatepetl, is N19E from the site but does not appear to have served as a point of orientation. It is also possible that some buildings were simply oriented to the natural topography of their field or terrace.

Amate Phase Orientations

Only two structures, PC Structure 4a–b and T-6 Structure 2, together with a wall section of unknown function (PC Structure 6a), are known to date to the Amate phase. PC Structure 4a–b, buried beneath the Cantera phase platform mound (PC Str. 4d), is exposed only in profile, and the short (1 m long) section of stone facing was insufficient for measuring the alignment. The PC Structure 6b wall has an orientation of N84½E (all orientations are being given to true north), while the south wall of T-6's Amate phase platform (Str. 2) is aligned N69½W.

Barranca Phase Orientations

The earliest Barranca phase constructions are a wall line exposed by the PC transect trench (PC Str. 7), which is too short to measure accurately (N40W ± 10°), and the site's major terraces. While these latter could simply be aligned with the topography of the original unmodified (Amate phase) hillslopes, the regularity of their front faces suggests otherwise. After nearly three thousand years of erosion and other modifications, their original orientation is obscured, but those west of the El Paso Drainage (T-15, T-17, and T-23) run essentially east-west (ca. N84W). The reasons for such regularity could have been ease of construction, erosion control, or an orientation toward a feature in the landscape or heavens.

As with Amate phase structures, the Barranca phase sample is too small to be meaningful. PC Structure 5, a stone construction facing north toward the PC platform mound (Str. 4), has an approximate orientation of N87½E. We have no data on the orientation of PC Structure 4 during the Barranca phase. The alignments of the T-9B house are difficult to measure because of the irregular nature of its walls of large stones, but are approximately N4½E. The late Barranca subphase platform-like structure, T-29 Structure 1, has two clusters of readings taken from its substructure walls: N15½W and N75½E.

Cantera Phase Orientations

The orientation of structures during the Cantera phase is remarkably consistent, which suggests that these alignments were purposeful. A significant point is that the consistency is not simply among the public/elite structures but is found in the domestic architecture as well. In other words, it was a community-wide pattern shared by the architects of the stone-faced platforms and the builders of the houses (in this latter case, presumably their residents).

It is during the Cantera phase that we also begin to see significant associations between various structures. An example of this is found with PC Structures 1d and 2, which faced onto a common "court" area on the southwest side of the Plaza Central. Structure 1d's main axis runs N–S and is oriented N½E. Structure 2's axis runs E–W and is aligned within 1° of Structure 1d (all readings were taken with hand-held Brunton compasses and are probably accurate only to ± 1°). The northern (front) wall of Structure 2, if extended ca. 20 m eastward, would touch (and align with) the southern wall of Structure 1d. This indicates that their positioning was purposeful and careful.

Archaeomagnetic samples taken from the burned floor of PC Structure 2 demonstrate that at the time the house was burned, magnetic north was 5.6 ± 4° east of true north. This seems to indicate no relationship between structure orientation and magnetic north (cf. Carlson 1975). Radiocarbon dates from the structure (N-1707, N-1708; see Table 5.1), while not definitely related to that particular burning, place the general age of PC Structure 2 at 620–630 ± 85 BC.

While we can only estimate the general alignment of the Cantera phase PC Structure 4 platform based on its present topography, it appears very close (ca. N88½W) to the PC Structures 1 and 2 alignments, suggesting that this was the basic orientation of the Late Cantera subphase Plaza Central public/elite area. A stone line adjacent to Burial 40 atop the Structure 4 platform was oriented N84½E, and the tomb structure at the east end of the mound was N5E, but the significance of these deviating alignments is unknown.

***Table 6.2.* Architectural Orientations (True North)**

Phase	*Structure*		*Orientation*
Amate	PC Str. 6b		N84½E
	T-6 Str. 3		N69½W
Barranca	PC Str. 5		N87½E
	T-9B Str. 1		N4½E
	T-29 Str. 1		N15½W
			N75½E
Cantera			
Public/Special Architecture	PC Str. 4d		N88½W
	T-6 Str. 1		N3½E
	T-15 Str. 5		N84½W
	T-25 Mon. 22		N87½W
	T-25 Str. 2		N87½W
	T-27 Str. 1		N87½W
Houses	PC Str. 2		N88½W
	PC Str. 3		N5E
	PC Str. 1		N½E
	PC Str. 6		N85½E
	T-4 walls		N73W
			N6½E
			N1½E
	T-9A Str. 1		N1½E
			N2W
	T-11 Str. 1		N3W
			N88W
	T-11 Str. 2		N89½W
	T-21 wall		N4½E
	T-23 Str. 1a	Wall 2	N84½W
		Wall 3	N2E
		Wall 4	N7E
		Wall 5	N79½W
		Wall 11	N85W
		Wall 13	N83W
	T-23 Str. 1b	Wall 6	N83W
		Wall 7	N2½E
		Wall 8	N81W
		Wall 10	N3E
	T-23 Str. 1c	Wall 9	N83½W
		Wall 12	N5E
		Wall 14	N7E
	T-24 Str. 1		N88W
			N3W
	S-39 Str. 1		N88½W
			N1½E
Classic	T-3 Str. 1 stairway		N½W
	T-4 Str. 3		N12½E
			N76W
			N11½E
	T-15 Str. 2		N87½W
	T-15 Str. 4		N16½E
			N13½E
			N75½W
	T-17 platform wall		N6½E
	T-20 Str. 2		N77½–80W
	T-27 Str. 2		N4½E
			N2E
Postclassic	Tetla-11 house		N9½E
			N80W
	Tetla ball court		N64½W
	Adoratorio stairs		N17°17′E
	(Aveni 1980:App. A)		N21°22′E

Stone-faced platform structures sit on the terraces to the north of (below) the Plaza Central terrace. The T-6 platform (Str. 1) is oriented N3½E, the T-15 platform (Str. 5) N84½W, while T-25 Structure 2 and T-27 Structure 1 are both N87½W, as is the table-top altar (Mon. 22) on T-25.

As mentioned, three of the stone-faced platforms, T-6 Structure 1, T-15 Structure 5, and T-25 Structure 2, have stelae in association. The stela (Mon. 27) with the T-6 platform, while facing outward with the same orientation as the structure, is off-center in its placement, standing 4.9 m from the north end of the 15.7 m long platform. Monuments 25 and 26 are apparently contemporaneous with the platform and with Monument 27. The location of these monuments is arrived at by projecting the alignment of the T-6 platform (N3½E) another 15.7 m to the north.

Monument 21, the stela erected in front of the T-15 platform (Str. 5), is also placed off center, in this instance 3.9 m from the structure's west end. Based on the position of the fallen stela when discovered, it is highly probable that this monument's carved face pointed eastward, rather than to the north, the direction the platform faced. The stela associated with the nearby T-25 platform (Str. 2) sits at that platform's southwest corner and is oriented to face the east or west (the carved area is missing). Thus, no matter which way the platform structures themselves faced, all the stelae (including Mon. 26 associated with the round altar) faced only east or west.

The reader will have noticed that the distance 15.7 m repeats itself on T-6 measurements. The platform is 15.7 m long, and Monuments 25 and 26 are situated 15.7 m from that structure (and essentially in alignment with it). When we noticed that repetition, we decided, primarily out of curiosity, to calculate the difference in length between the T-15 platform (19.5 m) and the T-6 platform (15.7 m). The difference is 3.8 m. This is also approximately the distance which the stela (Mon. 21) is offset from the corner of the T-15 platform. This distance, 3.9 m, is apparently one Cantera phase unit of measurement. Three times 3.9 is 11.7 m, the length of the T-27 platform (Str. 1c). Four times that unit is about 15.7 m (T-6 Str. 1), and five times the unit is 19.5 m (T-15 Str. 5). The T-25 altar (Mon. 22) and patio may also use this module.

Curiously, the placement of Monument 27, the T-6 in situ stela, does not seem to fit the hypothesized 3.9 m module, nor does every Cantera phase structure at Chalcatzingo. In many cases the wall sections uncovered in our excavations were too destroyed to be accurately measured. The analysis of these data are still underway. However, using the module it is at least possible to hypothesize that the length of the site's largest mound, PC Structure 4d, might have been 20 module units (78 m), which is close to the mound's estimated present length.

There are few data available which allow us to compare the Chalcatzingo alignments with those of other Middle Formative sites in the central highlands or with other centers in Mesoamerica. Two alignments are known for La Venta: the main complexes are oriented N8W, while the Stirling Group is N7E (e.g., Heizer, Graham, and Napton 1968: Site Plan). Laguna de los Cerros' main mounds (Bove 1978: Map A) seem to duplicate the La Venta main complex's alignment. The orientation of the Central Court and Palangana groups at San Lorenzo align to true north (Coe and Diehl 1980:29, Map 2), essentially midway between the two La Venta orientations.

The trend of alignments at Chalcatzingo is clearly slightly east of north, ranging between that of Middle Formative San Lorenzo and La Venta's Stirling Group. However, because of the variation (however slight) in the orientation of Cantera phase public structures and residences, it is of doubtful value to compare them with those of Gulf Coast centers at this time.

THE SETTLEMENT PATTERN

In attempting to reconstruct an overall view of the site, particularly as it appeared at ca. 500 BC, one feature is quite clear: The Cantera phase village was a dispersed settlement spread over the terraced hillside. While most of the terraces were "residential" in the sense that each served as the location of a house structure, a limited number of terraces near the upper center of the site can be distinguished as public (and elite) areas (Plaza Central, T-6, T-15, T-25). The development of this pattern is considered in the discussion which follows.

Amate Phase, 1500–1100 BC

The Amate phase occupation was built upon the unmodified hillside slopes. Because the Amate phase levels were disturbed, destroyed, or deeply buried by the Early Barranca subphase terracing, only a general estimate of the site size can be made. The estimate is based on the distribution of undisturbed (buried) Amate phase levels found during the excavations and on one area of Amate phase sherds found during the site survey.

The Amate phase settlement occupied the hillside area today covered by the Plaza Central terrace, T-15, and T-6. It is probable that the T-2 area was also part of the occupation zone, for although T-2 has not been farmed in years, Amate phase sherds have been found along its northern terrace face. Sherds from this phase have also been found on the northeast edge of T-11 and represent the westernmost known extension of the occupation zone. Amate phase deposits were also found during the excavations on N-2 and N-7, fields below the hillside and north of the small stream. There are no data to indicate any Amate phase occupation between the T-15 area and the N-2 and N-7 fields, but the latter areas have been included for our population estimates.

Using the present surface areas of the terraces and fields which have yielded Amate phase materials as a way of calculating the general coverage of the occupation zone, the Amate phase occupation of the upper hillside covered an area of roughly 4–6 ha, and that at the base of the hill 0.6 ha. Using the criteria for estimating site size and population of settlements located during the project's regional survey (Chapter 21), the Amate phase occupation can be classified as a Hamlet, with an estimated population of up to 66 inhabitants.

Although possibly only a Hamlet in size, Amate phase Chalcatzingo included two monumental architectural features, the PC Structure 4a mound and the T-6 Structure 3 platform. The only other architectural feature known from this phase is a wall, PC Structure 6a, to the east of the PC Structure 4a mound. It is significant that these architectural features occur in areas which were important public/elite areas during the Cantera phase. It seems highly probable, particularly in the case of the Plaza Central area, that the choice of this location for a public building (PC Str. 4a) set the pattern for public areas which was continued by later generations (during the Barranca and Cantera phases) at Chalcatzingo.

No carved monuments or stone sculptures can be attributed to the Amate phase occupation.

Barranca Phase, 1100–700 BC

The Barranca phase essentially begins with a major change in the site's configuration. During the Early Barranca subphase the natural hillside slopes were intensively modified to form a series of terraces which created ca. 10 ha of level fields. This massive cut-and-fill operation disturbed the majority of the Amate phase deposits, in most cases removing them to be deposited as terrace fill. The terrace construction included well-planned water-control embankments on the two major rainfall drainages crossing the site (T-15 Str. 1, El Rey Drainage Str. 1) for the purpose of neutralizing the erosional effects of heavy rain runoff.

It is obvious that, with a completely different topography following the terracing, the settlement pattern should be modified. However, since the arrangement of the Amate phase dwellings is unknown, the extent of the changes cannot be determined. The spatial extent of the site is greater at this time, incorporating T-9, T-21, T-25, T-29, and east of the El Paso Drainage, T-20, in addition to the continued occupation of the original Amate phase "core area." At the base of the hill only N-2 has evidence of use. The total area covered is estimated at 13 ha, including ca. 1 ha of public area (ca. 8 percent of the total area). Thus, the settlement is classified as a Small Village with a probable population of 130–325.

The expansion of the Barranca phase settlement indicates an expanding population and the need for more land. The increased desire for agricultural land may be reflected in the decreasing use of the land near the spring for settlement, suggesting a switch from domestic to agricultural land use.

At this time only the Plaza Central (T-1) area can be defined as a public/elite area. PC Structure 4 was enlarged (Stage c) and PC Structure 5 built immediately to the south, indicating that the area remained important during this phase.

Only one complete Barranca phase house structure, T-9B Structure 1, was found. A floor fragment and a trash pit on T-25 indicate that a Middle Barranca subphase dwelling had been situated there as well. T-29 Structure 1, a structure of uncertain use (public or residential), is also Barranca phase. While these data are minimal, they do seem to show similarities to the more abundant Cantera phase house data. The Barranca phase houses are widely separated, and there are no indications of more than one per terrace. This suggests that the Barranca phase settlement, like the Cantera phase settlement, was dispersed (see below). It is for this reason that using site area as a means of calculating population must be approached with caution.

Although no stone carvings or monuments can definitely be assigned to the Barranca phase, it is possible that Monument 22, the T-25 altar, may have originally been carved early in this phase. The Chalcatzingo altar is an enigma, for while it occurs in a very good Cantera phase context, its monolithic Gulf Coast counterparts are all apparently Early Formative monuments. Since it is imitative of those Gulf Coast monuments, it must be considered to be closely contemporaneous with them. As noted in Chapter 7, we know little of the history of the altar prior to its rebuilding on T-25.

Cantera Phase, 700–500 BC

During the Cantera phase the settlement extended beyond the terraced hillside and covered an area of about 40 ha. It is probable that several smaller, peripheral terraces (T-4, T-24, CT-1) were constructed on the talus slopes at this time. The presence of stone-faced platform structures on T-6, T-15, T-25, and T-27 demonstrates that the public/elite areas of Chalcatzingo likewise increased in extent. These special site areas cover a total surface of nearly 5 ha, about 12.5 percent of the land surface of the main site zone.

The most important of the special site areas was apparently still the Plaza Central. The northern end of this large terrace is flanked by the PC Structure 4 platform mound, while at least three house-like structures were located along the southern edge. One of these, PC Structure 1, has been classified as an "elite" residence based on its elaborate subfloor burials (Chapter 8). Its location across the plaza from PC Structure 4 suggests not only that it had special status in comparison to other residences on the site, but also that it may have been occupied by the community's "chief."

The two structures to the west of PC Structure 1 (the PC Str. 2 group) can be said to have had special importance simply on the basis of their location. Their positioning in relation to PC Structure 1 suggests that they faced and shared a common "patio" area. While the PC Structure 2 buildings may have served as residences, the quantity of iron ore fragments and green stone in the structures and in the patio area indicates that workshop activities were also important.

The presence of platform structures with associated stelae on terraces lacking surface indications of Cantera phase houses suggests that these platforms could also have been substructures for elite residences, although only the T-25 and T-27 data seem to confirm this possibility. Whatever their function, their location indicates that the upper terraces on both sides of the El Paso Drainage constituted a special area of Cantera phase Chalcatzingo.

Apart from the special site areas, each of the remaining terraces and fields of the main site zone had one large Cantera phase house structure located upon it. Although other areas of these terraces were only incompletely tested, it appears likely that no other residences or major structures (contemporaneous with the house structure) occupied a terrace. The resulting pattern across the site is therefore that of a dispersed settlement.

In comparing Chalcatzingo to other sites in the valley, those of comparable size (Chapter 21; Appendix H) seem likewise to have been dispersed. The surveys of the southern Valley of Mexico have shown Middle Formative nucleated villages and dispersed settlements (Sanders, Parsons, and Santley 1979:96–97, Map 9). Therefore, a dispersed settlement type is not necessarily "unusual" for Middle Formative central Mexico (see also comments in Chapter 27). At Chalcatzingo the dispersed Cantera phase settlement may simply be a continuation of the older Barranca phase pattern, although the fuller implications of the pattern may not be completely understood on the basis of the present data alone.

Each residence in the Cantera phase community sat alone on an individual terrace or field. Although one or two impermanent structures may also have been present, the remaining area of each field was apparently utilized for agricultural purposes. If this hypothetical reconstruction is correct, then in addition to whatever major functions the site may have had as a center for local or regional redistribution, exchange, or ceremonial functions, it was still an agricultural village.

It is significant that when a house was destroyed and then rebuilt, the rebuilding usually took place in the same location. The continued presence of a house on a particular piece of land implies some type of proprietary use rights to that field or terrace. Because the houses were continually rebuilt in the same location over what must have been a number of generations, it is highly likely that this use right was hereditary. The facts that the house location did not shift and that other houses were not built on the same piece of land suggest that agricultural land was at a premium, and that terraces then, as today, were considered prime land. The Cantera phase settlements in Tetla and in the flatlands between the site and the present village (Appendix H, RAS-1, -326, -328) probably reflect the expansion of the site's growing population into more marginal lands.

As Chalcatzingo grew over time, it spread outward from the original Amate phase "core area." It can be presumed (and this is generally confirmed by the archaeological data) that the terraces nearest to this "core area" have been the longest inhabited. This suggests that if each field or terrace was indeed passed on in a hereditary manner, and this system maintained over many centuries, then perhaps land closest to the "core area" belonged to the oldest lineages. While there is no evidence that the regular house structures nearest to the "core area" have any greater status or importance than those farther away, the "conversion" of T-15, T-25, and T-27 from residential terraces to areas with special stone-faced platforms (whatever their function) could be important in this regard. While this "conversion" probably reflects the expansion of the public/elite area and nothing more, it could imply that the residents of these upper terraces became part of the site's elite group, possibly because they were from the oldest lineage(s). This could be taken to indicate that the elite were local personages and not "outsiders." More excavations on these upper terraces are needed to further explore these possibilities.

It should be mentioned that based on house burials and their associated grave goods (Chapter 8), only PC Structure 1 is clearly of a higher status. The remaining houses (this does not include platform structures) appear relatively homogenous. If any further differences in social rank are found at Chalcatzingo during future field work, it may be between occupants of the main site zone and the peripheral zones (Tetla and the flatlands).

It is difficult to estimate the Cantera phase population for Chalcatzingo, and several conflicting estimates exist. If Naroll's formula is used to calculate household population, a figure of ca. 7 inhabitants per house is reached. While the exact number of occupied terraces and fields in the main site zone with Cantera phase houses is difficult to determine, an estimate of 20 is relatively close. Combining these figures provides a population estimate of 140 people. This number is perhaps low, but the estimate refers only to the main site area and does not consider Tetla and the flatlands (the latter area is included in Hirth's estimate in Chapter 21).

Using paleoecological data to determine the carrying capacity of the terraces and land adjacent to the stream, David Bugé (1974:4) suggests that a population of ca. 600 could have been supported. However, since the public/elite terraces may not have been used for agricultural purposes, and because houses also occupied an area of each agricultural terrace, a reduction of one-third might be appropriate (ca. 400 people).

Kenneth Hirth (Chapter 21) has estimated a minimum of 433 and a maximum of 1,081 for the Cantera phase population at Chalcatzingo. The maximum seems too high.

Based on the settlement data as we now interpret them, the household size and paleoecological data provide perhaps the best population range for the main site area, 140–400 people. While this number may seem low, it is far too easy to overestimate the populations of early villages. Chalcatzingo had a dispersed settlement, and our population estimate suggests that it was still a Small Village. At the same time, however, the settlement functioned as perhaps the major political-religious center in central Mexico (see Chapter 26), with strong external ties, public architecture, and impressive monuments. As Joyce Marcus (1983) has pointed out, preindustrial cities were ranked at the top of their regional hierarchies not necessarily because of their size, but through their ritual status or political power.

RESUMEN DEL CAPÍTULO 6

La arquitectura del período Formativo en Chalcatzingo puede clasificarse como pública-especial y residencial. Las construcciones de la categoría pública-especial son PC Str. 4, el montículo plataforma larga, y PC Str. 5, las cuales constituyen ambas alguna forma de arquitectura pública, así como cinco plataformas con cara de piedra, algunas de ellas asociadas con estelas: T-6 Str. 3 (Fase Amate), T-6 Str. 1, T-15 Str. 5, T-25 Str. 2, y T-27 Str. 1. La arquitectura del montículo es muy rara en el centro de México durante el Formativo Temprano y Medio, aún cuando es común en el sur; por lo tanto la presencia de estas estructuras en las secuencias iniciales en Chalcatzingo le da significado a la importancia que tiene el sitio en la región.

La otra categoría, las estructuras de casas, consiste de dieciseis estructuras incompletas, trece de las cuales pertenecen al Formativo Medio. El enfasis en la excavación se dio en estas estructuras y en sus interiores. No se localizaron por medio de muestreo al azar, sino por la observación hecha en cada caso de que la terraza tuviera una concentración de tepalcates que correspondiera con los restos de una casa. La mayoría de las casas estaban dañadas seriamente por la erosión y el arado.

Los datos provenientes de las casas producen un cuadro compuesto de residencias del Formativo Medio. El rasgo que separa a las casas de Chalcatzingo de otros asentamientos del Formativo es su gran tamaño, con un área de piso estimado para la fase Cantera 63 m², la cual es más de dos veces el área de otras casas conocidas del período Formativo. Los cálculos de población basados en la superficie de piso pueden no ser aplicables a Chalcatzingo porque no se sabe si toda la estructura servía como residencia.

Las casas de la subfase Cantera Tardío consisten típicamente de tres paredes de adobe y una pared de varas y revestimiento. Esta última problamente tenía la función de dejar entrar el aire y salir el humo. Las paredes de varas se asociaban comunmente con una sola hilera de piedras como cimiento. Las paredes de adobe tenían un cimiento más grande y más pasado, generalmente de varias hiladas de piedra de ancho. Las paredes de varas (Compositae) se construyeron de los diferentes recursos que abundan en la localidad, cubiertas con *una plasta de lodo. Algunas de las estructuras de las casas presentan muestras de haber sido pintadas con un pigmento de kaolín blanco. Los pisos casi nunca aparecen completos ya que se hacían de tierra aplanada o plasta de lodo. Los restos escasos de los materiales utilizados para el techado, hacen que tanto el pasto como los Compositae sean los candidatos viables a usarse para el objeto.*

Las paredes interiores indican que las casas estaban divididas en varios cuartos, y el material del que estaban hechas sugiere que se llevaron a cabo diferentes actividades en los varios cuartos, por ejemplo dormir, guardar, cocinar, manufacturar herramientas de piedra. La preparación de alimentos parece haberse realizado principalmente sobre braceros de cerámica. A los muertos comunmente se les enterraba bajo el piso de la casa. Nuestra muestra de casa, tal vez falseada, revela poca muestra de basura o de rasgos de almacenamiento.

Los habitantes quemaban periódicamente las construcciones y reconstruían en el mismo lugar, probablemente debido a que no eran muy durables y sí facilmente invadidas por insectos y las sabandijas. También es posible que se hayan destruido a la muerte del jefe de familia.

Durante la fase Cantera, para la cual tenemos la mayoría de los datos, tanto las estructuras pública-especial como doméstica presentan un patrón consistente de alineamiento en comunidad dispersa. La preferencia de asentamiento claramente muestra la dirección un poco hacia el oriente del norte, con lo cual la orientación queda dentro de las del grupo Stirling de La Venta y las de San Lorenzo. También hay muestra de un módulo de medida de 3.9 m en la fase Cantera. Los múltiplos de este módulo aparecen como las longitudes de varias estructuras y fueron utilizadas también para ubicar las estelas.

El desarrollo del patrón de asentamiento del sitio puede ser rastreado hasta la fase Amate. El asentamiento de la fase Amate ocupó las pendientes de la montaña que no han sufrido modificación, comprendidas hoy en T-1, T-15, y T-6 y una segunda superficie que consiste de N-2 y N-7. Estos dos poblamientos por separado cubrieron cerca de 6.5 has. con un cálculo aproximado de 66 habitantes por poblamiento. Hay dos estructuras monumentales que admiten fechamiento en esta fase inicial, el montículo de plataforma PC Str. 4a y la plataforma de piedra con cara esculpida T-6 Str. 3.

Durante la subfase Barranca Temprana las pendientes de las laderas naturales se modificaron intensivamente para crear las series de terrazas con las que formaron cerca de 10 has. de terrenos en distintos niveles. También se construyeron dos grandes canales de drenaje para el agua de lluvia y el control del desbordamiento del agua. Estos cambios son indicativos de un aumento en la población y en la necesidad de tierra para agricultura y habitación. Aparentemente, durante este tiempo se inició el patrón de tener una sola casa por terraza, indicativo de que el asentamiento de la fase Barranca fué disperso, semejante al asentamiento de la fase Cantera. La Plaza Central continuó como área pública elítista del sitio. Solamente se puede fechar un monumento en esta fase, el altar T-25 que ha sido fechado tentativamente en la subfase Barranca Temprana dado que sus adornos de la costa del Golfo son todos del Formativo Temprano.

Durante la fase Cantera el asentamiento se extendió más allá de las laderas terraceadas y llegó a cubrir una superficie de cerca de 40 has. Las áreas elite-públicas se aumentaron para incluir T-6, T-15, T-25, y T-27, las cuales junto con la Plaza Central cubren casi 5 has. o 12.5 por ciento de la superficie del sitio principal de la zona. Probablemente la residencia del (de los) líder(es) de la comunidad es PC Str. 1. Cada terraza continúa teniendo solamente una casa, lo cual implica que las terrazas cumplían una función agrícola a la vez que residencial. Es posible que el uso de la tierra terraceada preferente fuera un derecho hereditario, y con ello tal vez se obtenga la base para establecer rangos diferentes en las familias o linajes de la comunidad. La posibilidad de que la élite del sitio consistiera de miembros de los linajes más antiguos, los cuales vivían en las terrazas más altas, sugiere que estos fueran personajes locales, y no "fuŕáneos."

Los datos del tamaño de las casas y los de la paleoecología referentes a la capacidad de carga del área del sitio nos dan un rango de población para el área del sitio principal de 140–400 personas durante la fase Cantera. Este número puede parecer bajo, y en parte se debe al reflejo de la naturaleza dispersa del patrón de asentamiento, pero no se desvía de las otras muestras que indican que Chalcatzingo era un centro político-religioso importante con lazos externos fuertes. Las ciudades pre-industriales se catalogan en la cumbre de sus jerarquías regionales, no necesariamente debido a su tamaño, sino por la indicación de su actividad ritual o su poder político.

7. The Altar and Associated Features

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In 1973, the observation of two dressed stones exposed in a plow furrow on T-25 led to one of the project's major discoveries, a large table-top altar (Mon. 22). While such altars are common at San Lorenzo and La Venta, they had never previously been found outside of the Gulf Coast. The altar sits on the south side of a low-walled patio area, and excavations there in 1973 uncovered seventeen human burials and one dog burial (Fig. 7.1). In 1974 the continued research unearthed another five burials, a tiny section of a Barranca phase house floor, and, on the north end of the terrace, a Middle Formative stone-faced platform with an associated stela base. The unusual configuration of the altar at the time of its discovery, its chronological placement, and its temporal and cultural relationships to the burials and the stone-faced platform are discussed in the following pages.

THE ALTAR EXCAVATIONS

Upon discovery that the two long, faced stones in the T-25 plow furrow contained several carved lines, the terrace was gridded and exploratory excavations begun. It quickly became apparent that other faced stones occurred in alignment with the original two, and together they formed a large rectangular-U shape. Only the outer face of the rectangular-U construction was cleared since it was this face which was carved.

When the excavations reached the bottom edges of the stones at approximately 25 cm below surface, no underlying construction was immediately evident. However, continued clearing disclosed that the feature did continue downward but that the underlying stones were inset approximately 8–15 cm. When fully exposed on its three sides, the complete stone construction proved to be a large low rectangle ca. 1 m tall, 1.4 m wide, and 4.4 m long. It was built of two lower courses of large rectangular stone blocks, capped by a third course which overhung the lower courses creating the "table-top" effect. This construction forms a north-facing altar similar in form to those found at Gulf Coast Olmec sites. However, Gulf Coast altars are monolithic and tall, while this was shorter and created from about twenty large blocks.

Although the altar form was clearly visible after the initial clearing excavations, the front face—the area usually rich with iconography in Gulf Coast altars—was not. The altar's face was hidden by another group of eight large worked and faced rectangular stone blocks which had been placed to form a large rectangle covering about three-fourths of the altar's front (Fig. 7.2). These stones rested upon a well-made stone pavement which extended 1.3 m in front of the altar and 60 cm to each side. Apparently contemporaneous with the pavement is a rough stone wall construction which extended the west side of the altar to the pavement's edge (Fig. 7.3).

Although the altar's face was 75 percent hidden by the large stone blocks, some relief carving was visible. When these covering blocks were removed, the relief was revealed to be the eyes and eyebrows of an earth-monster supernatural (Fig. 7.4), a theme implicit in Gulf Coast altars but explicit here. The face is quite similar to the earth-monster "altar" painted above Oxtotitlan cave (Grove 1970a, 1970b, 1973). Lacking in Chalcatzingo's altar is the niche, the implied earth-monster mouth-cave.

Curiously, when exposed, the relief appeared incomplete. Some of the stone blocks making up the face were carved, but a few which should have been carved were blank. This is evident in the incomplete left eye of the earth-monster face, which lacks the lower section containing the eyeball. The solution to this enigma did not appear until late in 1974, when the altar was being structurally reinforced with cement mortar between the major stones. At that time, the projecting ledge stone on the altar's east side was raised, exposing the top edge of the large slab which comprises most of the altar's side. The missing eye section was carved on the upper edge of this slab. We interpret this to mean that sometime during its history the altar had been disassembled and improperly reassembled. The incorrect rebuilding may have been purposeful or perhaps irrelevant to those directing that labor. The implications of this rebuilding are examined later.

The ledge stones forming the top of the altar ran only around its edge, and the top was not the solid pavement of stone which might be expected if this altar were duplicating the tops of Gulf Coast examples. Although difficult to demonstrate, it seems likely that a complete top pavement originally existed but was dismantled, forming the source of the large stone blocks used to hide the altar's face.

As the altar was cleared further and excavations were extended outward, it was discovered that the altar had been constructed (or reconstructed) at the south end of a sunken walled patio area (Fig. 7.4). Continued excavations uncovered human burials beneath the patio area and small caches of vessels along the patio's south edge and around the altar (Figs. 7.1, 7.5).

The patio's low walls are built of medium-sized, faced stone blocks arranged so that an inverted-V shaped niche was a major feature of the south (back) wall on each side of the altar (Figs. 7.4, 7.6). Rounded stones set to protrude at each side of these niches created eyes for these unusual earth-monster faces.

The altar is not centered along the south wall, at least as the south wall existed in its final form. The patio wall

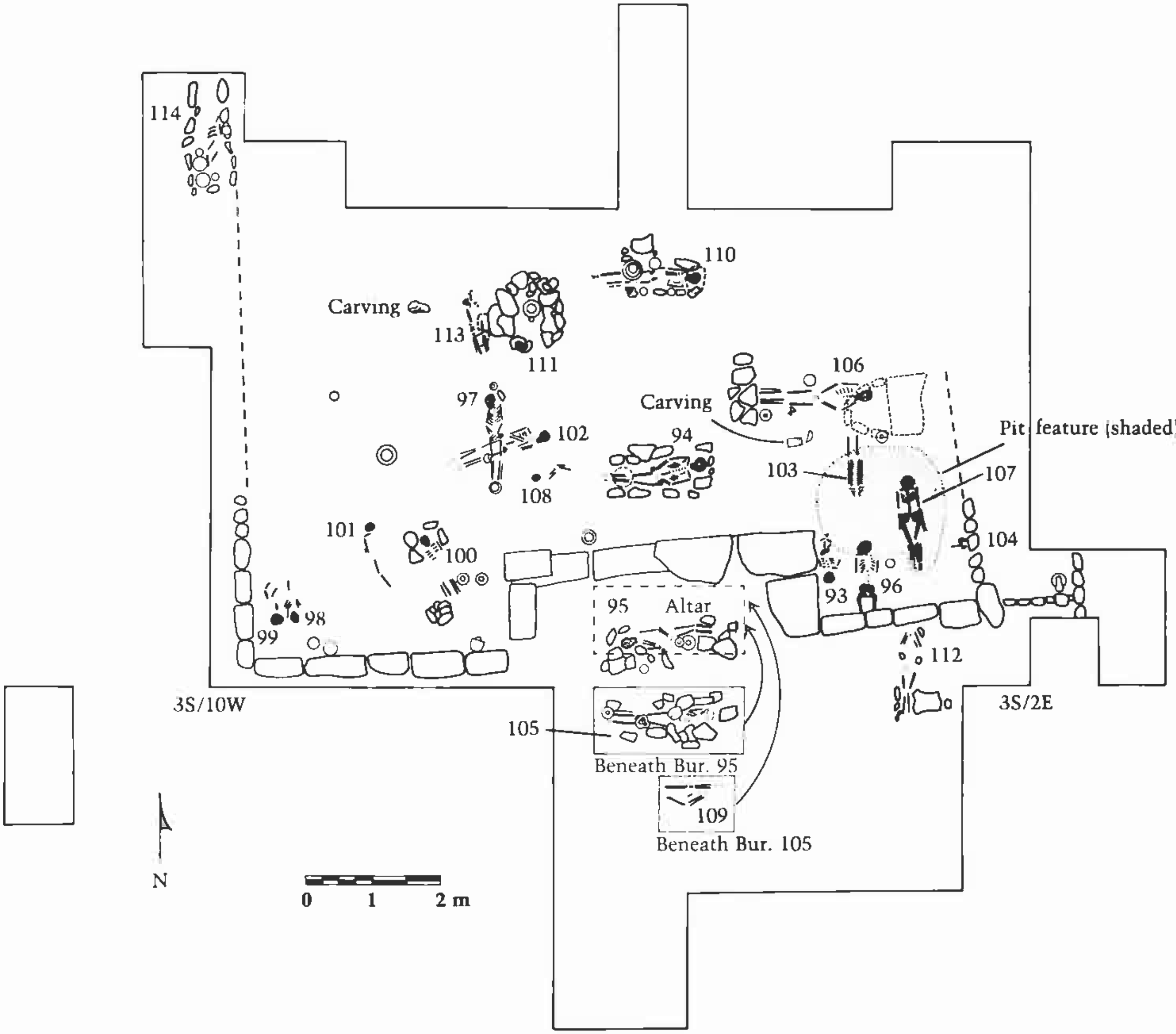


Figure 7.1. Plan map of T-25 altar excavations, showing burials 93–114.

Figure 7.2. Altar face hidden behind faced stones.

Figure 7.3. Extended wall lines, west end of altar.

Figure 7.5. Vessel cache at front of altar pavement.

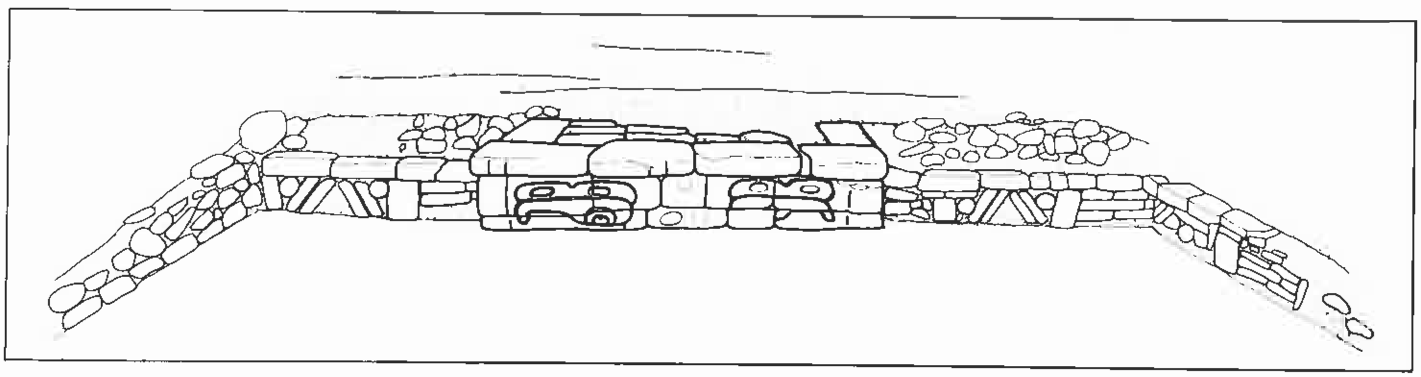


Figure 7.4. Altar and patio area showing altar face and patio wall niches.

Figure 7.6. Southwest corner of patio showing niche.

extending eastward from the rear of the altar is 2.3 m long, while the westward extension is 3.7 m long. This asymmetrical placement of the altar can be attributed to a rebuilding of the patio's eastern wall which moved it ca. 1.4 m closer to the altar.

There may have been four major building stages to the patio area. The bench-like south walls, with their inverted-V niches, are apparently part of the second building stage (Stage b). The evidence for the first stage (Stage a) rests with a long stone wall which runs ca. 70 cm behind (south of) the Stage b south wall and is at least as long as the Stage b south wall. This Stage a wall abuts the Barranca and Early Cantera subphase strata which were exposed when the sunken rectangular patio area was excavated in the sloping hillside. At the east end of the altar the wall rests upon stratigraphic Level VII (Fig. 7.7), thus predating the current position of the altar, which is built onto Level VI. Behind the altar, however, the wall is superficial and without great depth, and the natural stratigraphy of the cut is not completely hidden by the wall. It is here that a small section of a Barranca phase house floor (discussed below) is exposed. The lack of a complete Stage a wall behind the altar suggests that something—presumably the altar—may have stood in front of this wall.

The Stage b patio walls appear to have been built at the time the disassembled altar was rebuilt in its present configuration and location. At least two carved stones, apparently from the original altar, are incorporated into the western Stage b wall. Also within this same wall section, but largely destroyed, are the remains of another inverted-V niche.

It is impossible to estimate the dimensions of the Stage a patio, but the Stage b patio size can be hypothesized on the assumption that the south patio walls extending out from the back of the altar were of equal length (unlike today), or ca. 3.7 m each. These combine with the altar (ca. 4.2 m) for a patio width of 11.6 m. Interestingly, this reconstructed dimension is approximately three Cantera phase measurement modules (3.9 m; see Chapter 6), and the altar and each back wall roughly correspond to single module units.

Patio length is more difficult to ascertain. The present (Stage c) patio's side walls run north approximately 7 m and have been destroyed by erosion and plowing on the sloping terrace surface. However, a partially excavated fragmentary stone line running east-west 3.4 m north of the south Stage b walls (not shown on Fig. 7.1) may once have marked the northern extent of the patio. If this surmise is correct, the Stage b patio area was 39.4 m².

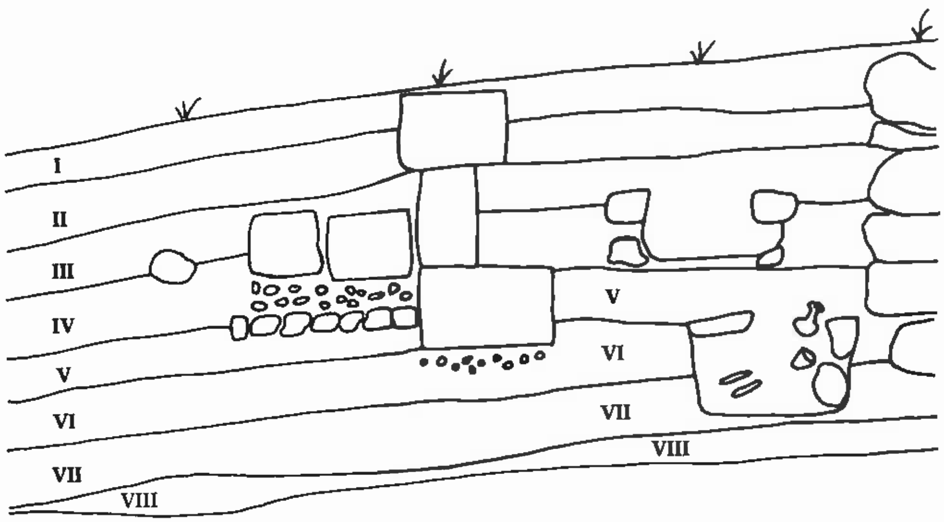


Figure 7.7. Profiles of stratigraphy in front of and behind the altar. Levels VIII–VI are Barranca phase and levels V–II are Cantera phase.

Stage c is simply an enlargement of the northern extent of the patio by another 3–4 m. This would have involved the destruction of the hypothesized Stage b northern wall mentioned above, and would account for its fragmentary remains. It would also imply that the east and west patio walls were lengthened. The northern limits of Stage c cannot be defined today because the patio blends into the plow zone due to the terrace's sloping surface.

Stage d is more complex. Apparently some time passed between the rebuilding of the altar (Stage b) and the act of covering the altar's face (part of Stage d). This is reflected in both the stratigraphy and the evidence that the table-top ledge was carefully replaced when the altar was rebuilt. Later, many of the top stones, including one ledge piece, were removed to use in covering the altar's face.

Prior to this, however, a stone pavement was laid in front of the rebuilt altar, and at the same time the altar's west side was extended by the construction of a stone wall. Eight large stone blocks were then set atop the pavement, apparently from the upper ledge, creating a rectangular construction across the front of the altar (Fig. 7.2), which together with the altar formed essentially a two-step platform.

At some time following these events, the eastern wall of the patio was removed and replaced by a wall constructed of rough field stones (Fig. 7.8). This new wall was built 1.4 m nearer to the altar structure, thus creating the asymmetry in the patio's back (south) walls. At about the same time some crude stone walls of unknown function were built on the western side of the patio.

Chronology: Features and Burials

Although most of the stratigraphy on T-25 dates to the Cantera phase, these strata are underlain by shallow Barranca phase deposits which relate to an earlier occupation of the southern terrace area. Excavations south of the patio's back walls also unearthed several Barranca phase levels. During the excavations of the interior area of the altar (see below), a small fragment of a Barranca phase house floor was found in the south profile. This floor apparently represents the remains of the south edge of a Barranca phase house (T-25 Str. 1) which had been destroyed during the excavations of the sunken patio. Its location suggests that Burials 109 and 112 had been subfloor interments beneath that house.

A Barranca phase trash pit, intruded into *tepetate* and probably associated with the same house structure, is located

Figure 7.8. Eastern patio wall, construction Stage d.

1 m east of the altar at a depth of 0.7 m below the level of the altar base (Fig. 7.9). It is roughly circular, measuring 1.8 m in diameter at its widest point, and had been dug down slightly over 1 m into *tepetate*. Stratigraphy within the slightly bell-shaped pit was composed of five discernible levels (x–xiv) (Appendix B, SSU 16–19), all Barranca phase in date.

As mentioned below, the altar may have originally been constructed as early as the Barranca phase and subsequently moved and/or reassembled here in the Cantera phase. The construction of the altar at this location suggests that the Barranca phase house and related activities on T-25 might have been the determining factor for its location.

At least six burials apparently predate the construction of the patio area, and four of these are unquestionably Barranca phase. One of the four, Burial 113, consists only of the lower limbs of the skeleton and rests atop sterile soil. Burials 109 and 112, as mentioned, had probably been subfloor burials under the Barranca phase house. Burial 112 was adjacent to portions of a rough stone wall, possibly one of the foundation walls for the Barranca phase structure. This burial was in a supine position, the skeleton in a north-south orientation with the upper body to the north. The skull was lacking, and no definitely associated artifacts were found. Burial 109, found at the base of the excavations conducted within the altar construction, lies atop *tepetate*. Although it is overlain by two Cantera phase burials clearly associated with the altar, the stratigraphy indicates that Burial 109 is Barranca phase and prealtar. A tubular jade bead was found in association with this burial.

Burials 96, 103, and 107 all appear to be associated with the Barranca phase pit excavated into *tepetate* (Fig. 7.1). Burial 107, within the pit itself (Fig. 7.10), was associated with two mortuary offerings. One, a stingray spine (Fig. 7.11), is an imported object of undoubted ritual importance, and its presence suggests that this individual may have had a special status or position within the community. The other, an Amatzinac White cylindrical jar with a nearly flat base and fine-line incising around the outer rim (Fig. 7.12), had been placed by the right knee. Stratigraphy and the associated vessel indicate the burial is Late Barranca or transitional Barranca–Cantera phase.

Burials 96 and 103 are less securely datable to the Barranca phase. Burial 96 was interred in a face-down, extended position, its head resting over the edge of the pit. The lower limbs are overlain by the Stage b south wall, showing that it predates this wall. No burial furniture accompanied this interment, and it is uncertain whether the obsidian blade found resting on the rib cage was deliberately placed with the body at the time of burial or was part of the fill laid over the burial. Burial 103 is disturbed and consists only of the lower limbs of an individual laid out in a supine position, with the feet extending over the edge of the pit.

The foundation stones of the rebuilt altar rest atop and slightly intrude into Level VI (Fig. 7.7). It is possible that the rebuilding actually began in the very lowest portions of Level V, and that the association with Level VI is intrusive for the purpose of laying a foundation. Both Levels IV and V, and their associated constructions, are Cantera subphase. This indicates that if the altar was originally carved and constructed at the same time as the Stage a patio walls, its creation can be dated to the early part of the Cantera phase. If the Stage a patio walls were constructed after the carving and dedication of the altar, the original monument may go back to the late Barranca subphase.

The stone block walls of the Chalcatzingo altar surround an interior earthen core which the excavations revealed to contain three burials. Burial 109, previously discussed, predates the reassembled form of the altar. Burial 105 was the first of two Cantera phase burials placed within the interior. The burial pit in which the individual was placed is intru-

Figure 7.9. Altar and patio showing position of trash pit.

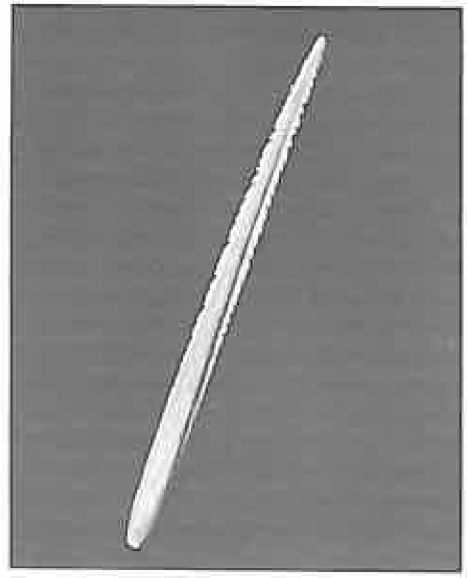


Figure 7.11. Stingray spine found with Burial 107.

sive from the lowermost portion of Level V, suggesting the possibility that Burial 105 was interred at the time of the altar's rebuilding.

The quality of the grave, its location within the altar, and the grave goods all indicate that the individual of Burial 105 was of high status. The burial occurred within a slab-lined and covered crypt (Figs. 7.13, 7.14). Seven vessels were placed as offerings. Two are Amatzinac White eccentric vessels in the form of what David Grove interprets as supernatural faces, with oval mouths on the side of the vessels and loop handles at the tops (Fig. 7.15*a*). One of these vessels occurred within the stone crypt together with an Amatzinac White bowl and a Peralta Orange punctate olla. It had incised pennant decoration on the back (Fig. 7.15*b*), a motif uncommon at Chalcatzingo but a marker for the late Middle Formative Rosario phase in the Valley of Oaxaca (Kent V. Flannery, personal communication to D. C. Grove). The other eccentric censer was placed within the rocks of the crypt which overlay the head of the burial.

A second burial (no. 93) almost certainly dates to the time of the re-erection of the altar. This, the burial of an infant lacking mortuary offerings, occurs at the altar's northeast corner (Fig. 7.16). It intrudes from Level V into Level VI. Al-

Figure 7.10. Trash pit; Burial 107 (within the pit) and legs of Burial 96.

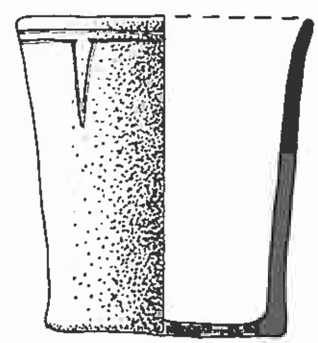


Figure 7.12. Amatzinac White vessel found with Burial 107.

Figure 7.13. Stone crypt, Burial 105.

Figure 7.14. Burial 105, stone crypt cover removed.

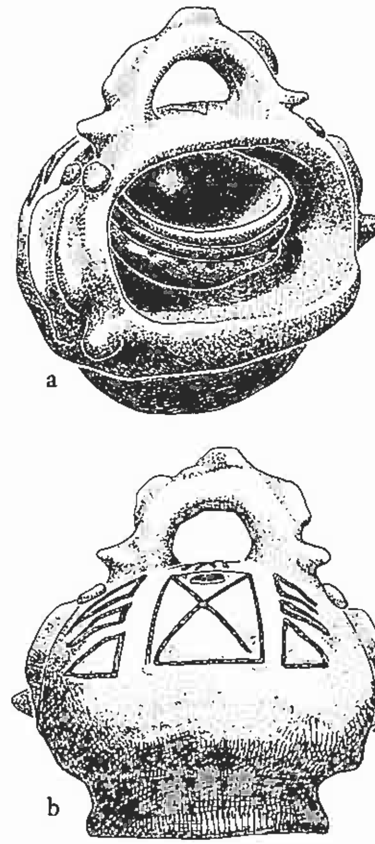


Figure 7.15. Vessel 1 associated with Burial 105: *a*, front, showing smaller vessels inside mouth; *b*, rear, showing incised design.

Figure 7.16. Burial 93 (small child) at northeast corner of altar.

Figure 7.17. Burial 94 stone crypt.

though there is no skeletal evidence to indicate that this child was sacrificed, ethnohistoric accounts (e.g., Durán 1971: 157–159, 164–165, 425, 454, 466) tell of the sacrificing of children in rituals related to water and rain, fertility, and mountains. The location of Burial 93 at the altar's corner and its apparent contemporaneity with the altar's rebuilding suggest it was a child sacrifice.

Sometime after the altar was re-erected, its face was covered by stone blocks removed from its upper surface. The stone pavement on which the blocks covering the altar were placed had not been part of the rebuilt altar. As Figure 7.7 illustrates, the pavement, which also hid a portion of the altar's carved face, is associated with Level IV. It served as a foundation for the stones used to hide the altar's face, but its westward extent goes beyond those stones and includes a crude stone extension wall built onto the altar's western side (Fig. 7.3). Vessel offerings were found in front of and underlying the pavement (Fig. 7.5) in front of each eye of the altar's earth-monster face. Whether the pavement and crude east extension were a separate construction act somewhat earlier than the placement of the large stone blocks over the altar's face cannot be determined from the stratigraphy.

Burial 94 is located directly in front of the altar at the edge of the stone pavement, which slightly overlay it. The burial had been placed within a well-formed stone crypt (Fig. 7.17), the walls of which parallel the edge of the pavement and the altar's front face. The body, extended in a supine position with the head to the east (Fig. 7.18), had no associated ceramic offerings. The burial clearly intruded from Level IV, which indicates that it was deposited after the reassembly of the altar but before the placement of the stone pavement in front of the altar.

The stratigraphy within the rebuilt altar diverges from the stratigraphy of the patio and northern area beginning with Level IV. Inside the altar Level IV is a clayish soil mixed with stones. It is thicker than its corresponding number in front of the altar. Interior Level IV appears to be a fill layer which followed the placement of Burial 105 (probably interred at the time the altar was rebuilt). Intruding into the Level IV interior fill was Burial 95, placed in a stone crypt (Fig. 7.19). Included as burial offerings were two ceramic vessels: a ridge-necked Peralta Orange olla decorated with punc-

Figure 7.18. Burial 94 with crypt covering stones removed.

Figure 7.19. Burial 95, altar interior.

tations (Fig. 13.42) and a Tenango Brown olla. A jade bead was found with the skull. The crypt was then overlain with a compact grey soil (Level III). Differences in interior and exterior stratigraphy prohibit us from determining whether Burial 95 was deposited before or after the Stage d rebuilding of the patio and the covering of the altar's face. It may well be that the two events were related, just as the interment of Burial 105 and the rebuilding of the altar have been hypothesized to be related. The restructuring of the altar may have been brought about yet a second time by the death of an important person.

A number of other burials were also interred within the patio area following Stage d. The exact sequence in which these burials took place is difficult to ascertain, but their presence indicates that the patio area was utilized as a burial plot. Although we have no archaeological proof, it is possible that the burials within this restricted area belong to one particular Early Cantera subphase lineage or family. These burials are all described in Appendix C, and only a few salient points are mentioned here.

Burial 97 is an adult directly interred with three offering vessels. One of these, a Carrales Coarse Grey composite bowl, has fine-line geometric incising along the rim. This is unusual for Carrales Coarse Grey vessels; yet a similar vessel was found with Burial 110 nearby, suggesting that the two burials could be roughly contemporaneous. Burial 97 was underlain by Burial 102, and therefore postdates the latter. Burial 102 lacks ceramic offerings, and because the interment of Burial 97 disturbed the stratigraphy, Burial 102 cannot be securely dated. Neither skeleton was in a good state of preservation, and sex determination was not feasible. As pointed out in Chapter 8, there is some reason to believe that overlapping subfloor burials in PC Structure 1 are male-female pairs and possibly husband-wife burials. Such a possibility must be considered in the cases of paired burials within the patio area as well.

Burial 108 may also be part of the Burial 97 and Burial 102 group. This child burial was disturbed, possibly by the interment of Burial 97. A jade bead was found in the child's mouth.

Two pairs of child burials were located in the southwestern area of the patio. The remains of Burials 98 and 99 were found intermixed (Fig. 7.20), and were associated with one Laca bowl. Their proximity to each other suggests that these children died at the same time and were buried together. Their apparently simultaneous deaths and placement near the southwest corner of the patio indicate that they may have been sacrificed. A second juvenile pair, Burials 100 and 101, were found nearer to the altar. Burial 101 lies just west of Burial 100 and had no associated offerings. Burial 100 had been placed within a partially stone-lined grave and had three associated Cantera phase vessels. It is interesting to note that a pair of child burials was also found at La Venta within the basalt column tomb (P. Drucker 1952:23–26).

Burial 106 is of interest because the individual received seven vessels as mortuary furniture. This quantity is exceeded, however, by Burial 110, a few meters further north, which was found within a partially stone-lined grave with eight vessels in association and a metate covering the skull area (Fig. 7.21). Among the vessel inventory of both Burials 106 and 110 are Amatzinac White censers with double-loop handles. These have burned, smudged areas on their interior bases which indicate that copal or some similar substance was burned in them, perhaps only at the time of burial. Burial 110 occurs just north of the remnants of the crude stone wall which may have marked the northern extent of the Stage b patio area.

Burial 111 is unique for the patio area, since it is a skull burial. The skull was placed atop the south end of a crude ring of stones (Fig. 7.22). Two Amatzinac White bowls and a small Atoyac Unslipped Polished I bowl filled with powdered hematite had been placed within the ring. The skull was in extremely poor condition and could not be analyzed to determine its sex. A fluted serpentine bead was found in the mouth.

Burial 114 is unusual because its well-made crypt partially cuts the northwest edge of the patio wall. Its placement indicates that it is the latest burial in the patio area. The remains were in extremely poor condition, consisting of a few bone slivers and four adult teeth.

In addition to a dog burial, a number of unusual artifacts were found during the altar area excavations. Whether some of these represent offerings or simply discarded objects is a matter of conjecture. Among them is a zoomorphic sculpture (Fig. 20.6) and a section of a cylindrical stone sculpture (Fig. 20.7).

Figure 7.20. Burials 98 and 99 in southwest corner of patio.

Figure 7.21. Burial 110.

Figure 7.22. Stone ring and vessels associated with skull Burial 111. Skull sits atop stone in lower left corner.

STRUCTURE 2 PLATFORM AND MONUMENT 23

The 1974 excavations approximately 30 m north of the altar uncovered a low Cantera phase platform (T-25 Str. 2) measuring about 21 m long, 6 m wide, and 50 cm high (Fig. 7.23). The platform was constructed of three to four courses of river cobbles and field stones. The base stones rest in Level III and indicate that this platform was built after the major activity in the altar-patio area. Some patio area burials (e.g., Burial 114) may be contemporaneous with the platform and could represent individuals who in life were associated with the activities, domestic or otherwise, related to the platform.

Two refuse dumps were found during the platform excavations. One existed within the interior of the platform, the other in a stone-lined pit adjoining the platform's west end (Fig. 7.23). These both contain Late Cantera subphase refuse and indicate that some domestic functions may have been associated with this structure. In addition, a stone stela (Mon. 23) originally stood in situ at the platform's southwest corner. At the time of our excavations, only the basal stub remained, and no traces of carving could be detected on the remnant portion (Fig. 7.24).

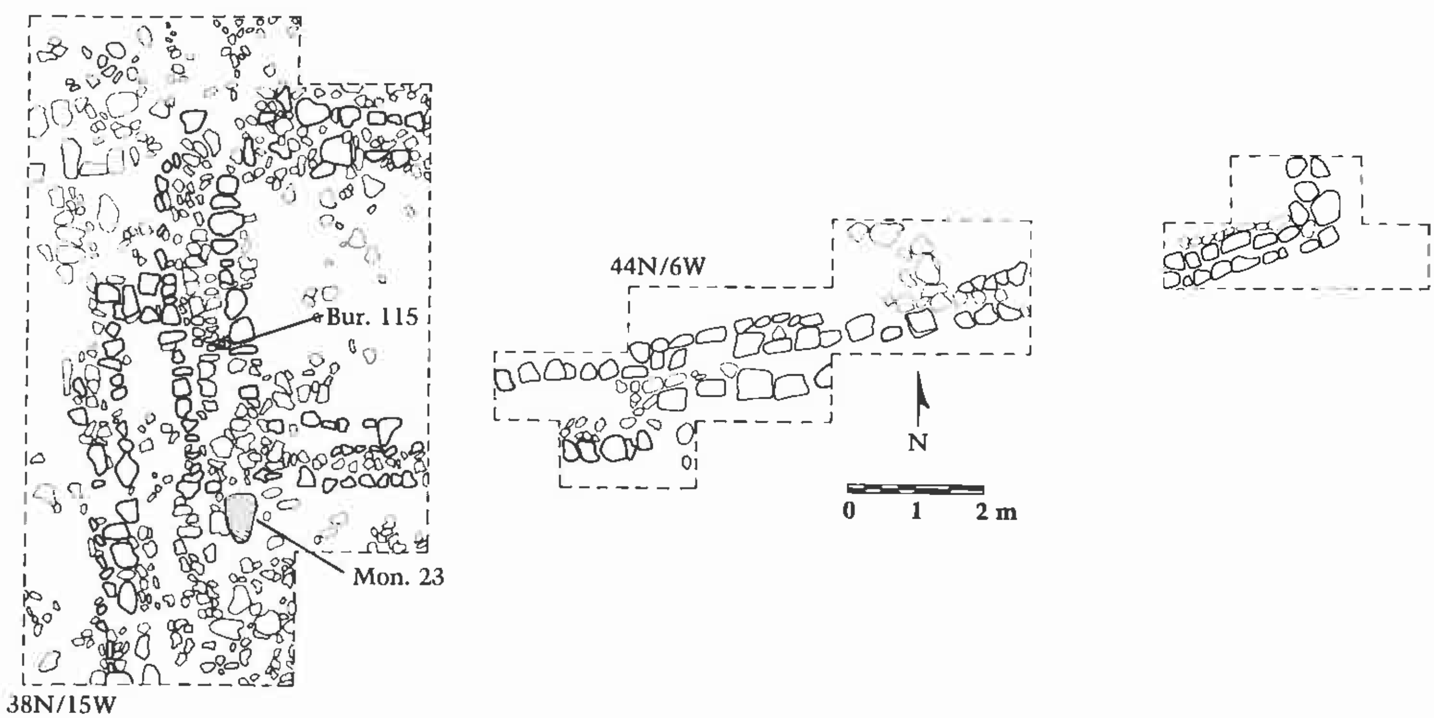


Figure 7.23. T-25 Structure 2; shaded area is stela base, Monument 23.

This northern area of T-25 apparently saw occasional reuse during the Classic period. A Classic period child burial (no. 115) intruded into the structure, and Classic period refuse occurred in the uppermost levels of this northern area.

COMMENTS AND CONCLUSIONS

The Chalcatzingo altar differs in several respects from its Gulf Coast counterparts. For instance, all known Gulf Coast altars are monolithic, and most depict a human figure seated within a niche in the altar's face. Chalcatzingo's altar lacks the niche and is constructed of twenty large stone blocks. Thus, this monument is not only unique in comparison with the Gulf Coast altars, but is unique as well for Chalcatzingo, where all other bas-reliefs were carved on monoliths (either free-standing or on the face of the Cerro Chalcatzingo).

While the monolithic altars, or blocks from which to carve them, were transported great distances to Gulf Coast centers, suitable large stones exist within 200 m of T-25 but were not utilized for the altar's construction. In fact, making the altar out of a number of large stones—all of which had to be shaped, dressed, assembled, and then carved—may have required more labor expenditure than simply carving one large boulder available nearby.

Figure 7.24. Monument 23 stela base in situ.

Unfortunately, attempts to compare the functions of Gulf Coast altars with those of the Chalcatzingo example are hampered by a paucity of published data on the former. With the exception of La Venta Altar 4 (Stirling 1943), the La Venta and San Lorenzo altars known today either were found repositioned or were not subjected to extensive horizontal excavations.

Grove (1973, 1981b) has suggested that one function of altars was that of a throne or "seat of power" for the ruler of an Olmec center. The iconography and particularly the altar's inset niche served to sanctify the ruler's divine origins as well as to link the ruler to the power of the underworld. Grove has also suggested (1981b) that a ruler's altar was mutilated and buried along with his other monuments at his death in order to neutralize the supernatural powers contained in these monuments and left uncontrolled by the ruler's death. It is important to remember therefore that the altar construction uncovered by our excavations represents an altar already dismantled and rebuilt, and in that sense ritually neutralized.

Burials may have been associated with Gulf Coast altars. Matthew Stirling's excavations in front of La Venta Altar 4 (1943:55) uncovered a grouping of ninety-nine jade beads and one amethyst bead distributed in an arrangement suggesting that they had been worn as a necklace and bracelets by an individual buried in front of the altar. The quantity of jade indicates an important status for the buried person. Several burials are associated with Chalcatzingo's altar in a manner which may indicate a similar relationship. Burial 94 occurs directly in front of the altar. Like the La Venta burial, it lacks ceramic mortuary offerings. Burials 95 and 105 both were found within the altar's interior, an obvious area of special significance. Whether Burials 94, 95, and 105 represent deceased rulers and/or personages ritually related to the earth-monster cult symbolized in the altar's iconography is conjecture at this point.

One major problem in dealing with the altar is that its final rebuilt form occurs in an unquestionable Cantera phase (700–500 BC) context. It is thus an anachronism, since the major Gulf Coast table-top altars may be Early Formative (1200–900 BC). Because Chalcatzingo's altar has clearly undergone at least one rebuilding, there is a possibility that it was originally made during the Barranca phase (1100–700 BC), a dating partially within the span of Gulf Coast altars.

The earliest evidence of occupation or use of T-25 is the Barranca phase structure, trash pit, and burials located on exactly the same area of the terrace as the altar. That the Barranca phase occupation may have been more than simple residential activity is suggested by the presence of a sting ray spine (an imported object of ritual importance) with Burial 107 and the association of a jade bead with Burial 109. The facts that the altar sits in the locale of the Barranca phase structure and that Burial 109 underlies the altar may be coincidental but may also indicate a long-standing "sacred" importance for this location.

The Chalcatzingo altar is shorter than Gulf Coast altars and lacks the frontal niche. It is intriguing to speculate that perhaps the altar as originally built was taller through the addition of two or three lower courses of stones and did incorporate a niche. However, it is probable that the original altar was the same height and form as the re-erected altar. A niche would have been difficult to build within an altar constructed of horizontal stone blocks, and the large size of the altar's basal blocks indicates that they were intended as foundation stones. Niches do occur in the Stage b patio walls.

Although the time period of the altar's original construction is uncertain, it is probable that it was dismantled and certain that it was rebuilt during the Early Cantera subphase. It is possible that the re-erection was associated with and/or related to the placement of Burial 105 within the altar. Burial 95 also occurs within the altar and appears to correlate to the period when the altar was further modified by covering its carved face, an act possibly in response to the death of the personage of Burial 95.

It is important to reiterate that the Cantera phase burials within the patio area were not associated with the original altar. Some date to the re-erection of the altar, and the majority were buried in front of the highly modified structure. The structure and patio may have served as an ancestral shrine and a cemetery for the relatives of the individuals entombed within the altar.

It is certainly possible, but not demonstrated, that some of the individuals buried within the patio area had been associated in life with the Cantera phase platform structure and residence at the northern end of the terrace. We believe that this structure, like other stone platform structures associated with stelae at Chalcatzingo, was associated with one of the site's rulers. Excavations of the platform's subfloor area did not reveal any burials, indicating that they were probably interred elsewhere. The possibility exists that the platform and residence were located here due to descent ties expressed through the altar and the other activities on this terrace.

RESUMEN DEL CAPÍTULO 7

El altar de piedra (Monumento 22) construido con un patio hundido fué descubierto cuando surgieron del suelo, al paso del arado, dos piedras esculpidas en el campo T-25. El altar, de más de 4 metros de longitud, no es monolítico como los altares olmecas de la costa del Golfo, sino que está construido de dos niveles de piedras rectangulares rematadas por un nivel superior sobresaliente, el cual crea el efecto de cubierta de tabla.

Los ojos y cejas de un monstruo de la tierra sobrenatural, el cual es un tema olmeca común, se encuentran esculpidos en el frente del altar. Al realizar la excavación, esta parte esculpida se encontró cubierta en un 75 por ciento por grandes bloques de piedra colocados al frente de la cara del altar. Una vez expuesta, se vió que la cara no presentaba el gran nicho de otros altares olmecas, y que la cara esculpida estaba incompleta. En el transcurso de su historia, los bloques del altar deben haber sido desarmados y vueltos a armar en forma incorrecta. Más tarde la cara fué escondida con otros bloques de piedra.

El fechamiento de la construcción original del altar se desconoce. Se volvió a armar en el lugar que se encuentra ahora durante la subfase Cantera Temprana. Dado que los altares de la costa del Golfo aparentemente pertenecen todos al Formativo Temprano, el altar de Chalcatzingo pudo haber sido esculpido primero y después vuelto a construir en el lugar T-25.

El altar mira al norte hacia el área ocupada por un patio hundido rodeado de paredes. Las paredes del patio no son altas y están construidas de piezas de piedra, las que algunas veces presentan la forma de nichos triangulares. Sobresalen a los lados de los nichos, formando los ojos, unas piedras redondas, en tanto que los nichos mismos figuran las bocas de estos rostros de monstruos terrestres.

El patio fué construido en cuatro etapas, las cuales todas corresponden a la fase Cantera. Los depósitos de la fase Cantera se encuentran por encima de los estratos de la fase Barranca, y un pequeño fragmento de un piso de una casa de la fase Barranca fué descubierto detrás del altar. Se descubrieron veintitrés entierros durante las excavaciones. Dos de ellos provinieron del interior del altar, pero la mayoria habían sido enterrados debajo de la superficie del patio. Unos cuantos entierros se pueden fechar en la fase Barranca y por lo tanto relacionarse con la casa de la fase Barranca. Varios entierros de niños de la fase Cantera pueden ser sacrificios de niños.

Las excavaciones del extremo norte de esta terraza permitieron descubrir una plataforma baja con una escultura de piedra asociada a una estela que se encontró rota. Esta plataforma pudo haber sido el cimiento de una residencia especial. El hecho de que esta plataforma se encuentre localizada al norte del altar puede indicar una relación de parentesco entre los individuos que hayan vivido sobre la plataforma y aquellas personas que se encuentran enterradas bajo el patio y dentro del altar.

8. Chalcatzingo Burials as Indicators of Social Ranking

MARCIA MERRY DE MORALES

This chapter discusses the human burials found during the 1972–1974 field seasons at Chalcatzingo with particular reference to Middle Formative social complexity. This social dimension is manifested by variations in grave type, mortuary furniture, and, derivatively, location. Alternative hypotheses for social differentiation at Chalcatzingo are presented, as well as similarities to Gulf Coast Olmec burial practices. Detailed descriptions of every burial are given in Appendix C.

No Early Formative (Amate phase) human burials were recovered by our excavations, and only a few burials of the early Middle Formative (Barranca phase) were found. The largest portion of the burials occur in Cantera phase (late Middle Formative) contexts, corresponding to the time of the heaviest occupation at Chalcatzingo. Some Late Formative, Classic, and Postclassic interments were also found and are mentioned briefly.

At the beginning of the project it was hoped that human skeletal remains would be of sufficient quantity and quality to allow the study of variations within the burial population in order to determine whether one or more morphological populations were present and/or restricted to particular site areas. Such data might have provided insights into the nature of external influences at Chalcatzingo, such as the hypothesized presence of a Gulf Coast elite.

Unfortunately, the majority of the skeletal material recovered was poorly preserved and highly fragmentary. Thus, sufficient morphological data could not be obtained to support or refute this hypothesis. The sexes of the individuals in nearly all instances were indeterminable, and age could not be refined beyond the simple division of infant, juvenile, young adult, and adult. In addition, no meaningful observations concerning deformation of the bones resulting from either pathological causes or premortem artificial deformation could be observed. The teeth were often well preserved, however, and in one instance, from the Classic period, dental mutilation was noted (Burial 92).

While morphological data were difficult to obtain from the majority of the burial population, skeletal preservation was sufficient to provide bone chemistry samples from over ninety Middle Formative skeletons. These samples were collected and analyzed for strontium content by Margaret Schoeninger. Since strontium is differentially distributed between meat and vegetable products, the relative amount of strontium in human bone can be used to infer diet. The results of that analysis (Schoeninger 1979a, 1979b) suggest that there were significant differences in meat consumption among the population at Chalcatzingo. Whether these differences resulted from a differential diet among a single population, as Schoeninger suggests, or serve to differentiate two distinct populations (i.e., an intrusive Gulf Coast elite) cannot yet be determined.

Burials at Chalcatzingo occur as subfloor interments in house structures and in nonresidential special contexts, such as the patio area enclosing the table-top altar (Mon. 22) on T-25 and the large earthen platform mound on the Plaza Central (Str. 4). They occur in both extended and flexed positions and exhibit a variety of orientations.

The burials have been classified into three types based on grave preparation. A simple, direct interment is a burial made in an unlined excavation in the ground, with no elaboration of the grave. A stone-associated interment is a grave which has several stones placed around the edges and/or covering parts of the body. This type of grave is not as complete as a stone crypt, the third type, in which the grave is lined and covered with stone slabs. In some instances, the Chalcatzingo crypts lacked covering slabs, but this appears to be a result of destruction by erosion and modern plowing rather than an intentional omission by the people preparing the grave.

Mortuary offerings consisted primarily of pottery, utilitarian stone, jadeite and serpentine objects, and obsidian, with pottery by far the most common artifact. Although a wide variety of ceramics was utilized on the site (see the typology presented in Chapter 13), only a relatively limited number of types and forms were found with the burials. No strong pattern has emerged which correlates certain vessels with specific burial types, and although some general statements can be made, there is a great deal of variability among the mortuary attributes.

The vast majority of ceramic vessels associated with burials are finished with an Amatzinac White slip. The principal forms for these vessels are the small shallow bowl and the double-loop handle censer. The small shallow bowl (Fig. 8.1*a*) is the most typical form of all ceramics associated with burials, occurring with twenty-nine of the 143 Formative period burials. Some are incised with decorative motifs. A few small shallow bowls, such as the Atoyac Unslipped Polished III type, lack the white slip. Small shallow bowls are found with extended and flexed burials in both crypt and noncrypt graves. They are sometimes found singly, but are frequently placed in pairs, mouth to mouth, suggesting that they held food or some other perishable substance. The mouth-to-mouth placement never occurs in association with crypt burials.

In addition, small shallow bowls are frequently paired with the small bottles we call *cantaritos* (Fig. 8.1*b*), the *cantaritos* often sitting within the shallow bowls (see below). *Cantaritos* with or without shallow bowls were found with twenty-two Middle Formative burials, apparently restricted to extended interments. Both they and the shallow bowls occur most frequently with Plaza Central burials.

Fourteen burials were associated with Amatzinac White double-loop handle censers (Fig. 8.1*d*). All but three examples of this censer form are found with Plaza Central burials, and one of these exceptions was a Cerro Delgado cave burial (Burial 156). The charred interior bases of these vessels suggest that they functioned for burning a substance such as copal at the time of the burial. Their near absence at other site areas suggests that double-loop handle vessels may have been reserved for censing at the burial of a person of special rank, position, or role.

Only five spouted trays were found in definite burial contexts. Spouted trays (Fig. 8.1*c*) normally have their interiors slipped with Amatzinac White. Four such artifacts were excavated with burials on the Plaza Central, and each was associated with a small shallow bowl. A similar association comes from a vessel cache on T-25. The fifth burial association, with the double burials on T-24 (Burials 90 and 91), lacked the shallow bowl and is the only occurrence of a spouted tray in a grave which also contains a jade bead.

Both grey wares, Carrales Coarse and Pavón Fine Grey, are also represented in burial contexts. Carrales Coarse Grey vessels are associated with twenty burials, while Pavón Fine Grey is rare. Most commonly the Carrales Coarse Grey vessels are composite bowls, often nicely incised and highly polished (Fig. 8.1*e*). Such bowls occur with extended and flexed burials, but are usually absent from crypt burials and from burials associated with jade ornaments.

Other ceramic types, such as Peralta Orange, are rare in burials. In addition, only six burials had definite associations with figurines, whole or fragmentary. The only burial excavated with two whole figurines is Burial 45, a subfloor burial in PC Structure 2 (Fig. 8.2). Several other burials, again primarily on the Plaza Central, had associated figurine fragments, usually only heads or bodies.

Jade, serpentine, and other greenstone objects comprise another class of Middle Formative burial offerings. Three general categories of greenstone jewelry were found—earspools, beads, and pendants—as well as some miscellaneous pieces. All of the earspools are of the type which Charlotte Thomson (Chapter 17) characterizes as "standard" earspools. None of the "paper-thin" earspool fragments recovered by excavations were associated with burials.

All of the beads occurred singly except in Burials 39 and 40, which contained necklaces obviously worn by the deceased. In the majority of burials yielding single beads, the beads were found at or within the individuals' mouths. A tubular bead found between the legs of Burial 40 (Fig. 17.10*j*) is of far greater workmanship and quality than any singular beads associated with other burials. Other greenstone objects include jade awl points and a serpentine were-jaguar figurine. (See Chapter 17 for descriptions and illustrations of these artifacts.)

Obsidian was also found in several burials, although in some cases it was difficult to ascertain whether the obsidian had been placed as part of the mortuary furniture or had simply been within the soil used to backfill the grave pit. Definite associations of obsidian were found only in burials from PC Structure 1 and T-25. Among the eight burials from PC Structure 1 associated with obsidian, the obsidian occurs in the form of complete or fragmentary prismatic blades, and the two burials from T-25 containing obsidian had respectively a partial blade and a flake. Obsidian also occurs with Burial 138 on T-37 because the individual was interred in a trash area composed of obsidian workshop debris. The lack of obsidian with burials elsewhere on the site could reflect a recording error on the part of the archaeologists excavating the burials, but it more likely appears to be part of a pattern of the restriction of certain mortuary objects to the Plaza Central and T-25 burials.

Manos and metates were found in association with nineteen burials, thirteen of which were in PC Structures 1 and 2. Only one of the metates was whole (with Burial 110); the rest were fragments. Several of the manos were whole. Because it was almost impossible to sex the burials by ordinary means, it could be tempting to assign female gender to burials associated with utilitarian ground stone artifacts. This practice has been correctly criticized (Marcus 1978b: 130).

MORTUARY PRACTICES AS AN INDICATOR OF SOCIAL POSITION

The mortuary practices indicated by the Chalcatzingo burials offer mute testimony of a non-egalitarian social organization as early as the Barranca phase but probably extending farther back in time. This statement is based on two assumptions. The first is that the treatment of an individual at death reflects the social position occupied in life. The second assumption is that the variability in social position can be determined by burial practices, in particular, the nature of the grave and the mortuary furniture. Obviously, age and sex data are also important, especially with regard to achieved statuses, but this information is lacking for the Chalcatzingo burials, so that any conclusions as to social ranking are based on nonskeletal evidence.

Evidence of a non-egalitarian social organization involving differential ranks or statuses (presumably hierarchically ordered) was taken to be unequal access to: (1) certain scarce and/or valued items and (2) the labor of other persons. For our purposes, we assumed that the manifestation of this differential access, in life and in death, followed community-wide rules or norms, present throughout at least the Middle Formative period. Without this assumption, we could not compare burial practices in order to derive some sort of ranking.

Certain propositions can be stated concerning variation in mortuary practices based on some rather obvious considerations. The first is that jade and other greenstone objects, which are nonlocal in origin and relatively rare at the site, were restricted to certain persons in life and in death. This is based on analogy to other prehispanic Mesoamerican cultures in which jade was the most highly valued material, particularly because of the sacred connotations of the color green. Its importation and use are assumed to have been controlled by the elite, and probably only the elite could "consume" jade by having it included in their graves.

A second proposition concerns the labor devoted to the interment. An extended burial requires a larger grave pit than a flexed burial, indicating greater expenditure of time and labor. The addition of stones to the grave is an increased labor investment since large flat stones are uncommon at the site and had to be transported to the burial location and

Figure 8.1. Ceramic vessels commonly associated with burials: *a*, shallow bowl; *b*, *cantarito*; *c*, spouted tray; *d*, double-loop handle censer; *e*, Carrales Coarse Grey decorated bowl.

Figure 8.2. Vessels, figurine, and mano associated with Burial 45.

placed around the body. A crypt is even more complex. It is therefore assumed that only higher-status individuals were permitted or could command the extra effort involved in making this latter grave type.

With these two propositions dealing with jade and grave type as markers of social inequality, a further observation concerning burial location can be made which also demonstrates differential status. Burials with crypts are found only on the Plaza Central, particularly in Structures 1 and 4, and on T-25. Jade artifacts are found primarily in burials in these same areas.

Of all these, PC Structure 4, the large earthen platform mound, appears to have had the greatest importance as a burial location. Burials found on the upper surface of this structure obviously fall outside the normal pattern of house subfloor interments. It is significant that PC Structure 4 is the largest architectural feature on the site. Our limited excavations uncovered two elaborate burials, a looted crypt, and a stone-faced tomb structure (Fig. 4.10). But the most striking aspect was the tremendous amount of jade in the two unlooted burials here (nos. 39, 40), more than was found in all other burials combined, and the fact that only these two individuals had been wearing the jade as jewelry at the time of burial.

PC Structure 1, a residence directly across the plaza from Structure 4, is the only house structure excavated which contained crypt burials. Thirty-eight subfloor burials were found within this structure, far more than in any other single structure. The range of burials here covers essentially every burial type found on the site, from crypt burials with associated jade to simple flexed burials lacking furniture. Because PC Structure 1 is the only house with crypt burials and jade in the burials, and further because it is situated on the Plaza Central, it has been designated as an "elite" residence.

The jewelry found with these burials consists primarily of jade originally meant to be worn, such as beads and earspools. However, with the exception of the were-jaguar figure found with Burial 33, all the associated jade in PC Structure 1 consists of broken items which apparently were no longer functional for their intended use but which, because they are of jade, still represented items of value.

The fragmentary nature of the burial jade artifacts corresponds to the pattern found elsewhere on the site, in nonburial contexts (see Chapter 17). However, jade is a very strong mineral and is not easily broken accidentally, so this breakage may have been purposeful, especially in the case of the larger artifacts such as the "standard" earspools. It is interesting to note that some pieces of these broken items are always missing from the grave, i.e., the entire (broken) artifact was not placed with the burial.

A third area with some apparently high-status burials is the patio associated with the table-top altar on T-25 (see Chapter 7). The presence of elaborate graves, including two crypt burials within the altar itself, suggests special activities for this location. The T-25 burials may slightly predate those of PC Structure 1, indicating perhaps a shift in importance from T-25 to PC Structure 1 in terms of elite burial location.

Along with the assumed high-status markers of crypt grave, greenstone artifacts, and elite burial location can be added a fourth type of burial treatment: the staining of the body and/or artifacts with hematite. Hematite staining is much rarer than greenstone artifacts with burials at the site, though hematite was presumably more accessible, with known sources in the area (Chapter 23).

Almost all of the hematite pigment occurred in Plaza Central burials, the area of elite burials. A few flecks around the skull of Cave 4's Burial 156 may have been hematite pigment, and hematite powder was found in a vessel associated with the skull burial (no. 111) on T-25, a possible ritual burial.

Only the two burials on PC Structure 4 (nos. 39 and 40) have hematite stains on the body itself. Elsewhere, it appears as stains on the offerings or as separate pieces accompanying the body. The fact that hematite staining occurs with the two individuals on PC Structure 4 and with two other Plaza Central burials having both crypts and jade inclusions (nos. 28, 33) distinguishes it as some kind of high-status marker.

Below this high rank category defined by grave type and the presence of jade and possibly hematite staining, we further assume that persons receiving ceramics as grave furniture were somehow ranked higher in the society than individuals who lacked such offerings. The burial ceramics are generally not everyday utilitarian vessels, but comprise more "costly" types as well as forms of obvious ritual use, such as the double-loop handle censers.

The lowest rank category is made up of simple, direct burials lacking any associated furniture as well as direct burials containing only chipped or ground stone tools. This latter group is included with the burials lacking furniture because these stone artifacts are primarily utilitarian, are frequently broken, and seem of little value. Thus, we cannot make any social distinction between burials with only stone tool inclusions and burials without any furniture. Obviously, perishable goods that may have been included in the grave could have served as status markers but cannot be recognized today.

It is instructive at this point to compare the proposed ranking with all the Cantera phase burial data by correlating grave type with mortuary furniture. These data are presented in Table 8.1. Three categories of burial furniture are differentiated: (1) jade with or without ceramics; (2) jade lacking, ceramics present; and (3) jade and ceramics lacking. In the first category, two subcategories of jade can be defined: jade worn at the time of burial and unworn jade. The unworn jade has also been subdivided to distinguish single bead inclusions, based on the assumption that other green stone artifacts, such as earspools, blood-letters, etc., were treated differently than were the single beads. Beads, unlike these other artifacts, are usually unbroken. Furthermore, they were usually not just added to the grave but placed at or in the mouth of the deceased. The placing of beads in the mouth of the dead was also a Postclassic custom reported by the Spanish for the Valley of Mexico.

The general picture provided by Table 8.1 is that the elite (with crypts and jade; upper left corner) are few, while the nonelite (lacking these two attributes; lower right corner) are many, as would be expected. The other possible groupings—jade without crypts and crypts without jade—provide intriguing, possibly intermediate categories, as do the stone-associated interments, but no specific hypotheses can be presented at this time. Stone-associated graves, however, have much less jade than either crypts or direct burials, and it is therefore unclear whether they may signify rank differences.

Elaborate stone crypt graves seem to be better indicators of high rank than do jade artifacts. Crypt graves are highly restricted, occurring only in PC Structures 1 and 4 and associated with Monument 22, the table-top altar on T-25. Furthermore, they represent an additional labor investment at the time of interment. Nevertheless, if grave type alone were taken as a measure of ranking, then it can be seen that other categories (jade or jade and ceramics, ceramics only, and burials lacking significant offerings) occur generally with each grave type, i.e., there is no absolute correlation of grave type with mortuary furniture.

Jade in burial association is somewhat less restricted in distribution than are stone crypts. A problem faced in interpreting the Chalcatzingo data lies in the fact that fragments of worked jade were found in essentially every house area (see Chapter 17). At the same time, with the exception of PC Structure 1, subfloor burials with jade as mortuary offerings are very rare. Thus, while every Chalcatzingo household may have had access to jade, the data support the assumption presented earlier that only a relatively few high-ranking members of the society had enough wealth in that substance to afford to utilize it as a mortuary offering and thus take it out of distribution.

Twelve direct burials had associated greenstone objects, alone or with ceramics. However, over 50 percent of these were simply associations with single beads. It is noteworthy that single beads occur only with direct burials, whereas other greenstone objects occur with all the grave types. This correlation of beads with a presumably lower-ranking grave type suggests that beads were not important rank markers in the same sense as other greenstone objects, but were considered to be different from these other artifacts. Thus, although they are all of greenstone, there was a conceptualized dichotomy between the two types of artifacts (beads and nonbeads).

Table 8.1. Cantera Phase Burials Categorized by Grave Type and Mortuary Furniture

	Mortuary Furniture								
	Jade with or without Ceramics[a]								
		Unworn							
Grave Type	*Worn*	*Beads Only*	*Other*	*Ceramics, No Jade*			*No Jade or Ceramics*		
Crypt	39		28	3	34	114	37[b]		
	40		33	5	36		94		
			95	26	105				
Stone-Associated			136	78	110	156	35		
				79	142	157	51		
				100	143				
Direct		12	16	2	38	90	1	57	96
		23	32	4	41	97	6	58	101
		43	54	8	42	98	7	59	102
		47	87	9	44	99	11	60	103
		108	89	10	45	106	17	61	104
		111	91	13	49	127	18	77	137
				14	50	128	20	82	138
				15	52	139	31	85	141
				19	62	146	46	86	144
				21	66	147	48	88	145
				22	73	148	55	93	158
				24	80	152			
				25	81	153			
				27	83	154			
				29	84	155			
				30					

[a]Burials which include both worn and unworn jade are listed under "worn."
[b]This is a skull burial within a small crypt.

Attempts to further refine the lower ranks, which required consideration of mortuary attributes other than crypts and jade, were generally unsuccessful. Several multivariate analyses were attempted, including those of Schoeninger (1979a; 1979b), Teresita Majewski (1976a), and Grove (personal communication), but they revealed little direct correlation between the type of interment, the presence of green stone artifacts, and the quantity and type of ceramics and other artifacts. In fact, individuals associated with jade artifacts and buried within crypts normally have few associated ceramics, so we could not determine whether any ceramic types or forms were associated with higher-ranking individuals. A similar inverse correlation between jade and ceramic quantity also obtains for directly interred burials. Finally, the burials exhibited such great diversity in mortuary furniture that it was difficult to detect more detailed patterning using multivariate methods. Thus, we were unable to apply the ranking to any clustering of other artifacts. On the other hand, Schoeninger's (1979a; 1979b) analysis suggests a correlation between certain artifact categories (jade; shallow bowls; and no furniture) and access or lack of access to meat in the diet, confirming in general terms our hypothetical ranking.

While the multivariate analyses did not associate particular ceramic types or forms with particular ranks, our observations suggest that two such correlations can possibly be made, although the number of instances is small in both cases. It seems fairly certain that *cantaritos* placed within shallow bowls mark a high-ranked individual. Such associations occur four times at Chalcatzingo, with Burials 10, 33, 39, and 40. These last three burials are in elaborated crypt graves and were associated with jade. A correlation can be drawn with La Venta, where a *cantarito* and a shallow bowl were found in Offering 5, a possible burial on the northeast platform (P. Drucker, Heizer, and Squier 1959: 162–164, Fig. 41).

The double-loop handle censer may also be a marker of high rank, although its importance appears to be less than that of the *cantarito* within the shallow bowl. Of the fourteen instances of burials associated with these censers, eleven (79 percent) are from PC Structures 1 and 2, although only two burials (nos. 28 and 34) have crypt graves. This high concentration on the Plaza Central suggests they have either rank value or particular social significance.

In addition, a ceramic type which seems to be negatively correlated with high rank is Carrales Coarse Grey. As was noted, vessels of this type are usually absent from crypt and jade-associated burials. This suggests they may have served as a marker of a lesser position within the community.

One can speculate as to what the generalized rank categories described above and detailed in Table 8.1 actually corresponded to in the social organization of Cantera phase Chalcatzingo. There is no evidence that they related to fixed social classes or to a rigid hierarchy of political, religious, or economic positions except for the highest category. The individuals buried in the platform mound (Str. 4) on the Plaza Central, in crypts (and tombs), wearing vast quantities of jade, with hematite stains on their bodies and furniture, were probably the "chiefs" of the society, at the top of the political order if not the religious and economic hierarchies as well.

Differential access to valued goods and labor as represented by the other burials may, however, reflect differences in wealth or prestige based on idiosyncratic qualities or kinship ties. For example, the privilege of owning jade may have been restricted to relatives and friends of the chief or to certain powerful kinship groups, such as lineages. People may have inherited this right, as well as the accumulated wealth of their families, such that valued artifacts will appear in their or their family members' graves for this reason and not because the individuals held certain fixed socio-political positions. This may explain the high "rank" assigned to some of the children (see below). In the absence of kinship-based access, people may have been able to accumulate wealth (e.g., in jade) through their own entrepreneurial activities, which indicates that any status thus obtained would have been achieved.

There are other possibilities to account for the differences in burial treatment. They may reflect different rules for the placement of mortuary furniture according to the sex of the deceased. They may relate to the occupation of the deceased, including religious offices. Differential access may even reflect ethnicity; perhaps the higher-status individuals were part of a Gulf Coast elite who lived and died at Chalcatzingo. Thus, the rankings may not, in fact, manifest a local hierarchy. Again, morphological data would have been very useful to test this last hypothesis.

DESCRIPTIONS OF THE BURIALS

The burials of the different site areas for the Middle Formative period are presented in greater detail below. The Late Formative, Classic, and Postclassic burials are also briefly discussed. The main distinctions between areas as represented by the archaeological features and artifacts of the graves are summarized, and distinguishing characteristics of burials within each area are also presented. Appendix C gives all the pertinent data for all burials, which are listed sequentially there by burial number.

Middle Formative Burials

PC Structure 4

Chalcatzingo's most elaborate burials were found along the top of the 70 m long Middle Formative platform mound, PC Structure 4, on the south and east sides of the mound. Although only two burials were recovered, the excavations atop the mound were limited in extent, and there is a strong probability that other burials remain to be found. Our 1976 excavations uncovered a looted crypt in the same area (Fig. 4.9), and 1974 excavations at the east end of the mound exposed a looted tomb faced with a stone wall and a stone-filled doorway (Fig. 4.10). The presence of the tomb structure and the elaborate burials which were recovered (nos. 39 and 40) strongly imply that the most important personages on the site were buried atop the platform mound.

Burial 39, an adult of undetermined sex, was uncovered during excavations in 1973. Burial 40, also an adult of undetermined sex, was found during the 1974 field season. Both burials share a number of traits. The individuals were in an extended, supine position, heads to the west. Both wore the majority of their associated jade artifacts, in sharp contrast to other burials on the site. Each also had a ceramic offering consisting of a *cantarito* placed inside an incised shallow bowl. As mentioned above, a similar association occurs with a jade-associated "burial" at La Venta (Offering 5; P. Drucker, Heizer, and Squier 1959: 162–164, Fig. 41).

At the time of its discovery, Burial 39 (Fig. 8.3) was covered by an irregular pile of stone which did not form the typical box-shaped crypt found with some other burials. Red pigment covered most of the extended skeleton. Jade earspools were found on each side of the skull, and forty-nine small jade beads were under the mandible and around the neck in an association indicating that they had been part of a multistrand necklace. A stone adze, the only associated greenstone artifact not worn by the individual, had been placed on the upper chest. Eight jade beads found at the pelvic area had apparently been part of a belt or decoration worn below the waist.

Stones outlined the grave of Burial 40 (Fig. 8.4), but at the time of excavation the grave lacked covering stones. Its location on the sloping sides of the mound and its shallow depth today suggest that any covering stones might have been churned up by plowing and removed by the farmers who used this land. While in an extended position, the legs were slightly flexed, and the skeleton appeared to rest partly on its left side.

The right earspool of Burial 40 was still in position at the time of excavation, but the left earspool was found on the chest area, between the arms. One and probably both earspools had originally contained shell insets (Fig. 16.23*a*). Recovered in the area of the earspools were 94 tiny (2 × 2 mm) thin, flat squares of turquoise, apparently part of a mosaic covering on the earspools.

Eleven jadeite beads were found on the skull, and a polished concave iron ore mirror rested on the right maxilla. The mirror has two suspension holes near one edge (Fig. 16.22*a*). The position of the mirror and the beads around the skull indicates that although these had probably been suspended around the neck, they had either accidentally or purposely been raised to the face area at the time of burial. A spherical bead had been placed atop the mouth (between the lips?).

Sixteen beads were found in the pelvic area, again apparently part of a decorative belt or strand of beads worn below the waist. A long tubular bead (snuff tube?) lay between the legs. After the burial had been excavated and removed, a knotted strand of thread-like sinew was found under the area of the skull. It is probable that the sinew had at one time been threaded through the beads found on the skull but had been purposely broken at the time of burial or had partially disintegrated later. Like those of Burial 39, the offerings and body of Burial 40 were stained with red pigment.

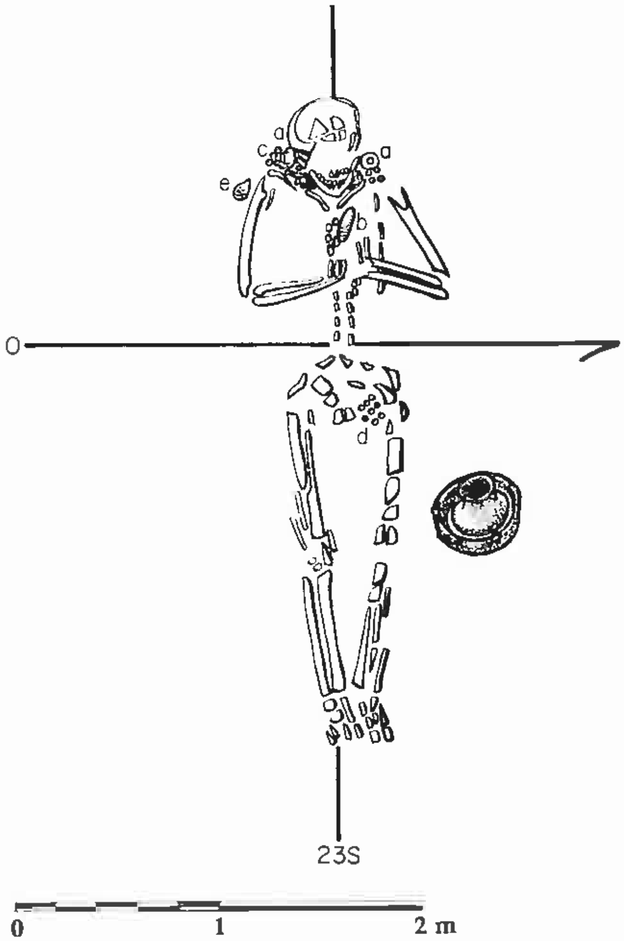


Figure 8.3. Burial 39, covering stones removed: *a*, earspools; *b*, adz; *c*, *d*, jade beads; *e*, figurine heads.

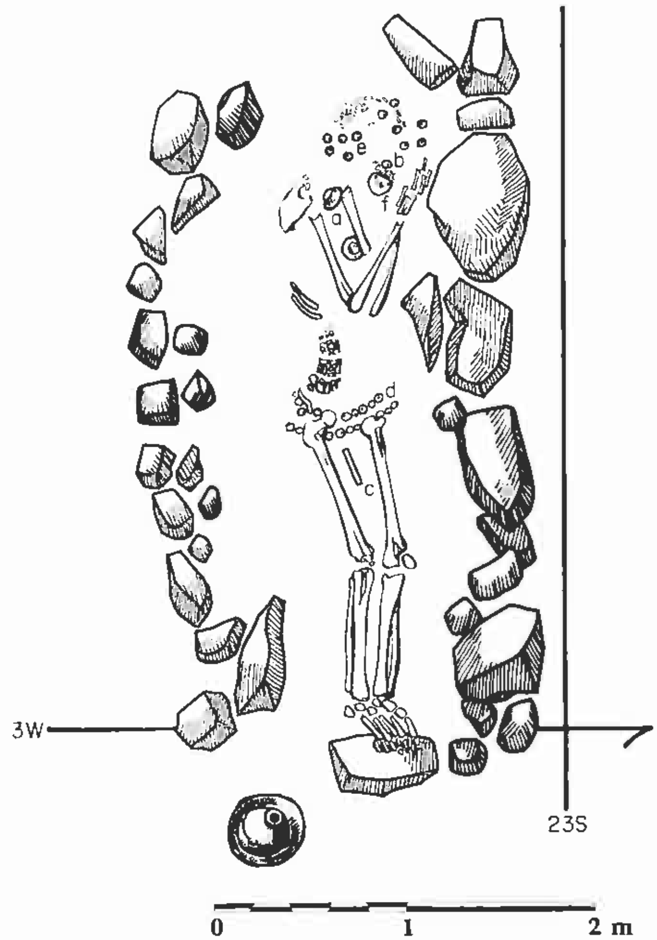


Figure 8.4. Burial 40: *a*, jade earspools; *b*, *d*, *e*, jade beads; *c*, tubular jade bead; *f*, iron ore mirror.

PC Structure 1

If crypt burials and/or jade ornaments are accepted as marker traits for high-ranking individuals, then Plaza Central Structure 1 (Figs. 8.5–8.7), an apparent domestic structure, occupied a prominent role among the houses of Cantera phase Chalcatzingo. Five crypts with stone covers (Burials 28, 33, 34, 36, 37) and three in the plow zone lacking covers (Burials 3, 5, 26) were found among the structure's subfloor interments. The facts that this structure is located on the Plaza Central, across the plaza area from the platform mound (Str. 4), and that it is the only residence found with definite subfloor crypt burials, indicate that it was a special structure and probably the site's elite residence during the Late Cantera subphase.

The quantity of burials associated with this structure permits several observations. Neither depth, type of interment, nor mortuary furniture serves to make significant temporal distinctions among the thirty-eight PC Structure 1 burials. The similarity of ceramic debris, interment procedures, and offerings leads to the conclusion that these Late Cantera subphase burials occurred over a relatively short period of time, possibly within 100–150 years. In the following discussion, any variations in mortuary practices are therefore attributed to social and not to temporal factors.

Besides being the only excavated residence with crypt burials, PC Structure 1 is also unusual in that it is the only structure within which the entire range of burial positions and orientations found on the site occur (see Appendix C). Burials were almost equally divided among those oriented with the head to the north, south, west, and east, with a few oriented to the northwest and northeast (Fig. 8.5–8.7). The majority of the individuals had been interred in an extended, supine position. Flexed burials, when found, had usually been placed on the right side.

As with the site as a whole, there does not appear to be any relationship among grave type, greenstone artifacts, and vessels interred with an individual. Nineteen of the twenty-four extended burials had associated vessels, which is what may be expected if both extended position and ceramic offerings are taken as an indication of at least some intermediate status. It is interesting to note that flexed burials, which might be assumed to be ranked lower than extended burials, divide almost equally between presence and absence of ceramic offerings.

A further noteworthy aspect with regard to the association of vessels with

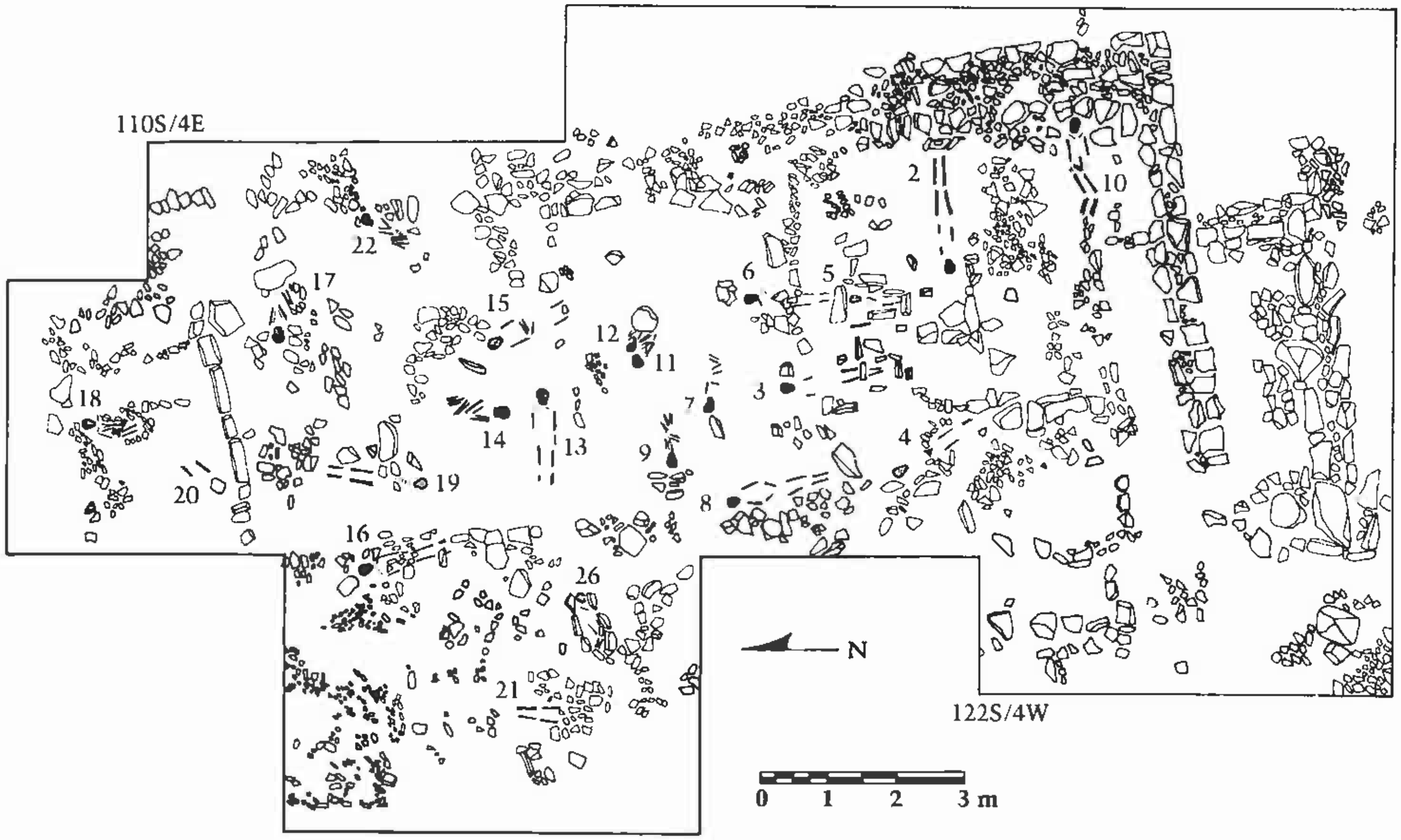
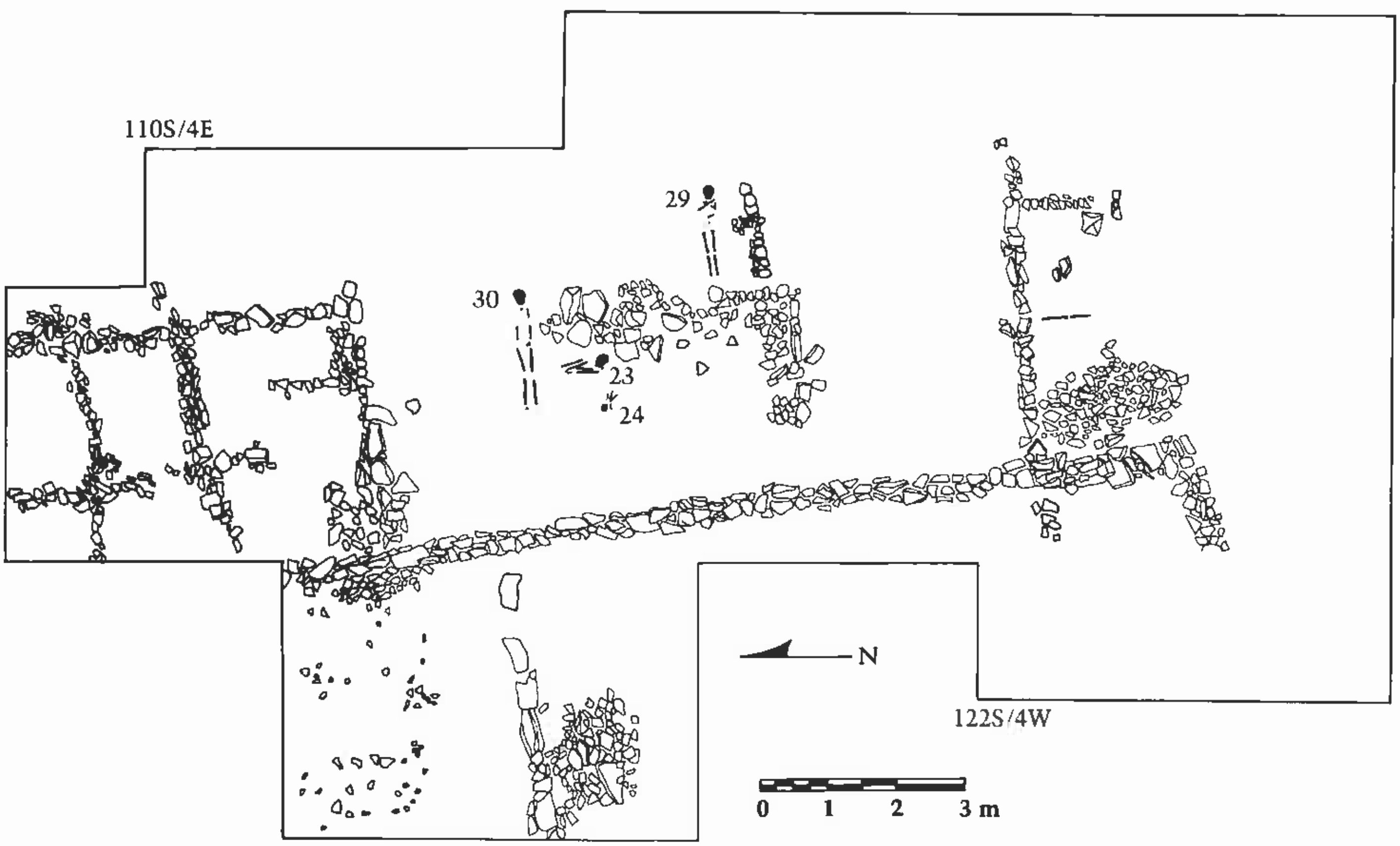


Figure 8.5. PC Structure 1, Stage d, showing locations of Burials 2–22, 26. Burial 1 (fragmentary) was located above Burial 2.



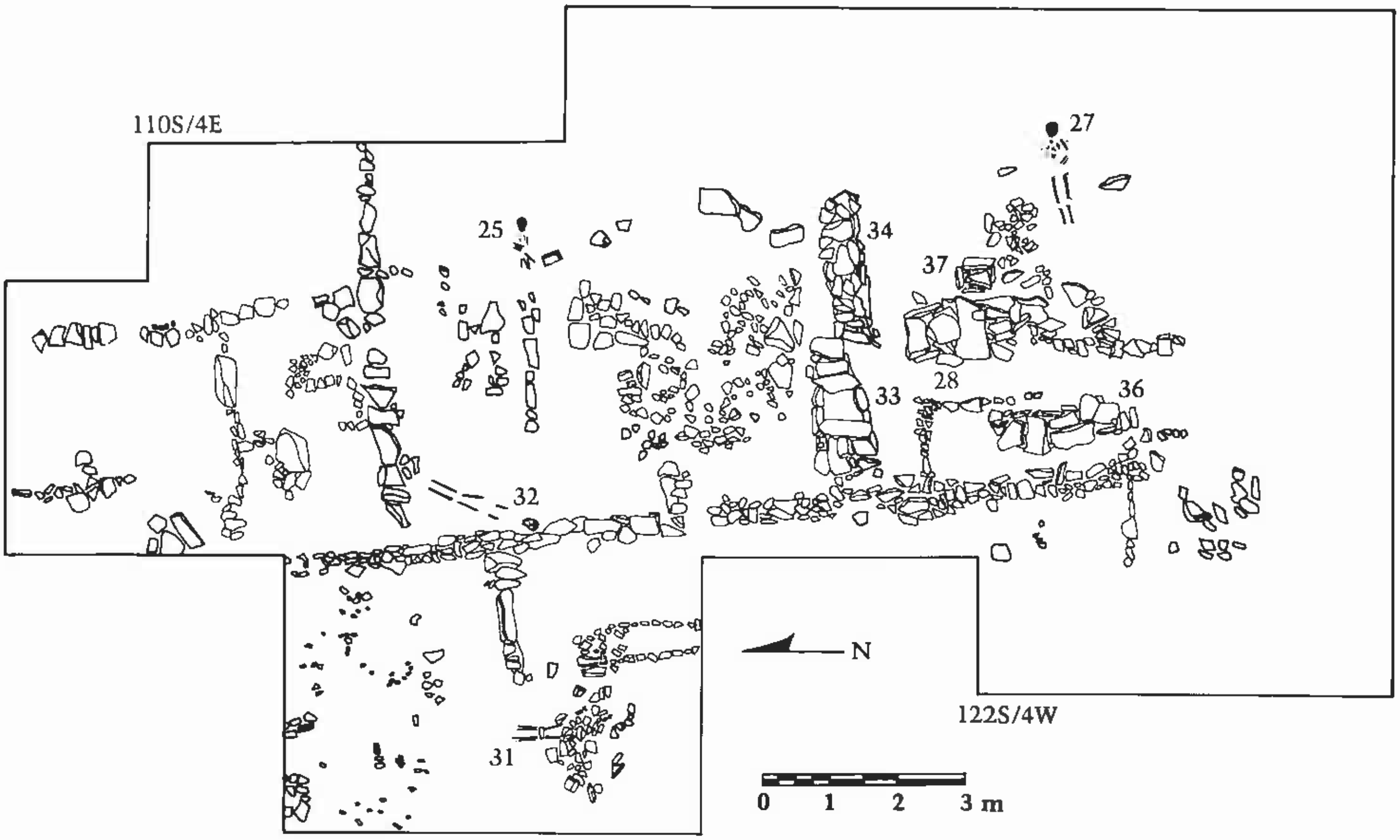


Figure 8.6. PC Structure 1, Stage c, showing locations of Burials 25, 27, 28, 31–34, 36, 37. Burials 35 and 38 too fragmentary to pinpoint.

Figure 8.7. PC Structure 1, Stage b, showing location of Burials 23, 24, 29, 30.

extended and flexed burials in this structure has to do with the placing of small shallow bowls in the mouth-to-mouth position. Mouth-to-mouth shallow bowls occur only with PC Structure 1 burials, appearing with three of the flexed burials and three of the extended burials. This may indicate some association linking these individuals (see discussion below).

On the eight crypt burials discovered below PC Structure 1 (nos. 3, 5, 26, 28, 33, 34, 36, and 37), several comments should be made. First, Burial 37, though a crypt burial, contained only a skull. This is not a case of poor preservation; rather, the small crypt was built only to receive the skull.

At the pelvis area of Burial 3 was one of the most significant items placed as mortuary furniture with any Chalcatzingo burial, a stone anthropomorphic statue head (Mon. 17; Fig. 8.8). Grove, in his discussion of monument mutilation (1981b) has suggested that the stone head is from a portrait monument which probably represented the deceased.

Burial 33 (Fig. 8.9) was associated with a small, unslipped polished *cantarito* which had been placed within a shallow Amatzinac White composite bowl, a pattern which was discussed above. An important item found in association with this burial was a serpentine figurine in the were-jaguar style (Fig. 17.1). The figurine is within the La Venta–Olmec style, although it may be of highland manufacture (see Chapter 17). Also placed within the crypt were the point of a jade awl and five groups of small, rounded pebbles numbering five, nine, ten, eleven, and twelve respectively.

The distribution of the PC Structure 1 subfloor burials reveals an interesting pattern: burial furniture and orientation differ on either side of an imaginary line crossing the center of the house at grid coordinate 118.5S, a line which divides the house into northern and southern halves. There are 23 burials north of the line, and 15 to the south. Flexed burials were found only in the northern half, while seven of the eight crypt burials occur in the southern half. The seven PC

Figure 8.8. Burial 3 with Monument 17 statue head in situ (*lower right foreground*) and destroyed remains of crypt, fragmentary skeleton, and *cantarito (center)*.

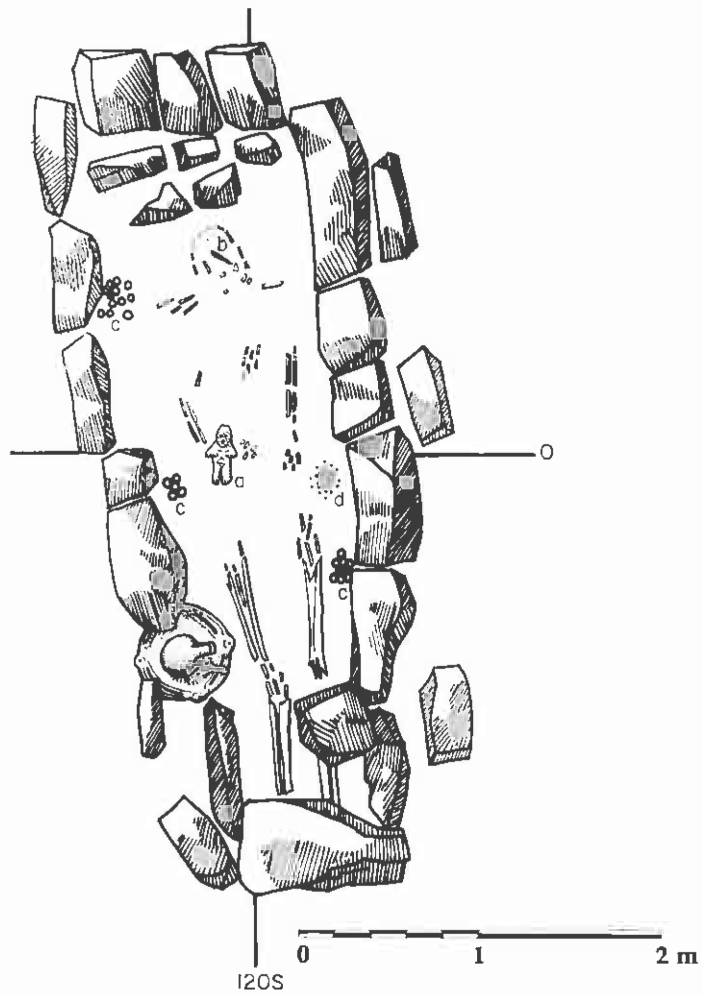


Figure 8.9. Burial 33 crypt: *a*, were-jaguar figure; *b*, jade awl; *c*, three groups of smooth pebbles within crypt; *d*, red pigment.

Structure 1 burials oriented with head to the south were all found in the northern half of the structure, while most of the north-oriented burials were south of the line.

Ceramic mortuary furniture is more abundant with interments in the southern half of the structure. Ten of the northern burials lack ceramics completely, whereas that is true of only three southern burials. In addition, seven of the eight burials associated with *cantaritos* occurred in the southern part, while five of the six occurrences of mouth-to-mouth shallow bowls were found to the north.

Other patterned distributions of furniture were evident in this structure, although they did not hold for the site as a whole. North- and south-oriented burials had the greatest range of ceramic vessels as offerings. *Cantaritos* occurred only with extended burials oriented north or south. They are not found in extended east-west oriented interments or with any flexed interments. This same pattern is found for greenstone ornaments other than beads.

Flexed burials received the least variety of offerings, but they also follow a similar north-south dichotomy, with north-oriented flexed burials having only grey ware bowls and south- or west-oriented flexed burials only shallow bowls (e.g., Burial 9; Fig. 8.10).

Another burial pattern evident from some of the PC Structure 1 interments is the pairing of burials, which occur either adjacent to one another or as one overlying the other (although they are not always oriented in the same direction). While in a few instances the pairings could be coincidental, most pairings appear deliberate. The burial pairs do not seem to represent individuals buried together at one time (i.e., a double burial) since normally several centimeters of earth separate them. Burials determined to occur in pairs are 3 and 33, 10 and 27, 5 and 34, 21 and 31, 19 and 32, and 15 and 30.

Any number of cultural distinctions could be responsible for the pairings. For instance, it is possible that the spouse of an already deceased high-ranking person was later buried in the same area, creating thereby a burial pair. Under better conditions of preservation this could have been partially tested by identifying the sexes of the paired individuals.

The most notable and intriguing pair consists of Burials 3 and 33, described above. Burial 3, the uppermost, was ap-

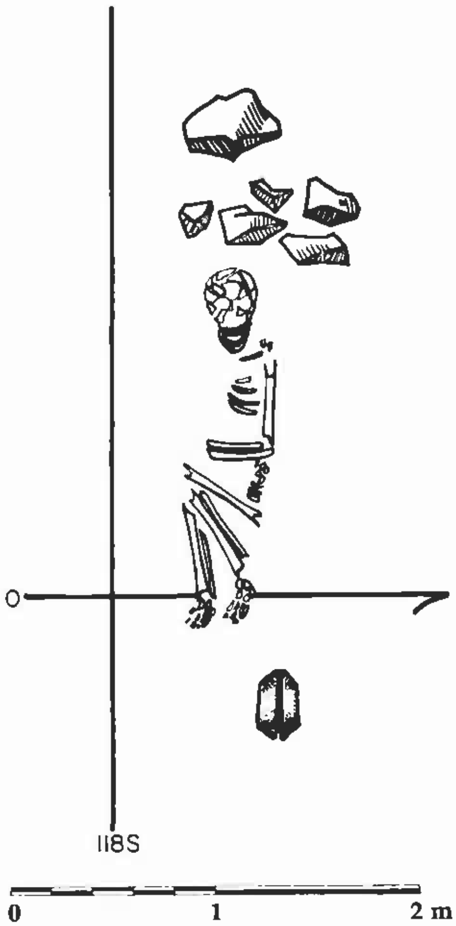


Figure 8.10. Burial 9, flexed, associated with two mouth-to-mouth shallow bowls.

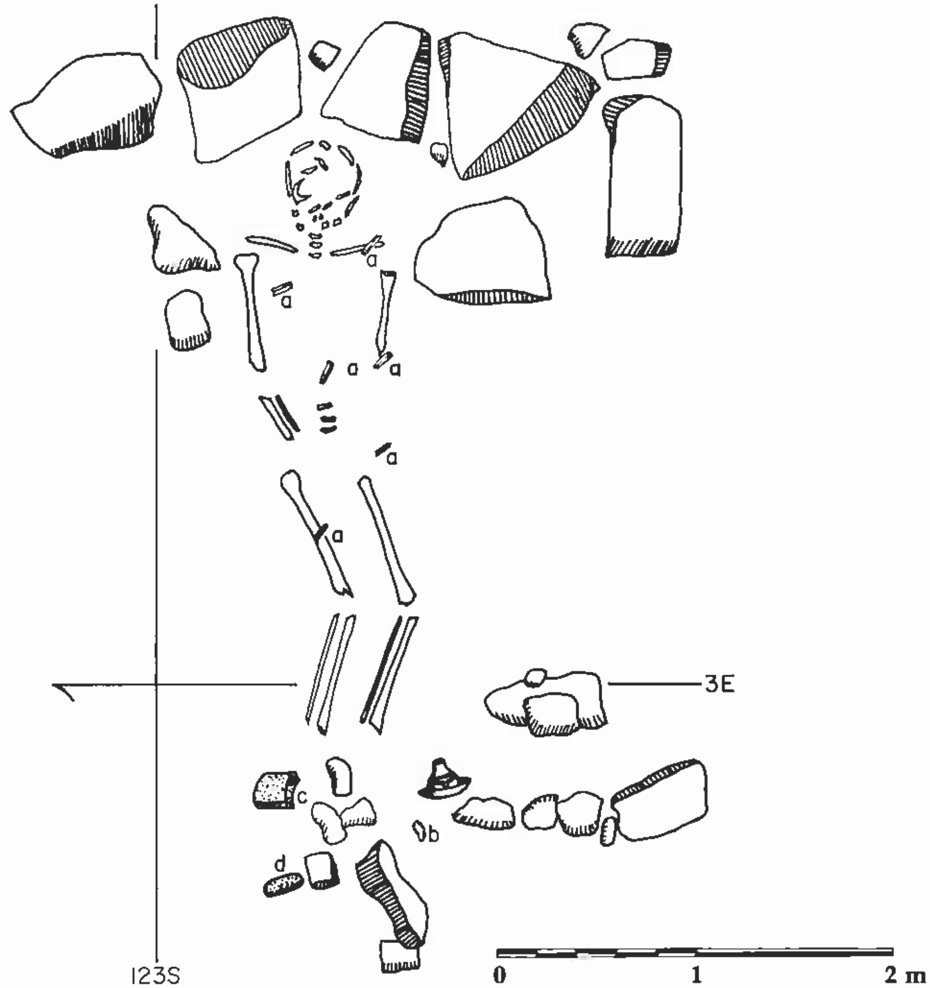


Figure 8.11. Burial 10: *a*, prismatic blades; *b*, flake; *c*, metate fragment; *d*, mano.

parently once a complete crypt, but at the time of its excavation it lay within the plow zone and was missing its stone cover. The mortuary goods associated with Burial 3 included a small *cantarito*, a Peralta Orange punctate bowl, a mano at the individual's feet, and Monument 17, the stone head which had been removed from a statue. Underlying Burial 3 was the complete crypt of Burial 33, at right angles to the upper burial. Offerings consisted of a *cantarito* within an Amatzinac White shallow bowl and the stone were-jaguar figurine.

These two crypts contain the most truly Olmec artifacts found during the project's excavations, the statue fragment and the figurine. The mano at the feet of the barely visible skeletal remains of Burial 3 does not serve to identify that burial as female. Nonetheless, it is possible that Burials 3 and 33 were a related pair of individuals, possibly husband and wife, connected to Gulf Coast Olmec culture or its symbolism within the society.

Another pairing consists of Burials 10 and 27. Both burials were directly interred in an extended supine position, heads oriented to the east. Burial 10 (Fig. 8.11) was associated with a mano, obsidian blades, and a *cantarito* placed within a shallow bowl. Burial 27 (Fig. 8.12) also had a mano and obsidian blades, but the vessels in this instance were two double-loop handle censers. Burial 10 is directly above Burial 27, and the two are separated by a depth of only 5 cm. If it is found that grinding stones were associated only with female burials, then both these individuals are female.

Burial 5, a crypt grave in the plow zone, overlies Burial 34, also a crypt burial, by 40 cm. Although these burials have different orientations, the head area of Burial 5 overlaps the head area of Burial 34. Burial 5 is a child and is oriented with the head to the north. It was associated with a single Carrales Coarse Grey vessel. Burial 34, an adult, is oriented with the head to the east and had two double-loop handle censers placed along the exterior of the crypt. Perhaps these two individuals represent a parent and child.

Burials 21 and 31 are disturbed, and only the lower limbs of each remain. These are extended burials, directly interred. They were originally oriented with heads to the south. Burial 21 is 30 cm directly above Burial 31. Each burial was associated with a mano placed east of the legs. Burial 21 had a partial Peralta

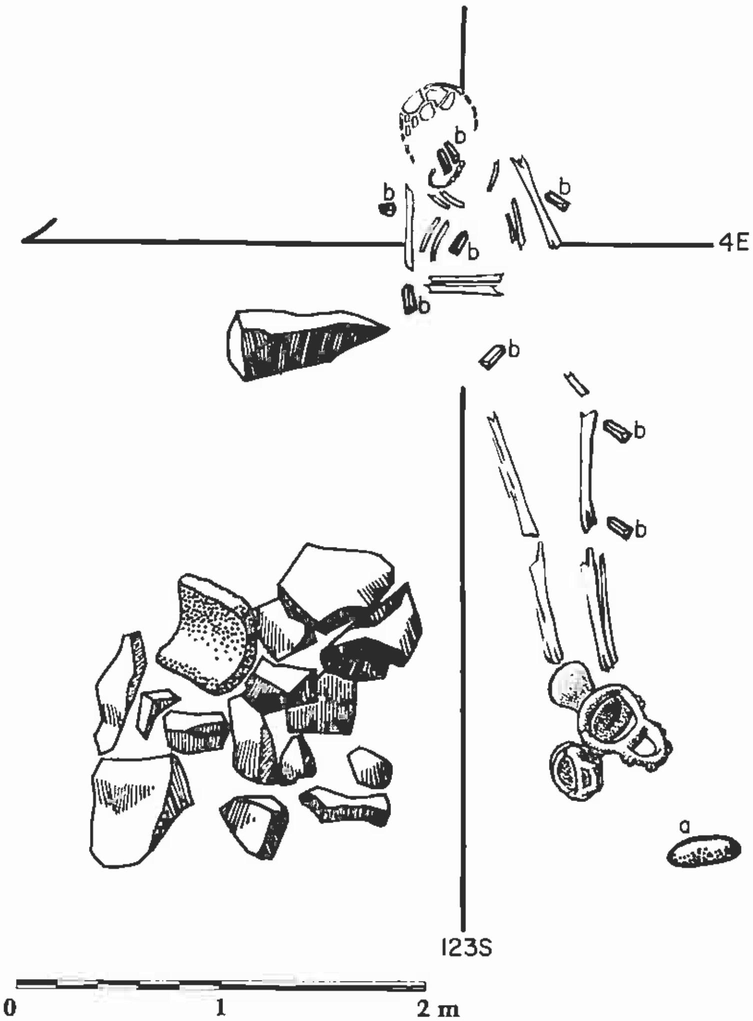


Figure 8.12. Burial 27: *a*, mano; *b*, prismatic blades and flakes.

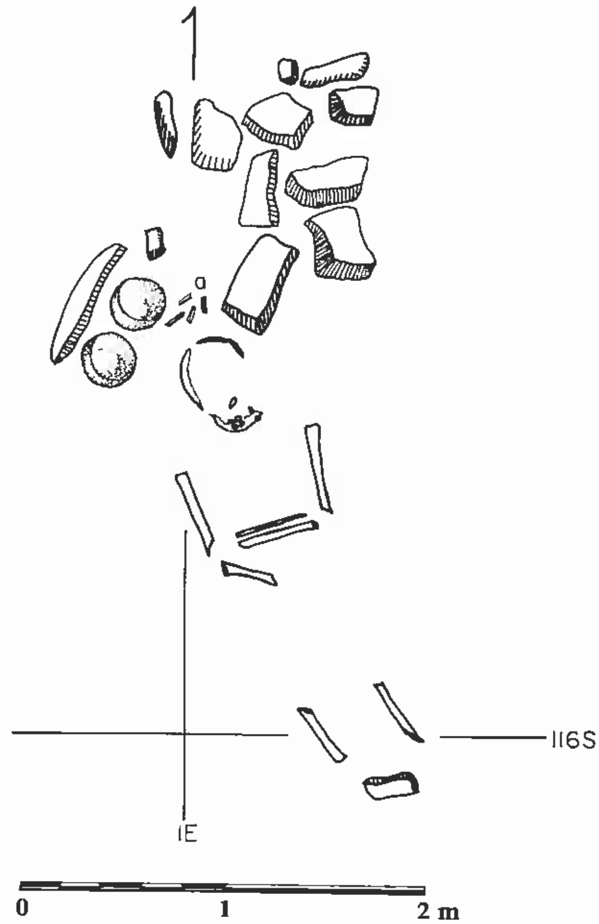


Figure 8.13. Burial 15: *a*, prismatic blades.

Orange punctate bowl in association. Other offerings may have been destroyed when the burials were disturbed.

Both Burials 19 and 32 were direct interments, extended, with heads oriented to the south. Burial 19 lay 28 cm above Burial 32. Burial 32 was associated with a small *cantarito*, two jade objects (a fang pendant and a broken awl point), and a ground smoothing stone. Burial 19 had two shallow bowls placed mouth to mouth.

Burials 15 and 30 occur almost perpendicular to each other and are separated by a depth of 39 cm. Both are direct, extended interments. Burial 15 (Fig. 8.13), head oriented to the northwest, was found with two small shallow bowls and four prismatic obsidian blades. Burial 30 (Fig. 8.14) likewise had two shallow bowls as offerings, but these had been placed mouth to mouth. A double-loop handle censer was also in association.

Analysis of the mortuary furniture of the paired burials within PC Structure 1 reveals that members of each burial pair differed in their associated ceramic artifacts (see Table 8.2). Although this may be due to chance, it is possible that certain vessels were used as markers to distinguish individuals in each pair. Interestingly, not only vessel forms and ceramic types but also vessel combinations may have served this function. The mouth-to-mouth position of small shallow bowls may have been viewed as conceptually distinct from the shallow bowls placed singly, and the *cantarito* in a shallow bowl may have been considered different from the *cantarito* alone.

Even though the members of the burial pair probably did not die at the same time, each has its own ceramic markers which do not co-occur in the two interments. This seems to imply that the first interment was remembered, and that the second was placed to be near the first and form its complement in the pairing. It is possible that we are seeing evidence of some type of social dichotomy, although the actual differences the individuals within a pair may express (e.g., sex, moiety) cannot be determined at this time. Nevertheless, the dichotomy within the burial pairs here and possibly elsewhere on the site remains an interesting problem for future research.

In addition to the burial pairs, there are two sets of double burials. Burials 11 and 12 and Burials 23 and 24 are interesting in that each pair represents an adult and infant, possibly parent and child. The 11–12 double burial has no associ-

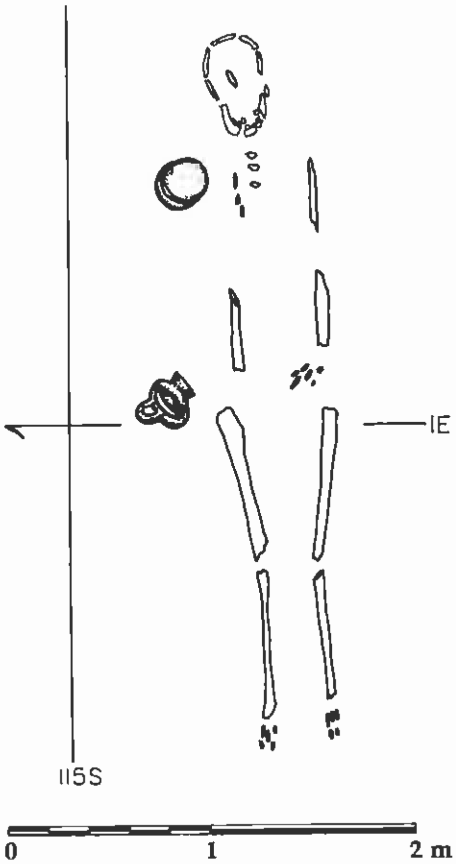


Figure 8.14. Burial 30.

***Table* 8.2. Burial Pairs on PC Structure 1**

	Mortuary Furniture (Ceramic)					
Burial Pair	*Double-loop Handle Censer(s)*	*Shallow Bowl(s)*	*Shallow Bowls Mouth-to-Mouth*	Cantarito	*Cantarito in Shallow Bowl*	*Composite Bowl*
27	X					
10					X	
30	X		X			
15		X				
34	X					
5						X
3				X		X
33					X	
19			X			
32				X		
21						X
31						

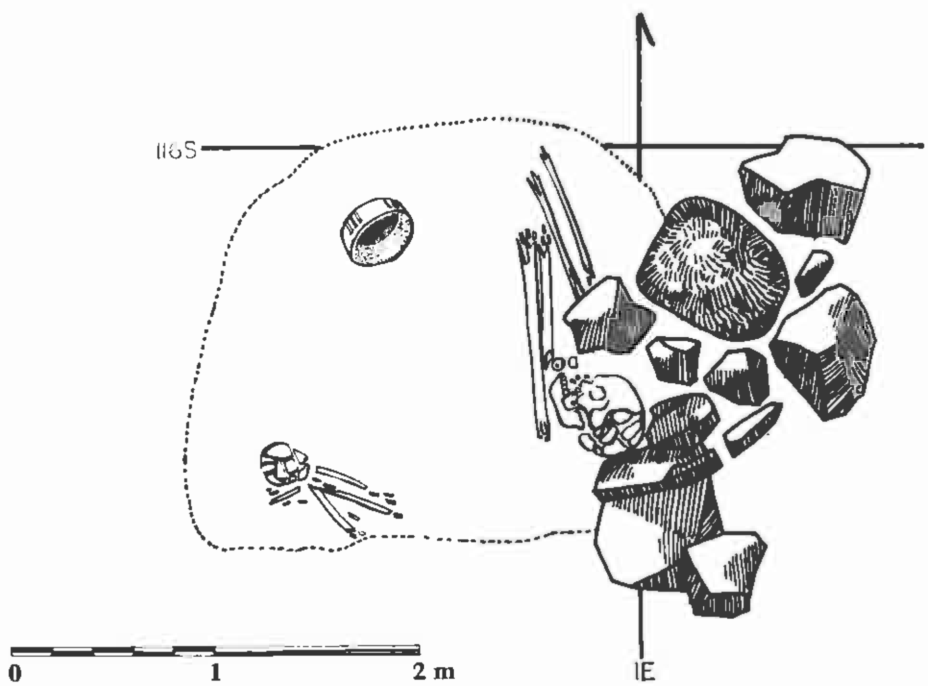


Figure 8.15. Burials 23 and 24: *a*, jade bead.

ated ceramic offerings, but a greenstone bead was found at the mouth of the infant (Burial 12). An Atoyac Unslipped Polished II bowl lay near Burials 23 and 24, and a jade bead was found at the mouth of the adult (Burial 23; Fig. 8.15). It may be significant that both of these adult-infant burials occur within one restricted area of the house and in close proximity. It should also be noted that an extended burial (Burial 13) lies very near to the 23–24 group (but 50 cm higher), and that Burial 29 lies near the 11–12 group. These associations could be circumstantial due to the limited burial space available, or they may have some as yet undetermined significance.

PC Structure 2

A structure that possibly served the function of both residence and workshop area, PC Structure 2 is located west of

Structure 1, and like it is Late Cantera subphase in date. The ten subfloor burials here all occurred beneath one room (Fig. 4.7). They were directly interred in extended positions (eight supine, two prone). Most had their arms slightly flexed with the hands placed over the stomach area. Four of the burials (nos. 41, 43, 48, 49) are disturbed and fragmentary.

Jade beads had been placed in the mouths of two individuals, Burials 43 and 47. Burial 45, a child, had two complete figurines in association (Fig. 8.2), a rare occurrence at this site. No obsidian appeared as mortuary furniture.

Although near Structure 1, Structure 2's burials differ from those of the elite residence in several respects. They occur in a limited area of the structure. Crypt and stone-associated graves are absent, as are flexed burials. There are also no mouth-to-mouth vessels among the grave offerings. The absence of mouth-to-mouth vessels and flexed burials suggests that these traits may be more subtle status or social markers within the more general ranking and social markers already discussed, referring to positions perhaps restricted to PC Structure 1 residents.

T-25

Twenty-three Formative period burials were uncovered by excavations on T-25. Of these, four (nos. 107, 109, 112, and 113) were Barranca phase in date (see discussion of Barranca phase burials below), two (96 and 103) are Late Barranca or Early Cantera, and the remaining seventeen date to the Cantera phase. Their association with the T-25 altar patio and platform is discussed in Chapter 7, and only a few comments about them are necessary here.

Two Cantera phase burials were found within the stone altar structure. These two individuals, who may be considered to form a burial pair, probably held high ranks during their lifetimes. The deeper of the two, Burial 105 (Figs. 7.13–7.15), was interred in a stone crypt, extended, in a supine position with head to the east. Two unusual vessels were found with the burial, as was a Peralta Orange olla. The uppermost interment within the altar, Burial 95 (Fig. 7.19), had been placed within a partial crypt in an extended position, but with the head to the west. Along with a tubular jade bead, a Peralta Orange and a Tenango Brown olla made up the mortuary furniture. It is possible that the people buried within the patio area are descendants or relatives of the individuals enshrined within the altar (see Chapter 7).

Three possible burial pairs exist among the Cantera phase burials interred within the patio area. Interestingly, two of the pairs are composed of children. One of these pairs, Burials 98 and 99, is really a double burial and the other, Burials 100 and 101, may be a double burial. The third pair, Burials 97 and 102, consists of two adults. A disturbed child's burial (no. 108) with four vessels and a tubular greenstone bead may also be associated with this last pair.

While most of the burials appear to represent individuals who died natural deaths, several may represent sacrifices associated with the altar. The most probable sacrifice is Burial 93 (Fig. 7.16), a child burial below the northeast corner of the altar. This child was probably sacrificed at the rebuilding of the altar structure. The child burial pair, nos. 98–99, may represent a sacrifice because the individuals appear to have been interred simultaneously. Burial 111 (Fig. 7.22), a skull associated with a ring of stone, may be an example of a decapitation sacrifice.

T-23

Burials within regular (non-elite) houses are best epitomized by T-23 Structure 1's subfloor interments. This house follows the pattern of other non-elite houses on the site: burials lack elaboration in the form of stone crypts, they rarely contain even a solitary jade bead, and they always lack more elaborate greenstone artifacts. The only preserved mortuary furniture is ceramic.

Seven burials were found during the T-23 excavations (nos. 79–85). Four occurred in extended position, and three were too disturbed to reconstruct the original position. The adult burials were all found in the northeast corner of the structure, while two child interments (Burials 80 and 82) had been placed beneath the floor of interior rooms.

An important question, which unfortunately cannot be tested from the current data, is whether the main personage in each non-elite house would be buried beneath the floor of the house or in some other location, such as PC Structure 1 or 4, as occurred at Classic Maya centers (e.g., Rathje 1970:366–367). It is certainly obvious that PC Structure 1's thirty-eight burials far outnumber the subfloor burials at any regular house structure. In view of the discussion of periodic purposeful destruction of house structures by their inhabitants (Chapter 6), it would be important to know if houses were destroyed at the death of the house's main personage, just as monuments were apparently destroyed at the death of the site's main personage (Grove 1981b).

S-39

The archaeological deposits on S-39 are difficult to interpret in terms of their original nature. While probably a combination of household and workshop debris, the slightly sloping hillside here on the southwest edge of the site shows no traces of house foundation walls, although the area of concentrated deposit is delineated by large, partially buried boulders. Six adult burials and one infant were found associated with the artifact concentration (Fig. 4.36). Because nearly all the burials were found at quite shallow depths, they were disturbed by plowing.

Only four of the burials (nos. 142, 143, 147, and 148) had associated ceramic vessels. A fifth, the infant burial (no. 146), had a figurine in association but lacked vessels. Burials 142 and 143 had several stones placed along the sides of the grave. Burial 142 in addition contained small clusters of smooth pebbles, an "artifact" also found within the crypt of Burial 33 beneath PC Structure 1.

Cave Burials

Seven burials of apparent Cantera phase date were encountered during excavation of two of the Cerro Delgado caves. In Cave 1, Burials 152–155 were highly disturbed but may represent up to four child and infant interments. Associated with this cluster of disturbed skeletal material were four vessels.

Three Cantera phase burials were excavated in Cave 4. Burials 156 and 157 were in fair condition, but only traces of Burial 158 remained. Burial 156 was associated with four vessels and a thin obsidian needle, apparently a "blood-letter" used in auto-sacrifice, found at the pelvis. Stones were placed at either side and one on top of the head. Burial 157's head rested against the cave wall, and the body was partially outlined by stone slabs placed at intervals around the edge of the grave. A metate fragment covered the head, and a mano fragment had been placed near the left shoulder. One Carrales Coarse Grey vessel had been placed near the left shoulder as well.

Barranca Phase Burials

Only ten Barranca phase burials were recovered during the Chalcatzingo excavations. Due to their rarity, few data are provided relating to changes in burial practices through time. Most of the burials are disturbed and have few or no mortuary artifacts. No crypts were found among the burials, but jade was present in some of them.

The T-9B Barranca phase house structure (Fig. 4.20) yielded three burials. Burial 63, located on the west side of the house, was manifested only through a scattering of a few human bone fragments, and it was apparently highly disturbed. No burial furniture was found in association. Burial 64 was likewise highly disturbed and is present only as a scatter of bone. However, the bone concentration lay adjacent to an inverted Amatzinac White shallow bowl. Burial 65 was interred within a grave marked by three large stones (part of the house foundation) near the foot of the grave. A stone slab had been placed over the pelvic area, and a Peralta Orange olla occurred as a mortuary offering.

The four Barranca phase burials of the T-25 area are discussed in Chapter 7. Burial 107 had been interred within the Barranca phase trash pit on T-25. The burial was associated with an Amatzinac White cylindrical jar and a stingray spine. Burial 109 is a disturbed burial which underlies the area of the Cantera phase rebuilding of the altar. It therefore also underlies Burials 95 and 105, the Cantera phase burials placed within the altar interior. No ceramic offerings were found with Burial 109, perhaps because it had been disturbed. However, a tubular jade bead was found in association with this burial.

Burial 112 was uncovered during excavations behind (south of) the altar within an area presumed to be related to an earlier Barranca phase structure. This burial may therefore have originally been a subfloor burial to that construction. The skull is missing and the burial lacks ceramic offerings. Burial 113 is heavily disturbed and no mortuary offerings were found.

Burial 149 was found during excavations on N-2 (Fig. 4.37). Fragments of an eroded *cantarito* were found at the feet. Burial 150, uncovered on N-5, consists only of the upper torso, arms, and skull of the skeleton. The lower body was missing, apparently through rodent disturbance. Burial 159 was associated with the Barranca phase structure on T-29 (Structure 1). Five other burials may be either Late Barranca or Early Cantera in date: 56, 58, and 60 from T-9A, and 96 and 103 from T-25 (see Appendix C).

Late Formative Burials

Fourteen Late Formative burials were found during excavations on T-27. Three sets of double interments were included within this group (Burials 117–118, 123–124, and 133–134). The associated mortuary furniture and burial patterns are different from those of the Barranca and Cantera phases, suggesting perhaps a hiatus in occupation at the site.

A Middle Formative platform structure exhibiting several rebuildings was excavated on T-27. The Late Formative burials were intruded into the platform structure, which at the time of our excavations was completely buried and undetectable from the surface. Seven Late Formative burials, including the three sets of double interments, were discovered within slab-lined graves. The remaining seven Late Formative interments are direct burials. Most burials were found in supine positions, but with the legs flexed. Exceptions to this include Burial 119, which was loosely flexed and lying upon its left side, and Burial 124, which was part of a double interment and had been buried in a tightly flexed sitting position.

Burials 117 and 118 (Fig. 8.16), both adults, are buried together in a flexed supine position, with heads to the south. Five ceramic vessels, including four black ware pots, were found with the burials. In addition, a group of three unusual figurines occurred within the cluster of mortuary ceramics. These figurines, handmade but essentially identical in all details, depict seated anthropomorphic figures, heads tilted upward, wearing elongated Ehecatl-like masks (Fig. 8.17). Whether these figurines represent the Ehecatl (wind-god) concept at this time is purely speculative, but anthropomorphic figurines wearing duck-bill masks are known to occur in Late Formative art (e.g., the Tuxtla statuette).

Burials 123 and 124 (Fig. 8.18) were found together within a rectangular, stone-lined grave. Both were adults. Burial 123 was supine and loosely flexed, while 124 was a bundled secondary interment. Four ceramic vessels were found within the grave.

Double interment 133–134 likewise consisted of two adults. However, the grave was circular, and the top of the grave was outlined by a ring of flattish stones. Burial 133 was in a supine, flexed position, while no. 134 was seated. Three grey ware vessels, all very well made and displaying different decorative techniques (fine-line incising, cursive incising, and traces of orange-on-white fresco decoration), were found in the grave. A "capped, hollow" ceramic earspool was associated with the skull of Burial 133 (Fig. 16.2*f*).

Individual interments with associated ceramics include Burial 119, which contained two vessels; Burial 120, which had three vessels, one with mammiform supports, in a rock-covered grave; and Burials 122 and 130, both direct interments with only one vessel in association with each. The vessel found with Burial 122, a grey ware, appears to be a nonlocal import.

In addition to the T-27 burials, two burials on T-4, nos. 53 and 56, seem to be Late Formative. Burial 53, a young adult, had been placed in a flexed position, the interment intruding into a Cantera phase structure foundation. No ceramics were present with the burial, making exact chronological placement tenuous. The only mortuary item was a metate fragment placed over the head. Burial 56, also a flexed burial, had been disturbed. It also lacked any grave goods except for a mano, which occurred in a dubious association.

The only other definite Late Formative burial recovered on the site, Burial 151, shares many traits with the T-27 burials, but was found in Cerro Delgado Cave 1 excavations. The interment is that of a young adult in a flexed position. Two ceramic vessels, both Late Formative, serve to place the burial chronologically. In addition, a solid cylindrical earspool with a polished red slip was found within the grave fill.

Classic Period Burials

Nine Classic period interments occur near the Classic period structure on T-20. These burials are unusual in that six of the nine are children, a situation not found with any other Chalcatzingo structure or burial group. Burials 67 and 68 represent a double interment of an adult and infant. The adult occurs in a flexed but supine position; the infant's burial position was difficult to ascertain. No ceramic mortuary furniture was present with this double interment, but it can be dated from the level of its intrusion.

A quadruple burial of children (Burials 69–72) was associated with two Classic period vessels. All the burials had been

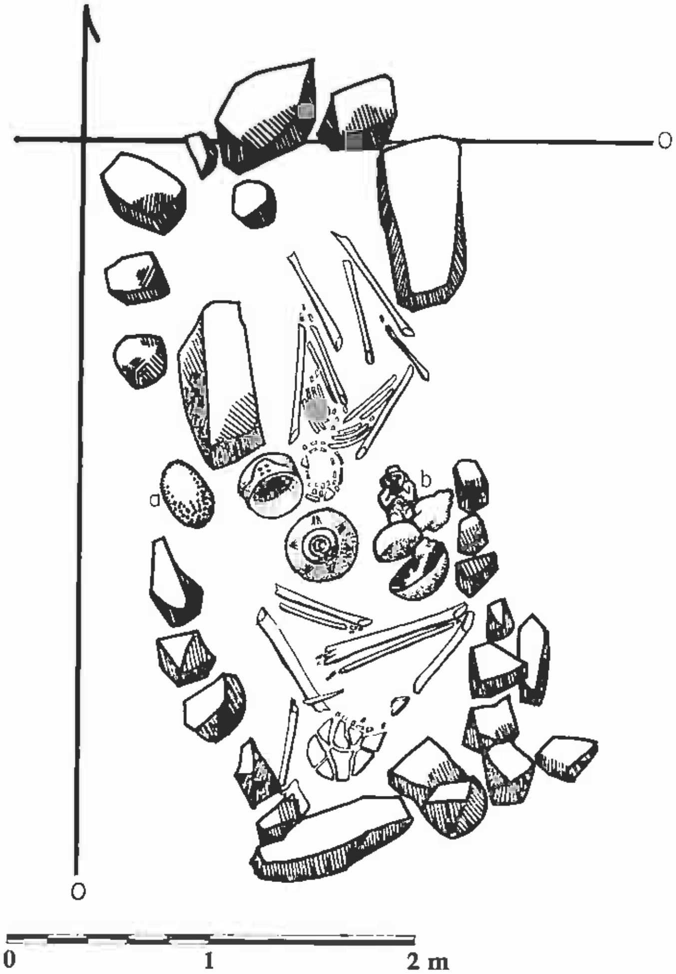


Figure 8.16. Burials 117 and 118: *a*, mano; *b*, three figurines.

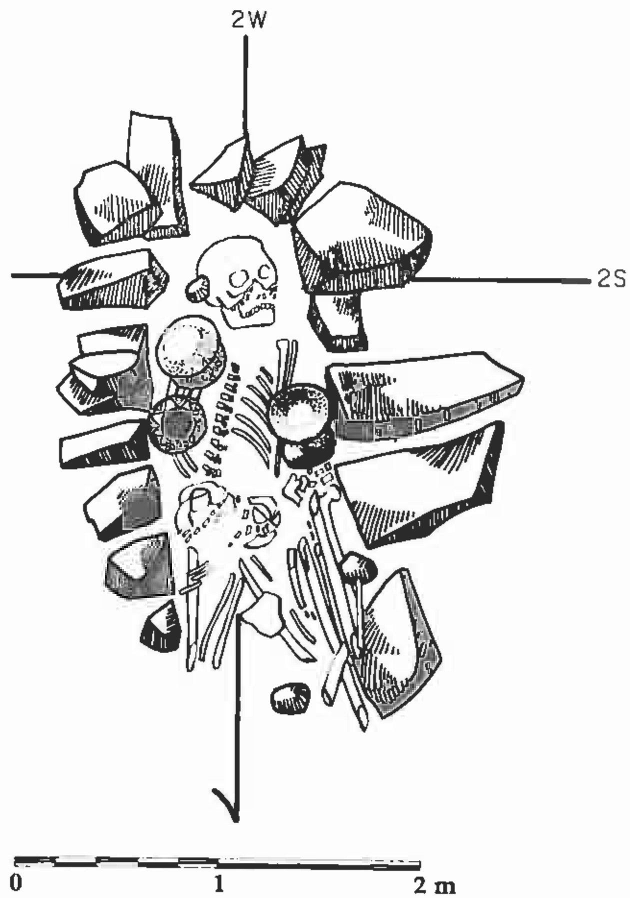


Figure 8.18. Burials 123 and 124 (secondary, bundled burial at lower right).

Figure 8.17. Figurines associated with Burials 117 and 118.

interred in tightly flexed positions. Burial 76 is likewise that of a child, associated only with a metate fragment.

The only other adult burials uncovered are nos. 74 and 75. Burial 74, tightly flexed in a seated position, may be a secondary burial. A jade bead was found near the neck area. Burial 75, interred in a flexed, prone position, had an obsidian spear point at the chest area, apparently as an offering. No ceramics had been placed with these burials.

One Classic period burial was found intruded into the subfloor area of T-24's Cantera phase house structure (Fig. 4.32). This interment (Burial 92) was in a flexed position with the head to the east. A jade pendant (Fig. 17.4*k*) and Classic period brown ware vessel were in association. Of interest with this individual was the dental mutilation present on the incisors. The upper front incisors were notched on the sides, while three of the four lower incisors had V-shaped notches.

A child burial (Burial 115) was uncovered during excavations at the north end of T-25 (Fig. 7.23). Like the other Classic period burials, it had been interred in a flexed and, in this instance, seated position. A small jadeite pendant (Fig. 17.7*c*) was associated with the child, but the interment lacked ceramic offerings.

Excavations of T-27 Structure 2, a Late Classic structure, uncovered a cache of thirteen vessels (Fig. 24.13), primarily orange ware bowls with ring bases, plus a human mandible and scattered human bone fragments (Burial 135). These were placed within a small, almost square stone-lined box. Two polished stone beads were also included with the cache. This group of ceramics represents the most elaborate offerings associated with a Classic burial at the site. Two other Classic burials from the same area, nos. 121 and 125, had only minor burial furniture.

The final Classic period burial recovered during the excavations—also Late Classic in date—is Burial 140, found on T-37. It is a child burial, interred in a flexed position. An orange ware bowl was placed over the skull and a small jadeite pendant (Fig. 17.4*i*) under the chin.

Two points can be made in summarizing Classic period burials at Chalcatzingo. First, of the fifteen recovered, over half (eight) were children. Second, of the fifteen, all for which position could be determined had been interred in a flexed position.

Postclassic Period Burials

The only Postclassic burials found at the site were uncovered during the excavations at Tetla. Both burials (nos. 160 and 161) are cremations. Burial 160 was a subfloor burial within the excavated Middle Postclassic house structure (Chapter 25). The cremated remains were associated with a black-on-red vessel fragment, a cache of obsidian blades, a jadeite bead, some mold-made figurine fragments, and three spindle whorls. The lithic artifacts and the spindle whorls may suggest that this was the burial of a female who used these items.

Burial 161 was discovered during the excavation of a stratigraphic pit northwest of the house structure. The remains were found within a Black on Red Polished bowl which had been covered with one-half of a Polychrome Resist Red dish with a tripod support (only two supports remained). A necklace fashioned from triangular shell sections was associated with the cremation.

EXTERNAL SIMILARITIES

The majority of the ceramic vessels associated with Chalcatzingo's burials show general similarities to vessels of the Middle Formative Zacatenco phase (e.g., Tolstoy and Paradis 1970; Vaillant 1930) in the Valley of Mexico. The crypt and stone-associated burials likewise have counterparts at El Arbolillo in the Valley of Mexico (Vaillant 1935: 168–180, Fig. 8). Several traits of the high-ranking Cantera phase burials also co-occur at La Venta, as was previously discussed. Some of these traits are generalized (e.g., associated jade) and are in fact present at other sites in both the highlands and lowlands. Other traits are of a more restricted nature and suggest that the trait co-occurrence may be due in part to some form of interaction between the two areas, such that Chalcatzingo's high-ranking individuals sought to emulate their Gulf Coast counterparts. These restricted traits are found among the PC Structure 1 and Structure 4 burials.

Jade in association with burials is not uncommon during the Formative period. Some El Arbolillo burials yielded greenstone jewelry (e.g., nos. 140, 148, 153; Vaillant 1935: 170–171), as have Formative period burials in Oaxaca (Kent V. Flannery, personal communication) and in other areas. The actual and pseudo burials recovered at La Venta (P. Drucker 1952: 25–27, 67–73; P. Drucker, Heizer, and Squier 1959: 162–174) were usually richly endowed with jade.

Jade cannot be considered an "Olmec" trait, since its use in Formative period Mesoamerica is widespread. However, La Venta's burials and extraordinary caches indicate that the Gulf Coast Olmec elite had the ability to acquire this imported luxury item in quantity and the wealth to "consume" it and remove it from circulation. Using present data it can be surmised that Chalcatzingo too consumed more jade in its elite burials than did other central Mexican sites, but the quantity nowhere equals the La Venta consumption.

Although far more limited in quantity, another obvious parallel between Chalcatzingo's elite burials and traits at La Venta is the previously mentioned mortuary offering consisting of a *cantarito* placed within a shallow bowl (Chalcatzingo Burials 10, 33, 39, 40; La Venta Offering 5). Although it is uncertain if La Venta Offering 5 is a real or pseudo burial (P. Drucker, Heizer and Squier 1959: 162), three of the four Chalcatzingo examples are without question among the highest-ranking individuals at that site.

Elaborate stone cist graves at La Venta (e.g., Feature A-3-a; P. Drucker 1952: 67–73) may be crudely mirrored by Chalcatzingo's stone crypts. Both seem to have functioned as graves for high-ranking individuals. While stone-elaborated graves were not found at Zacatenco (Vaillant 1930: 188–189, but see Pl. 54-1), stone crypts and stone-associated graves were excavated at El Arbolillo (Burials 112, 116, 117, 118–119, 127, 129, 130, 139, 146; Vaillant 1935: 168–179, Figs. 7–9). Chalcatzingo's crypts seem, in construction, far more similar to El Arbolillo's than to the La Venta cists. On the other hand, the burial furniture within the Chalcatzingo crypts is more comparable to artifacts recovered in general excavations at La Venta. Some of these similarities are detailed in individual burials discussed below.

Burials 39 and 40, both wearing a large quantity of jade ornaments, probably represent the highest-ranking individuals found during our excavations. They were interred on the upper surface of the site's large platform mound, PC Structure 4. Looted crypts and a plundered stone-faced tomb atop the same structure indicate that other high-ranking individuals were also buried there. The actual and pseudo burials recovered at La Venta (P. Drucker 1952: 23–27; P. Drucker, Heizer, and Squier 1959:162–174) also come from Middle Formative platform mounds. Whether this is an Olmec pattern only, or is more widespread remains to be tested at sites both on the Gulf Coast and elsewhere.

Chalcatzingo Burial 40 is unique in being the only Middle Formative period burial (highland or lowland) of an individual wearing a concave iron ore mirror. Such mirrors are found at Gulf Coast sites (e.g., P. Drucker, Heizer, and Squier 1959:Table 1, Pls. 43–46), but they are also known from Oaxaca, Guerrero, and other areas (Carlson 1981; Pires-Ferreira 1976b:317–325). The Chalcatzingo mirror is manufactured from high-purity magnetite and does not match any known magnetite sources (Chapter 23).

Burial 33 is also unique. While this crypt grave was associated with a *cantarito*–shallow bowl combination, it also contained the small greenstone were-jaguar figure. This figure bears a striking resemblance to other were-jaguar figures (e.g., Coe 1965a:14; Covarrubias 1957:56–57), including those found at La Venta (see Chapter 17; P. Drucker, Heizer, and Squier 1959:Pls. 26, 33–36). The Chalcatzingo figure is important because it is the only figure of this type to have been found in the context of controlled excavations at a site in the central highlands (not including one recovered from a Postclassic period floor at Coxcatlan, Puebla; Sisson 1974:48, Fig. 19 lower right). Similar stone figurines have emerged from Guerrero and also are alleged from Morelos, Puebla, and the Valley of Mexico (including Tlatilco), but these are not from controlled excavations.

Burial 3, highly destroyed and in the plow zone, forms a burial pair with Burial 33. The significant artifact from the crypt of Burial 3 is a carved stone head, forcibly removed from a statue and damaged in the process. Decapitated statue heads are rarely found archaeologically. Some have been recovered at La Venta (Mons. 28, 44, 64; Clewlow and Corson 1968) and other sites (San Lorenzo Mon. 6, Estero Rabón Mon. 5; de la Fuente 1973), but none in association with a burial. The presence of such a head with Burial 3 suggests that future excavations at Middle Formative Gulf Coast centers may uncover similar associations. As previously mentioned, Grove (1981b) believes the statue head may be a portrait head of the person buried within the crypt of Burial 3.

A final artifact found at Gulf Coast sites and at Chalcatzingo is the stingray spine. Again, this cannot be considered an Olmec marker since it is also found at non-Olmec sites (e.g., Huitzo, Oaxaca; Drennan 1976:Table 11.4), but its distribution may be significant. Two stingray spines were found in archaeological contexts at Chalcatzingo, one with Barranca phase Burial 107 (Fig. 7.11). La Venta examples include true spines and a jade replica, all from a bundle burial (P. Drucker 1952:26).

It is unfortunate, as previously noted, that the Chalcatzingo skeletal material was too poorly preserved for any detailed morphological analysis. One hope of the project was to check the morphological variability of the skeletal population on the possibility that some Gulf Coast individuals were residing at the site and might be morphologically distinct from the site's indigenous inhabitants. The skeletal data provided no clues of that nature, and, of course, no preserved skeletal remains are available from Gulf Coast Formative period sites for comparisons.

The individuals whose graves carry traits which co-occur on the Gulf Coast may be local Chalcatzingo elite bearing certain symbols of rank which appear Gulf Coast–like, or indeed one or many of them may be actual Gulf Coast persons, who likewise bear special symbols in their burial furniture. Whatever the ultimate resolution of this problem by future research, it is clear that the vast majority of the burials, those which can be classified as ranked below the uppermost elite, carry no special "external" traits and seem quite clearly part of the Middle Formative culture of the central Mexican highlands, as is also reflected in burials and artifact content at sites such as El Arbolillo and Zacatenco.

RESUMEN DEL CAPÍTULO 8

Los mejores datos para establecer la diferenciación social in Chalcatzingo provienen de las práticas de enterramiento. Desafortunadamente, debido a la poca conservación de los restos esqueléticos, no se pudieron determinar las edades, los sexos, y las enfermedades, por lo que en general la información proveniente de los entierros se limitó a los datos acerca del tratamiento recibido en el entierro, tales como la naturaleza de la tumba y de los objetos asociados a ella. La mayoría de los entierros ocurren bajo los pisos de las casas, aún cuando varios fueron encontrados en el área del patio de T-25, dentro del altar T-25 mismo, y dentro del montículo de plataforma PC Str. 4.

Basados en la preparación de la tumba, se clasificaron 161 entierros en tres tipos: simple o directo, en el cual el individuo aparece colocado en un agujero sin modificaciones en el piso; asociado a piedras en el cual algunas piedras se colocan alrededor de las orillas o cubren parcialmente al cuerpo; y en cripta en el cual la tumba se encuentra delineada y cubierta con tabletas de piedra. Las ofertas mortuorias están constituidas principalmente por vasijas de cerámica con artefactos de piedra verde, objetos utilitarios de piedra, obsidiana, y otros objetos menos frecuentes. No surgió patrón alguno suficientemente definido para relacionar entre sí algunos de los artefactos con los diferentes tipos de entierros.

Casi todas las vasijas de cerámica son del tipo Amatzinac Blanco. Las formas principales son la del tazón somero y la de incensario con doble asa. Ocurren con frecuencia cantaritos con los tazones someros, lo que también ocurrió en un entierro en La Venta, el cual presentó esta misma asociación. Los objetos de piedra verde son de ornamento generalmente—orejeras, cuentas, y pendientes. De éstos, todos excepto las cuentas frecuentemente presentan ruptura intencional.

Las prácticas mortuorias sugieren que la organización social en Chalcatzingo no fué egalitaria desde la fase Barranca. Como prueba de la existencia de rangos y estados diferentes, se consideró el acceso desigual a los artículos escasos y valiosos, y al trabajo de otras personas en la comunidad. En este caso la presencia de objetos de piedra verde o de jade, los cuales no son de la localidad y son relativamente raros, así como la presencia de tumbas de cripta que requieren trabajo extra, fueron indicativos de la existencia del estado elitista.

Los entierros que exhiben estos criterios elitistas se encuentran generalmente restringidos a la Plaza Central, en particular a las Str. 1 y Str. 4, y a T-25. Se presume por lo tanto que estas áreas hayan sido el foco de la actividad ceremonio-administrativa o de residencia de la elite. Dentro de este grupo, los entierros de mayor rango son los dos encontrados dentro del montículo plataforma PC Str. 4. Probablemente los atuendos y los cuerpos mismos de los "jefes" eran recubiertos con barniz de hematita, ya que al momento de su entierro estos individuos llevaban cantidad de joyería de piedra verde encima.

La mayoría de los entierros entran en esta categoría de alto rango. La gran variedad en la cerámica y otros objetos mortuorios esbozan intentos de refinar más los rangos menores, pero ocurren algunas correlaciones. Los cantaritos colocados dentro de los tazones poco hondos y los incensarios de doble asa, parece ser, estaban asociados a los individuos de mayor rango; en tanto que el tipo Carrales Gris Burdo se encuentra con mayor frecuencia en los entierros de rango menor. Curiosamente la mayoría de los entierros de rango menor contiene mayor número de vasijas de cerámica que los entierros de rango superior.

La residencia elitista, PC Str. 1, mostró treintaiocho entierros bajo el piso, con lo que produjo la exhibición de la variación total posible en los tipos de entierro, así como de las posiciones y orientaciones de los mismos. Se pudo observar que tanto los objetos asociados como la orientación difieren entre sí en las mitades sur y norte de esta estructura. Estos entierros también revelan otro tipo de patrón—la ocurrencia de seis pares de entierros, posiblemente esposo y esposa. Uno de estos pares presentó los artefactos más "Olmecas" encontrados en el sitio, consistentes en una cabeza desprendida de una estatua y una figurilla de piedra semejando un jaguar. Dentro de los entierros pareados, parece ser que se hayan utilizado ciertas formas o tipos de cerámica para distinguir con estas marcas a los miembros de cada par. También ocurren los entierros pareados en T-25.

La similitud entre los entierros elíticos de Chalcatzingo y los Olmeca de la costa del Golfo incluyen la presencia de jade en la tumba, la construcción de criptas de piedra, el entierro en montículos plataforma, y la combinación de un cantarito en un tazón poco profundo. Los individuos de alto rango, por lo tanto, pueden haber sido personajes locales que copiaban a sus contrapartes de la costa del Golfo, o en realidad inmigrantes de afuera que gobernaban en Chalcatzingo. De todos modos, la enorme mayoría de los entierros, aquellos de la población no elítica, claramente forman parte de la cultura del centro de México perteneciente al período Formativo Medio, con expresiones tan claras como las encontradas en El Arbolillo y Zacatenco.

9. A Catalog and Description of Chalcatzingo's Monuments

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Over the years Chalcatzingo has been known almost solely for its bas-relief carvings. These were first studied by Eulalia Guzmán (1934), and since that time new carvings have been found and described (Angulo and Grove 1974; Angulo 1979; Cook de Leonard 1967; Gay 1966; 1972a; Grove 1968a; 1972a; 1974a; Piña Chan 1955). Until the project documented in this book, most known monuments were on the hillside, executed on boulders or bedrock exposures. Our excavations have uncovered a variety of other carved monuments, including stone stelae. These new finds, together with the previously known monuments, are cataloged and briefly described here. Additional descriptions together with analyses and interpretation are found in Chapter 10.

Two numbering systems are used in this presentation. One is a sequential system which began with Guzmán and which has been added onto by others. This system essentially numbers monuments by the order of their discovery, ignoring monument location or the proximity of other carvings. This is the system which has been followed by Grove, although "order of discovery" has not been strictly adhered to. The sequential system presented here has been slightly reworked and modified, and some monument numbers given by Grove (1981b) have been changed and updated.

The second system was designed by Angulo, who divided the site into eight zones based upon topographical features and monument groupings. The monuments within each zone are individually numbered with a combination of zone number and monument number (e.g., I-B-3: Zone I-B, Monument 3). Included within Angulo's zone numbering system are various archaeological features and structures in addition to the monuments. This system was presented in detail by Angulo (Angulo and Grove 1974) and he has modified and expanded the system in the official INAH guide which he wrote for Chalcatzingo (Angulo 1979).

This chapter begins with a description of the eight topographical divisions of the site. These areas are illustrated in Figure 9.1. The catalog descriptions of the monuments are given area by area in the order of the sequential numbering system, with each sequential number followed by the Angulo system number. In Chapter 10, Angulo's analysis of the monuments uses his system of numbering, with the sequential number provided in parentheses. Table 9.1 correlates the two numbering systems. Figure 9.2 is a map showing the location of the various monuments (numbered in the sequential system) as well as the MCR stones (Chapter 11).

DESCRIPTION OF THE AREAS

Area I

The northern talus slopes of the Cerro Chalcatzingo, from approximately the 1,100 m contour level to the terraces below (PC, T-11, T-2; the 1,020 m contour) comprise Area I. Its western extent is marked by the deeply incised gully we call El Rey Drainage, which flows past Monument 1 (El Rey) on its course down the mountainside. Monument 1 itself marks the western boundary. The eastern boundary runs along the crest of the saddle separating the Cerro Chalcatzingo from the small knoll on the western extremity of the Cerro Delgado, along the base of the knoll, to the drainage edging T-4 and T-2.

Area I was described by Carlo Gay (1972a:37) as the "Sanctuary of the Reliefs" since it is here that most of the previously published and best-known carvings occur. This topographic section is divided into two subareas, I-A and I-B (Fig. 9.1). The reliefs of area I-A are carved onto the bedrock and a few boulders which occur high on the hillside, adjacent to the mountain's major water drainage system. The I-B carvings are on massive boulders on lower talus slopes, but all are located at the base of a major cleft in the vertical cliffs of the mountain. These natural features are undoubtedly significant in the placement of the I-A and I-B carvings. Area I-A contains Monuments 1, 6–8, 11, 14, and 15, while Monuments 2–5 and 13 are found in Area I-B.

Area II

The second area has as its southern boundary the 1,100 m contour level on the northwestern slopes of the Cerro Chalcatzingo. Its eastern limits follow El Rey Drainage to the 1,030 m contour (where the drainage bends sharply eastward), then runs north along the east edge of T-11 to T-7. Here we utilized a natural northwest-trending drainage on T-7 as the eastern limit, effectively dividing T-7 in half. The boundary then follows a trail and small drainage north to the site's northern extent. The western limit of this area follows the site's western limits, essentially the western edges of S-39, T-9, N-2, and N-7. Three widely separated monuments, 12, 19, and 20, occur within Area II.

Area III

Beginning at the foot of the hillside talus slopes of Area I, Area III includes the site's uppermost terrace (the Plaza Central), T-3, part of T-7, T-15, odd-numbered terraces T-17 through T-45, and continues past these to the northern extent of the site. The western boundary is formed by Area II; the eastern edge by the sharply defined gully of El Paso Drainage which runs along the east side of PC and T-15, and which includes the water control "dam" built as part of the terracing to slow rainwater runoff.

Area III contains most of the major

terraces on the site. Two monuments (Mons. 9 and 18) are (or were) associated with the large platform (PC Str. 4) which forms the north end of the Plaza Central terrace. A second grouping of monuments (Mons. 21, 22, 23) occurs near the junction of T-15 and T-25. Other monuments from Area III are Monuments 16, 17, and 24.

Area IV
The fourth area encompasses the terraces and hillside slopes from El Paso Drainage eastward to the vertical cliff face of the Cerro Delgado. The eastern boundary follows the cliff face around the north side of the mountain and at the ca. 1,000 m contour follows a natural drainage northward. Monuments within this area (Mons. 25–28) occur only on T-6.

Area V
The fifth section includes the upper cliffs, caves, and hilltop terrace areas of the Cerro Delgado, including the terraces above the 1,000 m contour on the Tetla (east) side. While Area V contains numerous caves with painted art (Chapter 12), no carved monuments have been found here.

Area VI
Almost the entire non-hillslope area of Tetla, consisting of the fields north and east of the Cerro Delgado, is included within Area VI. It is delimited by Area V on one side and by the barranca on the north and east. The southern boundary follows the upper edge of a large stream channel which cuts eastward to the barranca. Although a number of Postclassic mound structures occur within this area, no monumental carvings have yet been reported.

Area VII
The seventh section is composed of land south of Tetla and behind the Cerro Chalcatzingo. Occupation remains here are Postclassic. One monument, Monument 29, was found in the stream bed on the north side of this area.

Area VIII
The last section is the upper area of the Cerro Chalcatzingo. Only one monument (Mon. 10), at the summit of the mountain, has been reported. Caves and artifact scatter are rare here, in contrast to their abundance on the Cerro Delgado.

DESCRIPTION OF THE MONUMENTS

Area I-A
These carvings are discussed in numerical sequence rather than by the order of their placement (see for example Gay 1972a: Fig. 9a).

Monument 1 (I-A-1) ***(Fig. 9.3)***
The first carving is executed on the vertical north face of a very large boulder lying immediately adjacent to El Rey Drainage. This drainage carries most of the rainwater runoff from the northwest slopes of the Cerro Chalcatzingo. The drainage has been named for this monument, commonly called "El Rey," a term referring to the personage shown seated within the large U-shaped niche which is the focal point of this carved scene. Above the niche are three elaborate rain clouds from which !-shaped raindrops fall (Fig. 10.7). Several concentric circles and two plants are shown in the upper portion of the carving beneath the clouds. Plants also sprout from the outer edge of the large U-shaped niche.

Atop the niche is an oval eye motif which serves to identify the niche as an earth-monster mouth, an iconographic symbol representing a cave. Very large

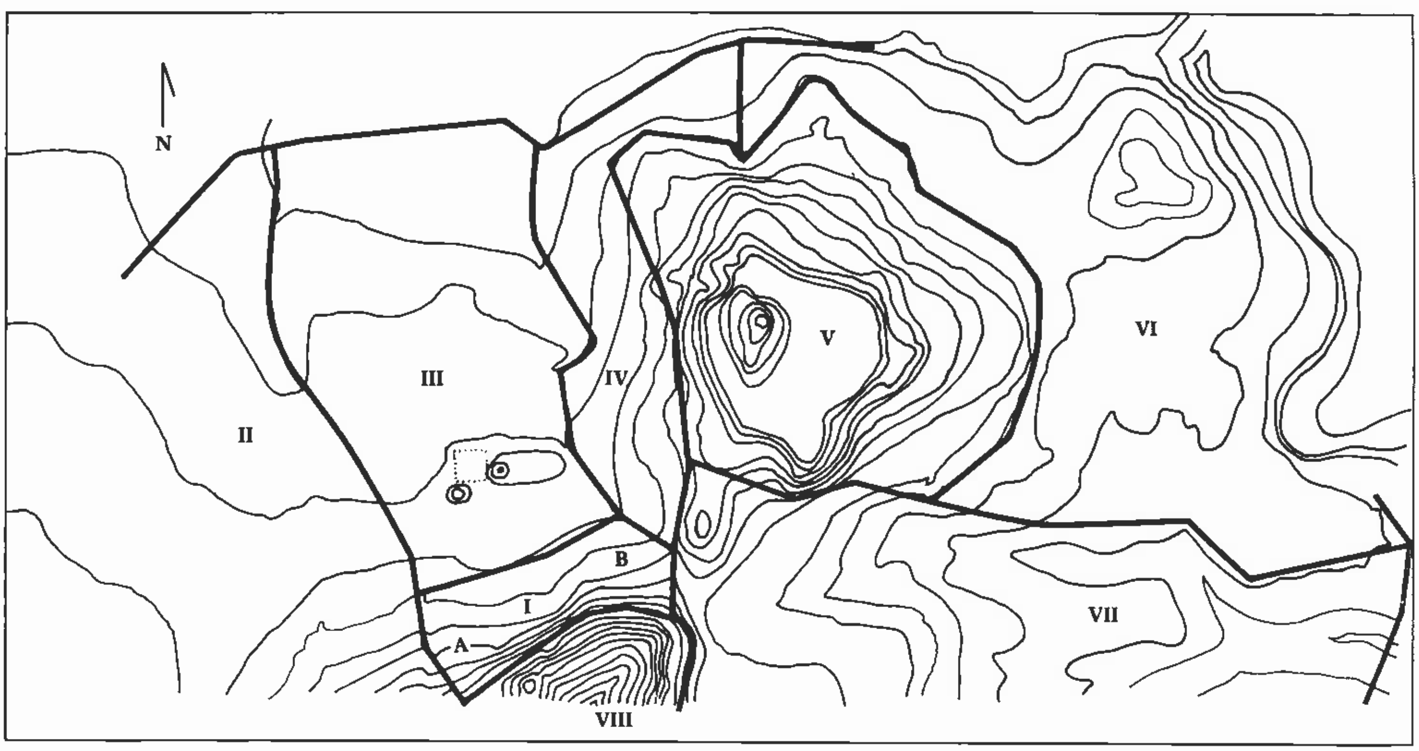


Figure 9.1. Map of topographical areas mentioned in Chapters 9 and 10.

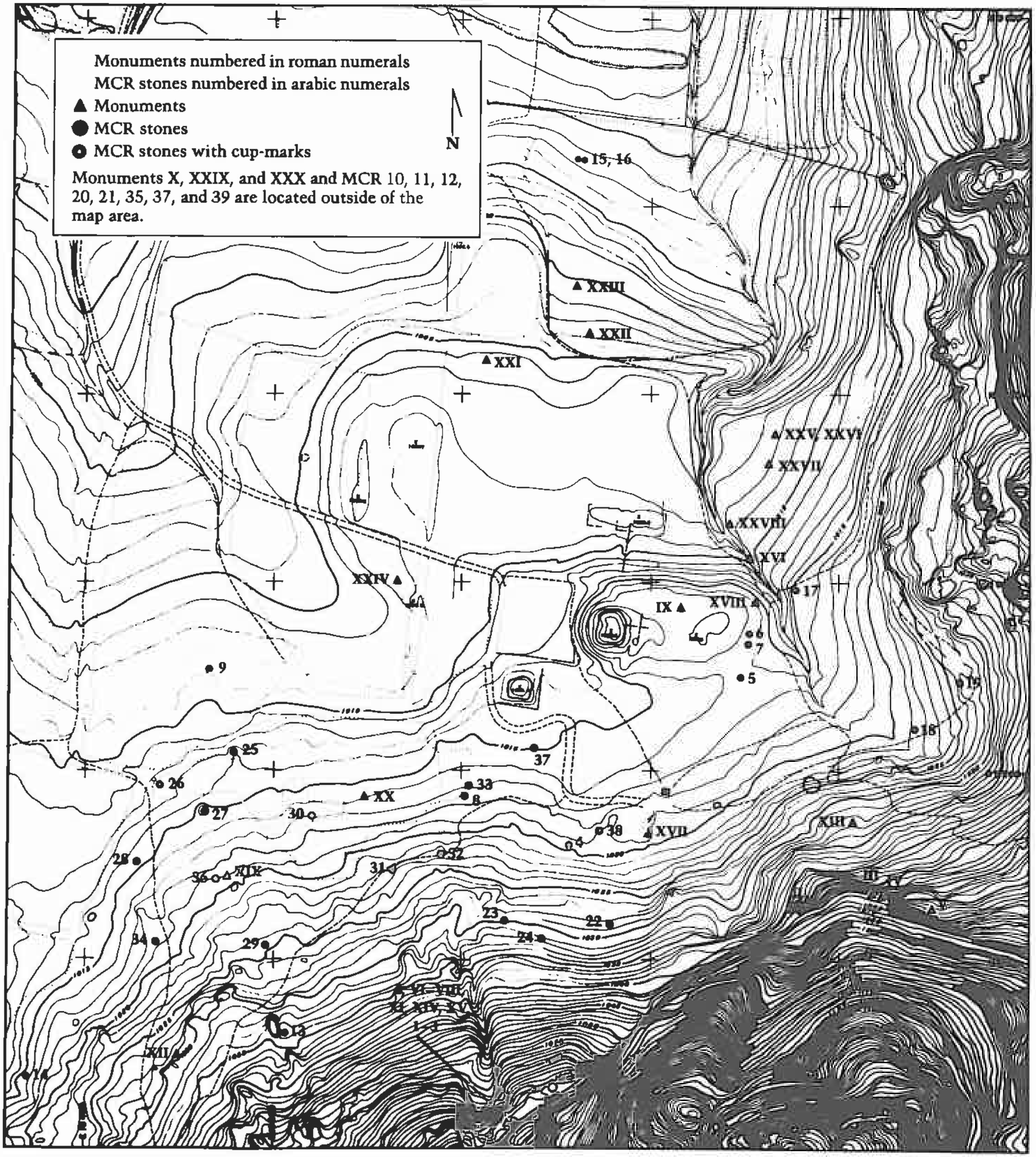


Figure 9.2. Map of site showing location of monuments and Miscellaneous Carved Rocks (MCR stones).

Figure 9.3. Monument 1, "El Rey."

***Table 9.1.* Monument Numbers**

Monument No. (sequential)	*Monument No. (Angulo 1979)*	*Dimensions in Meters*
1	I-A-1	2.7 × 3.2
2	I-B-2	1.6 × 3.2
3	I-B-3	1.2 × 1.2
4	I-B-4	2.5 × 2.5
5	I-B-5	1.8 × 3.7
6	I-A-3	1.3 × 0.6
7	I-A-2	0.4 × 0.6
8	I-A-6	0.7 × 0.8
9	x-3[a]	1.8 × 1.5
10	VIII-1	1.0 × 0.3
11	I-A-7	0.2 × 0.7
12	II-2	1.4 × 1.4
13	I-B-1	2.5 × 1.5
14	I-A-5	1.3 × 0.5
15	I-A-4	1.3 × 0.8
16	x-1[a]	0.5 × 0.5
17	[b]	0.2 × 0.175
18	III-9	1.6 × 1.7
19	II-8	1.6 × 1.0 × 0.8
20	II-9	0.4 × 0.5 × 0.3
21	III-7	2.4 × 0.9 × 0.4
22	III-4	4.4 × 0.9 × 1.4
23	III-5	1.0 × 0.5 × 0.3
24	III-13, III-14	1.0 × 0.5 × 0.2
25	IV-5	1.3 × 0.5
26	IV-6	0.7 × 1.0 × 0.6
27	IV-7	2.8 × 1.1 × 0.5
28	IV-8	>4 × 1.0 × 0.8
29	x-4[a]	1.2 × 0.9
30	x-2[a]	Unknown

[a]Removed from the site.
[b]Not numbered by Angulo.

scroll elements issue outward from the cave mouth, while within the cave is a seated personage (Fig. 10.8). The personage sits upon a large rectangular object containing a scroll motif, and holds a similar but smaller object in his arms. His tall headdress contains six raindrop motifs. Above and behind the headdress are unusual circular objects and two forms with long plumes. A small plant motif is found at the front of the headdress and also at the personage's forehead. El Rey's clothing includes a shoulder cape and a skirtlike garment with raindrop motifs.

Guzmán (1934:241–243) and Grove (1968a:487) view the scene as related to agricultural fertility, and the personage and cave as analogous to the Postclassic concept of Tlaloc and Tlalocan. Both Guzmán and Carmen Cook de Leonard (1967:66) relate the scrolls emanating from the cave to sound or thunder, although they may also be clouds or mist (Grove 1968a:486). The plants growing in the scene are usually identified as maize. Cook de Leonard (1967:66) identifies the oval eye motif with crossed bands, which sits atop the cave niche, as symbolizing the House of the Sun of the Underworld. The seated personage she identifies as the Sun God.

Previous descriptions: Angulo 1979; Angulo and Grove 1974; Gay 1966; 1972a; Grove 1968a; Guzmán 1934.

Monument 6 (I-A-3) ***(Fig. 9.4)***

A small boulder about 5 m northeast of Monument 1 contains both the Monument 6 and Monument 7 reliefs. There is no doubt that the boulder was in this position when the carvings were executed. Although early investigators gave the carvings separate identification numbers, they unquestionably form a single unit.

The section of the carving numbered as Monument 6 is on the boulder's east face. It is a surprisingly realistic squash plant (Fig. 10.6). Seven leaves and four blossoms with young developing fruit grow from the plant's long stem, which is tipped with curling tendrils.

Previous descriptions: Angulo 1979; Angulo and Grove 1974; Cook de Leonard 1967; Gay 1966; 1972a; Grove 1968a; Guzmán 1934.

Monument 7 (I-A-2) ***(Fig. 9.5)***

The carved area on the north side of the Monument 6 boulder was in poor condition when first viewed by Guzmán, who suggested it might be the head of an animal (1934:243, Figs. 6a, 6b). Its eroded

Figure 9.4. Monuments 6, squash plant (*left*), and 7, animal (*right*).

Figure 9.5. Monument 7, animal crouched atop scroll, highly eroded.

and lichen-covered state has likewise hindered more recent attempts at interpretation. Our analyses, carried out over many months and under a variety of light conditions and incorporating a rubbing as well (Fig. 10.5), have allowed us to identify this carving as representing a small zoomorphic creature positioned atop a scroll. This theme is repeated in other carvings nearby (see below).

Previous descriptions: Angulo 1979; Angulo and Grove 1974; Cook de Leonard 1967; Gay 1972a; Grove 1968a; Guzmán 1934.

Monument 8 (I-A-6) ***(Fig. 9.6)***
The small relief known as Monument 8, together with Monuments 11 (I-A-7), 14 (I-A-5), and 15 (I-A-4), were all carved on a sloping exposed rock face which begins adjacent to the Monument 6–7 boulder and runs eastward. Monument 8, near the east end of the rock face and the group of carvings, is heavily eroded. It seems to depict an animal with a bifurcated scroll emanating upward from its mouth, although where the scroll begins and the mouth ends is difficult to ascertain (Fig. 10.2). The bifurcated scroll nearly touches a thin horizontal rain cloud from which two raindrops fall. The carving's eroded state has made identification very tenuous. Guzmán (1934: 243–244, Figs. 7a, 7b) calls it an *animal fantástico*, possibly a dog or rabbit. A footnote by Carlo Gay (1972a:65) suggests it is a lizard-like creature, an identification also proposed by Grove (1968a:487).

Previous descriptions: Angulo 1979; Angulo and Grove 1974; Cook de Leonard 1967; Gay 1972a; Grove 1968a; Guzmán 1934.

Monument 11 (I-A-7) ***(Fig. 9.6)***
The easternmost carving known for this area's grouping was first published by Gay (1972a:71), who identifies it as a "coiled serpent and two pendant-dot signs." Closer examination shows it to be a small snarling animal crouched atop a scroll. The pendant-dot motifs are raindrops which fall from a thin, sinuous cloud located above and in front of the animal. The cloud is tilted, and the raindrops which fall approach the animal and scroll at an angle (Fig. 10.1).

Previous descriptions: Angulo 1979; Angulo and Grove 1974; Gay 1972a; Grove 1974a.

Monument 14 (I-A-5) ***(Fig. 9.7)***
The removal in 1972 of soil deposits covering the hillside's rock face between Monuments 6–7 and Monument 8 re-

Figure 9.6. Monuments 8 (*right*) and 11 (*center*).

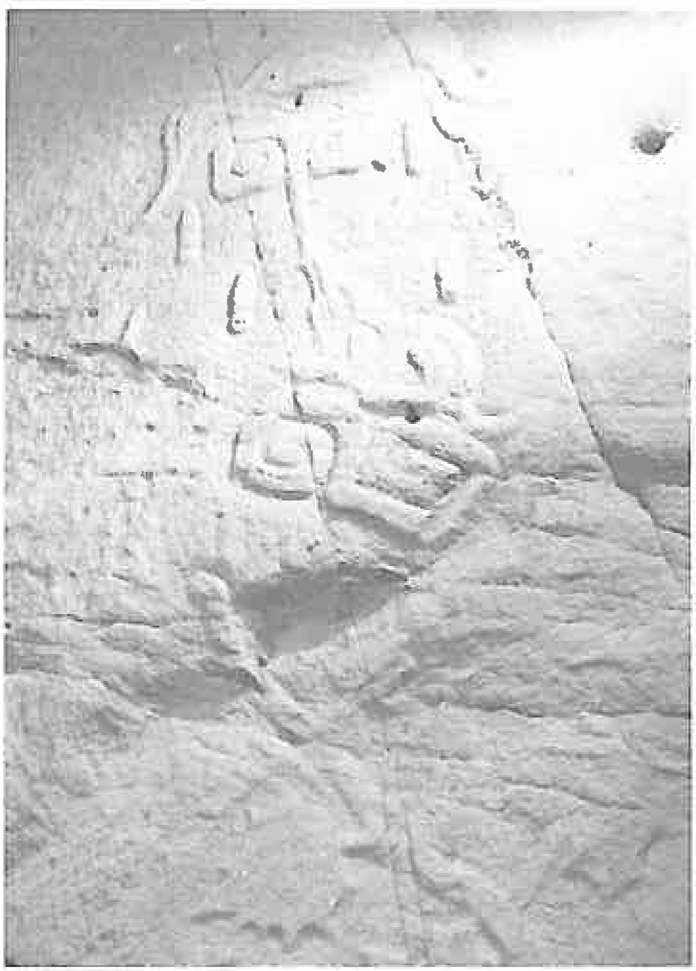


Figure 9.7. Monument 14 (taken at night with flash).

vealed two previously unknown small reliefs, Monuments 14 (I-A-5) and 15 (I-A-4). Monument 14 was in an excellent state of preservation when uncovered, and has allowed us to understand the motifs in the adjacent, heavily eroded carvings. This relief also represents an animal positioned above a scroll (Fig. 10.3). A bifurcated scroll, such as that shown in Monument 8 (I-A-6), rises upward from the animal's mouth toward a nearly horizontal cloud from which six raindrops fall. When viewed closely, the animal has a distinct serrated eyebrow area. Beneath the animal and scroll is a small squash plant, a motif shared with Monument 7 (I-A-2).

Previous descriptions: Angulo 1979; Angulo and Grove 1974; Grove 1974a; 1980.

Monument 15 (I-A-4) ***(Fig. 9.8)***
A highly weathered carving lies between Monument 14 (I-A-5) and Monuments 6–7 (I-A-2 and I-A-3). A portion of a tilted, thin, sinuous cloud, one raindrop, and part of a bifurcated scroll are all that remain of the upper section of the carving. The area where an animal atop a scroll should be is completely destroyed. At the base of the carving is a small portion of a squash plant (Fig. 10.4). The bifurcated scroll segment and the squash plant indicate that a small animal and scroll had once been carved here as well.

Previous descriptions: Angulo 1979; Angulo and Grove 1974; Grove 1974a.

Area I-B
Monuments 2–5 (I-B-2–I-B-5) occur on large boulders on the talus slopes near the western end of the Cerro Chalcatzingo. All the carvings face to the north.

Monument 2 (I-B-2) ***(Fig. 9.9)***
Four persons are depicted in Monument 2, a carving (Fig. 10.13) executed on a relatively flat face of the boulder. When originally discovered, the relief was barely accessible, since the boulder upon which it had been carved had shifted lower and possibly had tilted downward until it nearly touched a large boulder slightly downhill from it. To make the carving more accessible, Piña Chan's project dynamited off a large section of the lower boulder. The entire carving can now be seen, although access is still restricted and it is nearly impossible to photograph the entire scene.

The relief, nicknamed the "Marching Olmecs," is composed of three walking figures and, at the extreme right, a seated person. Two of the walking individuals approach the seated man. Their arms are outstretched and they hold long, paddle-shaped objects. The person on the far left walks away from the others. He holds a plant-like staff. All three walking figures wear cape-like garments. All three are masked and wear tall headdresses which differ in their decorative motifs. The fourth person sits with his left leg fully extended. His right leg may be slightly bent (Grove 1968a: Fig. 3) or extended. His arms stretch down toward his knees. He appears to have a pointed beard. He wears a horned headdress, and his mask has been turned to the back of his head.

Cook de Leonard (1967:64–66) and Gay (1966:58; 1972a:45–48) see this scene as depicting a ritual dedicated to agricultural fertility. Cook de Leonard identifies the paddle-shaped objects held by the two central figures as digging sticks, while Gay calls them ceremonial objects. A different interpretation of this relief has been made by Michael Coe (1965b: 766; 1965a: 18), who sees the objects as war clubs and relates the relief to Olmec militaristic activity.

Previous descriptions: Angulo 1979; Angulo and Grove 1974; Cook de Leonard 1967; Gay 1966; 1972a; Grove 1968a; 1974a; Guzmán 1934; Piña Chan 1955.

Monument 3 (I-B-3) ***(Fig. 9.10)***

A large recumbent feline is depicted in Monument 3. To the right of the feline is a tall, vertical, and asymmetrical branching motif. The feline creature has a long arching neck, and its tail is held upright. A line running along its body and up its neck could represent the bicoloration of a puma. Cook de Leonard (1967:62) offers a different point of view, identifying the animal as a tapir.

Grove (1974a: 155) likened the tall branching motif to the cardon cactus which grows in abundance on the hillside near the relief. He suggested the possibility that the animal licking the cactus might be ingesting a psychoactive alkaloid, linking the feline with a shamanistic transformation.

Separate studies of the carving by both Angulo and Grove discovered an area of unreported carved elements near the base of the vertical branching motif. These carved elements are difficult to discern today because molds taken in the 1950's left a residue of fiberglass resin adhering to the relief, obscuring details. These carved elements are discussed further in Chapter 10 (see Fig. 10.15).

A number of shallow concavities occur on the boulder to the left of the carving.

Figure 9.8. Monument 15, heavily eroded.

Figure 9.9. Section of Monument 2 showing seated person.

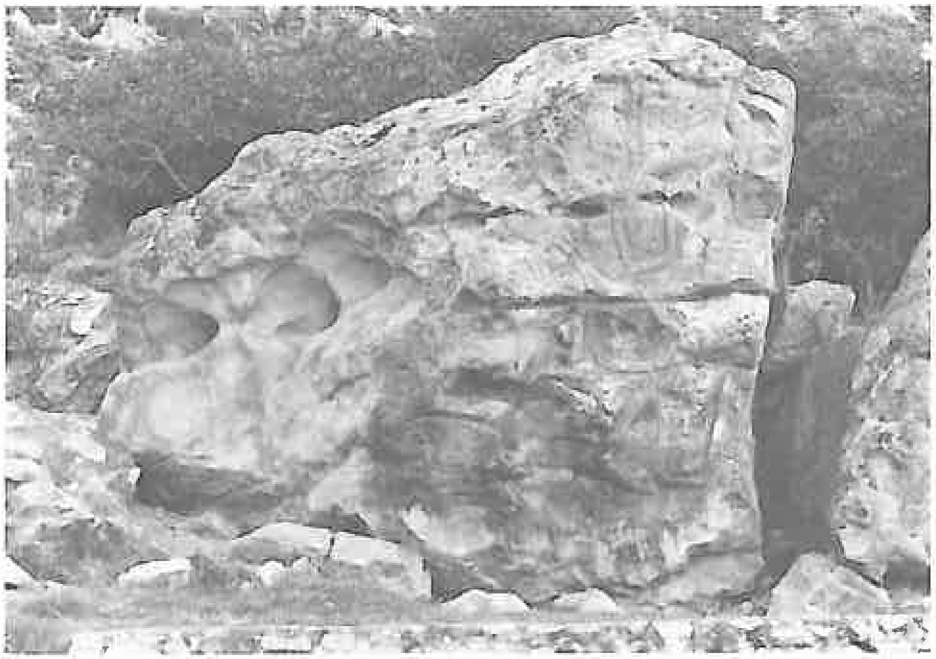


Figure 9.10. Monument 3.

Most of these contain a multitude of shallow striations, possibly due to artificial enlargement of the cavities or to ritual acts carried out here.

Previous descriptions: Angulo 1979; Angulo and Grove 1974; Cook de Leonard 1967; Gay 1966; 1972a; Grove 1968a; 1974a.

Monument 4 (I-B-4) ***(Fig. 9.11)***

Monument 4 is a relief carved on a large rock slab which lies along the southeast side of the Monument 3 boulder. While Cook de Leonard (1967:58–60) believes that the relief rests in its original position, it is much more likely that the stone has fallen backward and onto its left side, or was repositioned in this way later. The four figures depicted in the relief are therefore 90° out of position. Originally the carving apparently stood upright at the upper east end of the Monument 3 boulder, facing northward.

Figure 9.11. Monument 4.

When viewed correctly the carving shows two snarling felines (see Figs. 10.16, 10.17) atop two prostrate human figures. Both animals have similar postures and unsheathed claws, but differ in their head ornamentation. A cartouche above the eye of the upper jaguar contains a crossed-band motif, while two elements Peter David Joralemon (1971: 59) associates with corn adorn its outer edge. The jaguar's ear contains a symbol similar to the Maya glyph for Venus (Grove 1972a: 157). The lower jaguar likewise has a cartouche with a crossed-band motif. A stripe runs from below its eye along its body. In place of an ear the jaguar has an elongated element which ends in a cleft. At its forehead is a plume-like motif. The cleft ear and forehead plume appear also in the headdress of the walking figures depicted in nearby Monument 2. The tail of this lower jaguar shows three notched axe-like elements emanating from it (Grove 1968a: Fig. 5 and Grove 1972a: Fig. 2 incorrectly show these on the upper jaguar).

The human figures lie beneath the claws of the jaguars. Their positions are similar, for both have their left knees bent and their arms raised above their heads. Although each has a plumed head decoration, neither has clothing depicted.

Cook de Leonard's detailed interpretation of this carving links it with Monument 5, which lies a few meters to the east: In Monument 4 the sun descends into the underworld, and in Monument 5 it is shown being reborn. Grove's interpretation (1972a: 157–159) deals with the jaguars primarily in terms of dualities and oppositions.

Previous descriptions: Angulo 1979; Angulo and Grove 1974; Cook de Leonard 1967; Gay 1966; 1972a; Grove 1968a; 1972a.

Figure 9.12. Monument 5.

Monument 5 (I-B-5) ***(Fig. 9.12)***

Lying slightly over 10 m east of Monuments 3 and 4, Monument 5 is carved along the sloping underside of a large boulder which forms a shallow niche. Excavations beneath the boulder produced only a few highly eroded sherds and a large metate.

The carving's main figure is a large undulating reptilian-like creature with a crocodilian head (Fig. 10.18). A tri-lobed "fin" is depicted just behind the head, and small V-shaped elements cover the body. These latter suggest scales or "feathers." A human figure, identical to the humans depicted in Monument 4, is depicted in front of the creature's fanged mouth, as if being swallowed or regurgitated. The lower portion of the human's body is hidden by the creature's head, and only the left leg is shown, hanging below the saurian's lower jaw. The creature's very long bifurcated tongue extends past the recumbent person. Three large scrolls occur along the base of the scene.

The similarities between the human figures of Monuments 4 and 5 suggest that the monuments are not only contemporaneous but perhaps also share a common theme, as noted by Cook de Leonard. Grove (1968a: 489) has noted the similarity between the large creature and the *cipactli* of Postclassic codices.

Previous descriptions: Angulo 1979; Angulo and Grove 1974; Cook de Leonard 1967; Gay 1966; 1972a; Grove 1968a.

Monument 13 (I-B-1) ***(Fig. 9.13)***

A broken carving was found about 30 m downhill from Monument 5. It has been nicknamed "The Governor" because it depicts a seated personage and was found while the Governor of Morelos was touring the project's excavations. The carving is executed on a thick, flat slab of stone. It was apparently originally rectangular in form, and meant to stand upright. The rectangular slab had been broken diagonally in antiquity, and only the lower right half of the monument was found. Fortunately, this half apparently contains the major iconographic details of the relief.

The relief shows a cleft-headed, baby-faced person seated within the full-face mouth of an earth-monster (Fig. 10.12). The earth-monster is executed in the same manner as those of Monuments 1 and 9, including plants sprouting from the mouth's exterior. Only a small section of the earth-monster's eye remains, but it seems to be elongated rather than oval. It was surmounted by a large flame eyebrow (see Grove 1980: Fig. 5 for a hypothesized reconstruction). All details suggest that this earth-monster was depicted in full-face view as in Monument 9.

The human figure, in profile, is seated facing to the left, with both arms extended outward toward the knees. A garment or covering is shown on the lower back. A similar garment is worn by Monument 16, the headless statue found by Guzmán (Fig. 9.18).

Previous descriptions: Angulo 1979; Angulo and Grove 1974; Grove 1980.

Area II

Monument 12 (II-2) ***(Fig. 9.14)***

At the southwestern extreme of the site, near S-39 and the foot of the hill's talus slopes, is a relief uncovered during the first field season. It had apparently been found several years earlier by looters who, we learned, had attempted to sell it on the antiquities market without removing it from the site. A good portion of the back of the stone has been chiseled away, also apparently by the looters, who wanted to lighten it for easier removal. The very top of the carving is missing, probably as the result of an old break but possibly due to the attempted theft. While the unsuccessful looters covered the carving with earth to hide it, their actions were noted by other villagers, who relocated it and brought it to our attention.

This relief, nicknamed *"El Volador"* or the "Flying Olmec," depicts a person ex-

Figure 9.13. Monument 13, "The Governor," broken, lying on edge. Figure faces down.

tended horizontally (Fig. 10.19). The person wears an animal headdress. The area above the headdress was also apparently carved, but is broken and missing. In front of the person's face between the upper lip and nose is a circular element, an ornamentation also depicted on some figurines at Chalcatzingo (Chapter 14).

The person's right arm is extended and holds a torch-like object. The object held in the left hand, against the chest, is too eroded to discern easily. By implication, through similarities to other "flying" figures depicted on Olmec jades (Cervantes 1969), the object might have been a "knuckle duster." However, the object held, in terms of available space, seems small for a "knuckle duster."

The figure's position and dress are very similar to those of the figures depicted in the background of La Venta's Stelae 1 and 2 (P. Drucker, Heizer, and Squier 1959: Fig. 68; Heizer 1967). In this instance the figure can be stated to be "flying," for a parrot is shown below him, and two long-tailed birds, possibly quetzales, appear above him.

Previous descriptions: Angulo 1979; Angulo and Grove 1974; Grove 1974a; 1980.

Monument 19 (II-8) ***(Fig. 9.15)***

In 1976 a farmer working in the field we have designated T-13 cleared portions of a stone protruding slightly above the surface and discovered that it was worked.

Figure 9.14. Monument 12, "El Volador."

Figure 9.15. Monument 19.

Figure 9.16. Monument 20.

Apparently aware that no further field work was planned by the Chalcatzingo Project, and spurred on by curiosity, he excavated this large carved stone himself. Although it contains no bas-relief art, its form, size, and elaborateness render it suitable for inclusion among the site's monuments.

The carving's major feature, covering nearly the entirety of one long surface, is a very shallow (4 cm average), well carved and smoothed rectangular depression, measuring ca. 1.1 × 0.9 m. The sloping edges of the rectangle create a shadow-box effect. The workmanship on this monument is superb. Although it contains no carved iconography, its precise lines and smoothed surfaces make it aesthetically pleasing.

Previous description: Angulo 1979.

Monument 20 (II-9) ***(Fig. 9.16)***

An egg-shaped stone with an area of bas-relief carving was found incorporated into a Cantera phase wall segment on T-11 (Fig. 4.21). Although the depiction represented by the carving was not immediately clear, in time we realized that two bent arms with objects held in the hands were shown. This was probably originally an anthropomorphic carving, but the head had been removed and was not found. The left hand grasps a "knuckle duster," and the right hand holds a curved object, possibly a torch (Fig. 10.20). The "Flying Olmec" of Monument 12 seems to hold similar objects, as do other Olmec art objects (Cervantes 1969).

Previous description: Angulo 1979.

Area III

Monument 9 (x-3) ***(Fig. 9.17)***

Monument 9 was looted from Chalcatzingo and is currently in the collection of an art institute in the state of New York. While we decry its theft from the site, we fortunately have been able to determine its provenience. Our excavations atop PC Structure 4 uncovered an area of disturbed soil near that mound's northern edge. Several workers informed us that the monument, in fragments, had been found there.

It is obvious that the monument was freestanding and not a bedrock carving. However, Gay's (1972a:65–66) description of it as of "slipshod character" and somehow different from Chalcatzingo's other carvings is incorrect. Though eroded, the carving shows careful execution. Thematically it is identical to Monuments 1 and 13, since it is an earth-monster face with a cruciform mouth. Plants identical to those on the other two monuments likewise sprout from the mouth's exterior clefts. Interestingly, the mouth's interior is hollow and slightly worn at the base, suggesting that it may have served as a ritual passageway (Grove 1972a:161).

The eyes of the earth monster are ovoid. Joralemon's illustration (1976:Fig. 6b) shows faint crossed band motifs on the pupils. The eyes are surmounted by undulating eyebrows which end in cleft-like elements. A circular motif between the eyebrows contains two dot-and-pendant elements, essentially the reverse of the falling raindrop elements found on the Area I-A reliefs.

Previous descriptions: Angulo 1979; Easby and Scott 1970; Grove 1968a; 1972a; Joralemon 1976.

Monument 16 (x-1) ***(Fig. 9.18)***
Guzmán (1934:248–250) found a headless statue lying in El Paso Drainage between T-15 and T-6. It is now on display in the National Museum of Anthropology. Mutilation of the monument has removed the head and hands of the personage, who sits with legs crossed, hands resting on the knees.

A rectangular pectoral with a crossed-band motif is worn at the chest. At the waist is a wide band with a decorated "buckle" containing five points on its upper edge and four points along its bottom. A band also runs across the person's lap to the crossed legs. A garment also covers the back.

Previous descriptions: Cook de Leonard 1967; Gay 1972a; Grove 1981b; Guzmán 1934.

Monument 17 ***(Fig. 9.19)***
A decapitated statue head was found in association with Burial 3, a subfloor burial in PC Structure 1d, a Cantera phase elite residence. A section of the left forehead and eye is missing, apparently broken off by one of the blows which decapitated the monument. The face is framed by an unadorned head covering. The covering's shape suggests that it depicts a cloth or leather covering draped over some type of rectangular support which extends over the top of the head from ear to ear. The rear of the head is undulating (Fig. 9.19*a*), a treatment also found on the Las Limas statue (Medellín Zenil 1965:Photo 7), and a stone babyface head from Chiapa de Corzo (Pailles H. 1980:Fig. 14). The undulation seems to represent cranial deformation (see Pailles H. 1980:Figs. 55, 56).

Figure 9.17. Monument 9, now in private collection. Courtesy of Munson-Williams-Proctor Institute, Utica, New York.

Figure 9.18. Monument 16, headless seated statue, National Museum of Anthropology, Mexico City.

Two headless monuments (nos. 16 and 20) are known at Chalcatzingo, but neither was the source of this carved head. Although it is relatively common to find decapitated statues at Gulf Coast centers, the heads are seldom found, particularly in good archaeological association. Thus, this discovery is of particular interest, for it provides one piece of data on the disposal of mutilated monument fragments.

Previous descriptions: Grove and Angulo 1973; Grove 1981b.

Monument 18 (III-9) ***(Fig. 9.20)***
During the third field season a large boulder on the sloping east end of PC Structure 4 was laboriously turned over on the chance that its large flat underside might be carved. It was, although the carving itself is relatively small. The carving consists of concentric oblongs, the outermost being 65 cm in diameter. A parabolic nose-like protuberance extends from the oblong motif and points to a natural rounded cavity in the stone's flat surface. A crude pecked line runs from the cavity to the boulder's edge. While the cavity is relatively crude, an artificial cup-like hole also occurs on the surface (upper right in Fig. 9.20).

The two cavities, one apparently natural, the other purposely ground into the surface, suggest that the flat surface was originally horizontal, in the manner of the site's many "water ritual" stones (Chapter 11). The association of the relief carving with a "water ritual hole" indicates that the site's other water ritual holes may be contemporaneous with the bas-reliefs; in other words, Middle Formative.

Previous description: Angulo 1979.

Monument 21 (III-7) ***(Fig. 9.21)***
A stela, broken in half, was discovered lying face-down in the plow zone of T-15. Excavations in the same area uncovered T-15 Structure 5, a Middle Formative stone-faced platform. Although the stela was no longer in situ, archaeological evidence of its original location in front of the platform was found (Chapter 4).

The stela is extremely important, for it depicts a standing female, the only anatomically definite female known in Middle Formative period monumental art. She stands in profile facing to the right, her arms touching a large vertical column. Her upper torso is bare, and her left breast is clearly depicted. Her skirt-like garment is held in place by a knotted belt. A large covering with faint eroded motifs hangs from her head and down


a

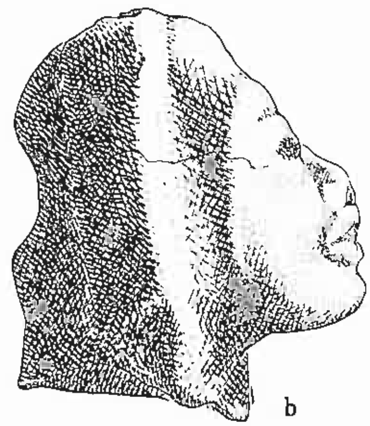

b

Figure 9.19. Monument 17, statue head; *a*, front view; *b*, side view.

Figure 9.20. Monument 18; carving only in lower left corner of stone.

Figure 9.21. Monument 21, depicting standing female.

her back. Her arms are shown with armbands; her feet are shod in sandals.

The vertical column which she touches contains three major iconographic elements. Running diagonally down the entire bundle are elongated oblongs set within undulating lines. This same motif occurs on Monuments 27 (IV-7) and 22 (III-4, see Fig. 27.6). Two horizontal bands cross the upper and lower areas of the column, and each contains a trilobe motif and a large cleft rectangle (also containing simple motifs).

Both the woman and the vertical column stand atop the highly stylized face of an earth-monster (see Fig. 10.21). The two crenelated eyes or eyebrows of the earth-monster rest above a band which forms a mouth with incurved fangs, a further iconographic symbol of the earth supernatural. The oblong and undulating line motif appears as a background within the mouth area, while in the center of the mouth, between the fangs, is a diamond motif with interior scroll.

Previous descriptions: Angulo 1979; Angulo and Grove 1974; Grove 1981b.

Monument 22 (III-4) ***(Fig. 7.4)***

Excavations on T-25 during the second field season uncovered a large table-top altar similar in form and presumably in function to those known from San Lorenzo and La Venta. Because Chapter 7 is devoted entirely to the excavations of this interesting monument, only a brief description is given here.

Unlike Gulf Coast altars, the Chalcatzingo example is not monolithic but is composed of a number of large rectangular stone slabs. It is essentially an earth-filled, three-sided rectangular construction. Only 1 m tall, it lacks the height of Gulf Coast altars, and the face is devoid of the symbolic cave-niche so common on those altars and also frequently depicted in other forms of art at Chalcatzingo. Yet in form there is no question that this construction is meant to be the equivalent of Gulf Coast altars.

The front face of the altar has low relief carving covering most of the stones. This carving depicts the eyes and eyebrows of an earth-monster supernatural. The eyes of the earth-monster are variants of the "Olmec" eye form which Joralemon (1971:8) has classified as "L-shaped . . . with squared drooping corner," characteristic of his Gods I and V. Both eyes are shown with pupils, but no other iconography, such as crossed bands, is present. Unusual, almost sausage-shaped eyebrows are carved above the eyes. In form these are almost identical to those on Monument 9 except that they do not end in twin protuberances.

The evidence is conclusive that the altar had been at least partially disassembled at one time in the Formative period and reassembled differently. This rebuilding displaced at least one major carved stone slab, and therefore the earth-monster face covering the front of the altar is incomplete—the supernatural's left eye is only partial. The missing carved section is built onto another part of the altar.

Previous descriptions: Angulo 1979; Angulo and Grove 1974; Grove 1980; 1981b.

Monument 23 (III-5) ***(Fig. 7.24)***

Excavations at the north end of T-25 during the third field season uncovered the remnants of a low stone platform (Str. 2) and, adjacent to this, the base of a well-faced stela, rectangular in cross-section (Figs. 7.23, 7.24). Although the base section lacked definite evidence of carving, the context of the stela and the fact that it had been purposely mutilated suggest that the missing upper section contained iconography of some sort. Continued excavations in the area did not uncover the missing section, indicating the probability that, as with mutilated Gulf Coast monuments, the broken section was purposely removed from the immediate area.

Monument 24 (III-13) ***(Fig. 9.22)***

A broken stela was discovered by a villager clearing stones on T-7 during our third field season. It was one of a number of stones in a Classic period wall line, but apparently is a Middle Formative carving, mutilated and later used in that construction.

The stela is rectangular in cross-section and has a long tapering end. On its

Figure 9.22. Monument 24, as found.

Figure 9.23. Monument 25, round altar.

Figure 9.24. Monument 26, stela base with traces of carved lines.

"front" side is a highly weathered carving, much of which is missing due to flaking and general erosion. One small design occurs on the back side of the stone. The original vertical position of the stela is in question. Grove believes that the tapered end was the stela butt, and today the stone is erected in that position, moved to the fenced enclosure area of the T-25 altar. However, the position of several glyphs suggest to Angulo that the stela may be upside down today. Angulo's description is provided in Chapter 10 (see Fig. 10.25), Grove's in Chapter 27 (see Fig. 27.7).

Previous description: Angulo 1979.

Area IV

Monuments 25 (IV-5) and 26 (IV-6) *(Figs. 9.23, 9.24)*

During the second field season, Monument 25, a cylindrical carving ca. 1.3 m in diameter and 47 cm in height, was discovered buried at surface level near the north end of T-6 (Fig. 4.16). This circular monument is partially broken on one side and is scored along its upper edge by plow marks. While its top and bottom are flat and uncarved, two motifs in low relief repeat around the monument's circumference. Encircling the monument's upper edge is a series of pendant elements composed of a circle above an oval. Nothing similar is known in Formative period iconography. Circling the monument's lower section is a sharply undulating or cog-shaped line beneath which are spaced several large oblong elements. This undulating line-and-oblong motif is only slightly similar to the wavy diagonal band-and-oblong motif on Monuments 21 and 27. The closest general similarity is with the base design on the left side of La Venta Altar 3 (e.g., de la Fuente 1973:22).

A second monument, no. 26, was found immediately adjacent to Monument 25's southwest side. Monument 26 is the broken basal stub of what must have been a large stela. Only 74 cm of the stub remain. It is oval in cross-section, with approximate dimensions of 100 × 56 cm. On the north side of the stub several carved lines occur, including one right at the upper (broken) edge, indicating that the missing upper section was carved. Together Monuments 25 and 26 appear to be a round altar and stela combination, the earliest so far known in Mesoamerica.

Because T-6 was due to be plowed soon, both monuments were moved ca. 10 m northward, to a roofed stone and cement platform built at the terrace's edge to accommodate them.

Previous descriptions (Mon. 25): Angulo 1979; Angulo and Grove 1974.

Monument 27 (IV-7) ***(Fig. 9.25)***

During the final major field season, the *ejiditario* of T-6 showed project co-director Raul Arana a small stone protruding from the surface near the center of the terrace. This stone, among the thousands which jumble the ground there, showed faint traces of low relief carving. The T-6 excavation grid begun for Monuments 25 and 26 was extended over this area of the field, and the stone was carefully excavated. This operation disclosed that the section protruding above the surface was the tip of a large stela. Excavations were continued and expanded until the entire stela was revealed.

In contrast to two of the other significant stelae on the site (Mons. 21 and 28), this stela is well faced on all four sides and is essentially rectangular in cross-section. It had been broken into at least three sections. The bottom half was still in situ. The fragment which stimulated the excavations is the monument's upper right half, which lay tilted back at an angle. The left upper section is missing and was not uncovered during the subsequent excavations in this area.

The main feature of the stela is the figure of a walking personage, facing to the left (Fig. 10.22). The breaks on the stela run horizontally across the hip section and vertically through the upper torso. Only the left shoulder, arm, and the extreme rear of the head are present on the remaining upper portion. The left arm is bent across a vertical scepter-like object. While the person's head is almost entirely missing, the remaining fragment appears to indicate a headband with two tassles (ties) hanging to the rear. On the lower section of the stela the person's legs are shown decorated with anklets and sandals. The sandals, like those on the female of Monument 21, seem to have some sort of element atop the foot. A hanging fringed belt appears in front of the person's waist.

The personage seems to be wearing an animal's skin or perhaps carrying the animal on his back. The hind legs of the animal hang down and forward, and extend beyond the person's legs. The animal's body is decorated with elongated oblongs separated by undulating lines. This design is the same motif which appears within the vertical column of Monument 21.

The major portion of the human's head and possibly the head of the animal were carved on the missing (upper left) stela fragment. This negates any possibility of identifying either one. The animal's short curved tail and long hoofed limbs suggest that it is a deer.

Rectangular "brick-like" motifs run up each front edge of the stela, framing the figure. In addition, generalized curvilinear motifs occur on the stela's sides. A special feature of the stela is that it was carved not particularly for relief but for color contrast. The rock's "weathered" surface color is red. The artists executing this monument cut below the red surface on the background to expose the lighter buff-colored stone, essentially leaving the main figure and other relief areas in red. Thus the figure is actually in lower relief than other carvings at the site.

This unique manner of carving for color contrast raises an interesting point. This stela is well formed and faced on all four sides, implying that the stone was worked and shaped prior to the relief carving. If this was the case, then the finished stela-blank would not have had a "weathered" red exterior color. This would suggest that the surface color was

Figure 9.25. Monument 27, as discovered, mutilated.

artificially induced through subjecting the uncarved stela to fire, or by some other means.

The excavations of the stela also disclosed that it stood in front of a stone-wall–like feature. When completely uncovered, this proved to be a Cantera phase stone-faced stepped platform mound (T-6 Str. 1).

Previous descriptions: Angulo 1979; Angulo and Grove 1974; Grove 1981b.

Monument 28 (IV-8) ***(Fig. 10.24)***

A massive stela lay almost completely buried on T-6. Fortunately, its butt end projected into El Paso Drainage, and its slightly exposed underside was inspected by Raul Arana, who discovered faintly carved lines. The area was then gridded and the stela excavated. The monument is over 4 m long. Its carved surface is so weathered that the design is barely discernable. A rubbing was made of the carved area (see Fig. 10.23), and although the details are still faint, general features can be ascertained.

The carving depicts a standing personage in walking position, facing to the left, surrounded by a cascade of plume-like elements. These emanate from the large headdress area and also appear as a background to the body and exhibit an unusual branching pattern.

While the personage appears to wear a large headdress, below that the facial details are very eroded or perhaps effaced by mutilation. The ear ornamentation consists of a round earspool from which a pointed element dangles. This ear ornamentation seems identical to that worn by the figures of Monuments 1 and 10.

The right arm is slightly raised, while the left arm is bent at the waist and appears to cradle a large vertical bundle. Below the left arm is a waist band which runs to a vague rectangular area at the stomach. From this same area a hanging belt dangles in front of the legs. While both legs are clearly shown, the feet are difficult to discern.

Previous descriptions: Angulo 1979; Angulo and Grove 1974; Grove 1981b.

Area VII

Monument 29 (x-4) ***(Fig. 9.26)***

An unusual carving was found in the Tetla zone of the site by villagers and brought by them to the village in late 1972. It stands today atop a pedestal in the village plaza.

This crudely carved stone is the only monument known from Tetla. No visible archaeological features occur in the southern part of the zone, where it was found. It is roughly oval in cross-section and stands approximately 1.2 m tall. One end is roughly finished, the other unfinished. The crude motif on the stone's face gives little clue as to the carving's original vertical orientation.

Figure 9.26. Monument 29 from Tetla area of site, now located on the plaza of the village of Chalcatzingo.

Although it could be erected upside down today, the stone is presently positioned so that the deeply carved curvilinear element forms what resembles the highly stylized features of a crude human face, reminiscent of "Kilroy" faces during the 1940's—two arched eyes joined by a pendulous nose.

Area VIII

Monument 10 (VIII-1) ***(Fig. 9.27)***

Monument 10 is a relief carved on the north face of a boulder located on the very top of the Cerro Chalcatzingo about 10 m east of a modern cross. The carving was first reported by Gay (1972a: 66–69) and consists of two motifs (Fig. 10.26). The major motif is a human head, shown in full face. The face has very thick lips and a very wide nose, and the eyes are slightly bulging rings. The brow and top of the head are covered by an unusual pointed cap. The ears are hidden behind large circular earspools with pendant triangle elements, the same style worn by the persons shown on Monuments 1 and 28.

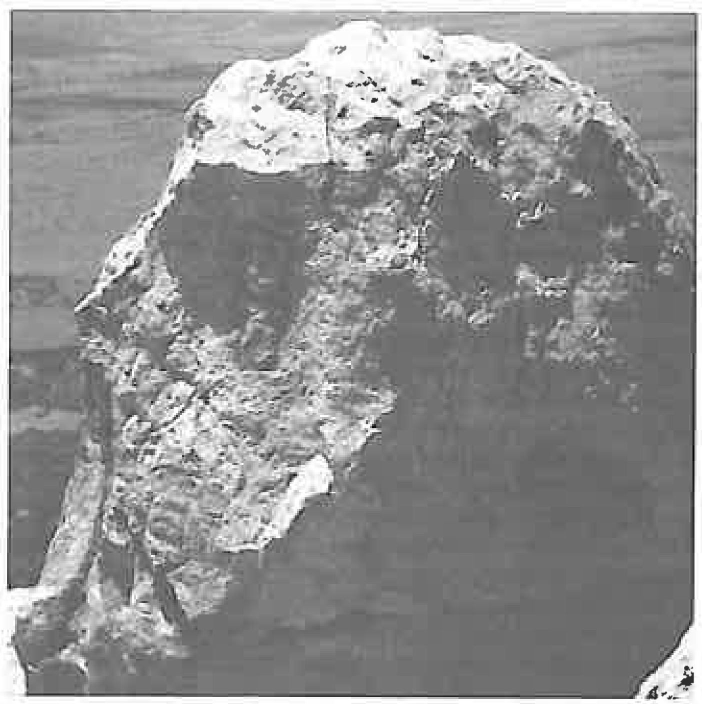


Figure 9.27. Monument 10, carved on boulder atop the Cerro Chalcatzingo.

Above and slightly to the right of the head is an arm and hand motif positioned vertically. The hand (a left hand) has all fingers raised and the palm facing outward. Three large circles form a bracelet on the wrist. Gay (1972a:66–69) identifies the face as a rain deity, and the hand as a petition for rain.

Previous description: Gay 1972a.

Area Unknown

Monument 30 *(Fig. 9.28)*

Cook de Leonard (1967:Pl. 8) has published a carved monument which is similar in form and style to the Teotihuacan ball game marker from La Ventilla (Angulo 1963; 1964; Aveleyra 1963), suggesting a general contemporaneity. The Chalcatzingo carving, which Cook de Leonard estimates at 70 cm tall, appears to have been made from one piece of stone rather than being composite, as in the case of the La Ventilla marker now on display in the National Museum of Anthropology, Mexico City. The base of the monument is post-like. Above this is a solid circular disc divided into eight sections. This circle is in turn topped by three smaller rounded elements, the lowest of which represents down-hanging carved feathers.

According to Cook de Leonard (1967:73), the Chalcatzingo marker stood in the plaza of the village in 1945, but it has long since vanished. It may have been originally associated with the site's T-15 or Tetla ball courts, or could have been placed elsewhere on the site, since at Teotihuacan such markers may have been for a ball game played with a stick and not in a formal ball court.

Previous description: Cook de Leonard 1967.

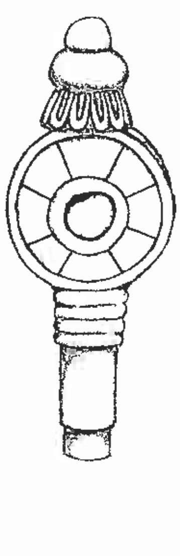


Figure 9.28. Classic period ball court marker.

RESUMEN DEL CAPÍTULO 9

Durante el desarrollo del proyecto, fueron descubiertos varios monumentos independientes y relieves al pie de monte, los cuales fueron catalogados junto con los bajorrelieves ya conocidos. El presente capítulo comprende la descripción de todos los monumentos, cuya interpretación aparece en los capítulos 10 y 27. La numeración de los monumentos se hizo en base a dos sistemas: uno, el sistema de secuencias, principalmente basado en el orden de descubrimiento; otro, el sistema de ubicación, basado en el lugar de origen del monumento, en función de ocho áreas geográficas definidas dentro del sitio.

El Area Geográfica I comprende, los piedemontes, al norte del Cerro Chalcatzingo. La mayoria de los bajorrelieves conocidos fueron encontrados en esta zona. En al Area I-A fueron encontrados el Monumento 1, llamado "El Rey," así como varios relieves representando animales pequeños, de los cuales algunos sentados debajo de nubarrones, Monumentos 6, 7, 8, 11, 14, 15. El relieve de "Los Olmecas Caminantes" (Mon. 2), un felino de gran tamaño (Mon. 3), una escena que representa a dos felinos atacando a dos seres humanos (Mon. 4), una creatura con rasgos de reptil (Mon. 5), y una figura humana sentada dentro de la boca de un monstruo de la tierra (Mon. 13), fueron hallados en el Area I-B.

El Area II corresponde a la parte occidental del sitio. En esta zona fueron encontrados: "El Volador" (Mon. 12), una piedra de gran tamaño con una cavidad rectangular bien trazada (Mon. 19), y una estatua burda decapitada, en la que sólo los brazos aparecen con claridad (Mon. 20).

El Area III comprende la parte central del sitio, incluyendo la Plaza Central, T-15, y T-25. Dos monumentos fueron erigidos en la parte superior de la estructura 4 en la Plaza Central (Mons. 9 y 18). El Monumento 9 es un relieve que representa, de frente, la cara de un monstruo de la tierra cuya boca es hueca y cruciforme. El Monumento 18 es una piedra de gran tamaño con un motivo grabado y dos depresiones semi-esféricas.

Otro grupo de monumentos del Area III fué hallado en T-15 y T-25: el Monumento 21, una estela representando a una mujer; un altar de estilo Olmeca en forma de mesa (Mon. 22); y la base de una estela (Mon. 23). Las dos estelas estaban asociadas a estructuras con revestimiento de piedra. Entre los monumentos del Area III también están la estatua decapitada que se encuentra actualmente en el Museo de Antropología (Mon. 16), la cabeza de una estatua encontrada en una sepultura (Mon. 17), y una estela rota con relieves erosionados (Mon. 24).

El Area IV está situada entre el drenaje de El Paso y el Cerro Delgado. Todos los monumentos hallados en esta zona se encuentran en T-6. Los Monumentos 25 y 26 son un altar asociado con la base de una estela; esta combinación es la más antigua que se conoce en Mesoamérica. El Monumento 27, que está roto, representa a una figura caminante y está asociado a la estructura 1 en T-6. El Monumento 28 es una estela imponente que representa a un personaje en bajorrelieve muy erosionado.

El Area V corresponde a los acantilados superiores y a la cima del Cerro Delgado, mientras que el Area VI corresponde a la planicie de Tetla. No se encontraron monumentos en ninguna de estas dos áreas.

El Area VII abarca la zona sur de Tetla y las laderas sur del Cerro Chalcatzingo. El Monumento 29 fué encontrado en esta zona: se trata de una piedra burdamente labrada, que ahora se encuentra en la plaza del pueblo de Chalcatzingo.

El Area VIII corresponde a la cima del Cerro Chalcatzingo, en donde fué encontrado el Monumento 10, que representa en relieve una cara humana.

10. The Chalcatzingo Reliefs: An Iconographic Analysis

JORGE ANGULO V.

Takuhón illustrations by Chappie Angulo

Local, regional, and long-distance economic interaction between distant culture groups existed very early in Mesoamerica's prehistory. For instance, Michael Coe's data from the Ojochi phase levels (1500–1350 BC) at San Lorenzo indicate that the obsidian utilized there derived from sources associated with the Orizaba volcano (Guadalupe Victoria, Pico de Orizaba) 300 km to the northwest (Cobean et al. 1971). The establishment of local and long-distance exchange and trade systems is a recurring phenomenon in Mesoamerica. Such systems moved raw materials and manufactured goods common to one area to other places lacking these products. Such exchange or trade was usually reciprocal and could be relatively local (within one valley) or pan-Mesoamerican (e.g., between Tikal and Teotihuacan during the Classic period). It is certainly evident that if groups could trade or exchange raw materials, manufactured goods, technology, and other material elements, then they could also exchange their astronomical knowledge, religious concepts, ideas, and cultural features, often translated into symbols and graphic elements that would have been understood among the elite. This way of communicating and transmitting ideas has been classified and studied under the rubric "iconography."

This exchange of materials, as well as intellectual-spiritual concepts and traditions, was established at least by the Early Formative period. The collective cultural traits that developed in Mesoamerica as a result of this exchange have much to do with the similarities in glyphic and symbolic elements that appear to be characteristically "Olmec" but are also manifested in later cultures. Though these elements are similar, they show particular adaptations to different areas in terms of stylization of their characteristics. Nevertheless these symbols conserved the basic elements of the "mother culture," as Miguel Covarrubias (1957:83) called it. Only a cultural unity of this type explains the stylistic evolution of certain iconographic traits that lasted for three thousand years until the time of the Spanish conquest. It is amazing to note how some celebrations and ceremonies today contain identifiable traits of prehispanic origin, although often barely recognizable in the rituals of a hybridized religion. Examples of this can be seen in the traditional dances related to agricultural fertility and the petitions for food performed to the deities related to natural elements. A list of these dances with their explanations would require an exhaustive chapter in itself; therefore it is enough to mention only the dances of Los Tecuanes, La Pescada, and those performed during the Easter period in isolated parts of Mexico, especially in the mountains of Chiapas, Oaxaca, Guerrero, Jalisco, and Nayarit.

A concept opposed to cultural unity and persistence as presented here has been popularized and repeated in the past decade by George Kubler (1967; 1972). This has been an attempt to invalidate any comparisons or analogies that might be established between archaeological cultures and ethnic groups either before the conquest or today. The theory condemns comparison between Mesoamerican cultures, particularly when they do not correspond to the same cultural subarea or if they did not reach similar levels of development at the same time. It is based on the "law of disjunction," formulated by Erwin Panofsky, which Kubler (1967:11–12) adapted for Mesoamerica, arguing for ". . . different meanings in similar representations." The concept favors a pluralistic interpretation of Mesoamerican religions based upon "intrinsic evidence" from the art forms (Kubler 1972:1).

One principle followed in this chapter is that the art form transmits a message as a complement of the social, political, economic, religious, and historical factors that constitute the culture of any group. I conclude, however, that many of the precolumbian iconographic representations do share the same basic concepts, and that they conserve a certain degree of continuity throughout the chronological horizons of their development. The various examples of this expression that have endured for more than three thousand years in Mesoamerica would require a lengthy list and a work dedicated exclusively to that theme, so only one example will be mentioned. This is the persistence of *chalchihuitl*, the jade bead that symbolically represents precious water (blood of the gods), as an element that frequently appears associated with representations of water-laden clouds. The most ancient expression known of this motif appears on a rock carving at Chalcatzingo (relief I-A-1, "El Rey"). It is also found with the same significance in the *Codex Telleriano Remensis* (Pl. 25) and in the copy *Vatican II*, both painted in the period immediately after the conquest, almost 2,500 years after the carving of the Chalcatzingo reliefs. This same motif is without question still found in drawings and paintings executed today on *amate* paper by artists in rural villages in the mountains of Guerrero and sold in folk-art stores throughout Mexico.

The following analysis of the monuments is based upon lengthy in-the-field studies of each relief under a variety of light conditions, supplemented with *takuhón* technique "rubbings" (which illustrate this chapter) and photographs. Because the concept of a continuity of beliefs and symbolism through time is followed, the analysis draws heavily upon ethnohistoric and Postclassic data. The presentation of the reliefs does not follow the sequential numbering order of the catalog (Chapter 9), but discusses the most important reliefs in groups which exhibit unifying themes. The reader is referred to the catalog for additional locational and descriptive data.

ANALYSIS OF THE RELIEFS

Group I-A (Mons. 11, 8, 14, 15, 7, 6, 1)
The carvings of Group I-A convey the idea that they form a pictorial sequence, rather than each carving simply being an isolated phenomenon. At least three symbolic motifs are repeated in most of these carvings, with only minor variations between them. The first is a cloud, which appears to be growing thicker and changing its position from left to right in the sequence. Another is the raindrop motif which terminates in a small concentric circle (the *chalchihuitl*, which in later Mesoamerican cultures symbolizes rainwater, precious water, and the blood of the gods). The raindrops change in quantity, size, and position in the sequence of carvings. The third motif is a double scroll element that winds and unwinds, forming a horizontal S. This last element serves as a base for most of the zoomorphic figures of Group I-A and as the seat of the principal personage, "El Rey," of relief I-A-1 (Mon. 1), who sits within the mouth of an earth monster, the entrance to the underworld (Grove 1968a: 486–487). El Rey holds within its arms a bar with the same scroll design, bringing to mind the ceremonial bars found in Maya carvings.

The Group I-A sequence must be viewed from left to right. Unfortunately, this is exactly the reverse of the sequence in which the reliefs were found and originally numbered. Relief I-A-7 (Mon. 11; Fig. 10.1), on the extreme left, begins with a cloud set at an angle of 60°. Beneath the cloud, but at some distance below it, raindrops fall perpendicularly, seemingly blown away by the wind. They do not quite reach the zoomorphic figure, which appears to represent a crouching jaguar lying in wait on top of the horizontal-S symbol and looking upward in the direction of the cloud.

The second relief in this series, I-A-6 (Mon. 8; Fig. 10.2) has been severely eroded and is barely perceptible today. It also includes a thin cloud, in this case directly over the zoomorphic figure. The head of this heavy-bodied figure is again upturned, facing the cloud. A bifurcated scroll emerges from its mouth. Where the scroll is close to the cloud, two rain-

Figure 10.1. Monument I-A-7 (Mon. 11).

Figure 10.2. Monument I-A-6 (Mon. 8).

drops are produced. It is difficult to determine whether the muzzle of the animal is large and the bifurcate element emerging from its mouth is short, or vice versa. The figure's face has remains of a wide eyebrow that could be interpreted as a "flame eyebrow." Two short legs terminating in claws protrude from the heavy body. The left leg appears to be shriveled and held close to the body, while something protrudes downward from the stomach. The most disconcerting part of this figure is the tail, which can be interpreted in different ways. One is to view the animal as a fish with some long element attached to its tail. Another is to view the zoomorph as a representation of a crocodilian with a long tail that branches out from the center and again at the tip.

It is difficult to identify the zoomorph based on the data available. It seems to be a fish-like animal with a large snout and large tail like a crocodile or *cipactli*, often referred to in Nahuatl mythology as the symbol of the material world, composed of earth and water. Or it may be the *acipactli*, which lives in the rivers and estuaries and has been frequently mentioned in sixteenth-century sources as *peje lagarto*, or alligator gar.

The third zoomorphic figure of this sequence, I-A-5 (Mon. 14; Fig. 10.3), was uncovered in 1972 and is in a good state of preservation when compared to the others. The figure is crouched over the horizontal inverted-S motif. The structure of a quadruped can be clearly seen. It may be a dog or a coyote with its tail curving upward. It also faces upward toward the cloud. The face has a clearly incised wide eyebrow, as is common among flame eyebrows in Olmec carvings. Emerging from the elongated snout is again the bifurcated scroll. When this touches the cloud above, it produces three drops of water that fall on each side of the figure. Below the figure is a plant consisting of a large stem with four large leaves, all morphologically characteristic of squash plants.

The fourth carving, I-A-4 (Mon. 15; Fig. 10.4), also found in 1972, is almost completely destroyed except for portions of the cloud's right half, one drop of falling rain, and the upper part of the bifurcated scroll. The destruction has removed almost all of the zoomorphic figure in this instance, as well as the scroll upon which these figures normally crouch. In the lower part of the carving another squash plant can be seen. This squash

Figure 10.3. Monument I-A-5 (Mon. 14).

Figure 10.5. Monument I-A-2 (Mon. 7).

Figure 10.4. Monument I-A-4 (Mon. 15).

plant contains at least one flower with incipient fruit. Although we have no way of knowing how long this relief has been destroyed or what caused its nearly total destruction, its position on the hill suggests that it may have simply disappeared through erosion.

The following scene is composed of two carvings on different sides of the same rock that seem to represent the same animal–scroll–squash-plant complex shown in the previous two reliefs. During the 1972 field season, a *takuhón* was made of I-A-2 (Mon. 7; Fig. 10.5). I believe it shows the zoomorphic figure to be an iguana. As with the other carvings, the zoomorphic figure is looking upward and also crouches over the horizontal-S scroll. Apparently missing here are the bifurcated scroll, the rain cloud, and the drops of rain. The other side of the same rock has a well-executed carving representing the vine, leaves, and young fruits of a squash plant, I-A-3 (Mon. 6; Fig. 10.6). The positioning of the zoomorphic figure and squash plant leaves little doubt that these two carvings form one unit.

Interestingly, the animal looks upward toward MCR-2 (Chapter 11), a small rock-carved canal about 2 m uphill. This canal may have symbolically or magically guided the torrents of water that during the rainy period formed the beginnings of a drainage system that started at the feet of El Rey and descended the hill, crossing the artificial terraces to irrigate the fields below.

The last relief of the sequence is "El Rey," I-A-1 (Mon. 1; Fig. 9.3). On the uppermost part of the relief are three large double clouds, apparently filled with water. Vertical lines below these undulating clouds transmit the image of a fine but heavy rain (Fig. 10.7). Below the clouds, raindrops occur in abundance. Concentric-circle *chalchihuitl* glyphs larger in size than the raindrops are also present.

From the open mouth of the earth-monster niche, large scrolls curl outward in diverse directions, as if describing a torrent of wind. Previous classifications have identified this large zoomorphic earth-monster profile as the jaguar-serpent. The triple lines of the jaw mark the gums of a feline, while the eye motif with its St. Andrew's cross is considered that of a reptile.

The St. Andrew's cross here may relate to the "crossroads" (*omaxalli*) that Edward Seler (1963) frequently mentions in his analysis of symbology. The *omaxalli*

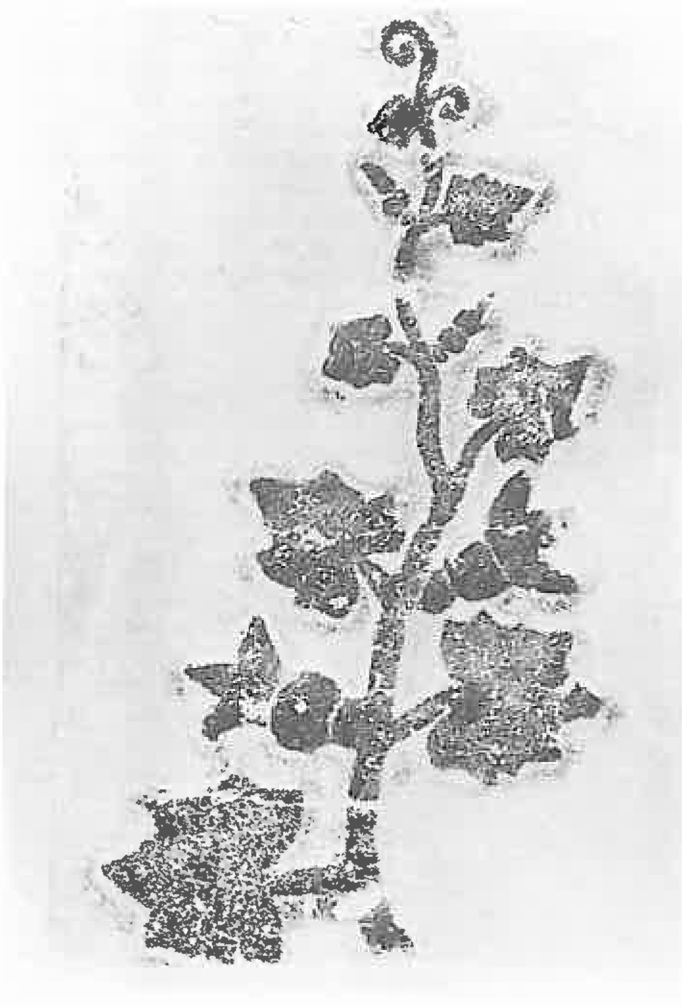


Figure 10.6. Monument I-A-3 (Mon. 6).

Figure 10.7. Cloud above "El Rey," Monument I-A-1 (Mon. 1).

probably had a mythical significance related to the cardinal points and to the definition of the five regions of the universe, of which the most important point was the center. This core would be where two different dimensions merge, as geographic space in the chronological moment of living experience, a combination of space and time that forms the present.

In the Mexica culture, the place where the roads crossed (*omaxalli*) was an important space destined for the construction of temples and altars dedicated to deities of the earth, especially Tlazolteotl, Tezcatlipoca, and Xipe Totec.

The St. Andrew's cross could also represent the dual deities of heaven and the underworld. The symbol would graphically express the crossing of the path of the sun in its daily journey with that of the Milky Way in the nocturnal sky.

Above the eye of the earth monster is a flame-eyebrow–like element which probably was derived from the eyebrow area of the quetzal bird or *guacamaya*. Donald Lathrap (1982) identifies it with the crest of the harpy eagle. In both instances it would personify the symbol of the sun.

In three areas of the open jaws of the earth-monster are plants, previously interpreted as maize (Coe 1965a: 18), but identified below as a bromeliad that grows and adheres to the fissures of the rocks at Chalcatzingo.

The personage seated within the earth-monster's mouth not only sits upon a rectangular block which contains the horizontal-S symbol, but also holds in his/her arms a "ceremonial bar" with that same symbol (Fig. 10.8). This personage, popularly called "El Rey," wears an enormous headdress placed at the back of the head. The tall and tubular form of this headdress evidences certain similarities with the headdresses worn by personages shown in other Olmec art such as in Juxtlahuaca cave, Guerrero, Stelae 2 and 3 at La Venta, and to some extent on Altars 3 and 5 at the same site.

Within the headdress of "El Rey" are two rows of three raindrop symbols each. Three large concentric circles (as in the *chalchihuitl* glyph) are distributed along the back and top of the headdress and are adorned with eyebrow-like elements. Above and below the central circle are the figures of two quetzal birds with long tail feathers. Two bromeliad-like plants are present, one in the front and center of the headdress, the second emanating forward from the turban or dressed hair that

Figure 10.8. Seated figure, "El Rey," Monument I-A-1 (Mon. 1).

covers "El Rey's" crown and forehead. Where the hair or turban covers the side of the head there is an elongated ornament which includes a circular element like an earplug. A triangular form with the long point facing downward hangs from the circle. The circle and triangle combination evolved into the year symbol used by later central Mexican cultures.

"El Rey" appears to have an adornment covering the cheek and nose, and there is some type of element emanating from the mouth. In both cases the effects of erosion or intentional mutilation prohibit definite identification.

A cape covers "El Rey's" shoulders and falls to elbow level. Any designs on the cape have been lost through weathering. Raindrop symbols occur on the personage's skirt-like garment, but the designs on the *maxtlatl* or hanging belt are too eroded to identify. Ankle bands are clearly worn, but it is difficult to determine if the feet are bare or shod in sandals.

With the idea in mind that the Group I-A carvings represent a pictorial sequence, this sequence can now be analyzed. One very significant feature is that all of the zoomorphic creatures executed in the reliefs are shown with their heads facing upward. Similar representations (especially of fish and birds) are found on Early Formative vessels from Tlatilco and Las Bocas (Coe 1963a: Figs. 22, 59, 61; Piña Chan 1958: 2: Pls. 4, 10). Three Late Formative ceramic figurines found during the 1974 excavations on T-27 (Fig. 8.17) wear duck-billed masks over their mouths in the manner of the Mexica Ehecatl and are also facing upward.

Various Gulf Coast sculptures are found in the same position, although at times they have been mistakenly set up horizontally. Examples include La Venta Monuments 11 and 56, Tres Zapotes Monuments F and G (de la Fuente 1973: 68–70, 103–104, 295–299), and a carving from Arroyo Sonso, Veracruz (Fig. 10.9). This position is also repeated in Mexica sculptures such as the dog or *ahuizotl* displayed in the Puebla Museum and the statue of Coatlicue found during the subway excavations in Mexico City. Thus, just as people today kneel in church, these carvings suggest that an upward-facing posture may have been a common ritual position from the Early Formative period until the destruction of the indigenous culture by the Spanish.

This position is of significance for another reason as well. Among the recent discoveries related to the decipherment of Maya glyphs has been the identification of a glyph that signifies the "birth" of important personages. This glyph is always a zoomorphic head (usually identified as a frog) looking upward (Fig. 10.10; Barthel 1968: 134–135). Chalcatzingo's zoomorphic figures with upturned faces could possibly have been carved for the same reason, to indicate "birth," or the initiation of some special event in the celebration of a ceremony. The other sculptures and the ceramic vessels mentioned above could likewise have been related to the same concept. The special event celebrated might have been the birth or beginning of the rainy season, the rebirth of the vegetation that covers the surface of the earth after the first rains, the act of fertilization, and the giving of the "new life" that annually bursts forth from Mother Earth, assuring the survival of the inhabitants.

While the zoomorphs looking upward could be the symbol of the initiation of an event, the bifurcated volutes emerging from their upturned faces would have been the energy emitted as breath, materializing the prayers and chants directed to the clouds to give forth their precious drops of water (*chalchihuitl*). Similar single volutes were used by later cultures in highland Mexico as the symbol of speech and communication. When speech scrolls were adorned with flowers they represented prayers and chants. Without adornment they signified ordinary communication.

The bifurcated volute emerging from the zoomorphic figures at Chalcatzingo can also be simplified into the geometric form of a T. Among the Maya this form is a glyph known as *ik*, whose literal translation is "wind." Ik, as god of the wind, is part of Itzamna, a greater god. In addition, according to J. Eric S. Thompson (1960:73), "Ik . . . means not only wind but breath and by extension life itself." In referring to the usage of the *ik* sign in one portion of the *Codex Madrid*, Thompson says, "Here again, the Ik must carry the idea of germination, of coming to life." The bifurcated volute conceived as a supplication rising to the clouds could be an earlier expression of the Maya glyph, the breath of Ik. Among the Maya of the Petén and the area of the Usumacinta-Grijalva during the Classic period, glyphic writing consisted of a mix of pictographic and ideographic symbols which complemented other abstract symbols grouped as affixes, suffixes, prefixes, and others which generally represented a sound or phoneme (Kelley 1962). It is possible that Chalcatzingo's Group I-A reliefs are one of the first manifestations of this type of symbolic-representative writing, which may have begun in the Early or Middle Formative, although few examples exist from these early times to verify such a hypothesis.

The pictorial sequence of zoomorphic figures facing upward may imply a deeper meaning than simply the initiation of a new phase of life related to the fertility of the earth brought about by the coming of the rains. The advent of the rains could have marked a new annual phase in the system of time measurement or calendric counts, the birth of a new year. All known calendars have seemingly arbitrary beginnings. It is possible that in the Formative period the calendar began the new year with the rainy season.

Figure 10.9. Arroyo Sonso carving, National Museum of Anthropology, Mexico City.

The passage of the sun across the true zenith is a phenomenon which occurs only in tropical latitudes. As Anthony Aveni (1980:40–46) has noted, the passage of the sun through the zenith may have been used in the prehispanic period, as it is today, to fix dates in the agricultural calendar. "The first (zenith passage) announces the rains at the end of April telling that it is time to clear the fields for a planting, the second . . . also signals rain accompanied by wind. These events are attended by elaborate ritual" (Aveni 1980:40).

Other scholars offer different beginning points for the precolumbian calendar. Alfonso Caso (1967:50–63) suggested that the calendric count began with the month of Atlcahualo, which he correlated with February 14. Coe (1975:13) suggests that the Maya year began during the second ten days of the month of July, when the sun passed over the zenith without leaving a shadow on a vertical stick. Aveni (personal communication) believes that the same zenith phenomenon took place at Tres Zapotes during the third week of May. He also notes (1980:245) that the initiation of the rainy season in Copán in the first week of May can be determined when Venus can no longer be seen through the window of the "observatory" at that site.

Today one of the principal festivals of Chalcatzingo is the Christian celebration of Santa Cruz on May 3. On this day a nearly constant procession of villagers can be seen climbing the Cerro Chalcatzingo to the cross which is erected atop the hill. They carry food and fruits as offerings for the year. Since the colonial period the indigenous populations have selected Christian festivals which coincided in time with their traditional ceremonies and festivals. However, it cannot be determined with certainty today whether the festivals are more important for their original indigenous aspects or for their more recent Christian significance.

Festivals and ceremonies today emphasize the continued importance of the beginning of the rains to Mesoamerican agriculturalists. In precolumbian Mesoamerica, in a cognitive system in which the elements of nature and the obsession with agricultural productivity were so important, the rainy season undoubtedly marked the beginning of a new cycle, the rebirth of a new life.

Another important and not unrelated theme in the Group I-A reliefs can be found in the horizontal-S scroll that serves as a base for almost all of the crouched zoomorphic figures. This symbol, with its winding and unwinding, visually expresses two aspects of the same movement, but in opposition. In the double scroll we find the dual principle of the giving of life and taking back through death, the dryness and later the humidity that cyclically cover the surface of the earth.

Although the extremes of this horizontal-S symbol diverge in opposite directions, at the same time it forms an inseparable unit as a dual principle of contrary forces that compose the order of the universe, the essence that maintains all of the elements of creation in permanent equilibrium. The scroll is a clearly explicit visual form of the principle of equilibrium of contrary forces, the eternal duality of oppositions found in all philosophical theories, the same principle or scientific premise that explores the eternal dynamics which maintain active and alive all the components affecting the constant rhythm of transformation of life in nature. These eternal oppositions, notable in the contrast between night and day, heat and cold, rain and drought, life and death, express the concepts of duality that have been manifested in Mesoamerica from the Early Formative period to the Spanish conquest.

Because of the common association of the scroll as a symbol for sound, the horizontal-S scroll may also represent sound in one direction and the echo in the opposite direction. As noted below, the echo has an important association with the Lord of the Mountain as personified by the "El Rey" relief (I-A-1). Caves and mountain cliffs are an appropriate place for echoes, and it is likely that this opposing scroll motif represents the chants, prayers, and supplications projected toward the sacred cliffs of Chalcatzingo to obtain rain from the "Heart of the Mountain."

It is possible that the horizontal-S scroll, the symbol of dual opposition, evolved into glyphs such as *hurakan*, the *xonecuilli*, and others used during the Classic period. The constant use and

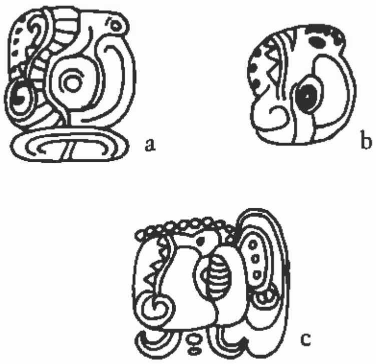


Figure 10.10. Maya "upended-frog" glyphs: *a*, T740:24; *b*, T740; *c*, T740 (after Kelley 1976: Figs. 55, 68, 73).

repetition of this symbol throughout many centuries may have converted it into a familiar and traditional motif applied to ceramics as decoration but no longer directly related to the mythic-religious symbolism of the original.

From the above discussions it can be seen that the zoomorphic figures in Group I-A are extremely complex iconographically, for they encompass concepts such as birth, new life, and oppositions. Their variety suggests a further interpretation, that they may also be totemic representations of clans or other kinship-oriented groups from the settlement of Chalcatzingo or the valley, who participated in ritualistic petitions for rain here on the side of the sacred mountain.

The first animal (I-A-7), identified here as a jaguar, would have been the most important clan or lineage, related to the sun or creator from the east who is crouched in wait.

The second relief (I-A-6) depicts a figure related either to the *cipactli* (crocodile) or the *acipactli* (alligator gar or *peje lagarto*), both of which represent the water from ponds, lakes, rivers, and estuaries, and are considered as a link between water and earth. There are some similarities between this figure and Izapa Stela 25, in which the *cipactli* is converted into a strong tree, evidently related to fertility (Norman 1976:37). Here this animal could also represent another clan participating with petitions in the ritual.

In the third relief (I-A-5) the figure is considered to be a coyote or some type of canine. It could have been related to a clan from the vicinity whose mythical animal would have guarded the *milpa* from rodents and other predators. It would also have been the symbol of a cosmic star, the moon, or some other form of cosmic energy.

Since the fourth relief (I-A-4) is almost completely eroded, it is impossible to identify the figure. However, in the sequence of zoomorphic figures there is none related to water and air; thus it might have been a duck or a bird. In the black ware ceramics from Tlatilco and Las Bocas, many vessels have been found in the form of birds, especially ducks. The duck would be considered here as an animal related to human groups as well as to the aquatic and aerial elements of nature, since it is often represented in Olmec and Middle Formative iconography.

The last zoomorphic figure of the sequence (I-A-2) depicts an iguana, a well-known symbol of fertility related to both plants and human beings.

This whole sequence of reliefs may in one aspect represent the collaboration of the clan groups, each one related to natural elements, in their petitions through prayers and ritual to bring the rain clouds from afar to the mountain of Chalcatzingo, in a ceremony associated with fertility.

As a complement to the fertility rites, the sequence clearly shows the progressive growth of the clouds. Relief I-A-7, at the extreme left of the sequence, shows a cloud on the distant horizon. The cloud keeps growing in the subsequent reliefs until it reaches its full size (repeated three times) above "El Rey" (I-A-1), where each cloud is three layers thick (Fig. 10.7), giving the impression of rain falling from three different levels to the earth-monster below.

A further complementary sequence occurs with the squash plants. Carving I-A-5 shows a vine with four leaves, while on the following relief, I-A-4, the vine (heavily eroded) bears a small flower with an incipient fruit. The adjacent relief, I-A-3, depicts a third squash plant in full florescence with two ripe fruits which are represented with flowers, while two other small fruits are beginning to grow at the end of the exuberantly carved vine. These three representations leave no doubt that they form part of a sequence showing the florescence of one of Mesoamerica's oldest cultigens, as a result of the rains brought through the fertility rituals depicted by this entire sequence.

A completely different type of plant is depicted in the "El Rey" relief, where it grows from the exterior of the earth-monster mouth. Although often identified as maize, these plants are more probably bromeliads, common on the Cerro Chalcatzingo (Fig. 10.11). The granodiorite of the cerro regularly weathers and flakes, forming large and small vertical rock faces and clefts into which the humid outside air penetrates. Here moisture condenses into drops of water which run down the fissures, providing sustenance to a variety of plants such as bromeliads and even to large *amate* trees which grow clinging to the mountain's vertical cliff faces.

The bromeliad is a plant that has the ability to store rainwater at the base of its large leaves, which sprout from a central core, and also to absorb atmospheric humidity through these same leaves. Bromeliads are native to the western hemisphere, ranging from the southern United States to South America. The pineapple is the most familiar of the two thousand bromeliad species, some of which house "mini-kingdoms" of bacteria, algae, insects, frogs, and spiders in and around their stored water (Zahl 1975). Large bromeliads have supplied water for human use, but Chalcatzingo's small plants certainly did not serve such a function.

Figure 10.11. Bromeliads growing near Monument I-A-1 (Mon. 1).

Bromeliads occur in quantity on the cliffs and fissures of the Cerro Chalcatzingo. Considering that they retain water that gives life to the dry mountain, and because they visually resemble the plants carved on the "El Rey" relief, it seems likely and logical that these rather than maize (which does not grow on the mountain) are the plants growing from the earth-monster mountain-cave symbol. The carved bromeliads can be seen as symbols of the life-sustaining water gathered from the air, and intimately related to the deities of the mountain, caves, and water.

This fits in well with the sequence of zoomorphic figures who attract the rain and humidity from the clouds, so that they will condense and drip their precious liquid over the sacred mountain of Chalcatzingo.

The personage of "El Rey" clearly played the most important role in the scene depicted in the Group I-A reliefs, perhaps as the Lord and Heart of the Mountain that converted water from the air into the streams of water that formed the ravines of Chalcatzingo. Symbolically speaking, the personage would be the mediator between human beings and the gods.

The concept of Lord of the Mountain is extremely important in Mesoamerica as well as other world areas. It is crucial to a complete understanding of Chalcatzingo, and thus is explored in detail here. The Lord of the Mountain may be a very ancient belief, for it occurs in the Old World as well as the New. For instance, in Korean folklore certain mountains are considered sacred and given the name Miruk. In these sacred mountains ceremonies have been carried out for centuries to attract rain. There are carved reliefs which predate the Buddhist conversion in this area (AD 370). Buddhist temples were constructed in various parts of the mountain in different periods, while large and small villages were established around them (Strom and Strom 1972). On the 38th parallel which now divides Korea into two independent countries, people still speak of the "spirit of the sacred mountain" called Koo Weal, which is identified as a legendary white tiger that the Koreans call "the king of the Mountain." In other references to Korean folklore, Yong-Hun Shing (1966: 5–7) relates a story of Tan Gun as " . . . a heavenly King (who) sent his minister of wind, rain and clouds to visit the earth . . . descending at the top of the mountain. The mountain and its spirit become the intermediary between men and Heaven with all elements of nature."

For Mesoamerica, Barbro Dahlgren de Jordan (1954: 237–238) points out that in the Mixteca "That the peaks of the hills were sacred areas has been confirmed by archaeology and historical sources" (my translation). The Mixtec had their idols on the highest points in the mountains, where they performed ceremonies to the gods of rain.

Calixta Guiteras Holmes (1965: 231–234), in a study on symbiotic concepts of the religion of the Tzotziles of Chiapas, says that "They believe that the hills and mountains are apart from the earth, that these constitute the home of Angel, God of Rain, Lord of Animal life and protector of 'our sustenance.'" Later, with respect to caves, she notes, " . . . they are entrances to the mansion of the God of Rain . . . the water sources and springs are the givers of that which is offered to man . . . The angel is the god of rain, Lord of the Mountains, he that gives us maize, master of the animals and of the divinity of the waters. The lightning belongs to him. The angel guards the planted fields at the foot of the hills and the ones on the pine-covered slopes" (my translation).

These Tzotzil concepts closely parallel the symbolism of the relief of "El Rey," who sits within the mouth of the earth-monster and may be related to the figure of Tepeyollotl of centuries later, the Lord of Caves and Heart of the Mountain. These attributes were also associated among the Mexica with the figure of Tlaloc, god of rain, whose most ancient name in Nahuatl is Tlaloc-Tlachpanquiahuitl, meaning "the one who sweeps the rain toward the earth." The Spanish chronicler-priest Diego Durán (1967: 1: 81) translates it as "road under the earth" or "large cave," while Edmundo O'Gorman in the index to Bartolomé de las Casas' *Los indios de México y Nueva España* (1971: 220–221), translates it as "the one who is inside the earth" (my translations to English).

Both Tlaloc and Tepeyollotl may have derived from a single concept in the Middle Formative. Both are associated with the wind that pulls the clouds filled with rain to the Lord of the Mountain, who then absorbs the water from the clouds, storing it in the caves and releasing it as rivers.

In the Maya area there are myths describing U C'ux Cah as the heart, the guts, and the living principle of the heavens, the spirit of the lakes, and the heart of the sea. This god is a triple deity who controls lightning and thunder. Caculha Hurakan is the one-legged lightning, Chi'pi Caculha is the small lightning, and Raxa Caculha is the green lightning bolt, lightning, or thunder (*Popol Vuh* 1947: 90–91 footnote).

In the *Popol Vuh* (1947: 23–24) it is mentioned that the gods "... joined their words and thoughts [and] brought forth the creation and the growth of man. It was brought forth in the fog and in the night by the heart of the heavens who is called Caculha Hurakan" (my translation).

Seler (1963: 1: 114) considers U C'ux Cah related in some form to Tezcatlipoca because it represents the solar deity of the west who is introduced to the earth from that point to reappear in the east. In reality U C'ux Cah is another version of Tepeyollotlicuhtli, the jaguar god who inhabits the caves and is similar to Tlaloc in many of his attributes (Seler 1963: 1: 174). He also controls the waters that come out of the caves, and he is surrounded by clouds, lightning, and thunder. This god keeps the fire of the lightning hidden behind the clouds and is a dual deity who produces water and fire at the same time.

Thompson (1960: 74) makes a similar observation: " . . . Tepeyollotl, according to commentaries of *Codex Telleriano-Remensis*, was the echo and lord of animals; his name means heart of the mountain . . . he is invariably in association with a temple, which in one case has a façade shaped as the open jaws of the earth monster. He usually has features which suggest the jaguar . . ." His association with the echo suggests a clear connection with another earth god, Uo'tan, deity of the Tzeltales and Tzotziles whose name signifies "heart." Uo'tan corresponds to the day of Akbal in the Maya calendar and, according to Seler (1963: 1: 175–176) "was the Lord of the hollow tree, the *Atabal* [drum] of wood called *Teponaztli* [who] was the first male that god sent to divide the earth among men . . . he owned a temple inside a cave—a somber house—a great treasure that he had produced by blowing . . . it was protected by a female priest and some *Tapianes* [guardians]" (my translation).

Uo is also the name of the second month among the Mayans. Its glyphic representation is formed by the St. Andrew's cross and the affix that symbolizes the color black and represents the jaguar god of the underworld. Uo could have been the patron of one of the pre-Mayan calendric months that marked fertility rites such as expressed in the reliefs of Group I-A.

One wonders if relief I-A-1, "El Rey," represents a deity who preceded the concept of Tepeyollotl among the Mixtecs and Mexicas. The relief seems to symbolize the ancient concept of the God of the Mountain who lives in the caves and in the interior of the earth, the one who controlled the echo expressed graphically as sound and resound. It is evident that the concept personified by "El Rey" underwent change through time and that the attributes became distributed among various later Mesoamerican deities. Other scholars generally agree in identifying the personage "El Rey" with rain and fertility, a type of Tlaloc, sitting at the entrance of the underworld in the mouth of the earth-monster.

To summarize, the Group I-A carvings should not be viewed simply as individual reliefs, but as the earliest pictorial sequence now known in Mesoamerica, a sequence probably meant to be viewed from left (east) to right (west). Important features of the sequential reliefs are the upward-facing animals, their bifurcated scrolls, the clouds, raindrops, and squash, and the horizontal-S motifs. The sequence is brought to a climax in the "El Rey" relief, which contains the essence of the total message. The wind coming out of the cave carries the clouds of rain to the top of the mountain, where they are transformed into raindrops, the precious water (expressed by the *chalchihuitl*) that will permit the green mantle of vegetation to return, covering the earth once more. This completes the cycle of renovation, produced by seasons of rain and drought in the eternal dialectic rhythm of nature transformed into a concept of life and death in an agricultural society.

Reliefs I-B-1, x-1, x-3 (Mons. 13, 16, 9)

There are two other monuments with the same motif and possible symbolism as "El Rey." One is relief I-B-1 (Mon. 13), called "The Governor," which was found during the 1972 field season. The other is composed of two sculptures, x-1 (Mon. 16) and x-3 (Mon. 9), at present exhibited in different museums but which might possibly have formed a unit when carved. Relief x-3 is today in the Munson-Williams-Proctor Institute in Utica, New York; x-1 is in the National Museum of Anthropology in Mexico City.

In both I-B-1 and the combination x-1 and x-3 one can find, as with "El Rey," a stylized jaguar-serpent with open jaws representing the earth-monster and a personage seated inside the mouth as in the entrance to the underworld. The reliefs "El Rey" and "The Governor" are two-dimensional, while sculptures x-1 and x-3 are three-dimensional. The reliefs in discussion show the earth monster motif full face while in "El Rey" it is seen in profile.

"The Governor" relief (I-B-1; Fig. 10.12), carved on a square slab, was found broken diagonally. Fortunately, the half recovered contains the major part of the central motif which depicts a person seated within the earth-monster's mouth. A bromeliad grows from the side of the mouth in the same manner as those on the "El Rey" relief. The mouth is formed by parallel bands modeled to give a feeling of depth to the carving.

The eroded nature of the carving has obscured the many rich details executed nearly three thousand years ago. The characteristic features of an Olmec face can still be recognized on the seated personage. The head is elongated upward and backward and cleft in a manner similar to some carvings and axes found at La Venta. The personage is kneeling or seated in a lotus position and is atop an element similar to the *icpalli*, a seat with a back of woven mats. The arms are extended toward the knees, manifesting certain tension and force in a position similar to sculptures of the Gulf Coast area, such as Monument 1 at Cruz de Milagro, Veracruz, Monument 1 of San Martín Pajapan, Veracruz, and Monuments 8, 10, and 73 of La Venta. Grove believes that this position in seated figures is a good chronological marker for Middle Formative carvings. By the position of the hands it appears that the figure may be holding a ceremonial bar (e.g., San Martín Pajapan Mon. 1; de la Fuente 1973: 242–244), but since the rock is broken in this spot one can only be sure that it wears wrist bands.

The personage wears a garment or cape over the torso, and appears to be using a wide belt that could represent the bands that hold the *maxtlatl* (loincloth) or might be an item such as those worn by ballplayers (e.g., yokes).

Monument x-3 (Fig. 9.17) was found by looters, apparently atop PC Structure 4. This sculpture repeats the earth-monster motif of "El Rey" and "The Governor," here manifested with a full-faced cruciform-shaped mouth. From the four clefts on the exterior of the mouth bromeliad-like plants again grow. In contrast to "The Governor," but similarly to "El Rey," x-3 has ovoid eyes that may have contained St. Andrew's crosses (symbol of sun or heavens of the Maya). The two wide eyebrow elements terminate in twin protuberances. There are similarities between these twin protuberances and the headdress motif of figure *c* in relief I-B-2 (Mon. 2; Fig. 10.13). The same form appears in the headdress of the lower jaguar in relief I-B-4 (Fig. 10.16) and the eyebrows on the earth-monster face on the T-25 altar (III-4 [Mon. 22]; Fig. 7.4). There is a small motif between the eyebrows, apparently a stylized jaguar face with two raindrop-like elements.

Figure 10.12. Monument I-B-1 (Mon. 13).

The large open mouth of this jaguar-monster is formed by a hollow cruciform that passes completely through the carving. The lower portion of this opening is worn and indicates not only that this sculpture was erected as a vertical panel but also that persons could have crawled through the mouth as a ritual passage through the earth-monster's mouth related to death and entrance into the underworld (Grove 1972a: 161).

Monument x-1 (Fig. 9.18) was found by Guzmán (1934:248–250, Figs. 10, 12, 13) lying in El Paso Drainage between T-6 and T-15. It could be a component of Monument x-3. The figure depicts a seated person, arms held tightly to the body, but mutilated, lacking head and hands. The mutilation probably took place during the Formative period and was related to the same factors as the mutilation of Gulf Coast Olmec monuments (discussed later in this chapter). The figure wears a rectangular pectoral with a St. Andrew's cross motif (celestial glyph) and is quite similar to Monument 30 from La Venta.

The anthropomorphic statue of x-1 could have originally been seated inside a stone and mud construction (representing a natural cave) behind earth-monster relief x-3, the entrance to the underworld through its open cruciform mouth. The worn opening in relief x-3 may have been produced by offerings placed there for the deity behind. The dim light illuminating the seated sculpture placed inside the artificial cave would have completed the three-dimensional image of the message, that of the Lord of the Mountain, of wind, of heavens and earth, of life and death, sitting in the entrance to the underworld.

Together with "El Rey," "The Governor" (I-B-1), x-1, and x-3 depict this important deity who brings the clouds to produce rain that results in the fertility of the earth and the renovation of all living elements, the lord who lives atop and inside the mountains at the entrance of the underworld in the cave-mouth of the earth-monster, a life and death deity.

Relief I-B-2 (Mon. 2)

The relief I-B-2 is executed on a rock which not only has become tilted through time, but also has difficult access. Thus this analysis has been based on a *takuhón* made on the fiberglass copy of the relief on display in the National Museum of Anthropology. This copy (Fig. 10.13) places the figures and their proportions more accurately than previous illustrations, but much of the carving's detail has been lost. Therefore the analysis was supplemented with drawings and photos made at the site.

The scene depicted is popularly known as "The Processional" or "Marching Olmecs." It is made up of four anthropomorphic figures equally distributed across the lower surface of the large boulder.

The first figure on the left (*a*) seems to be moving away from the scene. On his large headdress there is a square form, crossed by two thin bands which might have tied the headdress together or could have been a vertical St. Andrew's cross, identifying his affiliation with a heavenly deity. Another wide, transverse band fastens the cylindrical form of the headdress to the head of the personage. These horizontal bands tie another element that protrudes in the front, from which two long forms emerge as feathers, a plant like teosinte or another type of wild maize. The element closest to the headdress is rigid, while the other is flowing. The personage wears a square mouth mask held together by a *chalchihuitl* in the same way as the masks of the Lords of the Night that surround the sarcophagus of the tomb in the Temple of Inscriptions at Palenque and the mask of jadeite from La Venta (Covarrubias 1957: Fig. 33).

He is wearing a short cape that covers only the upper arm and a heavy *paño de caderas*, possibly of leather, like a small skirt, which covers his waist and thighs. One can barely discern a light or translucent tunic that reaches the calf of the leg. The arms are extended forward, sustaining a multifoliated element that could represent a wreath of corn stalks and cobs.

The two central figures (*b*, *c*) are moving toward the fourth figure (*d*) on the extreme right. These two middle figures carry lances that are as long as their own height and are held by their forward-extended arms. Both wear high headdresses, although the symbols that adorn them are different. These symbols probably identified their clan, political, or religious affiliation.

The headdress of figure *b* has a band that fastens a round jade bead to it. Out of the bead comes a vertical element, opening in two directions, that probably represents a plant or a bunch of feathers. A mask with the beak of a bird completely covers the face of this personage. This mask has been represented in previous drawings as the beak of a bird on a human face and classified by David Joralemon (1971:9) as "Bird Beak." After careful in situ observation and study of the *takuhón*, the mask appears to represent the complete head of an eagle, identifiable by the strong curve of the beak and the presence of short sharp feathers spread over the face.

A cape worn on the shoulders undulates backward, expressing a rhythm of movement. A bulky short skirt is held up by the loincloth or *maxtlatl*, whose extremes end in feathers. An object like a buckle on the front of the waist is adorned with circular forms, probably jade beads. It seems this second personage wears bands on the knees and the ankles. The ones on the ankles extend to the instep of the foot, possibly to tie the sandals that no longer appear in the relief.

The headdress of figure *c* is adorned with two symbols similar to those in the stylized jaguar face of the mosaic floors at La Venta and to other Olmec reliefs and carvings. The upper symbol, apparently corresponding to the eye, seems to relate to the rain clouds analyzed in Group I-A, while the lower symbol probably corresponds to the Olmec feline's thick lip with fangs at the end of the mouth (Fig. 10.14).

A band of laced ties (interpreted in other drawings as the St. Andrew's cross) sustains the headdress and another element to the front of it, out of which emerges an eagle's talon with three long nails. This same talon shape is found on a headdress of one of the jaguars of relief I-B-4 (Mon. 4). A jade bead emerges from the talon with a vertical element rising from it, similar to the ones identified on personage *a* as feathers.

The figure wears a mask which is apparently held in place by the same laced bands that tie the headdress and form the chin strap. It seems to be a mouth mask with a double line that represents the gums of the jaguar, the feared feline, with a curved fang at the end of the mouth. This type of mask represented Tlaloc in the Classic period. This personage, like the others, wears a short cape, skirt, and *maxtlatl* of an apparently heavy and rigid material.

In this relief is found one of the few cases of superimposed figures in Mesoamerican stone art. Figure *c*'s front leg crosses in front of person *d*'s outstretched leg.

Person *d* is in a seated position, either languishing or deceased. The figure is in left profile with the legs outstretched, while the arms extend along the body, resting freely on the leg. Grove notes that some small clay figurines from Chalcatzingo assume this same position (Fig. 27.4). These figurines are perforated, indicating that they were used as pectorals.

The facial features of figure *d* are typi-

Figure 10.13. Monument I-B-2 (Mon. 2).

cally Olmec, with wide nose and thick lips. He also has a sharp-pointed beard. A long element that curves up and behind the figure emerges from the top of his head. On the back of his head there is an anthropomorphic mask with the beak of a bird. Below the mask there is a square form with an eroded design which it has not been possible to identify and which serves as a support for the seated figure.

Peter Furst (1965:42–43) believes that the seated figure represents a shaman, identified by the horn-like headdress. The figure of the shaman or religious leader is in a position of total relaxation, in ecstasy, seeming exhaustion, defeat, or possibly death. The mask on the back of the head indicates that his function is finished (due to either termination of a ritual or his death).

A question has been raised (Grove 1968a:488) whether the seated figure had an erect penis in the original carving, or whether that was added more recently by someone wishing to accentuate an imprecise area of the carving. Grove suggests that the so-called penis is actually part of the right leg of the reclining figure. Aside from any mechanical analysis to define the original outline, it can be noted that none of the representations classified as Olmec (except the "Olmecoid" *danzantes* of Monte Albán) have been represented with sexual organs. The presence of a penis would make figure *d* an extraordinary case, especially since the position of the figure is of complete relaxation while the "phallus" is erect. If there actually is a phallus represented it might symbolize the readiness and ability to fertilize something which does not appear in the relief, as if it were relating to a myth of insemination by some legendary person during his trip through the underworld.

To understand the message in this relief, it is necessary to consider the figures as a unit. Figure *a*, on the extreme left, seems to be leaving the scene and appears to be separated from the action of figures *b* and *c*, while concentrating on the wreath of maize. His presence might relate to a fertility rite, as would that of figure *d* on the extreme right, especially if the representation of the penis is authentic. Legends compiled by chron-

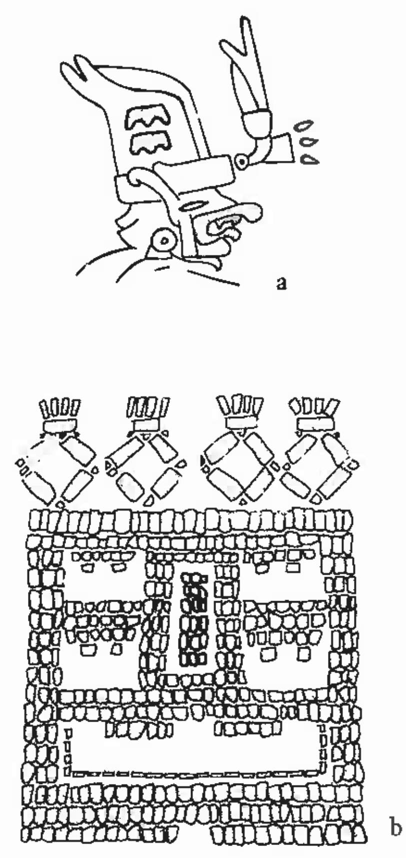


Figure 10.14. For comparison: *a*, masked figure on Chalcatzingo Monument I-B-2 (Mon. 2); *b*, La Venta massive mosaic mask.

iclers in the sixteenth century discuss the event of the semigod Quetzalcoatl bleeding his penis to give life to humanity, a legend that Mesoamerican cultures could have inherited from earlier groups.

The eagle and jaguar masks of the two central figures suggest that they are warriors whose personal, lineage, or clan identification was shown by the symbols on their headdresses. They could have been fulfilling a special function in this ceremonial scene as celestial or underworld warriors. The relief might then be a representation of an actual ritual related to fertility and warriors.

If Grove is correct that the phallus is a recent addition to figure *d*, the relief could be an early depiction of the sacrifice of captured warriors (in this case the "shaman") celebrating the ceremony of fertility, similar to the one described by Bernardino de Sahagún (1956:1:65) for Xipe-Totec of the Postclassic where ". . . they made a series of wreaths of maize . . . one side was of the team of Xipe-Totec . . . the other side was of valiant and brave warriors . . . bellicose . . . who were not afraid of death" (my translation).

Relief I-B-3 (Mon. 3)

The whole face of the rock upon which relief I-B-3 is carved has been worked to create a large, undulating, abstract surface with many concavities. It is evident that the form of the rock face was caused not by natural erosion but by human agency, possibly to complement the carved relief (Fig. 9.10). The interiors of several of the concavities appear to have been reworked to enlarge them with a tool which left long parallel scratches, similar to marks left by jaguar claws. The relief is carved to the right of the area of concavities.

The zoomorph featured in this carving seems to combine characteristics of diverse animals, as often found in other representations of Olmec art as well as in Mesoamerican iconography in general. The first visual impression that the figure transmits is that it is a feline, with its large tail raised. The animal's head is attached to an extremely long neck, almost suggesting a camellid, much like a llama. The body of the animal is divided from the neck to the tail by a longitudinal line indicating a separation that might imply a change of color or texture such as the bicoloration of a puma, which is tan on its side and back and has a white belly.

The crouching position of this creature is unusual, for its legs are bent in a way different than that natural for felines but similar to that of the felines depicted in Río Chiquito Monument 2 and San Lorenzo Monument 7 (Grove 1972a:155).

The animal's mouth is quite similar in form to that of the serpent shown in La Venta Monument 19 (P. Drucker, Heizer, and Squier 1959: Fig. 55). A long tongue-like form protrudes from the mouth, touching a long, thin, asymmetrical branching design which is nearly as tall as the rock upon which the relief is carved (Figs. 9.10, 10.15).

At least two types of felines can be found in the reliefs at Chalcatzingo and probably at other Olmec sites. One is the jaguar (*Felis onca*), for example in relief I-B-4, and the other is the puma (*Felis concolor*), which is probably represented in this relief.

All previous publications have illustrated the carving only down as far as the animal's paws, where it seemed to end. Our recent *takuhón* discovered another probable figure below the animal's front paws (Fig. 10.15). The newly discovered but obscure form seems to be the head, shoulders, and right arm of an anthropomorphic figure, rising from beneath the boulder. Previous descriptions of this relief have misidentified the arm as part of the branching linear motif.

The figure has an Olmec face and seems to wear a mask covering the area of the eyes, and also has an ear ornament. The nose area may have been erased by mutilation. On the top of the head there is a large oval element, either a headdress with the form of a jaguar's skull or a turban which is interwoven with the figure's long hair extending downward. Feathers emerge from the back of this turban or headdress and curl down in three different directions. The figure appears to wear a necklace of beads or knots connected to a cape or piece of cloth hanging down toward its back. The right arm of the figure is extended upward with the elbow almost touching the snout of the feline while the open hand almost reaches the linear branching object that extends toward the upper part of the rock. The arm is being licked by the tongue of the feline. The figure thus appears under the feline's paws and is apparently being devoured or held imprisoned by the animal, very much like the figures on relief I-B-4.

Figure 10.15. Portion of Monument I-B-3 (Mon. 3) showing feline's head and possible human below.

The *takuhón* revealed another surprise, an unidentified symbol in the puma's ear, which is probably a key to identifying the feline with its meaningful representation. One can possibly assume that it is meant to identify it with the earth's satellite, a star, a constellation, a planet, or a deity related to either cosmic or natural forces.

The intent of the elaborate and complete reworking of the boulder's face is unknown. It is possible that the concavities were enlarged to convert them into niches where ceremonial offerings related to a feline cult could be deposited, or for some other ritual purpose. The relief may represent a special ceremony practiced during the celebration of a calendric event, with the sacrifice of a deified person, identified by the elaborate headdress and the row of *chalchihuitl* beads, in honor of cosmic or natural forces that are represented by the feline. This mythic or real sacrifice could have been practiced to preserve the maintenance of the water sources expressed by the linear elements with *chalchihuitl* endings.

Relief I-B-4 (Mon. 4)

Monument I-B-4 is a relief made up of four forms equally distributed over the surface of the rock (Fig. 9.11). Although the theme of the relief constitutes a unit, it can be divided into two repeated scenes, each made up of a feline on top of a human. The lower feline (Fig. 10.16) is somewhat similar to the one in relief I-B-3, as it is also shown with a long neck and has a stripe dividing its body along the back. It is the puma type of feline found in Olmec art.

Figure 10.16. Lower feline, Monument I-B-4 (Mon. 4).

On top of the head there is a long double element, like the ears of a rabbit, stylized horns, or the typical cleft Olmec axe. In the center of this element are the barely visible features of a face that has a flaring upper lip with drooping lower corners, often represented as the symbol of royalty or priestly caste.

On the feline's face, above the nose, there is another element very similar to the eagle talon found on the headdress of personage *c* in relief I-B-2. In this instance, rather than representing the eagle talon, it looks like an upside-down axe or a sacrificial knife out of which emerge three long curved nails or fangs; it might symbolize sacrifice. A vertical form that could be considered as the handle of the sacrificial knife ends in another element that curves like a feather.

The eye of the zoomorphic figure is made up of two tangent circles, with an appendix that extends to the bottom and extreme left circle close to the occipital bone. This is the form that Joralemon (1971 : 8) describes as "L shaped eye with a squared drooping corner, common for Gods I and V" (the jaguar god with flame eyebrows and the cleft-headed deity, respectively). From the tail of the feline, three cleft axes spread out like rays or sparks thrown out from the movement of a shaking tail.

On the upper part of the relief is a characteristic Olmec jaguar bearing two motifs that are symbols of astrology in the Classic Maya culture (Fig. 10.17). One is the cartouche over the eye of the jaguar, substituting for the eyebrow, that holds a St. Andrew's cross. In this case the cartouche has two double feather-like elements coming out, upward and forward.

The second symbol is in the ear of the jaguar and closely resembles the Maya Venus glyph. Venus is the Chac Ek (the Large or Red Star) of the Maya, or the Huey Citlalli of the highland cultures of central Mexico. Venus is identified with the deity Tlahuizcalpantecuhtli.

The two anthropomorphic figures under the claws of the zoomorphic figures have similar characteristics. Their position is one of complete abandon or muscular relaxation, characteristic of someone without consciousness or life. Both figures have their heads turned backward, and the right arm of each figure is half bent, as if trying to protect the head. The left arm is extended toward the left leg, which is bent, as if the individual was trying to dive into an abyss. Both figures have a marked cranial deformation in the style of the ceramic Olmec hollow baby-face figurines. They wear a bunch of hair on their foreheads that could be a representation of *aztaxolli* (a tassel of heron feathers) used to adorn the sacrificed warriors during the Postclassic.

An interesting parallel to this Chalcatzingo scene occurs in Mochica art of Peru (AD 300–600). Elizabeth Benson

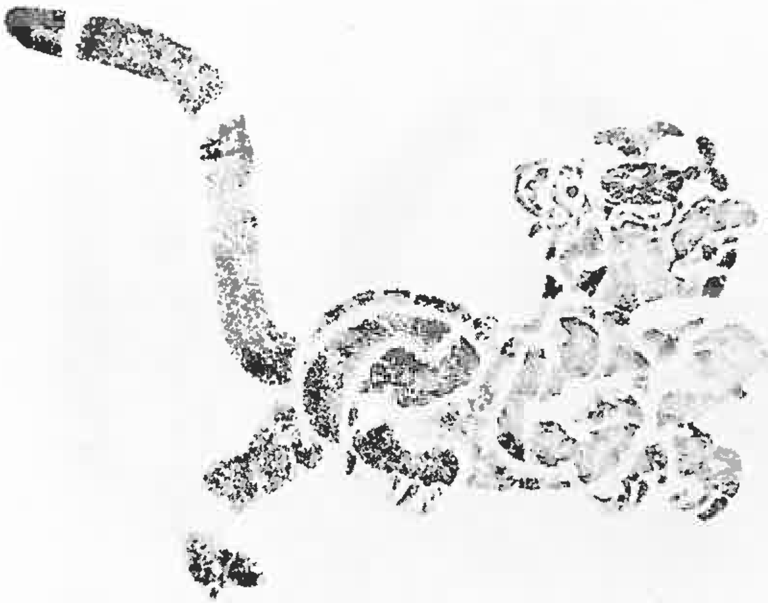


Figure 10.17. Upper feline, Monument I-B-4 (Mon. 4).

(1974) describes a number of Mochica ceramics which depict a man held under the claws of a jaguar. The majority of the men seem to represent warriors or prisoners-of-war as victims of the jaguar. In one typical description, Benson (1974: 16–19) states, " . . . the jaguar's forelegs go straight out so that only the claws of the uppermost paw threaten the neck of the man . . . The man has a rope around his neck; his hands seem to be tied behind his back; and, again, his shirt is that of a warrior suggesting that perhaps he is a prisoner-of-war stripped of his headdress and weapons."

In her analysis (1974:24), Benson suggests that the jaguar deity may have as its ancestor a Chavín period deity and that it probably had multiple attributes, including those of creator god, god of the sky, the sun, and the mountains. As she says (1974:24), "The Mochica presumably went into the mountains, where this deity dwelt, to make sacrifices . . . These sacrifices undoubtedly propitiated the mountain deity, who must also have been the deity of fresh water, of the rivers that come down from the mountains to make agriculture possible . . ."

In Mesoamerica a similar belief system may have been present. The offering of a prisoner-of-war or some other chosen person as a sacrifice could have been initiated by the shamans of the Formative period to calm the voracity of this mysterious feline that abounded in the mountains and forests of tropical and subtropical Mesoamerica.

The offering of the life of the sacrificed one could have been dedicated to a mythical entity of whom the jaguar became a symbolic representation, such as the Bolon Ti Ku, the Lords of the Night. The first four Lords have diverse attributes of the solar deity (Seler 1963:1:171). The fifth is the god of the underworld and death (*miquiztli*). The last four are related to earth and water and are represented by the jaguar. These lords combined and controlled the elements that produce the fecundity of the earth at the indicated time because they ruled the calendric cycles manifested yearly in the change of foliage that covers the surface (skin) of the earth through its periods of rain and drought. The ritual sacrifices were probably made on specific dates to remind the deities representing planets to fulfill their appointed journey through the sky in order to conserve the earthly rhythm.

As previously stated, the jaguar carved on the upper part of the relief has a glyph of Venus in the place of its ear and the glyph of the St. Andrew's cross over the eye. The glyph of Venus is similar in meaning to the glyph of the day Lamat among the Maya of the Classic period, especially in the version that is cut in half, which Thompson (1960:220) describes as "an inverted 'w' with a circle set in each loop" in which possibly each circle is related to the planet in its morning and evening cycle, the two aspects of the dual deity (the divine twins).

Many legends and traditions in diverse areas of Mesoamerica make reference to a set of twin brothers who participate in intricate stories related to the creation myth or cosmic deities, the formation of the word, and the origin of humanity. The sacred book of the Quiché focuses its stories on the experiences of various generations of twin brothers involved in the ordering of the heavens, the earth, and their regent deities. In the highlands, there are stories about Tezcatlipoca, Quetzalcoatl, and other deities as multiple personalities. Among the avocations of Quetzalcoatl is Tlahuizcalpantecuhtli as the morning star and Xolotl as the evening star (two aspects of Venus). Although Xolotl can be one aspect of Venus, the personality of Xolotl is sometimes confused and overlapped with that of Nanahuatzin, a deity who became the sun. In some myths the protagonists transform themselves into the sun and the moon, while in others they become the sun and Venus.

Thompson (1960:218) discusses the importance of the sun and Venus in the *Popol Vuh* of the Quiché of highland Guatemala, where the sun and Venus are seen as brothers. He states that, "Hunahpu was the name of the brother we assume to have become the planet Venus but *Hunahpu* is the Quiché equivalent of the day 1 *Ahau*, which is precisely the day sacred to Venus . . . *Nohoch ich* 'great eye', *Chac ek* 'red star' or 'giant star' and *Xex ek* 'wasp star' . . ."

Herman Beyer (1965:276–279) mentions that Venus was known as Huei Citlalin (Large Star) and Tlahuizcalpantecuhtli among the Mexica. This deity "is painted with white skin and red stripes. It symbolizes, without a doubt, the pallid light of the dawn . . . this same symbolic painting [is found] in the figure of the victim . . . because of the parallel between the morning star and the human victim. When the sun rises the star is not visible, which makes it appear as if the death of the morning star gives life to the sun." Beyer continues, "The Mexica sacrificed human beings to give food to the sun . . . in that fashion the victim played on earth the same role as the warrior-star, the morning star of the heavens" (my translations).

Sahagún, quoted by Aveni (1980:26), says of Venus, "Captives were slain when it emerged that it might be nourished. They sprinkled toward it, flipping the middle finger from the thumb, they cast the blood as an offering."

The two figures of relief I-B-4 have their faces turned behind them, precisely in the position that Seler (1963:1:143) describes a sacrifice which was consummated at sunset in the seventeenth festival of the year, in honor of the month Tititl, in which the priest danced stepping backward and waved his feet backward. That is to say, he made backward movements as if he wished to throw himself head downward in a dive. Later (1963:1:164–165) Seler adds that the turning of the head backward can be interpreted as a symbol of darkness, Tlillan, the dark house; of the earth; of the night in which the sun doesn't shine but only the fire, or rather a time before the sun was born, a remote time.

Thus, in view of the strong relationship of Venus to human sacrifice, it seems likely that this relief depicts a myth about the creation of heavenly twin gods, in which a human offering is portrayed as the sacrifice of deities (or their anthropomorphic representations) to assure the reinitiation of the harmonic rhythm of the stars, giving life to the people of the Preclassic world.

The basic elements to support this concept would be found in the following symbols: (1) the *aztaxolli* (an ornament of heron feathers) found on the head of the anthropomorphic figures (a symbol which represented sacrifice to the Mexica); (2) the journey to the underworld presented by the backward-looking head in a "diving" position; (3) the Lords of the Night, the darkness and the underworld, represented by the felines with their complementary attributes; (4) the symbol of the planet Venus in the ear of the upper feline, the jaguar, identifying it as a celestial representation; and (5) the second sacrifice, being consumed by the puma, who is decorated with axes and flint knives and who could be an earlier manifestation of the concept of the deity Iztli (one of the Lords of the Night), intimately related to the Tepeyollotl and the Tlaloc of the Mixtec and Mexica of the Postclassic.

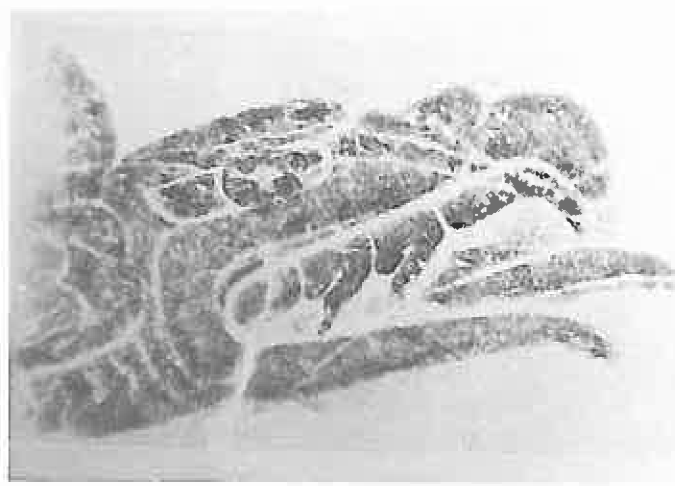
***Relief I-B-5* (Mon. 5)**

The main features in relief I-B-5 are a zoomorphic figure and a human form (Fig. 9.12). In the guide to the archaeological zone of Chalcatzingo (Angulo 1979), the zoomorph is classified as the *acipactli*, the *peje lagarto* (fish-gator or alligator gar) mentioned in the myths related to the formation of the earth.

The zoomorph here is represented with an open mouth, showing the characteristic folding fangs of the serpent and the tearing teeth of a shark. It has a clearly carved fish-like fin behind the head (Fig. 10.18*a*). The body is contorted in a form reminiscent of the movement of a worm traveling along the earth rather than the weaving of a serpent or the smooth sliding movement of a crocodile or large fish over the surface of a pond.

There are two elements in the middle section and at the end of the long body of this animal that are difficult to identify because of the advanced state of erosion (Fig. 10.18*b*). They seem to represent feathers, fish scales, or the rough skin of the crocodile. If feathers, the figure would acquire a divine status; if scales of fish, it might represent an iguana or the *acipactli*; but if the design represents the rough texture of the skin, it would perhaps identify the mythological *cipactli* (crocodile).

There is an element at the end of the sharp tail that has previously been drawn as the rattle of the rattlesnake. It is interesting to note that if it is a rattle, it is in an inverted position. This part of the relief is barely visible.



a

b

Figure 10.18. Saurian creature, Monument I-B-5 (Mon. 5): *a*, head; *b*, undulation showing pointed feather-like details.

The human figure is of the same size and position as those in relief I-B-4, with head thrown backward. The body is partly hidden from the thigh down by the snout of the aquatic animal. There is no way of knowing whether the animal is devouring or regurgitating the human figure, which seems to have lost consciousness or life as in the case of the I-B-4 figures (considered in this study as examples of human sacrifices).

There are three other elements, scrolls somewhat similar to those found at the base of the zoomorphic figures in the series of reliefs of Group I-A, although in this case the volutes are not open but united at the end. They are distributed below the *cipactli*. Their position around the animal suggests they represent water, although if so, such symbols did not continue into later cultures. The form also has a certain resemblance to an enclosed *xonecuilli*, a symbol that could be related to the sound of thunder and lightning when associated with water deities, the echo produced in caves and cliffs, or the sound of the ocean's waves.

Representations of *cipactli* or *acipactli* not only refer to the first day of the year in the calendar of the Mexica or the corresponding Cimi of the Maya, but also represent the region of the west. Seler (1963:2:52) states that the west is the region of Tamoanchan, the house of the birth of *atl ayahuican*, the land of water and fog. In the west is found the great sea, where the sun sets at day's end, and also the river which the souls of the dead must cross to arrive at their place of rest. In this manner the symbol of the west could only have been an aquatic animal. The reference was probably to the Pacific Ocean or to the swampy lands of the Pacific Coast where one would find the crocodile (*cipactli*) or alligator gar (*peje lagarto, acipactli*), the great fish that (the gods utilized) to make the earth (*Historia de los mexicanos por sus pinturas* 1941:210–211).

In Mexica mythology these concepts relate perfectly to that of Tezcatlipoca, the god of only one leg who, as Seler (1963:1:114) says, "is a solar god . . . who in the afternoon is devoured by the earth and transformed into a god of night, continuing his trip through the underworld, and who, because of his magic ability, rises the next morning to the heavens once again, converted into a young god." Seler also mentions that Sahagún said of Tezcatlipoca, "he walks in the heavens, on earth, and in the underworld" (my translation).

Seler (1963:2:52–55) also speaks of Xochipilli, ". . . the young god, the god of morning and of life, the sun that rises . . ." (my translation), who faces the sea monster *acipactli* and loses a foot in the encounter. Seler notes that this is shown in the *Codex Fejervary-Mayer* and the *Codex Borgia*, where the person is identified as Tlahuizcalpantecuhtli (Venus), the morning star.

Mary Helms (1977:68) relates an indigenous Costa Rican myth in which the early ancestors were victims of an alligator that "lived in a large pool [and caught] whatever he wanted . . . When he saw people he would stick out his tongue and pull them in . . ." According to this myth, Sinu (a culture hero and deity) "was annoyed with this and sent a man to pull the tongue out . . . which he gave to the sun to make its rays." Although perhaps only coincidental, it is interesting to note that the face of Tonatiuh depicted in the center of the so-called Aztec Calendar Stone has a solar ray (flint knife) as a tongue.

This relief can be interpreted as representing the sacrifice of an actual or mythical hero who symbolized the setting sun. He was probably swallowed by the dual earth-aquatic monster *acipactli* who dwells in the swampy areas of the west and the great sea. As the nocturnal sun he would then have traveled through the interior of the earth to be reborn in the east the following day as a young god, full of life and vigor, to start his daily journey as the rising sun. The relief might also be a combination of the two aspects of the same solar deity, as sunset and sunrise (rebirth), that during the Postclassic became two gods, Tezcatlipoca and Xochipilli.

Reliefs II-2, II-9, and III-9 (Mons. 12, 20, 18)

The style of relief II-2 can be considered as typical La Venta Olmec. It represents the extended figure of a person ("El Volador" or "Flying Olmec") wearing an elaborate loincloth, bracelets, arm and ankle bands, and sandals. The figure appears as if suspended in the air, in a dynamic position an athlete might assume in the middle of a vigorous jump (Fig. 10.19). The person carries an element like a torch or long stick in the right hand, while the left hand is touching an element that could be an elaborate pectoral made of jade laced together in a complicated design.

The *volador* is surrounded by various birds shown in flight. A parrot (*guacamaya* or *arara*) flies beneath the knees, and a long-tailed bird such as a quetzal is above the left leg. Three long tail feathers and part of the feet of another quetzal-like bird are above the personage's back, remnants of the missing upper fragment of this carving. The *guacamaya* and the quetzal, both tropical birds, are related to the sun in the symbolism of various Classic and Postclassic Mesoamerican cultures.

Most of the person's headdress was in the missing fragment. The face occurs in the open mouth of an animal, part of the remaining headdress section. The animal is identifiable as an oppossum through the form of its nose, jaw, slanted eye, and sharp ear. However, the nose and ear of the oppossum can likewise be viewed as the lower beak of a huge bird head (the upper beak part of the missing section), in which case the feathers hanging over the back of the *volador* might be those of the headdress rather than a second quetzal.

From the elegant ornaments that the figure is wearing and the lighted torch held in its hand, it might be thought to represent a messenger of the gods sent to earth, possibly flying through the darkness of the underworld; however, figures wearing similar garments found in other examples of Olmec art have been identified as ball players (e.g., Coe and Diehl 1980:268). Some of the prehispanic ball games have been related to astral movements, such as the *citlaltlachtli* (ball game of the stars) to which early Spanish chroniclers made reference. The relation of the relief's birds as numina of the sun fits with both interpretations, but the person's garments correspond to those of ball players, with a thick loincloth as part of the skirt that covers the hips and a great portion of the legs. The loincloth is knotted in front, from which point a long band falls, ending in small pleats as a decorative design that has to date been associated with the ornaments of dancers in certain ceremonies.

The position of the figure has been compared with those carved on the upper portion of Stela 3 at La Venta (Grove et al. 1976:1207). From the position he seems ready to hit the ball in the middle of a spectacular jump, as has been represented engraved on Olmec jades from the Gulf Coast (Cervantes 1969: Figs. 7, 9–11). A similar position is found on the sculptures of the Maya area such as the disc of Chinkultik and the monumental sculpture of Temple 11 at Copán, Honduras (Stromsvik 1947:25 left). This latter figure is shown kneeling on the earth and holding a bar in his left hand with a flaming ball carved with an *ik* (wind) glyph. The mask worn on the face identifies this figure as a messenger of the solar deity, although the position identifies him as a ball player in the middle of a jump. The personification of the sun would relate this to the celestial ball game, *citlaltlachtli*, in which the sun (rubber ball) was hit with lighted torches until the rubber caught on fire. It probably represented the movement of the king star through the heavens.

José Corona Núñez (1942) describes a game he observed in Michoacán in which the players used bats to hit and set on fire a ball made of the dried roots of cactus plants. He suggested that the sun represented by the ball on fire would be thrown from east to west as in its daily movement, to be sent back (in its nightly trip) through the underworld by the opposite team of players. There is a mural painting at Tepantitla, Teotihuacan, on the same wall as that of the famous Tlalocan mural, in which the main scene depicts a ball game played with bats (Angulo 1964:103–110). There are other clay sculptures clearly identified as ball players (such as certain Jaina figurines) modeled in the typical crouching position adopted by ball players at the moment of hitting the ball.

Before arriving at any conclusions about this relief, two other Chalcatzingo carvings, related in a way to the "Flying Olmec," must be considered. One, relief II-9 (Mon. 20; Fig. 10.20), was found fragmented and very eroded in the T-11 excavations (Chapter 4). Even though the relief is seriously damaged, it is possible to perceive part of the torso and the crossed legs of a figure seated in the lotus position. Although the head and shoulders are missing, one can see the arms at the center of the body holding a round object like the knuckle duster, similar to other examples depicting ball players in Olmec art. This relief is essentially a two-dimensional copy of three-dimensional Monuments 10 and 26 of San Lorenzo (de la Fuente 1973:190–191, 211), which can be considered ball players.

The second relief, III-9 (Mon. 18; Fig. 9.20), was found on PC Structure 4. It also seems to be related to the reliefs of the ball player and resembles the relief on the altar of Santiago Tuxtla and the

Figure 10.19. Monument II-2 (Mon. 12), "El Volador."

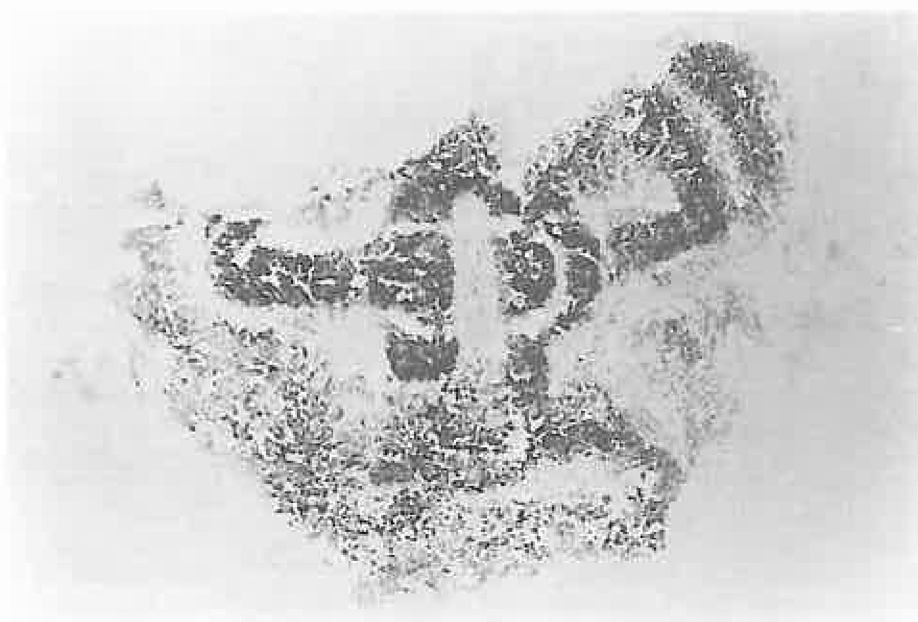


Figure 10.20. Monument II-9 (Mon. 20), arms holding "torch" and "knuckle duster."

disc from Laguna de los Cerros discussed by María Antonieta Cervantes (1969: Figs. 1, 2). I believe relief III-9 has a face enclosed in a rectangular form with round corners which can be seen only during a few months of the year and at certain hours of the day, when the sun's light hits the stone at the proper angle. This effect could have been calculated to be used in the ritual activities related to the ball game, although much remains to be known about these ceremonies and games. It may have coincided with the appearance of a star or a constellation similar to the one the Mexica called *citlaltlachtli*.

Reliefs II-2, II-9, and III-9 I believe represent different aspects of the ball players depicted in Olmec art. All three figures have in their hands implements of this complicated game, such as the lighted torch and the knuckle duster. These objects probably correspond to the *arreos*, or garments referred to in the *Popol Vuh* (1947: 125) as used in the ball game.

***Relief III-4* (Mon. 22)**

Found on T-25, Monument III-4 consists of a group of rectangular rocks, each about 1 m long, that form a composite table-top altar (Chapter 7; Fig. 7.4). The front surface of the construction is carved to form a full-faced stylized earth-monster mask, very similar to that painted above Oxtotitlan cave (Grove 1970a: frontispiece). It was noted upon discovery of this altar that not all of the pieces of this three-dimensional "puzzle" were located in their original positions. An important stone containing the carving of part of the left eye and eyebrow was out of place and was eventually found installed in a different position on the eastern side of the altar. This suggests that the monument had been rebuilt and possibly moved from the place where it had originally been carved and erected. It may have been moved and reassembled either to preserve it from physical danger or for psychocultural reasons.

One such reason might relate to the custom of monument mutilation. This "mutilation" might explain the "mistake" in reassembling the altar. It is difficult to believe that such a mistake was unintentional. At the moment we have no data to indicate how long the altar stood in its original form prior to its possible removal and reassembly at a new location (on T-25). Associated artifacts and burials date the reassembled altar to the Cantera phase. It can be assumed that the reassembly was done by the same group which created the original, if not by the same people.

Figure 10.21. Monument III-7 (Mon. 21).

***Relief III-7* (Mon. 21)**

Monument III-7 is a stela found close to the northern edge of T-15, apparently associated with T-15 Structure 5. The stela's style is different from that of the Group I-A and I-B carvings, suggesting that it was carved at another time. The carved area (Fig. 10.21) can be divided into three large elements, all described in Chapter 9: (1) the feminine personage, as the principal motif of the stela; (2) a long vertical bundle that covers the right section of the monument; and (3) a rectangular element on which the other two forms stand.

The feminine personage is shown in right profile with her arms extended forward. She is touching the vertical bundle in front of her with the palms of her hands. The position of her arms is not a common one, suggesting that it could have a specific meaning for the inhabitants. They would have understood the language of the gesture mimicked in the carving to emphasize the message. This posture also appears in the *Codex Cospi*, *Codex Vaticanus-Ríos* (3738), and others, where it is related to deities or important personages who are giving or receiving offerings and tributes.

The second element, a long bundle in vertical position, has diagonal bands with long designs which fill the surface of the bundle. The designs probably manifest the nature of the material of which the bundle is made (such as the skin of an animal) or indicate what is packed in the solid bundle. The package is tied by two transverse bands that are equally distant from the extremes of the bundle. They are decorated with a trilobal motif similar to the one found on the headdress of the third figure in relief I-B-2. A rectangular element, like a buckle, sticks out from each band. Its shape seems to be like the stylized motif found on stone cleft axes. The simple design of these axes is also similar to attributes in the large buried "jaguar" masks found at La Venta.

The third element, below the previous ones, is a rectangular form bordered by a band that turns up in the middle to form a mouth. It resembles the symbol of the earth monster or "ground mask or ground panel" described by V. Garth Norman (1976) as related to the earth and underworld.

In the middle of the earth-monster mouth there is a hollow diamond motif. This symbol is found in the central highlands at Cuicuilco and subsequently at Teotihuacan, where the glyph appears related to the water and fire numina. It is invariably associated with the Old Fire God, better known in the Postclassic Valley of Mexico as Heuhueteotl.

The combination of the earth-monster face and diamond symbols might represent "earth of fire" or "*tierra caliente*." The term *tierra caliente* today refers to the region south of Chalcatzingo in the state of Guerrero, where the Ríos Amatzinac, Atoyac, and Amacuzac join to become Río Mezcala-Balsas.

T-15 Structure 5, with which this stela was associated, could have been the dwelling of a matrilineal group related to the ethnic groups of the Pacific Coast and lower Balsas area, the area known as *tierra caliente* by the Spanish conquerors who dared to go into Cihuatlan, the "land of the women," where they reported the existence of a matriarchal organization (Barlow 1948: 181–190). It could be that stela III-7 indicates the presence of the matriarchy settled on T-15, whose members periodically collected tributes from the *tierra caliente*, as specified by the bundle shown on the stela which possibly symbolizes animal skins.

***Reliefs IV-7 and IV-5* (Mons. 27, 25)**
The human figure depicted in relief IV-7 (Mon. 27) is shown with legs spread, in a walking position (Fig. 10.22). He seems to be carrying the inert figure of a long-limbed animal on his back. The slender hind legs of the animal protrude past to the front of the personage, and appear to end in hooves.

Both the head of the human and the head of the animal were executed on a section of the stela that is now missing. Thus no identifying characteristics of the personage or attributes of the animal are preserved. The animal's short curved tail, long neck, and slender legs suggest it is a deer. An oblong design, distributed between undulating diagonal bands, is carved along the animal's body. The same motif occurs on the vertical bundle of relief III-7, where it is hypothesized to symbolize animal skins. A somewhat similar motif occurs on a round altar (IV-5) discussed below.

Could this oblong glyph identify the deer? Although there are no data concerning the mythical importance of deer among Formative period groups, the deer is well identified with the sun and peyote among Postclassic Nahua groups, particularly among the Huichol and Cora (Furst and Anguiano 1976).

During the 1973 field season a stone in the form of a circular altar, Monument IV-5 (Mon. 25), was found on T-6 about 16 m north of stela IV-7. This stone is ca. 1.3 m diameter and 47 cm high. Its cylindrical body is divided by a sharply undulating line. The upper circumference is decorated with small vertical oval motifs, while large horizontal ovals are distributed along the base (Fig. 9.23).

If the identification of the oblong motif with the deer is correct, then the large ovals on the lower part of the circular altar may represent the skin of the deer, while the small oval shapes along the upper circumference could be drops

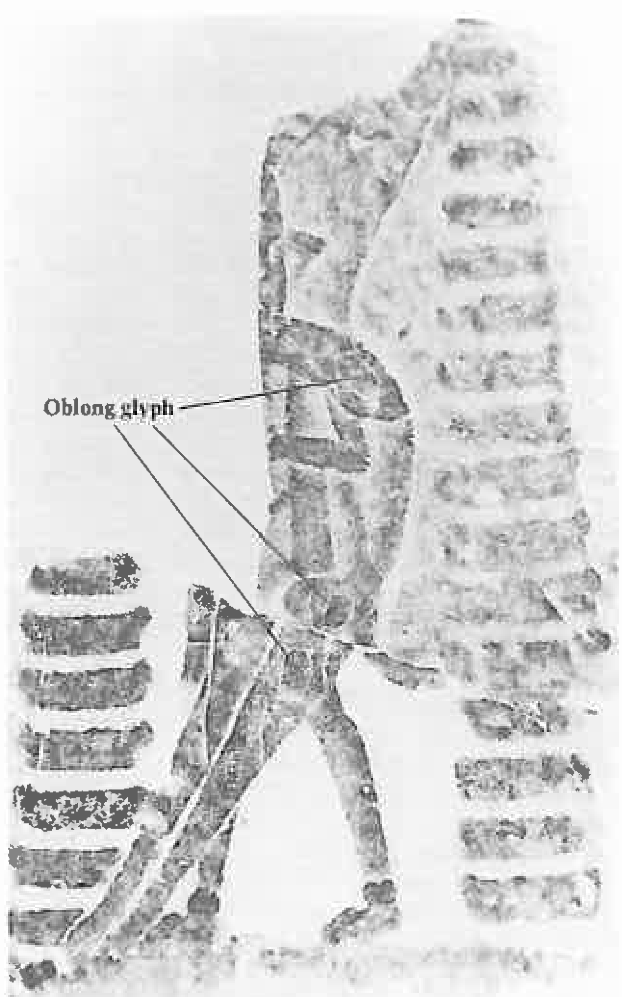


Figure 10.22. Monument IV-7 (Mon. 27).

of blood of the sacrificed animal. This could begin to explain why the human figure on stela IV-7 is represented as carrying an inert deer.

The deer has apparently been long associated with solar and hunting deities. This is true not only of hunting-gathering Indians in Mesoamerica, but among agricultural Indians as well. Many agriculturalists regard the deer as master and protector of crops and fertility, and they invoke its spirit at every turn of the agricultural cycle, from the clearing of the forest to the first fruits of harvest time. Among the Huichol every agricultural endeavor is preceded by a ceremonial deer hunt. Deer deities and their related ceremonies were of overriding importance to many ancient Mesoamerican groups, and this is reflected in the calendrical system (Furst and Anguiano 1976).

The stela and round altar on T-6 were probably utilized in a fertility cult in which the deer played an important role. Ceremonies were most likely celebrated on special dates, chosen by the position of the sun, defining the beginning and end of a given period of the agricultural cycle.

Relief IV-8 (Mon. 28)

The anthropomorphic figure on stela IV-8 is quite elegantly attired, seeming to wear a headdress with long feathers that extend in all directions with a soft waving movement (Figs. 10.23, 10.24). The central motif of the headdress is a confusing design that might be interpreted as a skull or the head of an animal.

The personage wears a long cape, open in the front, that falls almost to the knees. The state of damage to the relief is such that the background is unclear. It could be made up of undulating lines that unite several sections of the relief or could be representations of feathers that float freely, embellishing the cape of the personage.

The figure is in a sustained walking position. The left arm is bent to the waist and has something in the hand that is difficult to identify. The right arm is extended forward, the right hand holding a scepter-like object that could be a shaft ending in a flint point attached to a circular base. The personage seems to have a facial decoration of a dark horizontal band that covers the eyes and is parallel to another band that goes from mouth to ear. In Postclassic iconography, this type of facial decoration identifies Mixcoatl as a warrior, as well as Tlahuizcalpantecuhtli, the morning star, in figures of the Borgia type codices from the Mixtec area.

The incomplete *takuhón* made of the side of the stela seems to reveal the continuation of the scene. There may be another person kneeling or sitting in front of the principal personage in a position of submission.

If the side of the stela does depict a kneeling figure, it would be closely similar to the scene depicted in the Olmec style painting in Juxtlahuaca cave, Guerrero (Gay 1967: Figs. A, B). Chalcatzingo stela IV-8 could have been a commemorative stela, related to the conquest of a town by a brave warrior or ruler invested with godly power, like scenes from the Bonampak lintels and stelae of the Classic Maya, in which the kneeling person represents the submission of a defeated chief.

However, if only the face of the stela is carved, it would relate more to other examples of well-ornamented warriors, such as those on the warrior columns of Chichen Itza and the one carved on the hill of La Malinche, near Tula, which shows a well-ornamented warrior-priest with the waving figure of a feathered serpent as background. This latter carving was identified by Pedro Armillas (1947: 161) as Ce Acatl Topiltzin. The freely floating feathers that embellish the cape of the personage of stela IV-8 might correspond to the same feathered serpent.

The personage of stela IV-8 could likewise be an elegant Tlahuizcalpantecuhtli, the morning star, that is always found related to one of the aspects of Ce Acatl Topiltzin, Quetzalcoatl, the culture hero of the Toltecs. Although both of these names were used by Nahuatl-speaking people of the Postclassic, during the Formative period those deities must have had other names and probably were conceived of as deities which interrelated cosmic and natural forces with humanized representations.

The stela might have been carved as an example of this concept to commemorate one of the many rituals and ceremonies dedicated to the cosmic deities who, like the morning star, reappeared in the expected place in the sky as an indication to the people that life would continue because the cosmic deities would allow them to begin a new calendric cycle.

The constant observation of the movement of the stars and planets, such as the synodic cycle of Venus that shows intervals of appearance and disappearance, has been characteristic of most of the ancient agricultural societies, a reasonable practice considering that the stars probably indicated when to start burning the fields, when to plant, and when the rainy season would begin, as expressed in several of the names of the months of both the Maya and the Mexica calendars.

Reliefs III-13 and III-14 (Mon. 24)

The original position of stela III-13 is still uncertain, as is the identity of the symbols enclosed within the squares carved upon it. The appearance of the five glyphic areas (Fig. 10.25, nos. 1–5) suggests to me that this broken monument was meant to be oriented as discussed here. Each area is discussed below:

Glyph 1 is extremely eroded and hard to discern. It is formed by two elements. The main element (1*a*) seems to represent either a knuckle duster or two drops of water hanging from the remains of a quadrangular band that encloses the glyph. The second element (1*b*) looks like a vertical band divided by a central groove.

Glyph 2, directly below 1, is also made up of two elements. The main element (2*a*) is a square Maya-style frame enclosing two drops of rain similar to those depicted on the "El Rey" relief (Mon. I-A-1). The secondary element (2*b*) resembles the clouds on the "El Rey" relief. The 2*b* element extends downward to nearly touch the main glyph, 2*a*.

Glyph 3 is likewise composed of two elements. 3*a* is a square frame enclosing either another raindrop motif or a motif such as a bowl containing a plant with three leaves. There is space within the square frame for an additional motif which appears as a band or serpent coming from the upper middle portion of the square down toward the lower right corner and curving to end in a round form which is superimposed over the left corner of the frame. Two horizontal bars (3*b*) similar to Maya and Zapotec numerals complement glyph 3.

Glyph 4 is the best-preserved glyph and identical to 2*a*. The fifth area (5), separated from the other glyphs, can be partially seen in the lower corner of Fig. 10.25, where the stela is broken. The design might represent feathers, perhaps from a headdress or from the tail of a bird executed on the missing fragment of the stela.

Figure 10.23. Monument IV-8 (Mon. 28).

Figure 10.24. Reconstructed details on Monument IV-8 (Mon. 28).

A final carving, III-14 (unillustrated), on the back of the stela, is fragmentary. The motif could represent the claws of an animal or three feathers of a headdress lost in the missing section.

The repetition of the glyphs with two drops of water enclosed in squares (2*a*, 4) could indicate the presence of calendric glyphs, especially when accompanied by numeral bars (3*b*) such as used in stela 1 of Tres Zapotes and in Zapotec and Maya writing of the Classic period. For example, the element "cloud with rain" (2*b*) over the enclosed square glyph could be the symbol of a day or a year known as "Water Drops," or simply "rain," as in the style of the Mexica of the Postclassic. Glyph 3, with a possible serpent, together with the symbol of "rain" and two numeral bars in the square, might be a calendric date "10 Rain Serpent."

It is difficult to draw any definite conclusions about the meaning of this fragmented stone or to situate it chronologically in any good cultural context at Chalcatzingo. It is important that the carving is stylistically similar to Chalcatzingo's other Middle Formative period

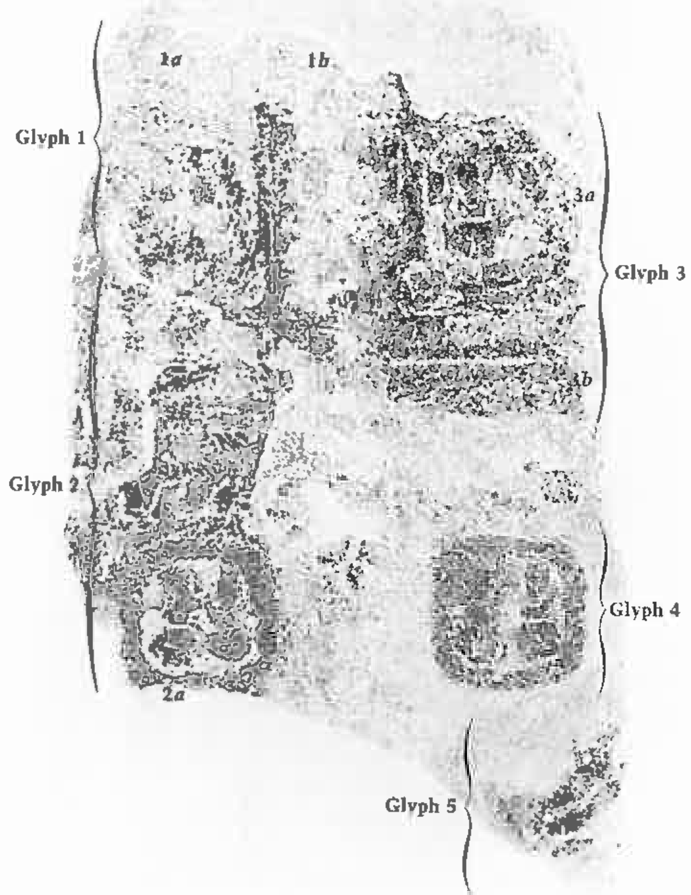


Figure 10.25. Monument III-13 (Mon. 24) (oriented according to Angulo).

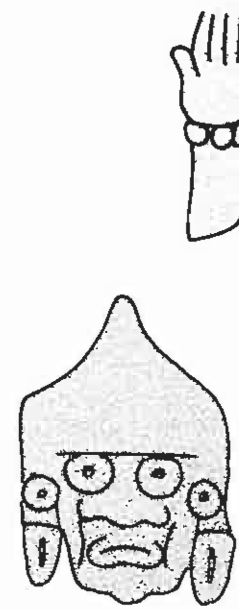


Figure 10.26. Monument VIII-1 (Mon. 10).

carvings and this is significant because it appears to contain a bar-and-dot numeral system.

***Relief VIII-1* (Mon. 10)**

Relief VIII-1, at the top of the Cerro Chalcatzingo, was first reported by Carlo Gay (1972a). It is the only representation found of the head of a personage full face (Fig. 10.26). The personage is wearing a conical hat and two-piece earrings that hang down to the chin. The features are coarse and have the characteristic Olmec wide nose and heavy lips with the ends turned down, as on the colossal heads from the Gulf Coast. The eyes are carved in circular form on natural bumps in the rock, giving the impression at first glance of the goggle eyes of Tlaloc as represented in the Classic and Postclassic.

Above the head is a graphic representation of a left forearm, with hand open and fingers extended upward. The distance between the head and the hand is correct anatomically, although there are no lines uniting these two elements.

The most outstanding aspect of the anthropomorphic head on this relief is that it is shown full face, as were the deities represented during the Classic period. The first impression of this carving as a representation of Tlaloc disappears with careful observation. Also, since the surface of the relief is considerably eroded, it is uncertain whether the headdress is really conical, or whether it could be a *xiuhtototl*, the small bird that the young deity of fire wears as an emblem on his headdress. If the hat ends in a point as originally described, it could be equivalent to the Mexica deity Iztli (the god of the flint knife), related to the mountains, thunder, lightning (the fire that comes from rain), and the numen of punishment. No written or graphic reference has been found that would identify the meaning of the body language of the raised hand of this figure.

This relief is very close to a modern metallic cross and a "box of offerings" (also of metal) located among the rocks at the top of the sacred mountain. Surely there must have been a sanctuary here (although now destroyed) similar to the small pyramidal structure at the top of the Cerro Delgado (still not dated).

These sanctuaries were probably dedicated to the deities of rain, wind, lightning, thunder, and fire, who dwelt in the mountain, deities that would have related to the total symbolism found in the figure of "El Rey" (Mon. I-A-1). Those deity attributes are also associated with Uo'tan, the angel Tohil according to modern Tzeltal and Tzotzil Maya groups, a deity that rules above and below, that controls the heavens as well as the natural elements, fertilizing the earth to assure human sustenance. This almighty deity is represented during the Classic period as Itzamna among the Maya and as the Dual Deity of the year and fertility in Teotihuacan.

MONUMENT MUTILATION

Because many of the reliefs and carvings from Chalcatzingo and the Gulf Coast were found mutilated, it seems pertinent to review the present theories as to why mutilation happened.

The earliest theory was that the mutilation was done years or centuries later by different ethnic groups who considered the monuments as pagan art (Stirling 1940:334). A later alternative suggested that mutilation was a reaction against old deities by "disillusioned people imbued with iconoclastic fervor" (Heizer 1960:220). Michael Coe (1968b: 63–73) has suggested that mutilation was "the result of internal strife . . . more than a peasant revolt."

Grove (1981b) has recently reanalyzed monument mutilation and suggests other possible causes: that the mutilation occurred at the end of calendric periods or ritual cycles, similar to the fifty-two-year cycle of the Postclassic; or at the change of rulers or ruling dynasties; or at the death of a chief, when the monuments depicting him were destroyed to release their supernatural power. He believes that the last alternative is the most probable explanation.

With the exception of Grove (1981b), all the theories have considered mutilation as an act of hatred or violence. Instead, it could have been a philosophical and profoundly religious concept, an act of piety to protect and liberate the spirit of the dead personage and to eliminate any remnant breath in the representations that might impede the spiritual development in the journey undertaken through the underworld. It may relate to the same concepts employed in the practice of *curanderismo* (folk healing), still carried out by many Mesoamerican groups today, in which some sickness is attributed to *susto* (fright). In various cases of *susto* found in the literature on *curanderismo*, the spirit (*alma, ch'uel, nahual*, or some other name used to designate the intangible force which gives life energy, and knowledge to humans) has attributes similar to those of the air. It is believed that as some of the most dangerous spirits are in the wind or air, they are introduced to a person through the nose or mouth (breathing) and thus have to be eliminated through *soplo* (blowing) by a shaman.

If we relate this concept to the partial destruction of the faces of the principal personages on Gulf Coast sculptures, the Chalcatzingo reliefs, and the paintings of the Juxtlahuaca cave, the mutilation might then be seen as an act of love, piety, protection from evil spirits, and respect for the soul of the person represented in the monuments instead of an act of violence or hatred against a deceased leader as was previously considered.

A good example of mutilation by decapitation was found during the 1972 field season in the offering of Burial 3 (Chapter 8). It consisted of a stone head with typical Olmec characteristics, obviously separated from the body of a statue at the neck by a strong blow that was delivered over the left eyebrow, destroying part of the forehead and eye (Chapter 9, Mon. 17).

Actual decapitation was apparently an act carried out with some frequency. At Chalcatzingo, Cantera phase Burials 37 and 111 are skull burials, possibly decapitations. Decapitation is depicted in Classic and Postclassic period art, particularly in association with ball courts.

Decapitation as a ritual act raises an interesting question. Does the decapitation of a stone monument, or the destruction of the faces of sculpted personages, correspond to the same symbolism as the breaking of the heads from clay figurines (an act common from the Formative period to the conquest)? If so, and if the monumental sculptures represent deities, rulers, warriors, and religious leaders, or elite personages, couldn't the great part of the figurines (which have defied explanation over the years) represent the common people?

GENERAL CONCLUSIONS

The basis of philosophic and religious concepts of the people who carved the reliefs at Chalcatzingo can best be understood when the reliefs are analyzed as a series of scenes reflecting the sociopolitical structure and mythic-religious concepts that gave a particular homogeneity to the Mesoamerican cultures of the Middle Formative. This structure was preserved both graphically and orally, through legends and traditions (such as those found in the *Popol Vuh*) and other "chants" that described the myths of creation and cataclysms, which eventually were recorded by the chroniclers of the hispanic period. The differences between the legends among the present ethnic groups and the ones gathered in the first years of the colonization seem understandable. The fact that these legends managed to survive the four hundred years of transformation since the conquest in any form indicates how strongly they must have been embedded in the psychological structure of the prehispanic world.

The following pages present the conclusions drawn from this analysis.

Basic Beliefs

Among the first agricultural groups, the fertility of the earth, as well as that of women, represented the security of sustenance and enrichment. It can be concluded that in all cultures whose fundamental base rests on agricultural production, the principal preoccupation is conserving and perpetuating the observed cycles of nature that produce the fertility of the earth. For this reason many rites and ceremonies are dedicated in petition to the rain to fertilize the cultivated fields. With this in mind, one can understand the basic Mesoamerican belief in a universe made up of the elements of nature, which are deified on various levels and have dual aspects.

The celestial deities were usually seen as self-created and creators. The earth deities were also creators and in charge of the maintenance of the earth. The deities who controlled the inside of the earth were related to maintenance, renovation, and life after death. These three groups collectively close a dynamic circle of creativity, sustenance, death, and renovation in a philosophy of constant cyclic evolution.

The three large groups of deities are related to the various elements of nature whose vital forces they personified as gods of constellations, stars, lightning or fire, thunder, wind, air, clouds, rain, and water in diverse forms and states. Each element that formed part of their active life was considered to be alive because it contained the vital spirit or essence of the deity with which it was identified. For this reason the stones, plants, and animals represented and shared the activities of daily life and the mythic-religious concept of the Mesoamerican world.

This explains how the socioeconomic system (control of production, storing, and distribution) was so intimately correlated with the politico-religious structure. With this philosophy, the social order would be integrated to a naturalistic rhythm such as utilizing cosmic and stellar movements that were controlled by the gods to direct the time to plant and to reap the harvest.

The concept of correlating abstract deities with elements of nature is fortified where one can find certain plants and animals that have attributes that identify the characteristics of the deity. This would be the case with the Lord of the Caves who lives in the heart of the mountain, a deity who controls the winds and moves the clouds to open the way to the celestial waters, a deity of the rain and thunder, a god of the flint knife, a deity of lightning that carries the hidden fire through the clouds that cover it, a dual deity who produces water and fire at the same time and is related to heaven and earth, day and night, life and death, and also evident in the fertility of the earth or a devastating drought.

This dual deity as masculine-feminine is self-fertilizing and later on is found subdivided into diverse deities with specific characteristics among the cultures of the Classic and particularly the Postclassic.

A System of Graphic Communication

The Chalcatzingo reliefs were obviously carved to convey a message. They are not simply art for art's sake. They should be considered as a communication system in which the figures are expressing specific ideas.

Just as the Maya "upended frog" glyph has been recognized as the symbol of "birth," so too the Group I-A animals looking upward may symbolize the beginning of a great event. The pictograms in Group I-A portray part of a ceremonial act as a symbolic expression representing birth or renovation, and could be the origin of the Maya glyph that was part of a much more advanced writing system, where there were fewer pictograms and more ideograms with affixes, prefixes, and suffixes along with other elements of a phonetic character. The Group I-A pictograms would indicate the fertilization of mother earth once again, and possibly the birth of a new year or cycle of life.

Reliefs on the Talus Slope: Ritual Sacrifices as Myth or Parables?

A subsequent aspect of the system of communication that transmitted more complicated messages is found in the series of reliefs of Group I-B, where it seems the pictographic scenes represent traditional legends or more complicated rituals that indicate the practice of human sacrifice, probably in honor of deities connected with principal stars of the calendric system or with the concept of fertility. They might likewise have depicted parables whose function was to communicate the ample knowledge of astronomy of the Olmec.

The reliefs on the cliff (Group I-A) and those of the talus slopes (I-B) can be divided into two separate groups in which slight stylistic variations of little transcendental value can be discerned, although a hidden psychic purpose is reflected in each group, still too subtle to define. They were probably carved within different periods of the same cultural phase, divided by the application of a different system of control of the group from new rulers.

An example of sacrifice or death ceremony is manifest in relief I-B-2, where a personage (*d*) is represented lying on an unidentified bundle with a mask on the back of his head, indicating that he is no longer functioning (either dead or dismissed). Two warriors armed with lances approach the personage while another with a crown of corn plants (symbol of transformation) moves away from the scene. The ritual or legend is probably related to fertility.

An even clearer example of sacrifice is found on relief I-B-3, where a richly adorned personage offers his life to produce the currents of bifurcating water that irrigate the surface of the earth. The sacrifice was probably in honor of the deity represented by the feline figure (puma) whose symbol in the ear is related either to fertility or to the stars in the night sky.

Both sacrifice and legend are found in relief I-B-4, where two felines are attacking two men. This could represent a parable of the sacred mythical twins who appear in many of the Postclassic stories related to the creation and destruction of the world. The relief is identified with the cosmic deity of Venus and of forces concentrated in mountain gods, such as Hurakan, Uo'tan, Itzamna, or Tepeyollotl of the Postclassic.

In relief I-B-5 a sacrifice related to a legend or parable is found in an anthropomorphic figure who is semi-devoured by a sea monster identified as an *acipactli* or *peje-lagarto*. This legend could be the same one expressed later in a Mixtec codex depicting a god losing his foot in the mouth of a *cipactli*.

The relief "El Volador" (II-2) is related to myths and explicatory concepts of the movement of the stars. The sun seems to be represented by the zoomorphic figures of the quetzal and *guacamaya* birds.

Reliefs on the Cultivated Terraces: A Socioreligious Function

The group of reliefs found on the cultivated terraces of the site seem to correspond to a style more characteristic of the Late Formative Izapa reliefs than to those on the talus slopes or cliff. Along with the notable change of style there is also a change in the philosophical focus and ritual practices of the scenes and motifs. They were found next to stone-faced platform structures which could have been centers of reunion, administration, or some other activity required by the political-religious organization to which they belonged.

This group of stelae seems to reflect a message related to a more defined thought representing established activities of the social organization. They were probably used in relation to ritual practices that could have been held in front of structures whose open space would have been designed specifically for the performance of ceremonies.

The stela and round altar complex of T-6 occurs at Izapa beginning in the Late Formative and is repeated at numerous Classic Maya centers. This confirms the existence of an organized activity in which there must have been established systems of endoethnic and exoethnic participation in the complicated festivities held in front of these monuments.

A notable difference between the reliefs on the cliffs and talus slope and those of the cultivated terraces is that those on the mountain have little available space for ceremonies, limiting the number of people involved to a performer and a few observers, while those below had ample space for large groups of participants and more complex ceremonies.

The female stela (III-7) seems to indicate the presence of a distant group (from the *tierra caliente*) with an established relationship to the people of Chalcatzingo. They might have participated in an exchange system, accommodating the merchants from that area and receiving the pilgrims attending the festivities and ceremonies periodically held in the religious center.

The reliefs associated with the structures on the cultivated terraces imply an efficient incipient organization whose economic and political control was based on a religious belief. They differ in this from the hillside reliefs, which seem to represent animistic-totemic beliefs manifest in a metaphoric language.

One could conclude that the sequence of representations of the various cultural periods through which this archaeological zone has passed contains scenes and motifs representing legends, historical traditions, parables, and mythical stories of philosophic concepts that probably survived until the Postclassic. These scenes would have been carved for all the ethnic groups living around Chalcatzingo to unify the clans and lineages by manifesting the accepted attitude about mythic origins, historical events, and rituals performed to preserve the economic and religious status attained through a sociopolitical structure, an incipient theocratic administration, that was based on myths and legends.

The Sacred Mountain within the Socioeconomic System

In this analysis one can visualize certain aspects of the socioeconomic organization at Chalcatzingo and possible political relationships with neighboring groups. These groups would have considered Chalcatzingo as a type of "sanctuary" and rector-administrative center, where there was intense regional commercial exchange at the time of the diverse religious festivals and ceremonies.

The information gleaned from the analysis of the graphic representations also reveals details about rituals, ceremonies, and deities that ruled and motivated the philosophic concepts and religious activities at the base of the "sacred mountain." This activity was possibly the reason why this area was converted into an important political-economic center that would have been on the route of merchants trading between the Gulf and Pacific coasts.

Chalcatzingo was on the obligated pathway, a settlement that became a port of exchange, trade, and distribution for serpentine stone (*chalchihuitl*), feathers, cacao, and other merchandise that came from the hot lands (*tierra caliente*) beyond the rugged Sierra Madre to the south, to be distributed among cultural centers disseminated in the area of Mesoamerica during the Middle and Late Formative (Angulo 1979).

The Sacred Mountain through Time

Even from a great distance, and even among people accustomed to an urban scene and insensitive to natural landscapes, the Chalcatzingo mountain complex creates an impression of solemn monumentality. This might be why the area was considered a place of oracle and center or origin of mythic concepts that were concentrated on the sacred mountain for groups whose beliefs were of a naturalistic character.

From the first agricultural settlement (Early Formative), this region must have attracted pilgrims and merchants from populations near and far who shared the philosophic-religious concepts and participated in the periodically staged ceremonial events. The functions of sanctuary and ceremonial center were consolidated when the reliefs were carved on the cliffs. There are abundant examples of works from this period such as the reliefs from Groups I-A and I-B, relief II-2, and altar III-4 (composed of reassembled carved stones).

The subsequent carved stelae and architectural structures distributed over the cultivated terraces seem to be slightly later in time. They indicate a continuity of occupation, with implicit changes in the social, political, and economic order that affected the development and transformation of the artistic styles of each period. This new form of artistic expression, although identified with Chalcatzingo, has much more stylistic relation (in the distribution of spaces, the way of framing, and motivation) to other sculptured pieces found along the Pacific Coast—those of Izapa, Santa Lucia Cotzumalhuapa, El Meson, and El Baúl—than with the earlier reliefs carved on the talus slopes of the Cerro Chalcatzingo.

Following the Classic period establishment of principal centers in cultivated valleys, the main activity of Chalcatzingo was moved to the site of Las Pilas, 4 km to the west. Las Pilas was by a water source ample enough to provide for the whole agricultural population, even up to the present time.

However, the information gathered during the Chalcatzingo research indicates that Chalcatzingo continued to be a center of socioreligious power even during the height of the Classic, since a ball court and various pyramidal structures occur there. The area called Tetla and the *adoratorio* below relief I-B-2 correspond to the Postclassic period. Considering that the *adoratorio* was found precisely at the foot of relief I-B-2, erected more than two thousand years earlier, it can be concluded that the construction was destined to perpetuate ritual and ceremonial practices that were related to the ancient monument. This association reveals the perseverance with which religious concepts were transmitted through the generations, perpetuating the memory, respect, and veneration of a symbol of a place destined to be permanently consecrated.

There is no doubt that Chalcatzingo's "sacred mountain" retained its importance through all the prehispanic culture periods. Even today it is revered and used for religious ceremonies (now Christian) by the people of the surrounding area.

Obviously the external form and type of ceremony has had to adapt to technical and social changes through the years. However, the basic motivation of these mythic and religious convictions apparently has been maintained in the adornment of the deities, the way of conducting the ceremony, and even the names and iconographic figures used in substitution for the ancient gods. In this same spirit, the "sacred mountain" has remained a place of reverence where the gods of fertility and maintenance dwell; the place where the celestial gods, those of the earth, and even those of the underworld meet. In this sanctuary rituals have been carried out without interruption for almost three thousand years, and for reasons probably similar to those described by Sahagún (1956:2:260–264) when he refers to the constellations of Mamalhuaztli and others, which the Mexica expected to appear over Citlaltepetl (Cerro de la Estrella), where festivities were carried out in which "they made sacrifices and ceremonies when they reappeared in the east, after the celebration of the sun or when the Pleiades appeared in the night sky announcing the proximity of the rains" (in the first week of May) (my translation).

It is notable that the inhabitants of the town of Chalcatzingo annually take offerings of food and gifts to the cross and metallic box at the top of the "sacred mountain," still associated with rain, wind, earth, and, most of all, with fertility. This ceremony takes place on May 3, just before the rainy season. It is the day when the Santa Cruz is celebrated in the Christian calendar. This cross could be considered a symbol of the sacrifice and death of Christ, substituting for the prehispanic sacrifice and ritual to bring rain. One could possibly argue that the appearance of the ritual does not correspond to a prehispanic ceremony as much as to rituals whose style is more in tune with the present era; however, there is an evident symbiosis in which the elements of nature, the gods of creation, fertility, and maintenance, and the cycle of the stars or constellations mingle with the sacrifice of the Messiah who gave his life on the cross. This rite surely interweaves characteristics of two belief systems of distinct origin into the resultant hybrid beliefs of the hispanic conquest over the Mesoamerican religious structure.

RESUMEN DEL CAPÍTULO 10

En este capítulo se analiza la iconografía de los monumentos de Chalcatzingo, basándose en el principio de la continuidad de ciertos conceptos básicos, desde por lo menos el Formativo hasta el Postclásico. Así, estas tempranas obras de arte pueden ser interpretadas por analogía con los principios iconográficos y religiosos conocidos de pueblos mesoamericanos más tardíos.

Resulta claro que algunos relieves, que aparecen en grupos, están relacionados unos con otros. Los relieves del Area I-A forman una secuencia gráfica que principia con el relieve I-A-7 (Mon. 11) y que concluye con I-A-1 (Mon. 1), "El Rey." Esta secuencia empieza con cuatro representaciones de creaturas zoomorfas que miran hacia arriba y que están asociadas con calabazas y nubarrones. A la manera del glifo maya "rana descendiente," estas criaturas pueden significar el "nacimiento" o el inicio de la temporada de lluvias, la "nueva vida" de la tierra. Las volutas que emergen de sus bocas pueden representar oraciones para pedir la lluvia, y su semejanza con el glifo maya Ik conduce a pensar que tambien podrían representar la respiración, la germinación, y la vida.

Las criaturas zoomorfas están sentadas sobre volutas horizontales en forma de S, las cuales podrían simbolizar las eternas oposiciones: lluvia y sequía, vida y muerte, etc. Los animales, identificados como jaguar, cipactli, canidae, e iguana, tambien pueden referirse a los clanes que formaban la sociedad local.

La secuencia del Area I-A muestra el crecimiento progresivo de las nubes, el incremento de lluvia, y el crecimiento y florecimiento de las calabazas que culmina en el relieve llamado "El Rey." Este último ha sido identificado como el Señor de la Montaña, debido a la presencia de características de la deidad del Postclásico Tepeyollotl. Está sentado en la boca de la cueva, la boca del monstruo de la Tierra, y bromeliáceas brotan de las esquinas de la cueva. El viento que de ahí sale lleva a las nubes cargadas de lluvia hacia la cima de la montaña, completando así el ciclo de renovación anual.

Tres relieves del Area I-B comparten rasgos estilísticos y parecen representar eventos míticos o rituales. El relieve I-B-2 (Mon. 2), "Los Olmecas Caminantes," representa a cuatro personajes, que bien podrían estar participando en un ritual de la fertilidad, similar al que se dedicaba a Xipe-Totec en la época Postclásica. El relieve I-B-3 (Mon. 3) muestra a un felino de cuello largo, echado. El felino aparentemente está sujetando y/o devorando a una figura antropomorfa que lleva un tocado de plumas. En un estilo semejante, el relieve I-B-4 (Mon. 4) muestra a dos felinos, un puma y un jaguar, atacando a dos seres humanos, los cuales pueden haber sido víctimas para el sacrificio, y que podrían estar relacionados con el concepto mesoamericano de los héroes gemelos, que representan al Sol y a Venus. El relieve I-B-5 (Mon. 5) muestra a una criatura que ha sido identificada como el acipactli o cipactli, el cual está devorando, o tal vez vomitando, a una figura humana cuya pierna podría estar dentro de la boca de la creatura. Esta figura puede estar relacionada con aquellas concepciones más tardías que rodean a Tezcatlipoca, el dios que perdió una pierna al enfrentarse con el monstruo terreste-acuático, y que representa al Sol en su recorrido diurno. Entre otros monumentos importantes, que no aparecen en grupos, está el relieve II-2 (Mon. 12), "El Volador." Su postura, que sugiere movimiento, así como su atuendo, permiten pensar en un jugador de pelota. Hay, además, varias estelas que representan personajes individuales. El relieve III-7 (Mon. 21) muestra a una mujer tocando, con la palma de las manos, un bulto en posición vertical que se encuentra frente a ella.

Esta figura femenina se encuentra parada sobre una máscara del monstruo de la Tierra. El relieve IV-7 (Mon. 27) representa a un hombre que aparentemente lleva cargando a un venado sobre sus espaldas. En el relieve IV-8 (Mon. 28) aparece un personaje vestido con una larga capa hecha de plumas.

Los relieves de Chalcatzingo fueron creados para transmitir un mensaje y deben ser considerados como parte de un sistema de comunicación. Los relieves del piedemonte son, antes que nada, escenas pictográficas, y hasta narrativas. Estas representan leyendas tradicionales y rituales relacionados con el sacrificio humano dedicado a las deidades asociadas con el sistema calendrico y con la fertilidad. Los monumentos que se encuentran en las terrazas residenciales cumplen una función tanto sociopolítica como religiosa. Probablemente se llevaban a cabo prácticas rituales frente a las estructuras sobre las cuales se encontraban dichos monumentos. Por el contrario, los relieves de piedemonte son mucho menos accesibles al público, ya que no existe un espacio desde el cual los espectadores pudieran observar los rituales.

11. Miscellaneous Bedrock and Boulder Carvings

DAVID C. GROVE

A wide variety of carved and worked stones and areas of bedrock, not strictly classifiable as monuments, are found at Chalcatzingo. A separate sequential numbering system, beginning with the prefix MCR (Miscellaneous Carved Rock), is used to separate these from the site's monuments. In keeping with the precedent set in the monument chapters (Chapters 9 and 10), the MCR's are ordered and discussed by site areas and subareas, within two sections. The first section describes *maquetas* (models) and quarry stones; the second section, stones with deeply ground "cup-marks."

The Miscellaneous Carved Rocks are found primarily in site areas I, II, and III, the upper terraces and hillside slopes of the archaeological zone. Stones bearing ground cup-marks are even more restricted, most of them occurring on the talus slopes of the Cerro Chalcatzingo and the terrace fringes immediately adjacent to the talus slopes. Figure 9.2 provides the location of the majority of the stones discussed below. Most were plotted on the map by sight, and thus their position on the map is accurate in some cases only within 1 or 2 m.

CARVINGS AND QUARRY STONES

Area I-A

MCR-1 ***(Fig. 11.1)***

Carved into the exposed bedrock about 3 m east of Monument 1 is a shallow rectangle, ca. 30 × 25 × 2.5 cm. This carving has been previously published by Carlo Gay (Altar 20; 1972a:83).

MCR-2 ***(Fig. 11.2)***

Excavations during the first field season removed soil deposits from bedrock exposures adjacent to Monuments 1, 6, 7, and 8 high on the hillside of the Cerro Chalcatzingo, uncovering Monuments 14 and 15. These same clearing operations also disclosed a narrow and shallow canal (MCR-2) carved into the bedrock above Monument 1, above and behind Monuments 6 and 7. This canal, with a maximum width of 14 cm and a maximum depth of 4 cm, is approximately 2.6 m long. It is within the drainage carrying rainwater runoff past Monument 1. Its position and height are such that water flowing out of the canal will fall into a group of mortar-like holes (MCR-3) near the base of Monuments 6 and 7.

MCR-3

Just west of the base of Monument 7 is a group of seven mortar-like holes (Altar 19; Gay 1972a:82–83), obviously positioned to catch falling water from the canal (and drainage) 1.8 m above and to the south. It is also probable that these water catchment stones and the canal were designed to function primarily at times when there was a minor rather than a major water flow. The canal is shallow, and the catchment holes were probably meant to hold "sacred" water. A torrent of water would obscure both carved features.

Area II

MCR-8 ***(Figs. 11.3, 11.4)***

Gay (1972a:80) reported this stone, which lies near the east end of T-11, as Altar 9. When originally seen by our project, the stone looked exactly as photographed by Gay (1972a: Pl. 16)—a large flat area, ca. 1.4 m in diameter, with a raised area on the south side and a ground cup-mark on the flat surface. Irregular pecked grooves ran east and west from the cup. Grove was intrigued with the possibility that the stone was a crude model (*maqueta*) of the Cerro Chalcatzingo and site, with the flat area representing the fields at the base of the *cerro*.

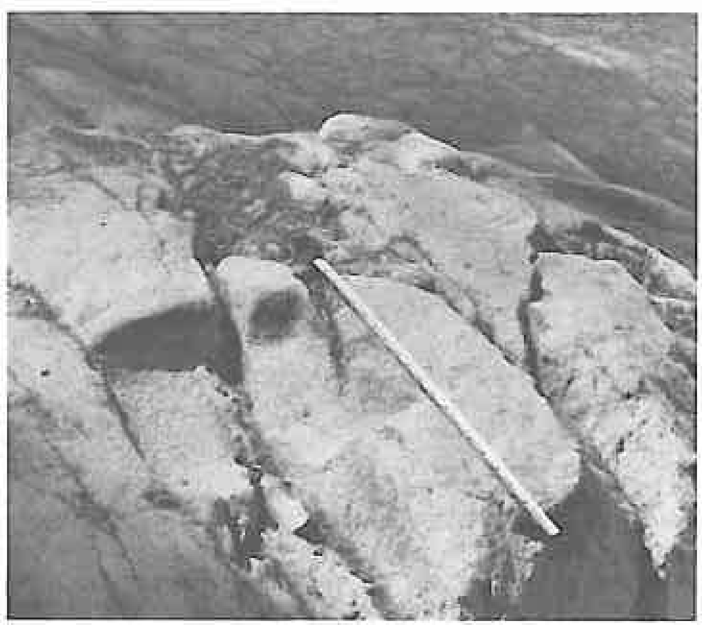


Figure 11.1. MCR-1, carved rectangular depression near Monument 1.

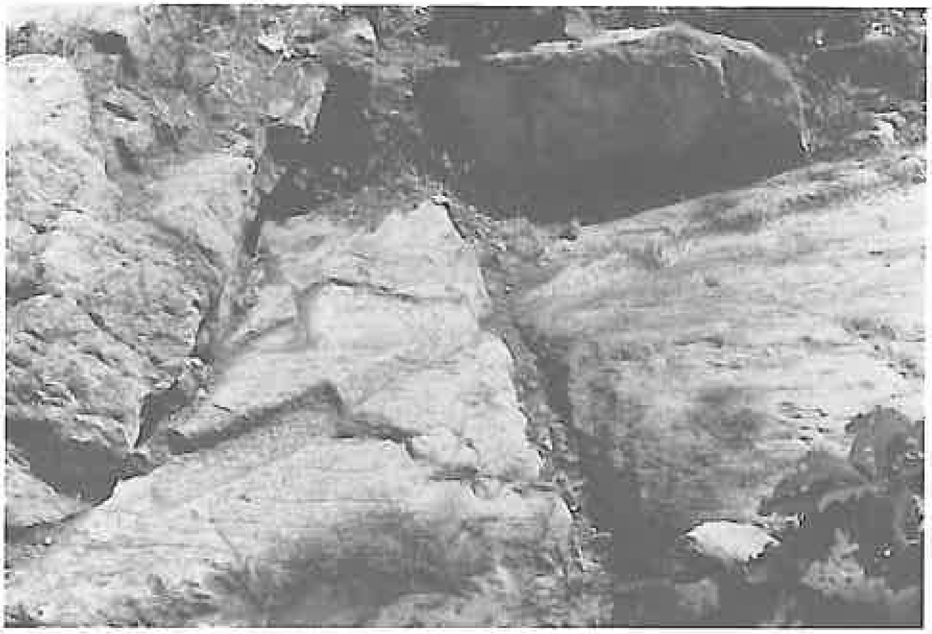


Figure 11.2. MCR-2, shallow canal cut into bedrock above Monuments 1, 6, and 7.

Figure 11.3. MCR-8, *maqueta.*

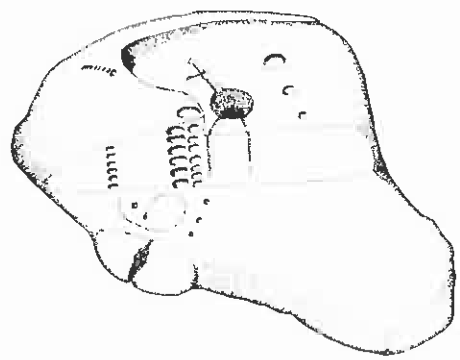


Figure 11.4. Drawing of MCR-8, showing details.

During the second field season, the sides of the stone were cleared, and it was discovered that the stone was larger and more complex than imagined, and indeed apparently was a *maqueta*. The area originally exposed on the ground surface is the top of the *maqueta*. Below this (to the east; up, in Gay's photo) is another large flat area with a pecked spiral. This flat area ends with another raised area (barely projecting from the surface in Gay's photo).

Today we believe that the main raised area symbolically represents the Cerro Chalcatzingo. The vertical drop to the lower flat area and spiral represents the cliffs of the *cerro*. Two pecked grooves running from the cup continue over the face of the "cliff," and when rain water overflows from the cup, it flows along these grooves and over the "cliff" as well.

This might seem slim evidence to consider this small vertical drop the "cliffs" of the *cerro*, but an examination of the carving clearly shows small pecked "stairs" on the face of the "cliff." On the back side of the uppermost projection of the "*cerro*" is a small natural hole in the stone. Small pecked "stairs" also occur up to this hole, a "cave" in the *maqueta*. Actual well-carved stairways have been found on the far western hillside of the Cerro Chalcatzingo (see MCR-11).

It is probable that the second raised area on the *maqueta* (today broken from the stone) represents the Cerro Delgado. The *maqueta* is not a realistic depiction of the hills and site; rather it seems to be a symbolic representation. The facts that the *maqueta* emphasizes water and shows two drainages on the cliff face are significant when it is remembered that the Area I monuments on the hillside at Chalcatzingo occur near the two major water drainages.

MCR-9 *(Figs. 11.5, 11.6)*

During the excavations of T-9A Structure 1, which exposed the remnants of a Cantera phase house structure, a large stone slab, ca. 85 × 50 cm, was uncovered within one of the interior stone lines. A small (ca. 16 × 10 cm) rectangle was engraved on the surface of the slab. Within the rectangle a crude "sunburst" motif had also been pecked and engraved. The presence of a glyph-like engraved motif on this slab and the highly possible association of the slab with a Cantera phase subfloor burial (Chapter 4) suggests the intriguing possibility that the symbol was linked to the deceased individual.

Figure 11.5. MCR-9 in situ in wall line of T-9A house. Arrow points north.

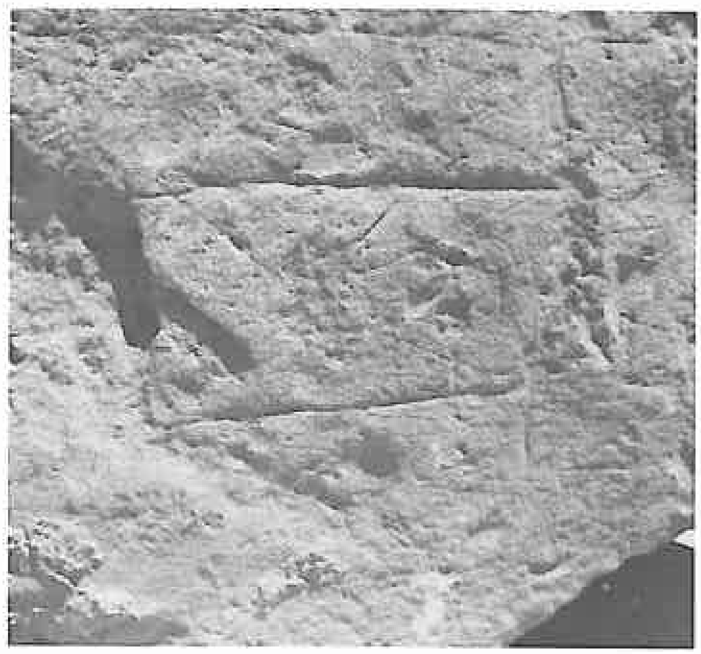


Figure 11.6. Details of MCR-9 engraved design. (Orientation is different from that in Figure 11.5.)

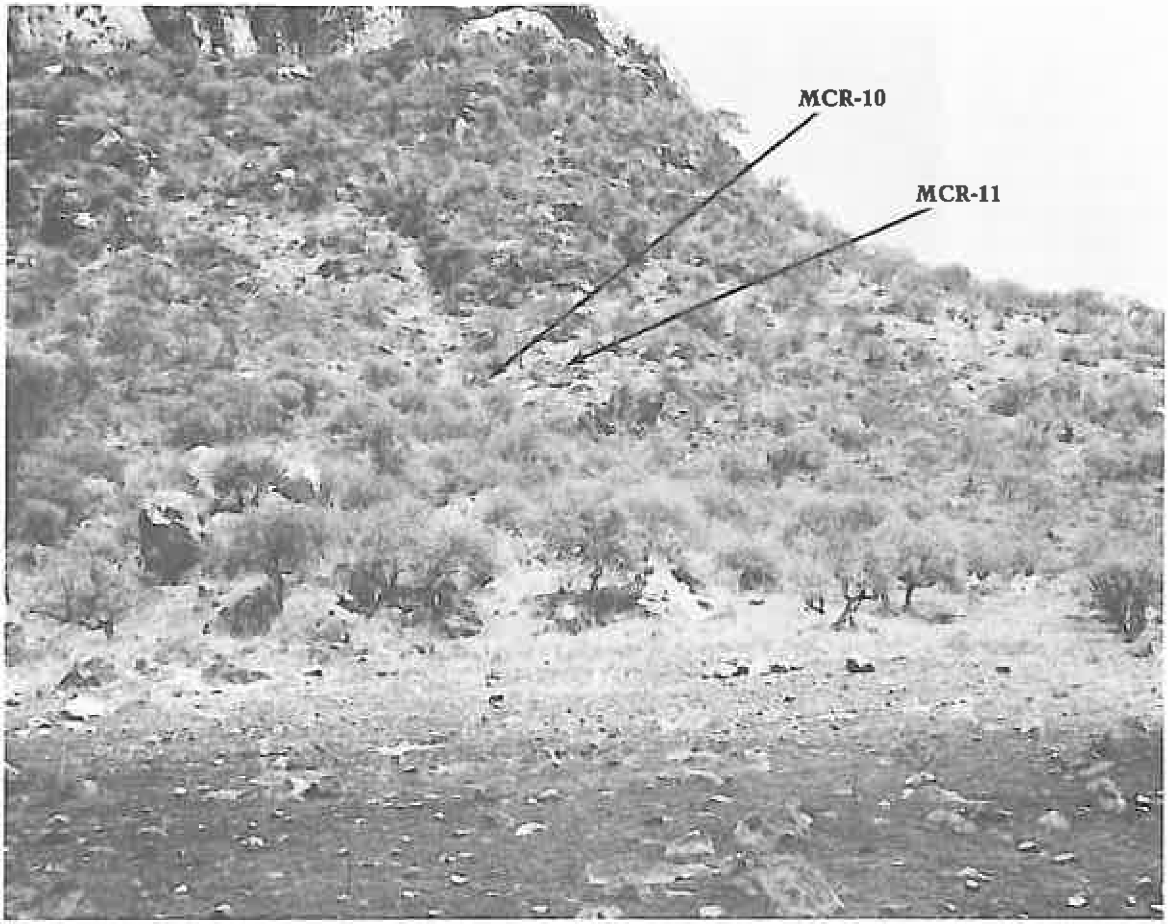


Figure 11.7. Hillside of Cerro Chalcatzingo showing locations of MCR-10 and MCR-11.

Figure 11.8. MCR-10.

Figure 11.9. MCR-11, lower stairway.

MCR-9 is located today in the municipal building in the village of Chalcatzingo.

MCR-10 ***(Figs. 11.7, 11.8)***

An unusual relief carving occurs on a sloping section of exposed bedrock on the Cerro Chalcatzingo above the southwest limit of the site (S-39). It is located at about the 1,040 m contour level. This shallow relief carving takes the form of a long parabolic line, with the open end of the parabola pointing uphill (south). The parabola's east leg is ca. 3 m long; the west leg is 2 m. It is the uphill section that is raised in relief. The parabola crosscuts natural fissures and contours of the stone, and therefore is believed to be an artificial construction.

MCR-11 ***(Fig. 11.9)***

This carving consists of two well-carved sets of stairways on the exposed rock slopes of the Cerro Chalcatzingo. They are located about 30 m west and 10 m above MCR-10.

The two stairways, of five steps each, are separated from one another by ca. 3 m vertically. The lowest (eastern) stairs (Fig. 11.9) extend up a ca. 40° rock face. These well cut and ground steps are ca. 44 cm wide. Their length varies from 20 to 30 cm and their depth from 9 to 12 cm.

The uphill (western) group is somewhat different, for rather than each step being integrally connected, they appear more as a sequence of well-cut steps separated by small areas of natural rock slope. This set of steps varies in width from 50 to 70 cm, but they are only 10–20 cm in length and 10–12 cm deep.

Today these steps do not appear to begin or terminate at any significant point on the hillside. Erosion on this highly exposed section of hillside may have long ago removed any artifact debris or simple constructions. The only other feature of interest in this hillside area is a group of stone slabs, another 30 m higher on the hillside. One of these slabs (MCR-12, see below) is partially cut through by a deep groove, suggesting that this hillside area was a source of large flat blocks of stone for the site.

Figure 11.10. MCR-12, partially cut stone slab.

MCR-12 ***(Fig. 11.10)***

A large slab of stone lies on the hillside surface about 30 m above (south of) MCR-11 and near some low, cliff-like exposures of stone. However, this slab, ca. 164 cm long, 100 cm wide, and 36 cm thick, has a deep groove cut across its upper face and two sides. This groove, 55 cm from one end of the slab, is 12 cm wide and 7 cm deep. The groove was apparently made to cut or trim this slab to size.

Three other smaller slabs nearby may be the unneeded remains of already cut slabs, although they are now eroded and weathered (a few are partially buried), and it is difficult to ascertain if they were once cut. However, the possibility exists that this area may have been a small quarry site, perhaps using slabs removed from the low outcrops nearby.

MCR-13

About 55 m east of Monument 12 is a buried stone slab with only its upper surface exposed. This slab, 150 cm in length and 70 cm wide, has a groove cut from side to side across its exact center. It may have been originally "quarried" on the hillside near MCR-12 and moved to this location, although this is speculation.

MCR-14 ***(Fig. 11.11)***

About 80 m downslope (west) from Monument 12 is a roundish boulder, ca. 190 cm in diameter and 65 cm tall. A cut groove encircles 90 percent of the boulder at its mid-point. No other worked stones have been found in the adjacent area.

Area III

MCR-4

This small stone, labeled Altar 12 by Gay (1972a: 80, Pl. 18) stands within the front wall line of PC Structure 2 (Fig. 4.7). As noted by Gay, it is ca. 74 cm tall and contains a 1 cm deep carved rectangular cavity ca. 23 cm long and 13 cm wide.

Figure 11.11. MCR-14.

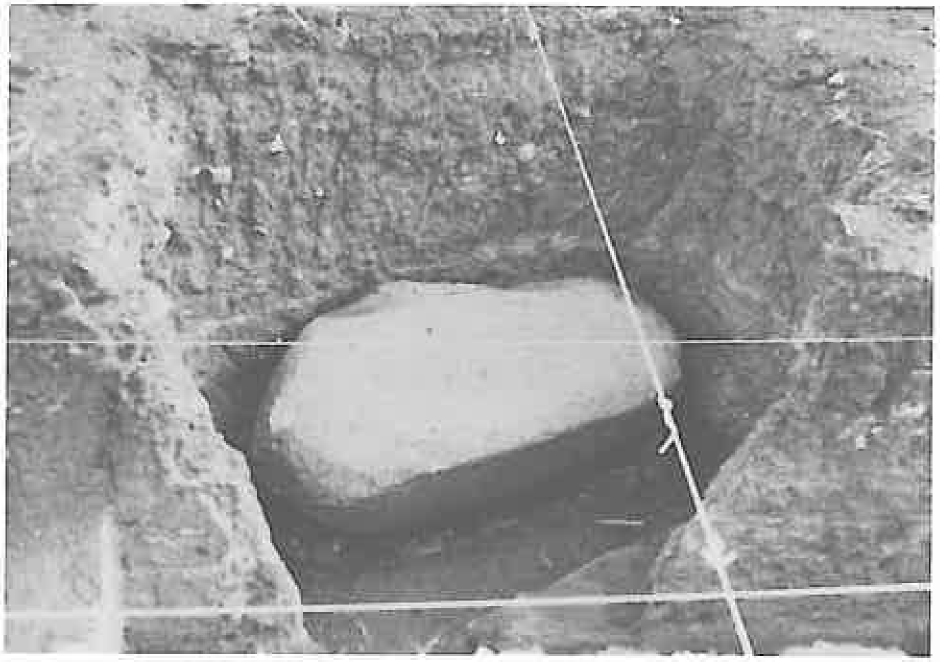


Figure 11.12. MCR-5 as found on PC Structure 6.

MCR-5, MCR-6, and MCR-7 (*Figs. 11.12–11.14*)

These are large stone slabs which have been ground to a smooth surface on all sides. While roughly rectangular in shape, the sides and end pieces are sometimes rounded or tapered, giving the stone an irregular shape overall. All three stones lack evidence of any carved or painted motifs, and their relatively short length and general shape suggest that they were not meant to be erected vertically. All were found buried on or near the southeast end of PC Structure 4, in intrusive pits, and the local villager who farms this piece of *ejido* land informed us that in the past he has buried large stones here to remove them from the area he plows yearly.

MCR-5 (Fig. 11.12) was found during excavations of PC Structure 6, adjacent to Structure 4's southeast edge. Unlike MCR-6 and MCR-7, it has one large flat side, ca. 125 cm long and 65 cm wide, and a curved (ovoid) cross-section ca. 50 cm thick.

Figure 11.13. MCR-6 in situ, PC Structure 4.

Figure 11.14. MCR-7, PC Structure 4.

Figure 11.15. MCR-15 (*left*) and MCR-16 (*right*) in field.

Figure 11.16. MCR-17, T-2.

MCR-6 (Fig. 11.13) was found buried on the east slope of Structure 4 in excavations carried out during the first field season. It is more rectangular than either of the other stones, but unlike them has one unfinished (or broken) end section. It measures ca. 100 × 60 × 40 cm.

MCR-7 (Fig. 11.14) was also found on the east slope of Structure 4, about 5 m from MCR-6 and east of the looted tomb feature. It has generally flat sides and rounded ends, and measures 95 × 60 × 50 cm.

There are also well-finished large broken stones buried on the east end of Structure 4, and others which lie along the edge of the El Paso Drainage gully adjacent to this structure (Fig. 6.3). The presence here of all these worked stones suggests that they may have been originally located atop the east end of the platform mound. At this time we cannot conjecture as to their function, although it is possible they served as part of an architectural feature (wall, floor, etc.). The dating of these carvings is unknown, and we can only presume that they date to the period of major use of the platform mound, the Cantera phase.

MCR-15 and MCR-16 ***(Fig. 11.15)***

Until recently, two large stones projected from the surface of the lower, flat area of T-29, but they apparently have been destroyed or removed. These stones, spaced ca. 3.8 m apart and with an approximate orientation between them of N85-1/2W, occurred in an area away from the hillsides, where no natural boulders are found. Therefore, these two monoliths must have been purposely erected in this location.

At the time of our project the western stone (MCR-15) projected ca. 50 cm above the ground surface, and the eastern stone (MCR-16) ca. 120 cm. Each was roughly quadrangular, with sides of ca. 70 cm. Neither exhibited faced side surfaces or traces of carving, but since their upper surfaces are angular, both may be the basal stumps of broken monoliths.

Area IV

MCR-17 ***(Fig. 11.16)***

Several small boulders occur at the northwest corner of T-2, just across the El Paso Drainage from the large Middle Formative platform mound on the Plaza Central (PC Str. 4). A concentric circle and a backward-S element are depicted on one of the boulders. Because of weathering and an overhanging tree, the carvings are usually visible only in the mornings when they are highlighted by the sun.

While I cannot offer an interpretation for the backward-S symbol, the concentric circle probably represents the *chalchihuitl* glyph, the symbol of "precious water." This motif also occurs on the "El Rey" relief (Mon. 1), and both that carving and the T-2 boulder are located beside gullies which carry rainwater runoff. It is impossible to date the T-2 carving, since the *chalchihuitl* glyph was important from the Formative period onward, and while this carving is probably Middle Formative, it could instead be related to the site's Classic or Postclassic period occupations.

MCR-18 ***(Fig. 11.17)***

This carved rock was reported by Gay (1972a: 85, Pl. 22; Mon. 2) and is a relatively small angular boulder projecting above the surface at the upper (southern) end of T-2. The stone, whose exposed dimensions are ca. 2 m long, 1 m wide, and 50 cm high, has small, step-like parallel lines carved on its surface, giving the impression that it is a miniature representation (*maqueta*) of a mountain with stepped paths to the top. Another *maqueta* stone was found on T-11 (MCR-8).

Figure 11.17. MCR-18, T-2.

MCR-19 ***(Figs. 11.18, 11.19)***

A boulder with a large horizontal surface sits on the west edge of T-4 near its southern extremity. Shaded by a tree, this rock served as a convenient resting spot during the two seasons of excavations on T-4. During that time the archaeologists noted small, purposefully ground pits in the boulder's surface and recorded this information in the T-4 field notes. However, it was not until several years later that astronomer John Carlson, during a visit to the site, noticed faintly carved lines connecting the pit marks. Carlson notified me of his discovery, and I then studied the carving during a visit to the site in 1978.

Several faintly carved lines on the upper surface of the boulder create a quadrangular form. Small pit marks are found at each of the quandrangle's corners, at its center, and at the midpoints of the NW and SE sides. The quadrangle measures 85 × 63 cm, and its lines orient to ca. N11-1/2E and ca. N80-1/2W. When this latter line is projected westward, it crosses the north side of the Classic pyramid, T-3 Structure 1. When projected to the east, it crosses the Classic period platform, T-4 Structure 3, only a few meters away. The orientation of T-4 Structure 3 is essentially the same as that of the quadrangle pecked onto the stone. The various orientations strongly suggest that the quadrangle dates to the Classic period.

Area VI

MCR-20

At the first major bend in the broad path which runs along the north side of the Cerro Delgado to Tetla is a large boulder on the north side of the path. The path (south) side of this boulder has a shallow carved rectangular depression (30 × 20 cm) and a faint series of weathered lines which could be remnants of miniature carved steps (see MCR-8, MCR-18) near the rectangle. A smaller rectangle (20 × 15 cm) is found on the boulder's north side.

MCR-21 ***(Fig. 24.20)***

This is a group of at least fifteen mortar holes ground in the bedrock at the edge of the river in the barranca north of Tetla. They are located at the foot of the only access trail from Tetla to the barranca in this area. Although Tetla has evidence of Formative, Classic, and Postclassic occupations, I would suggest that these bedrock mortars are probably Postclassic simply because they have not been completely eroded and destroyed by the river's annual flooding, indicating perhaps that they do not have great antiquity.

CUP-MARK STONES

Cup-mark stones are boulders or exposures of bedrock containing deep circular ground depressions. They were first reported at Chalcatzingo by Gay (1972a: 73–84). The holes are mortar-like and can occur as solitary examples or in groupings. The holes differ from normal bedrock mortars in their relatively small diameters, carefully ground vertical walls, and by the fact that they are seldom located near water sources.

Several points related to cup-marks are worth mentioning. Only one example can be even tentatively dated. Monument 18, found on the east end of PC Structure 4, has a cup-mark which seems to be an integral part of that monument's carved design (Fig. 9.20). This suggests that some, if not most, of the cup-marks are Middle Formative if we can assume that Monument 18 itself is Middle Formative in date. In addition, a few of the cup-marks are found on boulders on the surface of the site's Middle Formative terraces, demonstrating that they date to or after the terrace building.

Cup-mark stones are not restricted to Chalcatzingo or to Morelos. Similar stones have been found in other areas of Mesoamerica (e.g., Guanajuato; Emilio Bejerano, personal communication).

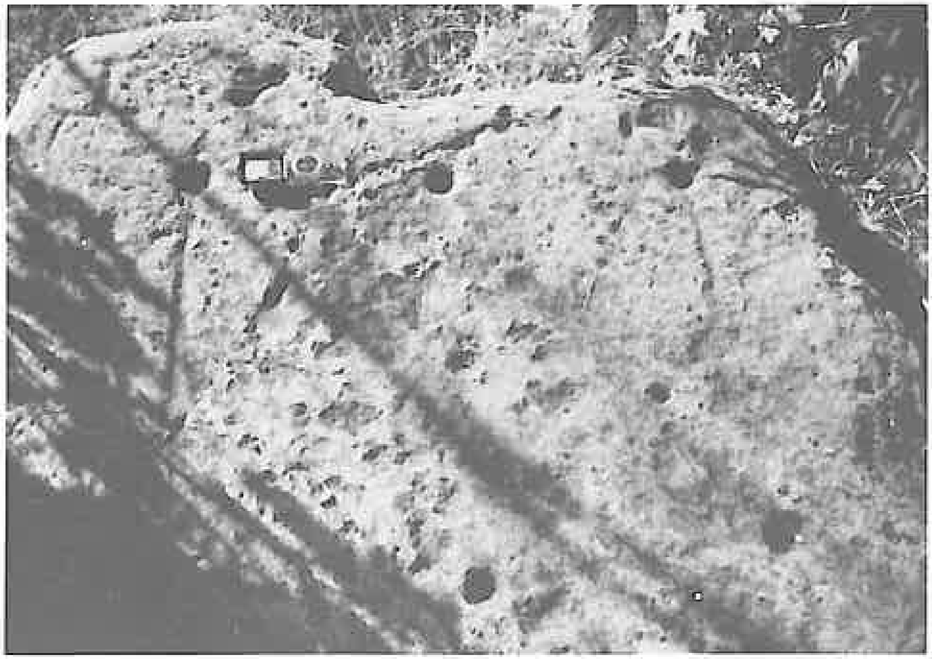


Figure 11.18. MCR-19, T-4.

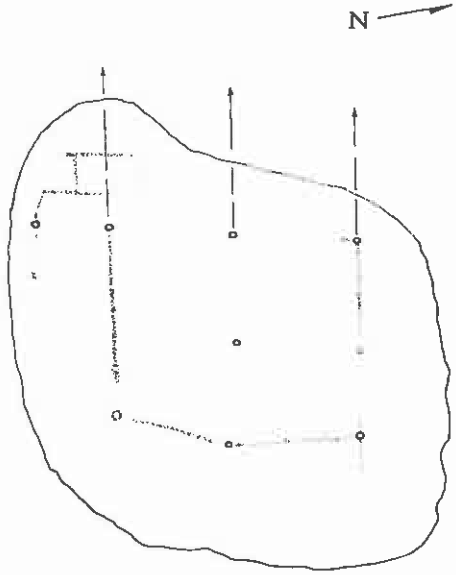


Figure **11.19.** MCR-19 showing alignments of shallow pits in stone. Arrows at top point to Classic pyramid.

However, they are not usually mentioned in site reports.

The survey of cup-mark stones by Gay and Gillett Griffin (Gay 1972a:73–84) was comprehensive and located the majority of the stones which we observed during our field work. Gay's use of the term "altar" for these stones seems inappropriate, however. His map (1972a:74) provides a good generalized idea of their distribution (compare to Fig. 9.2). It should be noted, though, that while illustrations in his book depict clusters of cup-mark stones (1972a:Figs. 40–42), the illustrations are stylized and are apparently meant only to portray individual stones. No such clusters occur, orientations vary, and the illustrations are obviously not meant to depict exact spatial distributions.

I share Gay's (1972a:84) opinion that the cup-mark stones served ritual rather than utilitarian functions, and that they were probably receptacles for "sacred" water (rainwater and/or ritual water). MCR-8 demonstrates very well the relationship of water to these deeply ground holes, as does the location of MCR-22. While I hypothesize that these stones functioned to hold "sacred" water, the possibility of significant alignments between some or all of them cannot be ruled out and remains to be tested.

Figure 11.20. MCR-22.

Figure 11.21. MCR-26, T-11.

Area I-A

MCR-22 ***(Fig. 11.20)***

This stone lies at the southeast corner of CT-1. It was found at the beginning of the second field season as we were removing earth from a small natural spring. The stone has four cup-mark holes, three in a line and one to the side. Its location by this minor trickle of water again points out the relationship of cup-mark stones and water. This carving was not reported by Gay.

MCR-23

A stone with one cup-mark lies 20 m east of the El Rey Drainage, and 5 m west and 3 m south of the small CT-2 Classic platform on the hillslope below Monument 1. This or MCR-24 could be Gay's Altar 16 (1972a: 82, Fig. 42).

MCR-24

A cup-mark stone sits about 25 m east of MCR-36 and about 5 m higher. A single cup-mark is found on its upper surface.

Area II

MCR-25

A large flat rock, almost 6 m in diameter, lies at the northern edge of T-11. This large rock, with at least ten cup-marks of varying sizes, is Gay's Altar 1 (1972a: 73–74, Fig. 38). Two of the highly eroded cup-marks are connected by a small groove. It is unfortunate that this large stone has apparently been dynamited in the recent past as part of the *cantera* mining on the hillside, since we cannot determine today how much of the rock is now missing.

MCR-26 ***(Fig. 11.21)***

A shallow design rings the cup-mark on this stone (Gay's Altar 2; 1972a: 76–77, Fig. 39), which protrudes slightly from the surface at the west end of T-11. It is the only design of this type recorded at Chalcatzingo, although several similar but far more complex motifs occur on rock exposures on the Cerro de la Cueva, across the valley from Chalcatzingo, visited by Grove and Angulo in 1972. The carving makes this cup-mark stone unique at Chalcatzingo.

MCR-27

Two cup-marks are found on the upper surface of the stone that Gay calls Altar 3 (1972a: 77, Fig. 40). It is located in the T-13 area, ca. 35 m southwest of MCR-25. As Gay noted, this stone has also been partially destroyed by *cantera* mining activities.

MCR-28

Located 40 m south of MCR-26, at the west edge of T-13 and beside the path to Monument 13, is stone with one cup-mark. It may be the stone Gay labels Altar 4 (1972a: 77, Fig. 40).

MCR-29

Located on the unfarmed hillside south of T-11, this stone with one cup-mark may be Gay's Altar 5 (1972a: 77, Fig. 40).

MCR-30

This stone may be Gay's Altar 6 (1972a: 80, Fig. 40). It is located in an area of unfarmed rocky land surrounded by T-11. The stone has one cup-mark.

MCR-31

As with some other cup-mark stones, it is difficult to correlate this stone to those reported by Gay. Nevertheless, this is probably his Altar 7 (1972a: 80, Fig. 41). It is located above the eastern end of T-11, 30 m southwest of MCR-32.

MCR-32

About 35 m south of the T-11 *maqueta* stone (MCR-8), a group of three cup-marks is found on what is probably a large buried boulder whose top is exposed in two areas. Two cup-marks occur on one large exposed section of rock, while the third is on a smaller exposure. This is probably Gay's Altar 8 (1972a: 80, Fig. 41), although the positioning of the cup-marks is slightly different than that illustrated in his publication.

MCR-33 ***(Fig. 11.22)***

A large angular stone, with a single cup-mark, lies 5 m north of MCR-8, the T-11 *maqueta*. This is Gay's Altar 10, although somewhat different than illustrated (1972a: 80, Fig. 42).

MCR-34

A stone with one cup-mark is almost midway between MCR-28 and Monu-

Figure 11.22. MCR-33 (*foreground*) and MCR-8 (*background*).

Figure 11.23. MCR-35.

Figure 11.24. MCR-36 (*center*) and Monument 19 (*foreground*).

ment 12, west of the infrequently farmed area we have labeled T-13. At this time we cannot correlate it with any specific stone reported by Gay.

MCR-35 ***(Fig. 11.23)***

At the extreme southeast of the site, in a small drainage about 60 m south of Monument 12 (and located off the south edge of our map, Fig. 9.2), is a small boulder with two cup-marks and two other rocks with slightly shallower depressions. These were not recorded by Gay.

MCR-36 ***(Fig. 11.24)***

A one-cup-mark stone was recently found just a few meters west of Monument 19.

Figure 11.25. MCR-37 (*foreground*) and Classic period pyramid (*background*).

RESUMEN DEL CAPÍTULO 11

Además de los monumentos, Chalcatzingo presenta un número de piedras esculpidas, trabajadas, y en pedacería que hemos designado Rocas Labradas Miscelaneas (MCR). Estas incluyen: maquetas, tabletas de cantera, y piedras con incisiones profundas "con marca de taza." Su ocurrencia principal está localizada en las terrazas superiores y en las pendientes de las laderas de la montaña en el área del sitio principal.

Algunos de estos labrados se encuentran asociados claramente con el agua, por ejemplo, piedras para canales pequeños y recipientes de agua, tales como las que presentan el motivo "marca de taza." El simbolismo del agua también se exhibe en la maqueta grande (MCR-8), la que presenta no sólo los dos cerros sino también espirales, tazas, y ranuras para contener agua de lluvia. Además, hay un glifo de un chalchihuitl *labrado en un canto rodado (MCR-17) al través del drenaje de El Paso.*

Las otras piedras labradas designadas MCR incluyen escalones labrados en la ladera del cerro, piedras con marcas de cantera, y piedras con cortes irregulares o incompletos y ranuras. Casi ninguna de las MCR puede fecharse, ni sus ubicaciones por ahora permiten descubrir patrón alguno respecto de ellas entre sí o con relación a estructura alguna.

Area III

MCR-37 *(Fig. 11.25)*

Ten meters south and behind T-3 Structure 2, a Classic period mound, is a stone with one cup-mark reported by Gay (1972a:80, Fig. 41) as his Altar 11.

MCR-38 *(Figs. 4.6, 11.26)*

Sitting on the southwest edge of the Plaza Central, between PC Structures 1 and 2, this large, tall boulder has two cup-marks on its upper surface. This cup-mark stone is unusual in that it is located very close to structures. It lies on the surface of a terrace and is the tallest of the cup-mark stones. This is Gay's Altar 13 (1972a:83, Fig. 42).

Area VIII

MCR-39

There are two cup-mark depressions at the base of Monument 10, on the peak of the Cerro Chalcatzingo. They were first reported by Gay (Altar 21; 1972a:83).

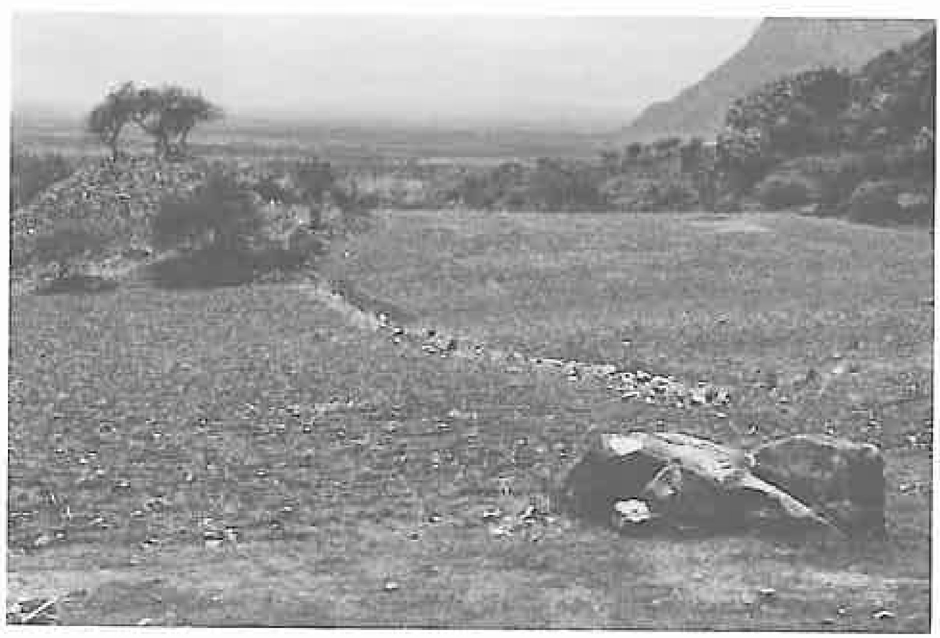


Figure 11.26. MCR-38 (*right foreground*), Classic pyramid, T-3 Structure 1 (*left background*), and PC Structure 4 (*right background*).

12. Chalcatzingo Painted Art

ALEX APOSTOLIDES

Although seldom reported, painted rock art occurs on cliff faces, rock outcrops, and cave walls in many regions of central Mexico. A marked dichotomy exists in this art. In rare instances it is extremely well executed, depicting personages and/or supernatural themes (e.g., Juxtlahuaca and Oxtotitlan caves; Gay 1967; Grove 1970a). Far more common is the cruder art usually composed of geometric designs, painted spots, and occasional zoomorphic and anthropomorphic representations. Although this latter type of painting is far simpler than the elaborate Oxtotitlan and Juxtlahuaca cave art or the frescos at sites such as Teotihuacan, Cholula, and Cacaxtla, there are no data to indicate that the cruder art is earlier rather than contemporaneous, and it is distinctly possible that the simpler paintings are different due to function, location, or the artist's skill and purpose, rather than to chronology.

The simpler art is usually ignored in the literature in favor of the more spectacular achievements of central Mexican cultures. Nevertheless, several publications deal with occurrences of such art in areas adjacent to the Chalcatzingo project's research area. José Luis Lorenzo (1957:16) mentions rock paintings on the slopes of the volcano Popocatepetl; and Verve Piho and Carlos Hernández (1972:85) discuss white paintings near Yecapixtla, slightly northwest of the Chalcatzingo project's survey zone. Pictographs stylistically similar to Yecapixtla's occur 20 km to the east at Texcalpintado, 7 km south of the village of Hueyapan. The Texcalpintado paintings, first reported by Antonieta Espejo (1945), are only 20 km north of Chalcatzingo, but again were outside of the project's survey area. Like the Yecapixtla paintings, they include crude human figures executed in white. Both the Texcalpintado and Yecapixtla paintings are apparently Postclassic in date.

The simple style of painting occurs at Chalcatzingo and is markedly different from the elaborate bas-relief art for which the site is so well known. Unfortunately it is difficult to date the majority of the paintings. Although Chalcatzingo had a significant Middle Formative period occupation, it also contains evidence of Classic and Postclassic period structures, and some of the painted art can be shown to be Classic period in date (see below).

The painted art was first seriously published by Carlo Gay (1972a:17–33). The paintings he illustrates occur in the saddle area between the Cerro Delgado and the Cerro Chalcatzingo. He has termed that area the "Sanctuary of the Pictographs" (1972a:17–18, Pl. 2). However, paintings at Chalcatzingo are not restricted to that area but occur at various locales (see Fig. 12.1) including both the west and east faces of the Cerro Delgado, on boulders on the west slopes of the Cerro Delgado and west slopes of the Cerro Chalcatzingo, and in the barranca of the Río Amatzinac. Only one small painting group has been found on the Cerro Chalcatzingo itself.

On the Cerro Delgado and in the saddle area the paintings occur in caves and erosion niches of various depths. To avoid confusion in separating Cerro Delgado cave and niche numbers from saddle area cave and niche numbers, all those of the Cerro Delgado are numbered as caves, those from the saddle area as niches, and the term shelter is used to designate painted areas on the western slopes of the *cerros*.

NUMBERING, RECORDING, AND DESCRIPTION

This chapter is primarily descriptive, and no serious attempt will be made to interpret the pictographs. In the same vein, few of Gay's (1972a) interpretations of various painting groups will be discussed since I disagree with most of them. In addition, to provide a more flexible numbering and identification system, I have not used Gay's all-inclusive sequential numbering system but instead use a system which labels each painted cave, niche, or shelter separately. Sequential numbering is used only within these separate areas. This allows for the incorporation of any newly discovered pictographs into the numbering system. Our investigations, for instance, found numerous unreported pictographs in the areas previously discussed by Gay, and it is probable that future investigators will add to our list. Table 12.1 correlates Gay's areas and numbering system with ours.

In describing the pictographs by groups, no attempt will be made to describe each individual design, line, or spot of paint. For later comparative purposes, however, some general names have been given to certain recurring designs:

(a) *Stick figures.* These are composed of linear elements, intersected (usually perpendicularly or nearly so) by one or more other linear or curvilinear elements. In some instances these stick figures may have represented anthropomorphic or zoomorphic figures, and in other instances such identifications cannot be made.

(b) *Triangle-and-slit.* This design consists of a down-pointing triangular outline, with a short line bisecting the lower interior angle. Gay (1972a:29) identifies this as a "vulval representation . . . manifestly female in value." I agree that such an identification in this case is probably valid.

(c) *Sunburst.* This is an outline circle with outward radiating lines completely around its circumference. The use of this term is not meant to imply that this motif depicts the sun.

Figure 12.1. Air view of Chalcatzingo showing locations of paintings.

(d) *Plumed.* This term refers to lines radiating upward from the top of a circle or arc (e.g., plumed circle). Again, this is simply a descriptive term, with no implications that plumes are actually depicted.

(e) *Clockwise and counterclockwise spirals.* Direction is designated from the inside of the spiral outward.

In recording the paintings, we utilized a technique which I had used previously in surveys of pictographs and petroglyphs in California's Mojave desert (Apostolides 1975). This involves tracing the art on an overlay of transparent pliofilm, using felt pens with non-water-soluble black ink for copying the designs and a Rapidograph pen with India ink for writing comments and brief notes on the plastic overlay itself. This provided as objective a depiction as possible, together with a permanent, actual-size record. The overlay can even be photographed in the lab if field conditions do not permit adequate photographic recording of the art (compare Fig. 12.31 to 12.32). In addition, field notes and sketches were made, and photographs were taken.

It should be noted that the pliofilm tracing technique was not used for all the less accessible paintings in the caves of the Cerro Delgado or for the barranca art. Most of these were recorded with drawings and photographs. The reader will also find throughout this chapter that the depictions of various pictographs here are not identical to those published by Gay. This is not a criticism of the previous work, but merely reflects the difficulty in recording faded pictographs.

***Table 12.1.* Correlation of Chalcatzingo Project's Designations with Gay's Designations of Pictographs**

Gay (1972a)		*Chalcatzingo Project*	
Designation	*Pictograph No.*	*Designation*	*Pictograph No.*
—	1	(probably mineral discoloration)	
Shelter A		Niche 5	
	2		4
	3		6
	4		7
	5		8
Shelter B		Niche 4	
	6		Area B-2
	7		B-2
	8		B-2
	9		B-2
	10		B-3
	11		B-4
	12		B-?
	13		B-1
	14		B-15
	15		A-1
	16		?
	17		A-5?
	18		A-6?
	19		D-4?
	20		?
	21		D-8?
	22		D-12
Shelter D		Niche 2	
	23		A-1
	24		D-1
	25		D-4
	26		D-5
	27		D-6
	28		B-13
	29		B-14
	30		B-19
	31		E-1
	32		E-2

THE PICTOGRAPHS

Cerro Chalcatzingo

At present only one group of paintings has been discovered on the Cerro Chalcatzingo. This group, not previously reported, is passed by nearly every person following the trail to Monument 1. The paintings occur about 6 m up on the cliff face, approximately 8 m east of the large *amate* tree which sprawls over the cliff face and is a very visible landmark to visitors seeking the trail to the upper relief group. Of the five areas on the cliff face showing red pigment, four are too faded or encrusted with mineral deposits to allow an adequate determination of their original design. The sole distinguishable painting (no. 1) is a large triangle with the interior painted in an irregular interlaced network of lines, resembling a net (Fig. 12.2).

The Saddle Area

Referred to by Gay (1972a:17–18) as the "Sanctuary of the Pictographs," this grouping of paintings is situated on a small cliff area in the saddle between the site's two hills (Fig. 12.3). The majority of the paintings have been executed within a group of large shallow erosion niches on the exposed rock face. The hillside talus slopes immediately in front of the cliff face are primarily exposed bedrock and likewise contain a number of shallow niches. Only one definite pictograph (Niche 1) occurs in this latter area, and the remaining painting group (Niches 2–6) are on the cliff face, their niches facing to the northwest.

Niche 1

Niche 1 is located above one of the many ledges on the exposed bedrock slope to the northwest of the small cliff (Fig. 12.4). The shallow niche faces to the southwest and is hidden by cacti and plants growing on the ledge's thin soil layer. The gently curving wall of the niche contains a previously unreported cruciform pictograph executed in deep brown-red pigment (Fig. 12.5) about 1 m above the ledge.

No other definite pictographs occur in this area. Although Gay's Pictograph 1 is only a few meters immediately downhill from the Niche 1 cruciform, examination indicates that it is more likely a

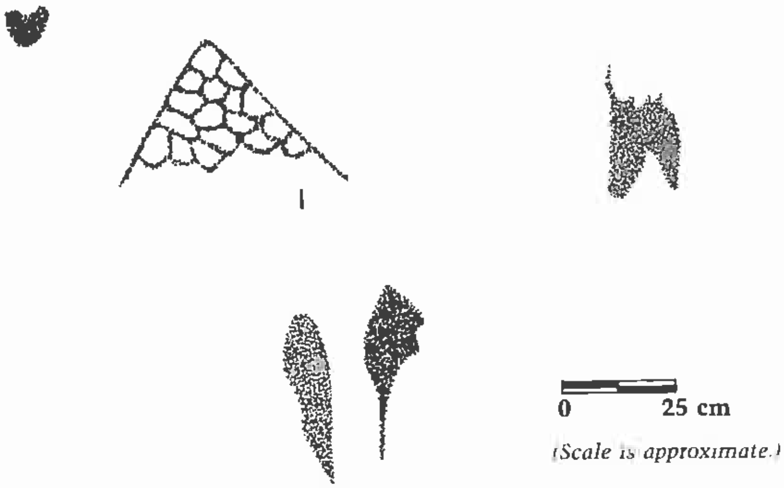


Figure 12.2. Cerro Chalcatzingo painting alongside trail to "El Rey," Monument 1.

Figure 12.3. Saddle area showing Niches 2–6.

Figure **12.4**. Saddle area showing location of Niche 1.

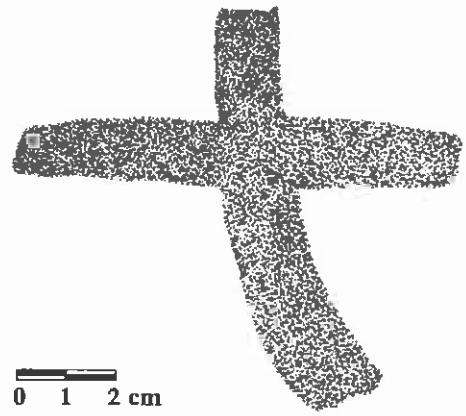


Figure 12.5. Niche 1 painting.

Figure 12.6. Niche 2: Area A painting.

natural red stain of irregular shape. Such natural stains are common on rock outcrops at the site.

Niche 2

Niche 2 (Gay's Shelter D) is the highest and northernmost of the pictograph niches in the saddle area. The mouth of the niche is approximately 7.5 m in length, and the niche's depth is about 3 m. There is a sheer drop of nearly 12 m from this niche to Niche 3 and to the talus slopes below.

Within Niche 2 is a nearly continuous line of shallow weathered ovoid concavities running along the back wall just above the floor line. It is within these concavities that the majority of the pictographs are found. The paintings occur in seven groups or areas (Areas A–G). Except where noted, all of the Niche 2 paintings are executed in red paint.

Area A. Only one pictograph (Fig. 12.6) is found here, in a shallow concavity. The pictograph, composed of six vertical lines, is described by Gay (1972a:29) as a "barbed sign."

Area B. The largest pictograph cluster in Niche 2, this group of paintings (Fig. 12.7) is surrounded by the other painted areas. Within this group are twenty pictographs, including five stick figures (nos. 3, 13, 14, 17, 20), one representational human figure with plumed head (no. 19), and on the left a comb-like design (no. 1) painted in white but superimposed over red pigment traces.

Area C. This group of pictographs is 1 m to the right of Area B. Of the four pictographs (Fig. 12.8), one is a solid trilobal design (no. 1), and another is a rectangular outline surrounding a U-shaped element (no. 2).

Area D. This group of six pictographs (Fig. 12.9) is 60 cm above Area B. The paintings are grouped around a small ovoid concavity which has red pigment smeared on the lower left rim. The six pictographs occur in two's: two stick figures (nos. 2, 3), two triangle-and-slit designs (nos. 1, 6), and two solid circles (nos. 4, 5).

Area E. These two pictographs (Fig. 12.10) are 20 cm above Area C. Pictograph 1 is a stick figure; no. 2 is not identifiable.

Area F. Two pictographs (Fig. 12.11) make up this group located above Area E. Painting no. 1 is a triangle-and-slit, and

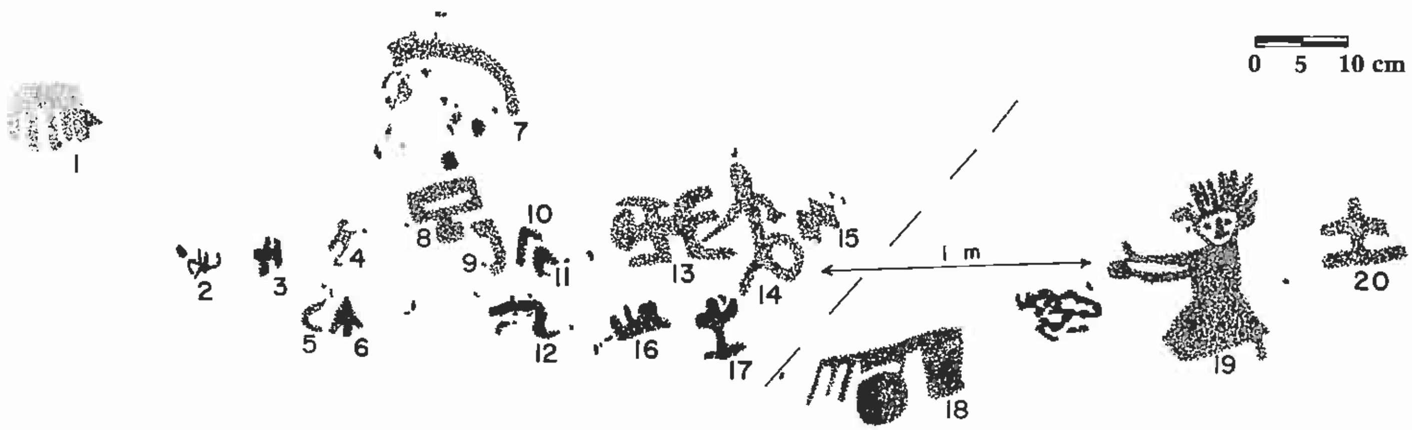


Figure 12.7. Niche 2: Area B paintings.

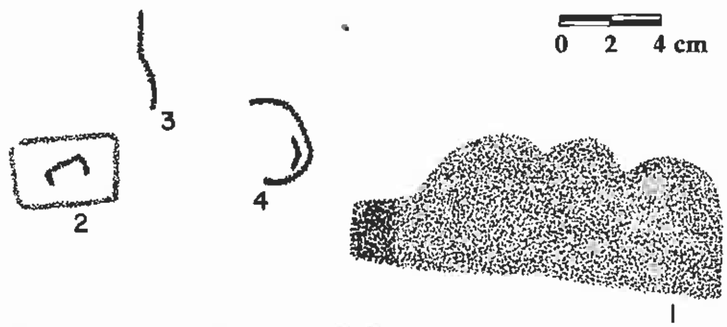


Figure 12.8. Niche 2: Area C paintings. (Scale is approximate.)

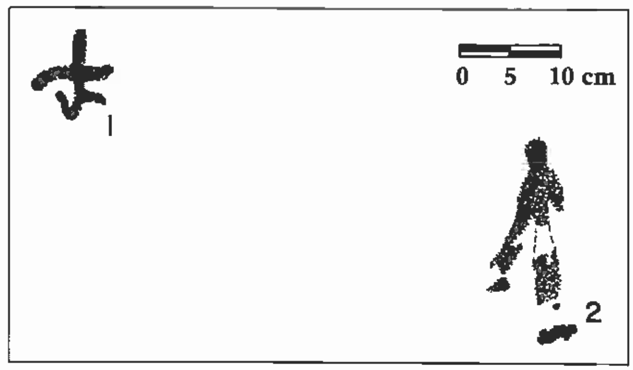


Figure 12.10. Niche 2: Area E paintings.

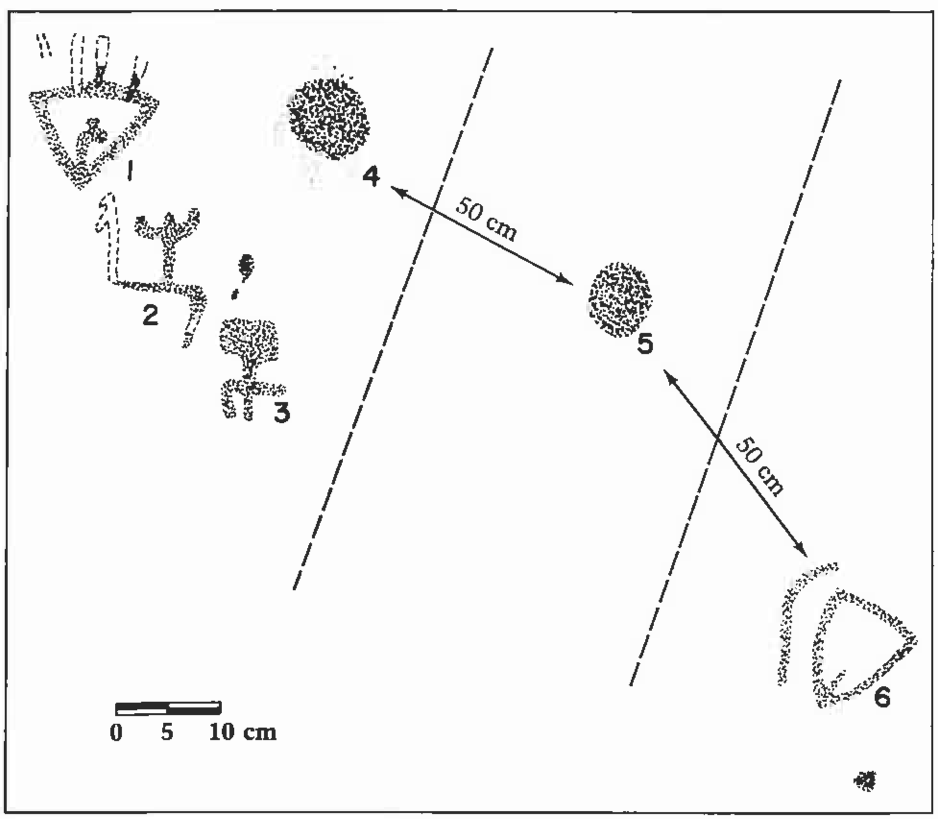


Figure 12.9. Niche 2: Area D paintings.

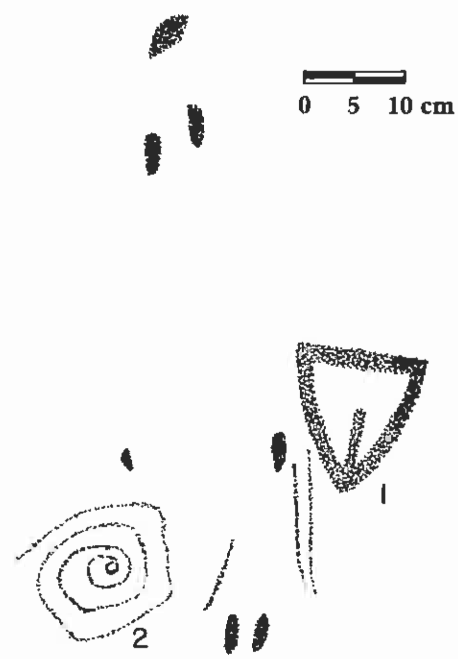


Figure 12.11. Niche 2: Area F paintings.

Figure 12.12. Niche 2: Area G paintings.

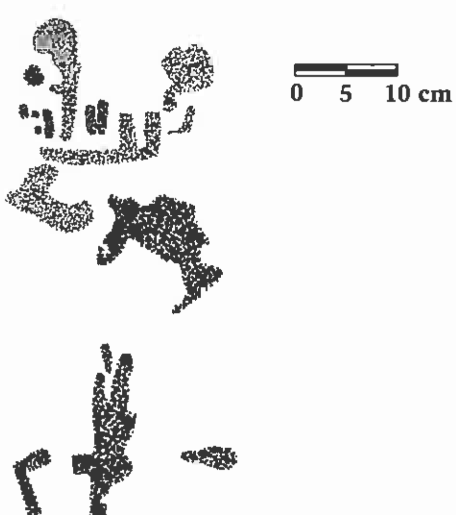


Figure 12.13. Niche 3: Area B paintings.

no. 2 is a very faint counterclockwise spiral. This latter design has been partially vandalized by a recent retracing with a red crayon. In addition, a recent drawing of a human head in profile occurs below no. 1. There are also seven small areas of red pigment and a few traces of white pigment near the two pictographs, all of which are apparently prehispanic.

Area G. Two areas of white pigment are found to the left of Area F on the wall above Area D (Fig. 12.12).

Niche 3

A long, odd-shaped niche (Gay's Shelter C) lies below and slightly south of Niche 2. Gay (1972a:29) refers to "scattered trickles of red paint" and a "red smear" in this location. Our investigations of this niche revealed two pictograph areas, nearly 12 m apart, and Gay's reference is apparently to our Area B paintings.

Area A. Three small side-by-side concavities occur at the northernmost (uphill) end of Niche 3. Above these concavities, slightly over 1 m above the niche floor, is a spot of red pigment ca. 4 cm in diameter (not illustrated). The rock in this area is spalled, and it is difficult to ascertain if this was originally simply a red spot or perhaps a larger design.

Area B. Within a large concavity at the south end of the niche is a small cluster of red linear elements and splotches (Fig. 12.13). No definite images can be discerned.

Niche 4

This large niche (Gay's Shelter B) contains four groups of designs executed in red pigment (Areas A–D) and two large designs painted in white (Area E). It is also unique in that a "chimney" or vent runs into the ceiling of the niche at its north end.

Area A. Although the majority of the paintings in Niche 4 occur in the long, shallow concavities on the walls, this cluster of paintings is associated with the "chimney" in the ceiling. Twelve pictographs were found along the upper rim of the opening (Fig. 12.14) and seem to cluster around a central pictograph (no. 1). This pictograph resembles a weathervane rooster, although it is basically a double curved line surrounding a circle. Pictographs 3, 4, 8, and 12 are possibly eroded stick figures; nos. 5, 6, 7, 10, and 11 are unidentifiable, perhaps due to erosion; and nos. 2 and 9 are splotches of paint. A further area of red paint is found to the right of no. 12.

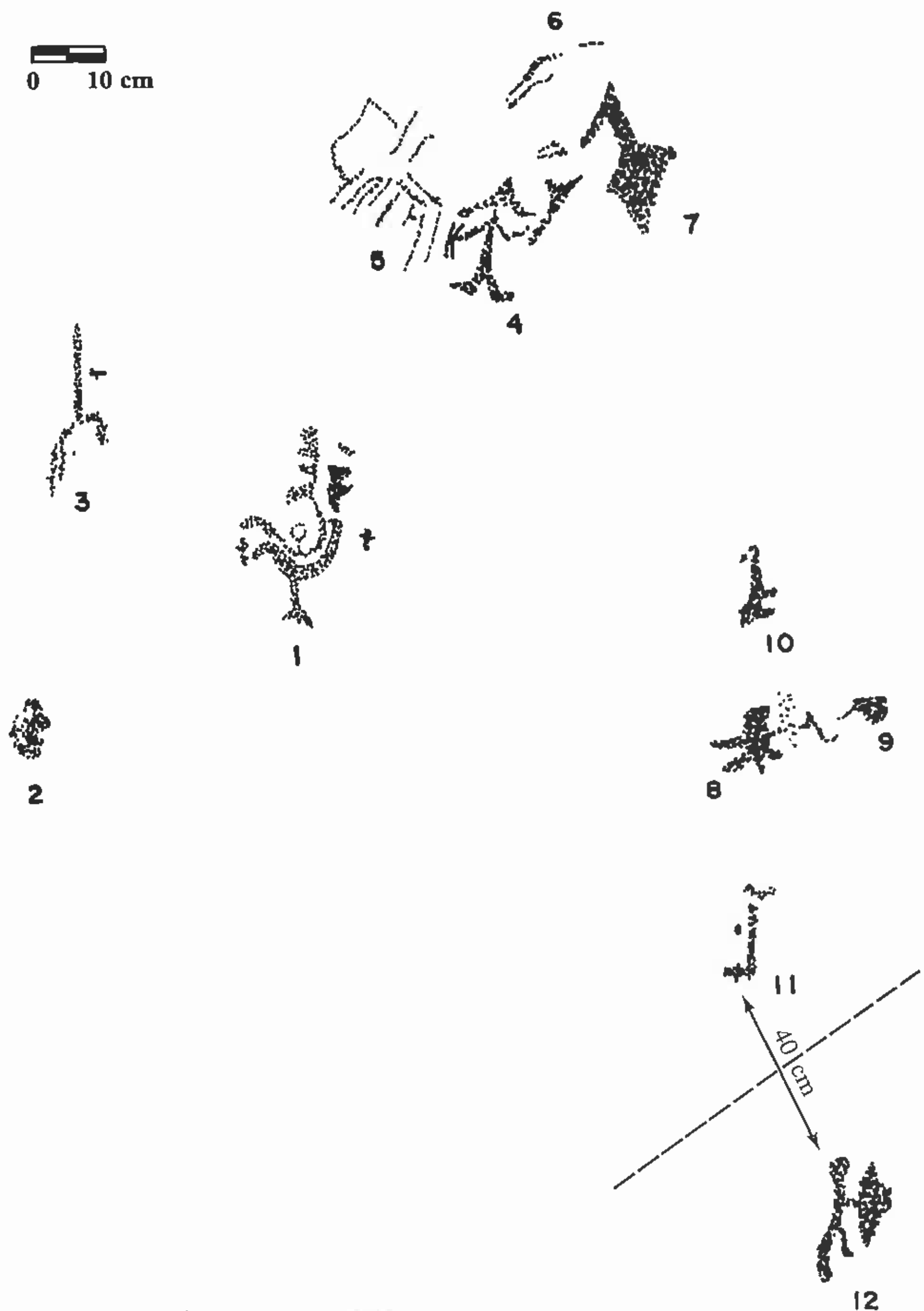


Figure 12.14. Niche 4: Area A paintings.

Area B. Situated along the curving wall at the north end of the niche, this group (Fig. 12.15) is composed primarily of stick figures (nos. 1, 4, 5, 7, 8, 9, 10, 12, and 13). In addition there is a group of horizontal V's (no. 2), other simple linear motifs (nos. 3, 11), an unidentifiable design (no. 14), and, near the left edge of the "chimney," a double inverted U motif (no. 15). The similarity of this last motif to the Olmec earth glyph has been pointed out by Gay (1972a:26), although because these paintings cannot presently be dated and may actually belong to the Classic period, the similarity could be coincidental.

Area C. Three small designs (Fig. 12.16), quite difficult to see, occur to the right of Area A. Two are small stick figures (nos. 1 and 2), and the third (no. 3) appears to be a small inverted U motif, although other paint traces around this design indicate that it may have originally been part of a larger painting.

Area D. At the south (entrance) end of the niche, about 2 m above the steeply sloping floor, is a deep concavity with a cluster of seventeen small pictographs (Fig. 12.17). These include one small positive handprint (no. 12) and what may be a partial handprint (no. 8, three fingers). Also visible are two stick figures (nos. 2 and 4), some unidentifiable designs (nos. 1, 9, and 17), eight red splotches, and a small concavity with a single red dot (no. 10).

Area E. Two large white designs are found on the rock face below and about 2 m south of Area D, at the access point to Niche 4. They resemble a large crescent (no. 1) and a very large bird (no. 2) (Fig. 12.18). The size of these paintings is such that they are visible from the Plaza Central area of the site. Their execution in white suggests that they may be contemporaneous with the white Postclassic paintings of Texcalpintado and Yecapixtla.

Niche 5

Niche 5 (Gay's Shelter A) is near the southern end of the cliff face. It is formed by an overhang of the rock face which shelters two ledges. Within the niche are eight pictographs in three areas.

Area A. There are four pictographs here: a large smear (no. 1) within a small ovoid concavity (the concavity also has pigment smeared along its rim), small linear elements of no definite pattern (nos. 2 and 3), and two vertical lines (no. 4) (Fig. 12.19).

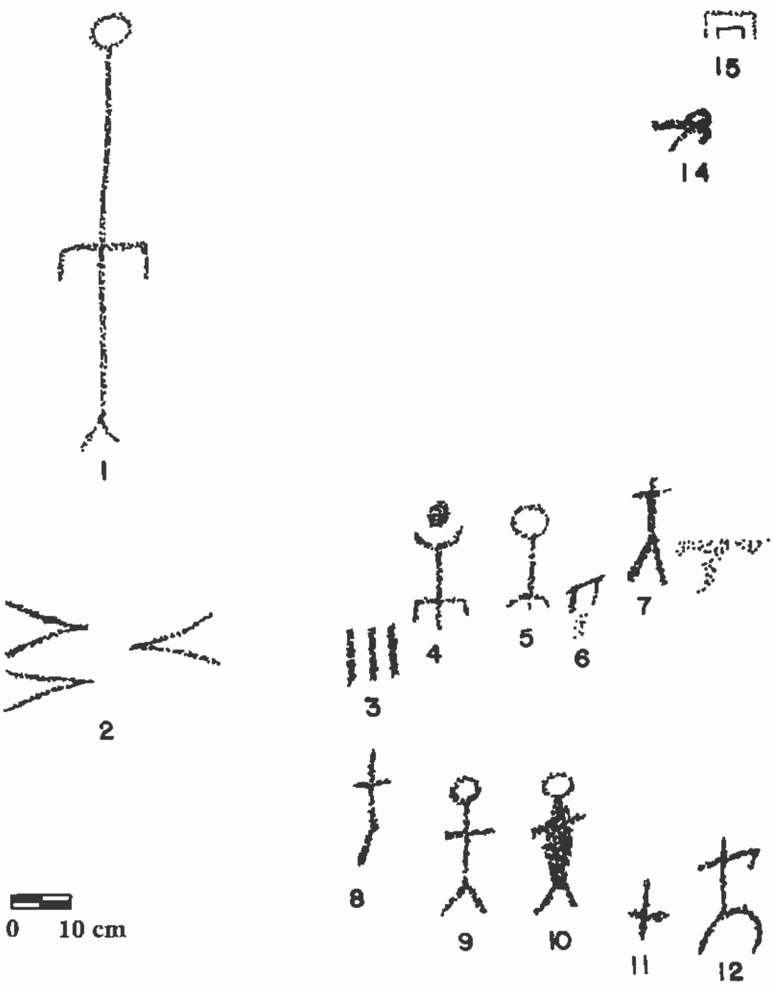


Figure 12.15. Niche 4: Area B paintings.

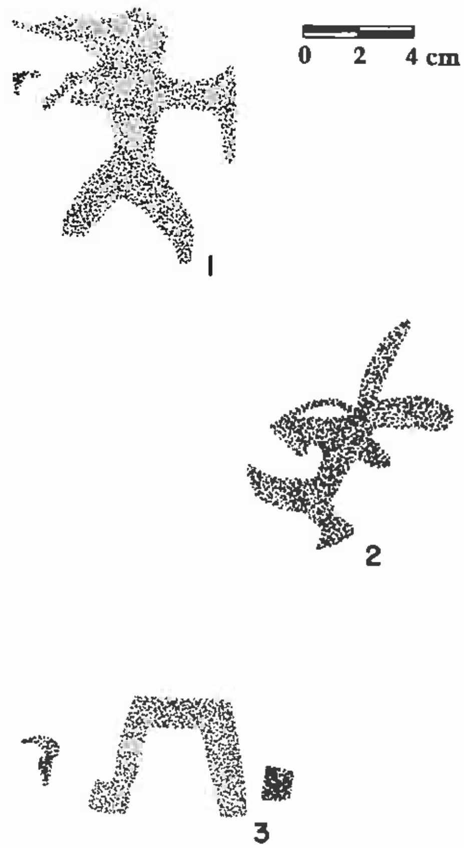


Figure 12.16. Niche 4: Area C paintings. *(Position of pictographs altered.)*

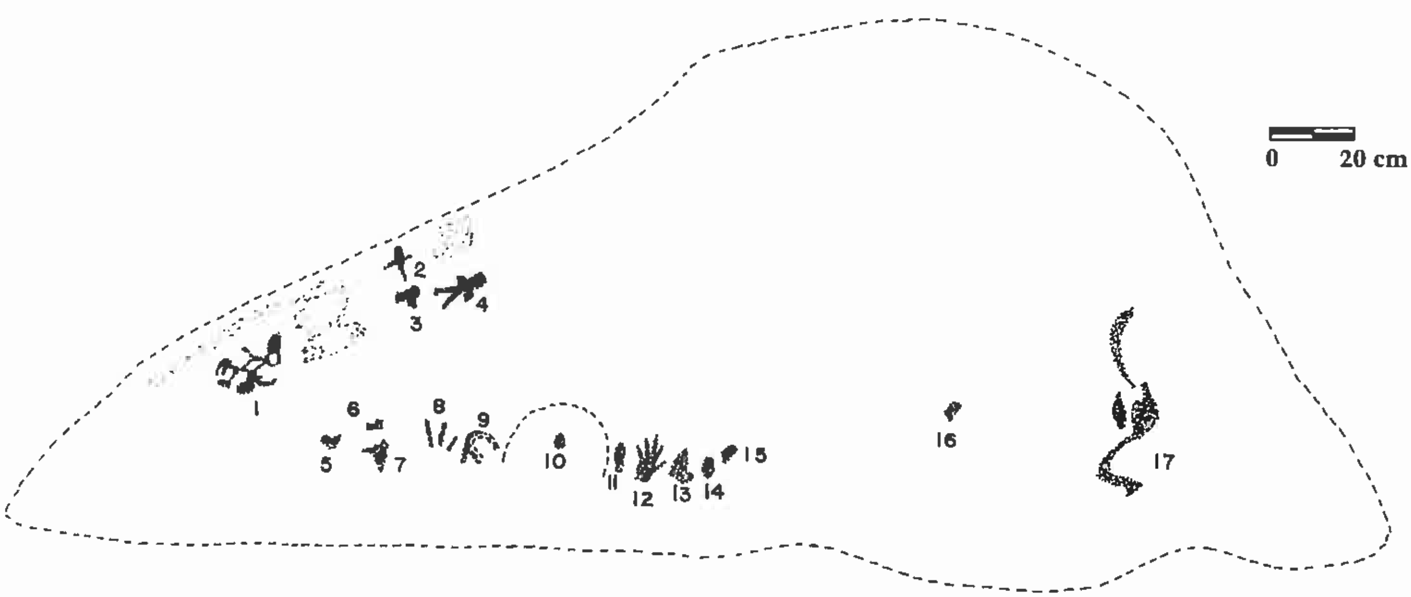


Figure 12.17. Niche 4: Area D paintings.

Figure 12.18. Niche 4: Area E paintings.

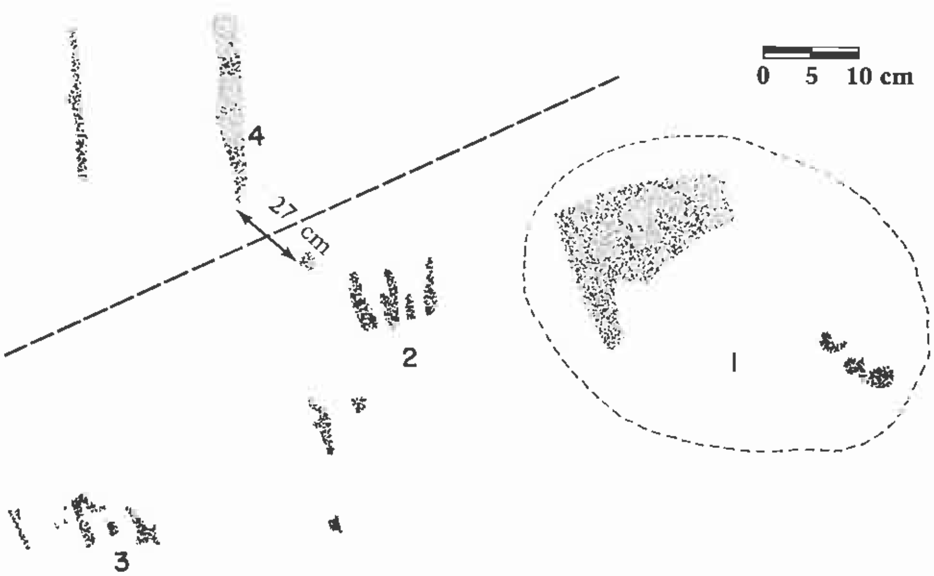


Figure 12.19. Niche 5: Area A paintings.

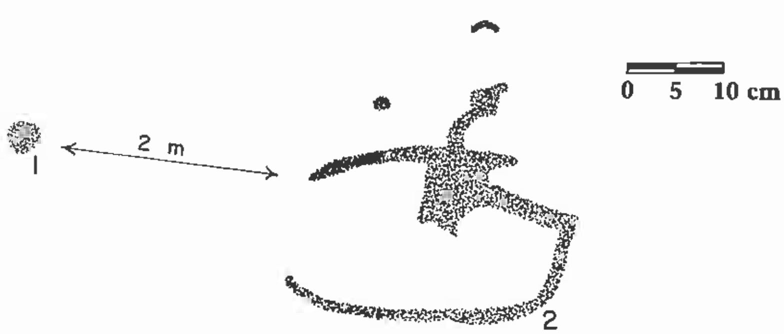


Figure 12.20. Niche 5: Area B paintings.

Area B. This area has two pictographs: a solid circle (no. 1) and a rectangular outline with a solid splotch of paint in the center of its top line (no. 2) (Fig. 12.20). Area B is above and to the east of Area A, while Area C is almost directly above Area A.

Area C. The remaining two pictographs are an up-pointing arrow (no. 1) and a down-pointing comb-like depiction (no. 2) (Fig. 12.21).

Niche 6

About 2 m below Niche 5 the rock face makes a curve. Here there are six small concavities caused by weathering. The fourth concavity from the left contains an irregular area of red pigment ca. 50 cm in length (not illustrated).

The North Shelters

Three groupings of pictographs occur on rocks or rock clusters (shelters) adjacent to the terraces on the western slopes of the Cerro Delgado.

North Shelter 1

Near the center of the small unnumbered terrace immediately above (northeast) of T-4 and approximately 100 m northwest of the saddle area's painted niches is a large boulder resting upon two other rocks, with a low exposed underside canted at an angle of about 30° (Fig. 12.22). The low (ca. 1 m tall) shelter thus formed faces northwest. The underside of the rock is heavily blackened from smoke, but faint traces of red pigment (not illustrated) show from beneath the carbon deposit. No designs could be ascertained.

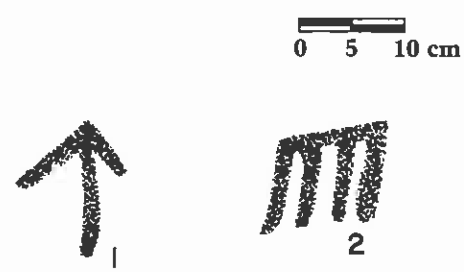


Figure 12.21. Niche 5: Area C paintings.

North Shelter 2

A large rockfall of boulders is found along the Cerro Delgado's talus slopes north of T-4. Within this rockfall, facing northwest onto T-10 is a large rock slab tilted at about 60° (Fig. 12.23). Thirteen pictographs are found on the underside of this sloping rock (Fig. 12.24). Twelve of them are executed in white pigment, while the thirteenth (no. 7) is done in a yellowish paint. Most of the pictographs occur as a cluster (nos. 3–11). Pictographs 1 and 2 are above the cluster; nos. 12 and 13 are below it. Pictographs 1, 2, and 5 are four-legged stick figures; nos. 4, 10, and 12 are irregular stick figures; no. 7, in yellow, is a pear-shaped outline with a stick figure on its narrow end and with its interior crisscrossed by perpendicular lines; no. 6 is a stick figure associated with a solid crescent, splotch, and linear elements. Pictographs on the right side of the central cluster are rectangular outlines (no. 3 and no. 8, which has a dot in its center). The bottommost pictograph in the central group (no. 11) consists of two parts: an outline rectangle below and an irregular crescent shape above.

Figure 12.22. North Shelter 1.

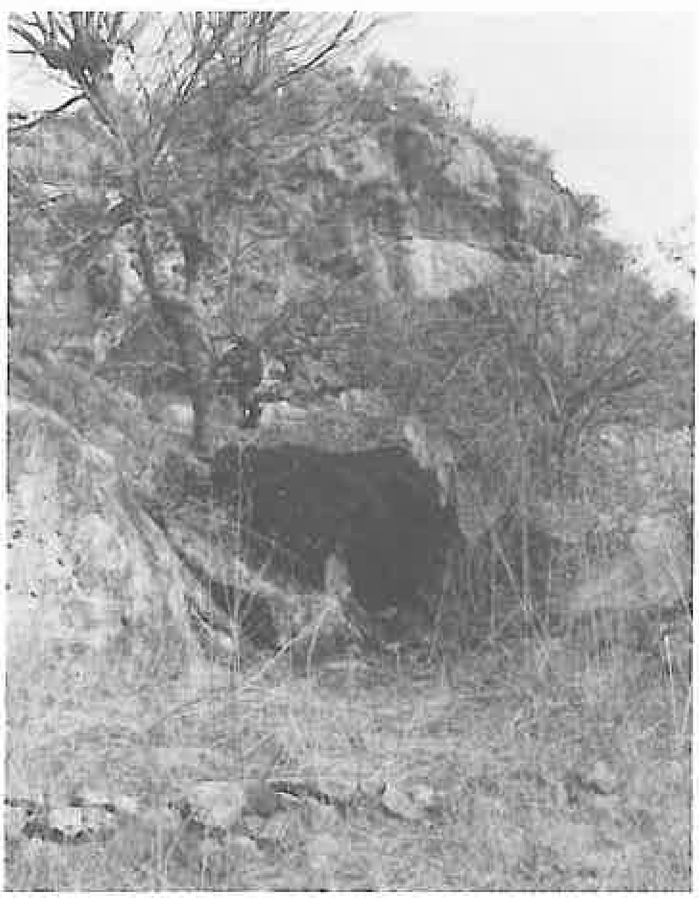


Figure 12.23. North Shelter 2.

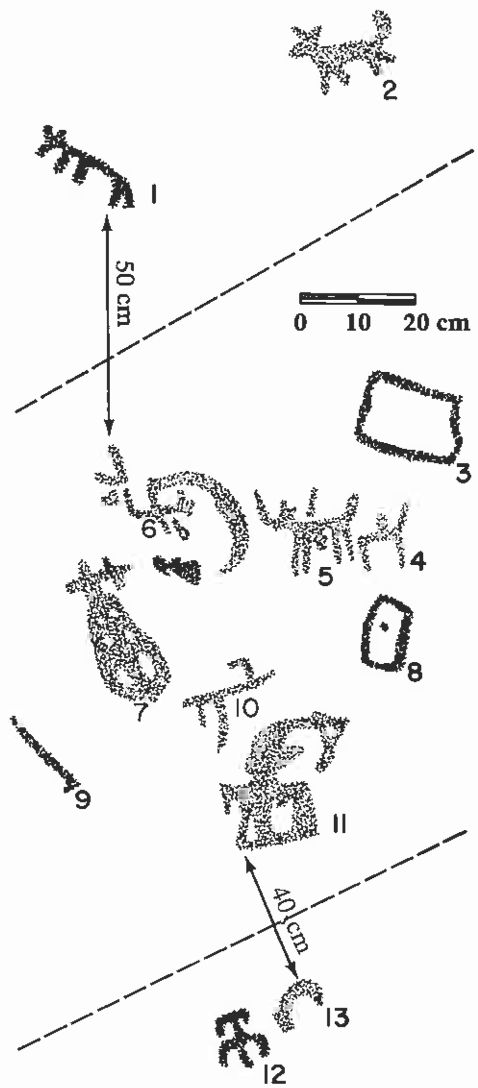


Figure 12.24. North Shelter 2 paintings.

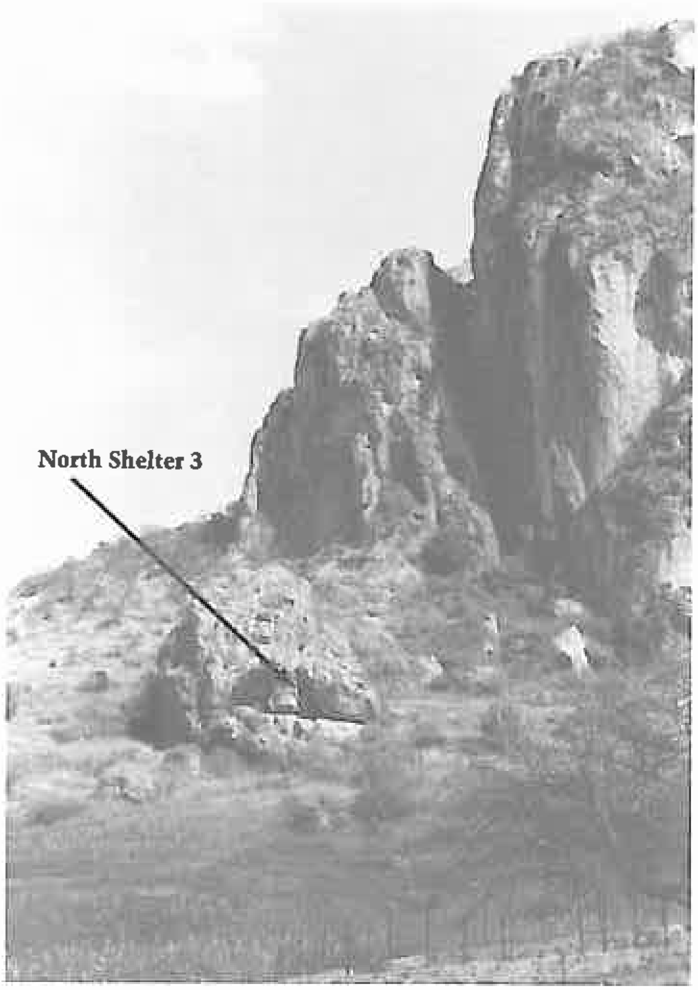


Figure 12.25. Rock mass at base of Cerro Delgado (*center foreground*) showing location of North Shelter 3.

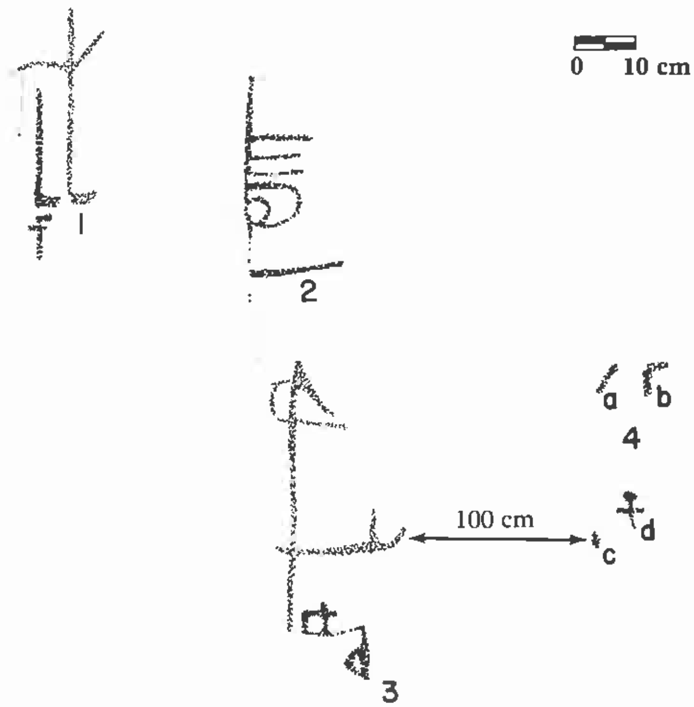


Figure 12.26. North Shelter 3: Area A paintings.

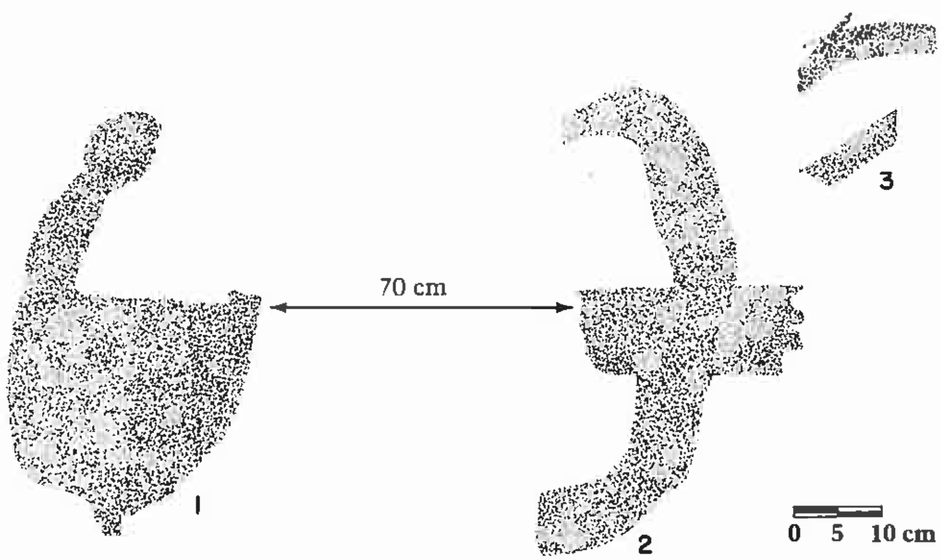


Figure 12.27. North Shelter 3: Area B paintings.

North Shelter 3

This shelter is part of a large rockfall cluster at the northern edge of T-20 (Fig. 12.25). A tall, narrow shelter is formed by the westernmost two rocks of the cluster, and pictographs occur at the west-facing mouth of the shelter and within the shelter itself.

Area A. Four pictographs are found at the mouth of the shelter on the right side (Fig. 12.26). Pictographs 1, 2, and 3 are complex, composed of linear elements which are difficult to discern clearly. Pictograph 4, 1 m to the right of nos. 1–3, is a cluster of four discrete elements, of which no. 4*d* is a simple cruciform stick figure.

Area B. Further inside the shelter, on the south wall, are paintings executed in

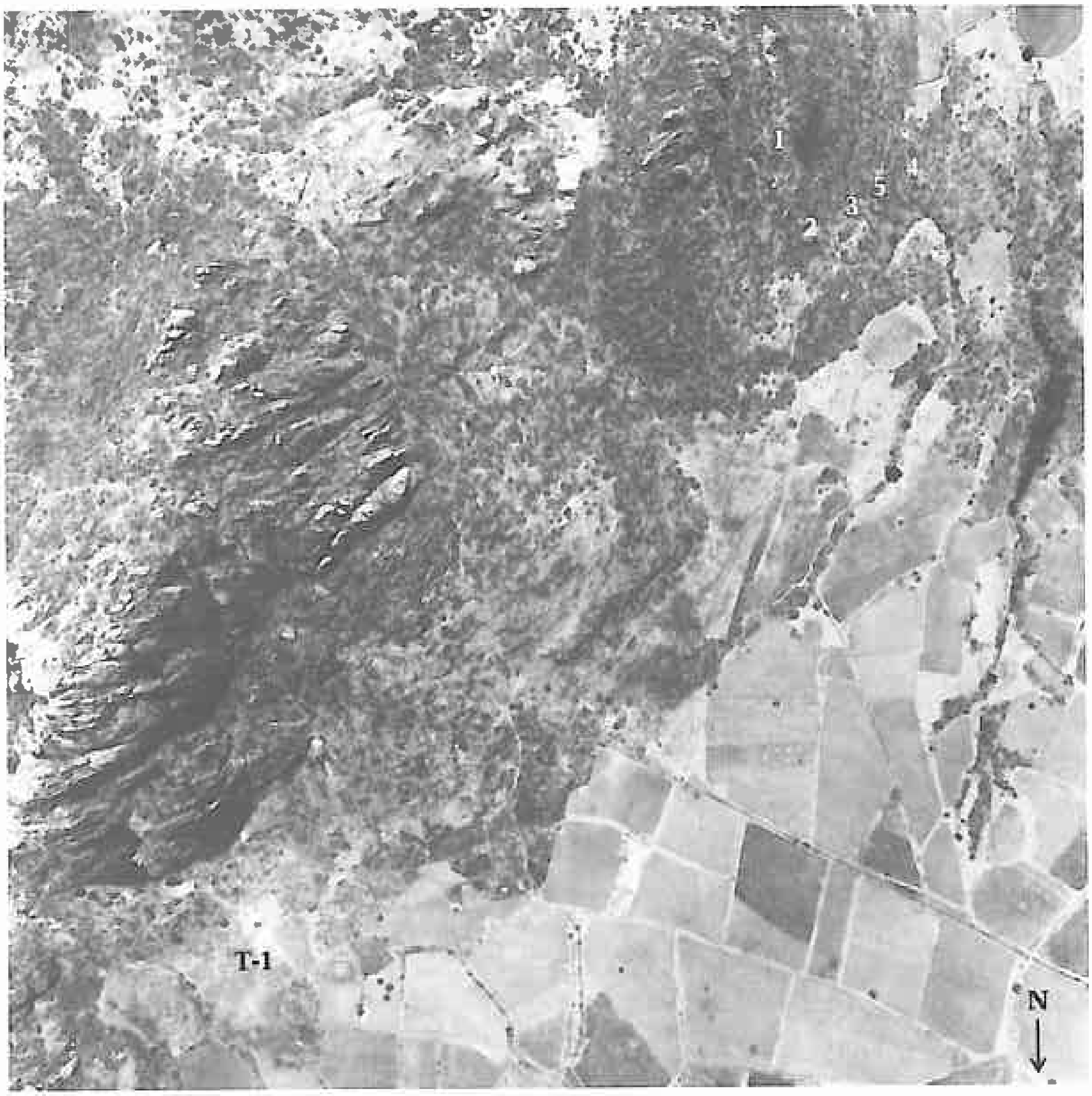


Figure 12.28. Aerial view of western side of Cerro Delgado showing locations of the South Shelters.

white pigment in relatively large, thick lines (Fig. 12.27). Pictograph 1 is a solid semicircle with a curved line coming up out of the left side, no. 2 is a curved line with a short perpendicular line intersecting it at its center, and no. 3 consists of two short lines.

The South Shelters

Rockfalls and minor outcrops of granodiorite occur in the field to the southwest of the Cerro Chalcatzingo, about 1 km south of the southernmost extent of the occupation zone, S-39 (Fig. 12.28). Of the "shelters" formed by these rocks and outcrops, we have found five with paintings (Fig. 12.29), all executed in red pigment, with one including superimposed white designs.

South Shelter 1

A west-facing shelter, on the boulder-jumbled western slopes of the Cerro Chalcatzingo, is formed by a massive stone slab resting at an angle of ca. 45° on several large boulders. The underside of the rock slab and several other rocks in this cluster are blackened by heavy carbon deposits, suggesting that the shelter had been utilized in the past. Spalled rock and smaller stones cover any traces of a possible occupation floor.

All of the nine pictographs in this shelter (Fig. 12.30) are painted in a dark red pigment. These paintings all occur on the side of one of the northern boulders supporting the shelter's massive roof slab. Pictographs 3, 4, and 7 are concentric circles (nos. 3 and 4 have three

Figure 12.29. South Shelters 1–5.

circles and no. 7 has two). Pictograph 1 is a small counterclockwise spiral; no. 5 is an outline funnel shape; no. 6 is a zigzag; and nos. 2 and 8 are vertical lines; and no. 9 is an irregular form. Paintings 1 and 2 are to the left of the main cluster.

South Shelter 2

This shelter, part of a massive boulder group about 300 m below South Shelter 1 and partially visible from S-39, has three clusters of red paintings, all executed on one large boulder in this group. Area A's pictographs occur on the boulder's north face, while those of Areas B and C are on the west face. The Area C pictographs are sheltered by a second, overhanging rock.

Area A. There are fourteen pictographs in this group (Figs. 12.31, 12.32). They include four groups of curved lines (nos. 1, 4, 5, and 8), three stick figures (nos. 2, 10, and 14, the latter two being relatively complex), a circle outline (no. 6), a small sunburst (no. 7), a slanted line (no. 9), four linear forms with right angles (nos. 11–14), and a splotch of pigment (no. 3).

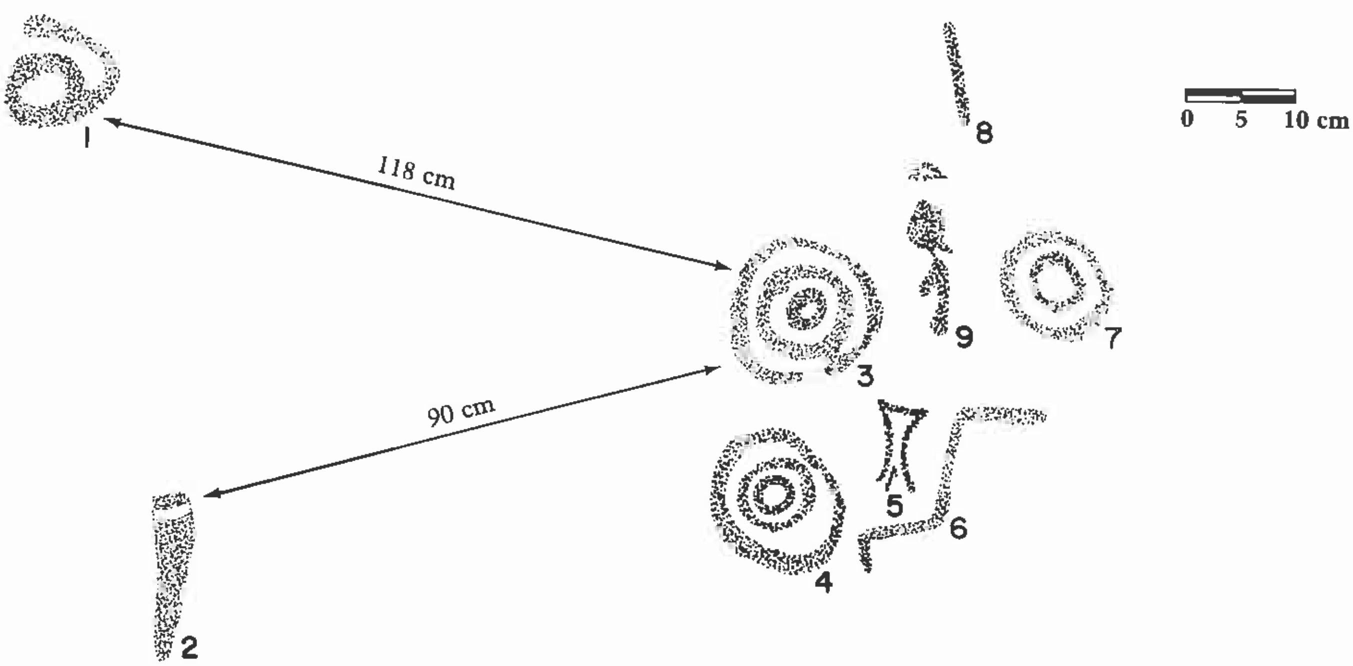


Figure 12.30. South Shelter 1 paintings.

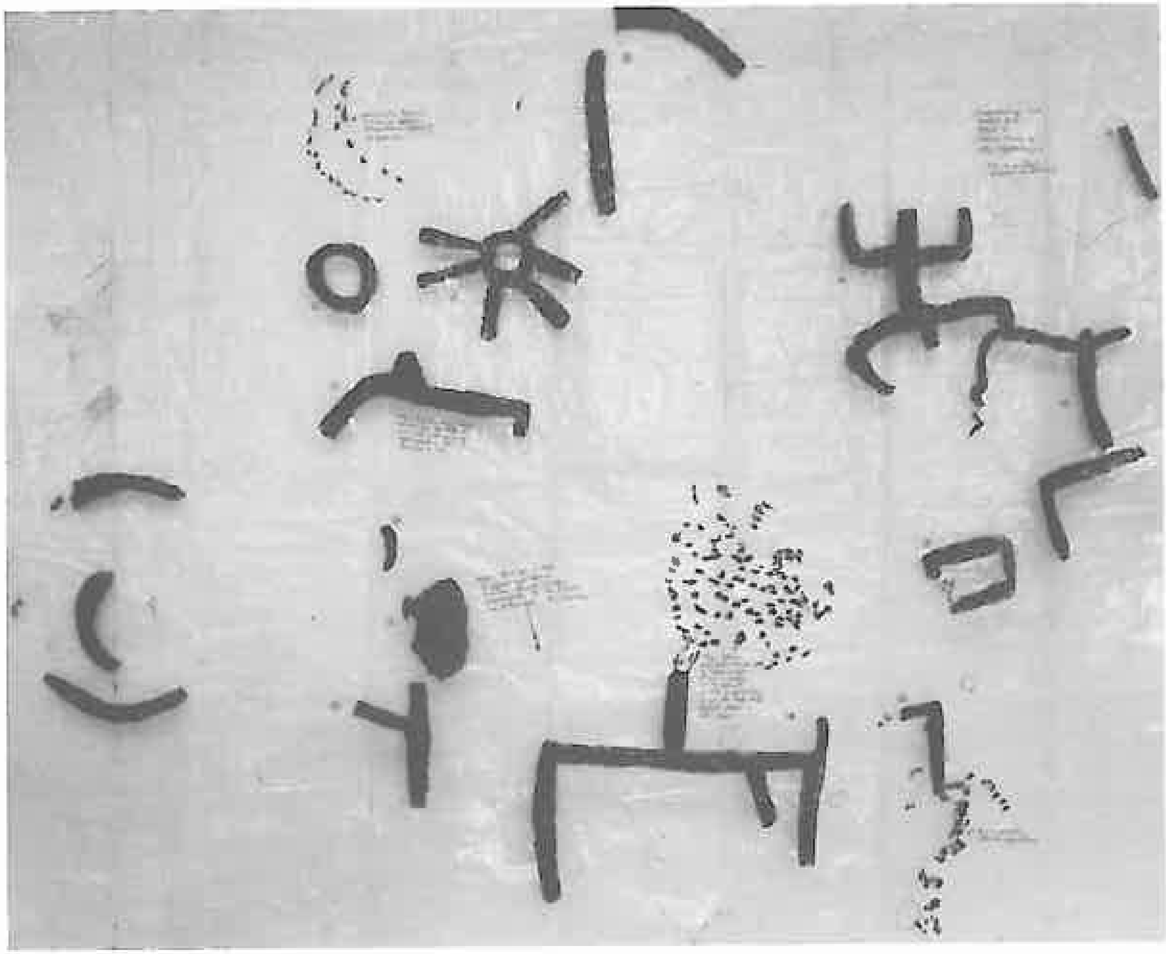


Figure 12.31. South Shelter 2: Area A paintings (pliofilm tracing).

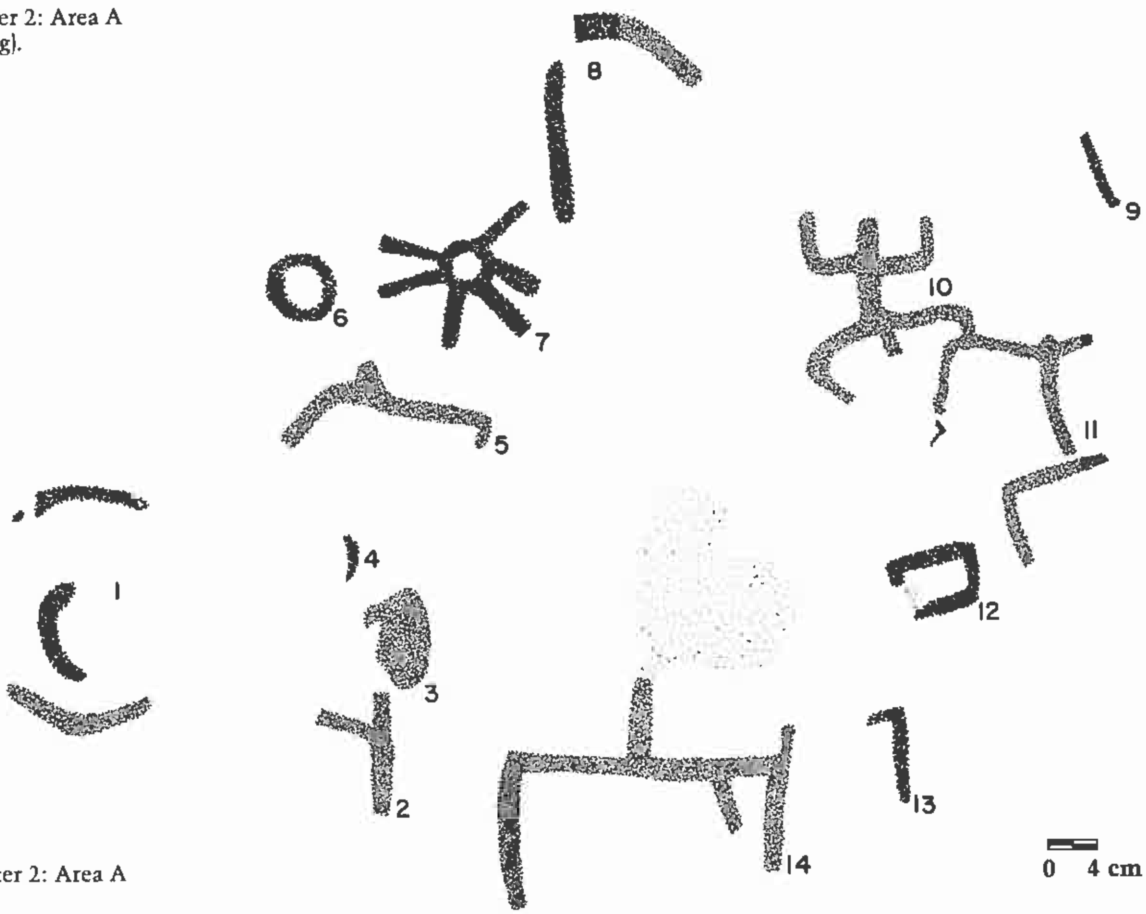


Figure 12.32. South Shelter 2: Area A paintings.

Area B. There are four pictographs in this group (Fig. 12.33). Pictograph 1 is a large, complex stick figure with six "fingers" at the end of each crossbar; no. 2 is a solid, upside-down funnel shape; and no. 3 is a symmetrical cluster of design elements. From top to bottom the elements of no. 3 are: *a,* a boat-shaped solid painting; *b* and *c,* crosses, one on each side of and below no. 3*a*; *d,* a microcluster of even smaller elements—rectangles, lines, and dots; *e* and *f,* lines that curve down and outward at the bottom of the cluster. Pictograph 4 is also complex. It is composed of an outline oval connected by a curved line to an outline crescent. Both outline shapes contain dots and lines within them.

Area C. Twenty-two pictographs are found in this area (Fig. 12.34). Pictograph 1 is a curved comb-like element atop an outline circle; no. 6 is three nesting squared-U motifs; no. 3 is a hook-shaped line with three associated dots; no. 2 resembles an upside-down small letter *e;* no. 7 is a cluster of small, vertically oriented curving and straight lines; no. 10 is an L-shape with a splotch of paint on one end; no. 12 is a cluster of small lines and splotches; nos. 5, 11, and 22 are short, straight lines; no. 14 is a thick, irregular vertical line; no. 15 is highly eroded, but was probably originally two concentric circles; no. 17 is a sunburst; no. 18 is a vertical line with downslanting lines coming off it on both sides; no. 19 is a backward C-shape, more incurved than a crescent; no. 20 is a stick figure; and no. 21 is a cluster of three vertical lines—the one on the right has other, perpendicular lines attached and is thus a stick figure as well. There are also five small crosses (nos. 4, 8, 9, 13, and 16).

South Shelter 3

Near the base of the hill slope, about 100 m below South Shelter 2, is another large boulder group, again with a west-facing overhang that creates a shelter. Some traces of red pigment can be found on the outer surface of the overhang near the shelter's south end. Within the shelter are several faded splotches of red pigment. The only identifiable pictograph in the shelter's south end is an outlined circle within which is a smaller, solid circle (placed off-center, Fig. 12.35). In the north section of the shelter a cruciform pictograph (not illustrated) occurs at the right edge of a small but deep concavity in the rock.

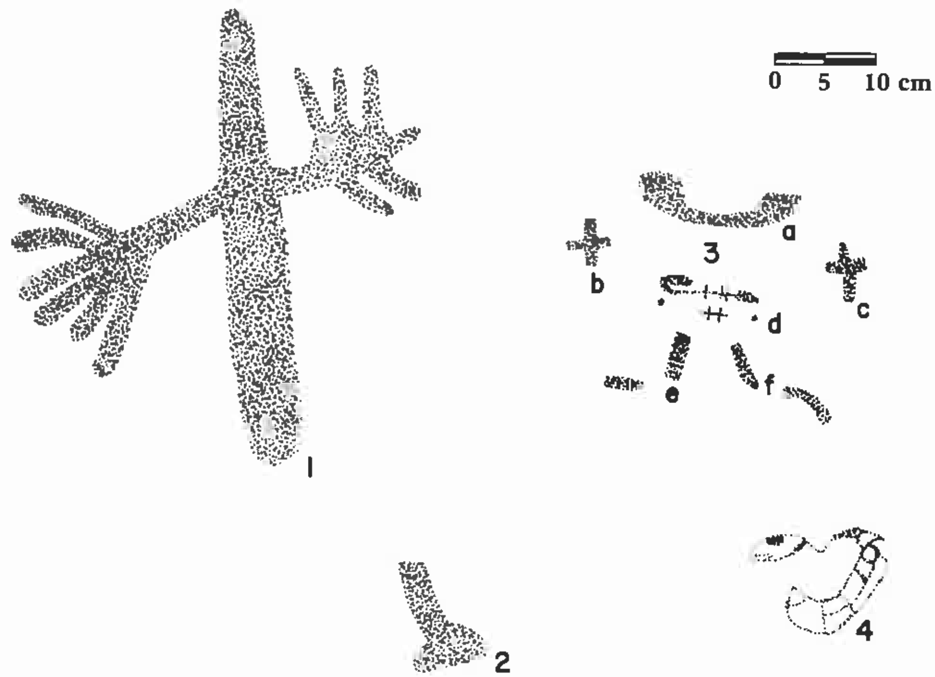


Figure 12.33. South Shelter 2: Area B paintings.

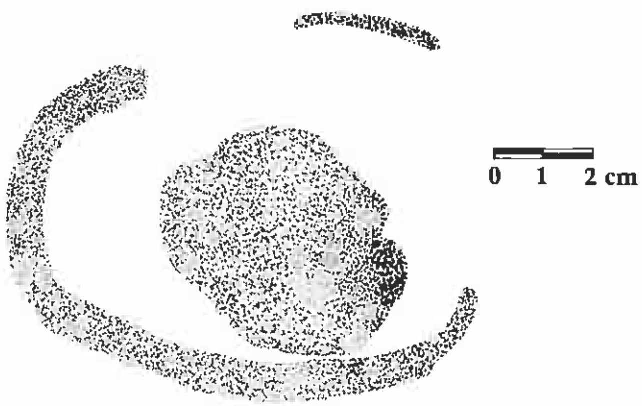


Figure 12.35. South Shelter 3 painting.

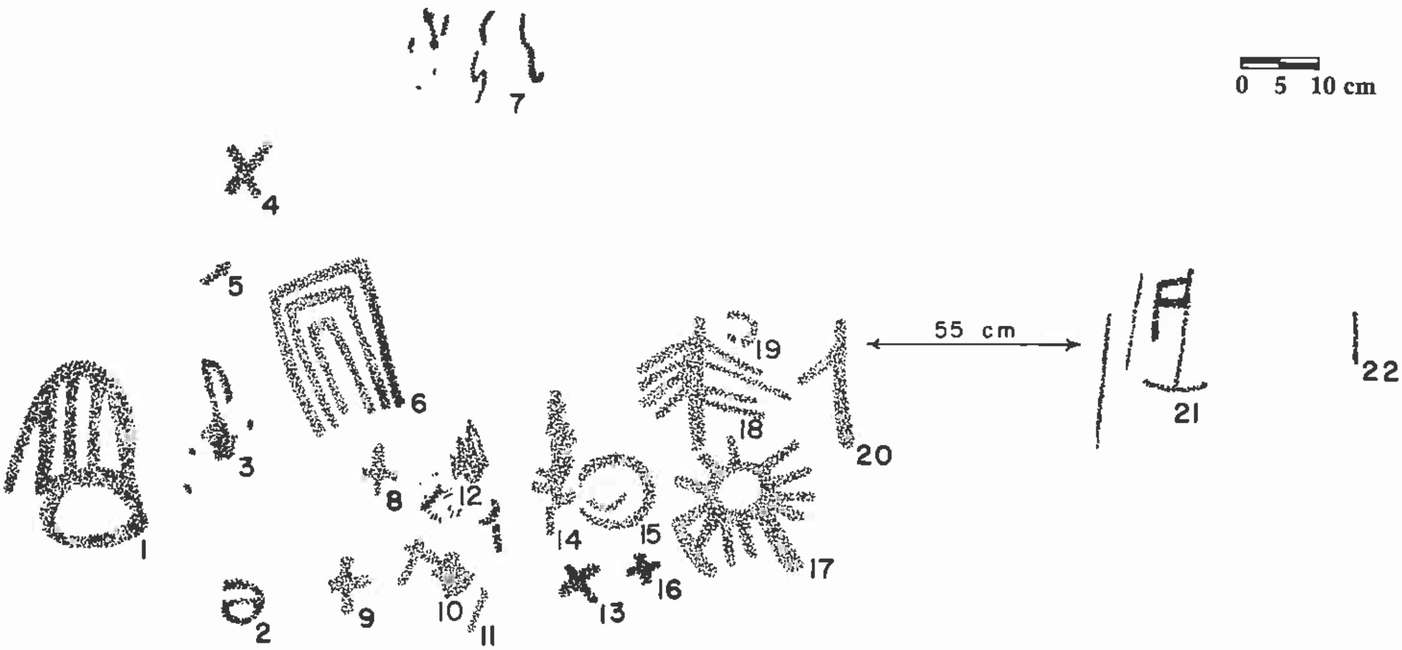


Figure 12.34. South Shelter 2: Area C paintings.

South Shelter 4

Between South Shelter 3 and the small creek is a group of massive boulders. The angular sloping west face of the huge central boulder forms a tall but shallow shelter. The only painting discernable here occurs at the south edge of the overhang and consists of five faded vertical parallel red lines (not illustrated). The lines were each originally about 16–18 cm in length (three have been partially destroyed by exfoliation of the stone), and about 1–2 cm wide. They are spaced 3–4 cm apart.

South Shelter 5

This shelter, about 40 m south of Shelter 4, is actually a deep cave formed between two great boulders. The cave, which contains bats, can be entered only from the south. Unlike the other South Shelters, the two painted areas here occur on the eastward-facing wall. The innermost painted area is too faded to discern any motifs, and only traces of red pigment can be noted. The painted area nearest the entrance, also in red and likewise faded, does include a recognizable positive handprint (not illustrated). White paintings with no clear motifs are superimposed over the red pictographs.

The Cerro Delgado Caves

Because of their extremely difficult accessibility, the upper cliffs and caves of the western face of the Cerro Delgado and the plateau on the eastern side of the *cerro* represent site areas seldom visited by anyone in recent years. One very agile villager discovered a way to scale the lower western cliff faces, thus gaining access to firewood sources not available to most villagers. In 1973 he informed the project directors that paintings existed in the caves visible high on the upper portions of the *cerro*'s western face. With the aid of a rope, Grove climbed the *cerro* with the informant and viewed the paintings in Caves 3 and 19. More paintings were found by the informant in subsequent weeks, further ascents were made, and serious investigations of the Cerro Delgado caves were begun.

From the access area, after the initial climb up the sharply sloping cliff face, the path to the upper western face of the *cerro* follows a series of narrow ledges. In some areas the ascents between ledges are aided by small pecked steps and hand-holds which are apparently prehispanic, indicating that the project's route was the original highly treacherous and defensible route used in the past. Several of the ledges midway up the *cerro* are wide and sheltered by overhanging cliff faces; these have a surface scatter of artifacts, including stone grinding tools and sherds (e.g., Cave 22). Occupation debris also occurs in several of the caves situated adjacent to the upper talus area high on the *cerro*.

The cave area is still inaccessible to visitors today. The ascent is dangerous and should not be attempted without proper equipment, a skilled guide, and the permission of INAH.

The numbering system used in the following description of the painting groups derives from reconnaissance, collecting, and investigation of the caves. The numbers were assigned to the caves in the order in which they were studied and not for their convenience in discussing the painted art. The discussion below will first consider paintings on the western cliffs (Caves 3, 5, 6, 7, 19, 20, 23, 24, and 25) (Fig. 12.36). This will be followed by a discussion of the eastern plateau and painted Caves 1, 2, 9, 12, and 16 (Fig. 12.37).

Western Caves

Cave 3: The red painted designs here are restricted to one area of the cave's sharply sloping back wall, slightly above the present level of the cave floor. They occur in two groups:

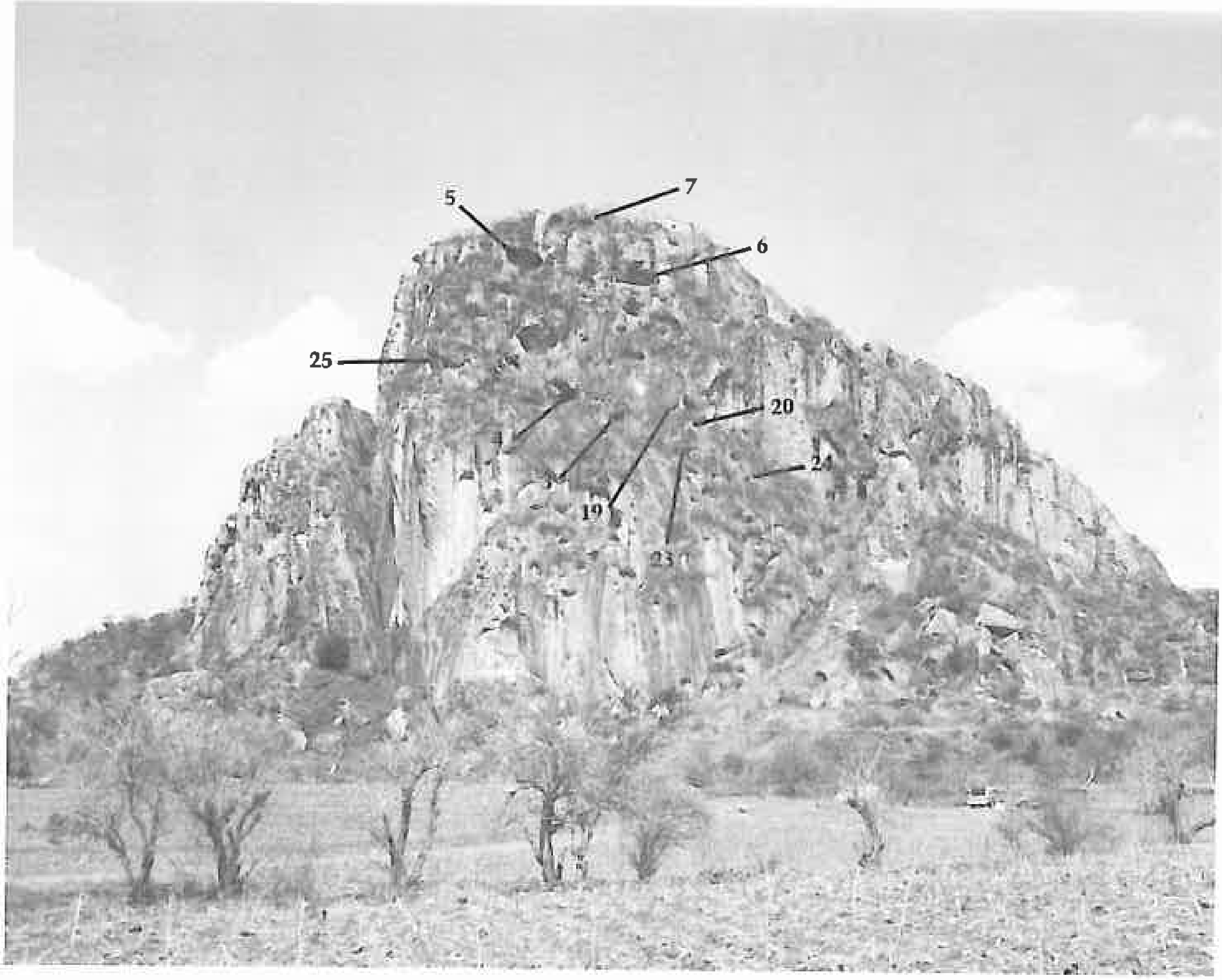


Figure 12.36. Western face of Cerro Delgado showing numbered caves.

Figure 12.37. Eastern face of Cerro Delgado showing numbered caves. (Caves 9 and 12 are not shown.)

Area A. There are six pictographs here (Fig. 12.38): no. 1 is a child's solid positive left handprint; no. 2 is a splotch of paint; no. 3 consists of two stick figures connected by a long horizontal line; and nos. 4, 5, and 6 are stick figures which are more anthropomorphic-zoomorphic than those previously described from other areas of the site. Pictograph 4 may represent a lizard or other long-tailed four-legged animal, and nos. 5 and 6 appear to be human representations.

Area B. This area is about 30 cm below Area A, and has seven pictographs (Fig. 12.39): nos. 1 and 7 are solid splotches of paint, although no. 1 may once have had a discernible shape; nos. 2, 3, 4, and 6 are anthropomorphic stick figures like those in Area A (above), no. 6 having a semicircular "plumed" corona above the figure; and no. 5 is a sunburst with a dot in the center and an elongated lower ray.

Cave 5: This cave, one of the uppermost on the *cerro*, is deeper than caves 6 or 7, the two other high caves. Cave 5 is below and to the left of Cave 7 (see Fig. 12.36). Its mouth is about 12 m tall and 10 m wide, and the cave has a depth of ca. 14 m. There are ten pictographs here, occurring in two groups:

Area A. This group, near the left side of the cave mouth, has three pictographs (Fig. 12.40): no. 1 is a solid circle with three outline lobes attached to it in a petal-like fashion. Due to weathering, the base and right side of this pictograph cannot be discerned. Pictograph 2 is a positive, solid right handprint with a small solid circle near the thumb, and no. 3 is a negative adult right handprint.

Area B. This group is near the rear of the cave and consists of seven pictographs (Fig. 12.41): nos. 1 and 2 are negative adult right handprints (no. 2 includes negative lines on two sides of the hand); no. 3 is an elongated oval and associated dot; nos. 4 and 5 are a child's left and right positive handprints, which may have belonged to a single individual; and no. 7 is two parallel lines. Pictograph 6 is extremely complex. It is a composite design with two symmetrical linear element clusters (*a* and *b*): no. 6*a* is composed of three vertical lines topped by a comb-like element that projects out to the sides, and its center is crossed by horizontal lines; no. 6*b*, partially destroyed by spalling, is composed of one vertical line topped by a comb-like element, with a horizontal line intersecting the vertical line near its base. Clusters

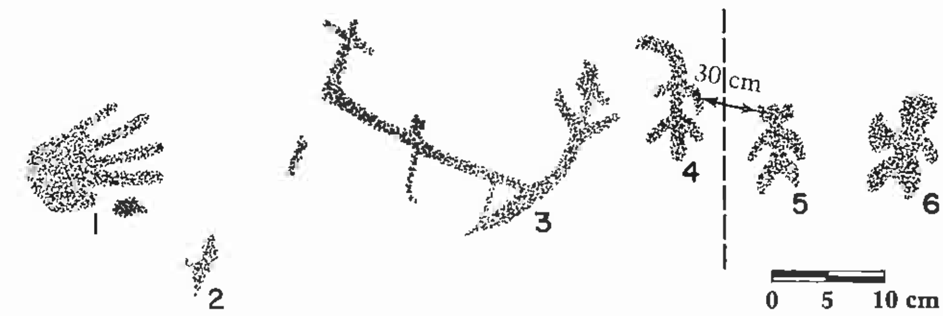


Figure 12.38. Cave 3: Area A paintings.

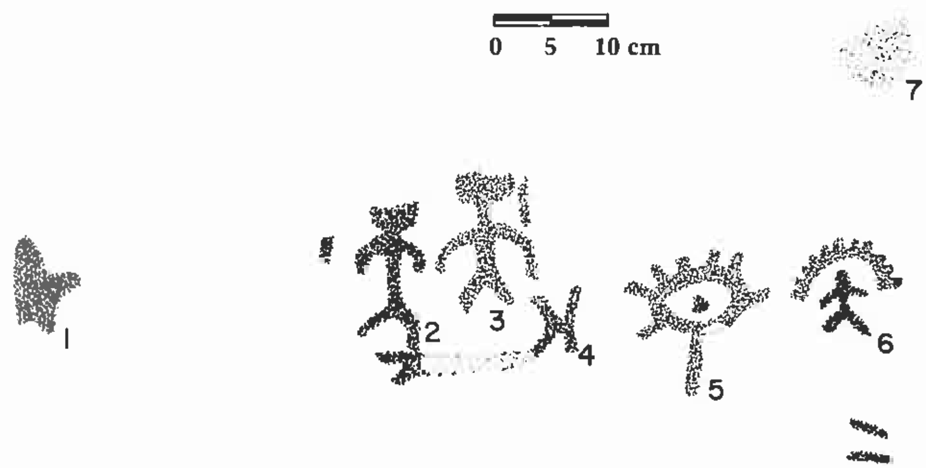


Figure 12.39. Cave 3: Area B paintings.

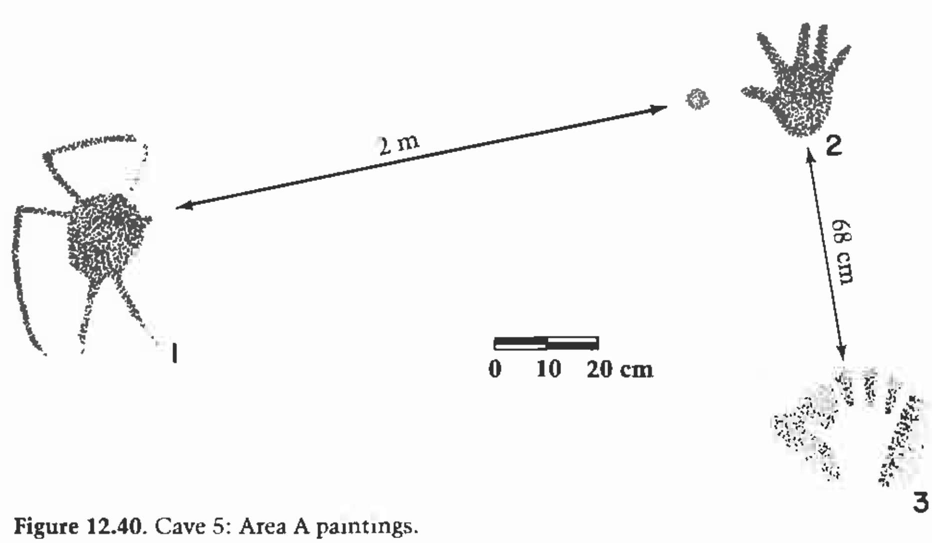


Figure 12.40. Cave 5: Area A paintings.

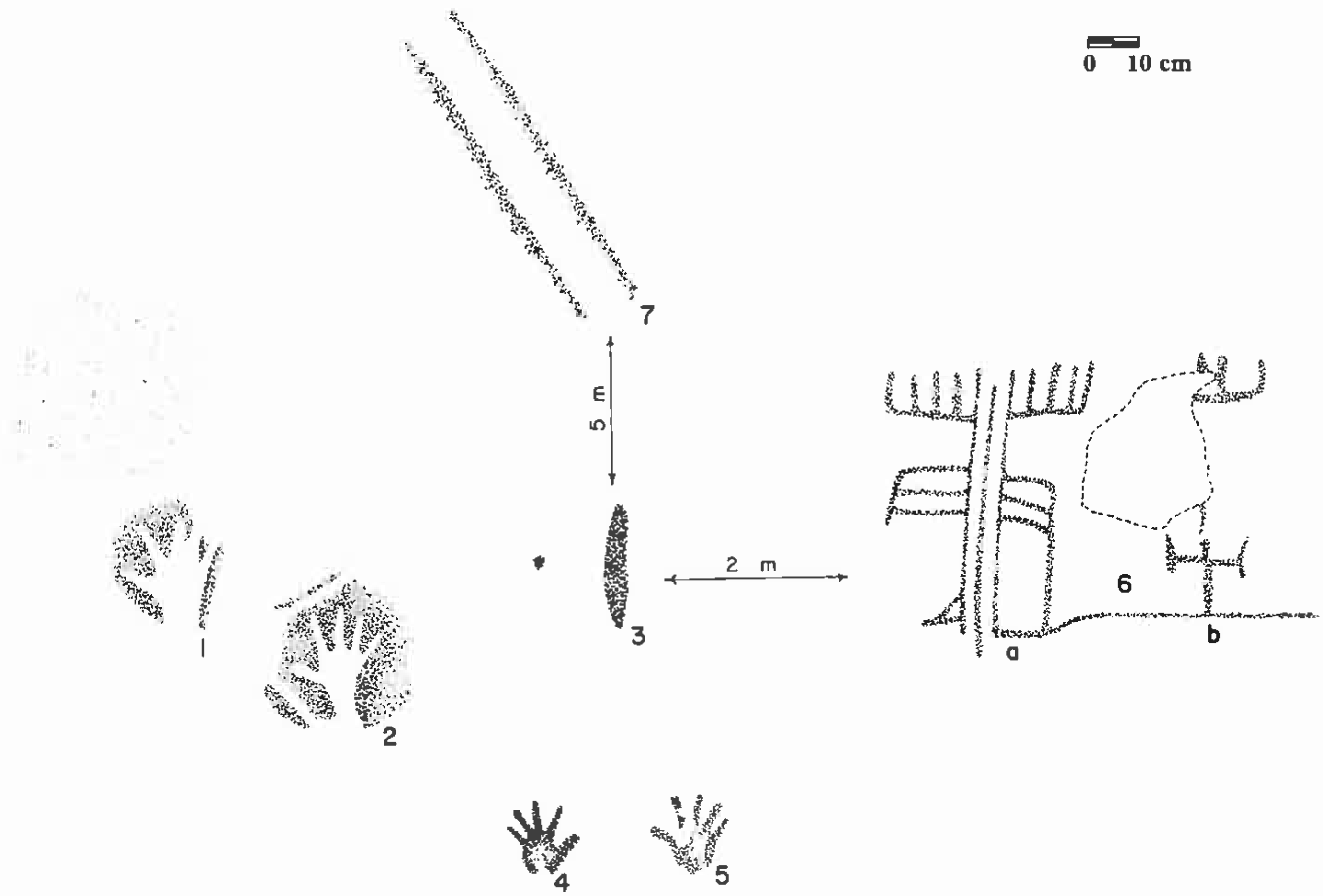


Figure 12.41. Cave 5: Area B paintings.

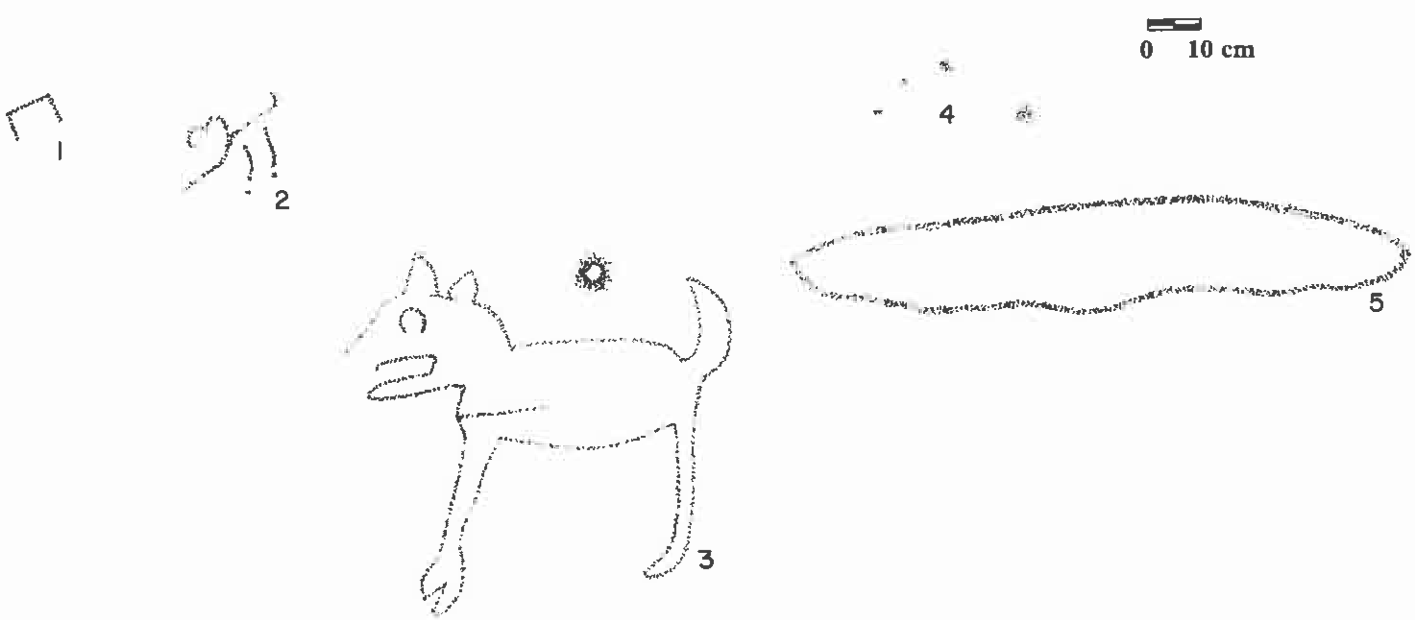


Figure 12.42. Cave 6: Area A paintings.

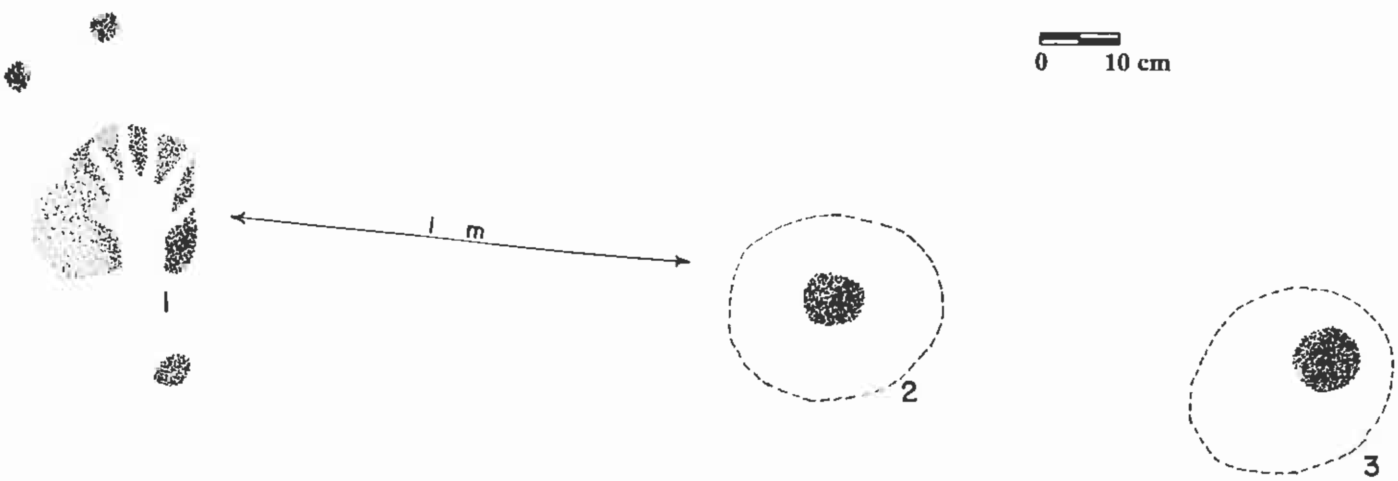


Figure 12.43. Cave 6: Area B paintings.

6*a* and 6*b* are connected by a horizontal line at their bases.

Cave 6: Access to this cave crosses a small natural reservoir of water immediately to the north of the cave. Some traces of paintings occur in this area. Spots of thrown paint are found high on the sloping cave ceiling. Eight pictographs in the cave, painted in red, occur in two groups:

Area A. There are five pictographs here (Fig. 12.42): no. 1 is an inverted squared U shape; no. 2 is a cluster of straight and curved lines which slightly resemble a monkey; no. 3 is an outline drawing of an animal which, although resembling a dog, has a cloven front foot suggesting the hoof of a deer, and an outline circle is above the animal's back; and no. 4 consists of four solid dots above a shallow niche outlined in red, which is no. 5. Pictograph 3 deserves some comment. Although the similarities are perhaps coincidental, three deer depicted in the *Codez Tro-Cortesianus* (1967:45, 46) are shown associated with sun-like elements which could represent a star or planet, and Grove (personal communication) has seen a similar theme in a pictograph near Chilapa, Guerrero.

Area B. Three pictographs are in this grouping (Fig. 12.43): no. 1 is an adult right handprint in negative with two solid circles above it and one below; and nos. 2 and 3 are solid circles placed within individual concavities in the cave wall.

Cave 7: This shallow cave is only about 14 m below the top of the *cerro*. It faces northwest but is almost entirely hidden from view from the site by a projecting section of cliff (see Fig. 12.36). The cave has two parts: Area A is the cave itself, while Area B is a shallow niche on the north side of the cave's mouth (Fig. 12.44).

Area A. Three pictographs occur in this section of the cave, as well as a large area of red pigment to the left of the pictographs. Pictograph 1 is a simple profile of a human head and shoulder; no. 2 is a zoomorphic stick figure which is unusual because it is painted in yellow; and no. 3 is a complex design composed of several elements including two outline circles with dots inside, two symmetrical L-shaped elements, and an inverted U shape.

Area B. There is only one pictograph here, but surprisingly it is a relatively realistic profile representation of a human head. Although the head has some attributes which make it appear similar to some Olmec depictions, there is no evidence to suggest that the painting is Formative period or Olmec-influenced.

Cave 19: The red paintings in this very shallow cave were first recorded by Grove during the initial investigations on the *cerro*. They are far more elaborate and sophisticated than any others known so far from Chalcatzingo or the general region (Fig. 12.45).

Pictograph 1. This painting is at the north end of the cave in a position which exposes part of it to weathering and mineral deposits. The design, 45 cm in height, is composed of two ovate lobes, each containing a small circle and a curvilinear segment. It is possible that a third lobe occurred on the left side of the painting but has faded and become covered by white mineral deposits. At the center of the design is a mouth-like motif with "teeth" and two streamer-like lines issuing downward and possibly representing a tongue. Comments on this follow the description of Pictographs 2 and 3.

Pictograph 2. The most elaborate of the three pictographs, this painting could represent a name or place glyph. Some 60 cm tall, it can perhaps best be described in terms of human anatomy, for it resembles a human torso, neck, and head. The uppermost element in the painting is a five-plumed feather headdress. This sits atop a disk of two concentric circles, the inner circle having hatch marks around its inner circumference. The "neck" area is composed of three elements: a central rectangular "neck" and a slightly outcurving "collar" on each side. All three elements contain diagonal bands. The "torso" area is dominated by a large semicircular four-strand necklace and oval with interior hatch marks. Each strand of the necklace contains five spaced circular bead-like elements. A large spear-shaped object hangs from the bottom of the necklace. Each "arm" of the torso is a rectangular element containing designs which are not discernible.

Pictograph 3. This painting initially aided the identification of the three pictographs as probably Classic period in

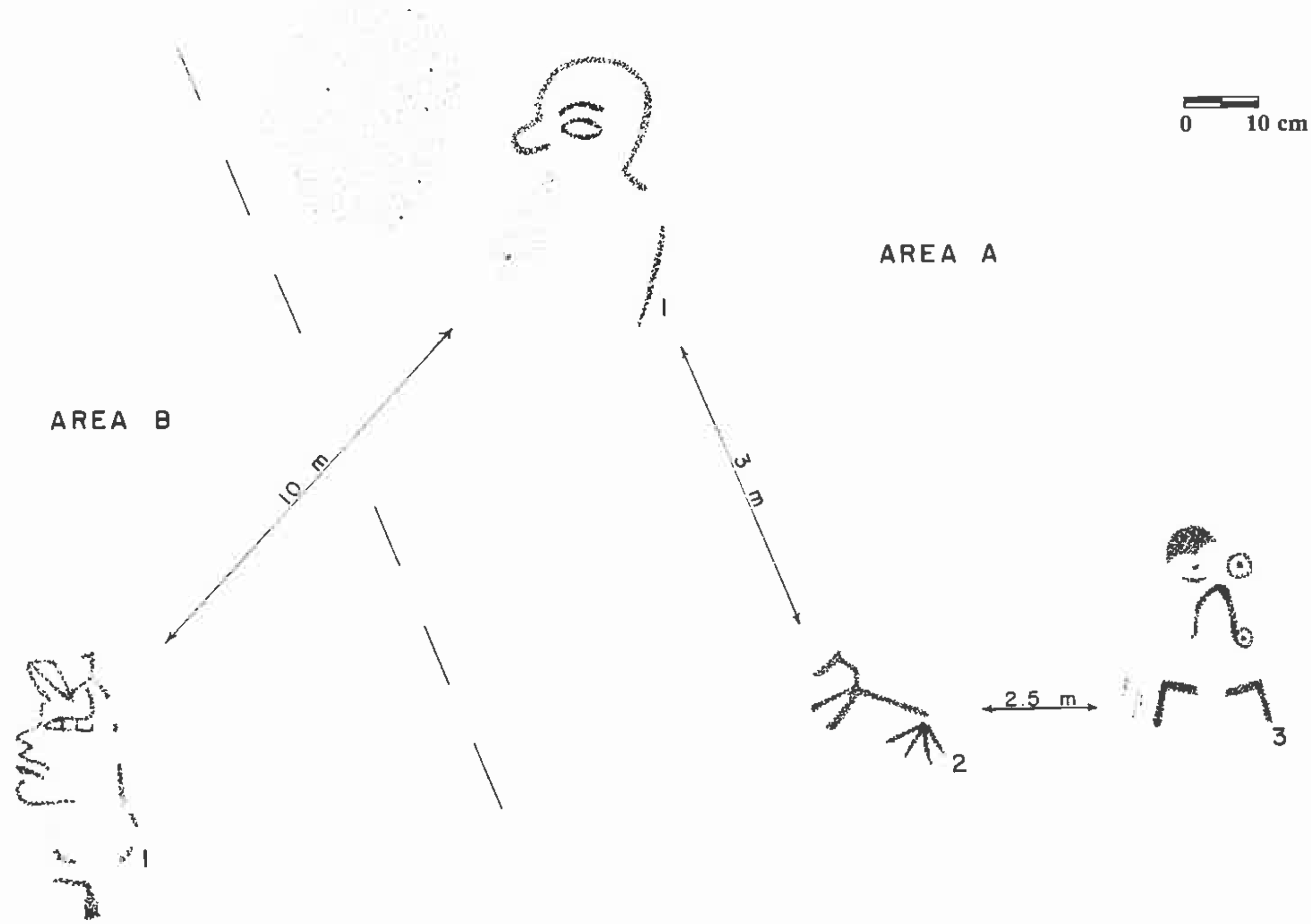


Figure 12.44. Cave 7: Areas A and B paintings.

Figure 12.45. Cave 19 paintings.

date. It is an inverted U-shaped band which varies in width from 17 to 25 cm, depicted by two parallel lines. Within the band at least five five-pointed star motifs are visible. Each star contains a circle at its center. This star motif is common in Teotihuacan art (see, for example, Miller 1973) and is also found at Cholula (Marquina 1970: Pls. 2, 3). Such stars at Teotihuacan usually occur within undulating "water" bands or similar water contexts (e.g., Fig. 12.46), as in Pictograph 3.

With the initial discovery of the three elaborate red paintings high on the Cerro Delgado, attention was focused on Pictographs 2 and 3; no. 2 because it was elaborate and no. 3 because of its similarities to Teotihuacan paintings. During subsequent analysis of the site's paintings, it became apparent that no. 1 is not unique and that it is essentially identical to Teotihuacan mountain glyphs. The mountain glyph is usually a trilobal motif, each lobe containing a circle and often a curvilinear element (Von Winning 1961: 128, Fig. 1v). Such glyphs occur on Teotihuacan ceramics (Kubler 1967: Figs. 30, 36; Séjourné 1966: Figs. 66, 160) and in at least one instance on a Teotihuacan mural (Miller 1973: Figs. 133, 134).

Pictograph 1 is the same motif except that it may be bilobal. Careful examination of the rock did not reveal any red painting where a third lobe should be, and it is possible that Pictograph no. 1 is purposely a bilobal mountain glyph. If this is the case, then it seems reasonable to suggest that the purposeful rendering of only two lobes identifies this particular glyph with the two mountains which are Chalcatzingo's landmarks. The right lobe is depicted as larger than the left, a parallel to the actual size differences in the two *cerros*.

The mouth-like motif below the bilobal glyph makes good iconographic sense, for in this context it would symbolize a cave, and the Cerro Delgado has numerous caves and niches. The streamer-like scrolls associated with the mouth motif are also found in Teotihuacan art and with similar symbolism. For instance, the major figure above the famous Tlalocan mural at Tepantitla (Fig. 12.46) is interpreted by Esther Pasztory (1972: 150) as containing cave symbolism. It includes iconographic motifs which also are found in Pictographs 1 and 3 on the Cerro Delgado: mountain-glyph-like motifs at the side of the bird head in the elaborate headdress, streamer-like scrolls issuing from the mouth, and numerous star motifs.

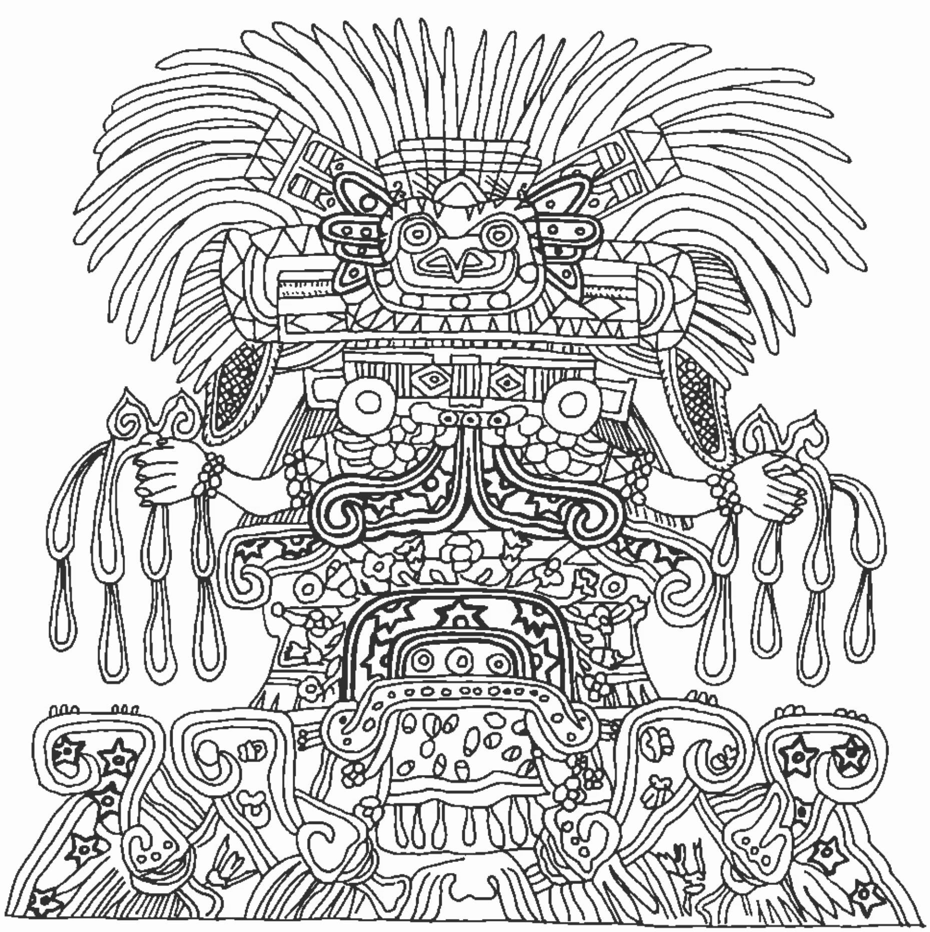


Figure 12.46. Teotihuacan mural with features comparable to Cave 19 paintings highlighted.

The interpretation of Pictograph 2 is more problematical. While originally the thought was that it might represent the glyph of Chalcatzingo's "site name," Pictograph 1 now seems a more likely candidate. Without doing a detailed analysis of individual elements in the painting, a few points should be mentioned. The three elements comprising the "neck" area are similar to Xochicalco renderings of the *acatl* (reed) glyph (Sáenz 1964: Fig. 2 [B8, C1]; Pl. 3 [B5, D14]; Pl. 4 [B5, B6, B8, C10, C11, D15]). The base of the glyph is dominated by a pendant V-shaped element. This element also occurs at Xochicalco as both the "flint knife" glyph and the "solar ray" glyph (Sáenz 1964: Fig. 3 [C8, C10, D17]). The Chalcatzingo example points downward in the "solar ray" position.

The similarities of Pictographs 1 and 3 to Teotihuacan symbols is unquestionable. Pictograph 2, at least outwardly, appears more similar to Xochicalco glyphs. This situation may be clarified as more research is carried out at both Xochicalco and Teotihuacan.

Cave 20: A stick figure with a diamond-shaped head (no. 1), two curvilinear paintings (nos. 5 and 6) which may have originally been parts of a larger design, and three small elements (nos. 2, 3, and 4) occur within this cave (Fig. 12.47).

Cave 23: There are two pictographs here (Fig. 12.48). The major painted design (no. 1) is composed of a stick figure made of one vertical line crossed by two outline ellipses, all surrounded by an outline generally conforming to the shape of the stick figure. Pictograph 2 (not illustrated) was not very clear but might be the handprint of a child.

Cave 24: A faded painting with vertical linear elements occurs within this cave, but the design could not be ascertained.

Cave 25: A horizontal row of dots is found in a long shallow concavity on the southeast wall of the cave.

Eastern Caves

The eastern side of the Cerro Delgado, which overlooks the Tetla archaeological area, is composed of three sections: cliff faces forming the lower portion of the hill, a long plateau above the cliffs which slopes upward toward the summit of the *cerro*, and another group of exposed rock faces near the summit (Fig. 12.37). Caves are found in the lower cliffs and in the rock faces near the summit. There is a heavy concentration of sherds on the plateau area, primarily Early Postclassic in date, and there also is a small mound structure at the summit. Due to the *cerro's* configuration, the summit is at the northwestern edge of the mountain. Pecked hand-holds on the lower east cliff face provide access to the plateau, although after centuries of weathering they are extremely precarious today.

Caves 1, 2, and 16 are on the lower cliff face. Cave 2 is one of the few dry caves encountered on the *cerro*. Caves 9 and 12 are in the rock exposures above the plateau and near the summit. All of the caves face eastward or northeastward.

Cave 1: There are two pictographs on the back wall (Fig. 12.49): no. 1 is a stick figure, anthropomorphic, with an enlarged solid oval head with short lines radiating out of the upper half; and no. 2 has its center section missing due to spalling, so the design is not identifiable.

Cave 2: There is only one discernible pictograph, a child-size positive right handprint, solid, located on the northern side of the cave entrance (Fig. 12.50). Pigment traces occur in other areas of the cave but are difficult to make out.

Cave 9: Five pictographs were found here (Fig. 12.51). Pictographs 4 and 5 (not illustrated) are negative red handprints; no. 4 is a left handprint, and no. 5 is apparently a partial negative outline of the finger area of a hand. Pictograph 1 is a solid circle between two short verticle lines; no. 2 is an outline circle with an X in the center; and no. 3 is a grouping of linear elements.

Cave 12: A red handprint occurs on the ceiling of this cave.

Cave 16: A large (ca. 1 m tall) simple anthropomorphic figure from about waist up, in frontal view, was found about 3–4 m high on the wall of this cave. It was too inaccessible to sketch clearly.

The Barranca Paintings

The Río Amatzinac runs in a deep barranca east and south of the site behind the two *cerros*. Access to the barranca near the site occurs in only three places: one where the site's small spring-fed stream enters the barranca, another at Tetla north of the major pyramid complex, and the third at the south end of Tetla. The colonial road to the town of Tenango, which passes through Tetla, crosses the river at this last point.

Three groups of paintings were found in the barranca near Chalcatzingo (Fig. 12.1), and all are executed in white pigment. Informants report other barranca paintings near Jantetelco, to the north.

Area A

This pictograph group occurs in a cave on the east side of the barranca just north of the point where the site's spring-fed stream enters the barranca (Fig. 12.52). The cave is located about 4 m above normal river level and would probably be dry even in times of flooding. There are four pictographs spaced at intervals around this cave (Fig. 12.53): no. 1 is a triangular clockwise spiral just inside the north mouth of the cave; no. 2 is a cluster of dots and two lines on the north wall; no. 3, near the rear of the cave, is a "butterfly antenna" motif associated with dots arranged symmetrically on either side, painted in a small concavity formed by the removal of a cobble from the wall (Fig. 12.54); and no. 4 is a small outline drawing of a four-legged animal, executed on a cobble which protrudes from the cave wall near the south side of the entrance (Fig. 12.55). White pigment traces on the cave walls indicate that other pictographs may once have also existed in this cave.

Areas B and C

Two groups of barranca paintings occur on the east side of the Río Amatzinac, downriver from the southernmost access to the Tetla zone, about 1.5 km southeast of the Area A paintings (see Fig. 12.1).

Area B: The two pictographs here are painted within a deep niche just below the rim of the barranca, at a point near where the barranca makes a sharp bend to the south. Pictograph 1 is an undulating line, and no. 2 is a small circle (Fig. 12.56).

Area C: Below the sharp bend in the barranca and Group B, the river straightens prior to beginning another sharp meander loop. The pictographs occur in the section where the river is running straight

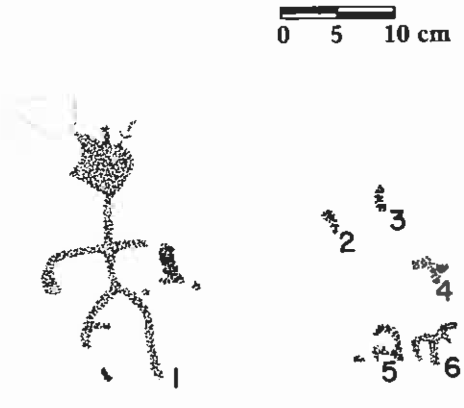


Figure 12.47. Cave 20 paintings.

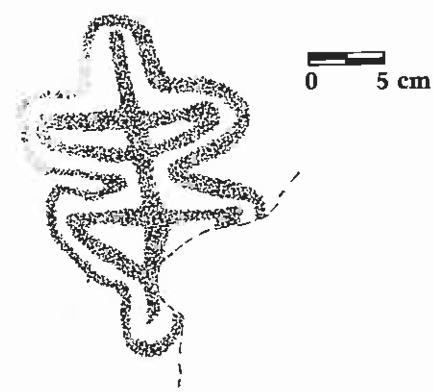


Figure 12.48. Cave 23 painting.

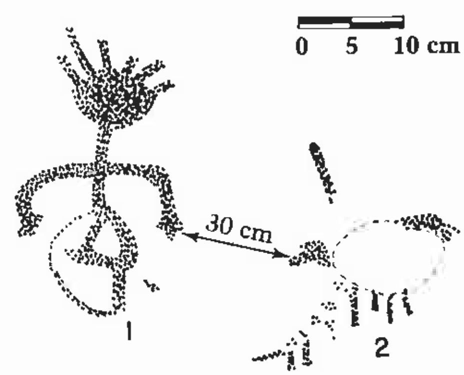


Figure 12.49. Cave 1 paintings.

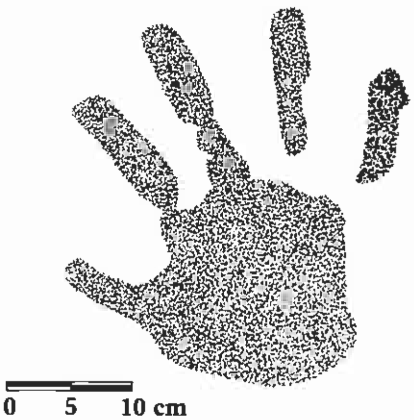


Figure 12.50. Cave 2 red handprint.

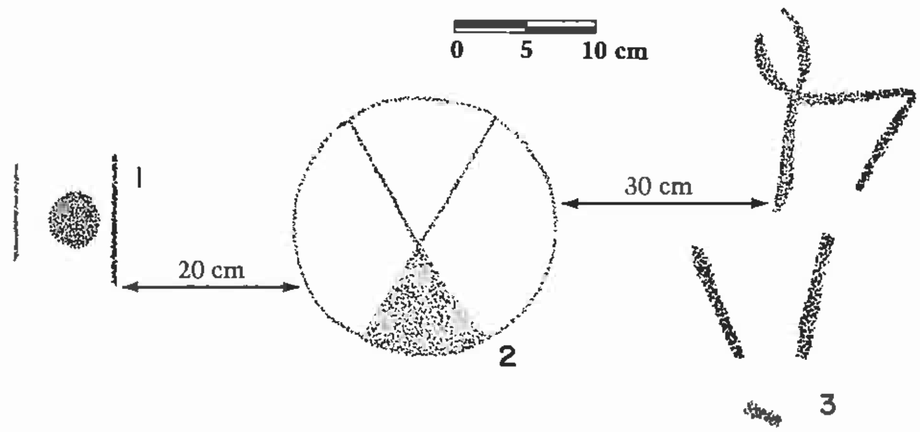


Figure 12.51. Cave 9 paintings.

Figure 12.52. Barranca Area A cave.

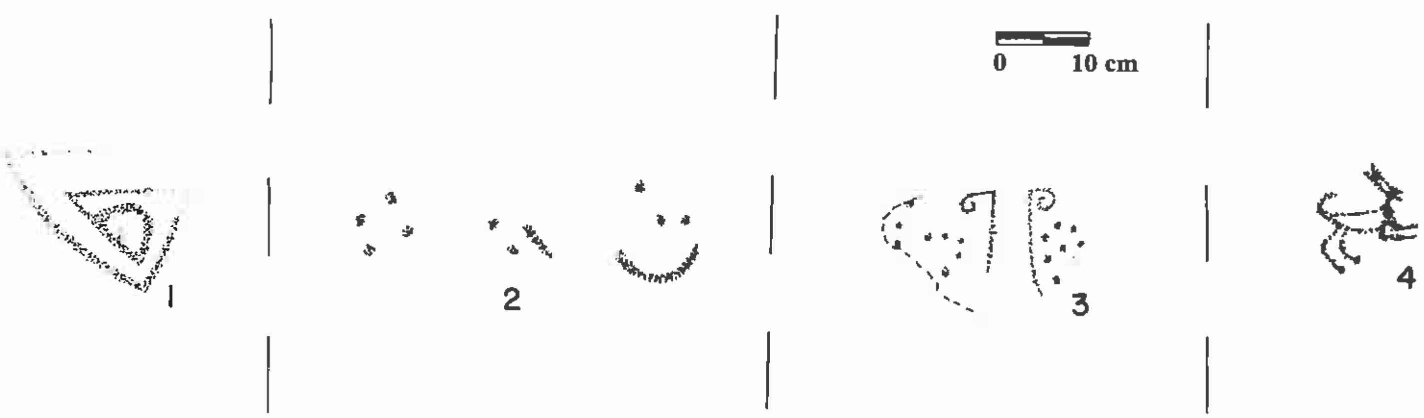


Figure 12.53. Barranca Area A paintings.

Figure 12.54. Barranca Area A painting no. 3.

Figure 12.55. Barranca Area A painting no. 4.

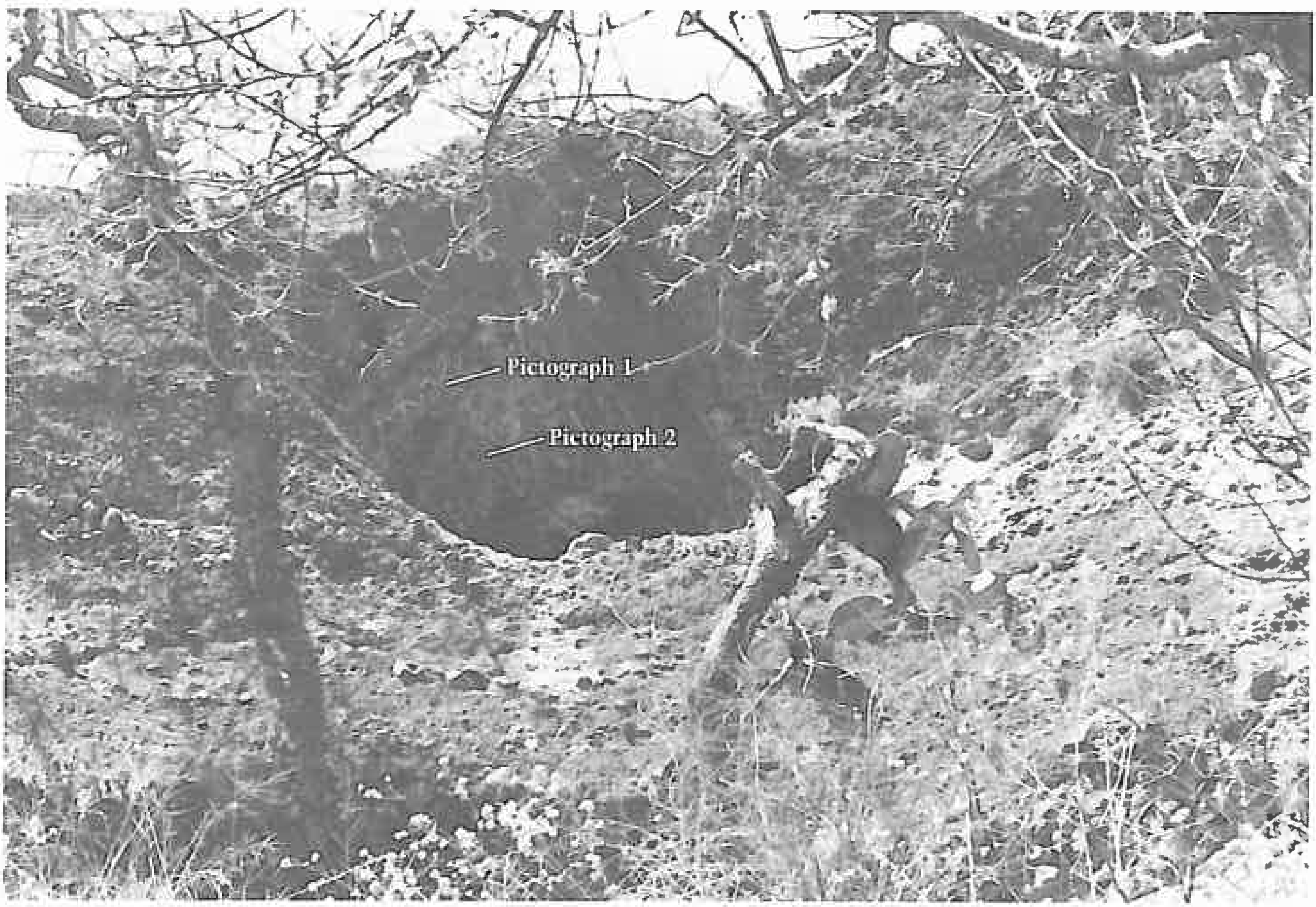


Figure 12.56. Barranca Area B: painting on upper left portion of cave.

Figure 12.57. View of Barranca Area C.

and are painted on various cobbles and boulders in the conglomerate strata on the northeast barranca wall, about 10 m above the river level (Fig. 12.57).

Thirteen relatively complex pictographs comprise Area C (Fig. 12.58). As with Area B, close access to these pictographs is extremely difficult, and they had to be studied from a distance. Their size is therefore only an estimate.

Pictograph 1 is a cluster of elements including an outline circle, curved and straight lines, and dots; no. 2 is an outline rectangular face, frontal view, with short lines radiating out from the top ("plumes"); no. 3 is composed of a series of curved lines around an outline circle; no. 5 is a rectangular outline with lines within and below it, surmounted by an outline oval; no. 6 is an outline rectangle with a "corkscrew" line and an L-shaped line coming out of the top; no. 9 is an anthropomorphic stick figure with an outline circular head with simple eyes and nose and topped by short radiating lines; the figure is apparently holding something in one hand; no. 10 is an outline circle with five upward-radiating lines; no. 11 is an outline circle with a dot inside and two upward-radiating lines; no. 12 is composed of two concentric circles connected by a curved line to a clockwise spiral, with several lines beneath it; and no. 13 is a square with a vertical line down the center. Pictographs 4, 7, and 8 are similar in that they all have outline circles (eyes?) above outcurving "fang-mouth" elements (nos. 7 and 8), and no. 4 has two arched lines over the "eyes" with curved lines beneath them. All of the pictographs but nos. 3, 4, and 5 are on projecting cobbles.

COMMENTS

At least three and possibly four pictograph types or styles can be ascertained at Chalcatzingo. The initial dichotomy is a division between red and white paintings (Table 12.2). Because white pictographs are occasionally superimposed over red ones, but never the reverse, it can be concluded that the white paintings are more recently executed. Since white Postclassic paintings occur at Texcalpintado and Yecapixtla, the Chalcatzingo white paintings can be tentatively dated as Postclassic. This dating is somewhat tenuous because many of the white pictographs are stylistically different from those of Texcalpintado and Yecapixtla. At Chalcatzingo there is great variation between the groups of white pictographs, both in size and in content. It remains debatable whether the white pictographs are all contemporaneous.

Similarities and differences are exhibited by the red pictographs as well. One major similarity is that the majority of the red pictographs are painted within shallow concavities in the rock or in close association with such concavities. Differences occur among the three major groups of red pictographs: Cerro Delgado caves, saddle area niches, and the South Shelters (see Table 12.3). The South Shelters pictographs contain all of the concentric circles and almost all of the cruciforms but lack human handprints. In the saddle area, Niche 2 and Niche 4 contain the majority of stick figures. In addition, Niche 2 is the only area with the triangle-and-slit motif, while Niche 4 is the only saddle area niche with hand prints. Excluding the elaborate paintings

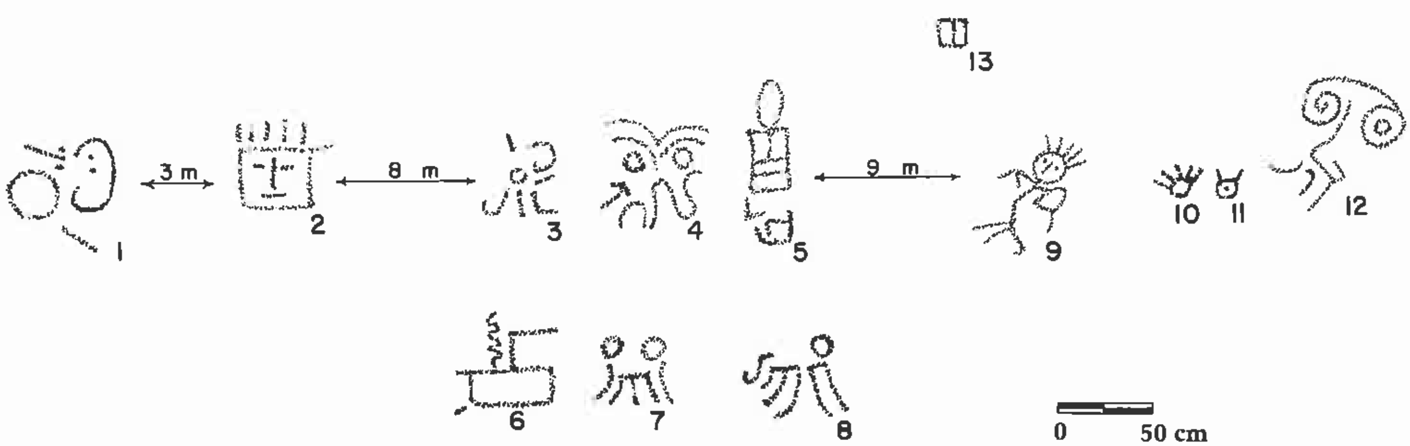


Figure 12.58. Barranca Area C paintings. (Scale is estimate from a distance.)

of Cave 19, the Cerro Delgado pictographs and particularly those of the high caves have few stick figures but include relatively realistic zoomorphic and anthropomorphic representations. These latter are particularly abundant in Cave 3, while Cave 5 has six handprints, including three of the five negative handprints known for the site. The other two negative prints are also in Cerro Delgado caves.

The differences among the site's red paintings could be at least partially temporal, but many of the differences may be due to the function of the pictographs and related to the areas in which they occur. For example, the South Shelters face a small stream at the base of their hill and contain concentric circles, a motif in Mesoamerica which has long been associated with water. In the Southwestern United States as well as in other world areas, hand prints are frequently associated with sacred places, and their limited distribution at Chalcatzingo might serve to identify a particular type of sacred place. Of all the red pictograph groups, Niche 4 appears to have been particularly important, since it contains seventeen stick figures, two handprints (but in only one concavity within the niche), and two U-motifs.

In order to decide whether the differences in the red pictographs are due to temporal reasons, it is necessary to determine their dating. Although the red paintings in Cave 19 have been tentatively assigned to the Classic period, it would be imprudent to conclude therefore that all other red paintings at the site are also Classic period in date, just as it would be wrong to assume that the saddle area paintings were "Olmec" because they contain a few pictographs with inverted U-motifs. The Cave 19 paintings are far more elaborate than any others at Chalcatzingo, and are not stylistically similar to the cruder paintings. Nevertheless, their presence on the Cerro Delgado does indicate the possibility that the simpler paintings have as much probability of being Classic as they do of being related to the site's Formative period occupation.

***Table 12.2.* Location of Paintings by Color**

Location	*Red*	*White*	*Yellow*
Cerro Chalcatzingo	X		
Saddle area niches			
Niche 1	X		
Niche 2			
Area A	X		
Area B	X	X	
Area C	X		
Area D	X		
Area E	X		
Area F	X	Traces	
Area G		X	
Niche 3	X		
Niche 4			
Area A	X		
Area B	X		
Area C	X		
Area D	X		
Area E		X	
Niche 5	X		
Niche 6	X		
North Shelter 1	X		
North Shelter 2		X	X
North Shelter 3	X	X	
South Shelter 1	X		
South Shelter 2	X		
South Shelter 3	X		
South Shelter 4	X		
South Shelter 5	X	X	
Cerro Delgado, western caves			
Cave 3	X		
Cave 5	X		
Cave 6	X		
Cave 7	X	X	
Cave 19	X		
Cave 20	X		
Cave 23	X		
Cave 24	X		
Cave 25	X		
Cerro Delgado, eastern caves			
Cave 1	X		
Cave 2	X		
Cave 9	X		
Cave 12	X		
Cave 16	X		
Barranca paintings			
Area A		X	
Area B		X	
Area C		X	

Table 12.3. **Distribution of Major Red-Painted Motifs**

Location	*Stick Figures*	*Anthropo-zoomorphic Figures*	*Con-centric Circles*	*Out-line Circles*	*Solid Circles*	*Spiral*	*Sun-burst*	*Plume*	*Positive Hand-print*	*Negative Hand-print*	*U-Motif*	*"Comb"*	*Triangle-and-Slit*	*Cruci-form*	*Profile Head*
Niche 1														1	
Niche 2	8	1			2	1		1			1		3		
Niche 4	17								2		2				
Niche 5					1							1			
NS 3		1													
SS 1			3			1									
SS 2	6		1	2			2				1	1		7	
SS 3				1	1									1	
SS 5									1						
Cave 1		1													
Cave 2									1						
Cave 3	2	7					1	1	1						
Cave 5					1				3	3		1			
Cave 6		1		1	5					1	1				
Cave 7				2							1				2
Cave 9										2					
Cave 12									1						
Cave 16		1													
Cave 20	1														
Cave 23	1								1						
Totals:															
Saddle Niches	25	1	0	0	3	1	0	1	2	0	3	1	3	1	0
North Shelters	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
South Shelters	6	0	4	3	1	1	2	0	1	0	1	1	0	8	0
Caves	4	10	0	3	6	0	1	1	7	6	2	1	0	0	2

RESUMEN DEL CAPÍTULO 12

En Chalcatzingo, las muestras del arte de roca pintada se han encontrado en cinco áreas separadas entre sí. Muchas de las pinturas están muy descoloridas o incrustadas con depósitos de mineral que dificultan el poder determinar su diseño original. La mayoría son motivos simples, regulares, y repetitivos, tales como las figuras antropomórficas y zoomórficas delineadas, triangulos con mordedura, discos solares, espirales, y huellas de mano. La mayoría fueron ejecutadas con pigmento rojo, aunque se conocen algunas pictografías blancas y amarillas.

Con algunas excepciones, la simplicidad de los diseños impide fecharlos a través de la comparación con otras expresiones artísticas mesoamericanas. Aun cuando pueden variar en tiempo desde el período Formativo hasta el Postclásico, los datos indican que las pinturas realizadas con el pigmento blanco probablemente son más recientes que las que fueron ejecutadas con el rojo. Las pinturas blancas pueden ser del Postclásico. Aun cuando la mayoría de las pinturas rojas son sencillas, los tres motivos provenientes de la Cueva 19 del Cerro Delgado claramente pertenecen al período Clásico e incluyen un glifo de montaña de Teotihuacan.

En cuanto a su ubicación las pictografías exhiben un patrón. La mayoría fueron pintadas en cuevas, nichos grandes, y refugios de roca. Dentro de estas áreas, por lo general, se encuentran pintadas dentro o alrededor de concavidades en forma de cajete, en la roca. También varían, dentro de las áreas del sitio, los motivos pintados. Por ejemplo, los círculos concéntricos (símbolo del agua) ocurren en los refugios de roca hacia el surponiente del Cerro Chalcatzingo, junto a una pequeña corriente de agua, pero no así en las catorce cuevas pintadas del Cerro Delgado ni tampoco en los seis nichos pintados en la hendidura entre los dos cerros.

13. Ceramics

ANN CYPHERS GUILLÉN

Over one million sherds from the Chalcatzingo excavations were analyzed in the project laboratory in Cuautla, Morelos. The descriptive typology which follows is based upon this lengthy analysis. The temporal ranges of types and forms derive from the sherds from the thirty-eight Selected Stratigraphic Units (see Chapter 5 and Appendix B), where dating to subphase was most secure.

The principal goals of the ceramic analysis were (1) to devise classificatory units (types) for describing the artifacts, and (2) to determine which ceramic attributes could be used as chronological markers. Surface treatment and paste were the major criteria for defining the types. Vessel form proved to be the most useful attribute for determining change through time. The form analysis was organized so that this attribute could be handled either independently or in conjunction with the descriptive typology.

Sherds were analyzed by catalogued provenience units. In the analysis of each sherd the following information was recorded.

1. Surface treatment:
   a. Color, designated in the Munsell Soil Color System (Munsell 1971).
   b. Luster, designated as highly polished, poorly polished, "stick" polished, matte, smoothed, or roughened.
   c. The presence or absence of slip.
   d. The presence or absence of painting.
   e. The presence or absence of fire-clouding.
2. Paste characteristics:
   a. Color, designated in the Munsell Soil Color System.
   b. Presence or absence of a grey or black (reduced) core.
   c. Kind, size, and abundance of temper.
   d. Fracture, designated as sharp, medium, or crumbly.
   e. Wall thickness.
3. Form.
4. Plastic decoration.

The analysis of form involved the construction of rim and body form charts (Appendix D) in which all known forms within Chalcatzingo's Formative period ceramics have been accommodated and coded. The following categories were used: bowls (RB), ollas (RO), dishes or plates (RD), bases (various codes), supports (S), handles (H), and *cantaritos* (C). Braziers constitute special cases which do not fit in well with the established categories due to their generally eroded state. Brazier forms are discussed in detail later in this chapter.

In the type descriptions, forms are given for each subphase, noting diagnostic and common forms. Forms possibly having chronological significance are marked with an asterisk (*).

Categories were also devised for the different kinds of plastic decoration. The resulting design codes (DC) are based on the design or form of decoration, pottery type, and in some cases vessel form. These categories are defined and illustrated in Appendix D. Decoration proved to be an important temporal marker for some, but not all types.

Following the creation of the descriptive typology, I conducted, under the supervision of Fernando Ortega at UNAM, a petrographic analysis using thin sections of the major types. The results of fifty-three thin section samples are given in Table 13.1, and a general summary of the analysis is provided in the type descriptions. This analysis greatly aided in distinguishing ceramics local to the Chalcatzingo area (those having temper derived from local volcanic tuffs) from imported types.

The bulk of the Chalcatzingo ceramics show the same petrographic character. The use of volcanic tuff as tempering material was continuous through the Early and Middle Formative. Petrographic comparisons of sherd samples with volcanic tuff from Chalcatzingo itself show the similarity of constituents. Although the distribution of tuffs is widespread in Mexico, the high frequency of these ceramics in the Chalcatzingo assemblage probably indicates their local character. Two major types shown by the petrographic analysis to be non-local imports are Del Prado Pink and Pavón Fine Grey.

The ceramic type descriptions are presented here generally in chronological rather than alphabetical order, beginning with the major types of the Amate phase. The descriptions include temporal range (when it could be determined), surface treatment, paste and temper characteristics, forms occurring in each subphase, and plastic decoration. Following the description is a discussion of comparisons of the type to Formative ceramics from other sites in Mesoamerica. A glossary is provided at the end of the chapter for defining the more technical terms associated with ceramic description.

Summary data derived from the Selected Stratigraphic Units are provided in Tables 13.2, 13.3, and 13.4.* These data will give the reader a better understanding of changes in ceramic attributes through time, and can be used for seriating these attributes. However, it should be remembered that the ceramic analysis as a whole was derived from all of the excavations and not just these selected units.

* *Editor's note*: These tables are syntheses of lengthy, detailed appendices submitted by the author to supplement this chapter. Unfortunately, space considerations did not permit their publication. The editor takes responsibility for any inaccuracies in these summary tables.

Table 13.1. **Petrographic Analysis of Thin Sections**

TYPE	*MINERALS*									*ROCK FRAGMENTS*					
	Plg	*An*	*Opy*	*Hbl*	*Cpy*	*Qtz*	*Musc*	*CorP*	*AlkF*	*And*	*Dac*	*Qtz*	*MicS*	*SS*	*RhyR*
Amatzinac White	1	30	2	3	4					+	+	X			
Amatzinac White	1	25	2	3						+	+				
Amatzinac White	1	28	2	3	3					+	+				
Amatzinac White	1	28	2	3	4	X				+					
Amatzinac White	1	27	2	3				X		+	+				
A.W. Ext. White, Int. Plain	1	34	2	3	4					+					
A.W. Paste Variant	1	28	2	2	4					+					
A.W. Ruddy Paste Variant	1	33	2	3						+					
A.W. Surface Treatment Var.	1	30	2	2	4					+					
Amayuca Ruddy	1	28	2	3	4					+				X	
Arboleda Coarse	1	26	2	2											
Arboleda Coarse	1	26	2	2	3					+				X	
Atoyac Unslipped Pol. I	1	28	2	2						+					
Atoyac Unslipped Pol. I	1	29	2	2	4					+				X	
Atoyac Unslipped Pol. II	1	27	2	2	3										+
Atoyac Unslipped Pol. II	1	28	2	3						+				X	
Brazier, Type I	1	26	3	2	4				X			X			
Brown-Slipped, Streaky	1	31	2	3						+					
Carrales Coarse Grey	1	28	2	3	4					+	+				
Carrales Coarse Grey	1	26	2	3	4					+	+				
Carrales Coarse Grey	1	30	2	4	3					+					
Carrales Coarse Grey	1	31	2	3	3					+	+				
Carved Grey	1	28	2	3						+					
Cuautla Brown	1	30	2	3				X		+					
Cuautla Brown	1	31	2	3				X		+					
Cuautla Red-Slipped	1	29	2	3				X		+	+	+			
Cuautla Red-Slipped	1	29	2	3	4			X		+					
Del Prado Pink						2						1	1		
Del Prado Pink												2	1		
Kaolin	+					1						2			
Laca	1	30	2	3	4					+					
Laca	1	32	2	3	3					+	+				
Laca	1	29	2	3	3					+	+				
Laca, Imitation	1	28	3	2						+					
Manantial Orange-on-White	1	27	2	3	4										
Mingo Fine Brown	1	30	2	2							+				
Pavón Fine Grey	X						Altered					X			
Pavón Fine Grey							Altered					1			
Pavón Fine Grey	X						Altered					1			
Peralta Orange	1	31	2	3	4					+	+				
Peralta Orange	1	30	2	2		X				+	+				
Peralta Orange	1	26	2	3		X					+				
Peralta Orange	1	28	2	3						+	+				
Santa Clara Orange	1	28	2	3	3					+					
Tadeo Coarse	1	26	2	3	4									X	
Tadeo Coarse	1	26	2	3	4					+					
Tenango Brown	1	27	2	2							+				
Tenango Brown	1	25	2	3	4					+	+				
White-on-Red	1	28	2	2	4			X		+					
White-Rimmed Black	1	30	2	3						+					
White-Rimmed Black	1	33	2	2	3					+					
Xochitengo Polychrome	1	22	2	3	3					+					
Xochitengo Polychrome	1	30	2	3						+					

MINERALS
- Plg: plagioclase.
- An: anorthite.
- Opy: orthopyroxene.
- Hbl: horneblende.
- Cpy: clinopyroxene.
- Qtz: quartz.
- Musc: muscovite.
- CorP: corroded plagioclase.
- AlkF: alkaline feldspar.

ROCKS
- And: andesite.
- Dac: dacite.
- Qtz: quartzite.
- MicS: micaceous schist.
- SS: sandstone.
- RhyR: rhyolitic rock.

The numbers 1–4 represent the order of frequency of the minerals, with 1 being the highest order (Sánchez-Rubio 1977).
The An (anorthite) numbers represent the composition of the plagioclase, forming a series ranging from sodic to calcic (albite to anorthite).
X is equivalent to a trace (one or two grains).
+ indicates presence ranging from 1 to 10 percent.

***Table 13.2.* Selected Stratigraphic Units: Distribution of Types by Subphase (Sherd Counts)**

Type	EA	LA	EB	MB	LB	EC	LC
				Subphase			
Cuautla Brown	151	2,819	18	86	485	913	760
Cuautla Red-Slipped	52	888	12	21	186	304	173
Atoyac Unslipped Polished*	155	2,817	133	108	772	873	2,046
Arboleda Coarse	159	2,361	39	41	153	65	86
Del Prado Pink		148	2	8	23	18	15
Tadeo Coarse	2	173	3	15	96	107	352
Carved Grey		6			4	4	10
Kaolin		2		1	18	6	4
Manantial Orange-on-White			1	14	51	18	32
Amatzinac White	3	111	247	493	3,560	5,941	16,056
Variants:							
Red Paste		1	2	3	32	12	72
Ruddy Paste					1	1	5
Surface Treatment		3	1		1	1	10
Paste		5		1		4	
Exterior White-Slipped, Interior Plain		2					6
Laca		10	56	135	862	872	1,248
Imitation Laca	1	1		3	5	26	39
Tenango Brown	22	848	395	998	6,487	7,320	13,257
White-Rimmed Black	4	64	35	89	614	753	788
Peralta Orange	5	123	248	300	2,463	3,824	12,316
Pavón Fine Grey		1	7	9	66	131	326
Carrales Coarse Grey		25	2	13	80	237	2,534
Xochitengo Polychromes		2			9	61	169
Amayuca Ruddy		1			12		138
Mingo Fine Brown				2	3	13	157
Santa Clara Orange					1		13
Atotonilco Black	1	50	3	9	58	56	86
Brown-Slipped Streaky			1		2		2
White-on-Red						2	
Totals	555	10,461	1,205	2,349	16,044	21,562	50,700

Subphases: EA, Early Amate; LA, Late Amate; EB, Early Barranca; MB, Middle Barranca; LB, Late Barranca; EC, Early Cantera; LC, Late Cantera.

* Data not separated by I, II, or III.

The chapter concludes with some comments and comparisons to Gulf Coast Formative ceramics. At the time of the laboratory analysis it was difficult to compare the Chalcatzingo ceramics with those from major Gulf Coast centers, since the San Lorenzo data were still in preparation, and the descriptions from La Venta (P. Drucker 1952; P. Drucker, Heizer, and Squier 1959) and Tres Zapotes (P. Drucker 1943a; Weiant 1943) were either too brief or for other reasons incompatible with our analysis.

Nevertheless, because such comparisons could be of value, travel funds were acquired in 1977 from a private donor in order to make an inspection of the various collections. The La Venta and Tres Zapotes ceramics at the Smithsonian Institution (see Fig. D.6) and the San Lorenzo ceramics at Yale University were briefly studied. The analysis of these artifacts provided a clearer idea of general and temporal relationships between Chalcatzingo's ceramics and those of Gulf Coast sites as well as relationships between the ceramics of the Gulf Coast centers.

TYPE DESCRIPTIONS

Cuautla Brown

Temporal Range: Cuautla Brown was abundant in the Early and Late Amate subphases, began to diminish in the Early Barranca, and was present in the later subphases only in minute quantities.

Surface Treatment: Vessel surfaces tend to be well polished; occasional "stick" polishing is evident. Surface color is variable: 2.5 YR 3–5/4–6, 3–5/2, 3/0; 5 YR 2.5/2, 3–4/1–2, 3–5/3–4; 10 YR 2.5–3/1, 5/1–2, 4–5/3; 7.5 YR 2/0, 4/0, 3–6/2, 4/4.

Paste and Temper: The paste is fine particled and has a sharp fracture. The paste color range is 2.5 YR 4–5/4, 3–5/2, 3–5/6, 3/0; 5 YR 3/1–2, 3–5/4, 3–5/6; 10 R 2.5–3/1–2.

No more than 9 percent of the paste volume is aplastics. Plagioclase (An 30–31) is the most frequently occurring mineral, 5 percent of the total volume, and grains range in size from 80 to 580 microns. Many plagioclase grains present evidence of magmatic corrosion. Orthopyroxene composes 1–3 percent of the volume, and grains measure 120–800 microns. Some of the orthopyroxenes are poikilitic. Less than 1 percent of the volume is horneblende, whose grain size is 160–700 microns. Basaltic andesite, iron stains, and leucoxene are present.

Forms (Figs. 13.1, 13.2):

Early Amate subphase
- Outslanting wall bowls (RB-17)
- Outcurving wall bowls (RB-25)
- Flaring neck ollas (RO-12, 15)
- Flat bases predominate

Late Amate subphase
- Diagnostic phase markers
  - Beveled rim ollas (RO-8)
  - Bottles (RO-35)
  - High shoulders (Base M)
- Common forms
  - Hemispherical bowls (RB-7)
  - Outslanting wall bowls (RB-17, 18)
  - Shallow bowls (RB-41)
- Other forms
  - Hemispherical bowls (RB-66, 93)
  - Outslanting wall bowls (RB-19)
  - Cylindrical bowls (RB-14)*
  - Beveled rim bowls (RB-37)*
  - *Tecomates* (RB-1)
  - Incurved rim bowls (RB-3)
  - Outcurving wall bowls (RB-23, 25)
  - Flaring wall bowls (RB-26)
  - Highly outcurved bowls (RB-76)
  - Flaring neck ollas (RO-5, 12)

Flaring neck ollas with drooping rims (RO-9)
Super flaring neck ollas (RO-17)
Collared ollas (RO-2)
Flat and rounded bases

While Cuautla Brown ollas (RO-35; Fig. 13.1*v–jj*) ended with the Late Amate subphase, some Late Amate forms continued into the Early Barranca. From the Middle Barranca through the Late Cantera, Cuautla Brown declined markedly as an important type, and may be in our sample only as "float" material.

Plastic Decoration: Exterior incising on *tecomate* forms, incurved rim bowls, and hemispherical bowls often takes the form of the "Tlatilco panel" (Paul Tolstoy, personal communication; see Fig. 13.1*g* and 13.2). Gadrooning and finger impressions occur as olla decorative techniques. Grooving is present on the exteriors of both ollas and bowls (Fig. 13.1*hh*). One incised line was often executed immediately below the rims of bowls.

Comparisons: Café Rojizo, Bayo, and Café Oscuro types from Piña Chan's Chalcatzingo excavations (1955: Figs. 4*t*, 9*ñ*, *o*, *t–x*, 18*f*, *j*) are similar to Cuautla Brown. Café Oscuro and Café Claro from Atlihuayan, Morelos, and Café Rojizo o Bayo and Café Claro from Tlatilco have hemispherical bowls with the Tlatilco panel incised motif (Piña Chan and López González 1952: Fig. 1; Piña Chan 1958: Figs. 10*i*, *j*, 39*o–q*, 45*p*, *q*). Brown ware flaring wall bowls, everted rim bowls, and globular bottles are typical of the Early Nexpa phase of the Río Cuautla area, while during the Late Nexpa phase, cylindrical bowls appear (Grove 1974b: 30, 77–78). Tlatilco panel motifs, along with gadrooning and ledged bottle necks, are present on Incised Brown and Black ware and Brown bottles from Gualupita (Vaillant and Vaillant 1934: Figs. 20–22). At Iglesia Vieja, Morelos, globular bottle forms and the Tlatilco panel design are present in La Manuela subphase (Grennes-Ravitz 1974: 102). The Tlatilco panel design on hemispherical bowls apparently is a decorative motif restricted to the central highlands, principally in the Valley of Mexico and Morelos. Gadrooned brown vessels are present during the Bajío phase at San Lorenzo (Coe 1970: 24).

Cuautla Red-Slipped

Temporal Range: Cuautla Red-Slipped began in the Early Amate subphase, was abundant in the Late Amate, and diminished in the Early Barranca.

Table 13.3. **Selected Stratigraphic Units: Distribution of Forms by Subphase (Sherd Counts)**

Form	*Subphase*						
	EA	*LA*	*EB*	*MB*	*LB*	*EC*	*LC*
RB-1		19	2	5	15	14	64
RB-3	1	44	5	19	82	121	172
RB-6		2					5
RB-7	4	75	19	40	252	289	655
RB-14	1	30	2	1	45	53	98
RB-16			6	18	50	33	96
RB-17	6	112	11	36	185	275	616
RB-18	2	111	15	34	205	484	632
RB-19		36	12	21	171	253	768
RB-20				1	25	16	27
RB-21		1		2	19	20	26
RB-22				1	5	5	16
RB-23	8	66	8	19	152	288	768
RB-25	4	39	9	43	228	410	1,353
RB-26		7	11	26	147	119	202
RB-30			8	17	125	103	234
RB-31		1			7	14	63
RB-35		10			11	14	19
RB-37	1	65	3	3	29	40	71
RB-38		6	1		14	19	16
RB-41	7	61	9	24	279	382	811
RB-45			1	1	5	28	226
RB-60		6			3	10	11
RB-62				9	19	26	70
RB-65		1					2
RB-66		7				2	8
RB-67	1	2			6	20	413
RB-70		1			3	12	118
RB-71						9	52
RB-74					1		3
RB-75		1			4	4	6
RB-76		1		2	7	14	48
RB-77		1	3	3	27	57	77
RB-78					1		4
RB-79						1	2
RB-80						5	2
RB-81							1
RB-85						1	6
RB-88					5	1	3
RB-89						2	65
RB-90		3	1	2	38	14	511
RB-91		6				1	8
RB-93		2	1		3	1	4
RB-99				1	2		5
RB-100				1	6	11	20
RB-101		2	1		6	7	74
RB-102					1		22
RB-109							1
RB-115		2		1	2	6	5
RB-116							5
RB-117							1
RB-119							1
RB-120							2
RB-121							2
RB-122					1		
RB-123							2
RB-125					1	4	1
RB-128							1
RB-130							1
RB-131						1	1
RB-132						2	
RB-133		1					

Table 13.3 (continued)

Form				Subphase			
	EA	LA	EB	MB	LB	EC	LC
RB-134							1
RB-135							1
RB-137					1		
RO-1	1	3	1	5	18	30	30
RO-2						5	8
RO-3					1		
RO-5	6	81	10	12	64	129	203
RO-8	2	60		6	29	37	39
RO-9		8			14	23	17
RO-11		2			4	5	7
RO-12	1	33	6	3	48	87	259
RO-15	1	1			2	8	17
RO-16		1			2		1
RO-17		18	3	6	27	34	44
RO-25		1				3	19
RO-26							1
RO-27						2	40
RO-28			1		4	9	16
RO-29		2			2	2	48
RO-30						5	22
RO-31		1			1	1	19
RO-32							2
RO-33							1
RO-34							1
RO-35		6			3	1	
Flat base	1	39	12	41	258	273	422
Rounded base	3	25	47	54	457	723	1,515
Base M	1	18		1	10	38	312
RD-1		1			9	1	7
RD-2		2		1	8	6	27
RD-3				1	10	16	24
RD-4			1	2	22	15	36
RD-5				2	10	5	1
RD-7					1	1	3
RD-8			2	4	24	20	23
RD-9					3	1	35
RD-10				1			1
H-1		3			12	22	128
H-4					3		19
S-1						1	4
S-2					1	1	2
S-3-4					1		2
S-6		1				1	
S-7		17		1	5	1	9
C		2			3	2	14
Totals	51	1,046	211	470	3,244	4,699	11,876

Subphases: EA, Early Amate; LA, Late Amate; EB, Early Barranca; MB, Middle Barranca; LB, Late Barranca; EC, Early Cantera; LC, Late Cantera.

Surface Treatment: The interiors of bowls may be entirely slipped in red, the rims of vessels may be painted red, or the exteriors of vessels may be painted with horizontal or vertical bands of red slip over a beige-brown background (Fig. 13.3*a–c*). Ollas characteristically have zoned red painting. Surfaces are well polished except for grater vessels, whose interior bases are unfinished. The color range for the red slip is 7.5 YR 3/4–6, 3–4/6–8; 10 R 3/6, 5/6. The background color is variable: 7.5 YR 6–7/4, 4–5/2; 10 YR 6–7/2–4; 5 YR 5/6, 4/2; 2.5 YR 5/6, 3/2–4, 3/0.

Paste and Temper: The paste is fine particled and has a sharp fracture. The paste color range is 2.5 YR 4–5/4, 3–5/2, 3–5/6, 3/0; 5 YR 3/1–2, 3–5/4, 3–5/6; 10 R 2.5–3/1–2.

Aplastics do not exceed 15 percent of the paste volume. Plagioclase (An 29) is the abundant mineral, 5–8 percent of the volume. The range of grain size is 80–600 microns. Magmatically corroded plagioclase reaches a maximum frequency of 1 percent in one sample. Orthopyroxenes constitute 3–5 percent of the paste volume, and grains measure 100–700 microns. A few grains of clinopyroxene are present in one sample. Hornblende is present in proportions of less than 1 percent of the volume, and the grain size range is 120–500 microns. Iron stains and leucoxene are present in addition to dacite and basaltic andesite.

Forms:

Early Amate subphase (Figs. 13.3, 13.4*a–d*)
- Cylindrical bowls (RB-14) *
- Hemispherical bowls (RB-7)
- Outslanting wall bowls (RB-17, 18)
- Beveled rim bowls (RB-37)
- Rounded bases
- High shoulders (Base M)

Late Amate subphase (Fig. 13.4*i–l*)
- Diagnostic phase markers
  - Beveled rim ollas (RO-8)
  - Bottles (RO-35)
  - High shoulders (Base M)
- Common forms
  - Outcurving wall bowls (RB-23)
  - Outslanting wall bowls (RB-17, 18)
- Other forms
  - Outcurving wall bowls (RB-25)
  - Outslanting wall bowls (RB-19)
  - Everted rim bowls (RB-35) *
  - Beveled rim bowls (RB-37) *
  - Cylindrical bowls (RB-14) *
  - *Tecomates* (RB-1)
  - Incurved rim bowls (RB-3, 6)
  - Shallow bowls (RB-41)

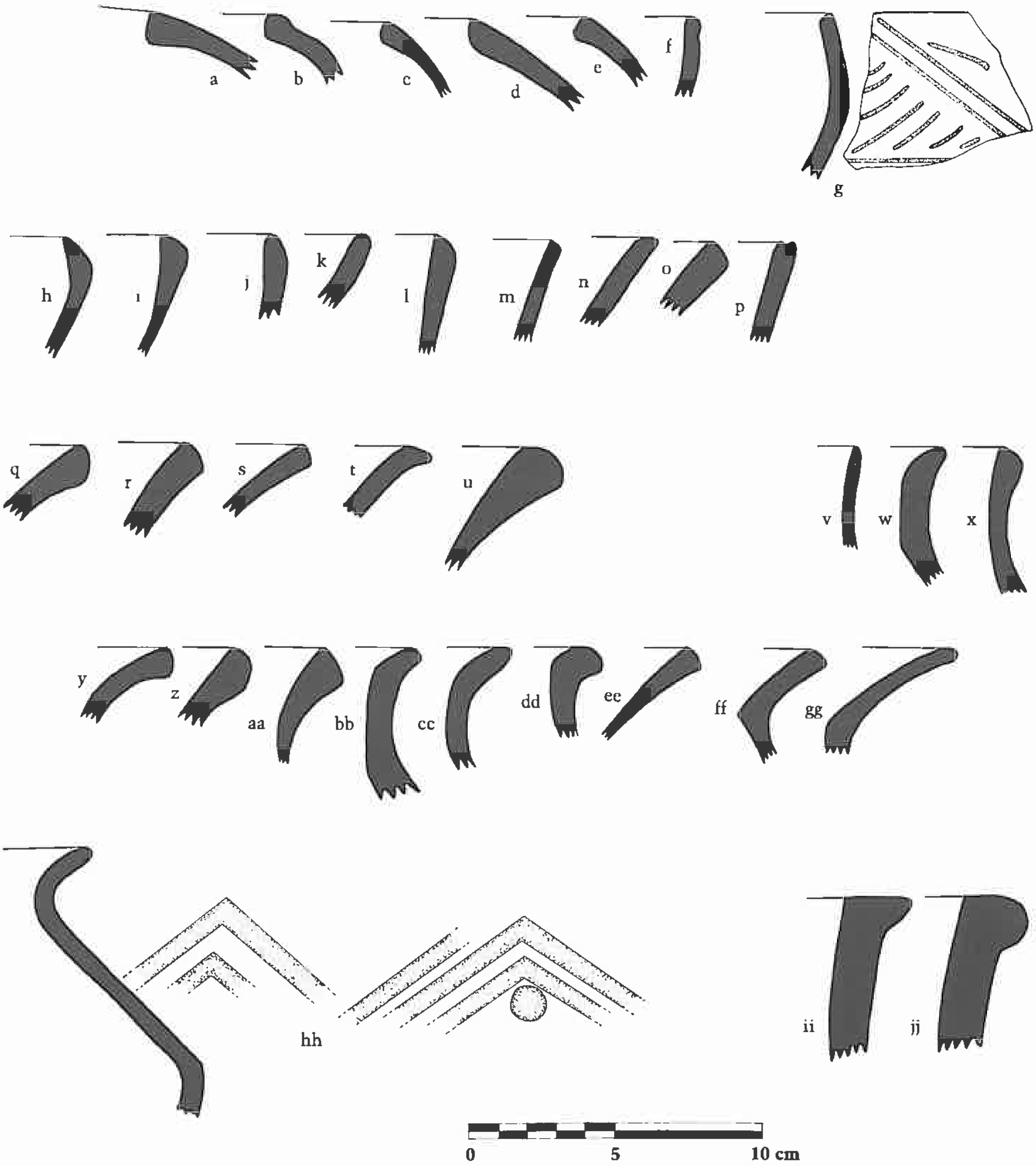


Figure 13.1. Cuautla Brown: *a–u*, Early and Late Amate subphase bowls; *v–jj*, Early and Late Amate subphase ollas.

Table 13.4. **Selected Stratigraphic Units: Distribution of Design Motifs by Subphase (Sherd Counts)**

Design Code	*Subphase*					
	LA	*EB*	*MB*	*LB*	*EC*	*LC*
DC-1		2		4	14	76
DC-2		6	4	36	33	67
DC-3		5	5	45	93	186
DC-4		1	1	3	3	3
DC-5				1		1
DC-6				3	3	5
DC-7				5	8	6
DC-8				3		
DC-9			2	28	40	60
DC-10				7	1	4
DC-11			1		58	588
DC-12				1	1	
DC-13				4	9	55
DC-14				2		
DC-15				2	20	121
DC-16		15	30	280	352	542
DC-17			1	5	6	2
DC-18		6	29	159	124	168
DC-19			1	5	7	5
DC-20	1	4	26	163	107	128
DC-21		1	4	28	10	15
DC-22	1	7	15	66	106	84
DC-23						22
DC-24					1	5
DC-25						2
DC-26			1		1	76
DC-27					1	7
DC-28						2
DC-29						4
DC-30					7	134
DC-31						1
DC-32				2	4	10
DC-33		1			1	4
DC-34				1		2
DC-35			1	2	5	11
DC-36					2	56
DC-37					2	21
DC-38						6
Totals	2	48	121	855	1,019	2,479

Subphases: LA, Late Amate; EB, Early Barranca; MB, Middle Barranca; LB, Late Barranca; EC, Early Cantera; LC, Late Cantera.

Hemispherical bowls (RB-7, 66)
Globular bowls (RB-60)
Flaring neck ollas (RO-5, 12)
Flaring neck ollas with drooping rims (RO-9)
Flat and rounded bases

Many of the Early Amate forms continue into the Late Amate subphase as well. While some Late Amate forms continue into the following Early Barranca subphase, there is a distinct decrease in the quantity of Cuautla Red-Slipped ceramics.

Plastic Decoration: Decorative techniques on this type are the same as those of Cuautla Brown: gadrooning, grooving, finger impressions, and incising (Figs. 13.3*c*, 13.4*a–b*, *l*). Bowl shapes with true interior grater bottoms created by deep, crude incising or punctation on unsmoothed interiors also occur (Figs. 13.3*d*, 13.4*c–d*).

Comparisons: Cuautla Red-Slipped corresponds to Rojo sobre Café as defined by Román Piña Chan at Chalcatzingo (1955:60), Mapache Borde Rojo and Ventana Rojo sobre Bayo of the Nevada phase at Zohapilco (Niederberger 1976: Pls. 37, no. 6, 38 nos. 1–4), and to Pilli Rojo sobre Bayo of the Nevada-Ayotla phases at that same site (Niederberger 1976: Pl. 40). It is common at Tlatilco (Piña Chan 1958:85, Figs. 15*a*, *b*, 40, 41). Along the Río Cuautla, in Morelos, red-slipped ceramics are present in the Middle Nexpa phase (Grove 1974b:32). It may also be similar to Coatepec Red-on-Buff of the Late Ajalpan phase of the Tehuacan Valley (MacNeish, Peterson, and Flannery 1970:47).

More tenuous similarities are with Fidencio Coarse from Fábrica San José, Oaxaca (Drennan 1976). Red rim bands and vertical striping are found in the Tierras Largas and San José phases of the Valley of Oaxaca (Kent V. Flannery, personal communication). These Oaxacan examples lack the exotic bottle forms found in central Mexico. San Lorenzo, Veracruz, has red-on-buff *tecomates* with red rims and red striping during the Ojochi phase, and Tatagapa Red of the Chicharras phase has red-slipped *tecomates* with parallel-line incising, cross-hatching, and false rocker-stamping (Coe 1970:25).

At Altamira, Chiapas, Tusta Red is common to the Barra phase, and Mendez Red-Rimmed to the Cuadros phase (Green and Lowe 1967:104). Mendez Red-Rimmed is known from Izapa during the Cuadros phase (S. Ekholm 1969: 41). At Santa Cruz, Burrero Red of the Burrero phase follows the same pattern (Sanders 1961:17). Finally, in the Ocós phase at La Victoria, Guatemala, vessels with vertical red stripes are present (Coe 1961: Fig. 20).

Red-slipped buff or brown ceramics appear quite common throughout much of central Mesoamerica during the Early Formative. What distinguishes different regions is the complex of vessel forms. *Tecomates* and bowls seem far more common in the southern tropical areas, while exotic bottle forms are more common in central Mexico.

Figure 13.4. Cuautla Red-Slipped: *a–b*, Early and Late Amate subphase bowls; *c–d*, Early and Late Amate subphase bowls with true grater incised interiors; *e–h*, Early and Late Amate subphase ollas; *i–k*, Late Amate subphase bottle rims; *l*, bottle body (hatched area indicates red).

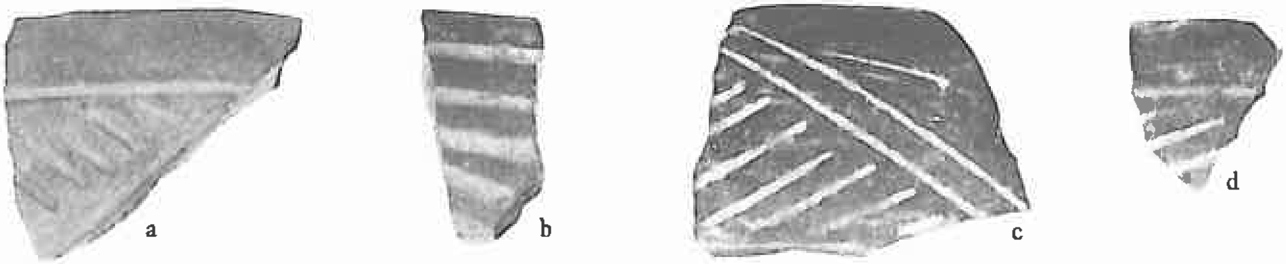


Figure 13.2. Cuautla Brown, Early and Late Amate subphase hemispherical bowls with exterior incising.

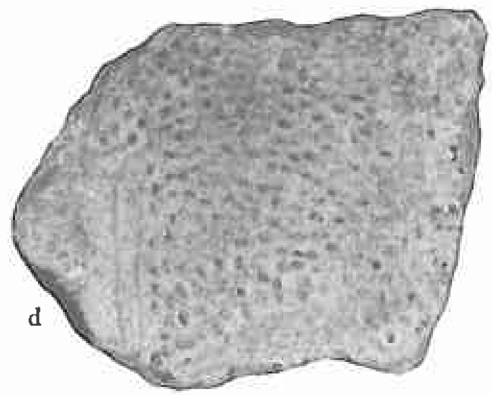
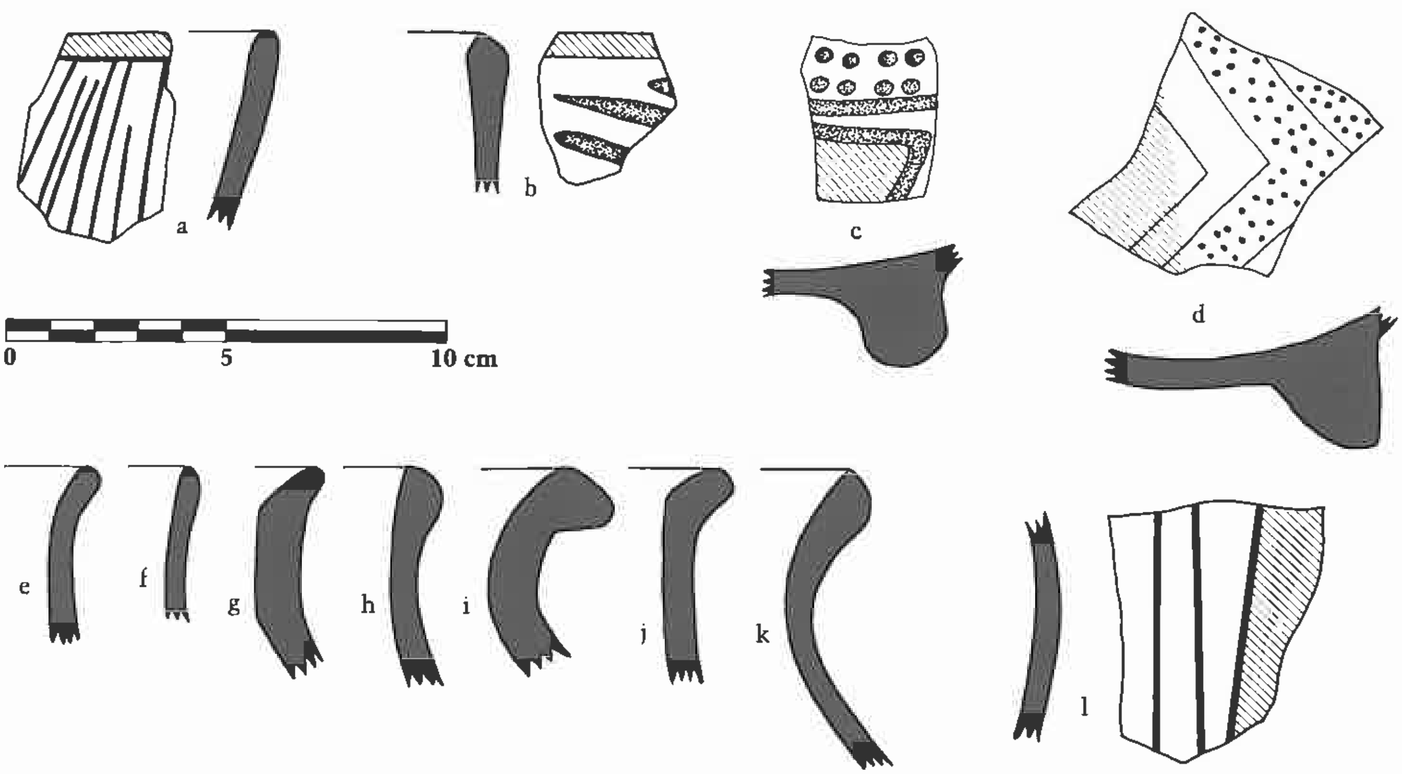


Figure 13.3. Cuautla Red-Slipped, Early and Late Amate subphase bowls: *a*, interior red-banded bowl rim; *b*, exterior red-banded bowl rim; *c*, red-rimmed bowl with interior incising; *d*, true grater incised interior bowl base.



Both Cuautla Brown and Cuautla Red-Slipped, two major forms of the Amate phase, contain magmatically corroded plagioclase. This plagioclase is typical of these types and is not consistently present in other types of the phase or other phases. Its seemingly restricted presence in Amate phase types could suggest the possibility of a different center of manufacture for these two types. However, since igneous terrain, from which corroded plagioclase derives, is characteristically heterogeneous, a single formation could feasibly contain both corroded and noncorroded plagioclase. Nonetheless, the possibility exists that the specific quarry containing the corroded plagioclase was exploited only during the Early Formative Amate phase.

Atoyac Unslipped Polished III

Temporal Range: Atoyac Unslipped Polished III was typical of the Early and Late Amate subphases.

Surface Treatment: Although unslipped, the highly polished surface of these ceramics often gives the illusion of a slip. The surface color is distinct, usually having ruddy brown tones: 2.5 YR 3–5/4, 3–5/6, 4/2; 5 YR 4/1, 3–5/3–4, 3–4/2, 4–5/6; 7.5 YR 3/2, 6–7/2–4, 5/1; 10 YR 3/1, 6–7/2–4, 5/1; 10 R 4/6–8.

Paste and Temper: The paste is identical to that of Cuautla Brown. Wall thickness varies with the size of the vessel, reaching a maximum thickness of 1.5 cm.

Forms (Fig. 13.5):

Early and Late Amate subphases
- Diagnostic phase markers
  - Incurved rim bowls (RB-3)
  - Hemispherical bowls (RB-7)
  - Beveled rim bowls (RB-37)
  - Beveled rim ollas (RO-8)
  - Flaring neck ollas (RO-15)
  - Flaring neck ollas with drooping rims (RO-9)

Plastic Decoration: Incising and grooving were popular decorative techniques (Fig. 13.5*b*). One example of zoned punctation was noted.

Comparisons: None.

Arboleda Coarse

Temporal Range: Arboleda Coarse spanned Early Amate, Late Amate, and Early Barranca subphases.

Surface Treatment: The surfaces of this utilitarian ware are unslipped and poorly finished, being only slightly smoothed. Surface color varies from brown to grey due to irregular firing and conditions of usage: 5 YR 4–6/1–3, 5–7/3–4, 3/1–2, 7/6, 2.5/2, 7/2, 5/6, 5/2, 4/4; 7.5 YR 2–4/0–2, 4–5/2–4, 7/2–3, 3/0, 5–6/2, 6/4; 10 YR 3/1, 7/2; 2.5 YR 5–6/6, 3–4/2.

Paste and Temper: The paste is fine particled and has a sharp fracture. The range of paste color is 5 YR 5/6, 5/8, 4/3, 6/6, 4/6; 7.5 YR 5–6/4, 3/0, 7/6, 4/4, 2/0, 6/6; 10 YR 7/3.

The proportion of aplastics in the total paste volume is 10 percent. The principal aplastic constituent is plagioclase (An 26) at 8 percent, ranging in grain size from 100 to 600 microns. Less than 1 percent of orthopyroxene and horneblende is present. Horneblende grain size is 80–260 microns; orthopyroxenes range from 200 to 360 microns. An occasional clinopyroxene, sometimes twinned, is evident. Basaltic andesite, iron stains, and occasionally sandstone and leucoxene are evident. These minerals are typical of the area's volcanic tuffs.

Forms:

Early Amate subphase
- Common forms
  - Flaring neck ollas (RO-5)
- Other forms
  - Outcurving wall bowls (RB-23)
  - Shallow bowls (RB-41)

Late Amate subphase (Fig. 13.6)
- Common forms
  - Outslanting wall bowls (RB-17, 18)
  - Outcurving wall bowls (RB-23)
  - Flaring neck ollas (RO-5)
  - Spider-leg supports (S-7)
- Other forms
  - Outslanting wall bowls (RB-19)
  - Outcurving wall bowls (RB-25)
  - Flaring neck ollas (RO-12, 16)
  - Everted rim bowls (RB-35)*
  - Cylindrical bowls (RB-14)*
  - Heavy everted rim bowls (RB-38)*
  - Beveled rim ollas (RO-8)*
  - Bottles (RO-35)*
  - Plate with roughened exterior (RD-2)
  - Nub supports (S-2)
  - Flat bases
  - *Tecomates* (RB-1)
  - Beveled rim bowls (RB-37)
  - Shallow bowls (RB-41)
  - Hemispherical bowls (RB-7)
  - Flaring wall bowls (RB-26, 75)
  - Highly outcurved bowls (RB-90)
  - Incurved rim bowls (RB-3)
  - Globular bowls (RB-60)
  - Super flaring neck ollas (RO-17)
  - Collared ollas (RO-1)
  - High shoulders (Base M)

The same Late Amate forms continued through to the Late Barranca subphase even as the type decreased in importance.

Plastic Decoration: Single incised lines along the interior or exterior rims and incised pseudo-grater designs in bowls constitute the occasional decorative aspect of Arboleda Coarse.

Comparisons: None.

Del Prado Pink

Temporal Range: Del Prado Pink was present in the Late Amate and Early Barranca subphases. Its appearance in the stratigraphic record during the Late Amate is one distinguishing trait between the Early and Late Amate subphases.

Surface Treatment: Both slipped and unslipped surfaces are only slightly smoothed. Surface color is quite variable, but usually has a pinkish tinge: 10 R 6/6; 2.5 YR 5–6/6, 4/4; 5 YR 4–5/1–3, 5–6/4, 5–7/6; 7.5 YR 3–6/2, 5–6/4.

Paste and Temper: Temper composed of large angular crystals is diagnostic in the identification of this type. Large flakes of mica are often obvious without the use of a hand lens. Fracture is very jagged due to the temper size. The paste color range is 2.5 YR 4–5/6, 4/4; 10 R 6/6; 5 YR 6/6, 5/1.

Muscovitic mica, possibly originating in a plutonic terrain, constitutes 3–5 percent of the paste volume. The range of grain size is 400 microns to 1.6 mm. Quartzite comprises 8–10 percent of the volume with a grain size ranging from 320 microns to 2.8 mm. Micaceous (sericitic) schist is found to reach a frequency of 10–15 percent. Grains range in size from 700 microns to 1.8 mm. The mineral inclusions are markedly different from the local volcanic tuffs and indicate a metamorphic source area. Petrographic comparison with similar sherds from Las Bocas, Puebla, indicates a high degree of similarity, and Las Bocas is located very close to a metamorphic terrain which could be the source of these minerals.

Forms (Fig. 13.7):

Late Amate subphase
- Outslanting wall bowls (RB-17,* 18*)
- Outcurving wall bowls (RB-25)*
- Flaring neck ollas (RO-5)*
- Shallow bowls (RB-41)
- Everted rim bowls (RB-35)
- Rounded bases

Early Barranca subphase
- Incurved rim bowls (RB-3)
- Hemispherical bowls (RB-7)
- Outslanting wall bowls (RB-17, 18)
- Outcurving wall bowls (RB-23, 25)
- Shallow bowls (RB-41)

Plastic Decoration: None of the sherds had plastic decoration.
Comparisons: The most important similarity occurs between Del Prado Pink and virtually identical ceramics from the surface of Las Bocas, Puebla. The forms and paste appear identical. Another pottery, possibly similar to Del Prado Pink, is Río Salado Coarse of the Early Santa María phase of the Tehuacan Valley. The heavy temper, including mica, and the surface color range are like Del Prado Pink, but Río Salado Coarse is usually very thick (MacNeish, Peterson, and Flannery 1970:76–78). The metamorphic nature of the temper indicates that this type is an import into the Río Amatzinac Valley–Chalcatzingo area.

Tadeo Coarse
Temporal Range: Tadeo Coarse was typical of the Early and Late Amate subphases, and continued in minor amounts through the Late Cantera.
Surface Treatment: The surface of this utilitarian pottery is poorly smoothed and unslipped. Surface color is variable, brown to grey, due to firing and use conditions: 2.5 YR 3–5/4, 3–6/6, 4–5/8; 5 YR 4–5/4, 4/6, 4/2, 3/2; 7.5 YR 6/3.5–4; 10 YR 4–5/1–2.
Paste and Temper: Tadeo Coarse is differentiated from Arboleda Coarse on the basis of paste. The paste of Tadeo Coarse is softer with a more crumbly texture. The fracture is jagged as a result of the texture and abundant temper. Wall thickness range is 0.8–1.9 cm. The paste color range is 2.5 YR 3–5/4, 3–6/6, 4–5/8; 5 YR 4–5/4, 4/6, 4/2, 3/2; 7.5 YR 6/3.5–4; 10 YR 4–5/1–2.

The total volume of aplastics is 9 percent. Plagioclase (An 26) makes up 4–6 percent of the paste volume, and its grains range in size from 80 to 600 microns. Orthopyroxenes constitute 2–4 percent of the total volume, present some twinned examples, and range in size from 160 to 240 microns. Horneblende or clinopyroxene is present in less than 1 percent. Horneblende has a range of size from 80 to 440 microns; clinopyroxenes from 260 to 300 microns. Basaltic andesite, sandstone, and iron stains are present. The mineral inclusions show similarities to mineral fragments found in the volcanic tuff of the area.
Forms: The Early Amate subphase forms are not known.
Late Amate subphase
Beveled rim bowls (RB-37)*

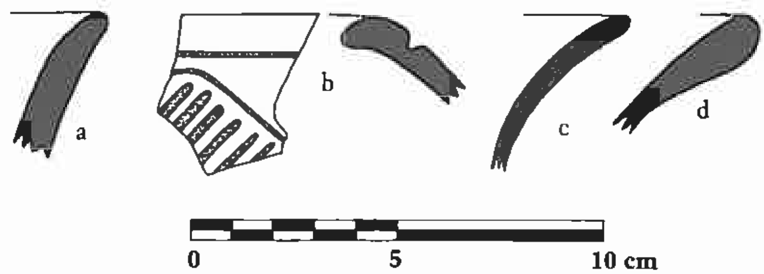


Figure 13.5. Atoyac Unslipped Polished III: *a–b*, Early and Late Amate subphase bowls; *c–d*, Early and Late Amate subphase ollas.

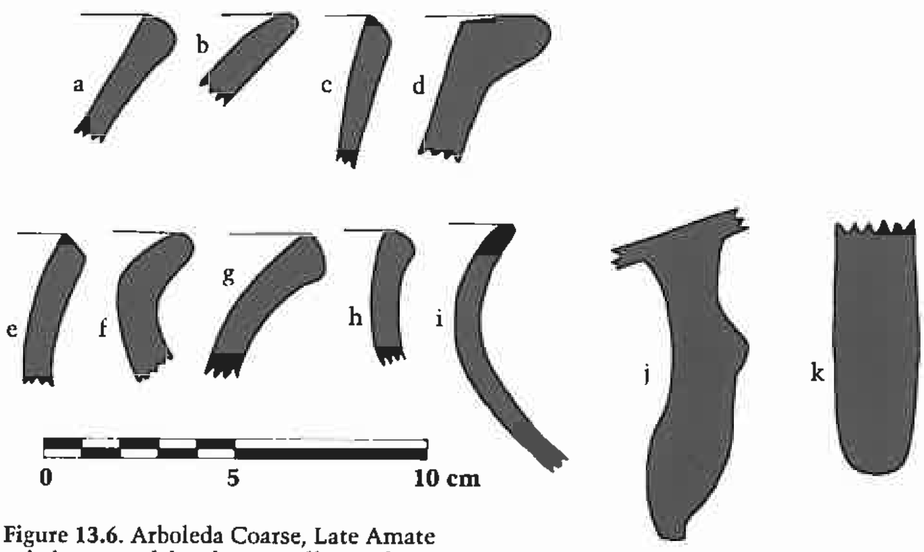


Figure 13.6. Arboleda Coarse, Late Amate subphase: *a–d*, bowls; *e–i*, ollas; *j–k*, spider-leg supports.

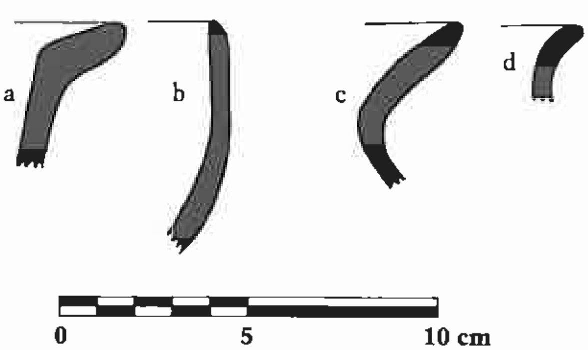


Figure 13.7. Del Prado Pink, Late Amate and Early Barranca subphases: *a–b*, bowls; *c–d*, ollas.

High shoulders (Base M)*
Outslanting wall bowls (RB-18)
Outcurving wall bowls (RB-25)
Flaring wall bowls (RB-26)
Shallow bowls (RB-41)
Super flaring neck ollas (RO-17)
Flaring neck ollas (RO-5)
Flat and rounded bases

The sample of Tadeo Coarse in Early Barranca levels is small, with the only recognized form being outslanting wall bowls (RB-18).

Middle Barranca subphase
Incurved rim bowls (RB-3)
Plate forms with roughened exteriors (RD-2, 3, 5, 7, 8)
Flat bases

Late Barranca subphase
Common forms
Shallow bowls (RB-41)
Outcurving wall bowls (RB-23, 25)
Other forms
Everted rim bowls (RB-30)*
Collared ollas (RO-1)*
Outslanting wall bowls (RB-18, 19)
Highly outcurved bowls (RB-90)
Hemispherical bowls (RB-7)
Flaring wall bowls (RB-26)
Braziers, annular based (RB-100)
Incurved rim bowls (RB-3)
Plate form with roughened exterior (RD-4)
Flat and rounded bases

Early Cantera subphase
Common forms
Outcurving wall bowls (RB-23, 25)
Small shallow bowls (RB-70)*
Plate form with roughened exterior (RD-4)
Other forms
Plate form with roughened exterior (RD-2)
Flower pot bowls (RB-62)*
Highly outcurved bowls (RB-90)*
Outslanting wall bowls (RB-18)
Shallow bowls (RB-41)
Double-loop handle censer (RB-101)
Flat and rounded bases

Late Cantera subphase
Common forms
Outcurving wall bowls (RB-23, 25)
Shallow bowls (RB-41)
Other forms
Braziers (RB-99)*
Small shallow bowls (RB-70)*
Double-loop handle censers (RB-101)*
Highly outcurved bowls (RB-90)*
Flaring mouth ollas (RO-28)*
Plate form with roughened exterior (RD-3,* 8,* 1, 2, 4)
Spouted tray (RD-9)*
Regular handles (H-1)
Flat and rounded bases
Cylindrical bowls (RB-14)
Heavy shallow bowls (RB-115)
Incurved rim bowls (RB-3, 128)
Outslanting wall bowls (RB-17, 18, 19)
Flaring wall bowls (RB-26)
Everted rim bowls (RB-30)
Braziers, annular based (RB-100)
Flaring neck ollas (RO-5, 12)
Super flaring neck ollas (RO-17)

Plastic Decoration: No examples of plastic decoration were noted.
Comparisons: None.

Carved Grey

Temporal Range: Carved Grey first appeared in Late Amate subphase levels.
Surface Treatment: Surfaces are unslipped and well polished. Due to firing clouds, the surface color is variable: 5 YR 5–6/1; 10 YR 4/1, 5/3, 7/3, 7–8/1–2.
Paste and Temper: The soft paste has a jagged, crumbly fracture. The color range is 5 YR 5–6/1; 10 YR 4/1, 5–6/1; 7.5 YR 6/6, 5–6/2.

Approximately 7 percent of the volume of the paste is aplastics. Plagioclase (An 28) is the most frequently occurring mineral, 5 percent of the volume, and ranges in grain size from 80 to 540 microns. Orthopyroxenes compose 1 percent of the volume and range in size from 140 to 400 microns. The common amphibole, horneblende, constitutes less than 1 percent of the paste volume; grain size ranges from 200 to 320 microns. Basaltic andesite is present. The mineral inclusions show similarities to mineral fragments found in the volcanic tuff of the area.

Forms (Fig. 13.8):
Late Amate subphase contexts
Outslanting wall bowls (RB-18)
Outcurving wall bowls (RB-23)
Shallow bowls (RB-41)
Other known forms
Diagnostic phase marker
Everted rim bowls (RB-35)
Other forms
Hemispherical bowls (RB-7)
Incurved rim bowls (RB-3)
Heavy everted rim bowls (RB-38)

Plastic Decoration: The most notable characteristic of Carved Grey is the deep, wide, incised decoration, often depicting crossed bands (Fig. 13.8*a*). Red pigment was sometimes rubbed into the incised areas. Excision also occurs occasionally.
Comparisons: Carved Grey is similar to certain examples of Café Negruzco and Negro Pulido defined by Piña Chan at Chalcatzingo (1955: Figs. 3*g*, 8*ñ–q*). Chalcatzingo's Carved Grey is closely parallel in form, decoration, and color to Calzadas Carved of the San Lorenzo A phase of San Lorenzo. In the central highlands of Mexico, similar pottery types have a wide spatial distribution but do not occur in abundance at any one site. In Morelos it is reported from the Río Cuautla area during the Late Nexpa (San Pablo B) phase (Grove 1974b: 33), from Cerro Chacaltepec (Grove 1968b: 68–69, Fig. 64), from Atlihuayan (Iglesia Vieja) as Café Negruzco in the Olmeca-Arcaico complex (Piña Chan and López González 1952: Fig. 1), and in El Zarco subphase (Grennes-Ravitz 1974). Similar grey wares are found in the San José phase of the Valley of Oaxaca (Flannery 1968: 82–83), in the Moyotzingo A phase of Moyotzingo, Puebla (Aufdermauer 1973: 12), and at Ayotla in the Valley of Mexico during the Ayotla and Justo phases (Tolstoy and Paradis 1970: 347). At Tlatilco, some examples of Café Negruzco and Café Oscuro are like Chalcatzingo's Carved Grey (Piña Chan 1958: Figs. 34*h*, 37*m*).

From the Middle Grijalva region, flat-bottomed everted rim bowls are known from the Bombana phase, but the carved designs do not appear until the Cocahuano phase (Lee 1974: 5–7). At Altamira, Chiapas, Pampas Black and White of the Cuadros phase includes both white-rimmed black pottery and everted rim bowls with carved designs (Green and Lowe 1967: 108–109). Coapa Black of the Cuadros phase of Izapa evidences everted rim bowls and excised motifs (S. Ekholm 1969: 45). Burrero Grey of the Burrero phase of Santa Cruz, Chiapas, has the typical flat based everted rim bowls, but there is no mention of carved or excised designs (Sanders 1961).

Kaolin

Temporal Range: The exact temporal placement of Kaolin pottery at Chalcatzingo is unknown. Its earliest occurrence is in a Late Amate subphase level. Several Kaolin sherds occurred in Middle Barranca levels, and others in Cantera phase levels. Since only small amounts of Kaolin ceramics are present at Chalcatzingo, and in contexts which are temporally scattered, an exact temporal placement will not be attempted.
Surface Treatment: The unslipped, well-polished surfaces are distinguished by their stark white color.

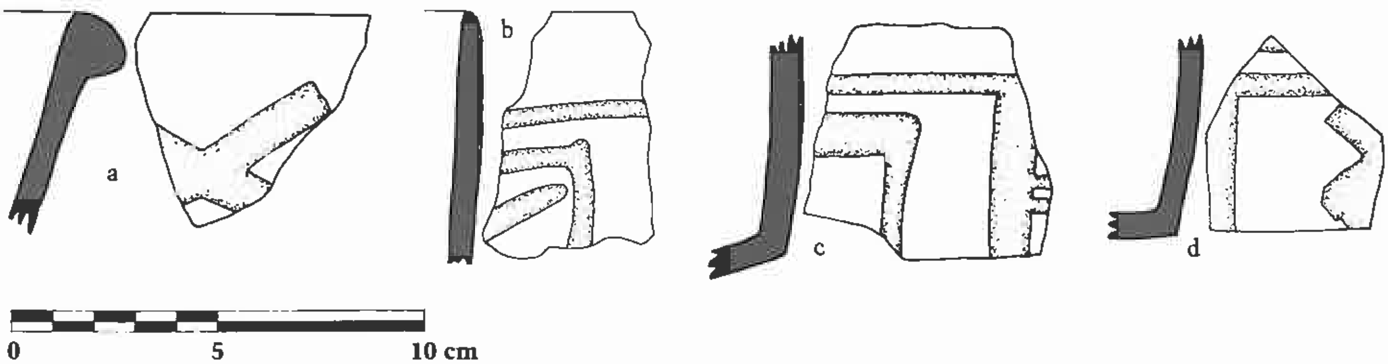


Figure 13.8. Carved Grey, Late Amate subphase bowls.

Paste and Temper: Cross-sections of sherds show a completely white core. There is little or no temper. The fracture is generally sharp. Wall thickness is extremely thin, ca. 0.3 cm.

Less than 2 percent of the total paste volume is aplastics. Quartz comprises 1 percent of the paste volume, its grains measuring 140–600 microns. A trace of plagioclase, a few grains of quartzite, and iron stains were noted.

Forms (Fig. 13.9): The small quantity of sherds in our sample are all irregularly shaped or warped forms and do not fit within our established categories.

Plastic Decoration: Rippled surfaces of some sherds in our sample probably represent a decorative technique.

Comparisons: Kaolin pottery called Xochiltepec White is present beginning with the Chicharras phase at San Lorenzo (Coe 1970:25). Hollow figurines made of kaolin are known from La Venta (museum collection of the Museo Nacional de Antropología, Mexico City). Porous White Ware from Tres Zapotes may be similar to Kaolin (Weiant 1943:17). Kaolin sherds are present in the San Pablo B phase of the Río Cuautla region (Grove 1974b) and at Iglesia Vieja, Morelos, during the El Zarco subphase (Grennes-Ravitz 1974). Kaolin ceramics occur as burial furniture at Tlatilco (Piña Chan 1958:91).

The petrographic analysis of Kaolin ceramics should not be expected to correspond to that of other types. Kaolin ceramics represent a special case, as aplastics were apparently not added during the manufacturing. Chalcatzingo is located near a kaolin source (see Chapter 23), although at this time we have not completed trace analyses of this source and therefore cannot ascertain whether the Kaolin ceramics present in our samples were locally manufactured or imported. Their small quantity suggests that they may not have been locally manufactured.

Manantial Orange-on-White

Temporal Range: Manantial Orange-on-White appeared during the Middle Barranca subphase and was also present in small quantities into the Cantera phase. Its true chronological position is probably within the Middle to Late Barranca subphases.

Surface Treatment: The often polished surface is slipped with painted bands of orange or sometimes red on the exterior. The painted bands are usually delimited by incising (Figs. 13.10, 13.11*e*–*f*). The color range of the white background is 10 YR 8/1–4, 7/1–2. The orange slip has a range of 5 YR 4–6/6.

Paste and Temper: The paste is like that of Amatzinac White. Probably as a function of the extraordinary thickness of the vessel walls (over 2 cm), the paste usually contains abundant inclusions. The paste color range is 7.5 YR 6/4, 5–7/4–6.

The total frequency of aplastics in the paste is 8–9 percent. As in most samples with volcanic tuff temper, plagioclase (An 27) is the major mineral, constituting 5 percent of the volume. Grain size range is 100–600 microns. Orthopyroxenes compose 1–2 percent of the volume, with a grain size range of 180–260 microns. Some twinned examples of orthopyroxenes are present. Basaltic andesite, iron stains, and leucoxene are

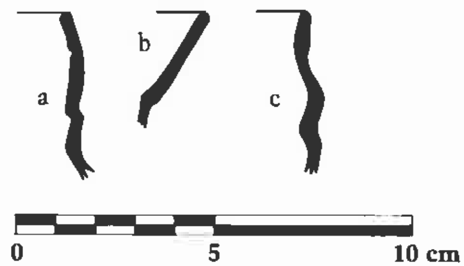


Figure 13.9. Kaolin rims.

present, while a trace of clinopyroxene is noted.

Forms (Figs. 13.10, 13.11): Large heavy everted rim bowls (RB-38; Fig. 13.11*d*) and flower pot bowls (RB-62) are typical.

Plastic Decoration: Incising to outline the orange-painted areas is common (Figs. 13.10, 13.11*e*–*f*).

Comparisons: Aguatepec Thick of the San Lorenzo phase of San Lorenzo has identical thick, heavy RD-38 forms (Coe, personal communication).

Amatzinac White

Temporal Range: Amatzinac White was present in minute quantities in the Late Amate subphase. It became a major part of the Chalcatzingo ceramic assemblage at the beginning of the Early Barranca and continued in that role through the Late Cantera.

Surface Treatment: Vessel surfaces are slipped with a thick slip which varies in color from a stark white to a creamy or greyish white: 10 YR 7–8/1–4. During the Barranca phase, this type is generally well polished, and the slip is durable. During the Cantera phase, however, the slip is of a poorer quality and tends to wear off (fugitive white). Hemispherical bowls and incurved rim bowls are always slipped white on both interior and exterior surfaces. During the Barranca phase,

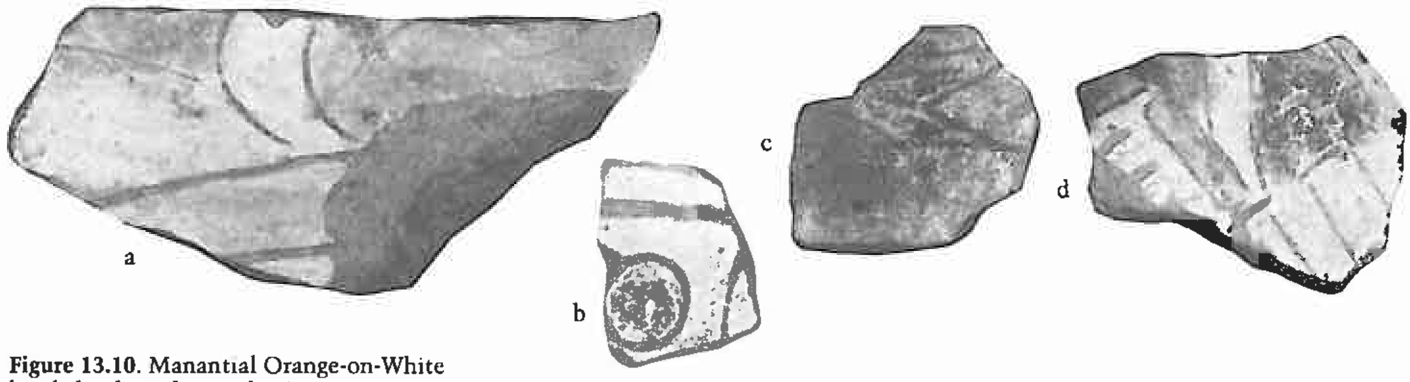


Figure 13.10. Manantial Orange-on-White bowl sherds with zoned painting.

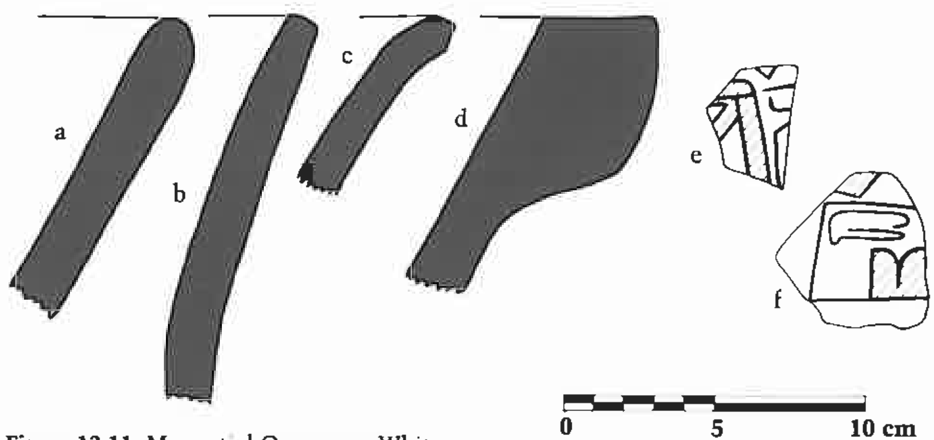


Figure 13.11. Manantial Orange-on-White: *a–d,* bowl rims; *e–f,* bowl sherds with zoned painting (hatched area indicates orange).

some outcurving wall and everted rim vessels are unslipped on the exterior. Almost all Amatzinac White vessels during the Cantera phase are slipped on the exteriors as well as interiors.

Paste and Temper: The paste is crumbly and has a jagged fracture. The paste color range is 7.5 YR 6/4, 5–7/4–6, 3–5/0; 10 YR 6–7/3–4. A brown and dark grey sandwiched core is typical of Amatzinac White.

The total volume of aplastics is approximately 20 percent. Plagioclase (An 25, 27, 28, 30) occurs most frequently, as 10 percent of the total paste volume. Grain size is 100 microns to 1.0 mm. Orthopyroxenes constitute 2–5 percent of the volume, and grains measure 100 microns to 1.3 mm. Horneblende may be the second most abundant mineral, never more than 1 percent of the volume, or may be equaled in proportion by clinopyroxene. Some grains of clinopyroxene are twinned. Clinopyroxenes measure from 100 to 400 microns; horneblende grains range from 140 to 640 microns. Basaltic andesite, dacite, iron stains, leucoxene, and opaque iron-titanium ores are observed. Occasional grains of quartzite and poikilitic plagioclase are present. The mineral inclusions show similarities to mineral fragments found in the volcanic tuff of the area.

Forms:

Late Amate subphase
- Cylindrical bowls (RB-14)
- Outcurving wall bowls (RB-23)
- Outslanting wall bowls (RB-17)
- Everted rim bowls (RB-35)
- Flat and rounded bases

Early Barranca subphase (Figs. 13.12*a–g,* 13.13, 13.14, 13.15*a–j*)
- Common forms
  - Hemispherical bowls (RB-7)
  - Outslanting wall bowls (RB-17, 18, 19)
  - Flaring wall bowls (RB-26)
  - Slightly everted rim bowls (RB-77)
- Other forms
  - Ovate bowls (RB-16)*
  - Everted rim bowls (RB-30,* 35*)
  - Outcurving wall bowls (RB-23, 25)
  - Shallow bowls (RB-41)
  - Flat and rounded bases, with a higher frequency of flat bases
- Infrequent and sporadic forms
  - Highly outcurved bowls (RB-76)
  - Composite silhouette bowls (RB-45)
  - Super flaring neck ollas (RO-17)

Middle Barranca subphase (Figs. 13.12*h–k,* 13.13, 13.14, 13.15*a–j*)
- Common forms
  - Outcurving wall bowls (RB-25)
  - Outslanting wall bowls (RB-18)
  - Flaring wall bowls (RB-26)
  - Hemispherical bowls (RB-7)
  - Everted rim bowls (RB-30)*
- Other forms
  - Outcurving wall bowls (RB-23)
  - Outslanting wall bowls (RB-17, 19)
  - Ovate bowls (RB-16)*
  - Flower pot bowls (RB-62)*
  - Slightly everted rim bowls (RB-77)*
  - Incurved rim bowls (RB-3)
  - Shallow bowls (RB-41)
  - Outslanting, slightly everted rim bowls (RB-20)
  - Highly outcurved bowls (RB-76)
  - Fragment of a possible cloverleaf-shaped bowl
  - Flat and rounded bases

Late Barranca subphase (Figs. 13.12*h–j, l–p,* 13.16–13.18)
- Common forms
  - Outcurving wall bowls (RB-25)*
  - Outslanting wall bowls (RB-18)*
  - Flaring wall bowls (RB-26)
  - Everted rim bowls (RB-30)*
- Other forms
  - Outcurving wall bowls (RB-23)*

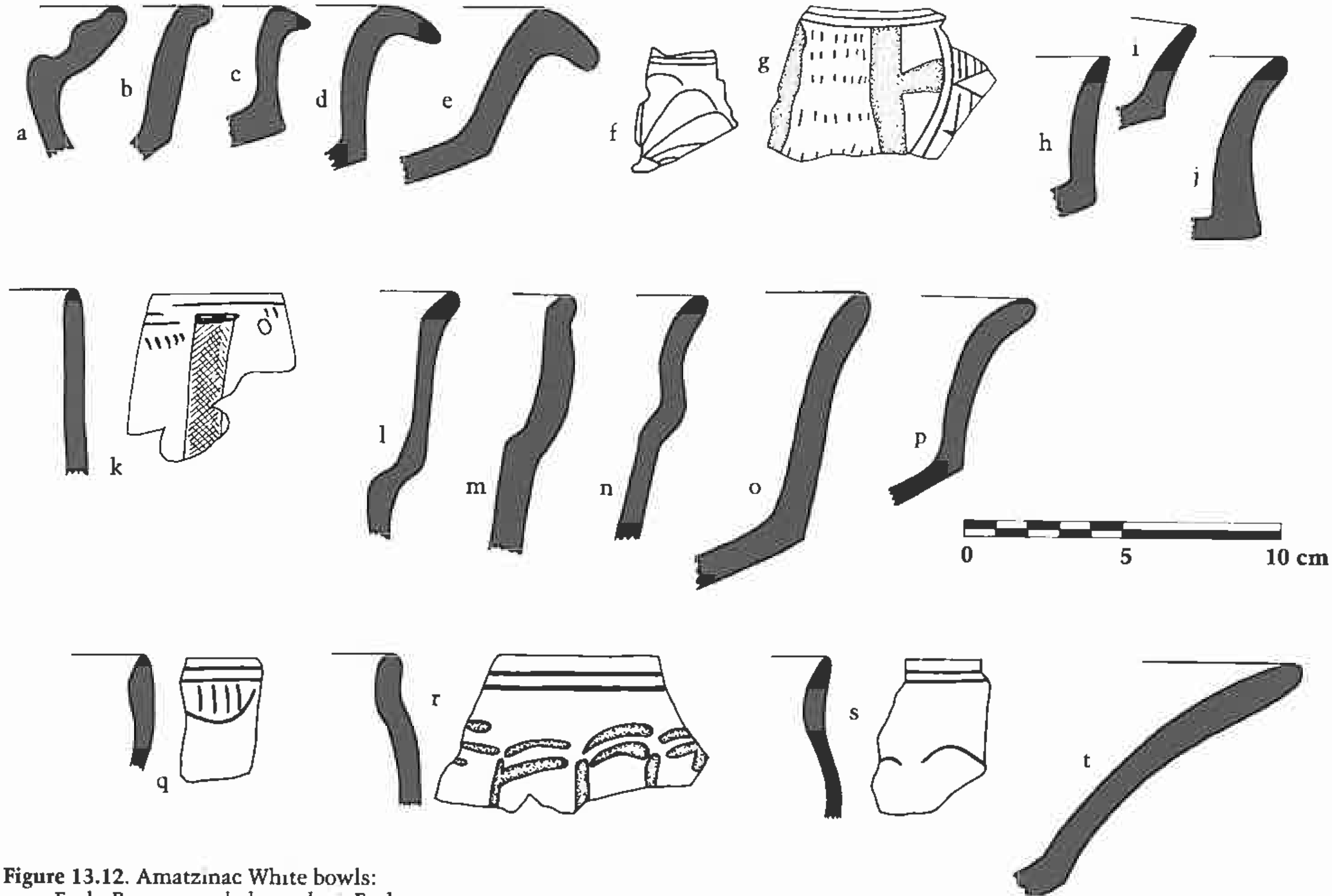


Figure 13.12. Amatzinac White bowls: *a–g*, Early Barranca subphase; *h–j*, Early to Late Barranca; *k*, Middle Barranca; *l–p*, Late Barranca; *q–s*, Early Cantera; *t*, Early to Late Cantera.

Outslanting wall bowls (RB-17,* 19*)
Everted rim bowls (RB-35, 125)
Double-loop handle censer (RB-101)
Flower pot bowls (RB-62)
Slightly everted rim bowls (RB-77)*
Highly outcurved bowls (RB-76,* 90*)
Ovate bowls (RB-16)*
Small shallow bowls (RB-67, 70*)
Direct rim composite silhouette bowls (RB-31)*
Hemispherical bowls (RB-93,* 7)
Spouted trays (RD-9)*
Incurved rim bowls (RB-3)
Outslanting, slightly everted rim bowls (RB-20, 21)
Shallow bowls (RB-41)
Beveled rim bowls (RB-37)
Cylindrical bowls (RB-14)
Heavy shallow bowls (RB-115)
Composite silhouette bowls (RB-45)
Tecomates (RB-1)

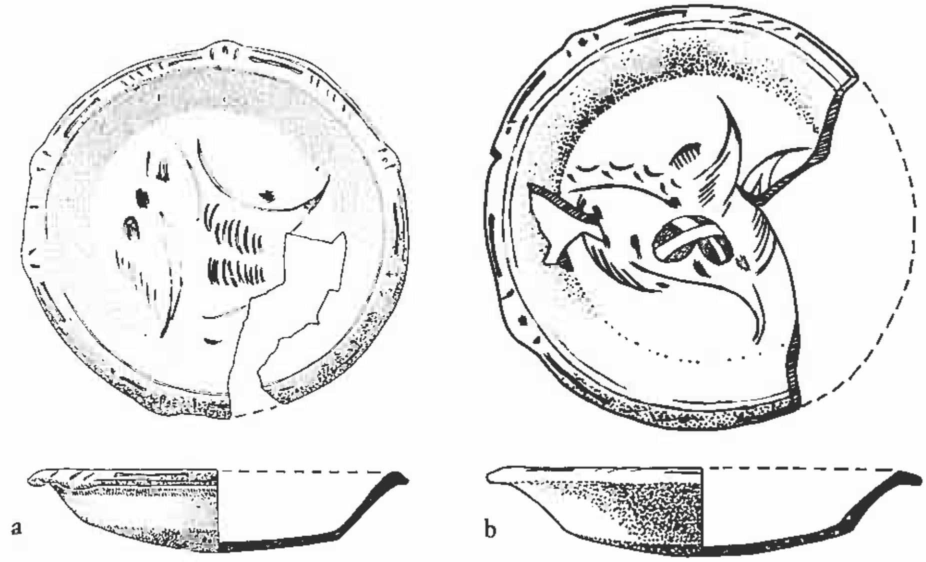


Figure 13.13. Amatzinac White, Early and Middle Barranca subphase bowls with interior pseudo-grater bottom incising.

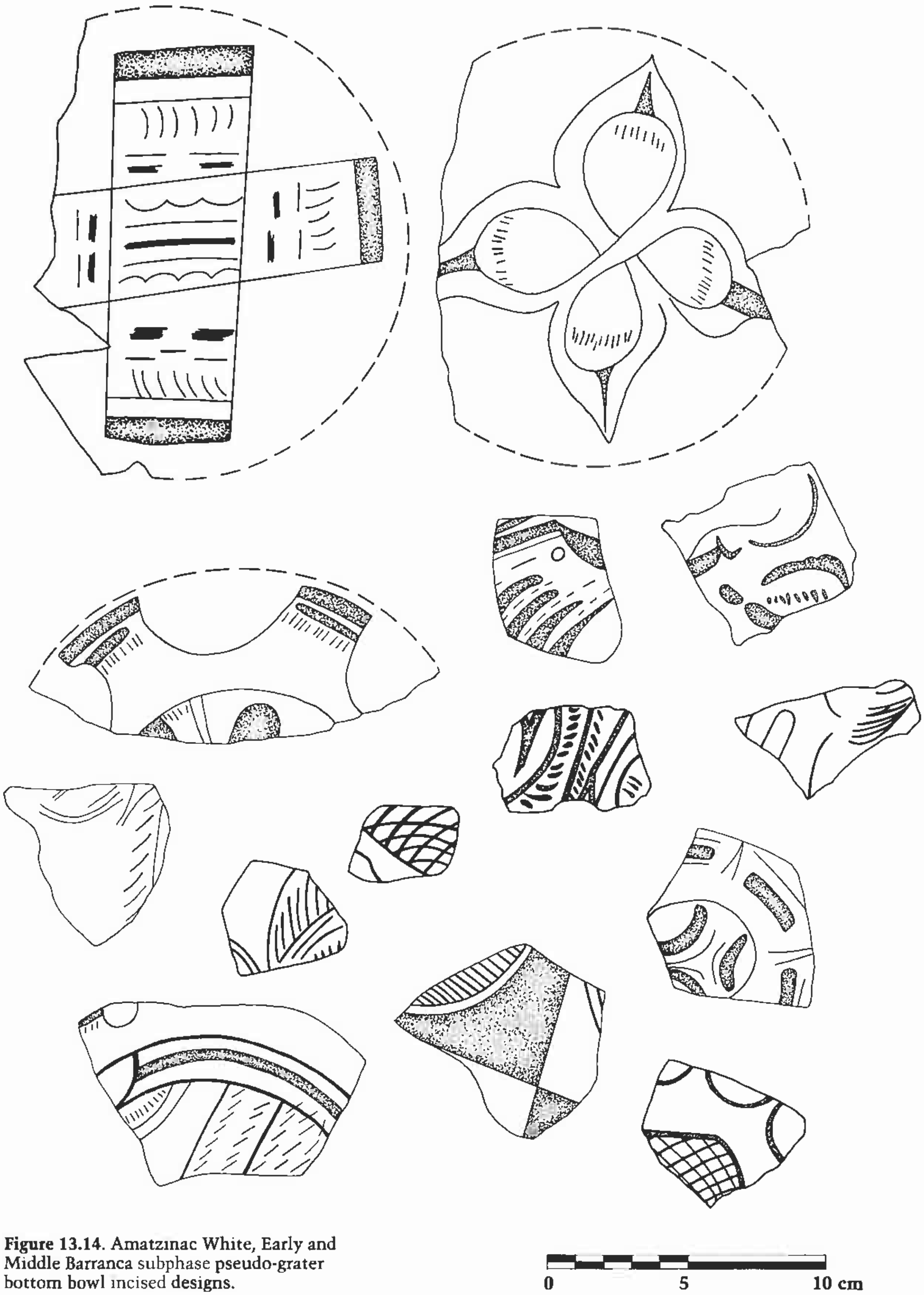


Figure 13.14. Amatzinac White, Early and Middle Barranca subphase pseudo-grater bottom bowl incised designs.

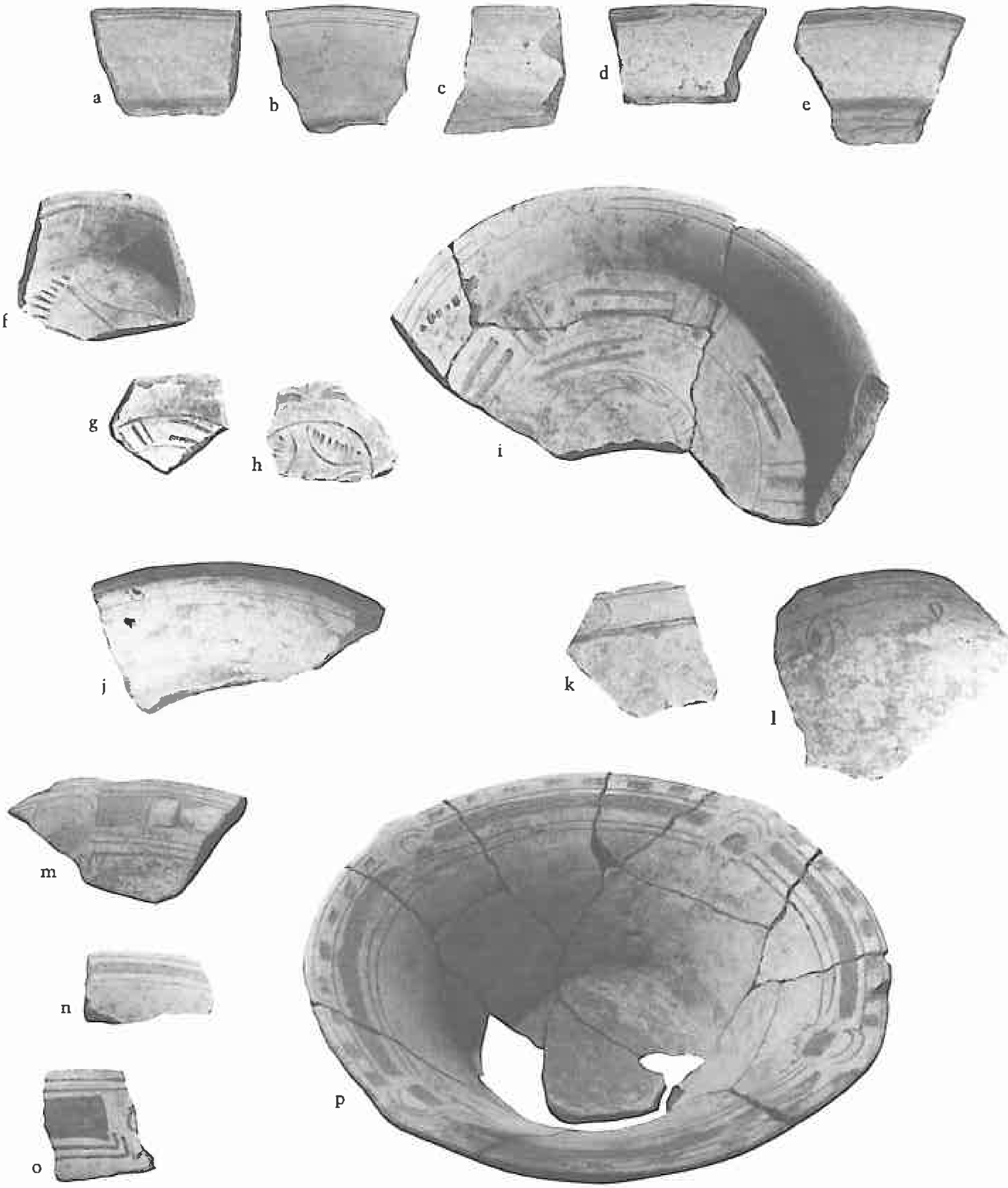


Figure 13.15. Amatzinac White bowls: *a–e,* Early and Middle Barranca subphase outslanting and outcurving walls; *f–i,* Early and Middle Barranca subphase pseudo-grater bottoms; *j,* Early and Middle Barranca subphase everted rim; *k–l,* Early and Late Cantera subphase hemispherical bowls; *m–o,* Early and Late Cantera subphase *raspada*-decorated bowls; *p,* Early and Late Cantera subphase highly outcurving wall bowl with *raspada* decoration.

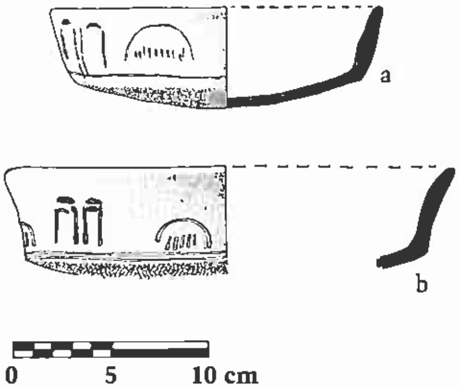


Figure 13.16. Amatzinac White, Late Barranca subphase bowls with exterior incising.

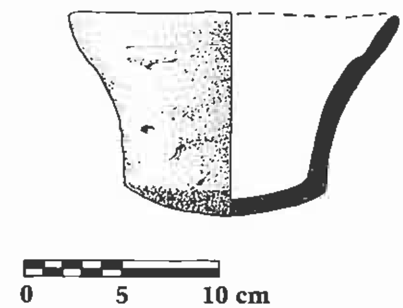


Figure 13.17. Amatzinac White, Late Barranca subphase bowl.

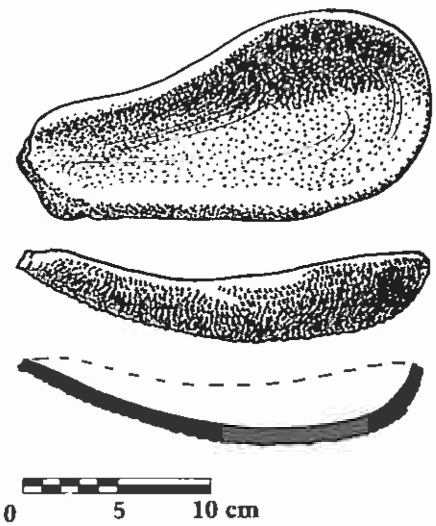


Figure 13.18. Amatzinac White, Late Barranca to Late Cantera subphase ladle.

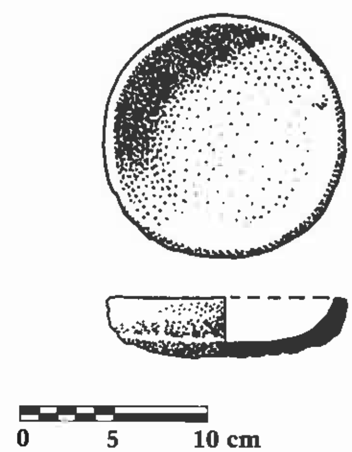


Figure 13.19. Amatzinac White, Early and Late Cantera subphase small bowl.

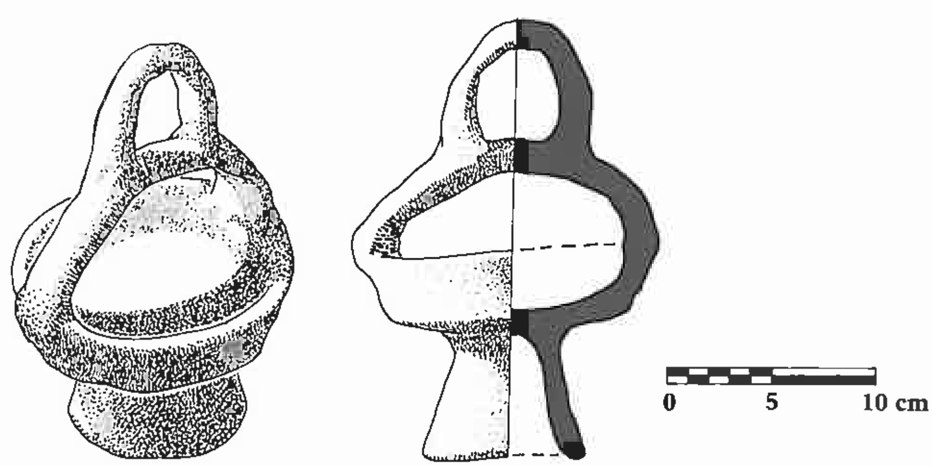


Figure 13.20. Amatzinac White, Early and Late Cantera subphase double-loop handle censer.

Globular bowls (RB-60)
High shoulders (Base M)
Flat or slightly rounded bases

The Cantera phase continued many Barranca phase forms, but new ceramic forms also appeared. Many of the Cantera phase Amatzinac White vessels occurred as burial offerings, and it should be remembered that most Formative period burials recovered by our project date to the Cantera phase, so our burial furniture is strongly biased to this phase. In our sample, the basket censer with the double-loop handle (RB-101; Fig. 13.20) and small shallow bowls (RB-70; Fig. 13.19) appear in significant numbers for the Early Cantera phase. Both were important as burial furniture.

Early Cantera subphase (Figs. 13.12*q–t*, 13.15*k–p*, 13.18–13.22, 13.25–13.26)
- Diagnostic phase markers
  - Highly outcurved bowls (RB-90)
- Common forms
  - Outcurving wall bowls (RB-23,* 25*)
  - Outslanting wall bowls (RB-17,* 18*)
- Other forms
  - Outslanting wall bowls (RB-19)*
  - Highly outcurved bowls (RB-76)*
  - Globular bowls (RB-60,* 79*)
  - Spouted trays (RD-9)*
  - Flower pot bowls (RB-62)*
  - Direct rim composite silhouette bowls (RB-71)*
  - Braziers annular base (RB-100)*
  - High shoulders (Base M)*
  - Incurved rim bowls (RB-3)
  - Hemispherical bowls (RB-7, 93)
  - Shallow bowls (RB-41)
  - Cylindrical bowls (RB-14)
  - *Tecomates* (RB-1)
  - Flaring wall bowls (RB-26)
  - Everted rim bowls (RB-30, 35, 125)
  - Outslanting, slightly everted rim bowls (RB-20, 21, 22)
  - Ovate bowls (RB-16)
  - Slightly everted rim bowls (RB-77)
  - Beveled rim bowls (RB-37)
  - Small shallow bowls (RB-67)
  - Plate form with roughened exterior (RD-4)
  - Flat or rounded bases
  - Supports infrequent

The Late Cantera subphase assemblage is practically identical to that of the Early Cantera subphase, with frequency changes being the most notable characteristic. RB-79, present in the Early Cantera subphase, does not carry over into Late Cantera.

Late Cantera subphase (Figs. 13.12*t*,

13.15*k*–*p*, 13.18–13.22, 13.25–13.26)
- Common forms
  - Outcurving wall bowls (RB-23, 25)
  - Outslanting wall bowls (RB-17, 18, 19)
  - Hemispherical bowls (RB-7)
- Other forms
  - Shallow bowls (RB-121)
  - Heavy everted rim bowls (RB-38)
  - Flaring wall bowls (RB-75)
  - Direct rim composite silhouette bowls (RB-31)
  - Incurved rim bowls (RB-6, 123)
  - Composite silhouette bowls (RB-45)
  - Globular bowls (RB-60)
  - Flanged shoulder bowls (RB-89)
  - Exotic forms (RB-91, 88)
  - Ridged composite bowls (RB-85)
  - Supports infrequent

Plastic Decoration: Our classification and analysis of design motifs (see Table D.4, Fig. D.5) has yielded a sequence of appearance of designs. Design motifs were generally not restricted to particular subphases but continued for quite a while after their appearance. During the Early Barranca subphase, a thin "*raspada*" incising composed of a wide, shallow band incised through the white slip and bordered on either side by single incised lines (Design Code [DC]-1) appeared. This design occurred on many vessel forms but was most common on direct rim outslanting or outcurving wall bowls (RB-17, 18, 19, 23, 25).

On everted rim bowls (RB-77, 30), incised designs composed of several incised lines and shallow, round, or elongated punctates are present on the upper surface of the everted rim (DC-2; Fig. 13.13). A variation of the double-line-break motif began during the Early Barranca subphase. This usually consists of two or three lines incised around the interior rim; where the lines terminate, a series of scallops are introduced (DC-3; Fig. 13.23). These motifs carried over into other subphases. A new incised design, termed the "rainbow" motif, appeared during Middle Barranca (DC-9; Fig. 13.16). Unusually elaborate designs are found on cylindrical bowl forms (Fig. 13.24).

The Late Barranca subphase is characterized by several innovations in design. The "falling raindrop" motif (DC-6) usually occurs on the exterior of outslanting wall bowls. The use of cross-hatch incising on the interior rim of vessels (DC-7) began in this phase. Commonly this cross-hatching occurs on everted rim bowls. The pennant motif (DC-8) consists of incised lines delimiting a pennant form which has been incised through the slip. Interior pseudo-graters attained their greatest frequencies during the Barranca and Early Cantera phases (Figs. 13.13, 13.14). Modeled everted rim bowls with deep punctation (DC-12) are a good marker for the Late Barranca subphase.

Hemispherical bowls of the Early and Late Cantera subphases are typified by exterior rim incising with the "egg" motif (DC-13; Fig. 13.25). A sloppy style of incising, which we term "wide *raspada*" (DC-11; Fig. 13.26), began during the Early Cantera subphase. The common form associated with "wide *raspada*" is the highly outcurved bowl (RB-90), which has the design along the interior rim. This form never has pseudo-grater incising in its interior but is usually incised on the exterior (DC-15; Figs. 13.21, 13.22, 13.26). Other incised rim designs are found on Amatzinac White as well as Laca and Carrales Coarse Grey types (Fig. 13.27).

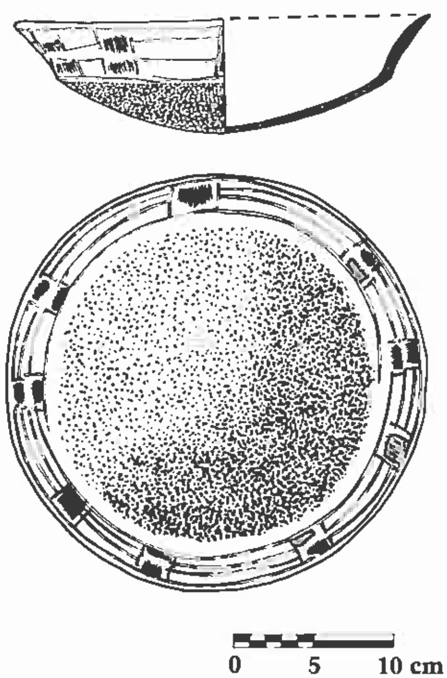


Figure 13.21. Amatzinac White, Early and Late Cantera subphase bowl with exterior incising and interior *raspada* designs.

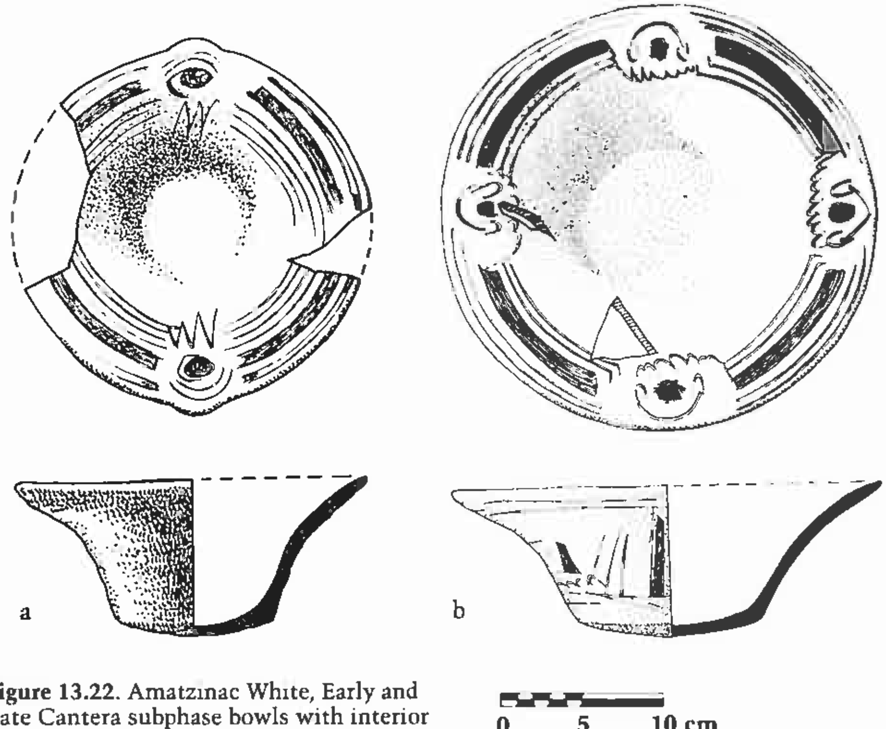


Figure 13.22. Amatzinac White, Early and Late Cantera subphase bowls with interior *raspada* design.

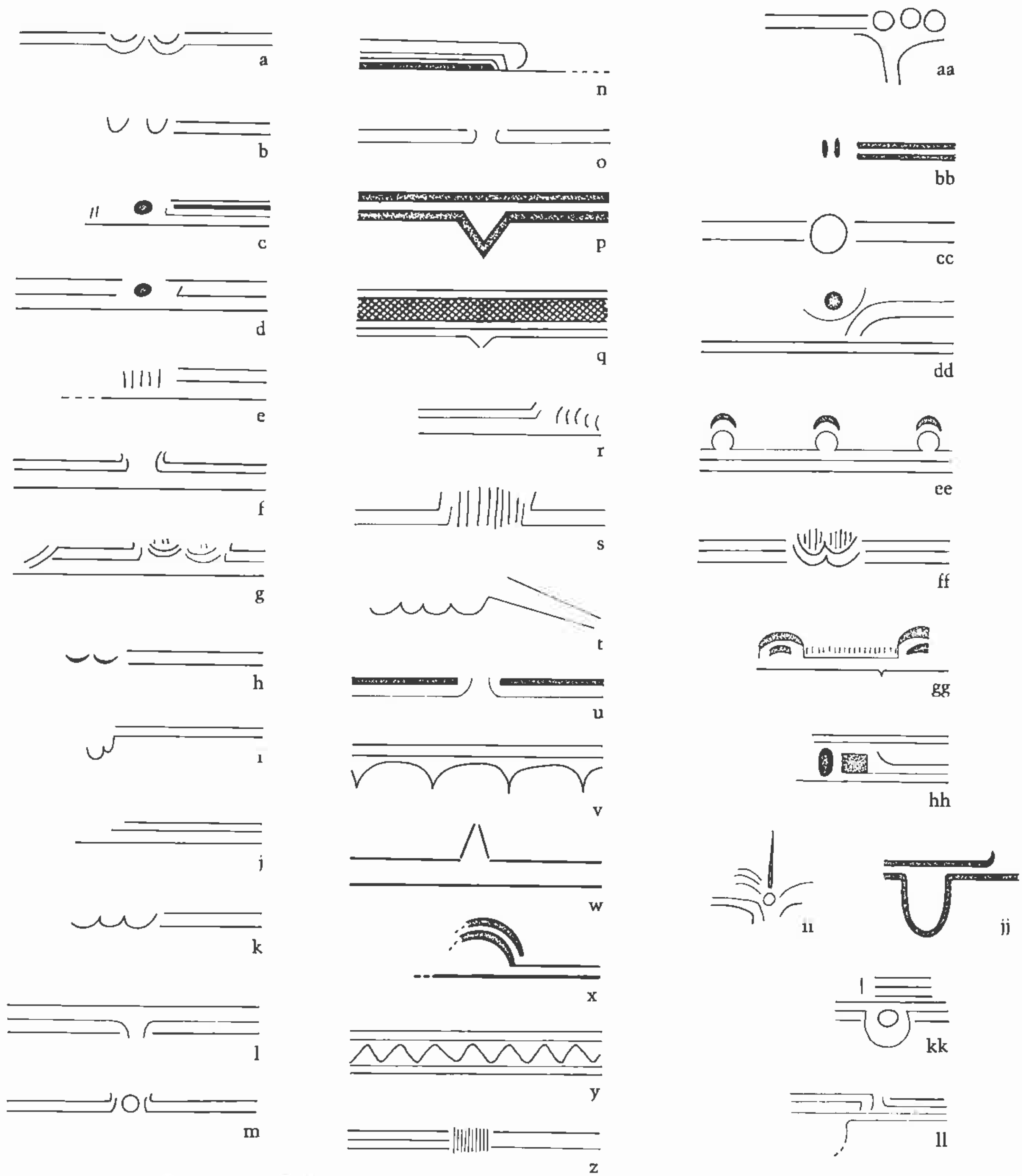


Figure 13.23. Amatzinac White variations of double- and triple-line-break motifs.

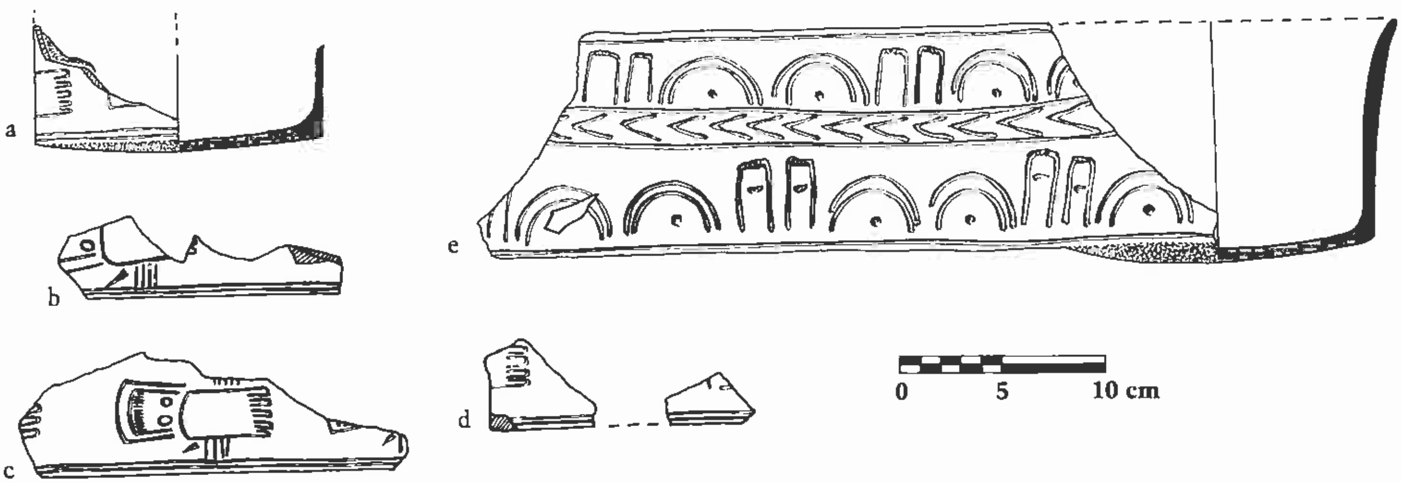


Figure 13.24. Amatzinac White cylindrical bowls with elaborate exterior incised designs.

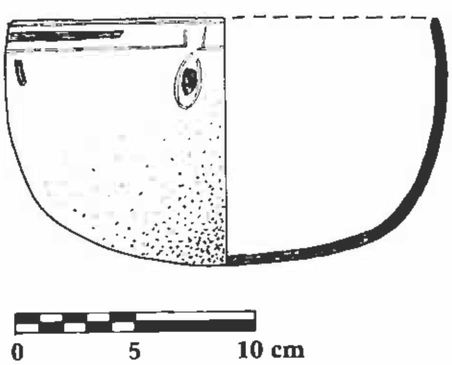


Figure 13.25. Amatzinac White, Early and Late Cantera subphase bowl with exterior "egg" motif incising.

Comparisons: Amatzinac White correlates with Blanco Pulido and Blanco Laca in Piña Chan's classification of Chalcatzingo ceramics (1955: Figs. 5–7, 15–17). In the Valley of Mexico, at El Arbolillo East, the rainbow motif on white-slipped pottery was present in La Pastora phase (Tolstoy and Paradis 1970:345). Pseudo-grater interiors were present at El Arbolillo during El Arbolillo subphase and at Ayotla during the Bomba subphase (ibid.:347). White basket censers and ovate bowls were recovered by George C. Vaillant at Zacatenco (1930: Pl. IV*m*, *p*), and thus are similar to Cantera phase Amatzinac White vessels. Manantial phase Cesto Blanco ceramics from Zohapilco are similar to the Barranca phase Amatzinac White pottery, but Cesto Blanco Tardío from the Zacatenco phase at that site shows no resemblance in form or decoration (Niederberger 1976: 132–135, Pls. 50–52). Blanco Pulido from Middle Formative contexts at Tlatilco (Piña Chan 1958: Figs. 11–12) is typified by outflaring and outcurving wall bowls with single-line, double-line, and scallop incised motifs. Basket censers of the same type are illustrated. The Blanco Pulido at Atlihuayan (Piña Chan and López González 1952: Fig. 1) is also comparable to Amatzinac White, as are Las Juntas White and Grey White from Cerro Chacaltepec in south-central Morelos (Grove 1968b: 71–73, Figs. 59–61).

Early Santa María phase Canoas White of the Tehuacan Valley has flaring wall bowls with flat and rounded bases, simple double-line-break incising, pseudo-graters, and everted rim bowls similar to Amatzinac White of the Barranca phase (MacNeish, Peterson, and Flannery 1970: 59–68). White Cerámica Olmeca Tardía of the Moyotzingo B phase (Aufdermauer 1973) is similar and includes the flower pot bowl (RB-62). Similar pseudo-grater designs and rainbow motifs are present. In Oaxaca, white-slipped pottery vessels with outslanting walls and flat bases are reported from the Guadalupe and Rosario phases of San José Mogote (Flannery 1968:82; personal communication). This is presumably like Atoyac Yellow-White from Fábrica San José (Drennan 1976). From the Panuco region, white-slipped pottery with pseudo-grater designs is reported from the Pavón site (G. Ekholm 1944). Progreso White of the Pavón and Ponce phases includes flaring wall bowls, pseudo-graters, and flat bases (MacNeish 1954:566). Cerámica Blanca is reported from Chalahuite and El Trapiche also (García Payón 1966).

At La Venta, Coarse Buff is probably similar to Amatzinac White in *style*, although no pseudo-graters are present there (P. Drucker 1952: 85–87). San Lorenzo's La Mina White of the San Lorenzo A subphase (Coe 1970) is similar to Amatzinac White in the hemispherical bowl form (RB-93), which is present in Amatzinac White during the Late Barranca subphase. White-slipped ceramics are reported from Tres Zapotes A phase (Weiant 1943: 17). The Cream-White pottery from Tres Zapotes is a fine-paste, thin pottery whose forms include flat

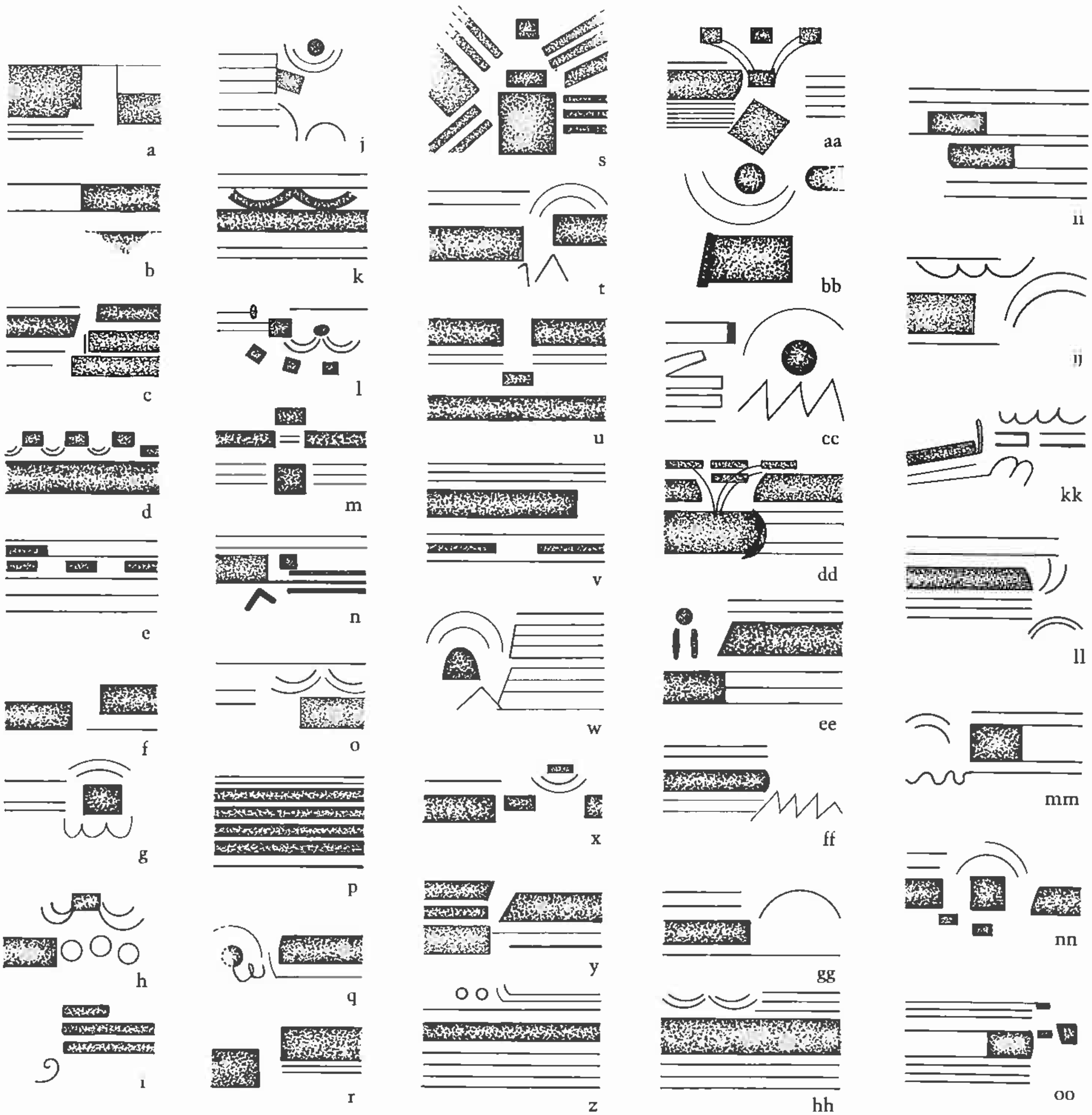
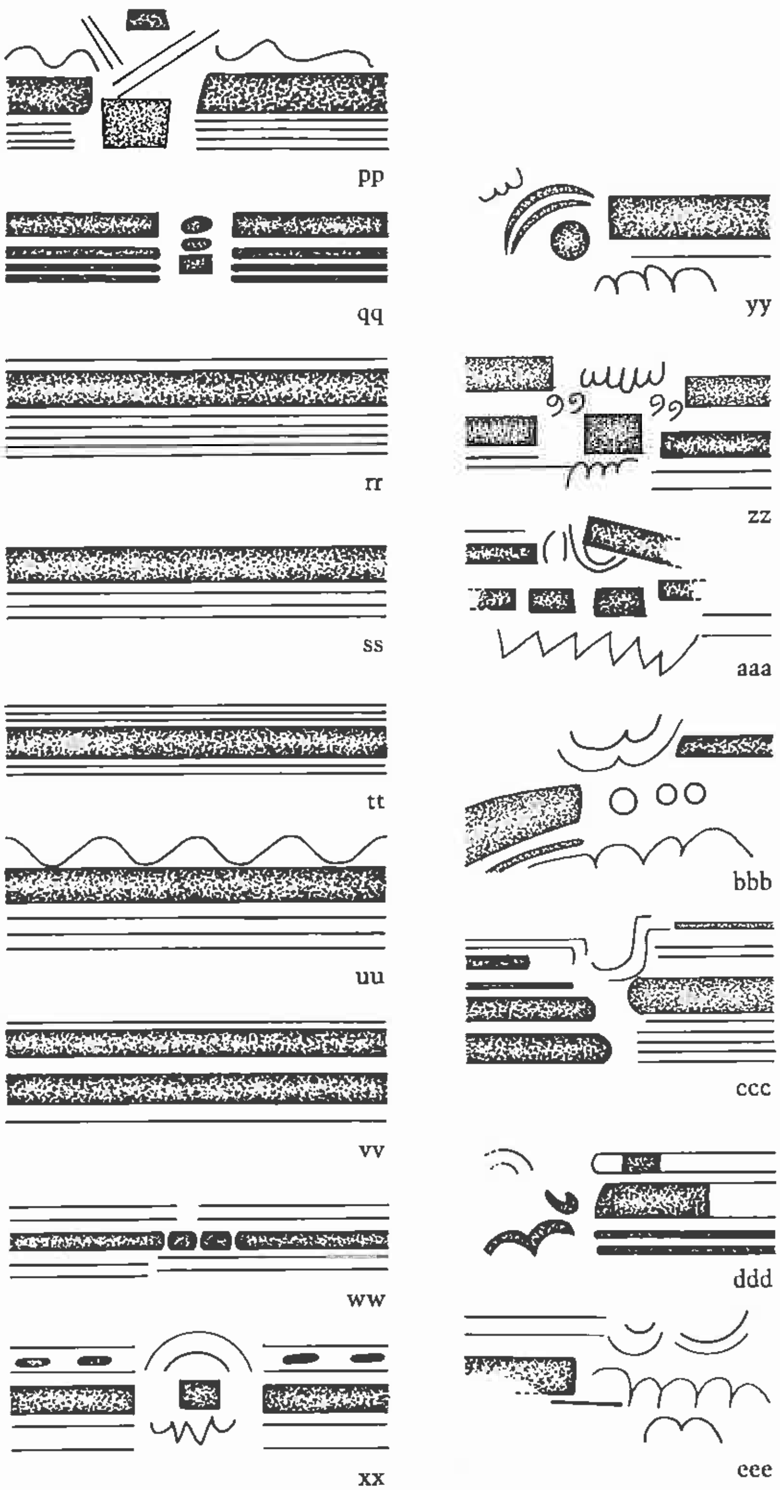


Figure 13.26. Amatzinac White, Early and Late Cantera subphase variations of wide *raspada* interior rim incising.



base flaring wall bowls, everted rim bowls, and hemispherical bowls (Drucker 1943a:38). The white-slipped pottery in the Smithsonian collection (Fig. D.6) has a hard brown paste, and vessel form is mainly ollas and hemispherical bowls with little or no incising.

A notable form at Chalcatzingo is the spouted tray (or ladle; RD-9) often found in burial context (but also found in midden context). Ladles are reported from Santa Cruz, Chiapas, by Sanders (1961), but those ladles have a very elongated spout or handle. Ladles (*charolas*) from Monte Albán are reported by Caso, Bernal, and Acosta (1967:253, Fig. 231). Only eight examples were noted from Monte Albán in K.19 type paste. They were reported as "offerings," but no other context is given.

Amatillo White of the Cuadros phase of Altamira, Chiapas, is similar in form and decoration to Barranca phase Amatzinac White (Green and Lowe 1967:110). Tacana Incised White of the Late Jocotal phase has similar design motifs (ibid.: 118). Amatillo White of the Cuadros phase, and Siltepec White and Tacana Incised of the Jocotal phase of Izapa follow the same style. Outslanting wall bowls with the double-line-break, flaring wall bowls, and cylindrical bowls were popular during those phases (S. Ekholm 1969: 48, 51, 65–66). White Monochrome from Chiapa de Corzo has everted rim bowls with the interior rim cross-hatch design similar to Late Barranca Amatzinac White (Dixon 1959:26, Fig. 27a). Smudged White of the Mirador II phase from Mirador, Chiapas, is typified by flaring wall bowls with flat and rounded bases and decorated with the double-line-break motif (Peterson 1963:8, Fig. 9). Conchas White-to-Buff of the Conchas phase of La Victoria, Guatemala, follows the same pattern of style in white-slipped pottery (Coe 1961:Figs. 25–27). Salinas La Blanca has a complex similar to that of La Victoria (Coe and Flannery 1967). In the coastal regions of Guatemala and Chiapas, pottery forms are different from the highland ones due to different functions and traditions. *Tecomates*, for example, were not a common form in the highlands but were very popular in the coastal lowlands. Huetche White of the Xe complex of Altar de Sacrificios, Guatemala, is described as similar to Teopisca White: Teopisca Variety of Chiapa IV–V, and to Vergel White-to-Buff: Tzutzuculi Variety of Chiapa III (Adams 1971).

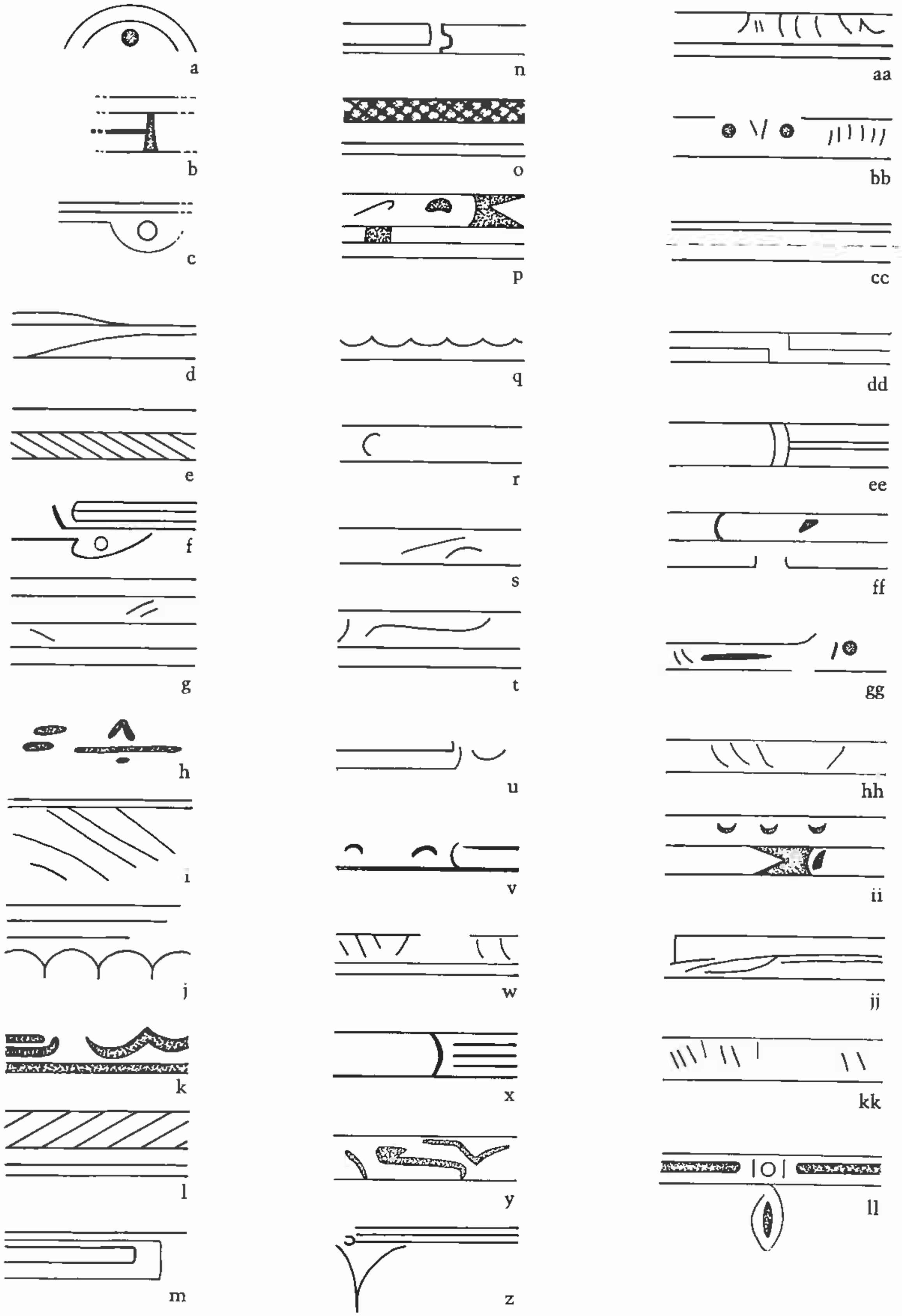


Figure 13.27. Examples of incised rim designs of Amatzinac White, Laca, and Carrales Coarse Grey.

It is important to point out that "wide *raspada*" decoration is known only at Chalcatzingo.

Amatzinac White, Red Paste Variant
Surface Treatment: Surface treatment is identical to that of Amatzinac White.
Paste and Temper: The paste differs from the normal Amatzinac White paste in that it is a bright orange-red color: 7.5 R 4/8; 2.5 YR 5/8, 4/6; 10 R 4/6–8, 6/6, 5/8. Because the paste is like Amatzinac White in all except color, this variant could represent only a difference in firing atmosphere.
Forms: Outflaring wall bowls and everted rim bowls are present.
Plastic Decoration: See Amatzinac White.

Amatzinac White, Ruddy Paste Variant
Surface Treatment: The interiors of the vessels are unslipped and highly polished. The exteriors are slipped white and highly polished. The color range is 2.5 YR 4/8 (interior) and 5 YR 8/1 (exterior).
Paste and Temper: The paste is compact and the fracture sharp. Paste color is 2.5 YR 4/8. There is little or no temper.

The principal mineral constituent is plagioclase (An 33), 5 percent of the total paste volume. Grain size range is 120–600 microns. Orthopyroxene is observed as comprising not more than 1 percent of the volume and having a grain size range of 120–280 microns. Horneblende is present in frequencies of less than 1 percent. Its range of grain size is 100–120 microns. Iron stains, andesite, and leucoxene were observed. These inclusions show similarities to mineral inclusions found in the volcanic tuff of the region.
Forms: The exact bowl forms are unknown.
Plastic Decoration: None.

Amatzinac White, Surface Treatment Variant
Surface Treatment: The white-slipped surfaces are very highly polished and are quite compact. Surface color is distinct from that of Amatzinac White: 10 YR 5/1–2, 6/4. The surface is streaky due to uneven application of slip.
Paste and Temper: The paste is similar to that of Amatzinac White. It has a moderate amount of temper, and the fracture is jagged. Paste color range is 7.5 YR 5/4; 5 YR 3/4.

The principal mineral constituent is plagioclase (An 30), forming 5 percent of the paste volume and having a range of grain size of 100–600 microns. Orthopyroxene and horneblende each comprise less than 1 percent of the volume. Orthopyroxene ranges in grain size from 200–400 microns; horneblende ranges from 140–220 microns. Only a trace of clinopyroxene is noted. Andesite is present. These inclusions show similarity to the mineral inclusions of the volcanic tuff of the region.
Forms:
- Outslanting wall bowls (RB-17, 18, 19)
- Flaring wall bowls (RB-26)
- Direct rim composite silhouette bowls (RB-31)
- Ollas (unknown form)

Plastic Decoration: Shallow exterior grooving, fine-line incising, and patterned "stick" polishing were noted.

Amatzinac White, Paste Variant
Surface Treatment: The surface treatment is similar to that of Amatzinac White. Color range is 10 YR 6/4, 6/2, 7/2; 7.5 YR 6/4, 8/2; 5 YR 7/2.
Paste and Temper: The paste has little temper and is very compact. The fracture is very sharp and even. Paste color is diagnostic: 2.5 YR 3/2, 3–4/6; 5 YR 5/3–4, 4/6.

Plagioclase (An 28) forms 6 percent of the paste volume, and its grains measure 180–840 microns. Horneblende and orthopyroxene each constitute less than 1 percent of the volume. Horneblende has a range of grain size of 200–420 microns. One grain of clinopyroxene was noted. Andesite and iron stains are present. These inclusions show similarities to those of the volcanic tuff of the region.
Forms:
- Flaring wall bowls (RB-26)
- Hemispherical bowls (RB-7)
- Ollas (unknown forms)

Plastic Decoration: Fine-line incising is the only decorative technique present.

Amatzinac White, Exterior White-Slipped, Interior Plain Variant
Surface Treatment: The interiors of the vessels are unslipped and polished. Interior color range is 5 YR 3–4/1, 4/4; 7.5 YR 4/2. The exteriors are white-slipped and polished. Color range is 7.5 YR 8/2.
Paste and Temper: The paste is similar to Amatzinac White. Plagioclase (An 34) constitutes 5 percent of the paste volume. Grains range in size from 180 to 380 microns. Orthopyroxene is the second most abundant mineral, 1 percent of the volume. Grains range in size from 140 to 440 microns. Horneblende is present, but forms less than 1 percent of the paste volume. Grains measure 300–540 microns. One twinned example was observed. One grain of clinopyroxene was noted. Iron stains, andesite, and leucoxene are present. These inclusions show similarities to mineral inclusions in the volcanic tuff of the region.
Forms: Bowl body sherds are present, but rim forms are not known.
Plastic Decoration: Punctation, patterned "stick" polishing, and incising occur.

Laca
Temporal Range: Laca appeared in significant quantities at the beginning of the Early Barranca subphase and was typical of the ceramic assemblage during the Early, Middle, and Late Barranca and Early Cantera subphases. During the Late Barranca, it began to diminish in popularity.
Surface Treatment: Vessel surfaces first received a white slip and then an orange-red colored wash over the white slip. The transparency of the colored wash gives the impression of lacquer technique, although this pottery is not a true lacquer (*laca*) ware. Laca shows varying degrees of polishing, from highly to poorly polished, often dependent upon conditions of preservation. Due to firing conditions, surface colors vary from bright orange to yellow and sometimes brown: 2.5 YR 3–6/6–8, 3/2; 5 YR 4–6/6, 5–7/8, 7/6–8, 3–4/2–3, 3–5/4–5, 3/1, 5/6–8; 10 YR 4–5/4, 7/5, 7/8; 2.5 YR 3/2–4, 4–5/8; 7.5 YR 6–8/6, 5–7/8. Piña Chan (1955:19–20, Fig. 14*a–j*) originally divided Chalcatzingo Lacas into two subgroups on the basis of color: Amarillenta and Naranja. Grove (1968b:76–79) created orange, yellow, and brown Laca types for Cerro Chacaltepec.

Hemispherical, incurved, and shallow bowls invariably have the slip and colored wash on both interior and exterior surfaces. Some outcurving and outslanting wall bowls during the Early and Late Barranca subphases tend to be slipped only on interiors. Occasionally everted rim bowls were left with a white rim when the colored wash did not extend to the lip of the vessel. During the Cantera phase, bowls were slipped and decorated on the exteriors.
Paste and Temper: The paste is crumbly and has a jagged fracture. Paste color

range is 7.5 YR 6/4, 5–7/4–6, 3–5/0; 10 YR 6–7/3–4. A reduced black or grey sandwiched core is common.

The maximum frequency of aplastics is 19 percent of the total paste volume. The most frequently occurring mineral is plagioclase (An 29–32), as 5–8 percent of the total volume. The range of grain size is 140–400 microns. Orthopyroxene grains measure 100–500 microns and constitute 3–4 percent of the volume. Clinopyroxene grains, ranging in size from 200 to 340 microns, are less than 1 percent of the volume. Horneblende never exceeds 1 percent of the volume, and the grains have a size range of 160–360 microns. Basaltic andesite, dacite, iron stains, and occasional leucoxene are present. Opaque iron-titanium ores reach a maximum of 5 percent of the total volume. The mineral inclusions show similarities to the mineral fragments found in the volcanic tuff of the area.

Forms:

- Late Amate subphase contexts
  - Shallow bowls (RB-41)
  - Outslanting wall bowls (RB-17, 18)
  - Outcurving wall bowls (RB-23)
  - Rounded bases
- Early Barranca subphase (Fig. 13.30*a–e*, *i–k*)
  - Hemispherical bowls (RB-7)
  - Outslanting wall bowls (RB-17, 18, 19) with flat and rounded bases
  - Shallow bowls (RB-41)
  - Cylindrical bowls (RB-14)
- The Early Barranca forms continued into the Middle Barranca.
- Middle Barranca subphase (Figs. 13.28*a–g*, 13.30*a–e*, *i–k*)
  - Common forms
    - Incurved rim bowls (RB-3)
    - Outslanting wall bowls (RB-19)
    - Outcurving wall bowls (RB-25)
  - Other forms
    - Outcurving wall bowls (RB-23)
    - Everted rim bowls (RB-30)*
    - Ovate bowls (RB-16)
    - Outslanting, slightly everted rim bowls (RB-21, 22)
- Early and Middle Barranca forms continued into the Late Barranca.
- Late Barranca subphase (Figs. 13.28*h–o*, 13.29, 13.30)
  - Diagnostic phase markers
    - Everted rim bowls (RB-30)
    - Flower pot bowls (RB-62)
  - Common forms
    - Outslanting wall bowls (RB-17, 18, 19)
    - Outcurving wall bowls (RB-25)
  - Other forms

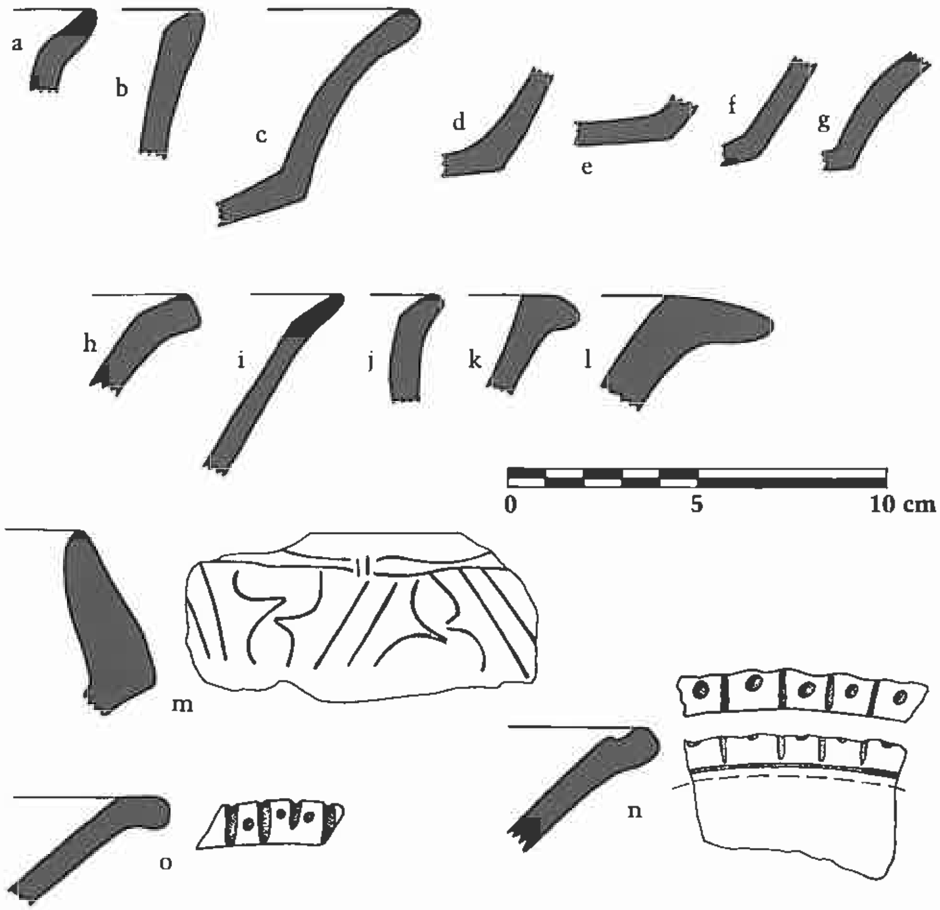


Figure 13.28. Laca: *a–c*, Middle Barranca subphase bowls; *d–g*, Middle Barranca subphase bases; *h–o*, Late Barranca subphase bowls.

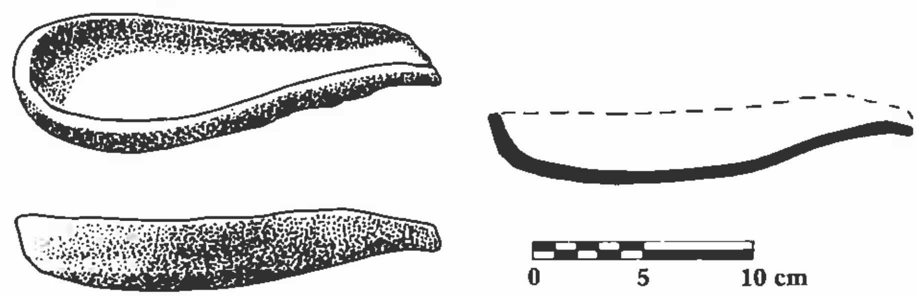


Figure 13.29. Laca, Late Barranca to Late Cantera subphase ladle.

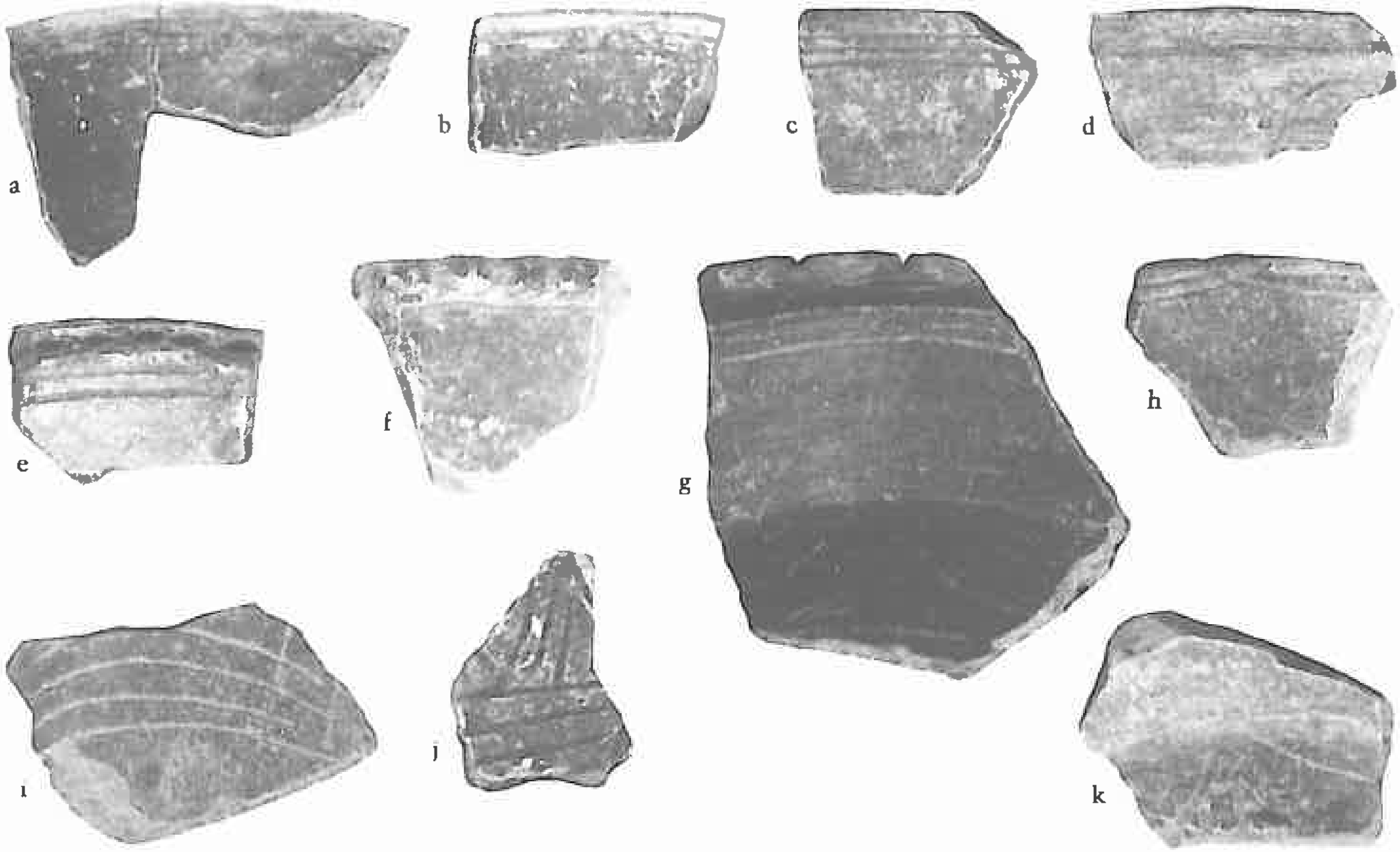


Figure 13.30. Laca: *a–e*, Early to Late Barranca subphase outslanting wall bowls with rim incising; *f–h*, Late Barranca subphase modeled and punctated everted rim bowls; *i–k*, Early to Late Barranca subphase pseudo-grater bowl interiors.

Spouted tray (RB-9)*
Direct rim composite silhouette bowls (RB-31)*
Tecomates (RB-1)
Outslanting, slightly everted rim bowls (RB-20)
Flaring wall bowls (RB-26)
Highly outcurved bowls (RB-90)
Globular bowls (RB-60)
Beveled rim bowls (RB-37)
Everted rim bowls (RB-35)
Heavy shallow bowls (RB-115)
High shoulders (Base M)

Laca diminished in popularity during the Early and Late Cantera subphases; interestingly, while frequency decreased, the variety of forms increased. The forms of previous phases continued.

Cantera phase
Common forms
Outslanting wall bowls (RB-17, 18)
Shallow bowls (RB-41)
Hemispherical bowls (RB-7)
Other forms
Direct rim composite silhouette bowls (RB-71)
Composite silhouette bowls (RB-45)
Heavy everted rim bowls (RB-38)
Flaring wall bowls (RB-75)
Highly outcurved bowls (RB-76)

Some Amatzinac White forms are paralleled, such as RB-90 and RB-71. Peralta Orange forms are also imitated, particularly RB-45.

Plastic Decoration: Interior and exterior rim incising with the single-line, double-line, triple-line, double-line-break, or triple-line-break motifs is common (Fig. 13.30*a–e*). Pseudo-grater interiors were more common during the Barranca phase than in the Cantera phase (Figs. 13.30*i–k*, 13.31). Modeling of everted rims during the process of manufacturing with deep punctation into the tops of these rims is a good marker for the Late Barranca subphase (Figs. 13.28*n–o*, 13.30*f–h*).

Otherwise, there seems to be little temporal significance to Laca designs, although occasionally a copy of an Amatzinac White design will appear and can be temporally correlated within that sequence (DC-18–20).

Comparisons: This pottery type appears in greatest quantities in Morelos and apparently is present in only minor amounts in the Valley of Mexico and the Valley of Toluca (Yoko Sugiura, personal communication). In Morelos it has been reported by Grove (1968:76–79, Figs. 67–68) at Cerro Chacaltepec and by Piña Chan and López González (1952: Fig. 1) for Atlihuayan. It is an important type at

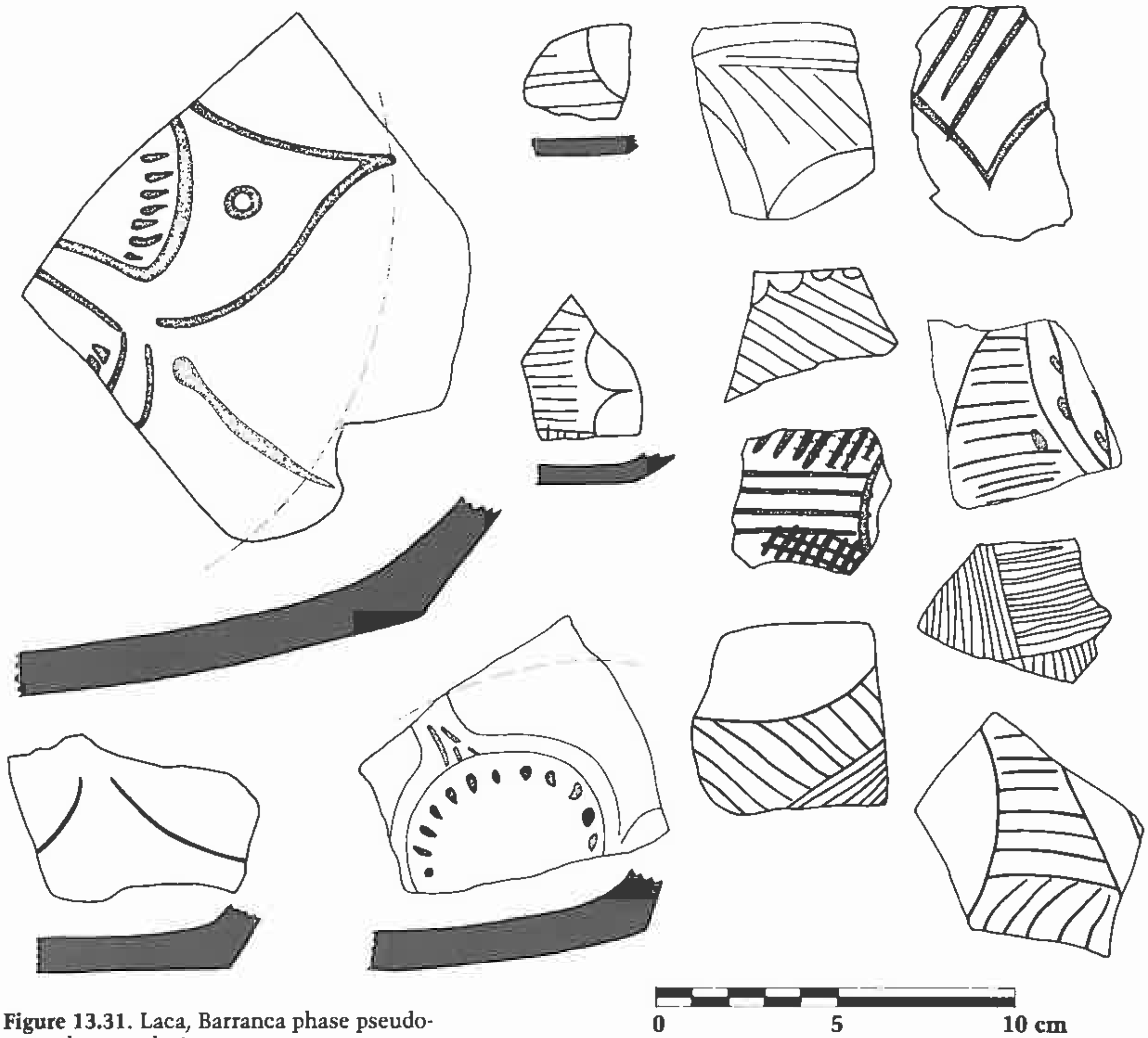


Figure 13.31. Laca, Barranca phase pseudo-grater bottom designs.

Chalcatzingo, and it is possible that the Río Amatzinac Valley area is its major focus (as is also the case with Peralta Orange). Further analyses are necessary to determine whether when present at Valley of Mexico sites it was locally manufactured or represented a Morelos "export" ware.

Imitation Laca

Temporal Range: This pottery occurred during the Middle and Late Barranca and Early Cantera subphases.

Surface Treatment: Imitation Laca looks nearly identical to Laca but lacks the white-slipped base. The thin colored wash was applied directly to the light buff ceramic body, and then the surface was polished. This wash appears identical to that applied to Laca sherds. Surface color range is 2.5 YR 3–5/6–8, 3/2; 10 R 4–5/8, 3/6; 5 YR 4/6–8, 6/6; 7.5 YR 6/6.

Paste and Temper: The paste is identical to that of Laca sherds. Plagioclase is the most frequently occurring mineral, comprising 4–5 percent of the paste volume. Its grains range in size from 100 to 800 microns. Horneblende constitutes 1–2 percent of the paste volume, and its grains measure 80–400 microns. Orthopyroxene is present in frequencies of less than 1 percent of the paste volume. Andesite is observed. These inclusions probably originate from volcanic tuff.

Forms:

- Outcurving wall bowls (RB-23, 25) with rounded bases
- Flaring neck ollas (RO-15)

Plastic Decoration: None of the decorations found on Laca are known to occur on Imitation Laca.

Comparisons: Imitation Laca may be similar to Santa María Orange which Grove (1968b:80) recovered in minor quantities at Cerro Chacaltepec.

Tenango Brown

Temporal Range: Although Tenango Brown was present as early as the Early Amate subphase, it was overshadowed in quantity by Cuautla Brown, Arboleda Coarse, Tadeo Coarse, and Atoyac Unslipped Polished III, the major plain wares of the Amate phase. Tenango Brown became a major part of the assemblage during the Early Barranca subphase and continued into the Late Cantera, although its quantities diminished when Peralta Orange gained popularity during the Early Cantera.

Surface Treatment: The surface finish varies from well polished to streaky and poorly finished. Surface color range is 5 YR 1–5/2–6. For the Early, Middle, and Late Barranca subphases, Tenango Brown and Peralta Orange show similar Munsell color ranges along with similar form assemblages. However, by the Early Cantera subphase, there is a distinct difference between Tenango Brown and Peralta Orange on the basis of both surface color and form.

Paste and Temper: The paste has a crumbly texture, and the fracture is jagged. The paste color range is 7.5 YR 6/4, 6/6; 5 YR 5–6/6, 7/4, 3–4/1, 5–6/4. Core section has the typical dark grey center and lighter outer layers.

The aplastics constitute 1 percent of the paste volume. Plagioclase (An 25, 27) constitutes 5–7 percent of the total volume as the most abundant mineral inclusion. Grain size ranges from 100 microns to 1.8 mm. Orthopyroxenes are present in equal proportions with horneblende in one sample, and reached 2 percent of the total volume in another. Grains measure 80–240 microns. Horneblende occurs as less than 1 percent of the total volume, and the grain size range is 80–440 microns. Basaltic andesite, dacite, iron stains, and leucoxene are present. Occasional grains of clinopyroxene and sandstone are observed. The mineral inclusions show similarities to mineral fragments found in the volcanic tuff of the area.

Forms:

Late Amate subphase
- Common forms
  - Hemispherical bowls (RB-7)
  - Outslanting wall bowls (RB-17, 18)
  - Flaring neck ollas (RO-5)
- Other forms
  - Hemispherical bowls (RB-93)
  - Outslanting wall bowls (RB-19)
  - Flaring neck ollas (RO-12, 11)
  - Outcurving wall bowls (RB-25)
  - Flaring wall bowls (RB-26)
  - Cylindrical bowls (RB-14)
  - Beveled rim bowls (RB-37)
  - *Tecomates* (RB-1)
  - Incurved rim bowls (RB-3)
  - Shallow bowls (RB-41)
  - Heavy everted rim bowls (RB-38)
  - Super flaring neck ollas (RO-17)
  - Flat and rounded bases
  - High shoulders (Base M)

Early Barranca subphase (Fig. 13.32*a–i*)
- Diagnostic phase marker
  - Collared ollas (RB-1)
- Common forms
  - Incurved rim bowls (RB-3)
  - Plates with roughened exteriors (RD-8)*
- Other forms
  - *Tecomates* (RB-1)
  - Hemispherical bowls (RB-7)
  - Outcurving wall bowls (RB-25)
  - Flaring wall bowls (RB-26)
  - Flaring neck ollas (RO-5)
  - Flat and rounded bases

Middle Barranca subphase forms are identical to those of Early Barranca, and a number of new forms were introduced.

Middle Barranca subphase (Fig. 13.32*a–i*)
- Common forms
  - Beveled rim ollas (RO-8)
  - Collared ollas (RO-1)
- Other forms
  - Outcurving wall bowls (RB-23)
  - Outslanting wall bowls (RB-17, 18, 19)
  - Highly outcurved bowls (RB-90)
  - Shallow bowls (RB-41)
  - Heavy everted rim bowls (RB-38)
  - Ovate bowls (RB-16)
  - Flaring neck ollas (RO-12)
  - Super flaring neck ollas (RO-17)
  - Plates with roughened exteriors (RD-4, 5)

Early and Middle Barranca forms continued into the Late Barranca subphase, and again new forms came into use.

Late Barranca subphase (Fig. 13.32*j–q*):
- Common forms
  - Hemispherical bowls (RB-7)
  - Shallow bowls (RB-41)
  - Flaring neck ollas (RO-5, 12)
- Other forms
  - Flaring neck ollas (RO-9, 15, 11)
  - Collared ollas (RO-1,* 2)
  - Basins* (Fig. 13.32*m–n*)
  - Braziers, annular based (RB-100)
  - Cylindrical bowls (RB-14)
  - Outslanting wall bowls (RB-17, 18, 19)
  - Outslanting slightly everted rim bowls (RB-20)
  - Everted rim bowls (RB-30, 35)
  - Beveled rim bowls (RB-37)
  - Heavy everted rim bowls (RB-38)
  - Composite silhouette bowls (RB-45, 132)
  - Flower pot bowls (RB-62)
  - Highly outcurved bowls (RB-90)
  - Slightly everted rim bowls (RB-77)
  - Beveled rim ollas (RO-8)
  - Super flaring neck ollas (RO-17)
  - Plates with roughened exteriors (RD-1, 2, 3,* 4, 5, 8*)
  - Regular handles (H-1)
  - Rolled-lip ollas (RO-30)
  - Direct rim composite silhouette bowls (RB-127)
  - Flaring wall bowls (RB-75)

Except for RB-90, RB-16, RB-75, and H-1, these forms continued into the Early Cantera subphase.

Early Cantera subphase (Fig. 13.32*q–z*)
- Diagnostic phase markers
  - Rolled-lip, short-neck ollas (RO-27)
  - Rolled-lip ollas (RO-30)
  - Short-necked ollas (RO-29)
  - Flaring mouth ollas (RO-28)
- Common forms
  - Flaring neck ollas (RO-5)
  - Shallow bowls (RB-41)
  - Outslanting wall bowls (RB-18)
  - Hemispherical bowls (RB-7)
- Other forms
  - *Tecomates* (RB-131)
  - Globular bowls (RB-60)
  - Direct rim composite silhouette bowls (RB-31)
  - Incurved rim bowls (RB-133)
  - Small shallow bowls (RB-67)
  - Composite silhouette bowls (RB-132)
  - Collared ollas (RO-2)
  - Plates with roughened exteriors (RD-1, 2)

The Late Cantera subphase forms include all previous forms except for RB-75 and RD-5.

Late Cantera subphase (Fig. 13.32*t–cc*)
- Diagnostic phase markers
  - Twisted handles (H-4)
  - Ridged-neck ollas (RO-25)
- Common forms
  - Flaring neck ollas (RO-12, 5)
  - Outslanting wall bowls (RB-17, 19)
  - Hemispherical bowls (RB-7)
- Other forms
  - Flaring neck ollas (RO-11)
  - Small shallow bowls (RB-67)
  - Incurved rim bowls (RB-66, 6)
  - Outslanting, slightly everted rim bowls (RB-21, 22)
  - Highly outcurved bowls (RB-76)
  - Ridged composite bowls (RB-85)
  - Heavy shallow bowls (RB-115)
  - Beveled rim bowls (RB-120)
  - Plates with roughened exteriors (RD-1)

Composite silhouette bowls (RB-45) and rolled-lip short-necked ollas (RO-27) reached their peak of popularity during the Late Cantera subphase.

Plastic Decoration: Tenango Brown vessels are usually undecorated. Punctation along the shoulders of composite silhouette bowls (RB-45) occurred during the Cantera phase in imitation of Peralta Orange. Twisted handles (H-4) sometimes have incisions near the top of the handles or in rows on the twisted sections (Fig. 13.32*z*). Body incising on all

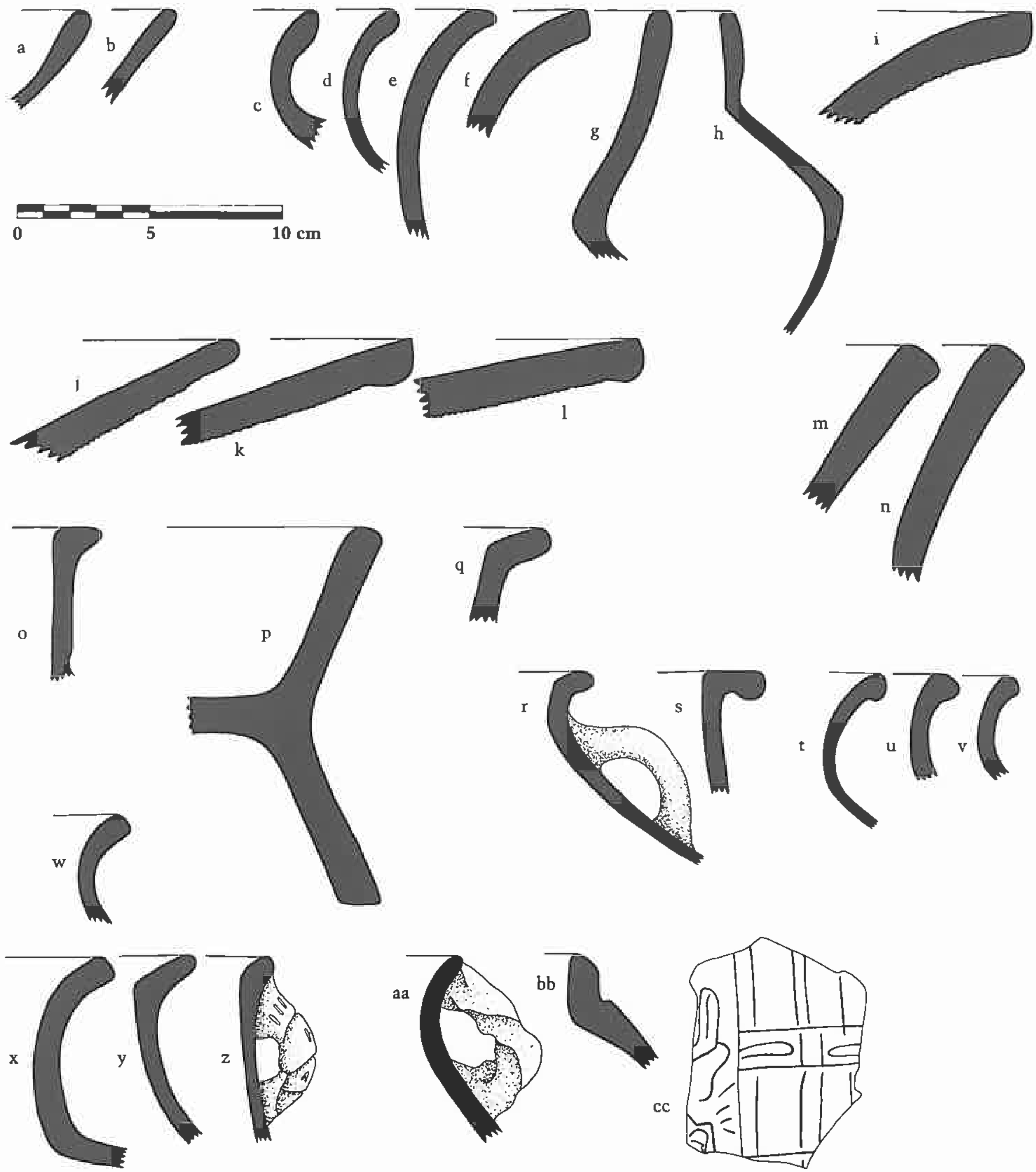


Figure 13.32. Tenango Brown. Early and Middle Barranca subphase: *a–b*, bowls; *c–h*, ollas; *i*, plate. Late Barranca subphase: *j–l*, plates; *m–n*, basins; *o*, collared olla; *p*, annular base brazier. Late Barranca to Cantera subphase: *q*, olla. Early Canterá subphase: *r–s*, ollas. Early and Late Cantera subphase: *t–z*, ollas. Late Cantera Subphase: *aa–bb*, ollas; *cc*, exterior incising.

forms is rare (Fig. 13.32*cc*).

Comparisons: Tenango Brown appears similar to Café Claro and Bayo defined by Piña Chan at Chalcatzingo (1955: Figs. 1, 9).

Tenango Brown is a local utilitarian ware. Because utilitarian wares tend to be more regionally restricted than decorated wares, there are few comparisons to be made with other regions. The only important comparison to be made here is with the collared olla (RO-1). This form was present at San Lorenzo beginning with the Chicharras phase (Coe, personal communication). It was also found with Quachilco Mica ceramics during the Late Santa María phase at Tehuacan (MacNeish, Peterson, and Flannery 1970: Fig. 65, row 3), but this context is later than its presence at Chalcatzingo.

White-Rimmed Black

Temporal Range: White-Rimmed Black began in small quantities in the Late Amate subphase, became common during the Barranca phase, and began to diminish in popularity in the latter part of the Early Cantera subphase.

Surface Treatment: The exterior and/or interior rim surfaces are a beige-to-cream color while the rest of the vessel is black (Fig. 13.33). This pottery is unslipped, but the high polish gives the impression of a slip. Rim color is in the 10 YR 7/2–3 range; the black surface is invariably 7.5 YR 2.5/0. In the Late Amate subphase, the technique of differential firing, a resist technique, was imperfect, and most pieces were irregularly clouded. During the Barranca phase, occasional imitations of White-Rimmed Black were manufactured using white-slipped rims.

Paste and Temper: The paste is crumbly and has abundant temper. Wall thickness is always less than 1 cm. The black part of the core profile has a Munsell color of 7.5 YR 2.5/0. The lighter sections range 10 YR 7/2–3.

The maximum frequency of aplastics in the total paste volume is 15 percent. Plagioclase (An 30, 33) is the principal aplastic, constituting 8–10 percent of the total paste volume. Grains range in size from 120 to 500 microns. Orthopyroxenes compose 5 percent of the volume in one section, less than 1 percent in another. Grain size range is 140–300 microns. Horneblende never exceeds 1 percent of the total volume, and grains measure 100–460 microns. Clinopyroxenes, sometimes twinned, may be present but in less than 1 percent of the volume. Basaltic andesite, iron stains, opaque iron-titanium ores, and leucoxene are present. The mineral inclusions show similarities to mineral fragments found in the volcanic tuff of the area.

Forms (Figs. 13.33, 13.34): There is no regular change in forms through time in White-Rimmed Black. Variability between the subphases is therefore probably a function of sample size.

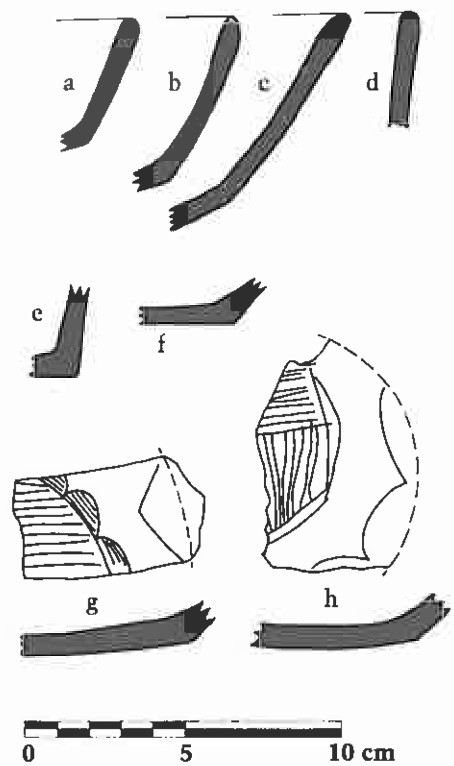


Figure 13.34. White-Rimmed Black, Early to Late Barranca subphase bowls.

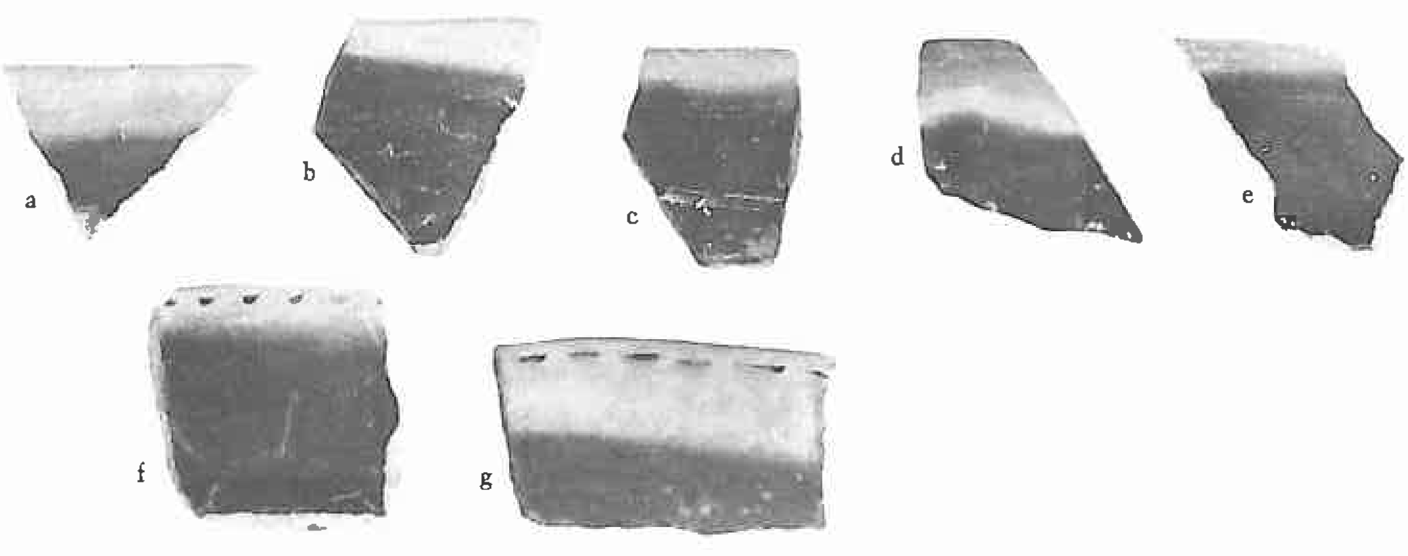


Figure 13.33. White-Rimmed Black: *a–e*, bowl rims; *f–g*, interior rim punctation.

Amate phase
- Common forms
  - Shallow bowls (RB-41)
- Other forms
  - Hemispherical bowls (RB-7)
  - Beveled rim bowls (RB-37)
  - Everted rim bowls (RB-35)
  - Outslanting wall bowls (RB-17)
  - Rounded bases

Early Barranca subphase
- Common forms
  - Shallow bowls (RB-41)
- Other forms
  - Heavy everted rim bowls (RB-38)
  - Flat and rounded bases

Middle Barranca subphase
- Common forms
  - Shallow bowls (RB-41)
- Other forms
  - Outcurving wall bowls (RB-23, 25)
  - Incurved rim bowls (RB-3)
  - Ovate bowls (RB-16)
  - Outcurving wall bowls (RB-17, 18, 19)
  - Hemispherical bowls (RB-7)
  - Cylindrical bowls (RB-14)
  - Flat and rounded bases

Late Barranca subphase
- Common forms
  - Shallow bowls (RB-41)
  - Hemispherical bowls (RB-7)
- Other forms
  - Outslanting wall bowls (RB-17, 18, 19)
  - Cylindrical bowls (RB-14)
  - Beveled rim bowls (RB-37)
  - Outcurving wall bowls (RB-23, 25)
  - Incurved rim bowls (RB-3)
  - Everted rim bowls (RB-35)
  - Flaring wall bowls (RB-26)
  - Flat and rounded bases

Early Cantera subphase
- Common forms
  - Shallow bowls (RB-41)
  - Hemispherical bowls (RB-7)
- Other forms
  - Outslanting wall bowls (RB-17, 18, 19)
  - Beveled rim bowls (RB-37)
  - Cylindrical bowls (RB-14)
  - Outcurving wall bowls (RB-25)
  - Incurved rim bowls (RB-3)
  - Flat and rounded bases

Late Cantera subphase
- Common forms
  - Shallow bowls (RB-41)
  - Hemispherical bowls (RB-7)
- Other forms
  - Flower pot bowls (RB-62)*
  - Incurved rim bowls (RB-3)
  - Beveled rim bowls (RB-37)
  - Outslanting wall bowls (RB-17, 18, 19)
  - Outcurving wall bowls (RB-23)
  - Outslanting, slightly everted rim bowls (RB-20, 21, 22)
  - Small shallow bowls (RB-67)
  - Flat and rounded bases

Plastic Decoration: Interior pseudo-grater bottom incising is common, especially during the Barranca phase. The designs are usually stiffly geometric (Fig. 13.34*g–h*). Single or double incised lines along the interior or exterior rims or exterior incising are present but not common. The most common decorative technique consists of a double row of elongated punctates on the interior rim (Fig. 13.33*f–g*).

Comparisons: White-Rimmed Black pottery is another widespread ceramic style of the Middle Formative period. Local variations from region to region are noted. As one example, the rim punctates on the Chalcatzingo type seem unique to the region around Chalcatzingo.

In Morelos, white-rimmed black pottery is reported from Iglesia Vieja in El Zarco subphase (Grennes-Ravitz 1974). In the Valley of Mexico, it was present in the Nevada, Ayotla, Manantial, and Zacatenco phases at Zohapilco (Niederberger 1976:127–128, Pl. 45). At Ayotla, white-rimmed black pottery was common during the Ayotla and Justo phases, and then declined in popularity during the Bomba phase (Tolstoy and Paradis 1970:347). In the Tehuacan Valley, Puebla, Coatepec White-Rim Black of the Late Santa María phase has a greater variety of forms than at Chalcatzingo but follows the same style (MacNeish, Peterson, and Flannery 1970:108–110, Fig. 64).

Differentially fired ceramics began in the Bajío phase at San Lorenzo, but white-rimmed black ware was present predominantly in the Chicarras and San Lorenzo phases (Coe 1968b:46; 1970:24–27). It is present at La Venta (P. Drucker 1952: 92), and at Tres Zapotes it occurred during the Middle Tres Zapotes A phase (Weiant 1943).

In the Middle Grijalva region of Chiapas, White-Rim Black was prevalent in the Cacahuano phase (Lee 1974:6–7). At Altamira and Izapa, Pampas Black and White was present in the Cuadros phase (Green and Lowe 1967:108–109; S. Ekholm 1969:39). Smudged Black and White-Rim Black of the Mirador IV phase of Mirador exhibit shallow bowls with flat bases (Peterson 1963:9, Fig. 10*a–d*). A white-rimmed black pottery was present in the Cuadros and Jocotal phases at Salinas La Blanca (Coe and Flannery 1967:33). An unnamed white-rimmed black pottery is present in the Xe complex at Altar de Sacrificios (Adams 1971:27).

Atoyac Unslipped Polished II

Temporal Range: Atoyac Unslipped Polished II was typical of the Early, Middle, and late Barranca subphases, although it began as early as the Late Amate subphase.

Surface Treatment: The unslipped surface has been evenly polished in most cases, although occasional "stick" polishing is evident. Surface color is variable from grey to brown: 2.5 YR 6/6; 5 YR 4–6/6, 5/3, 4/1; 7.5 YR 5–6/4, 4/4; 10 YR 6/2, 5/3, 4/3–4, 3/3.

Paste and Temper: The paste is coarse with a crumbly, jagged fracture. Paste color range is 10 YR 6/5, 3/2–3, 7/3; 7.5 YR 6/6, 6/4, 4/4; 2.5 YR 3/0; 5 YR 5/6, 4/4, 5/8. A grey sandwiched core in the section is common.

Mineral grains form 10–11 percent of the total paste volume. Plagioclase (An 27–28) comprises 8 percent of the volume, ranges in grain size from 80–880 microns, and is the most frequently occurring mineral. Orthopyroxene is usually the second most frequent mineral but constitutes less than 1 percent of the total volume. Grain size ranges from 100 to 680 microns. Horneblende is consistently present but never exceeds 1 percent of the total volume. It ranges in grain size from 100 to 400 microns. Occasional clinopyroxenes, sandstone, rhyolitic rocks, iron stains, and leucoxene are present. The mineral inclusions show similarities to mineral fragments found in the volcanic tuff of the area.

Forms (Figs. 13.35, 13.36): The range of forms for Atoyac Unslipped Polished II follows that of Tenango Brown.

Barranca phase
- Diagnostic phase markers
  - Collared ollas (RO-1)
  - Plate forms (RD-2)
- Other forms
  - *Tecomates* (RB-1)
  - Outslanting wall bowls (RB-17)
  - Outcurving wall bowls (RB-23, 25)
  - Everted rim bowls (RB-30)
  - Shallow bowls (RB-41)
  - Flaring neck ollas (RO-5)

Plastic Decoration: In the Late Amate subphase, rocker-stamped pseudo-grater incising occurred on the interior of flat-bottomed flaring wall bowls (Fig. 13.37).

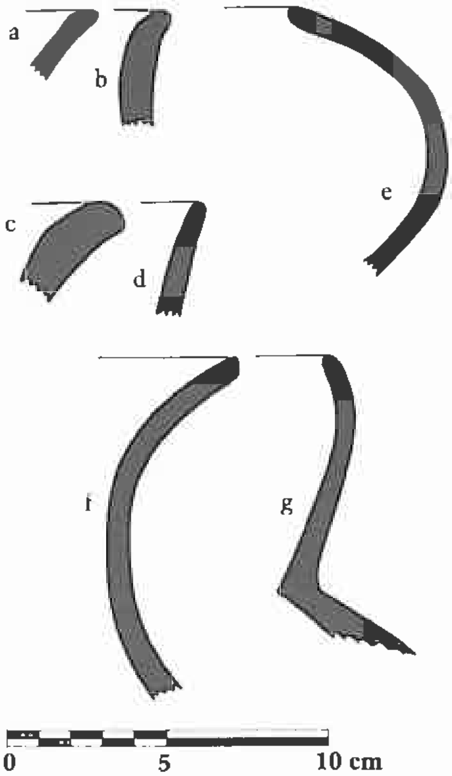


Figure 13.35. Atoyac Unslipped Polished II, Barranca phase: *a–e*, bowls; *f–g*, ollas.

Present in the Late Barranca subphase were modeled, punctated everted rims and pseudo-grater incising (Fig. 13.36; see also Laca, Fig. 13.28*n–o*).
Comparisons: None.

Peralta Orange
Temporal Range: Peralta Orange was present in the Amate phase in minute quantities. There was a considerable increase in the proportion of Peralta Orange in the Early Barranca subphase, and it continued to be a major type through the Cantera phase.
Surface Treatment: For the Barranca phase, the surface color of Peralta Orange tended to be in the brown range, and at this time the color and form differences between Peralta Orange and Tenango Brown were minimal. To determine any shift in color emphasis, the distinction between the two types was maintained artificially in our analysis by using defined Munsell color ranges. Because of the overlap in form and color between the two types during the Barranca phase, they should be considered as one classificatory unit for that phase. Better control of firing conditions apparently enabled the Cantera phase potters to produce a clear, bright orange-slipped pottery. The well-polished vessel surfaces are generally an even, bright color though occasionally marred by tiny, possibly intentional, firing clouds. Range of surface color is 2.5 YR 4–5/4–8, 3/4–6, 3–4/2–4; 5 YR 6–7/6–8, 4–5/6–8. Red painting, in bands on exterior surfaces, has been noted, but its temporal position is unclear.
Paste and Temper: The typical core section of this pottery shows a grey sandwiched center. Paste color range is 7.5 YR 6–7/4, 4–5/2, 4/0; 10 YR 5–7/4–3. Fracture is jagged.

Plagioclase (An 26–28, 30–31) is the most abundant mineral, 5–8 percent of the volume, and ranges in grain size from 60 to 800 microns. Orthopyroxenes constitute 1–2 percent of the volume, and grains measure 100–600 microns. Horneblende is present in proportions of usually less than 1 percent, and the grain size ranges from 160 to 860 microns. A trace of clinopyroxene was observed in two samples. Basaltic andesite, dacite, iron stains, and leucoxene are present. Occasional quartz grains are noted. Opaque iron-titanium ores were observed in one of the samples. Possible microcline was present in one sample. The mineral inclusions show similarities to mineral fragments found in the volcanic tuff of the area.

Vessel wall thickness varies with the size of the vessels; thus, there are thin as well as very thick vessels.
Forms:
Late Amate subphase
- Flaring wall bowls (RB-26)
- Heavy everted rim bowls (RB-38)
- Cylindrical bowls (RB-14)
- Outcurving wall bowls (RB-25)
- Flaring neck (RO-12, 15)
- Short-necked ollas (RO-29)
- Flat and rounded bases

Early Barranca subphase (Fig. 13.38*a–k*)
- Common forms
  - Flaring neck ollas (RO-5)
- Other forms
  - Flaring neck ollas (RO-12)
  - Incurved rim bowls (RB-3)
  - Hemispherical bowls (RB-7, 93)
  - Outslanting wall bowls (RB-17, 18, 19)
  - Outcurving wall bowls (RB-25)
  - Beveled rim ollas (RO-8)
  - Super flaring neck ollas (RO-17)
  - Plate forms with roughened exteriors (RD-4)
  - Rounded bases
  - High shoulders (Base M)

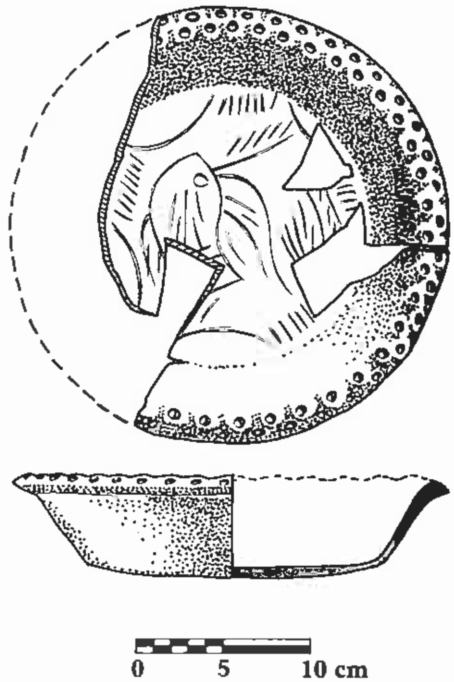


Figure 13.36. Atoyac Unslipped Polished II, Late Barranca subphase bowl with modeled punctate rim and pseudo-grater bottom incising.

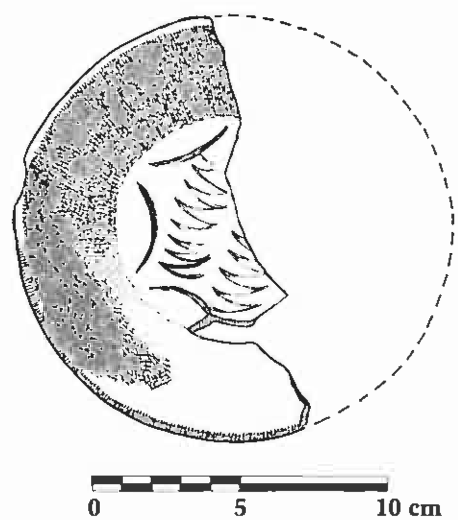


Figure 13.37. Atoyac Unslipped Polished II, Late Amate subphase bowl with interior rocker-stamping.

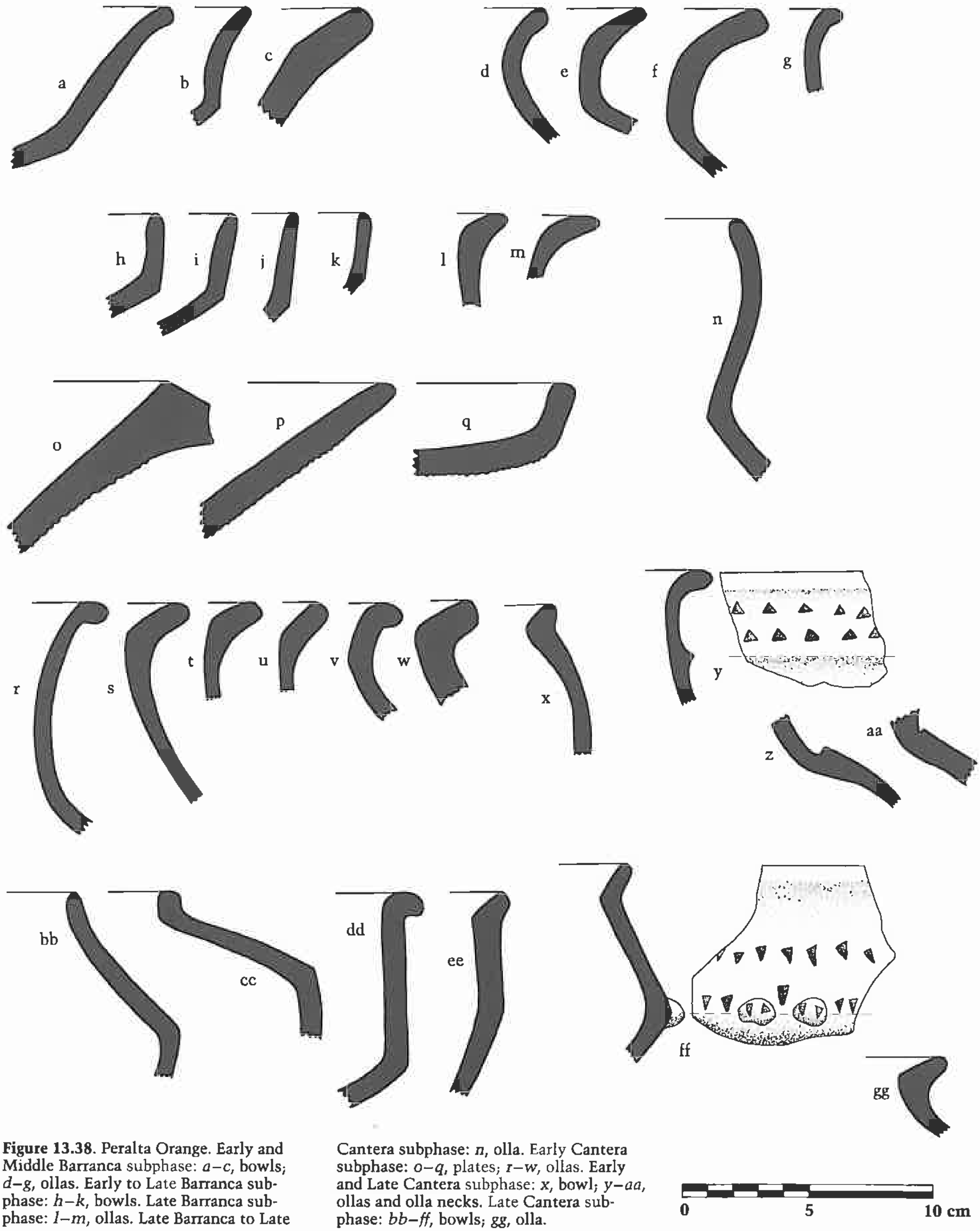


Figure 13.38. Peralta Orange. Early and Middle Barranca subphase: *a–c*, bowls; *d–g*, ollas. Early to Late Barranca subphase: *h–k*, bowls. Late Barranca subphase: *l–m*, ollas. Late Barranca to Late Cantera subphase: *n*, olla. Early Cantera subphase: *o–q*, plates; *r–w*, ollas. Early and Late Cantera subphase: *x*, bowl; *y–aa*, ollas and olla necks. Late Cantera subphase: *bb–ff*, bowls; *gg*, olla.

Middle Barranca subphase (Fig. 13.38*a–k*)
- Common forms
  - Outcurving wall bowls (RB-25)
  - Flaring neck ollas (RO-12)
- Other forms
  - Outcurving wall bowls (RB-23)
  - Flaring neck ollas (RO-5, 16)
  - Plate forms with roughened exteriors (RD-8)*
  - Brazier forms (RB-99,* 100*)
  - Outslanting wall bowls (RB-17, 18, 19)
  - Heavy shallow bowls (RB-115)
  - Composite silhouette bowls (RB-45)
  - Shallow bowls (RB-41)
  - Hemispherical bowls (RB-7)
  - Heavy everted rim bowls (RB-38)
  - Beveled rim ollas (RO-8)
  - Super flaring neck ollas (RO-17)
  - Flaring neck ollas with drooping rims (RO-9)
  - Plate forms with roughened exteriors (RD-4)
  - Flat and rounded bases

There was an expansion of the form assemblage during the Late Barranca subphase. This is another indication of the increasing popularity of Peralta Orange. Forms of the Middle Barranca subphase continued.

Late Barranca subphase (Fig. 13.38*h–n*)
- Common forms
  - Flared neck ollas (RO-5, 12)
  - Outcurving wall bowls (RB-25)
  - Hemispherical bowls (RB-7)
- Other forms
  - Flaring neck ollas (RO-11)
  - Flower pot bowls (RB-62)*
  - Collared ollas (RO-1)
  - Deep basins*
  - Spouted trays (RD-9)*
  - *Tecomates* (RB-1, 131)
  - Cylindrical bowls (RB-14)
  - Outslanting, slightly everted rim bowls (RB-20, 21, 22)
  - Flaring wall bowls (RB-26)
  - Everted rim bowls (RB-30, 35)
  - Globular bowls (RB-60)
  - Slightly everted rim bowls (RB-77)
  - Highly outcurved rim bowls (RB-90)
  - Flaring neck ollas (RO-15)
  - Flaring mouth ollas (RO-28, 31)
  - Short-necked ollas (RO-29)
  - Incurved rim bowls (RB-3)
  - Beveled rim bowls (RB-37)
  - Direct rim composite silhouette bowls (RB-31)
  - Rolled-lip ollas (RO-30)
  - Plate forms with roughened exteriors (RD-3, 5, 7)
  - Flat and rounded bases
  - High shoulders (Base M)

Early Cantera subphase (Figs. 13.38*n–aa*, 13.39, 13.40, 13.42)
- Diagnostic phase markers
  - Composite silhouette bowls (RB-45)
  - Rolled-lip, short-necked ollas (RO-27)
  - Rolled-lip ollas (RO-30)
  - Ridge-necked ollas (RO-25)
  - Short-necked ollas (RO-29)
  - Flaring mouth ollas (RO-31)
  - Twisted handles (H-4)
- Common forms
  - Outcurving wall bowls (RB-23, 25)
  - Composite silhouette bowls (RB-45)
  - Flaring neck ollas (RO-5, 12)
  - Super flaring neck ollas (RO-17)
- Other forms
  - Flaring neck ollas (RO-15, 11)
  - Flaring mouth ollas (RO-28)
  - Braziers, annular based (RB-100)
  - Plate forms with roughened exteriors (RD-8,* 2, 3, 4, 5, 7)
  - Highly outcurved bowls (RB-90)
  - Hemispherical bowls (RB-7)
  - Outslanting wall bowls (RB-17, 18, 19)
  - *Tecomates* (RB-1)
  - Flaring wall bowls (RB-26, 75)
  - Direct rim composite silhouette bowls (RB-31)
  - Incurved rim bowls (RB-3, 66)
  - Shallow bowls (RB-41)
  - Cylindrical bowls (RB-14)
  - Outslanting, slightly everted rim bowls (RB-20, 21)
  - Small shallow bowls (RB-67)
  - Everted rim bowls (RB-30)
  - Heavy shallow bowls (RB-115)
  - Double-loop handle censers (RB-101)
  - Beveled rim ollas (RO-8)
  - Flaring neck ollas with drooping rims (RO-9)
  - Collared ollas (RO-1, 2, 3)
  - Regular handles (H-1)

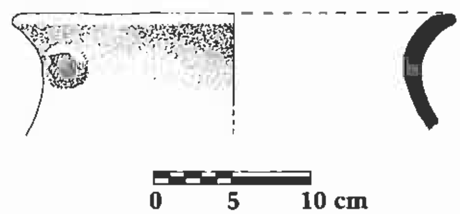


Figure 13.39. Peralta Orange, Early and Late Cantera subphase olla with handle attachment.

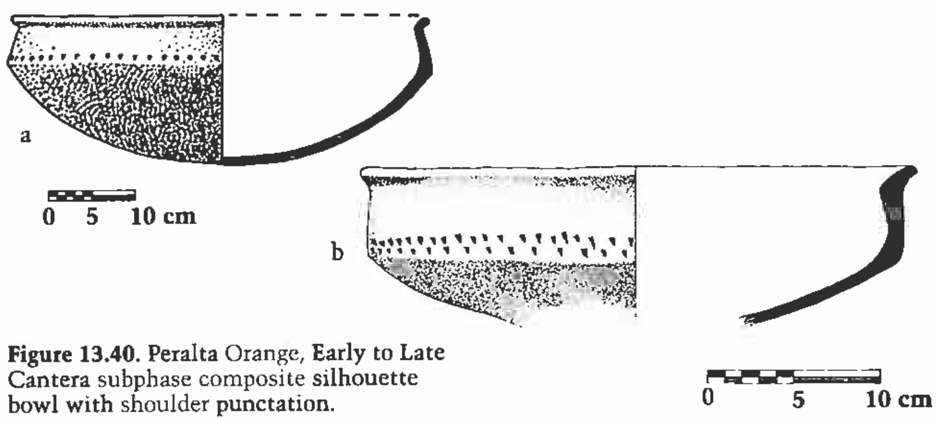


Figure 13.40. Peralta Orange, Early to Late Cantera subphase composite silhouette bowl with shoulder punctation.

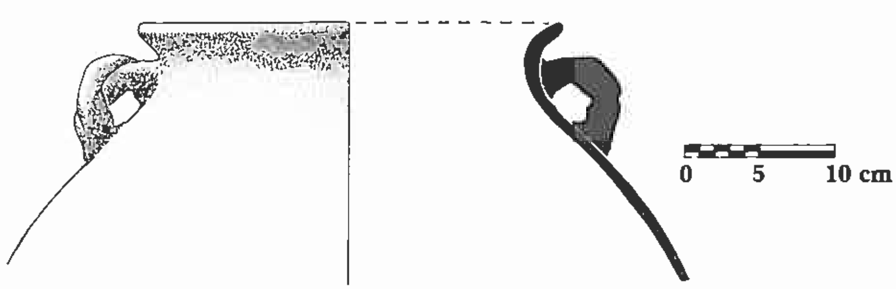


Figure 13.41. Peralta Orange, Late Cantera subphase olla with twisted handle.

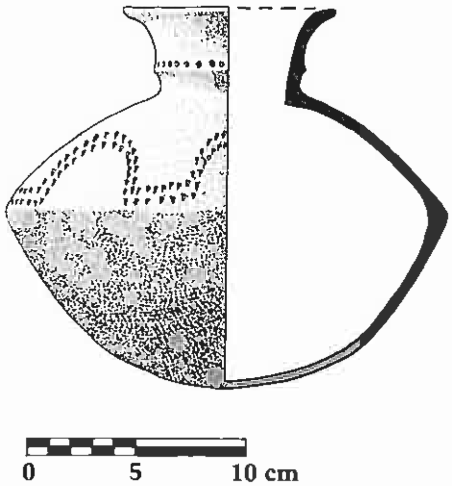


Figure 13.42. Peralta Orange, Early and Late Cantera subphase olla with ridged neck and shoulder punctations.

An occasional *cantarito* was made in Peralta Orange, although this was not common. The Early Cantera forms continued into the Late Cantera with the exception of RB-75, RB-101, and RO-3.

Late Cantera subphase (Figs. 13.38*n*, *x–gg*, 13.39–13.42)
- Diagnostic phase markers
  - Composite silhouette bowls (RB-45)
  - Brazier forms (RB-99)
  - Sharply outflaring ollas (RO-32)
- Common forms
  - Composite silhouette bowls (RB-45)
  - Flaring neck ollas (RO-12, 5)
  - Outcurving wall bowls (RB-25, 23)
  - Shallow bowls (RB-41)
  - Hemispherical bowls (RB-7)
  - Outslanting wall bowls (RB-19)
- Other forms
  - Angular flaring wall bowls (RB-102)*
  - Direct rim composite silhouette bowls (RB-71)*
  - Beveled rim bowls (RB-37)
  - Outslanting, slightly everted rim bowls (RB-22)
  - Heavy everted rim bowls (RB-38)
  - Everted rim bowls (RB-35)
  - Ovate bowls (RB-16)
  - Flower pot bowls (RB-62)
  - Incurved rim bowls (RB-6)
  - *Tecomates* (RB-131)
  - Very short-necked ollas (RO-33)
  - Spider-leg supports (S-7)
  - Nub supports (S-2) infrequent
  - Spouted trays (RD-9)
  - Globular bowls (RB-60)
  - Flanged shoulder bowls (RB-89)

Composite silhouette bowls (RB-45) were very popular during this subphase and are often found as burial furniture (Figs. 13.38*dd–ff*, 13.40). Twisted handles (H-4) on ollas were restricted to the Late Cantera subphase (Fig. 13.41). Regular handles (H-1) also became more abundant.

Plastic Decoration: Punctation along the upper shoulder or along the basal break of composite silhouette bowls (RB-45) began during the Early Cantera subphase and continued during the Late Cantera (Figs. 13.38*ff*, 13.40). Punctation along the neck ridge of RO-25 ollas and along the upper shoulder (Base M) was also a common decorative technique of these subphases (Figs. 13.38*y*, 13.42). Simple incising, such as single or double lines, occurs along the rims or on the exterior bodies.

Comparisons: Peralta Orange corresponds to some examples of Piña Chan's Café Claro and Roja Amarillenta from his 1952 Chalcatzingo excavations (Piña Chan 1955: Figs. 1*d–f*, 11*f–h*). It is difficult to draw comparisons to similar types in Mexico's central highlands because we know of none which are closely similar. At Zacatenco, composite silhouette bowls with shoulder punctates and olla handles with incising were reported by Franz Boas (1911–1912: Pls. 38, 40). George C. Vaillant also reported them from Zacatenco (1930:95, Pl. VIII) and from Ticoman (1931: Pl. LXIX).

Based on the present data, certain vessel forms of Peralta Orange appear to be local, restricted to the Río Amatzinac Valley, and probably closely related to Chalcatzingo's interaction with the Gulf Coast. This statement is made because while Peralta Orange ceramics show no close highland ties, they do exhibit strong similarities to the Gulf Coast and possibly to the lowland Maya area.

The analysis of collections at the Smithsonian Institution (Appendix D) revealed that orange-slipped wares (Red Wares; Weiant 1943: 18) were common at Tres Zapotes during the Middle Tres Zapotes A period. Included in that sample are ridge-necked ollas (RO-25) with neck punctations. The Tres Zapotes ridge-necked ollas often have "faces" created by punctations on the vessel neck (cf. Weiant 1943: Pls. 56, 1–5). These attributes also occur in Chalcatzingo's Peralta Orange ridge-necked ollas and are similar enough to suggest that these similarities are significant and more than fortuitous (see Figs. 13.42, 13.69). San Lorenzo and La Venta collections at the Smithsonian also contain sherds which have strong similarities to Chalcatzingo's Peralta Orange.

In general terms, Peralta Orange ceramics show strongest affinities not to the central highlands but to southern Mesoamerica. In fact, in terms of basic similarities, they exhibit strong correspondences to Middle Formative orange wares from the Maya area, including Mars Orange from Uaxactun (R. Smith 1955: 110–115), Joventud Red (Jolote and Mocho varieties) from Altar de Sacrificios and Seibal (Adams 1963:89; 1971: 20; Sabloff 1975:61–62), San Agustín Red Polished of San Agustín, Chiapas (Navarrete 1959), Chiapilla Polished Red from Santa Cruz, Chiapas (Sanders 1961: 20–21), and Conchas Orange from Salinas La Blanca (Coe and Flannery 1967: 48), to name a few.

Pavón Fine Grey

Temporal Range: Pavón Fine Grey is a non-local type which began appearing at Chalcatzingo in small quantities during the Early Barranca subphase. The period of greatest frequency of this type is the Late Cantera subphase.

Surface Treatment: The unslipped, well-polished surfaces of Pavón Fine Grey tend to be very compact and dense, with uniform surface color. Surface color is not the most important defining characteristic of this pottery because of the variability of color. Paste is the distinguishing feature between Pavón Fine Grey and Carrales Coarse Grey. The surface color range is 5 YR 6/1; 7.5 YR 4–7/0; 10 YR 7/1; 5 Y 5/1; 2.5 Y 4/0.

Paste and Temper: The fracture of this pottery is sharp and even. In the core section, lenticular holes, where some tempering material has burned or leached out, are visible. Paste color is 5 YR 6/1; 7.5 YR 5–7/0; 10 YR 7/1, 5/1–2. The paste is fine particled and has few inclusions.

No more than 7 percent of the volume is aplastics. Magnetite reaches 5 percent in abundance. Quartzite, never more than 1 percent, ranges in size from 140 microns to 1.3 mm. Altered mica (possibly sericitic) is less than 1 percent of the volume and ranges in size from 120 to 460 microns. Leucoxene, a trace of plagioclase, and possibly alkaline feldspars are present. Paste composition indicates that the source of the aplastics is an area of metamorphism.

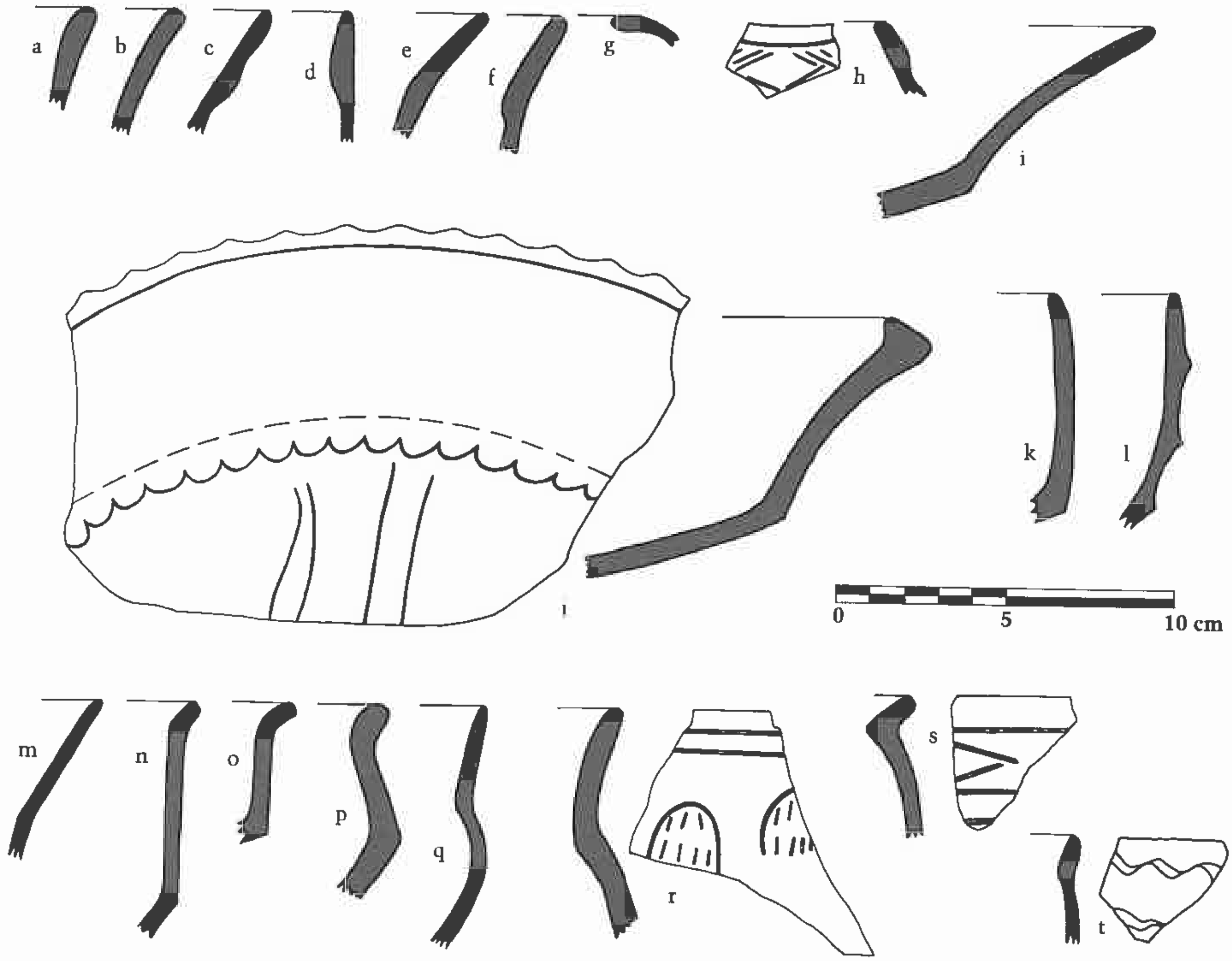


Figure 13.43. Pavón Fine Grey bowls: *a–i*, Early Barranca to Early Cantera subphase; *j–t*, Late Cantera subphase.

Forms:

- Barranca phase (Fig. 13.43*a–i*)
  - Common forms
    - Outslanting wall bowls (RB-17)
  - Other forms
    - Outcurving wall bowls (RB-18)
    - Exotic forms (RB-88)*
    - Globular bowls (RB-78)*
    - Hemispherical bowls (RB-7)
    - Ovate bowls (RB-16)
    - Outcurving wall bowls (RB-23, 25)
    - Flaring wall bowls (RB-26)
    - Shallow bowls (RB-41)
    - Flower pot bowls (RB-62)
    - Beveled rim bowls (RB-37)
    - Outslanting, slightly everted rim bowls (RB-21)
  - Bases tend to be rounded

Barranca phase forms continued into the Early Cantera subphase except for RB-37, RB-21, and RB-78.

- Early Cantera subphase (Figs. 13.43*a–i*, 13.44)
  - Diagnostic phase markers
    - Exotic forms (RB-87)
    - Flanged shoulder bowls (RB-116)
  - Common forms
    - Hemispherical bowls (RB-7)
    - Ovate bowls (RB-16)
  - Other forms
    - Composite silhouette bowls (RB-45)*
    - Incurved rim bowls (RB-3)
    - Cylindrical bowls (RB-14)
    - Outslanting wall bowls (RB-17, 19)
    - *Tecomates* (RB-1)

For the Late Cantera subphase, the Early Cantera forms continued except for RB-87 and RB-116.

- Late Cantera subphases (Figs. 13.43*j–t*, 13.44, 13.45, 13.46)
  - Common forms
    - Ovate bowls (RB-16)
    - Shallow bowls (RB-41)
    - Outcurving wall bowls (RB-23, 25)
  - Other forms
    - Shallow bowls (RB-121)
    - Ridge composite bowls (RB-85)*
    - Exotic forms (RB-88,* 91)
    - Everted rim bowls (RB-35)
    - Composite silhouette forms (RB-74)
    - Hemispherical bowls (RB-93)
    - Collared ollas (RO-2)
    - Direct rim composite silhouette bowls (RB-31, 71)
    - Outslanting wall bowls (RB-119)
    - Super flaring neck ollas (RO-17)

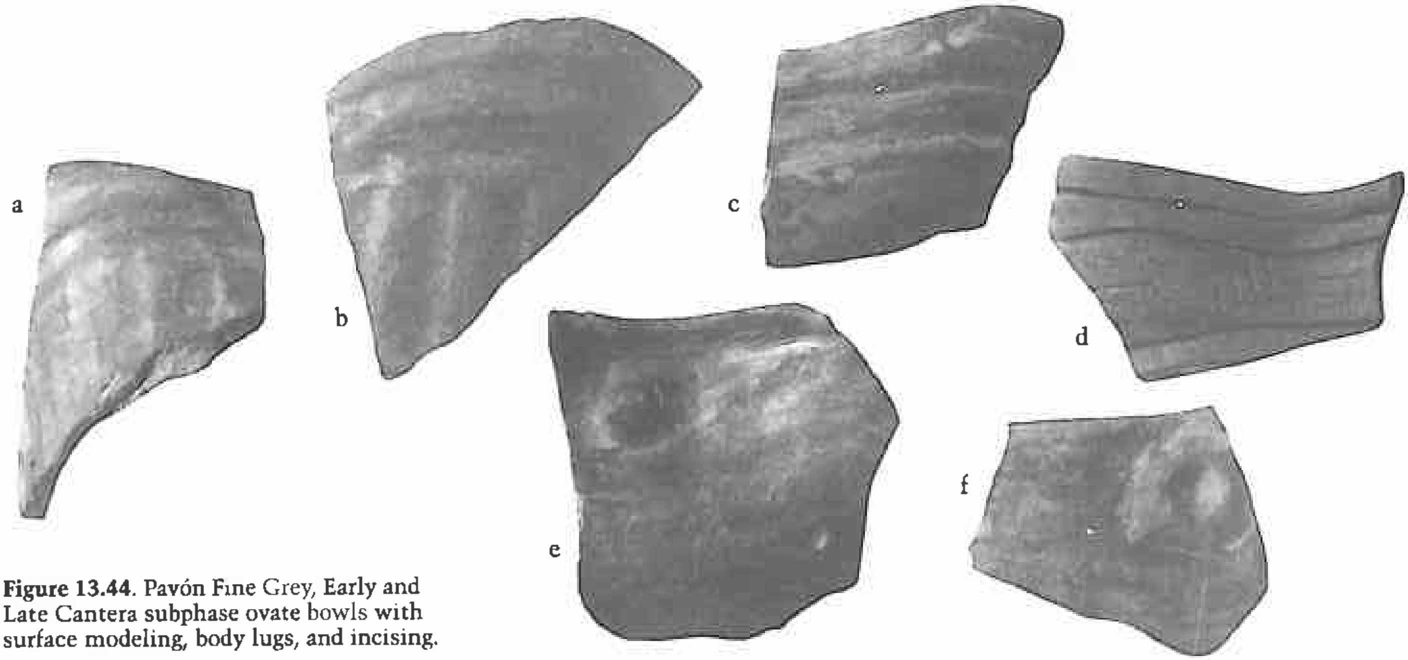


Figure 13.44. Pavón Fine Grey, Early and Late Cantera subphase ovate bowls with surface modeling, body lugs, and incising.

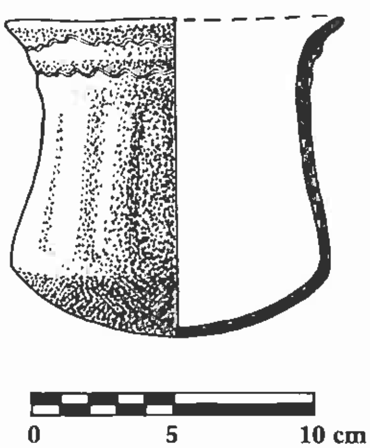


Figure 13.45. Pavón Fine Grey, Late Cantera subphase bowl with rippled walls.

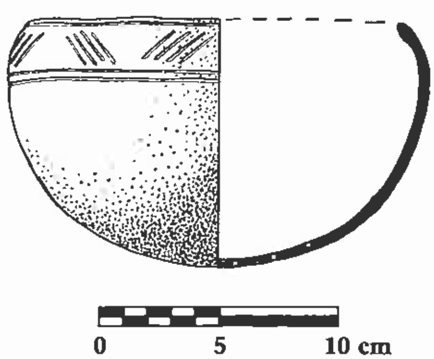


Figure 13.46. Pavón Fine Grey, Late Cantera subphase bowl with exterior incising.

The Late Cantera subphase has the great variety of forms and the maximum frequency of Pavón Fine Grey ceramics.

Plastic Decoration: Double-line and double-line-break motifs and fine-line body incising are typical. Body lugs on ovate forms (RB-16) are present but not common (Fig. 13.44*e–f*). Surfaces modeled into rippled vessel walls are also present but atypical (Fig. 13.45).

In general Pavón Fine Grey does not show clear temporal changes in terms of decoration except for examples which are decorated like Carrales Coarse Grey (Fig. 13.46).

Comparisons: Pavón Fine Grey was designated Tipo Gris by Piña Chan at Chalcatzingo and was recognized as a nonlocal pottery (1955:16, Fig. 11*a–c*). Petrographic analysis of this fine-paste grey pottery has shown it to be composed of minerals of metamorphic origin, far different from those in the local Chalcatzingo ceramics. Metamorphic minerals and the general style suggest an origin of this pottery somewhere east or southeast of Chalcatzingo. Analyses show that the greatest similarity of Pavón Fine Grey is with the grey wares from sites in the nearby state of Puebla.

Río Salado Grey of the Early Santa María phase at Tehuacan has forms and decoration similar to those of Pavón Fine Grey: ovate bowls, hemispherical bowls, flaring wall bowls, and pseudo-grater interiors. Quachilco Gray of the Late Santa María phase is also similar to Pavón Fine Grey (MacNeish, Peterson, and Flannery 1970:120–133, Figs. 70–72).

On the Gulf Coast, fine-paste grey wares are present at San Lorenzo during the Palangana and Remplás phases (Coe, personal communication). Philip Drucker's Fine Paste Gray-Black ware from La Venta (1952:102) and some examples of Cerámica Negra from Chalahuite and El Trapiche, Veracruz (García Payón 1966: 39–45) are similar in paste, form, and decoration to Pavón Fine Grey. The Tres Zapotes collection at the Smithsonian Institution has abundant fine-paste grey wares. Nevertheless, preliminary petrographic analyses of Gulf Coast grey ceramics demonstrate marked differences with Pavón Fine Grey.

During the Guadalupe phase at Fábrica San José, Oaxaca, Socorro Fine Grey was popular and is similar to the grey wares from Monte Albán I (Drennan 1976; see discussion of Carrales Coarse Grey). Grey wares were present in the

Valley of Oaxaca as early as the Tierras Largas phase (Flannery, personal communication).

Pottery comparable to Río Salado Gray of the Tehuacan Valley is found at Salinas La Blanca, Guatemala, beginning in the Jocotal phase, and is called Ocós Grey (Coe and Flannery 1967:46). At Altamira, Chiapas, Culebra Grey is present (Green and Lowe 1967:118–119).

Several duck effigy vessels were excavated as burial offerings at Chalcatzingo. Bird effigy vessels are reported from Monte Albán by Caso, Bernal, and Acosta (1967): turkey effigy (1967:54, Fig. 94b), a bird effigy with its head twisted back (1967:156, Fig. 99), a small ovate bowl with the head facing backward (1967:157, Fig. 101), and a bird effigy from the Museo Nacional de Antropología (1967:201, Fig. 171).

Atoyac Unslipped Polished I

Temporal Range: Atoyac Unslipped Polished I is typical of the Cantera phase.

Surface Treatment: This unslipped pottery is typified by streaky polishing often referred to as "stick" polishing. The type's pale beige to rose color is diagnostic: 2.5 YR 6/6; 5 YR 5/3, 5–8/4, 4–5/1, 6–7/6, 4/2; 7.5 YR 5–7/4, 6–7/2; 10 YR 4/1, 4/6.

Paste and Temper: The paste is fine grained and has a sharp fracture. Wall thickness is always less than 1 cm. Paste color range is 7.5 YR 7/2–4, 6/4, 6–7/2; 5 YR 7/6, 5/4; 2.5 YR 5/6.

From 5–6 percent of the paste volume is aplastics. Plagioclase (An 28–29) is the principal mineral, constitutes 2–3 percent of the volume, and ranges in particle size from 60 to 300 microns. Horneblende and orthopyroxene are the second and third most frequently occurring minerals, but compose less than 1 percent of the total volume. Orthopyroxene ranges in grain size from 100 to 320 microns; horneblende, from 120 to 500 microns. Andesite, iron stains, opaque iron-titanium ores, and leucoxene are present. Occasional grains of clinopyroxene are evident. The mineral inclusions show similarities to the mineral fragments found in the volcanic tuff of the area.

Forms (Figs. 13.47–13.49):

Cantera phase
- Diagnostic phase markers
  - Small shallow bowls (RB-67), with a radius of 4–10 cm, most abundant during the Late Cantera subphase
  - Small shallow bowls (RB-70)
  - *Cantaritos* (C), occur as burial furniture during the Late Cantera subphase

Plastic Decoration: Late Cantera subphase decoration on the small shallow dishes (RB-67) includes stick impressions on the lip (DC-36; Fig. 13.47) and appliqué lugs on the lip (DC-37; Fig. 13.48*c*). These small bowls often have red pigment stains on the interiors, indicating a possible function as paint dishes.

Incising on the upper shoulders and body lugs on the shoulder breaks of *cantaritos* are typical of the Late Cantera subphase (DC-38, 39; Fig. 13.49*b–c*).

Comparisons: *Cantarito* vessels at Chalcatzingo occur primarily as burial offerings, yet they are atypical of burial furniture at other central Mexican Formative period sites. The small dishes are also uncommon. However, both have counterparts at Gulf Coast sites. "Small thick-wall jars" were reported at La Venta by Philip Drucker (1952:119), who also mentions "miniature dishes" at Tres Zapotes (1943a:56, Fig. 29). These latter are similar in form to Chalcatzingo bowl forms RB-67 and RB-70.

Carrales Coarse Grey

Temporal Range: Significant quantities of Carrales Coarse Grey appeared during the Late Barranca subphase, and maximum frequency was reached during the Cantera phase.

Surface Treatment: A waxy luster is characteristic of this well-polished unslipped pottery. A typical cloudy film on the sherds may be due to conditions of preservation. Beige, pink, and yellow firing blotches are occasionally present. The surface color is variable: 2.5 YR 4–8/0, 5–6/4–6, 6/7–8; 10 YR 3–6/1, 6/4, 5/3; 7.5 YR 7–8/0, 7/4–6, 6–7/6; 5 YR 4–7/1, 3/1, 5/3; 2.5 YR 5–6/4–6.

Paste and Temper: The core section of this pottery is distinctive, with several alternating layers of dark and light grey. The range of the paste color is 10 YR 6/3–4, 4/1, 6/1, 3/4; 5 YR 6/1; 2.5 YR 7/0. The paste is crumbly, and the fracture is jagged.

The maximum frequency of aplastics is 22 percent. Plagioclase (An 26, 28, 30–31) is the most abundant mineral, making up 10 percent of the total paste volume. Grains measure from 100 microns to 1.5 mm. Orthopyroxenes, constituting 1–3 percent of the volume, range in grain size from 80 to 500 mi-

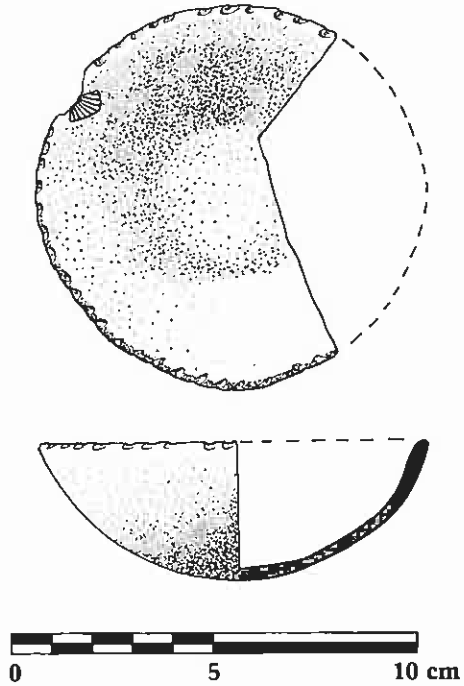


Figure 13.47. Atoyac Unslipped Polished I, Late Cantera subphase small shallow bowl with stick impressions on the lip.

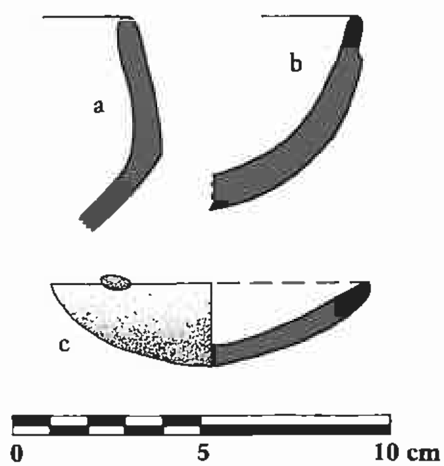


Figure 13.48. Atoyac Unslipped Polished I: *a–b*, Early and Late Cantera subphase small bowls; *c*, Late Cantera subphase small shallow bowl with lip lug.

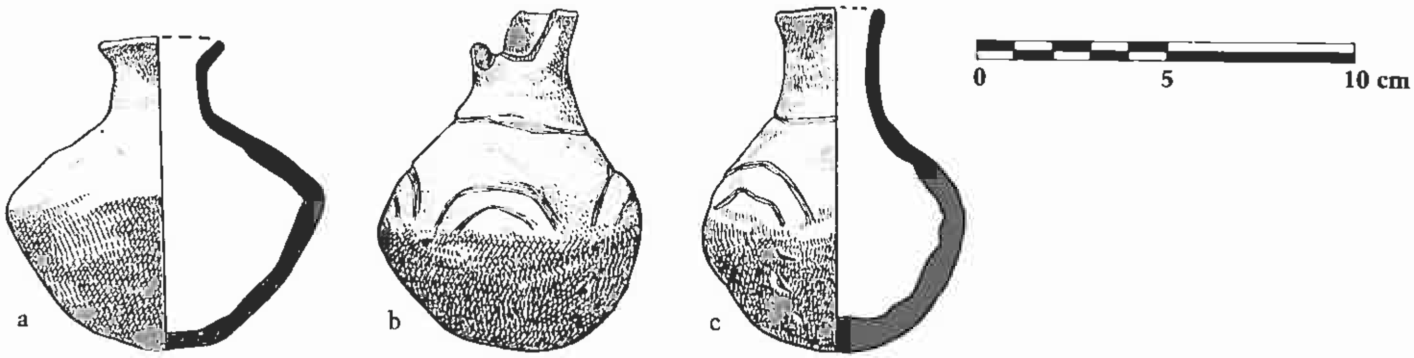


Figure 13.49. Atoyac Unslipped Polished I *cantaritos*: *a*, Early and Late Cantera subphase; *b–c*, Late Cantera subphase with shoulder incising.

crons. Horneblende or clinopyroxene may be the next most abundant mineral. Horneblende never exceeds 1 percent of the paste volume; clinopyroxenes reached a maximum of 2 percent in one sample. Grains of horneblende measure 100–700 microns; those of clinopyroxene, 140–600 microns, and some are twinned. Basaltic andesite, dacite, opaque iron-titanium ores, iron stains, and leucoxene are present. Occasional sherd and sandstone temper are observed. The mineral inclusions show similarities to mineral fragments found in the volcanic tuff of the area.

Forms: Although minor quantities of Carrales Coarse Grey are occasionally present in Middle Barranca levels, the forms present during that subphase are few. Carrales Coarse Grey began to be important during the Late Barranca, and the range of forms in that subphase is broad and clearly parallels those of Amatzinac White.

Middle Barranca subphase
Outslanting wall bowls (RB-17, 19)
Ovate bowls (RB-16)
Late Barranca subphase (Fig. 13.50*a–h*)
Common forms
Hemispherical bowls (RB-7)
Other forms
Exotic forms (RB-88)*
Outslanting wall bowls (RB-17, 18, 19)
Outslanting, slightly everted rim bowls (RB-22)
Outcurving wall bowls (RB-23, 25)
Flaring wall bowls (RB-26)
Everted rim bowls (RB-30)
Shallow bowls (RB-41)
Flower pot bowls (RB-62)
Composite silhouette forms (RB-74)
Cylindrical bowls (RB-14)
Incurved rim bowls (RB-3)

Late Barranca subphase forms continued into the Early Cantera subphase with the exception of RB-22 and RB-88.

Early Cantera subphase (Figs. 13.50*i*, 13.51)
Common forms
Outcurving wall bowls (RB-25)
Hemispherical bowls (RB-7)
Outslanting wall bowls (RB-17, 18)
Shallow bowls (RB-41)
Incurved rim bowls (RB-3)
Other forms
Incurved rim bowls (RB-66)
Direct rim composite silhouette bowls (RB-31,* 71*)
Composite squash-like bowls (RB-80)*
Ridged composite bowls (RB-85)*
Ovate bowls (RB-16)*
Flanged shoulder bowls (RB-89)*
Highly outcurved bowls (RB-90)
Outslanting, slightly everted rim bowls (RB-21)
Flaring neck ollas (RO-12)
Collared ollas (RO-1)
Plate forms with roughened exteriors (RD-4)
Ridged-wall bowls (RB-81)

With the exception of RB-21, the Early Cantera subphase forms continued into the Late Cantera.

Late Cantera subphase (Figs. 13.50*i–bb*, 13.51–13.55)
Diagnostic phase markers
Flanged shoulder bowls (RB-89)
Direct rim composite silhouette bowls (RB-71)
Exotic forms (RB-87, 91)
Common forms
Outcurving wall bowls (RB-25, 23)

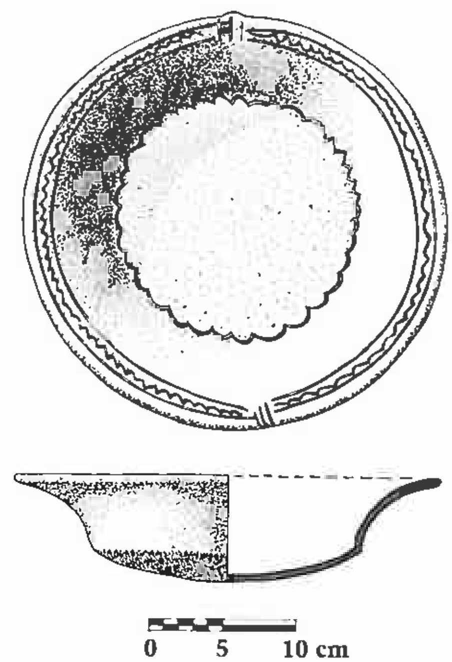


Figure 13.51. Carrales Coarse Grey, Early and Late Cantera subphase bowl with interior rim incising and pseudo-grater bottom incising.

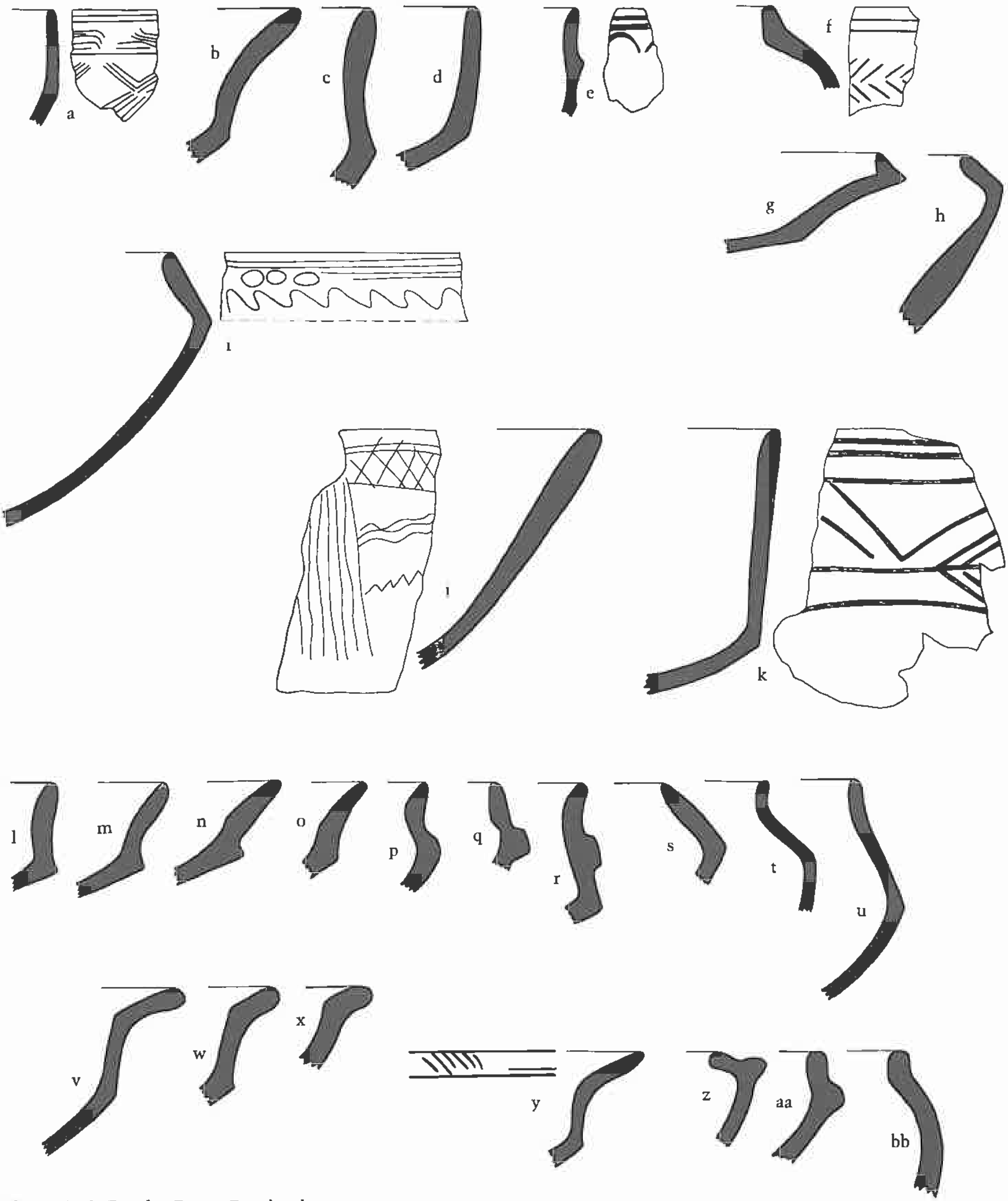


Figure 13.50. Carrales Coarse Grey bowls: *a–h*, Late Barranca subphase; *i*, Early Cantera subphase; *j–bb*, Late Cantera subphase.

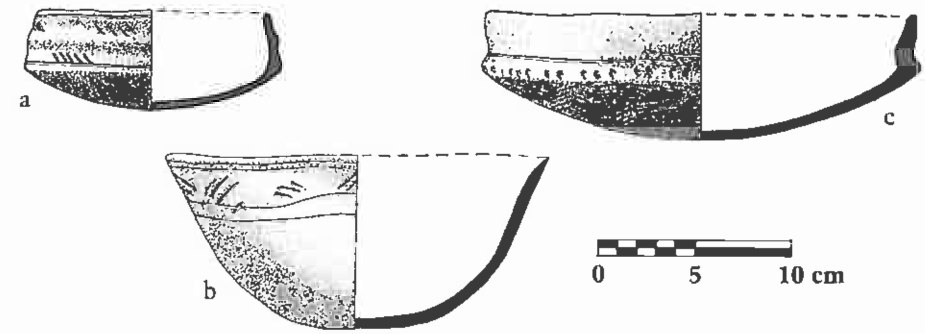


Figure 13.53. Carrales Coarse Grey, Late Cantera subphase bowls: *a*, rippled wall and exterior incising; *b*, ovate bowl with exterior incising; *c*, bowl with basal flange and punctation.

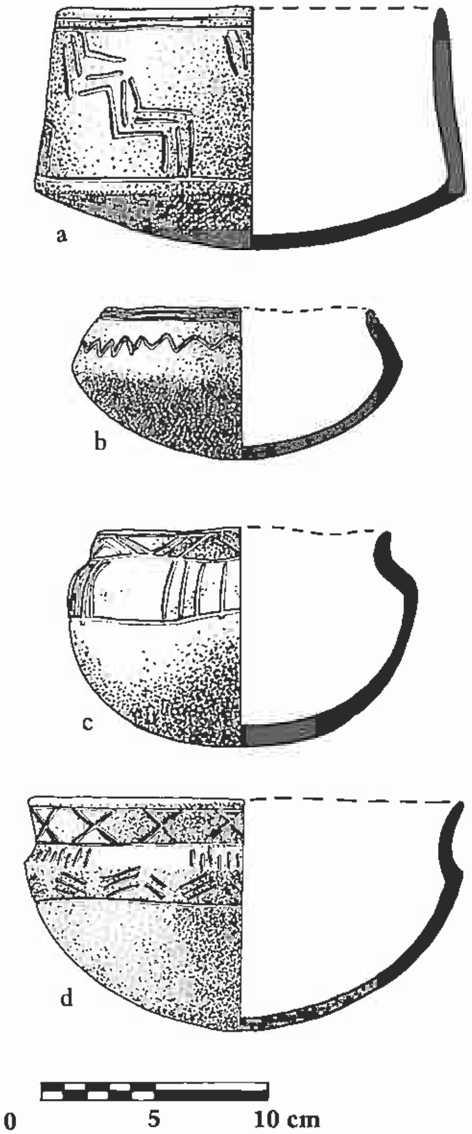


Figure 13.52. Carrales Coarse Grey, Late Cantera subphase bowls with exterior incising.

- Shallow bowls (RB-41)
- Flanged shoulder bowls (RB-89; Fig. 13.53*c*)
- Outslanting wall bowls (RB-17)
- Hemispherical bowls (RB-7)

Other forms
- Flanged shoulder bowls (RB-116)
- Outslanting wall bowls (RB-65)
- Hemispherical bowls (RB-93)
- Direct rim composite silhouette bowls (RB-31)*
- Globular bowls (RB-60)*
- Angular flaring wall bowls (RB-102)* (parallel to Amayuca Ruddy)
- Globular bowls (RB-78)*
- High shoulders (Base M)
- Composite silhouette bowls (RB-45) (parallel to Peralta Orange)
- Beveled rim bowls (RB-37)
- *Tecomates* (RB-1)
- Outslanting, slightly everted rim bowls (RB-20, 22)
- Small shallow bowls (RB-67)
- Heavy shallow bowls (RB-115)
- Double bowls (RB-137)
- Highly outcurved bowls (RB-76)
- Slightly everted rim bowls (RB-77)
- Plate forms with roughened exterior (RD-2)
- Ovate bowls (RB-16; Fig. 13.55)

Plastic Decoration: Rim incising is often similar to that found on Amatzinac White (Figs. 13.27, 13.56). As Carrales Coarse Grey increased in quantity during the Cantera phase, its forms and decorations increased in variety. The Early Cantera subphase specimens had little elaborate decoration, but during the Late Cantera this type possessed a wide range of decorative styles. Punctations along the exterior basal ridge of the RB-89 bowls (DC-23; Fig. 13.53*c*) were typical of the Late Cantera, as was ridging or modeling of the exterior vessel walls (DC-24). Occurring only during this time were body lugs applied to the pinched-in section of ovate bowls (RB-16) (DC-25; Fig. 13.55) and decorative bands of incised stairsteps, slashes, X's, and V's (DC-26–29; Figs. 13.52*a, c, d*, 13.53*a–b*).

Comparisons: Grey pottery was almost as widespread as white-slipped pottery during the Middle Formative period. It is yet another pottery style which is indicative of long distance information networks. Grey pottery is classified in a different way by each researcher. It is called black by some and brown by others. Therefore, to get a coherent idea of grey pottery from the literature is extremely difficult unless criteria other than color are used. In this discussion, Munsell color (when available), paste description, and, most important, forms were used as the criteria for identification of grey pottery.

Carrales Coarse Grey shows similarities to some examples of Café Negruzco defined by Piña Chan at Chalcatzingo (1955: Figs. 2*j–l*, 3*a–b*). From Zacatenco a black ware vessel with a ridged-rippled wall is designated in the Early Period (Vaillant 1931: Pl. Ib) and is very similar to Figure 13.53*a*. Boas (1911–1912: Pls. 37, nos. 3, 15; 39, nos. 1, 2; 40, no. 12) reported pottery from Zacatenco with design elements very similar to those of Carrales Coarse Grey, but no temporal placement for these is known.

Río Salado Gray of the Early Santa María phase and Quachilco Brown and

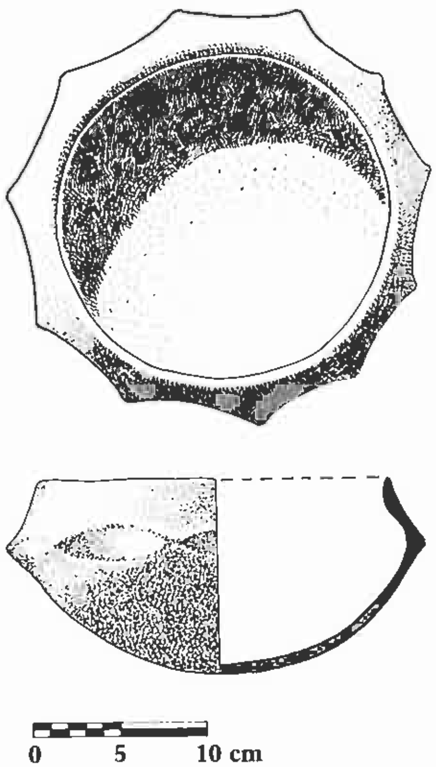


Figure 13.54. Carrales Coarse Grey, Late Cantera subphase bowl.

Quachilco Gray of the Late Santa María phase of the Tehuacan Valley (MacNeish, Peterson, and Flannery 1970:117–133) have basal break ridges or flanges, cross-hatch incising, stairstep incising, and basal break punctates that make them similar to Carrales Coarse Grey.

Coarse and fine-paste grey ceramics are found in relative abundance in the Gulf Coast heartland Olmec sites of San Lorenzo, La Venta, and Tres Zapotes. Carrales Coarse Grey is similar in form and decoration to the Palangana phase grey ceramics and to Ixpuchuapa Black Incised of the Remplás phase at San Lorenzo (Coe, personal communication). At Tres Zapotes, Grey Wares were reported from the Middle Tres Zapotes A phase (Weiant 1943:17). An exotic form similar to Chalcatzingo's RB-87 form with basal break punctates was published under "*incensario* wares" from Tres Zapotes (P. Drucker 1943a: Fig. 41f). The collections viewed in the Smithsonian possessed an abundance of coarse grey pottery, often with the basal break ridge, or flange, and zoned incising (slashes, stairsteps). Ceramics known as Coarse Black at La Venta (P. Drucker 1952:90–92) and as Black Ware at Tres Zapotes (P. Drucker 1943a:59–64) may also relate to our grey ware classification.

Several pottery types from Monte Albán, Oaxaca, may be similar to Carrales Coarse Grey and to Pavón Fine Grey. Type G.12 has flaring and outcurving wall bowls with single, double, and triple lines on the rim and slashes and undulating lines. Types G.15 and G.16 of Monte Albán I also exhibit these forms and designs, plus zoned slashes, wavy lines, and cross-hatching (Caso, Bernal, and Acosta 1967).

Culebra Gray of the Jocotal phase of Izapa is typified by plain flaring wall bowls (S. Ekholm 1969:63–65). There are forms similar to Carrales Coarse Grey from Altamira, Chiapas, but in pottery other than grey wares. The Red-on-Orange of the Late Crucero phase has forms like RB-91 and RB-116 (Green and Lowe 1967:120–121, Fig. 92). In Santa Cruz, the same situation exists. Chiapilla Matte Red of the Chiapilla phase has RB-116, RB-91, and RB-87 (Sanders 1961). Flanges, rippled vessel walls, and designs are similar. From La Victoria, Guatemala, Conchas Streaky Brown-

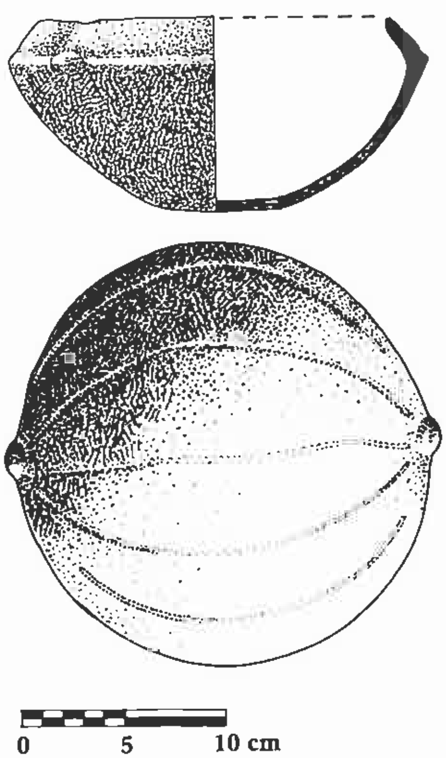


Figure 13.55. Carrales Coarse Grey, Late Cantera subphase bowl with exterior incising and body lugs.

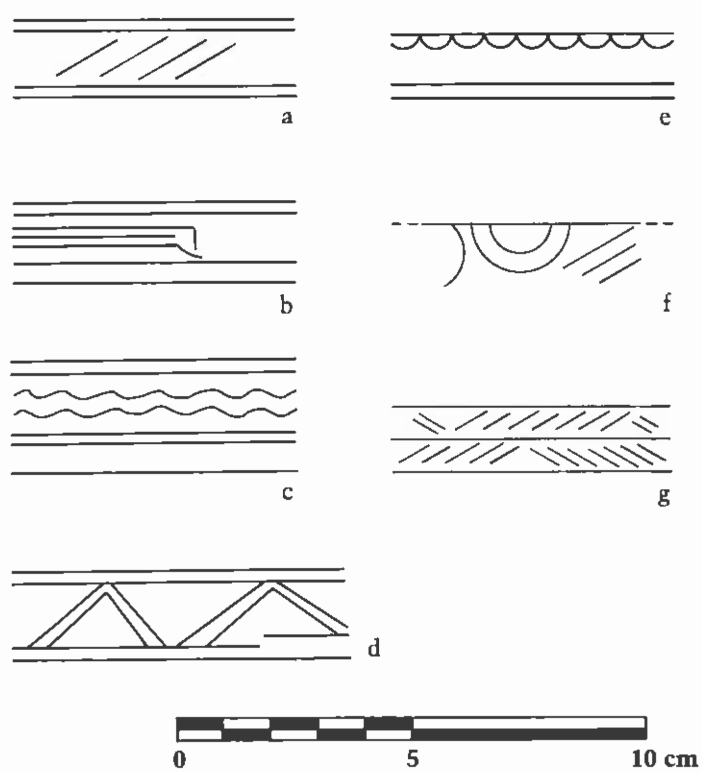


Figure 13.56. Carrales Coarse Grey incised interior rim designs.

Black of the Conchas phase has forms and designs similar to Carrales Coarse Grey such as the composite silhouette bowls with zoned slashes (Coe 1961: Figs. 35, 36). Conchas Orange of the Crucero phase exhibits forms similar to RB-74 (Coe 1961: Fig. 36n). Polished Brown from Mirador, Chiapas, has the RB-88 form and the zoned stairstep designs, although the surface color and paste descriptions do not concur with those of Carrales Coarse Grey (Peterson 1963: 12–13).

Bowls with punctated basal ridges or flanges (RB-89) are present at Uaxactun, but the ceramics have red, orange, or black surface finishes (R. Smith 1955: Fig. 77b, nos. 1–3).

Xochitengo Polychromes

Temporal Range: Xochitengo Polychromes were restricted to the Cantera phase.

Surface Treatment: Designs are painted in red, orange, brown, and black slips over a white base slip. Interior and exterior rims are generally painted with a band of red. The remainder of the painting commonly occurs on the exterior of the vessel near the lip (Figs. 13.57–13.59). The Munsell color for the surface slips are as follows:

Red	10 R 3–4/6, 3/4, 4/8
Orange	2.5 YR 3/2, 5–6/8; 5 YR 5/8
Brown-black	5 YR 3/2, 2.5/2
White	10 YR 8/2

Xochitengo Polychromes are frequently highly polished.

Paste and Temper: The paste and temper are identical to those of Amatzinac White. Paste color range is 7.5 YR 6/4, 5–7/4–6, 3–5/0; 10 YR 6–7/3–4.

The volume of aplastics is approximately 16 percent. Plagioclase (An 22, 30) is the most abundant mineral, composing 5–10 percent of the total paste volume. Grain size range is 180–280 microns. Orthopyroxenes, not more than 3 percent of the total volume, have a grain size range of 100–700 microns. Occasionally the grains are twinned. Horneblende is observed as not more than 1 percent of the volume, and the grains measure 120–400 microns. Clinopyroxenes, not invariably present, constitute less than 1 percent of the volume. Grain size is 420–440 microns. Basaltic andesite, opaque iron-titanium ores, and leucoxene are present. The mineral inclusions show similarities to mineral

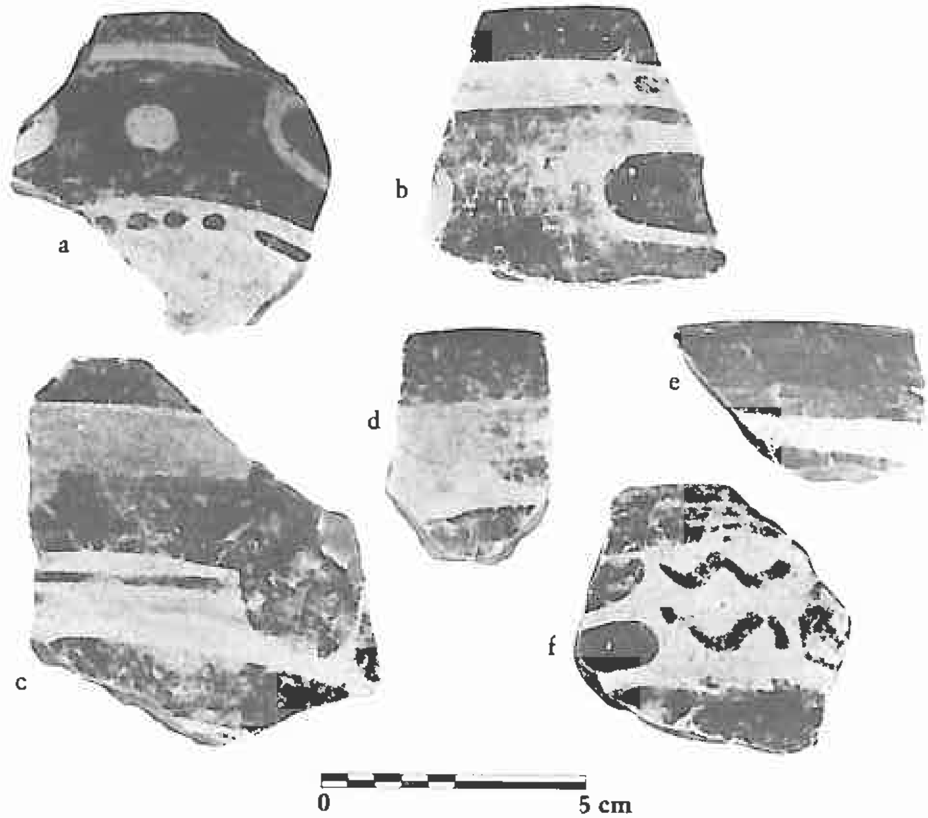


Figure 13.57. Xochitengo Polychrome, Early and Late Cantera subphase hemispherical bowl exteriors.

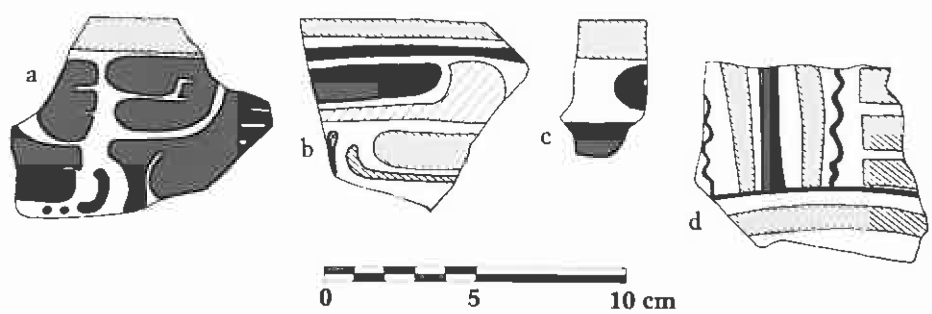


Figure 13.58. Xochitengo Polychrome, Early and Late Cantera subphase bowls.

fragments found in the volcanic tuff of the area.
Forms (Figs. 13.57–13.59):
Cantera phase
  Common forms
    Hemispherical bowls (RB-7)
    Shallow bowls (RB-41)
  Other forms
    Tecomates (RB-1)
    Ovate bowls (RB-16)
    Outslanting wall bowls (RB-17, 18, 19)
    Flaring wall bowls (RB-26)
    Slightly everted rim bowls (RB-77)
    Outcurving wall bowls (RB-23, 25)
    Incurved rim bowls (RB-3)
Plastic Decoration: None.
Comparisons: The Las Juntas Polychromes from Cerro Chacaltepec in south-central Morelos (Grove 1968b: 74–76, Fig. 62) are identical to the Chalcatzingo polychromes. Bichromes and trichromes are known from the Valley of Mexico, and these provide the closest regional similarities. Red-and-orange-on-white sherds were found in a Totolica level from Atoto (Paul Tolstoy, personal communication to Grove), and red-on-white wares (which we have included within this type) in the Early, Middle, and Late periods at Zacatenco (Vaillant 1930: 83, 89, 96).

On the basis of our current data, Xochitengo Polychrome appears to be a type restricted to Morelos, with a possible center of importance in the Chalcatzingo area. Polychrome ceramics have also been reported from Chalchuapa, El Salvador, where Perulapan Polychrome occurs in minor quantities in the Colos Ceramic complex (900–650 BC) (Sharer 1978: 19, 115; Fig. 9h4–1). However, the similarity to Xochitengo Polychrome lies only in the use of several colored slips. Forms and painted designs are distinct in each case.

Amayuca Ruddy

Temporal Range: Amayuca Ruddy began at the end of the Early Cantera and is a phase marker for the Late Cantera subphase.
Surface Treatment: The surfaces may be slipped with the same clay as the paste. Surfaces are unevenly polished, often with the streaks of the polishing tool evident. Surface color range is 10 R 3/4, 3/6; 5 YR 2.5/1, 4/4, 2.5–3/2–3; 2.5 YR 5/8, 4/6–8, 3–4/4–6, 5/6; 7.5 YR 8/4.
Paste and Temper: The paste is very hard, and the fracture is sharp. The paste color range is 2.5 YR 4–5/6, 6/8, 3/2, 3–4/4–8, 5/6–8; 7.5 R 4/2; 5 YR 4/4, 3/2.

The total volume of aplastics is 9 percent. Plagioclase (An 28) comprises 5 percent of the volume as the principal mineral and ranges in grain size from 180 to 660 microns. Orthopyroxenes constitute 2 percent of the volume and the grain size range is 280–460 microns. Horneblende, less than 1 percent of the volume, ranges from 500 to 540 microns. Grains of clinopyroxene, also less than 1 percent of the volume, measure 260 microns. Basaltic andesite, sandstone, iron stains, and leucoxene are present. The mineral inclusions show similarities to mineral fragments found in the volcanic tuff of the area.
Forms (Fig. 13.60):
Cantera phase
  Diagnostic phase markers/common forms
    Angular flaring wall bowls (RB-102)
    Sharply outflaring ollas (RO-32)
  Other forms
    Incurved rim bowls (RB-3)
    Hemispherical bowls (RB-7)
    Cylindrical bowls (RB-14)
    Outslanting, slightly everted rim bowls (RB-21)
    Outcurving wall bowls (RB-23, 25)
    Highly outcurved bowls (RB-76, 90)
Plastic Decoration: Simple incising is occasionally present.
Comparisons: None.

Mingo Fine Brown

Temporal Range: Mingo Fine Brown may have begun in the Early Cantera and was typical of the Late Cantera subphase.
Surface Treatment: The rich, dark brown, slipped surface of this pottery is very highly polished. Surface color range is 10 YR 3/1–2; 5 YR 2.5–3/1–4; 7.5 YR 3/2, 4/2–4, 3/0.
Paste and Temper: The paste is very hard and fine particled, with a sharp fracture. Wall thickness is diagnostic, ranging from 0.3 to 0.6 cm. The color range of the paste is 5 YR 4/2, 5–6/4, 3–4/2; 10 YR 3/1; 7.5 YR 5/4, 3–4/2.

Plagioclase (An 30) is the most abundant mineral, constituting 5 percent of the volume, and grains measure 80–400 microns. Horneblende constitutes less than 1 percent of the volume, and grain size is 120–240 microns. Orthopyroxenes also comprise less than 1 percent of the volume, and the range of grain size is 100–200 microns. Dacite and leucoxene are present. The mineral inclusions show similarities to mineral fragments found in the volcanic tuff of the area.
Forms (Fig. 13.61):
Cantera phase
  Ovate bowls (RB-16)
  Highly outcurved bowls (RB-76,* 130)
  Incurved rim bowls (RB-3)
  Everted rim bowls (RB-35)
  Rounded bases
  Other forms
    Tecomates (RB-1)
    Hemispherical bowls (RB-7)
    Cylindrical bowls (RB-14)
    Outslanting wall bowls (RB-17, 18)
    Outslanting, slightly everted rim bowls (RB-21, 22)
    Outcurving wall bowls (RB-23)
    Flaring wall bowls (RB-26)
    Everted rim bowls (RB-30)
    Shallow bowls (RB-41)
    Globular bowls (RB-79)
    Collared ollas (RO-1)
    Beveled rim ollas (RO-8)
    Short-necked ollas (RO-29)
    Flaring neck ollas (RO-34)
    High shoulders (Base M)
Plastic Decoration: Fine-line incising is occasionally present (Fig. 13.61o).
Comparisons: None.

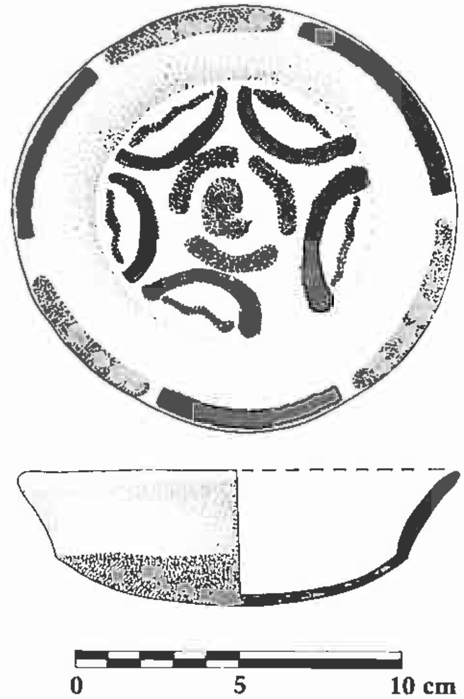


Figure 13.59. Xochitengo Polychrome, Early and Late Cantera subphase bowl.

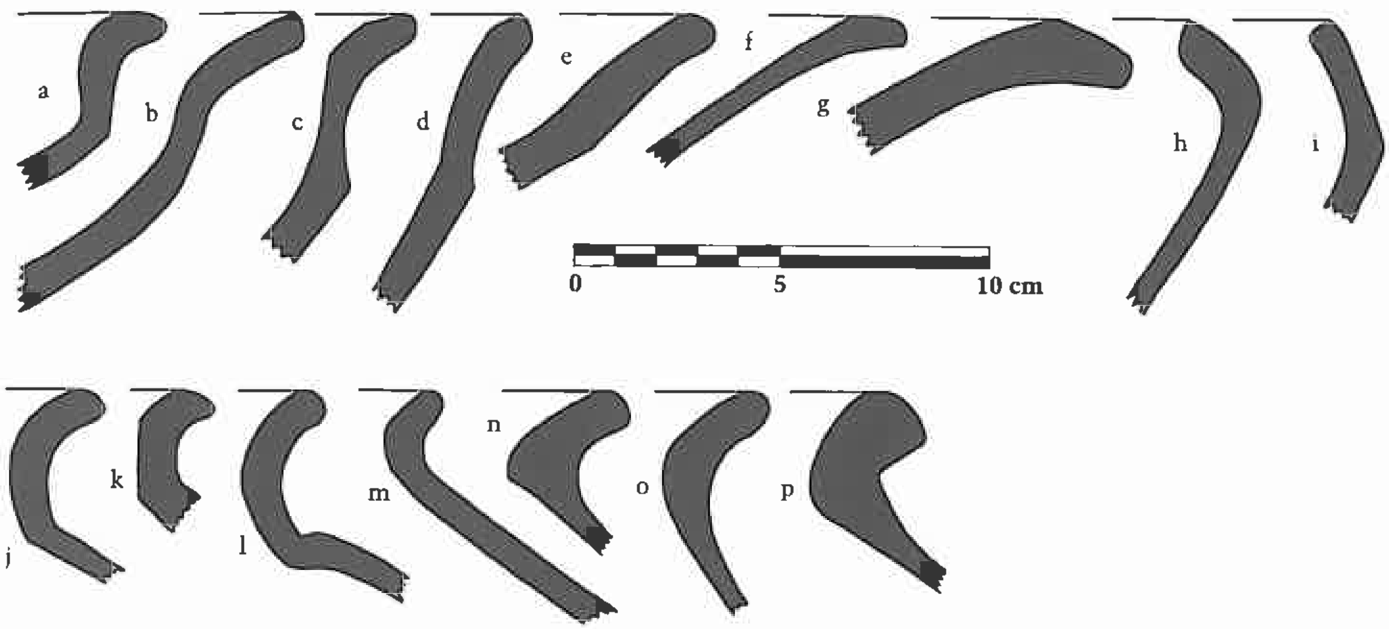


Figure 13.60. Amayuca Ruddy, Late Cantera subphase: *a–i*, bowls; *j–p*, ollas.

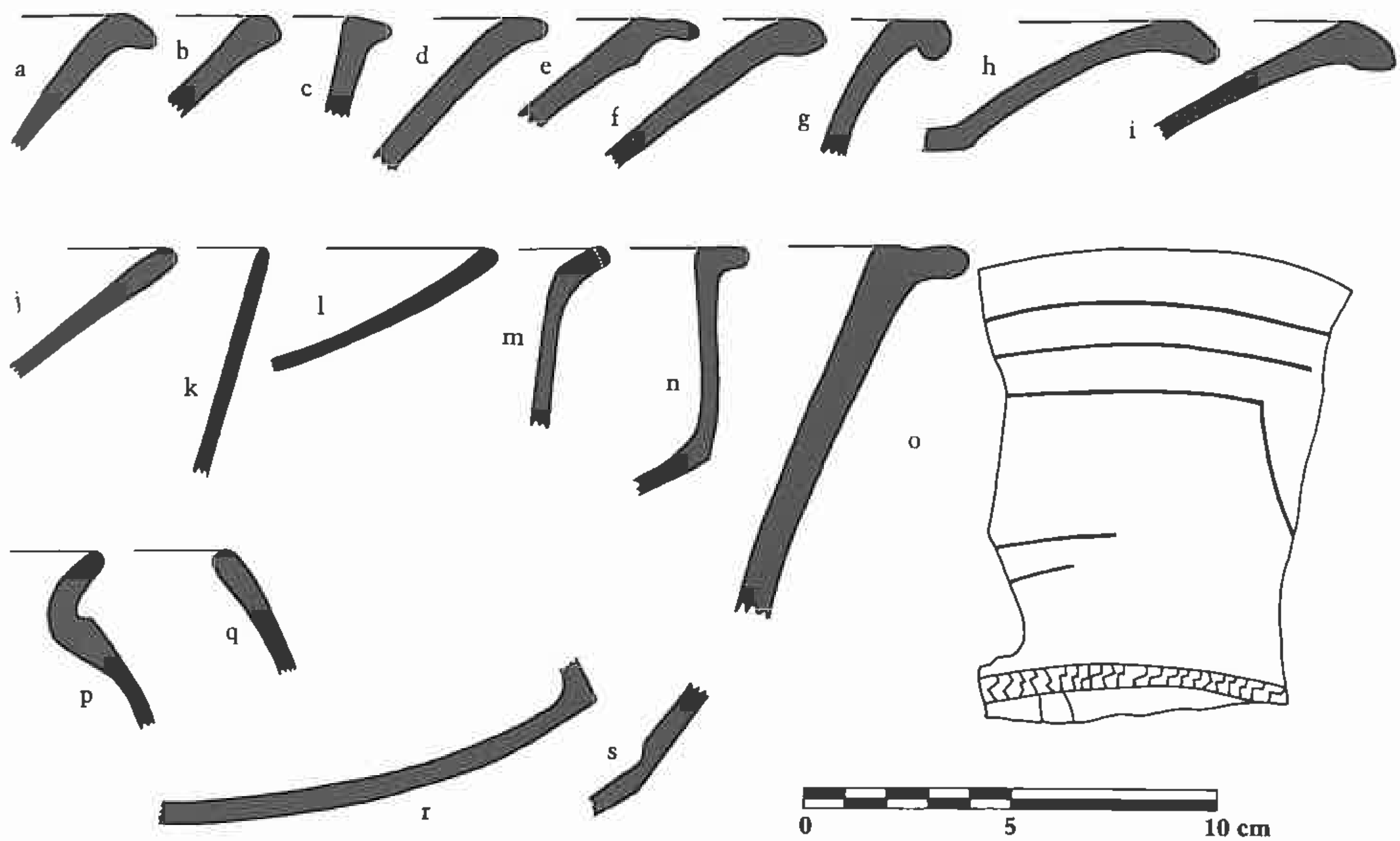


Figure 13.61. Mingo Fine Brown, Late Cantera subphase bowls.

Santa Clara Orange

Temporal Range: Santa Clara Orange was restricted to the Late Cantera subphase.

Surface Treatment: A thin, well-polished slip is the trademark of Santa Clara Orange. The color is diagnostic: 2.5 YR 5/8; 7.5 YR 5–6/4. Vessels were often slipped and polished only on the interior, leaving the exterior unslipped and smoothed.

Paste and Temper: The paste has few or no inclusions and is very fine particled, with a sharp fracture. Wall thickness averages 4.5 mm. Paste color is invariable: 7.5 YR 7/6; 5 YR 5–6/6.

Aplastics constitute 13 percent of the paste volume. The most frequently occurring mineral is plagioclase (An 28), comprising 8 percent of the volume. Grain size ranges widely from 80 microns to 1.0 mm. Orthopyroxenes, occasionally twinned, constitute 3 percent of the volume and range in grain size from 120 to 400 microns. Horneblende and clinopyroxene are present in fairly equal proportions, but make up less than 1 percent of the volume. Horneblende ranges in grain size from 220 to 540 microns; clinopyroxene ranges from 220 to 500 microns. Basaltic andesite, iron stains, and some leucoxene are present. The mineral inclusions show similarities to mineral fragments found in the volcanic tuff of the area.

Forms (Fig. 13.62):

Late Cantera subphase

- Incurved rim bowls (RB-3)
- Ovate bowls (RB-16)
- Outcurving wall bowls (RB-23)

Plastic Decoration: None.

Comparisons: None.

Atotonilco Black

Temporal Range: Atotonilco Black spans all the phases, from the Early Amate subphase through the Late Cantera. This classificatory unit, Atotonilco Black, might actually represent a catch-all category for errors in firing.

Surface Treatment: The surfaces are highly polished and lustrous. Because the paste color is also black, it is difficult to discern if this pottery is slipped or not. Surface color range is 5 YR 2.5/1; 7.5 YR 2.5/0.

Paste and Temper: The core section shows complete reduction. The paste has a soft, crumbly fracture. Paste color is 5 YR 2.5/1; 7.5 YR 2.5/0.

Forms (Figs. 13.63, 13.64):

- Hemispherical bowls (RB-7)
- Cylindrical bowls (RB-14)
- Outslanting wall bowls (RB-17, 18, 19)
- Everted rim bowls (RB-30)
- Shallow bowls (RB-41)

Plastic Decoration: Modeling of rims, incised lines along rims, and pseudo-grater incising are occasional decorative techniques (Fig. 13.64).

Comparisons: Black pottery styles seem to have strong local variations. Our data do not indicate that there was a significant black ware tradition at Chalcatzingo as there seems to have been in the Valley of Mexico. Tlatilco, for example, has scores of black vessels (Piña Chan 1958:74, Fig. 35), and many were reported from Zacatenco and El Arbolillo also (Vaillant 1930:80–87; 1935: 223–227).

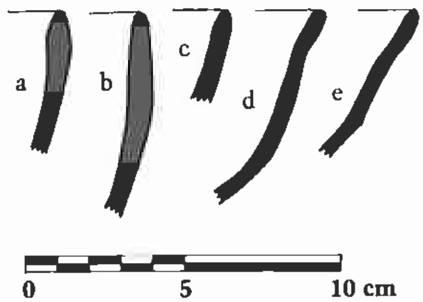


Figure 13.62. Santa Clara Orange, Late Cantera subphase bowls.

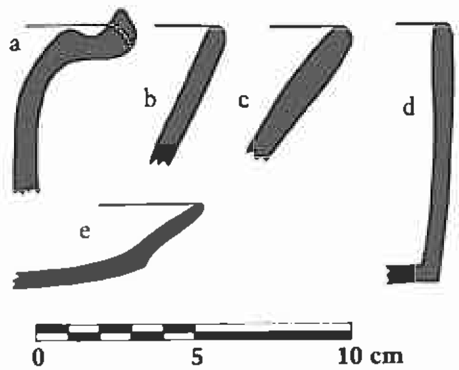


Figure 13.63. Atotonilco Black bowls.

Figure 13.64. Atotonilco Black bowl interiors.

Brown-Slipped, Streaky
Temporal Range: Our sample is too small to determine the temporal range of Brown-Slipped, Streaky.
Surface Treatment: The surfaces are well polished, but the surface slip is very streaky. Surface Munsell color is 7.5 YR 4/4, 5–6/4–6; 5 YR 5/3; 10 YR 6/4. Zoned toning may have been used.
Paste and Temper: The temper is a fine sand, and the fracture is crumbly and jagged. Paste color is 5 YR 5–6/6. Vessel wall thickness is always less than 1 cm.

Plagioclase (An 31) is the most frequently occurring mineral, comprises 5 percent of the paste volume, and has a grain size range of 80–420 microns. Orthopyroxene constitutes 1 percent of the volume, with grains measuring 140–240 microns. Less than 1 percent of the volume is horneblende, measuring 200–260 microns. Andesite and leucoxene are present. The mineral inclusions show similarities to mineral fragments found in the volcanic tuff of the area.
Forms: Highly outcurved bowls (RB-76) and ollas are the only known forms.
Plastic Decoration: None.
Comparisons: None.

White-on-Red
Temporal Range: Our sample is too small to determine the temporal range of White-on-Red.
Surface Treatment: The surface is red-slipped, 10 R 3/6, and has unknown designs painted in white over the red base slip. The surface is evenly polished.
Paste and Temper: The paste is dark grey with a crumbly fracture. Sand temper is abundant.

Plagioclase (An 28) is the predominant mineral, comprising 6 percent of the volume. Grain size ranges from 120 to 480 microns. Orthopyroxenes constitute less than 1 percent of the volume, and the grains range in size from 80 to 180 microns. Horneblende also occurs in frequencies of less than 1 percent of the total paste volume. Its grain size range is 200–300 microns. One grain of poikilitic plagioclase was noted, in addition to a few grains of clinopyroxene. Andesite and leucoxene are present. The mineral inclusions show similarities to mineral inclusions found in the volcanic tuff of the area.
Forms: Olla body sherds were the only examples of this type.
Plastic Decoration: None.
Comparison: White-on-Red ceramics occur at Zacatenco (Vaillant 1930: Pl. IIg–o), El Arbolillo (Vaillant 1935: 231), and the Middle Formative Atoto area near Tlatilco (Piña Chan 1958: Figs. 28, 29), and are placed within the Early La Pastora phase of the Valley of Mexico by Tolstoy (1979: Fig. 1). Chalcatzingo's White-on-Red ceramics may be compared with the Valley of Mexico types only on the basis of color since the designs and forms are unknown.

Yellow Paste Wares
Temporal Range: The sample is too small to determine the temporal range of Yellow Paste Wares.
Surface Treatment: The surfaces are sometimes slipped in red but are usually brown. The color range is 10 YR 4/6. Surfaces are not well polished.
Paste and Temper: The paste distinguishes these wares from the normal Chalcatzingo pottery. It is a distinctive yellow color: 7.5 YR 7/6. The paste is compact, with fine sand temper, and has a hard, even fracture. This is a minor type, and no thin-section analysis was performed.
Forms: Globular bowls (RB-60) and other indeterminable bowl forms occur.
Plastic Decoration: None.
Comparisons: None.

"Cement" Ware
Temporal Range: The sample is too small to determine the temporal range.
Surface Treatment: The surfaces are poorly polished and are mottled due to fire clouding. The color range is 7.5 YR 6/6; 5 YR 5/6, 4/1.
Paste and Temper: The clay of the paste is fine particled and well fired but contains large, coarse temper grains, which give it the texture of cement. Paste color range is the same as the surface color range. This is a minor type, and no thin-section analysis was performed.
Forms: Forms were indeterminable.
Plastic Decoration: None.
Comparisons: The coarseness of the temper is unlike that of other Chalcatzingo pottery types.

Grey-Slipped, Red Paste
Temporal Range: The sample is too small to determine temporal range.
Surface Treatment: The surfaces are only slightly polished. The grey slip tends to be mottled. Color is 2.5 YR 4–6/0.
Paste and Temper: The paste is a bright red, 2.5 YR 5/8. The temper is abundant, causing a crumbly texture. Petrographic analysis was not conducted.
Forms: Olla and bowl body sherds make up the sample, and precise forms were not determined.
Plastic Decoration: Pseudo-grater incising is present.
Comparisons: None.

BRAZIERS

Four types of braziers are known from Chalcatzingo. All are Formative period in date and are made of the sandy, crumbly paste typical of local ceramic types at the site. Because the majority of brazier sherds in our sample have eroded surfaces, we have been unable to classify most of them within our general ceramic typology, and therefore they are discussed separately by form.

Type I
The first type consists of small, crude, unslipped and unpolished braziers or incense burners with spider-leg supports and small conical nubs on the flat upper surface (Fig. 13.65). Although they definitely date to the Formative period, their exact phase placement cannot be determined because our sample comes from fill or mixed contexts. The spider-leg supports (S-7) suggest they may be Amate phase. Reduced (fire-clouded) areas around the conical nubs suggest that coals or incense were held on the upper surface. (This form is not illustrated in the Appendix D form chart.)

Type II
The heavy, squat hourglass-shaped Type II braziers (RB-100) began in the Middle Barranca subphase and continued through the Late Cantera. They occur with Peralta Orange surface finish and paste and also in an unidentifiable eroded condition. Their form and their blackened interior bases suggest they function as braziers.

Type III
The three-handled braziers (RB-99) composing the third type are only infrequently represented in the Late Barranca and Early Cantera subphase assemblages, but were typical of the Late Cantera subphase. Three openings in the basal wall are common, as are tiny appliqué lugs on the handles (Fig. 13.66). Uneroded identifiable sherds of this brazier type are Tadeo Coarse in paste and finish.

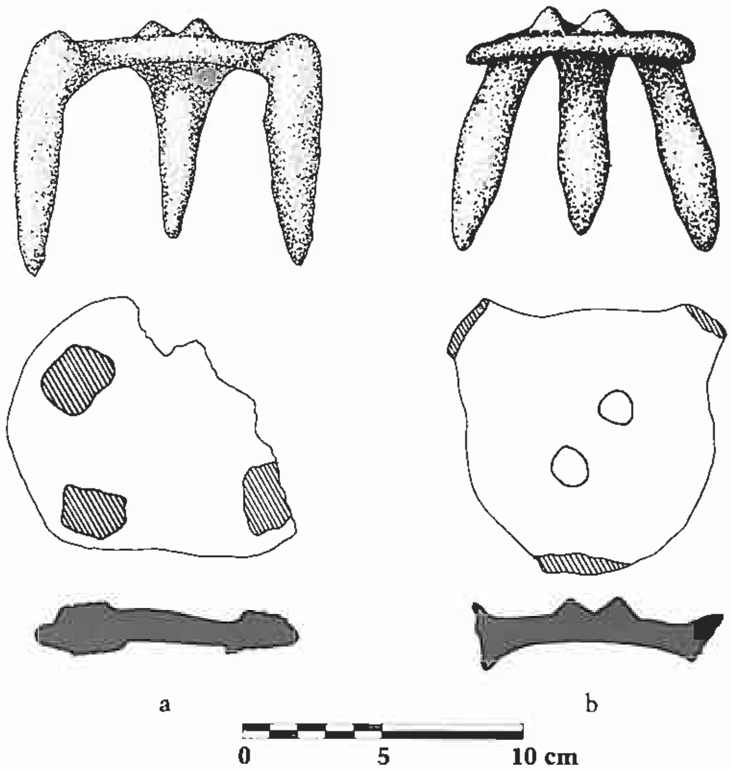


Figure 13.65. Brazier I, possibly Amate phase.

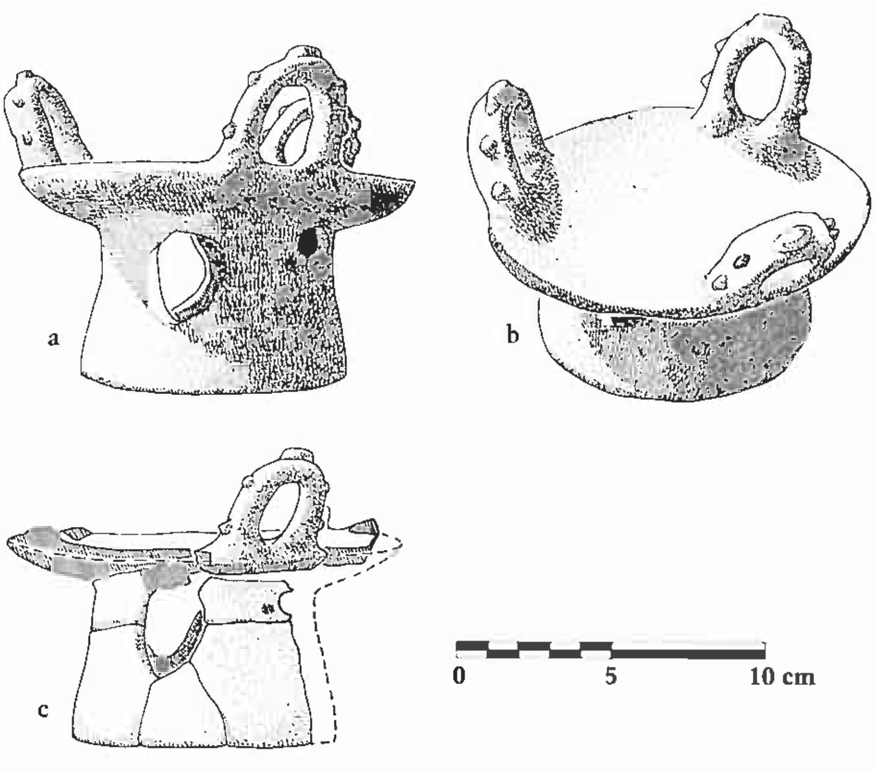


Figure 13.66. Brazier III, Late Cantera subphase.

Type IV

The largest number of brazier fragments recovered at Chalcatzingo belong to three-prong braziers with thick walls. These occurred in greatest frequency during the Late Cantera subphase. An important feature of this type is that the prongs are zoomorphic. No complete braziers were recovered, and the sherds allow two possible reconstructions of the original form—heavy basins or hourglass-shaped. Either form would have had the zoomorphic prongs jutting upward and inward from the rim (Fig. 13.67).

Brazier size varied from about 12 to 53 cm in diameter, although most ranged from 24 to 28 cm. Vessel walls on all brazier sizes were 1–2 cm in thickness, and thickness is unrelated to diameter. While most of the sherds have eroded surfaces, a few have traces of brown or orange slip.

The majority of the zoomorphic prongs are rounded and elongated (Figs. 13.67, 13.68*a–c*). They show no close resemblance to any specific animals. Other prongs can be identified as canines and peccaries (Fig. 13.68*d–f*). These prongs vary in length from 4 to 13 cm, and in diameter from 2.5 to 9 cm. The majority of the prongs are hollow, but a few smaller examples are solid. The upper surface of the prongs is normally smudged or blackened, indicating that a cover or vessel rested upon them at times when the brazier was heated.

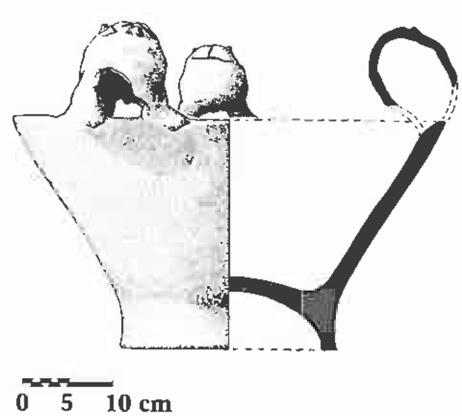


Figure 13.67. Three-pronged brazier reconstruction, Late Cantera subphase.

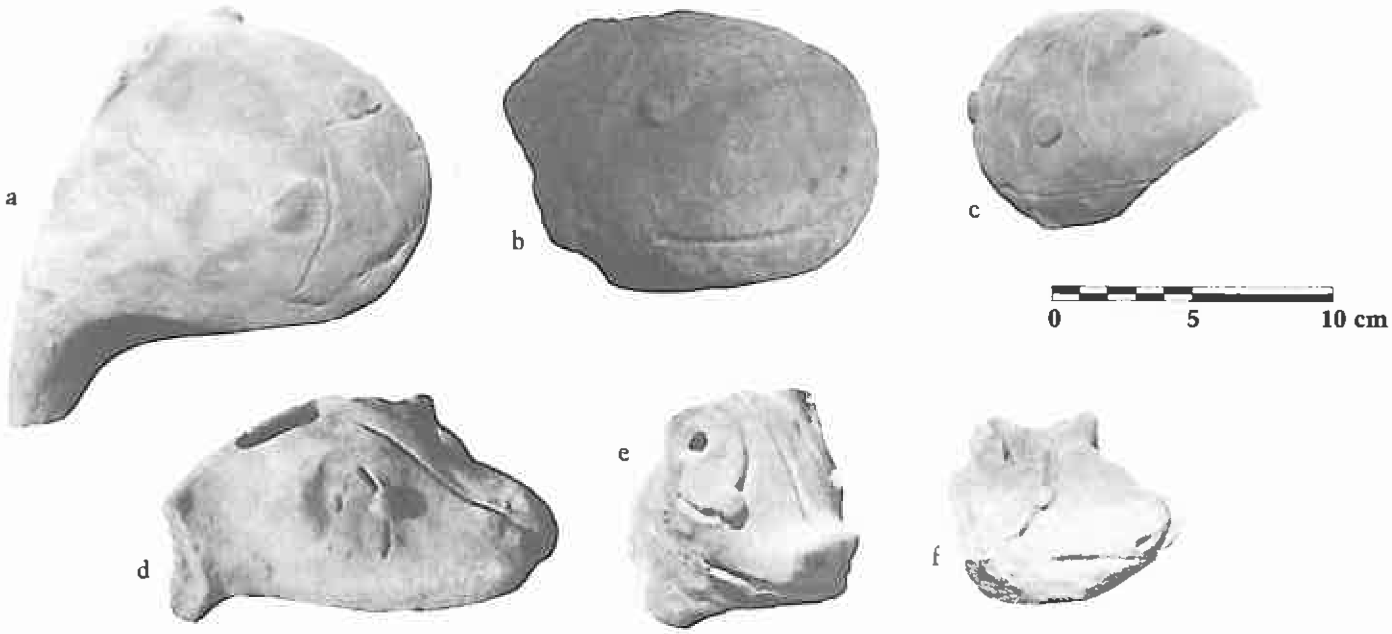


Figure 13.68. Zoomorphic brazier prongs, Late Cantera subphase: *a–c*, "supernatural" heads; *d–f*, dog and peccary heads. Scale is approximate.

Comparisons

Brazier Type I has no counterpart in sites published to date. An Early Formative Chicharras phase brazier from San Lorenzo (Coe 1970:25) shows similarities to Dili-Escalera phase braziers from Chiapas (Lowe 1962:98, Pl. 18*c*, *g*), but the only similarities of these braziers with Chalcatzingo's Type I are in the small interior lugs.

Brazier Type II has many more counterparts. Pot rests or *incensarios* are reported from Chiapa de Corzo (Dixon 1959:31, Figs. 37*a–b*, 43*a–b*). Canoas Heavy Plain and Canoas Orange-Brown of the Early Santa María phase of the Tehuacan Valley include an annular base form (MacNeish, Peterson, and Flannery 1970:73, Fig. 40). Similar forms are reported but not illustrated from Oaxaca by Flannery (1968:91) and Drennan (1976:73, Fig. 17). This form occurs at La Victoria on Conchas Red-on-Buff (Coe 1961: Fig. 33). Deep, heavy annular bases are present among the La Venta sherds observed at the Smithsonian Institution.

The only form found similar to Brazier Type III is a fragment from Tres Zapotes (P. Drucker 1943a: Fig. 42*f*) which is identified as a "*comal* with a strap handle."

The three-prong brazier, Type IV, was a popular and widespread form during the Cantera phase. A fragment of one of these is present in the La Venta collection, and many occur in the Tres Zapotes collection at the Smithsonian. These latter were published as "effigy handles" of the Middle Tres Zapotes A phase by Weiant (1943: Pl. 54, nos. 1–9), and by Philip Drucker (1943a: 74, Fig. 43*c–d*) as Upper phase "Unslipped Ollas." At Izapa they are found in the Dili phase (Chiapa II; Lowe 1965: Fig. 2*b*).

Animal head brazier prongs are known from Middle Formative Oaxaca (Marcus Winter, personal communication; Kent V. Flannery, personal communication). A probable prong attachment from Fábrica San José is illustrated and called an "effigy grip" (Drennan 1976:30–31), but no temporal position is defined. At Mirador, Chiapas, attached burner horns with perforations from the exterior into the horn are present (Peterson 1963:68, Fig. 101, no. 2).

Three-prong braziers are known from Las Charcas phase at Kaminaljuyú (Rands and Smith 1965: Fig. 6; M. Weaver 1972: Fig. 5*gg*). It is important to note that three-prong braziers are depicted on stelae from Izapa and Kaminaljuyú: Kaminaljuyú Stela 11 (Norman 1976: 289, Fig. 6.2) and Izapa Stelae 5, 12, 24, and possibly Stela 18 (Norman 1973: Pls. 9, 10, 23, 24, 27, 28).

GULF COAST CERAMICS

Our excavations and analyses have disclosed several important similarities between the Chalcatzingo and Gulf Coast sites. In order to better understand the affinities among the ceramics of the Gulf Coast, and between the Gulf Coast and Chalcatzingo, I examined Michael Coe's San Lorenzo collection and the Smithsonian's La Venta and Tres Zapotes collections to supplement the published data on Gulf Coast ceramics, most of which deal with the Early Formative (whereas Chalcatzingo attained its greatest importance during the late Middle Formative; see Appendix D).

There are a number of ceramic ties among the Gulf Coast Olmec sites, and many of them occur at Chalcatzingo as well. These linking traits are not iconographic, but are far more subtle and relate to vessel forms and types.

Early Formative Ceramics

The Early Formative (pre–Nacaste phase) ceramics of San Lorenzo (Coe 1970:21–28) show several similarities to La Venta and Tres Zapotes sherds in the Smithsonian collections. San Lorenzo's Aguatepec Thick everted rim bowl form (similar to Chalcatzingo's RB-38) of the San Lorenzo phase is comparable to a form known in La Venta's Coarse Brown Ware (e.g., P. Drucker 1952:92–96) and Chalcatzingo's Manantial Orange-on-White. Similar forms in White-Rimmed Black are found at San Lorenzo, La Venta, and Barranca phase Chalcatzingo. San Lorenzo's white-slipped bowls with pseudo-grater incised interiors have counterparts at La Venta and Tres Zapotes, where this decorative technique occurs on other types of ceramics as well (Ortiz Ceballos 1975: Fig. 36).

The characteristic markers of the San Lorenzo A and B phases, Calzadas Carved and Limón Carved Incised (Coe 1970:26–27) are not present in the Smithsonian collections for La Venta and Tres Zapotes. However, in Ponciano Ortiz Ceballos' study (1975) of *Pozo 3* from Squier's Tres Zapotes excavations, levels 14–11 do contain examples of these types. Although they are dated by Ortiz Ceballos to 800–300 BC, levels 14–11 (Tres Zapotes A and B phases in his chronology; 900–300 BC) should be considered contemporaneous with the San Lorenzo phase at San Lorenzo. Reexamination of his data could push the dating of these phases back to ca. 1100 BC. Tres Zapotes, therefore, contains a San Lorenzo phase occupation, though of unknown size and extent.

Middle and Late Formative Ceramics

In general, fine- and coarse-paste grey-black ceramics are excellent temporal markers for the Middle and Late Formative. Bowls with exterior "ridging" (RB-134), outcurving wall bowls (RB-23, 25, 90), hemispherical bowls (RB-7), and other bowls (RB-31, 71, 78, 79, 80, 85, 87, 89, 91, 116) are common forms throughout much of non-Maya Mesoamerica. At San Lorenzo, a fine-paste grey-black ware is present in the Middle Formative Palangana phase, and Ixpuchuapa Black Incised is typical of the Remplás phase, which Coe (1970:30–31) dates as Late Formative. Slight basal ridges on composite silhouette bowls are present at both San Lorenzo and Tres Zapotes but are absent in the sample from La Venta. Punctations infrequently occur on the basal ridge. Decorative motifs of zoned slashes, zoned cross-hatching, and zoned stairsteps are common at La Venta, Tres Zapotes, and during the Palangana and Remplás phases at San Lorenzo. These various attributes can serve as broad temporal markers between these sites and help identify ties with Chalcatzingo.

Punctation, particularly in association with orange-slipped ceramics, appears to be an important shared attribute. Ollas with "human" faces created by punctation (discussed above) are illustrated for Tres Zapotes by Philip Drucker (1943a: Pls. 17*j*, 18*a*–*b*) and by Bertha Aguayo L. and Ponciano Ortiz Ceballos (1975:304, 308, lower right photo). An olla of this type was uncovered at San Lorenzo in a San Lorenzo phase context (Coe, personal communication), but none were seen in the La Venta collection, nor are they mentioned in that site's reports. A Chalcatzingo example occurs on a Peralta Orange olla (Fig. 13.69).

Also important is the correspondence between Peralta Orange ridged-neck ollas (RO-25, Figs. 13.42, 13.69) with punctations, which are characteristic of the site's Cantera phase, and ridge-necked olla sherds (many with orange slip) in the Tres Zapotes sample. Peralta Orange sherds from composite silhouette bowls (RB-45, Fig. 13.40) with punctations along the shoulder edge are present at Chalcatzingo, and similarly placed punctations are found at La Venta on Coarse Buff sherds (P. Drucker 1952: Fig. 28*d*–*e*, *g*) and at Tres Zapotes on orange-slipped sherds.

There are similarities in some of the more unusual forms, such as the three-pronged braziers with zoomorphic prongs. One probable brazier fragment is present in the La Venta collection. The Gulf Coast examples are occasionally zoomorphic and sometimes have plain prongs.

Drucker noted the abundance of small ollas at both La Venta and Tres Zapotes. La Venta's "small thick-wall jars" (P. Drucker 1952:119) and the "toy ollas" from Tres Zapotes (P. Drucker 1943a:40, Pl. 16*b*, *d*–*e*, *g*) appear equivalent to Chalcatzingo's *cantaritos* (C-5) which occur with some Cantera phase burials. The Smithsonian's Tres Zapotes collection includes many *cantarito*-like sherds from Trench 20. Tiny bowls or flat-based dishes with low walls were made of Tres Zapotes Brown Ware (P. Drucker 1943a: Fig. 29). Similar small vessels were found at Chalcatzingo. It is possible that at both sites they functioned as paint dishes.

Summary of Comparisons between Chalcatzingo and the Gulf Coast

Chalcatzingo's apogee during the Early and Late Cantera similarities, 700–500 BC, is clearly contemporaneous with the Palangana phase of San Lorenzo and late Middle Formative La Venta and Tres Zapotes. The similarities in ceramics, apart from those in portable art, monumental art, and other artifactual categories, can be summarized as follows:

1. Carrales Coarse Grey and Pavón Fine Grey show form, decoration, and surface color similarities to Gulf Coast pottery. Particularly notable are bowls with basal ridges, punctation along basal ridges, zoned exterior incising in the form of zoned slashes, stairsteps, and X's, flaring wall bowls, and modeled or ridged composite silhouette bowls.

2. Peralta Orange pottery, typical of the Cantera phase, has composite silhouette bowl forms with punctation above or on the shoulder and the ridge-necked ollas with punctation along the ridges. The latter form is similar to the punctate face ollas of Tres Zapotes.

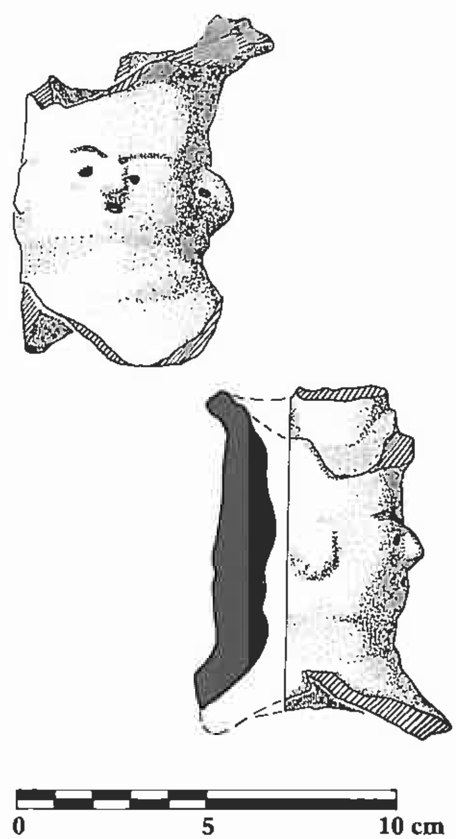


Figure 13.69. Peralta Orange olla neck with human face made by punctation.

3. Three-prong braziers are found at Tres Zapotes and are common at Chalcatzingo, where they are restricted to the Cantera phase.

4. The small dishes and *cantaritos* of Atoyac Unslipped Polished I at Chalcatzingo are similar to the miniature bowls and ollas from the Gulf Coast sites.

5. White-slipped ceramics and white-rimmed black ceramics have a long temporal span at Chalcatzingo, as they do at most Formative sites. They represent general points of similarity among the assemblages.

GLOSSARY

BASE: the lower part or bottom of a vessel.

BASIN: a deep, wide-mouthed vessel finished on the exterior and interior; in the Chalcatzingo assemblage, it may have a composite silhouette.

BOTTLE: an olla with a globular body and a long, narrow neck (RO-35).

BOWL: a ceramic form with an unrestricted mouth and always finished on the interior.

BRAZIER: a specific function vessel form used for burning.

CANTARITO: a miniature olla or jar form made by hand-modeling or pinching technique.

DOUBLE-LOOP HANDLE CENSER: a specific function ceramic vessel, probably used for burning incense; a low dish form atop an annular or ring base with a double-loop handle (also called basket censer).

ENGRAVING: a post-firing decorative technique involving the scratching or cutting of decorative elements into the hardened surface of the vessel.

EXCISING: a pre-firing decorative technique in which a portion of the surface is cut away to achieve a design in relief.

FLUTING: a technique of modeling used to achieve shallow canals or low ridges on a vessel (Smith and Piña Chan 1962: 1).

GADROONING: a technique of modeling used to achieve a lobed or pumpkin-like vessel form.

GROOVING: wide incising; here used to indicate a form of incising slightly deeper and wider than usual.

INCISING: "freehand decoration by pressing or cutting lines" into the leather-hard vessel surface; a pre-firing decorative technique (after Shepard 1963: 195–203).

LUSTER: shine.

MATTE: an unpolished surface.

MODELED: hand manipulation of the vessel while still in a wet, plastic stage (Shepard 1962: 55).

OLLA: a ceramic jar form with a defined neck; the neck area is finished on the interior but the interior of the body is unfinished.

PLATE: a low, extended form with a roughened exterior.

POLISH: both a technique and a property; rubbing of a leather-hard clay surface with a tool to achieve luster or shine (often called "burnish").

RASPADA: a technique of wide, shallow incising; at Chalcatzingo, it refers to a specific, sloppy incising which barely removed the slip. It is restricted to specific design motifs.

RIDGING: the formation of elongated, raised areas on either the interior or exterior of a vessel wall without deforming the lateral contour of the vessel.

RIM: vessel mouth or lip.

SHOULDER: that part of a vessel form between the base and the neck where the curvature changes; in the case of a composite form, the shoulder is a sharp angle.

SLIP: a clay in liquid suspension used as a pre-firing paint on vessels (after Nelson 1971: 338).

SMOOTHING: a surface finishing technique which leaves no luster.

"STICK" POLISHING: polishing which does not cover the entire surface and produces a streaky luster with the marks of the polishing tool evident; the polishing tool is not necessarily a stick.

TECOMATE: a globular ceramic vessel form with a restricted neckless mouth.

RESUMEN DEL CAPÍTULO 13

La tipología descriptiva para la cerámica tuvo como base más de un millón de tepalcates, con lo cual se produjeron las unidades de clasificación para el análisis de los artefactos así como para determinar que atributos de la cerámica mejor reflejaban los cambios en la secuencia temporal. Los tipos de cerámica resultantes se definen en base al tratamiento de superficie recibido y al de empastado. Se encontró que son las formas el indicador de cambio temporal más sensible. Las fases para los tipos de cerámica y las formas fueron basadas en la derivación obtenida de los tepalcates provenientes de treintaiocho Unidades Estratigráficas Selectas (SSU). El análisis petrográfico permitió separar los tipos locales de los no locales (importados).

Los objetos utilitarios principales de la fase Amate (Formativo Temprano) son de los materiales pertenecientes a las clasificaciones Cuautla Café, Cuautla Engobe Rojo, Atoyac sin Engobe Pulido III, e Arboleda Burdo. Los tipos secundarios incluyen las diferentes decoraciones y para esta ocupación temprana son Del Prado Rosa (imporado), Atotonilco Negro, Gris Esgrafiado, y Kaolin. Las cerámicas Kaolin se consideran generalmente un marcador de la cultura "Olmeca" del Formativo Temprano, pero son muy raras en Chalcatzingo. La mayor afinidad de Chalcatzingo con la cultura mexicana del Formativo se revela por las cerámicas café y rojo sobre café y las formas de botella.

Los restos utilitarios principales de las fases Barranca y Cantera (Formativo Medio) son los que presentan los terminados Tenango Café y Peralta Naranja; los de importancia secundaria presentan el Atoyac sin Engobe Pulido II y el I. El acabado que tipifica los blancos del Formativo Medio es el Amatzinac Blanco, el cual presenta una gran variedad en tratamiento de superficie, pasta, forma, y decoración plástica, incluyendo el marcador del Formativo Medio, el motivo de interrupción de doble linea. Los tipos principales de decoración incluyen el Laca, el Negro con Borde Blanco (representativo del material quemado diferencial típico del Formativo Medio de Chalcatzingo), y el polícromo, Xochitengo Polícromo. Los acabados grises también caracteristicos del Formativo Medio son el Carrales Gris Burdo y el Pavón Gris Fino, este último de importación en el Valle del Río Amatzinac. Los tipos secundarios son el Laca Imitación, el Manantial Naranja sobre Blanco, Amayuca Rijizo, Mingo Café Fino, Santa Clara Naranja, Atotonilco Negro, Baño de Café Rayado, y Blanco sobre Rojo.

Los tipos principales claramente indican el alcance de la relación interregional de tradiciones de cerámica en las que Chalcatzingo participó. Las únicas excepciones son los acabados utilitarios, los cuales tienden a ser regionalmente más restringidos que los acabados decorados, y tanto el Peralta Naranja como el Tenango Café entran en esta generalización. De hecho, el Peralta Naranja parece tener sus afines más proximos con los del sur de Mesoamérica. Dos tipos decorados que parecen estar restringidos a Morelos y no tener contrapartes en ningún otro lado son el Laca y el Xochitengo Polícromo.

Una categoría cerámica importante, que no fué incluida en la tipología descriptiva, es la de los braceros, la cual generalmente careció de los restos de tratamiento de superficie que son cruciales para su tipificación. Cuatro formas de braceros pudieron distinguirse, siendo la más importante el bracero trípode con podes zoomórficos. Esta forma tiene también afinidades con el sur de Mesoamérica.

Las relaciones de Chalcatzingo con la cultura Olmeca de la costa del Golfo se expresan, no sólo mediante el hecho de compartir las tradiciones de cerámica Panmesoamericanas sino también, por la co-ocurrencia de más atributos específicos en las dos áreas. En particular los sitios de Chalcatzingo y de la costa del Golfo, ambos, se encuentran ligados por la presencia de braceros trípodes, ollas de cuello labiado con "caras" (en el Peralta Naranja de Chalcatzingo), y ciertos tipos de decoración plástica en los materiales grises. De otra manera, la mayoría de las cerámicas de Chalcatzingo parecen ser las más semejantes a las cerámicas del Formativo de Morelos y del Valle de México.

14. Chalcatzingo's Formative Figurines

MARK HARLAN

The Chalcatzingo excavations produced nearly six thousand recognizable fragments of anthropomorphic figurines. These were the object of an analysis which had two basic purposes: to generate a reasonably complete description of the figurines' variability and to use the distribution of patterned variability to investigate the organization of Chalcatzingo's prehistoric population. To these ends, a design attribute analysis was carried out, which is presented elsewhere in detail (Harland 1975; 1979). The results of that analysis are summarized in the second section of this chapter. In order that the Chalcatzingo figurines could be used for comparisons with other areas of Mesoamerica, they have been classified according to a whole piece typology based on the work of George C. Vaillant (1930) in the Valley of Mexico. The Chalcatzingo whole piece typology forms the first section of the chapter.

WHOLE PIECE TYPOLOGY

While minor attempts have been made to revise Vaillant's typology, primarily to reflect regional differences in figurine styles, there has been only one lengthy reanalysis of central Mexican Formative figurines, the thesis of Rosa María Reyna Robles (1971). Her study is broad in geographic scope and is not site specific. She reclassified most of Vaillant's types into a series of "traditions." For example, Vaillant's numerous Middle Formative C types were placed into two traditions. In my analysis of Chalcatzingo figurines, I have taken her criticisms of Vaillant's typology into account, but I have not followed her system of reclassification since it does not fit the Chalcatzingo sample well.

The research of Paul Tolstoy and Louise Paradis (1970) significantly revised the Formative period sequence in the Valley of Mexico and placed Formative period figurines in a finer sequence than that provided by Vaillant. The temporal sequence of figurines has been further refined through Tolstoy's continued work (e.g., 1978:253–260; 1979:Fig. 1) and through research in the northern Valley of Mexico (McBride 1974) and in the southern valley (Niederberger 1976).

Unfortunately, attempts to order the Chalcatzingo figurine types chronologically, e.g., by seriation, proved generally unsuccessful, since erosion, land modification, and frequent rebuilding had created numerous mixed levels with few pure strata. In addition, figurines were seldom abundant in areas with good, unmixed stratigraphy; therefore, only general chronological observations can be made. In spite of the revisions by other researchers, the classification of the Chalcatzingo figurines primarily follows Vaillant's original typology published in his Zacatenco report (Vaillant 1930). The Zacatenco collection contains nearly the full range of figurines and variability seen at Chalcatzingo, and many of the types are truly identical. In using Vaillant's categories, primary reliance was placed on the photographs of his various types and less emphasis on his written descriptions, although portions of these proved valuable and are quoted in some of the Chalcatzingo descriptions. A copy of the Zacatenco report was kept on hand throughout the classification procedure, and attempts were made to match each piece in our collection with figurine photographs in the report. Thus, when a Chalcatzingo figurine bears the same type designation as one of Vaillant's types, a high degree of correspondence can be assumed.

Because Chalcatzingo and Zacatenco are regionally distant, exact similarities in all figurine types were not expected, and, as anticipated, many specimens in our sample failed to correspond closely to types from the Zacatenco assemblage. Vaillant's Types C1–C9, K, E, A, F, G, D1, and D2 each occurred at least once in our sample. However, some figurines were dissimilar enough from Valley of Mexico types to justify new type designations. These were Chalcatzingo 1 (Ch1), varieties 1–5 (labeled Ch1-1–Ch1-5), and Chalcatzingo 2 (Ch2).

The main difference between the Ch1 series and Vaillant's C series of figurine heads is in the depiction of the eyes, which are quite distinct in the Ch1 figurines. Ch2 figurines are in the same stylistic tradition as the C and Ch1 types but possess a series of features which warrant a separate category, the main difference again being in the eye form.

Complete figurines (some examples of which are shown in Figs. 14.1 and 14.2) are extremely rare. Our large sample clearly shows that most had been broken at the neck area, a pattern so regular that it strongly indicates purposeful breakage. Such decapitation may be akin to the decapitation of monuments (e.g., Grove 1981b). It is important to note that even those few figurines which were complete when found were usually also broken.

Two of the whole figurines found were in good association with a child burial (no. 45) from PC Structure 2 (Fig. 8.2), although figurines were rarely included as mortuary furniture at Chalcatzingo. One of the Burial 45 figurines (Type Ch1; Fig. 14.1*b*) depicts a person seated with knees flexed, arms encircling the knees. Significantly, the person is wearing a zoomorphic headdress which continues down the back almost to the waist. The features of the headdress resemble a horned owl. The second figurine with the burial was of the C8 type. Other whole figurines were of the C8, Ch1, and Ch2 types.

In view of the small number of whole figurines and the difficulty of associating heads with specific bodies, I also set up four body (BD) types to classify figurines lacking heads. These are B-C, Ch, D, and E bodies. Since the vast majority of the figurines were fragmentary, it seemed important to classify them as well even though they could not be put into the established whole piece typology.

Detailed descriptions of the types are given below, along with a discussion of comparisons between Chalcatzingo and other Mesoamerican figurine types. Comparisons to types with the same numerical designation from sites in the Valley of Mexico and Morelos are taken for granted and are not mentioned unless the Chalcatzingo designation is somehow different. Distributional data for both head and body types are displayed in Tables 14.1 and 14.2.

Head Type Descriptions and Comparisons

C

Vaillant (1930:99) described Type C as the most common figurine type in the Valley of Mexico. He subdivided the type into eight groups (Ci–Cviii; our designations substitute Arabic numerals for Roman ones) to provide "greater ease in description" (1930:99).

C1 *(Fig. 14.3a–b; 24 specimens [specimen numbers for Chalcatzingo only, not Telixtac and Huazulco])*

The C figurines generally have coffee bean eyes with the fillet of clay which forms the eyes left protruding. Type C1 has a prognathic face, and the chin is undeveloped. The mouth is most frequently depicted as a simple gash under the nose. The C1 figurines from Chalcatzingo were among the most crudely modeled in the collection. Vaillant (1930:99) described C1 figurines as "characterized by a relatively small trunk, usually erect posture, heads which are prognathic and relatively large in proportion to the body. The features, eyes, nose, and mouth are indicated by fillets of clay, the mouth is developed to the exclusion of the chin. The prognathic chinlessness is the definitive trait."

Tolstoy (1979: Fig. 1) places C1's in the Valley of Mexico within the Bomba and El Arbolillo phases, both within the time range of Chalcatzingo's Barranca phase. However, C1's were absent in most Barranca phase contexts at Chalcatzingo other than on the Plaza Central (see Table 14.1). None were recovered at Huazulco, but one occurs in the Telixtac sample.

Figure 14.1. Whole figurines: *a*, C8 Person M, 15.5 cm tall; *b*, CH1, 9.0 cm tall; *c*, C8 Person F, 13.8 cm tall.

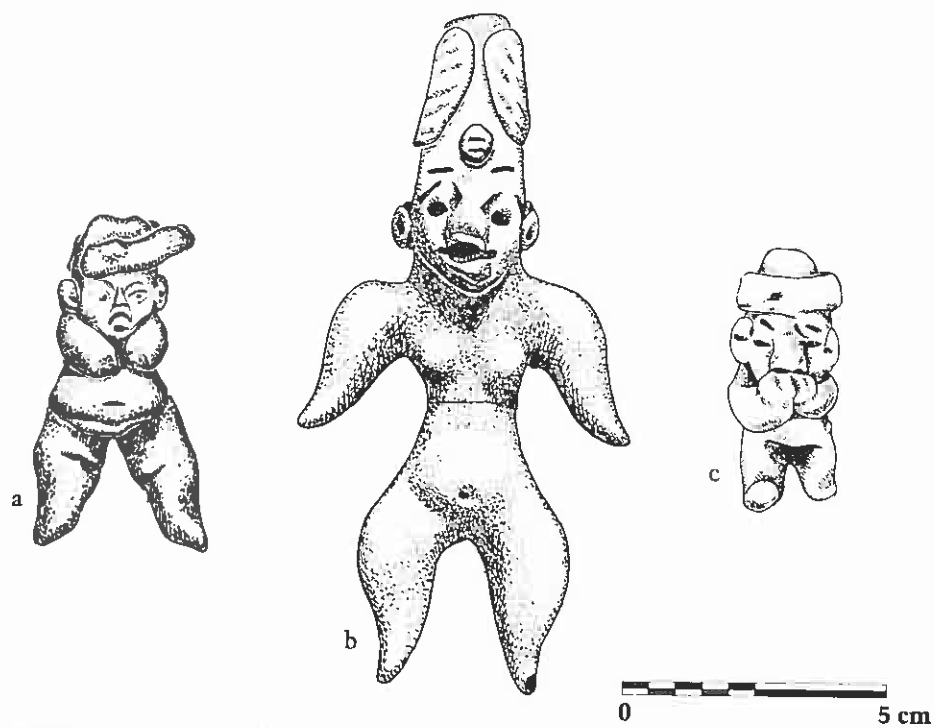


Figure 14.2. Whole figurines: *a*, C8; *b*, Ch1; *c*, Ch2.

***Table 14.1.* Distribution of Figurine Head Types**

Area	*C1*	*C2*	*C3*	*C4*	*C5*	*C6*	*C7*	*C8*	*C9*	*Ch1-1*	*Ch1-2*	*Ch1-3*	*Ch1-4*	*Ch1-5*	*Ch2*	*D1*	*D2*	*K*	*KC*	*A*	*E*	*F*	*G*	*Totals*
PC Strs. 1 & 2	10	18	5		5		2	111		5	34	16	3	20	2	3	33	2	3					272
PC Str. 6					1												1							2
PC other	13	33	35	4	40	2	12	169	2	32	76	26	6	29	26	15	97	27	14	14	12	4	3	691
CT-1		1	1		1			14			10	2					1	1				2		33
CT-2		1	4					20	2		2						4							33
T-4		1	1				1	40		2	7	2		2	2		9	1	4	1				73
T-6		3	2		3		2	9		1	5	1		1	6	1	7	6	3	2	2			54
T-9A		3	2		1			7		2		4		2	3		1							25
T-9B		1	1				2	1				2		1	2		1							11
T-11		6	9		5	1	8	11			26	10		5	13	1	1		1		1			98
T-15 Str. 1		3	2			3										5	27	15	3	2		4	1	65
T-15 Str. 5		1			1			1			4	1					5	3		1				17
T-15 other		7	2					7				1			1		5	1						24
T-17								3			1				1		1							6
T-20			13		3	1	3	19		2	11	3		3	1		5	5	5					74
T-21			3		2			14		1	1	1		3	1			1	2					29
T-23		6	3		1	1	1	48		6	31	4	1	2	1		3					3		111
T-24		7	6		2		2	58		1	13	7	2	4	5	2	5	2	3					119
T-25		6	3		1		2	73		3	9	2		1	9	1	9	1	1			1	2	124
T-27			4		2			47			20	5			3		4		2		1	5		93
T-29		5	8		8			2	2	1							10	4	2	2			1	45
T-31					1			1		1		1					1							5
T-37		1	5					8			11	5			4		1		2					37
S-39			1				3	14			9	1			9		2							39
N-2															1		1							2
N-5	1		1					3		1				1										7
N-7																								0
Caves								4		1	4						1				12	3		25
Telixtac	1		1		1			18				5		3										29
Huazulco		1			1							2												4
Totals	25	104	112	4	79	8	38	702	6	59	274	101	12	77	90	28	235	69	45	22	28	22	7	2,147

C2 *(Fig. 14.3c–d; 103 specimens)*

C2 figurines contrast with C1's mainly in the depiction of the chin, which is usually well formed and often pointed. The eyes of C2 figurines have the fillet of clay which forms the coffee bean shape well smoothed to leave only a soft ridge around the eye. Overall, the finishing on C2 figurines is quite superior to that found on C1's. Vaillant (1930:103) described C2's as having "a greater refinement of feature than Ci. The planes of the face through the reduction of the fillets forming the features, increase to a more nearly natural size. By decreasing the size of the mouth fillet, the contours of the chin are modeled naturalistically."

As with the C1's, C2's have been chronologically classified by Tolstoy (1979: Fig. 1) within the Bomba and El Arbolillo phases, and at Chalcatzingo they do occur in good Barranca phase contexts (T-9B and T-29), although they are lacking on N-2. One was found at Huazulco, but none were recovered from the larger site of Telixtac.

C2 figurines from Chalcatzingo share general attribute similarities with the High Turban Slit Eye Heads from the Tehuacan Valley (MacNeish, Peterson, and Flannery 1970:95).

C3 *(Fig. 14.3e–g; 111 specimens)*

C3 figurines are distinguished from C1's and C2's in that the face is not prognathic and its outline is much more ovate than the faces of the previous two types. Noses and lips in particular do not protrude to the extent seen in the C1 and C2 figurines. C3 figurines may or may not have well-developed chins. Vaillant (1930:104) stated that the C3 type "shows more positive diagnostic traits. The face is heavy in contour and oblong in outline . . . , and the headdress is equally coarse and simple."

C3 figurines are placed by Tolstoy (1979: Fig. 1) within the Early La Pastora phase, the equivalent of the Early Cantera subphase at Chalcatzingo. The Chalcatzingo sample contains some C3 figurines from Barranca phase contexts, suggesting that perhaps our chronologies are not well matched.

MacNeish, Peterson, and Flannery (1970:93) identified a number of Early Santa María phase specimens as C3a and C3d figurines. These identifications seem to have been made on the basis of filleting of the eyes. In my opinion the correspondences are not very close.

C4 *(Fig. 14.3h; 4 specimens)*

Due to the small number of figurines of this type from our collection, nothing can be added to Vaillant's original description (1930:107): "The diagnostic traits comprise a flat, thin head, conical in outline, features in relatively low relief, the chin indicated by a fillet applied and smoothed and a headdress presented in frankly two dimensions."

All C4 figurines at Chalcatzingo come from general (non-structure) excavations on the Plaza Central. The sample size renders comparisons of this type to others of little value.

C5 *(Fig. 14.3i–j; 77 specimens)*

Type C5 contains some of the most finely made C figurines. The face is

***Table 14.2.* Distribution of Figurine Body Types**

Area	*B-CBD*	*ChBD*	*DBD*	*EBD*	*Totals*
PC Strs. 1 & 2	200	127	2	2	331
PC Str. 6			1		1
PC other	868	377	43	9	1,297
CT-1	21	13	2		36
CT-2	14	24			38
T-4	32	48		2	82
T-6	36	26	4	2	68
T-9A	23	22	1		46
T-9B	29	10			39
T-11	97	50	5	1	153
T-15 Str. 1	12	6	4		22
T-15 Str. 5	11	5			16
T-15 other	11	6	1		18
T-17	2		1		3
T-20	115	86	6	2	209
T-21	36	39	1		76
T-23	118	60	17		195
T-24	54	123			177
T-25	57	123			180
T-27	95	92			187
T-29	38	10			48
T-31	7	2			9
T-37	36	36			72
S-39	21	30			51
N-2			16		16
N-5	9	2			11
N-7	8				8
Caves	13	3	2		18
Telixtac	21	11	2		34
Huazulco	5	2			7
Totals	1,989	1,333	108	18	3,448

rounded in plan and relatively flat in cross-section. The fillets of clay used to model the various features of the face are carefully formed and well smoothed. The rather elaborate headdresses seen on the C5 figurines illustrated are characteristic of the type. Vaillant (1930: 108) defined C5's in the following manner: "The heads are relatively large; the face plump and rounded. The nose, which closely follows the convexity of the face which is completed usually with the chin underdeveloped, gives the countenance a sheep-like appearance."

Tolstoy (1979: Fig. 1) has placed the C5 figurines, as well as the C3's, in the Early La Pastora phase, equivalent to Early Cantera subphase at Chalcatzingo. The Chalcatzingo C5 figurines seem to confirm this chronological placement. In addition, one C5 figurine was found at Telixtac and one at Huazulco. No close correspondences occur with types outside of the Morelos–Valley of Mexico area.

C6 (Fig. 14.3*k*; 8 specimens)

Type C6, very rare at Chalcatzingo, contrasts with types C1–C5 mainly in its eye form. The eyes of C6 figurines are basically a square variant of the coffee bean eye. According to Vaillant (1930: 111), "The proportions of the face are naturalistic and there is a tendency to work the fillets into the base clay of the face."

In eye treatment the C6 figurines show some general similarities to figurines from a number of sites, including La Venta and Tres Zapotes. These correspondences may be insignificant, particularly in view of the small sample size from Chalcatzingo.

C7 (Fig. 14.3*l–n*; 38 specimens)

Type C7 has a rather great range of variability in the treatment of the facial features with the exception of the eyes. It is the eye form which contrasts C7 with the C1–C6 types. The eye is the coffee bean shape but has the pupil depicted by punctation. In all other characteristics, C7 shows as much internal variability as seen in Types C1–C5 combined. Some C7 figurines are closely similar to C8's and are occasionally difficult to differentiate from them.

Based on eye treatment, C7's show some correspondences to five of the Tehuacan types: Hollow Lowland Heads of the Early Santa María phase (MacNeish, Peterson, and Flannery 1970: Fig. 48), the La Venta Hairknot type of the Early Santa María phase (ibid.: Fig. 53; the Chalcatzingo C7 figurine is also the type most likely to display a hairknot), the Multi-Hairknot Head of the Early Santa María phase (ibid.: Fig. 56), the Doughnut-eye Heads (ibid.: Fig. 55). The Tehuacan specimens of these types are quite crudely formed in comparison to Chalcatzingo's C7's.

C8 (Figs. 14.1*a, c*, 14.2*a*, 27.1; 684 specimens)

The single feature which best contrasts all C8's with the rest of the C series is the depiction of the eyes. The eye is not the basic coffee bean shape seen in other C types. Rather than by the application of a fillet, the eye is made by incising and gouging directly into the face. The pupils are almost always shown by a deep punctation in the inside corner, giving the figurines a cross-eyed appearance. An additional important characteristic is the portrayal of the eyebrows by lightly incised lines.

Whereas eye and eyebrow execution, plus the well-modeled nature of these figurines, serves as the basis for classifying these as one type, they exhibit a wide range of variation in the execution of the general facial features. This variation is apparently not random or of a type which might be expected of different figurine workshops: instead, it appears to be patterned. Grove (Chapter 27) believes that C8 figurines are not stylized in the sense of most C, D, and K type figurines, but rather are portrait figurines of specific individuals. He sees the variation within the C8 type as reflecting the personal physical differences of these personages, and points out that there is a definite correlation between the individuals portrayed and headdress shapes.

The Matamoros type figurines from the Late Santa María phase at Tehuacan (MacNeish, Peterson, and Flannery 1970: Fig. 80) are similar to C8's from Chalcatzingo but lack the distinctive eye attribute. Early Santa María phase Crescentic Cap Heads (ibid.: Fig. 51) share turban forms with some of the C8 varieties, but neither this type nor the Matamoros type appears to have portrait qualities.

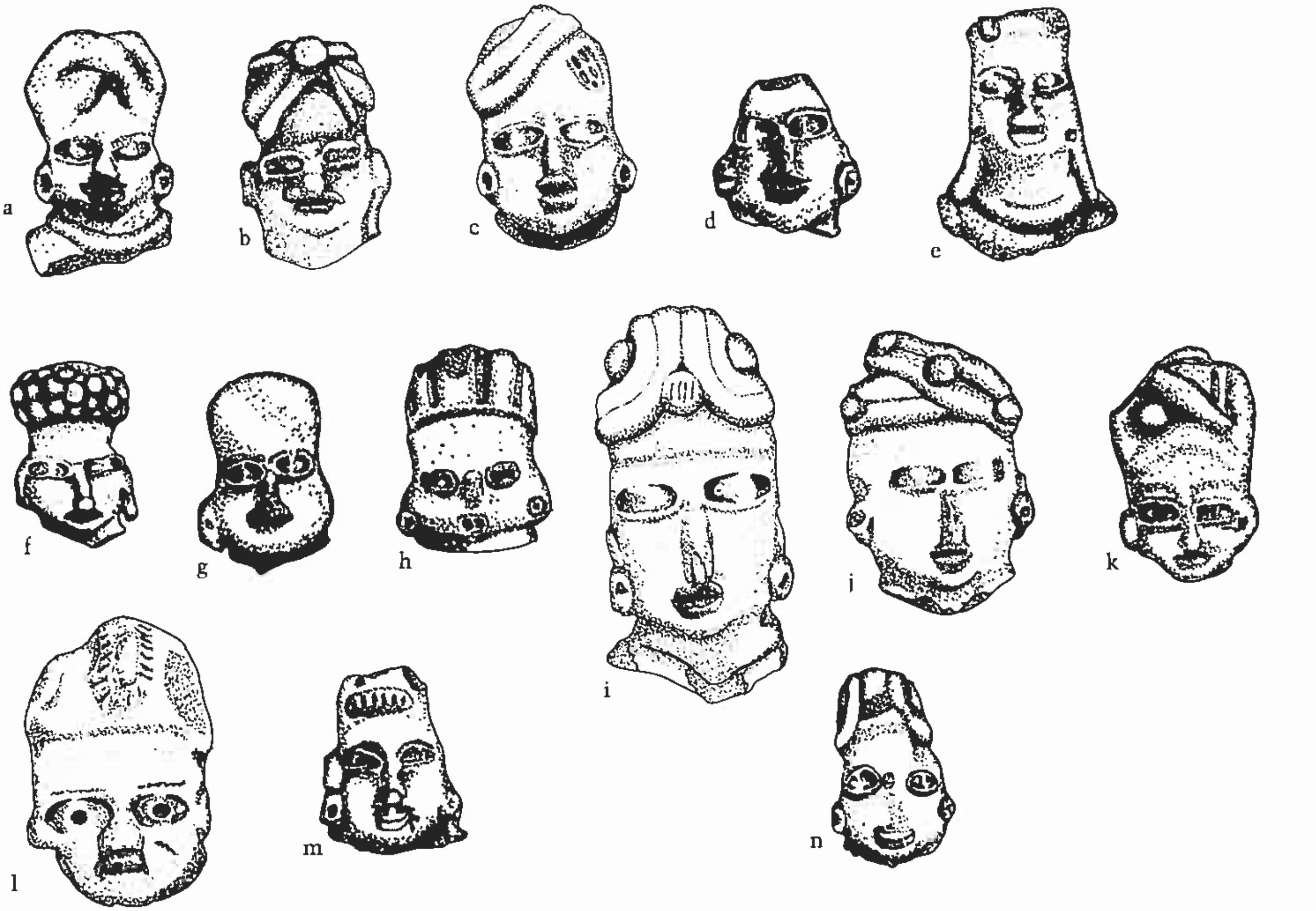


Figure 14.3. Type C figurine heads: *a–b*, C1; *c–d*, C2; *e–g*, C3; *h*, C4; *i–j*, C5; *k*, C6; *l–n*, C-7.

At least three Gulf Coast (Tres Zapotes) figurine types show similarities to Chalcatzingo C8 figurines: Classic Pointed Chin type, Classic Prognathic Type, and Classic Beatific Type (Weiant 1943: Figs. 1–7). While the similarities are often general, Grove (Chapter 27) believes that some of the figurines classified within these Tres Zapotes types may be portrait figurines, in part because the figurines lack the stylized "sameness" of other figurine types. The fact that both the Gulf Coast and Chalcatzingo appear to have special portrait figurines may reflect the close ties between them.

C9 ***(Fig. 14.4; 6 specimens)***

Vaillant's Zacatenco (1930) and El Arbolillo (1935) reports did not document the C9 figurine type. It was identified instead during his work at Gualupita, Morelos (Vaillant and Vaillant 1934: 38), and has subsequently been found at Early Formative sites throughout the central highlands. Using the illustrated C9 figurines from Gualupita leads to some confusion in differentiating D from C9 because, while many of the figurines with Olmec baby-faces fall within the C9 type, most of the C9's originally illustrated by the Vaillants (1934: Fig. 10, nos. 2–4, 7–10) are so similar to Type D figurines that Chalcatzingo figurines with those attributes are difficult to classify. Therefore, I have followed the practice most current today (e.g., Reyna Robles 1971: 277–301, Figs. 56–66) of using the C9 type as a catch-all for baby-face figurines. When figurines were more similar to Vaillant's Type D and lacked clear baby-face attributes, they were placed in the D category.

Over three hundred Amate phase D and K figurines were recovered at Chalcatzingo, while the C9 sample is very small, comprising only about 1 percent of the Early Formative figurines. At Zohapilco in the Valley of Mexico (Niederberger 1976: Chart 8), C9 (Pilli) figurines range from 9 to 69 percent of the figurine assemblage in the Early Formative levels, a striking contrast to Chalcatzingo. The low percentages of C9 figurines at Chalcatzingo may surprise many who think of Chalcatzingo as an Olmec site. All Chalcatzingo C9 baby-face figurines come from areas with Amate phase fill.

Because C9's represent the wide range of baby-face figurines, they compare readily to baby-face figurines in many areas of Mesoamerica. These comparisons include Pilli, Isla, Pahuacan, and Tenayo figurine types at Zohapilco (Niederberger 1976: 209–213, Figs. 74–76, 78, 82–83), the Baby Face type at Tres Zapotes (Weiant 1943: Pls. 18–19), and Baby Face, Plough Eye, and Tres Zapotes Chin Strap types from Tehuacan (MacNeish, Peterson, and Flannery 1970: Figs. 47, 52, 53), to name only a few.

Ch1 ***(Fig. 14.5a–h; 513 specimens [59 Ch1-1, 274 Ch1-2, 94 Ch1-3, 12 Ch1-4, 74 Ch1-5])***

We have defined within the Chalcatzingo sample a series of types which bear strong resemblances to the C1–C5 figurines of Vaillant's typology in head shape, modeling of the face, and turban forms, but differ in eye treatment. The eyes are executed by gouging rather than filleting. Two gouges form the lateral edges of each eye, and a pupil between these is created by another smaller gouge or a punctation. Types Ch1-3–Ch1-5 also seem considerably more prognathic than Types C3–C5.

Because the unusual eye treatment which sets the Ch1 types apart from C types appears to be a phenomenon restricted mainly to the Chalcatzingo region (see for example Reyna Robles

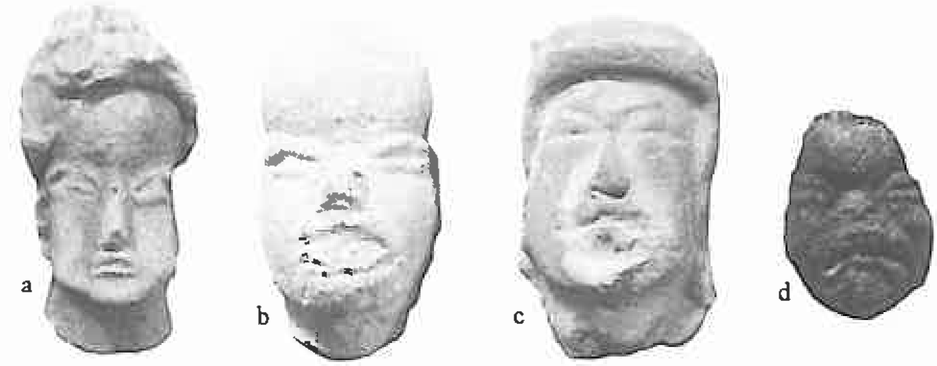


Figure 14.4. C9 figurines. Each head is ca. 4 cm tall.

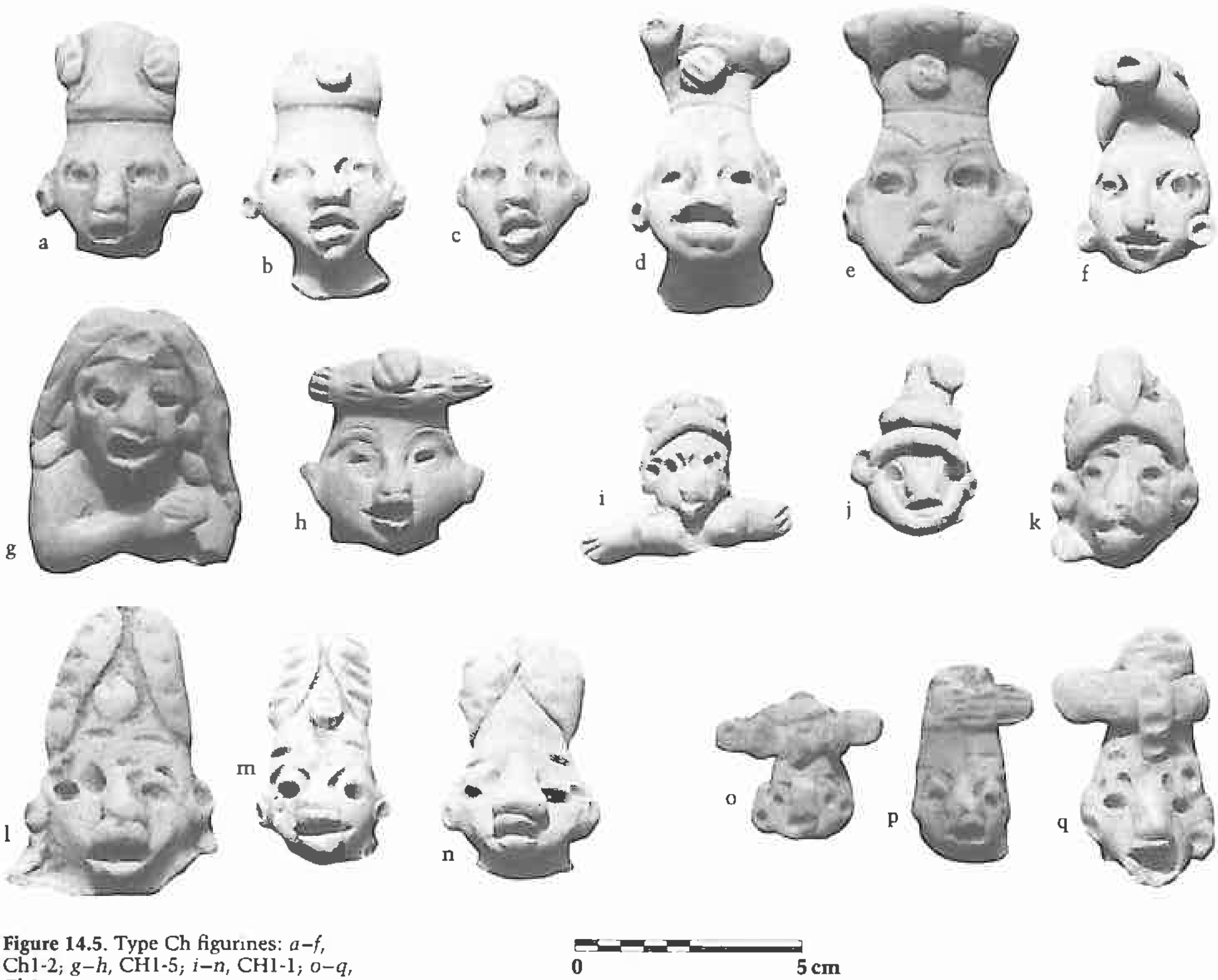


Figure 14.5. Type Ch figurines: *a–f*, Ch1-2; *g–h*, CH1-5; *i–n*, CH1-1; *o–q*, Ch2.

1971:171, Pl. 8), they may represent a Chalcatzingo regional variation of the standard Valley of Mexico Type C figurines. In some instances the Ch1 type occurs in greater quantities than its C counterpart. The distributions of these Ch1 figurines and their C counterparts across the site are seldom identical (Table 14.1; see also Chapter 15).

Because the Ch1 type of eye execution is not common in central Mexico, it is interesting to note that among the Aberrant Types at Tehuacan, which date to the Late Santa María phase (MacNeish, Peterson, and Flannery 1970:Fig. 85), there is at least one with a similar eye treatment. No figurines with this eye treatment have been published from Valley of Mexico collections.

Ch2 ***(Fig. 14.5o–q; 90 specimens)***

The type given the designation Ch2 bears no resemblance to any of Vaillant's material. It is characterized by the following features: (1) the eyes are depicted by making three slashes in a triangle, slightly raising the area inside the triangle; (2) the nose is quite large and protruding, with the mouth usually depicted as a slash directly below the nose; and (3) the turban is high and almost always has a distinctive crossing element near the forehead, giving it the effect of an old-fashioned top hat.

There were no close correspondences between Ch2 and other central Mexican figurine types.

D ***(Fig. 14.6a–c; 263 specimens [28 D1, 235 D2])***

As Vaillant noted (1930:116), "It is not possible . . . to predicate exactly the line of demarcation between Di and Dii." These two D types do, however, contrast sharply with the whole C series. D heads are usually oblong to square in plan and quite straight in cross section. The features are finely modeled and the fillets of clay well smoothed into the base. Nearly all D figurines are shown wearing turbans, and these usually continue in line with the forehead. Unlike most C figurines, many D's are modeled on the back as well as the front surface.

The only consistent contrast I was able to find between D1 and D2 figurines is the tendency for D1's to have heads which are rounded into cross-section. The D2 heads are always quite flat. However, even in this one diagnostic there is gradation.

Vaillant described the D figurines in the following manner (1930:115): "The most distinctive features of Type Di are a

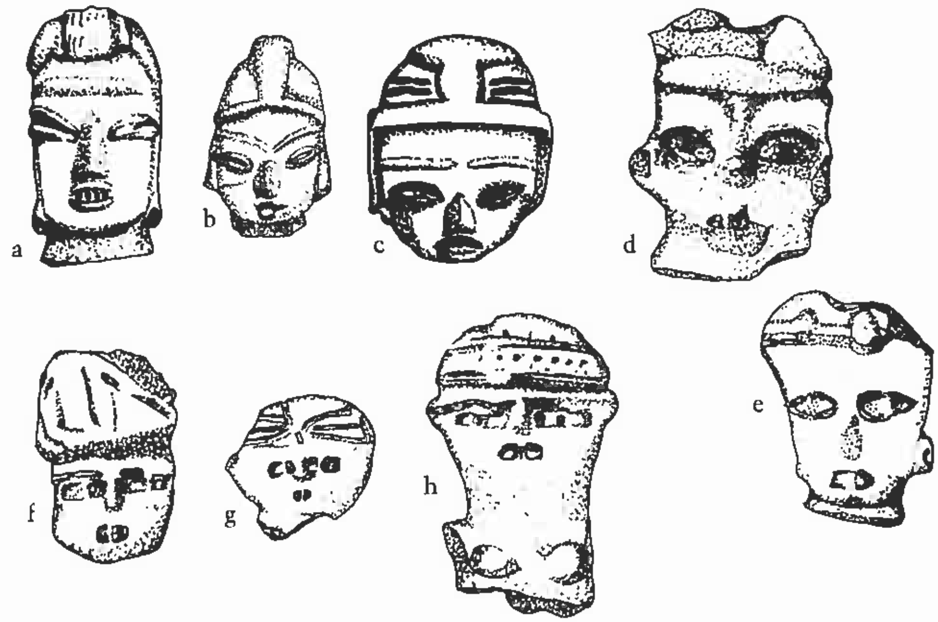


Figure 14.6. Early Formative figurines: *a–c*, D2; *d–e*, K; *f–h*, K Crude.

body shown always erect and modeled in the Type C manner, but with more grace. The heads are small and in direct natural proportion to the body. The features are naturalistic and the filleting technique is refined to a point where it is no longer distinctive . . . Attention is especially given by gouging and by perforation to present the eye and its pupil realistically and to show the mouth and teeth." On the other hand, "Type Dii is characterized by the presentation of the features slightly coarser and more formalized than that of Type Di. The body is apt to be cruder, flatter and squarer than its predecessors. Especially definitive is the attenuation of the fillets composing the eyes and eyebrows" (ibid.: 119).

Few pure Early Formative levels were excavated at Chalcatzingo, and most D figurines come from mixed contexts. The Tehuacan Valley types show resemblances to type D1, i.e., the Trapiche Bunned-Helmet type of the Early Santa María phase (MacNeish, Peterson, and Flannery 1970:Fig. 49), as well as the specimens specifically identified as D1's (ibid.: Fig. 50). These latter show only a fair correspondence to Chalcatzingo's D1's, and the Tehuacan figurines tend to be cruder.

K ***(Fig. 14.6d–h; 114 specimens [69 K, 45 K Crude])***

Vaillant (1930:112) said of Type K that it is "characterized by a round face, simple headdress with details shown by incision, a mouth made by two gouges, and the eye depicted by two broad gouges on a heavy fillet." Since Vaillant's classification was created, the sample of K figurines has become far larger, and some modifications must be made in this description.

K figurines can be readily recognized by their eye forms. The eyes are executed by two broad gouges, sometimes placed on a fillet of clay and sometimes placed directly on the face. A pupil is sometimes incised between the gouges.

The K Crude (KC) variant has a form quite similar to the generalized K type, but these figurines are much less carefully modeled. The eyes and mouth are often executed with a single deep gouge made directly on the face with a squared implement.

There are two types from the Tehuacan Valley which are similar to some of the Type K figurines from Chalcatzingo. The Flat Punched Feature Heads (MacNeish, Peterson, and Flannery 1970:Fig. 15) and the Early Ajalpan phase Spherical Punched Feature Heads (ibid.: Fig. 14) resemble some of the cruder K types recovered at Chalcatzingo.

A ***(22 specimens)***

Type A figurines are characterized by a basically round face with the features rather crudely depicted. Few specimens show any attempt at fine modeling. The most diagnostic feature of the type is the eye form. The eyes are depicted by two ploughs into the face, sometimes with a punctation between them to show the pupil. Vaillant (1930:120) said of this type: "Its definitive features are squat bodies . . . a broad round face with nose and mouth fillets sunk into a central groove. The eye is made usually by two ploughs with a central perforation. The headdress is simple and heavy."

The Typical Vaillant's Type A from Tres Zapotes (Weiant 1943: Pls. 10–12) actually bears only a general resemblance to A figurines from Chalcatzingo and central Mexico.

E ***(28 specimens)***

As illustrated by Vaillant (1930:130), Type E is highly variable. Some of the specimens placed in Type E would fit as well in A or G. The specimens typed as E from the Chalcatzingo collection were placed in that type because they possess an eye form depicted by placing a single stroke through a fillet of clay. The eye fillets are not smoothed, and the majority of E figurines from Chalcatzingo are quite crude. According to Vaillant (1930: 131), "The head is flat in back and the face is pinched forward into an almost bird-like prognathism." The quantity of this type at Chalcatzingo is too small to provide any meaningful distribution or temporal data.

MacNeish, Peterson, and Flannery (1970: Fig. 54) identify a number of specimens at Tehuacan as Type E, and this identification appears to be reasonably well based. The Standing Ticoman Body (ibid.: Fig. 18) is the same type of body sometimes found associated with Type E heads.

F ***(22 specimens)***

Type F may be a residual category of very crude pieces. The face is very prognathic with the features carelessly modeled. The head is often squashed straight onto the shoulders with no attempt to depict a neck. Vaillant's (1930:128) description of this type is that "the head is almost inhuman, so crudely portrayed are the features. The nose and mouth fillets occupy a large space on the highly convex and prognathic face, while the brow recedes." The Chalcatzingo sample is too small to provide good data on distribution.

G ***(7 specimens)***

The figurines typed as G from the Chalcatzingo collection were all characterized by an eye form executed by two slashes perpendicular to the long axis of the face. In some specimens, a third, shorter slash was placed between the first two, and in other cases a punctation was used to depict the pupil. Vaillant (1930:132) described these figurines as follows: "The heads are narrow and pinched into a bird rather than a human face . . . The flat-backed, pointed-faced heads receive the most rudimentary delineation of features by incision."

G figurines are very rare in the Chalcatzingo assemblage. The Tehuacan Valley specimens identified as Type G (MacNeish, Peterson, and Flannery 1970: Fig. 82) are similar to specimens of this type in our sample.

Body Types

B-C, Ch, D, and E Body ***(Fig. 14.7; 3,448 specimens [1,989 B-C, 1,333 Ch, 108 D, 18 E])***

In this study, headless body fragments have been treated separately and classified into four types independent of the head types. These are B-C, Ch, D, and E. Other body fragments were put into a residual category which is not a type. The B-C and Ch bodies are both associated with C and Ch figurines, but not necessarily respectively. Ch heads may be found on B-C bodies, and C heads (particularly C8's) occur on Ch bodies. The plan for both of these body types is the same: a pudgy figurine, usually standing. The distinction between B-C and Ch bodies is the heavy grooving around the joints associated with the latter type.

It is sometimes (but not always) possible to distinguish D bodies from B-C and Ch bodies. The classification is based on two distinctions: D bodies tend to be slightly squared-off, especially in the limbs, and they are frequently modeled on both sides, particularly in depicting the buttocks. Another distinction, which is less diagnostic but which can be helpful, is that D figurines tend to be wasp-waisted and flat-chested, while B-C and Ch figurines tend to be chubby and barrel-chested.

E bodies are distinguished (rather unsatisfactorily) by the following criteria: legs jutting off from the body at a sharp angle, a "gingerbread man" appearance, and breasts shown as appliquéd dots. The classification of this type is tenuous, and there is no example from Chalcatzingo of a Type E head associated with any large part of its body.

The treatment of bodies in this chapter and in studies of comparative collections precludes any useful comparisons.

Miscellaneous Figurines

Some figurine heads were recovered which were not classifiable within the Vaillant typology or that set up for Chalcatzingo, and few of these bear similarities to published figurines from other Mesoamerican sites. As these are generally solitary pieces, they do not warrant new types. Many of these unique pieces are probably non-local, but thin-section analyses have not been carried out at this time to test this assumption.

Six fragmentary figurines which appear to be modeled after the seated personage of Monument 2 (Fig. 10.13*d*) were found during the excavations, and a complete figurine from Chalcatzingo, in the same style, occurs in a private collection (Fig. 27.4*e*). All the pieces depict a seated person, arms and legs stretched forward. Two clearly show the headdress projecting slightly forward, although it does not curve upward as does the horned headdress shown in Monument 2. These same two figurines also have suspension holes at the rear of the neck. Two of the fragments were recovered from T-4, two from PC Structure 2, and one each from T-25 and T-27.

Fragments of large, hollow figurines are rare in our sample. Among the several recovered are the crown of the head of a white-slipped figurine (Fig. 14.8*a*) presumably from an Amate phase babyface figure although found in a Cantera phase context; the muzzle portion of a jaguar face from a Barranca phase context (Fig. 14.8*b*); and a white-slipped face with red hematite pigmentation on the ear and chin areas (Fig. 14.8*c*) from a Cantera phase provenience. There are also a few hollow Amate phase D–K figurines.

Although Late Formative, Classic, and Postclassic figurines are not dealt with in this chapter, a few deserve mention. Among the burial furniture of Late Formative double burial 117–118 were three identical figurines, persons with duck-bill masks gazing slightly upward (Fig. 8.17). Perhaps the most spectacular figurine seen during our research was discovered by one of the villagers, who

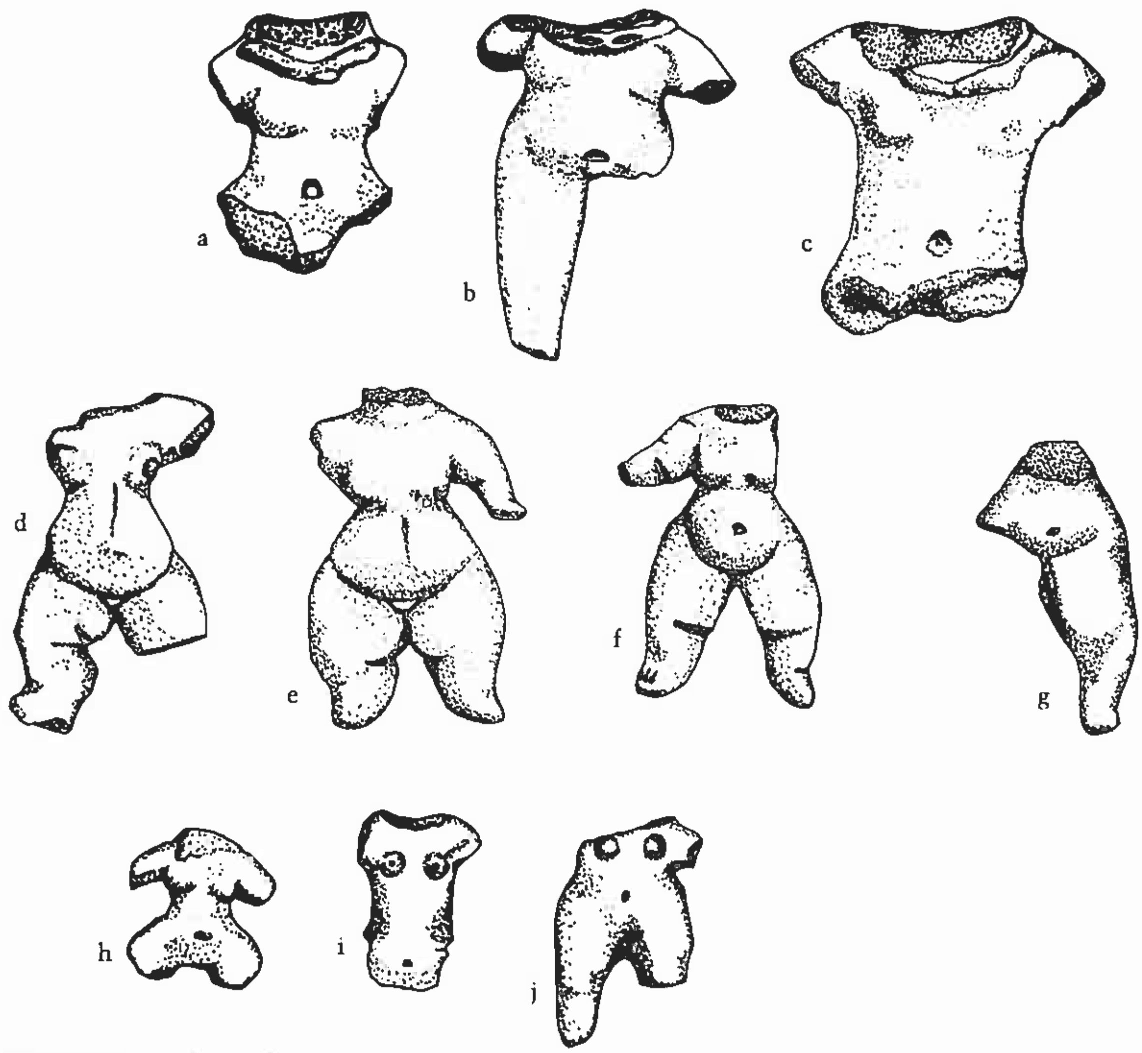
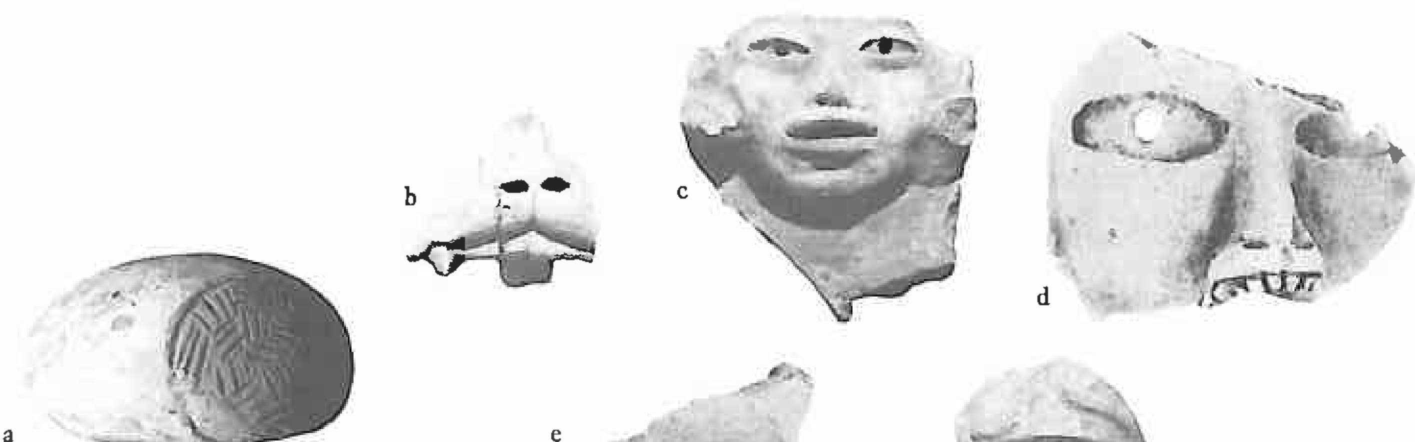


Figure 14.7. Figurine bodies: *a–c*, B-C; *d–f*, Ch1; g, D; h–j, E.



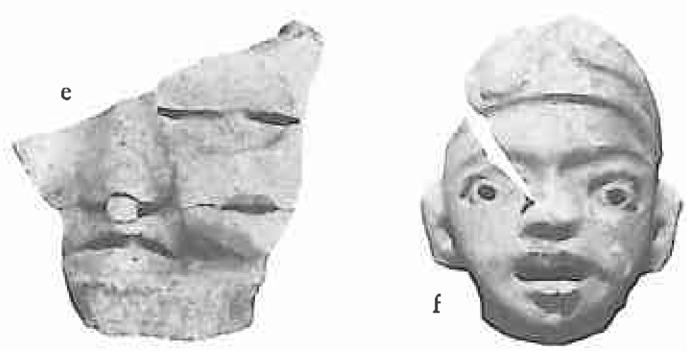


Figure 14.8. Hollow figurines: *a*, top of bald, white-slipped head, length 5.8 cm; *b*, feline muzzle, length 6.4 cm; *c*, face with red pigment, height 10.2 cm; *d*, face, width 9.6 cm; *e*, face, height 10.3 cm; *f*, head, height 11.2 cm.

stated it came from his backyard. However, because his *ejido* land includes the Plaza Central and T-3, it is possible that the piece actually came from this part of the site. This large, hollow figurine depicts a duality, the right side of the face being human while the left side is a jaguar. Stylistically, the human side of the face seems similar to some Teotihuacan art, suggesting that the figure may date to the Classic period. The figurine was donated to INAH.

SUMMARY OF DESIGN ATTRIBUTE ANALYSIS

While useful information has come from the whole piece typology, its limitations have proven particularly severe in the study of Formative figurines. This is largely the result of two binding constraints. When a whole piece typology is used, one is assuming that: (1) only the non-shared variability between types is interesting, and any variability that crosscuts types can be safely ignored; and (2) with whole piece typologies, there is no attempt to find isomorphic taxa, only types which somewhat resemble one another.

Thus, in order to deal with problems other than simple chronology, I felt that any further analysis should proceed at the attribute level where true isomorphisms can be expected to occur. Analyses at this level were performed (see Harlan 1975; 1979) using as the fundamental unit of observation the depiction of individual figurine parts. In this section I will briefly summarize the figurine attributes and discuss the implications of their observed variability at Chalcatzingo.

The 142 attribute classes used in the analysis were all based on non-unique occurrences in the assemblage. These attributes include various eye, mouth, nose, and hair forms; turban types, embellishments, and buttons; ear and neck ornaments; arm positions; pregnancy types; and hand, breast, navel, leg, and clothing forms. This last category consists of waistbands, pubic covers, knee pads, sandals, and various other clothing and ornament attributes. Body decoration and categories for items carried or formed with the figurine (such as a burden or a chair) were also included in the analysis. Each of the attribute classes is described in more detail in Appendix E.

The reasons for this attribute variability were probably many and varied, but they are most likely associated with the functions of the figurines. Thus, variability may be expected to reflect the activities in which the figurines were used. Furthermore, changes in these activities through time are also expressed in the variability (see Harlan 1979).

Given that variability is primarily related to function in the broad sense, important sources of variability must be examined. These include tradition of manufacture, aesthetic considerations, and iconography, i.e., the need to convey meaning through symbols. Little is known of the learning tradition of figurine manufacture. However, this much can be said: (1) There are indications that figurines may have been manufactured by specialists. (2) Nearly all of the figurines found at Chalcatzingo seem to have been made in the same basic tradition. (3) There are indications that access to the specialized knowledge of figurine manufacture or perhaps to the figurines themselves changed through time (Harlan 1979).

The role of aesthetics in figurine manufacture is particularly difficult to pin down since this whole area is so poorly understood. There is no doubt that some figurine variability was generated in response to considerations of taste. What is hard to determine is how much patterning can be expected in that variability. If aesthetic considerations were purely idiosyncratic to the individual makers of figurines, then it is likely that most or all of the aesthetic variability has been drawn off into the unique design attributes. If aesthetic variability is patterned with respect to social groups or any other feature of the prehistoric community, then some part of the redundant variability must be imputed to it. At present, there is no theory of aesthetics which would permit a rational choice between these alternatives.

If the figurines functioned integrally with an ideological system, then constraints imposed by an iconography would be a major source of variability. Since this appears to me to be the most likely function of the figurines, more detailed consideration will be given to this area of variability. Here again, however, the discussion is hampered by a lack of theory.

If the figurines were used in ritual, they were symbolic of some aspect of the ideology behind that ritual and so needed to convey meaning. This view of figurine variability has implications for expected patterning. Certain attributes should vary only within set limits, since a particular combination of symbols and depictions is required to insure that the figurine conveys its intended meaning. This combination may or may not correspond to the whole piece types set up by the archaeologist. While there is no way to specify the content of the prehistoric ideology or even to truly determine which of the attributes on the figurines carry meaning, the attributes themselves and their patterned distribution may provide some clues of how the informational system may have worked.

First, it would seem that some parts of the figurines carried the bulk of the informational load. In the Chalcatzingo collection, the main information bearers seem to be a series of features on and around the head. These parts appear to be key information carriers for two reasons: they are highly variable, yet there is a high degree of redundancy in the variability. Vaillant (1930) implicitly recognized this fact when he based his main typological distinctions on the figurines' heads.

Nevertheless, it does not seem that all of the features of the heads had an equal role in carrying information. The depictions of the turbans may have been among the most important. This is suggested by the large variety of ways in which the turbans were wrapped and in the consistent associations between wraps and ornamentation or embellishment. Ear ornaments seem another likely candidate for high symbolic content. While not nearly as variable as turban forms, their depictions are both consistent and patterned. Eye forms may have symbolic content, but here the ground is less sure. While there were eighteen different ways to show the eyes, and the occurrence of the variants is patterned archaeologically, a good deal of the variability takes place over time, and changing aesthetics or tradition of manufacture may have played a major role in this variability. Depictions of the nose, mouth, and other anatomical parts of the head seem least likely to carry iconic content. Here the differences between the forms are much less marked and distributional patterning much harder to perceive.

While the most highly variable part of any given figurine is generally its head, and all other body parts are much less variable, there may still be some iconic information below the figurine's neck.

The positions of the limbs may carry meaning, and the depiction of the thorax and abdomen sometimes distinguishes female figurines. It is interesting to note that none of the figurines in the Chalcatzingo collection were definitely male. They were either recognizably female (having developed breasts or obvious signs of pregnancy) or they were sexless. Male genitalia were never depicted, and it is impossible to say that the simple lines placed on some female figurines were intended to depict female genitalia. Sure depictions of genitalia are seen on some of Vaillant's specimens (1930: Pl. 26, middle row 8, 10, 11), but only on Type E figurines.

Other than turbans, clothing is rare in the Chalcatzingo figurine assemblage. A number of kinds of sandals are depicted, and the more common depictions are quite consistent. Garments on the body are very rare, and it may be that when used the figurines were dressed in perishable materials.

A rare but striking exception to the general nudity is the pads on the knees, hips, and thighs which may have been intended to depict equipment for the ball game. Aside from this one area, it is hard to assess the possible iconic content of the few garments which were depicted.

While it is possible to use variability and its redundancy to suggest which parts of the figurines carried iconic information, the content of the message cannot yet be decoded. Even this, however, may be possible at some future time. This interpretation will not come from archaeological material alone. The hope lies in an intensive comparative study of Formative cultures' ideologies and their material culture correlates.

In this discussion of figurine variability, attention must also be given to the level of integration of the prehistoric culture and its implications for the systems of figurine manufacture and distribution. In dealing with these two factors, much more support is available from archaeological data, both from Chalcatzingo and from other sites in the central highlands of Mexico.

It is not likely that the organization of society remained constant during the seven hundred years dealt with here (ca. 1200–500 BC). There is every indication that changes took place, and expectations concerning the figurines' variability and distribution must take account of this change. The relationship works both ways. If there is an expected pattern of figurine variability assuming a particular level of social integration, the patterns of distribution observed in the archaeological record can be used to provide inferences about the level of social integration actually achieved during various periods.

This discussion will focus on two aspects of social organization which are particularly germane to the study of figurines: craft specialization and access to specialist-produced goods. These are at least partially independent of one another, and both have implications for expected variability and its patterned distribution.

Some degree of craft specialization can be found at almost any level of social integration. It begins to assume real importance, however, in what Morton Fried (1967) has called "ranked" societies, a level which Chalcatzingo had certainly attained by the Middle Formative. There is the possibility that the Chalcatzingo figurines (and other Formative figurines) were not produced by specialists. They may have been produced by each household unit for its own use. Although this is a likely situation for some other ceramic artifacts in Formative period culture, it does not seem applicable for figurines, assuming an "ideotechnic" (Binford 1962) function for them. Religious specialists are among the earliest to emerge in human societies and may be expected at the lowest levels of integration achieved by Formative societies. Although craft specialists have done the actual forming and firing, religious specialists would have been ultimately responsible for the iconic content. Further, while a few of the Chalcatzingo figurines appear crude and roughly made, the majority are remarkable for both the quality of the workmanship and the uniformity of that quality.

If the Chalcatzingo figurines were produced by specialists who were members of an egalitarian society, hereditary privilege would have had no influence on access to their products. Subject to need for the product, ability to compensate the specialist, and perhaps an achieved prerogative to use it, any member of an egalitarian society has equal access to the products of its specialists. Some factors might intervene to constrain the choice of an individual specialist by an individual consumer (such as kinship ties, a traditional relationship between one particular group and one specialist, or some similar mechanism), and these relationships can be expected to create some clusters of variability in the archaeological record left by such a society. The range of variability, on the other hand, should be essentially consistent throughout the whole community (and thus over the entire archaeological site). In the particular case of Chalcatzingo, if the site were occupied by an egalitarian society, there might be clusters of design attributes associated with particular areas of the site, but there would be no reason to expect greater variability within any one of the clusters.

The pattern of equal variability would not hold if the specialists operated within a ranked or chiefdom level society. Here there are hereditary differences in status, and persons in the higher levels command greater access to the products of the specialists. There may even be a tendency for specialists to derive all or part of their subsistence from members of their society's upper levels.

In the archaeological remains of a ranked society, the expected pattern of figurine variability is different. In this case, not only will associations between particular groups and particular specialists create clusters of attributes, but there may also be consistent differences between the areas of the site associated with the elite and those associated with the non-elite. If the figurines were only toys or decorative items, we might expect that the only differences would be in quality and abundance. If the figurines were ideotechnic in function, there might be differences in diversity as well. Since this study assumes an ideotechnic function, this last point merits further discussion.

As indicated above, it is probably not correct to view the specialists responsible for figurine production in the same way that the craft specialists who produced pottery, stone tools, and other utilitarian items might be viewed. The key individual in determining figurine variability may have been a religious practitioner rather than a craft specialist. This would mean that the role of the religious practitioner in determining figurine variability was far more important than the role of the craft specialists who may have formed the artifacts, since any serious flaw in the iconographic content may have negated the efficacy of the figurine.

An implication of this line of reasoning is that the unequal availability of figurines reflects an unequal access to ritual.

It is for this reason that we might expect differential diversity in the design attributes placed on the figurines manufactured for the elite. Some of the design attributes would correspond to aspects of the iconography reserved for the elite. Since the elite must, by definition, have been in a minority in the society, we might also expect these reserved elements to be among the least frequent.

The results of the figurine attribute analysis (Harlan 1979) support many of these hypotheses and expectations. It is apparent that over a period of centuries figurine attributes began to cluster differently for the elite and non-elite areas of the site, a pattern "consistent with the assumption that the elite had developed as a distinct group that controlled the production and distribution of figurines" (ibid.: 485). The quantity and diversity of figurines found in elite areas suggest that the elite had achieved greater access to the specialist producers. There is also a tendency for the rarest elements to occur most frequently in elite areas. These differences in attribute groupings most likely reflect the ideotechnic function of the figurines in a religious system dominated by the elite, who had access to a portion of the iconography which was not available to the non-elite.

It would seem that there were three foci of the figurine cult, each with its own particular aspect. First, there was the private ritual carried out in and around the elite residences which made use of figurines carrying a diverse range of design attributes (or iconographic elements). Second, there was the private ritual performed in or around the non-elite residences which made use of figurines with a limited range of iconographic elements. Finally, there was the ritual carried out in association with formal ceremonial features, like the altar on T-25. The figurines associated with this third activity also have a limited range of iconographic elements. This leads to the suggestion that this ritual was intended to serve the whole community.

In conclusion, the attribute analysis of the Chalcatzingo figurines suggests the following interpretation, which has implications for societal development in Mesoamerica as a whole: An elite emerged in the community and, among other things, achieved control of the religious system. Special features were constructed for elite-directed public ritual on behalf of the whole community. A portion of figurine variability (and by implication an aspect of ritual) was reserved for elite use only.

This discussion has not been intended to argue any absolute superiority of design attribute analyses over whole piece typologies. Each has its advantages and drawbacks. The limitations of the design attribute analysis are most obvious in the comparative domain. The distribution of the design attributes within a single site can be highly informative, but the information produced by such analysis drops off sharply as more distant sites are included. When dealing with a Formative site like Chalcatzingo, one can presume that one deals with the archaeological remains left by members of the same community. Fluctuations in the frequencies of design attributes from one area of the site to another are not likely to result from differences in the opportunity for contact created by physical distance. This is not true when samples from geographically distant communities are included in the same analysis. Design attribute analysis and whole piece typology, then, are each important in the study of the Chalcatzingo figurines. The greater emphasis on design attribute analysis in this study stems from its greater utility in dealing with my main research problems.

RESUMEN DEL CAPÍTULO 14

Se analizaron con dos objetivos en mente, describir su variabilidad e investigar los patrones de la variabilidad al través del sitio, cerca de seis mil figurillas recobradas en Chalcatzingo. La tipología descriptiva de pieza completa está basada en el trabajo de Vaillant en el Valle de México. Casi todos los tipos principales de figurillas del Formativo Temprano y Medio provenientes del Valle de México se encuentran también presentes en Chalcatzingo, en efecto las series D, K, y C. Además, existen en Chalcatzingo variantes de algunos de estos tipos para los cuales se produjeron nuevas designaciones: la Ch1, variedades 1 a 5, las cuales son contrapartes de las C1 a C5 de Vaillant; y la Ch2, la cual no parece corresponder a ninguno de los tipos de Vaillant; aun cuando queda claramente dentro de la misma tradición estilística que tienen las figurillas C y Ch1. Se crearon cuatro tipos de cuerpos para clasificar aquellas figurillas que no tenían cabeza.

La variabilidad de las figurillas refleja casi seguramente la función que tenían. Generalmente se presume que las figurillas fueron usadas en las actividades rituales, y que podrían proporcionar información iconográfica, en especial las características con relación a y alrededor de la cabeza. También pueden ser de alguna importancia simbólica las posiciones de las extremidades, el atuendo, indicaciones de embarazo, etc. El admitir que las figurillas tuvieran uso ritual y el que sus atributos pudieran tener conotación esotérica, implica que la manufactura y el uso de estos artefactos estaban probablemente bajo la dirección de especialistas quienes formaban parte del segmento elítico de la comunidad.

15. Distributional Analysis of Chalcatzingo Figurines

SUSAN D. GILLESPIE

The preceding chapter on figurines emphasized description, classification, and an analysis of figurine attributes. However, as the author noted, a whole piece analysis of figurine types would also be very enlightening. This chapter presents a brief analysis of the figurine types based on the data in Table 14.1, which shows the distribution of figurine (head) types across the site.

The general purpose of this study was to discern patterned variation in the manufacture, use, or deposition of figurines. Such variation may have been due to differences in chronology, preference, place of manufacture, etc., although the limited data precluded determining which of these alternatives best accounted for the figurine distribution.

Since only the distribution data given in Table 14.1 were available, the analysis was focused on some very basic problems, i.e., discerning variations in the frequencies of the different types for the site as a whole as well as for the individual terraces, and an investigation of the composition of the "figurine population" for each terrace (that is, what type combinations are present). Each of these problems is discussed in detail below.

FREQUENCIES OF EARLY AND MIDDLE FORMATIVE FIGURINE TYPES

Since Chalcatzingo is a multi-component site, the first step in this investigation of community patterning was to separate the figurines according to the period (Early, Middle, or Late Formative) they belong to, in order to hold the time factor constant. Unfortunately, a refined chronology of the Chalcatzingo figurine types is lacking. However, some types are known to date to the different periods by comparison to Valley of Mexico sites, and these comparisons were used to separate the types.

The known Early Formative types are D, K, and C9. The frequencies of these types at Chalcatzingo are shown in Figure 15.1 as percentages by comparing the frequency of each type to the total number of Early Formative types. Figure 15.2 displays similar data for the Middle Formative types (C1–C8, Ch1–Ch5, Ch2, A, and F). The Late Formative figurine types (E and G) are not considered since there was such a small occupation of the site at that time.

Figure 15.1 shows that the D2 figurine was by far the most common type during the Amate phase, comprising 61 percent of the Early Formative figurine population. It was therefore a basic type for the community, and it occurred in all the Amate phase components at the site. A similar preference for the D2 type apparently existed at other Early Formative sites in Morelos and the Valley of Mexico. As was mentioned in Chapter 14, "baby-face" (C9) figurines were rare at Amate phase Chalcatzingo.

For the Middle Formative, Figure 15.2 shows that all of the types of the C series, the major Valley of Mexico Middle Formative figurine series, were represented at Chalcatzingo. It is readily apparent that the most common Middle Formative figurine type at the site was the C8, which made up 41 percent of the figurine population of that period. Ch1-2's rank second in quantity, comprising 16 percent of the figurines, and the other types hover between 0.2 and 6 percent.

The abundance of C8's contrasts sharply with this type's rarity or absence at other Middle Formative sites outside the Chalcatzingo–Río Amatzinac area (Grove, personal communication). This distribution tends to support the hypothesis (Grove et al. 1976:1206–1207) that the C8 type was significant to Chalcatzingo and its immediate interaction area. It is also evidence of the greater independence of this area from the Valley of Mexico during this time. This idea is further supported by the importance of the Ch series of types, which were not found in the Valley of Mexico but also seem local to the Chalcatzingo area.

Eighteen C8 figurines were recovered from Telixtac (62 percent of the figurine assemblage there), but none were found in the limited Huazulco sample (see Table 14.1). The Telixtac C8's all occurred in Area I, the location of the site's "elite" residence (Chapter 22). This distribution suggests that outside of Chalcatzingo, the C8 type may have been present only in larger villages, such as Telixtac, and then only with the elite of those villages. This is speculation, however, and project surface reconnaissance collections contain too few figurines to test these hypotheses. The importance of C8 figurines at Chalcatzingo is discussed in greater detail in a later section of this chapter.

DISTRIBUTION OF MIDDLE FORMATIVE FIGURINES AT CHALCATZINGO

Tables 14.1 and 14.2 show the distribution of all head and body figurine types for each excavation area at Chalcatzingo. None of these areas failed to yield figurines, and thus it can be presumed that general figurine usage was not restricted to certain site areas. Within the excavation areas, Harlan (1979:472) noted that figurines were most frequently associated with structure floors, burial fill, and ceremonial features, and were less common in general fill.

Since figurines were found on all site areas, the next step in this analysis was to determine whether they were more abundant at certain parts of the site than others. In order to control for time, only Middle Formative figurines were considered for this and further analysis. Because the volume of earth excavated differed from one excavation area to the next, each area had to be weighted to make the figurine numbers comparable. A ratio of the number of figurines (head type only) to m³ excavated was calculated for the different site areas (see Table 4.1). The ratios are presented in Table 15.1.

In calculating this ratio, some non–Middle Formative figurines were unavoidably included because this study derives from Table 14.1, which does not provide data on individual excavation units needed to separate out figurines from other periods. In order to reduce the error this procedure introduces, only certain Cantera phase terraces were selected for the analysis—PC (Strs. 1 and 2), T-4, T-11, T-20, T-23, T-24, T-25, and T-27. They were chosen because they have evidence of primarily Cantera phase structures, thus narrowing the time frame and context under consideration, and they all have a Middle Formative figurine sample size of at least fifty. These restrictions should render the data more comparable.

Table 15.1 shows that figurines are more abundant in some site areas than others, and thus are not equally distributed across the site. The ratio ranges from a low of .035 fig/m³ for T-4 to a high of 2.70 fig/m³ for T-24. Perhaps significantly, the "elite" areas of the site (PC, T-25, T-27?) do not have the highest quantities of figurines. Terraces 11, 20, and 24 all rank higher than any "elite" area in this respect.

T-24 has a ratio twice that of the next highest-ranking terraces (T-11 and T-20), indicating the radical nature of figurine frequency at this terrace, which is somewhat at a distance from the center of the site. It has been suggested (Harlan 1975) that the very high quantity of figurines on T-24 may be due to its location midway down the steep foothill slope of the Cerro Delgado. That is, many figurines may simply have washed down from areas above the terrace, areas which were not excavated. T-11 and T-20, which rank second and third in figurine quantity, are in somewhat comparable topographic positions, and the same explanation could apply. However, two terraces with the lowest figurine counts, T-4 and PC, are also in areas of heavy slopewash deposition. Thus, intrasite variation in figurine frequency may be significant for cultural rather than mechanical reasons.

An alternative, nonmechanical explanation which has been proposed for the

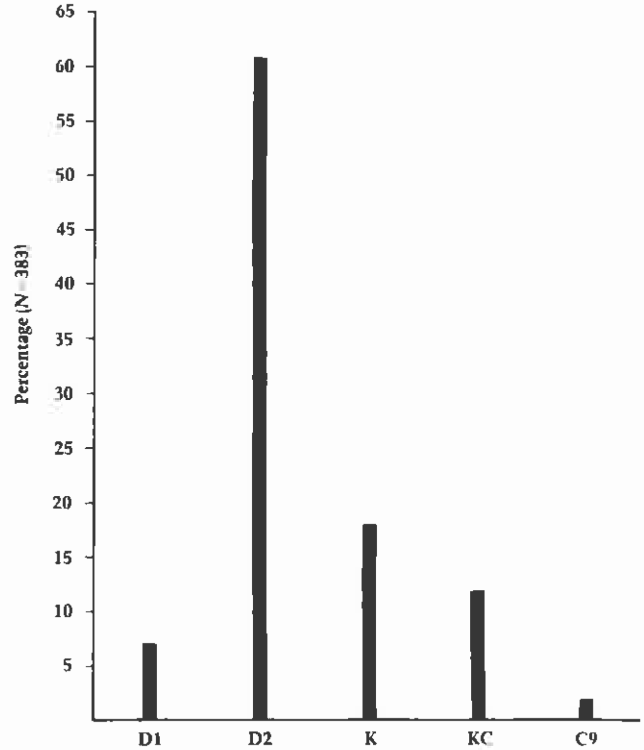


Figure 15.1. Frequency of Early Formative figurine types at Chalcatzingo.

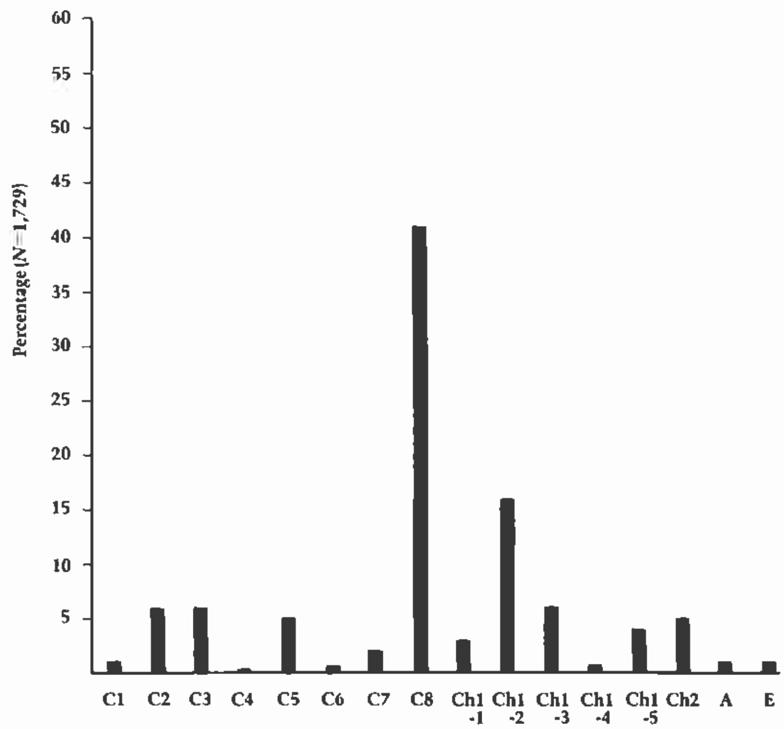


Figure 15.2. Frequency of Middle Formative figurine types at Chalcatzingo.

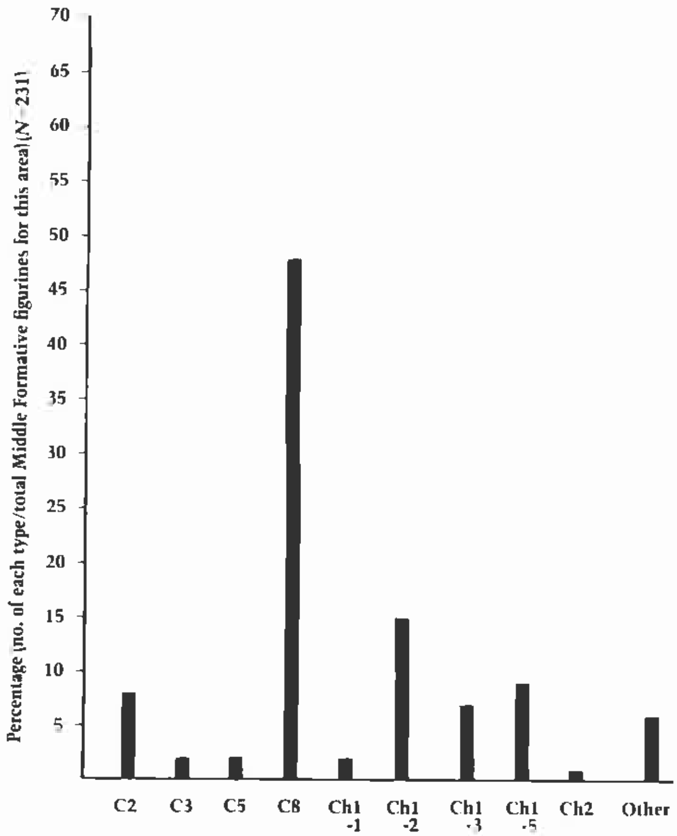


Figure 15.3. Middle Formative figurine population at PC Structures 1 and 2.

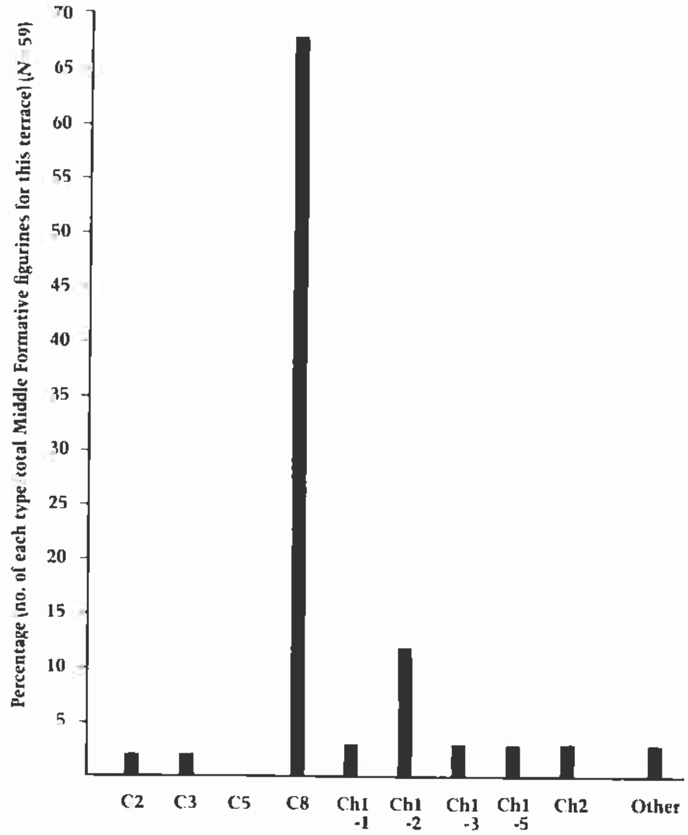


Figure 15.4. Middle Formative figurine population at T-4.

abundance of figurines on T-24 is that it was a locus of figurine manufacturing activities (Harlan 1979:488). The available data are inconclusive on this point. No kiln or evidence of firing activities was uncovered, and the T-24 figurines do not vary significantly from those of other terraces, e.g., by being broken during firing as opposed to normal breakage (Grove, personal communication). Thus, we are more likely dealing with concentrated figurine utilization and/or deposition on T-24, the purposes of which we cannot determine with the available data.

INTRASITE DISTRIBUTION OF FIGURINE TYPES

The next step in the analysis was to consider the relative percentages of the various figurine types present on individual terraces. The composition of the figurine population of the previously selected terraces was calculated by comparing the frequency of each type to the total number of Middle Formative figurines at each terrace. The percentages obtained are displayed in Figures 15.3–15.10. Only Middle Formative figurine types with a sample size of fifty or greater were included in this part of the analysis: C2, C3, C5, C8, Ch1-1, Ch1-2, Ch1-5, and Ch2. Note that almost all of these types were present on the selected terraces. There seems to be no clear pattern of restricting particular types to certain site areas.

Table 15.2 summarizes the frequencies of each type in each terrace taken from Figures 15.3–15.10 and also gives the relative frequencies of all Middle Formative types for the entire site taken from Figure 15.2. This table shows that for the most part, the figurine assemblages on the different terraces are biased toward the C8 type, with Ch1-2's a distant second and the other types relatively low in frequency. This is generally the same distribution that was found for the site as a whole. It appears that with a few exceptions, the types are randomly distributed across the site. The major exceptions are the low representation of C8's on T-11, the only terrace where Ch1-2 figurines outnumber C8's; the high frequency of C3's on T-20; and the very high frequency of C8's compared to the other types on T-4, T-24, T-25, and T-27.

In order to determine whether there were strong affinities between any two types in terms of their co-occurrence at the site, Pearson correlation coefficients were computed for the selected figurine types utilizing the samples from twenty-one terraces which had total figurine counts of twenty or more. A constant was added to the counts for the types, and their logarithmic values were taken to make the relationships appear more linear. The correlation coefficients displayed in Table 15.3 are derived from these transformed variables.

Table 15.3 reveals several fairly strong between-type relationships. Among the Ch1 series, the Ch1-5/Ch1-3, Ch1-5/Ch1-1, and Ch1-2/Ch1-3 correlations are high enough to warrant some comment. First, it is possible that the distinctions among the Ch1 types are not "real" in

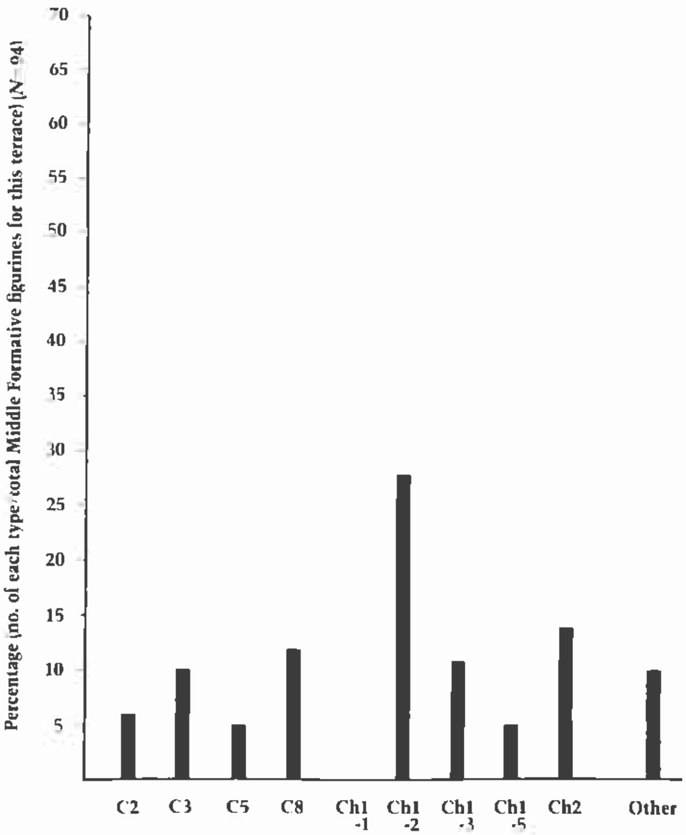


Figure 15.5. Middle Formative figurine population at T-11.

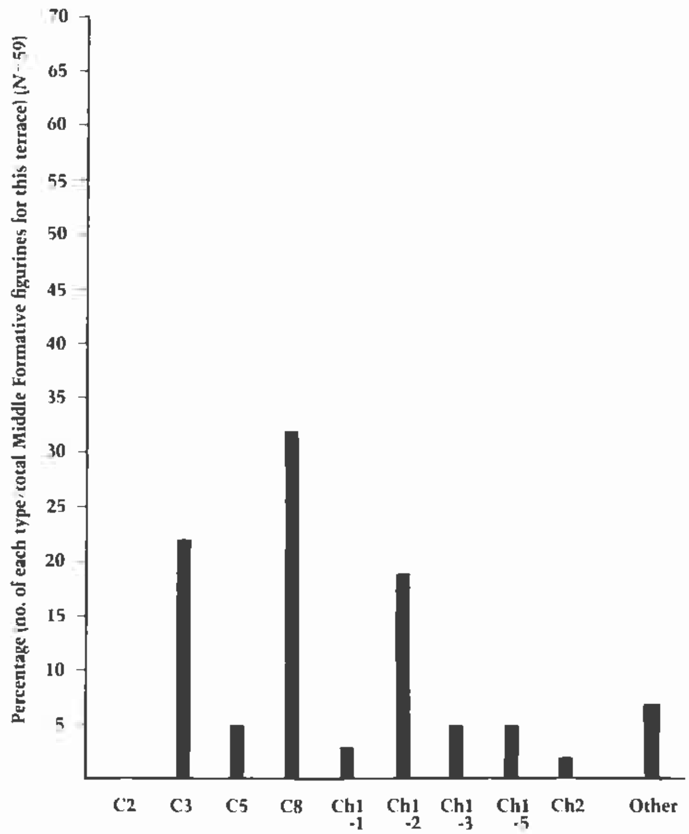


Figure 15.6. Middle Formative figurine population at T-20.

the sense of having been recognized by the people of Chalcatzingo. Instead, they may form a continuum of allowable variation in what was considered a single type. Or, alternatively, it is possible that they were recognized as different types but were used and/or deposited together in the same areas.

Within the C series, the correlation matrix shows a rather strong relationship only between C3 and C5 figurines. Paul Tolstoy (1979: Fig. 1) has shown that in the Valley of Mexico these two figurine types date to the Early La Pastora phase, corresponding to the Early Cantera subphase at Chalcatzingo. In the Valley of Mexico the C3 and C5 types postdate the C1 and C2 figurines. Thus, the correlation of the C3 and C5 types at Chalcatzingo may reflect a chronological factor, in that C3 and C5 may have been used together within a relatively limited time span during which some other types of the C series were not being used.

Comparisons between the C and Ch1 series reveals a fairly high relationship between the Ch1-5 and C5 types, al-

Table 15.1. **Ratio of Figurines (Head Types) to Excavation Volume for Selected Terraces**

Terrace	*Figurines*	*Excavation Vol. (m³)*	*Fig./m³*
PC Strs. 1 & 2	272	374	0.73
T-4	73	209	0.35
T-11	98	72	1.36
T-20	74	55	1.35
T-23	111	130	0.85
T-24	119	44	2.70
T-25	124	124	1.00
T-27	93	97	0.96
			$\bar{X}$ = 1.16
			SD = .70

***Table 15.2.* Summary of Middle Formative Figurine Population at Chalcatzingo (Selected Types)**

	Figurine Types as % of Total Middle Formative Figurines for Each Area								
	C2	*C3*	*C5*	*C8*	*Ch1-1*	*Ch1-2*	*Ch1-3*	*Ch1-5*	*Ch2*
Total site	6	6	5	41	3	16	6	4	5
PC Strs. 1 & 2	8	2	2	48	2	15	7	9	1
T-4	2	2	0	68	3	12	3	3	3
T-11	6	10	5	12	0	28	11	5	14
T-20	0	22	5	32	3	19	5	5	2
T-23	6	3	1	44	6	29	4	2	1
T-24	6	6	2	54	1	12	6	4	5
T-25	5	3	1	66	3	8	2	1	8
T-27	0	5	2	55	0	23	6	0	3

***Table 15.3.* Correlation Coefficients**

	C2	*C3*	*C5*	*C8*	*Ch1-1*	*Ch1-2*	*Ch1-3*	*Ch1-5*	*Ch2*
C2	1								
C3	0.4943	1							
C5	0.5534	0.7390	1						
C8	0.3267	0.4313	0.3737	1					
Ch1-1	0.6481	0.5741	0.6612	0.6367	1				
Ch1-2	0.3394	0.4606	0.4408	0.7002	0.5054	1			
Ch1-3	0.4610	0.5146	0.5644	0.6864	0.5552	0.7027	1		
Ch1-5	0.5613	0.5759	0.6954	0.6490	0.7588	0.5084	0.8005	1	
Ch2	0.3545	0.3522	0.4224	0.3855	0.4018	0.6199	0.5533	0.4191	1

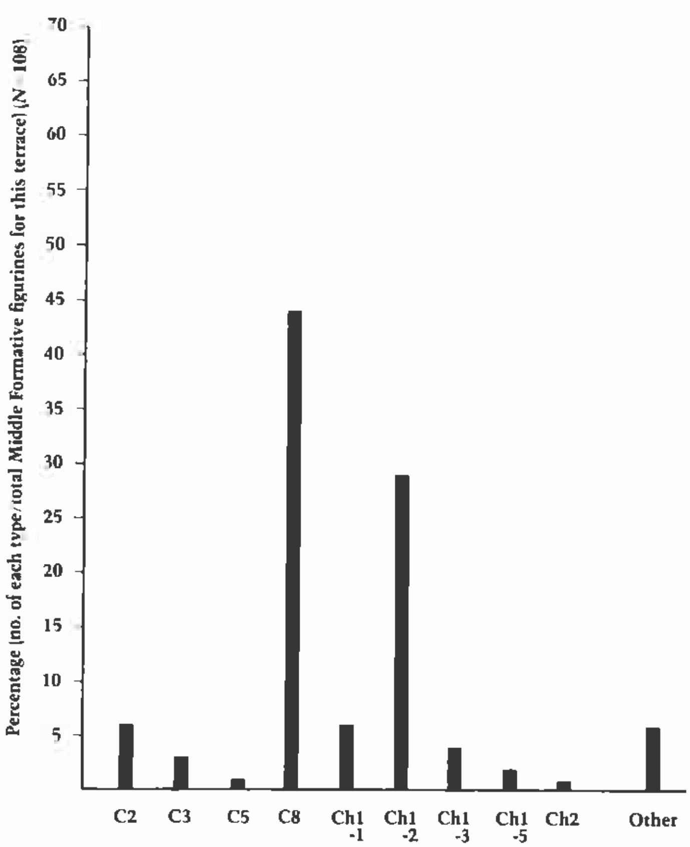


Figure 15.7. Middle Formative figurine population at T-23.

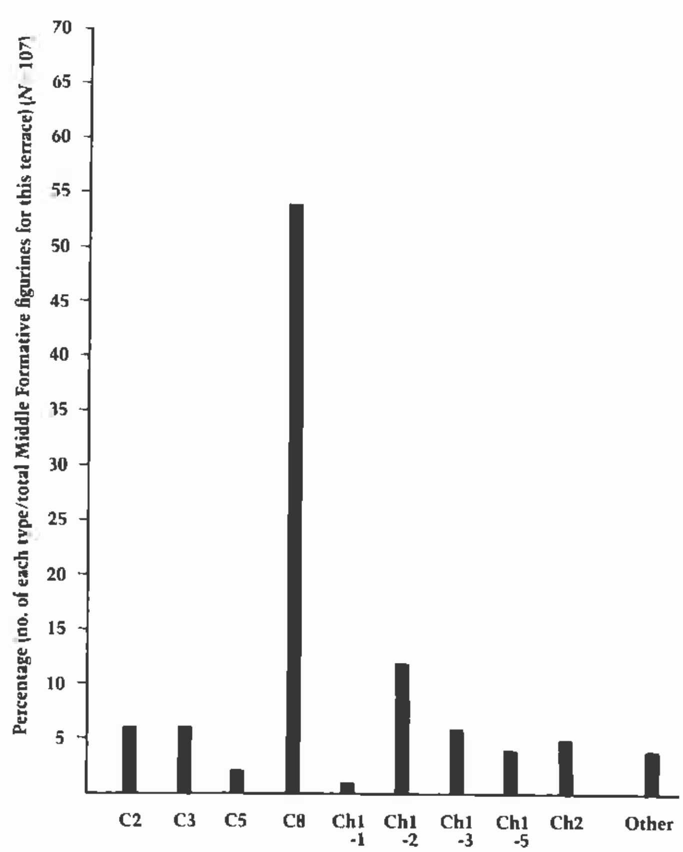


Figure 15.8. Middle Formative figurine population at T-24.

though not quite as strong as those previously mentioned. This seems to be the only case of a type in the Ch1 series co-occurring to a significant degree with its counterpart in the C series (although the samples for some other types were too small to be included in the analysis).

Finally, there is a good positive correlation between the C8 and Ch1-2 types. These two types are not from the same series and do not form counterparts of each other as do Ch1-5 and C5, for example. It is possible that these two types correlate because they functioned together in rituals or in other activities. However, the C8 and Ch1-2 figurines seem to be the numerically most important representatives of two different aspects of ritual activity, such that they may not necessarily have been used in the same rituals.

One can separate the figurines into two *kinds*—stylized and nonstylized (portrait)—based on superficial evidence. The Ch1-2 type is extremely stylized and rather carelessly made, a characteristic shared with other figurines of the C and Ch series with the exception of the C8 type. C8 figurines present great variety and were probably portrait figurines, depicting the features of actual personages (Chapter 27). The C8 figurines are also well made, revealing more care and workmanship than any other figurine type. Furthermore, only figurines of this type received special surface treatment such as orange slip and/or polishing (Grove et al. 1976: 1207).

Thus it is possible that the C8 figurines, probably made to depict the current ruler(s), were used for different purposes than the stylized figurines. For example, C8's may have been made for ritual centered on the cult of the ruler, a cult which began in the Early Formative among the Gulf Coast Olmec and is characteristic of the Classic Maya. The stylized figurines, on the other hand, may have been used in rituals of another kind, e.g., curing, calendrical celebrations, invoking other personalized or nonpersonalized supernatural powers. This is the same dichotomy that is exhibited by the site's monuments (Chapter 9): there are both portrait monuments down on the terraces and nonportrait depictions of supernatural/mythical events on the slopes of the Cerro Chalcatzingo (Grove 1981b).

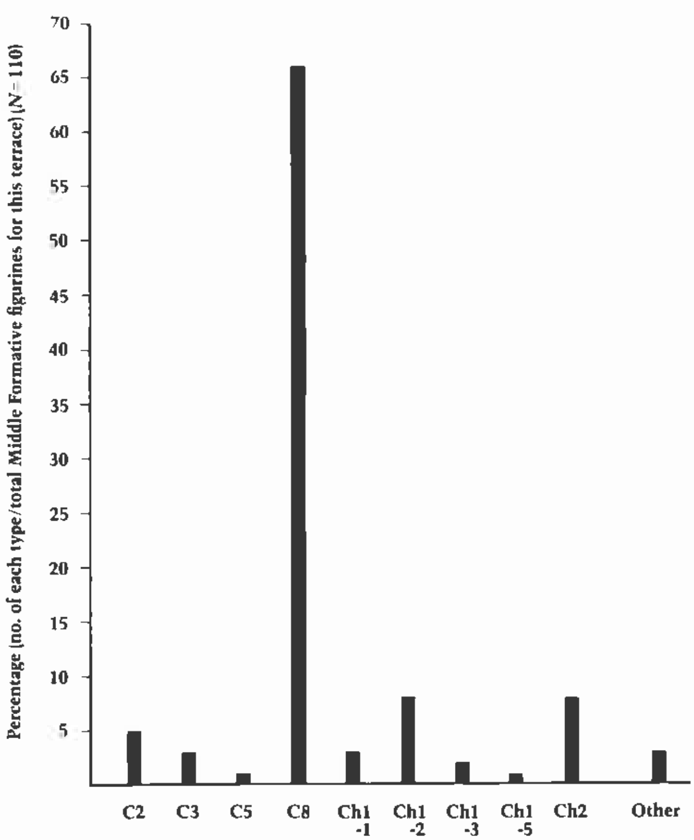


Figure 15.9. Middle Formative figurine population at T-25.

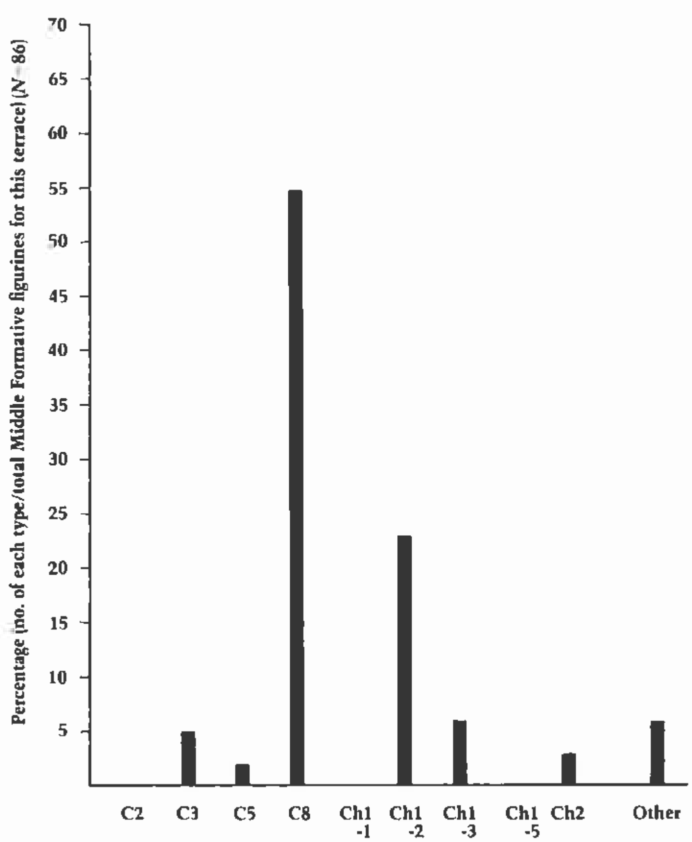


Figure 15.10. Middle Formative figurine population at T-27.

The fact that there is a good positive correlation between the C8 and Ch1-2 figurines implies that the two aspects of ritual were performed to more or less the same degree across the site, or at least that the broken figurines from each aspect were deposited on the same terraces. Two exceptions to this are T-25 and T-11. T-25 has the second highest frequency of C8's and the lowest frequency of Ch1-2's among the selected terraces (see Table 15.2). Thus, this terrace seems to have been a focus of ritual concerning the cult of the ruler; the altar and its interments of high-ranking individuals may very well have been involved as well in this cult. T-11, on the other hand, the site of a regular residence, has the lowest frequency of C8's and therefore high frequencies of several other types of both the C and Ch series, implying that rituals of the ruler cult were much less frequent here compared to the rest of the site.

On the whole, the overwhelming number of C8's at Chalcatzingo and their occurrence at nearby sites (e.g., Telixtac) demonstrate the pervasiveness of the cult of the ruler centered at Chalcatzingo. The stylized figurines are numerically best represented by the Ch1 series of types. Both the Ch types and C8's are local to Chalcatzingo and its immediate interaction area, and their manufacture and/or use may have been controlled by the Chalcatzingo elite (see Chapter 14).

Thus, Middle Formative Chalcatzingo can be contrasted with the Early Formative situation by a shift in figurine utilization and therefore in ritual using figurines away from the Valley of Mexico types toward a local tradition of stylized types, and by the influx of a new cult, the cult of the ruler, reflected in both portrait figurines and portrait monuments and probably coming from the Gulf Coast.

RESUMEN DEL CAPÍTULO 15

El análisis de la distribución de las figurillas se enfocó sobre las variaciones en frecuencia de los diferentes tipos, a través del sitio y en las terrazas individuales. Para el sitio como un todo, D2 es el tipo más común del Formativo Temprano (fase Amate), el cual comprende el 61 por ciento de los tipos del Formativo Temprano. Este es el mismo patrón que se encuentra para este mismo período en el Valle de México. Para el Formativo Medio, sin embargo, las figurillas de Chalcatzingo se separan del patrón del Valle de México, y sus dos tipos más frecuentes son el C8 (41 por ciento) y el Ch1-2 (16 por ciento), los cuales, ambos, se encuentran restringidos fundamentalmente a Chalcatzingo y a sus zonas más inmediatas. Otros tipos de las series C y sus contrapartes de Chalcatzingo se encuentran presentes sólo en muy pequeñas cantidades.

Este patrón de frecuencia de los tipos de figurilla del Formativo Medio es válido no sólo para el sitio como un todo, sino también para cada terraza individualmente, en donde los tipos aparecen estar distribuídos al azar dentro de los contextos de las casas de la fase Cantera. La distribución de la cantidad de figurillas (todos los tipos) es menos azarosa, presentando en T-24, por mucho, el mayor número de figurillas por volumen de tierra excavada, mayor que en ninguna otra terraza.

Los dos tipos más frecuentes, C8 y Ch1-2, representan dos maneras diferentes de figurillas—el de retrato y el estilizado. Es posible que hayan sido empleados en diferentes modos de ritual o en diferentes aspectos del mismo ritual, y presentan un patrón de co-ocurrencia, a través del sitio, bastante fuerte. Las figurillas de retrato, C8, las cuales son las más cuidadosamente hechas de todos los tipos, probablemente muestran a los gobernantes de Chalcatzingo y fueron usadas en asociación con el culto al gobernante, el cual también se encuentra presente en los monumentos del sitio, y es un culto que pudo haber tenido su origen en los centros olmecas de la costa del Golfo.

16. Other Ceramic and Miscellaneous Artifacts

DAVID C. GROVE

The overwhelming quantity of potsherds and anthropomorphic figurines recovered at Chalcatzingo and their importance in archaeological interpretation tend to obscure the minor quantity of other ceramic artifacts recovered. Nevertheless, these various kinds of artifacts provide a wealth of data on different aspects of daily life at Chalcatzingo, and may also be used to compare and contrast Middle Formative culture here and elsewhere in Mesoamerica.

The ceramic artifacts described in this chapter have been classified into three categories: personal adornment, ritual, and utilitarian. Objects of personal adornment include clay beads, earspools, pendants, and stamps which were presumably used for body decoration. Artifacts which may have been used in rituals are whistles, flutes, masks, miniature vessels, and animal figurines. Ceramic bars are included in this category as well because some of them are decorated and all lack wear marks. Easily identifiable utilitarian artifacts are spindle whorls and ceramic molds. In addition, ceramic "bananas" are classed with the utilitarian artifacts because they show wear patterns. There is also a fourth catch-all category of artifacts of unknown function. Within this last category are solid ceramic balls, ground sherds of various shapes, and hollow spheres.

The second part of this chapter describes artifacts manufactured from a variety of other materials—iron ore, shell, bone, and sinew. The chapter concludes with a description of the remarkable artifacts from Cave 2, many of them of wood and other perishable materials, which were apparently part of a tool kit related to spinning, weaving, and the manufacture of agave fiber cordage.

OTHER CERAMIC ARTIFACTS

Personal Adornments

Tubular Beads *(5)*
Tubular clay beads are rare in our artifact sample, and, interestingly, four out of five of those which do occur are from caves. The beads range from 12 to 22 mm in length, 4 to 8.5 mm in outside diameter, and 1.5 to 4.5 mm in inside diameter. Three are brown-black, but two from Cave 1 are of white clay.

Spherical Beads *(2)*
Only two spherical beads occur in our sample. One is an orange bead from T-11, 1.7 mm in diameter and 0.7 mm thick. It is possibly Cantera phase in date. The other bead, from Cave 1, is what Charlotte Thomson (Chapter 17) calls a "bag-shaped" bead ca. 18 mm in diameter and 1.2 mm thick. This bead may date to the Postclassic.

Solid Earspools *(24; Fig. 16.1)*
The fat solid disc earspools range in diameter from 13 to 45 mm, although most have a diameter of ca. 20–30 mm. In thickness they vary from 7 to 18 mm. Their sides are slightly concave. Most are plain, but a few have incised decorations. One from our sample has traces of a fugitive white slip; another has the side (circumference) painted red and highly polished.

George C. Vaillant (1931:296) observed that earspools of this type are "as diagnostic of this Ticoman culture complex as the figurine types and pottery." However, at least nine of the Chalcatzingo solid earspools come from unquestionably earlier, Cantera phase contexts, and there is evidence that similar earspools begin late in the Middle Formative at other central Mexican sites as well. One solid earspool was recovered by the Vaillants from a Gualupita I level at that site (Vaillant and Vaillant 1934: Fig. 30, no. 2, Table 3), and Christine Niederberger (1976:235) illustrates a solid disc earspool from her Capa 3 (Middle Formative, Zacatenco phase) at Zohapilco. Angel García Cook (1976:47, Fig. 7) dates similar earspools from Tlaxcala as early as 1100 BC, with maximum percentages of this type occurring in Tlaxcala between 700 and 1 BC.

Michael Coe describes solid disc earspools from Conchas phase levels at La Victoria (1961:Fig. 60*c*). These earspools, while similar in form to Chalcatzingo and Ticoman examples, have slightly convex sides. A Francesa phase (Late Formative) Chiapa de Corzo example, with a slightly concave circumference, is illustrated by Thomas A. Lee (1969:89, Fig. 47*h*), who also cites other published examples. No such earspools are published from Gulf Coast sites.

The distribution of solid earspools at Chalcatzingo (Table 16.1) shows that only one occurred on the Plaza Central terrace, location of the site's Late Cantera subphase elite residence. Four were recovered from the T-23 house, which is also Late Cantera subphase, suggesting the possibility that this type of earspool may have been more typical of the site's non-elite. Interestingly, four solid earspools were recovered during excavations of Cave 1 on the Cerro Delgado, a cave which also yielded two Late Cantera subphase burials. A similar earspool was also found in Cave 8 excavations. Four were found during the excavation of the Middle Postclassic house on Tetla-11, including two found on the house floor itself. Because Tetla-11 is an artificial terrace with the fill containing quantities of Middle and Late Formative artifacts, the association of the earspools with the dwelling should be viewed at this time as coincidental.

Thin-walled Hollow Earspools *(14; Fig. 16.2a)*
Thin-walled ceramic earspool fragments, like their jadeite counterparts, were recovered in excavations of Cantera phase

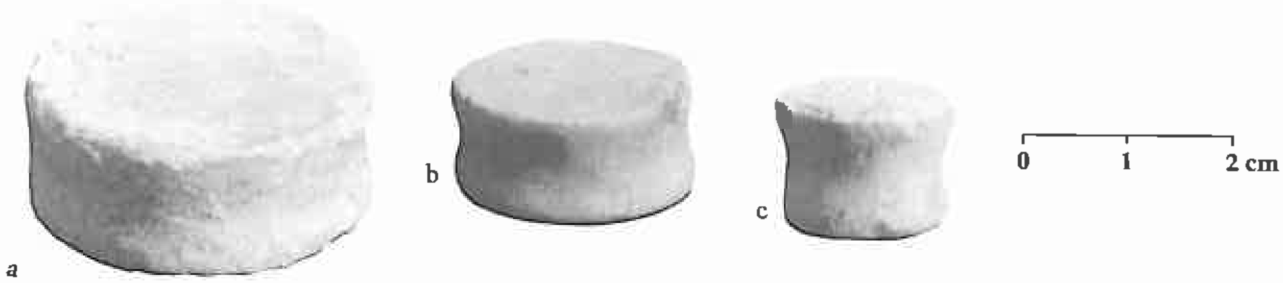


Figure 16.1. Solid clay earspools.

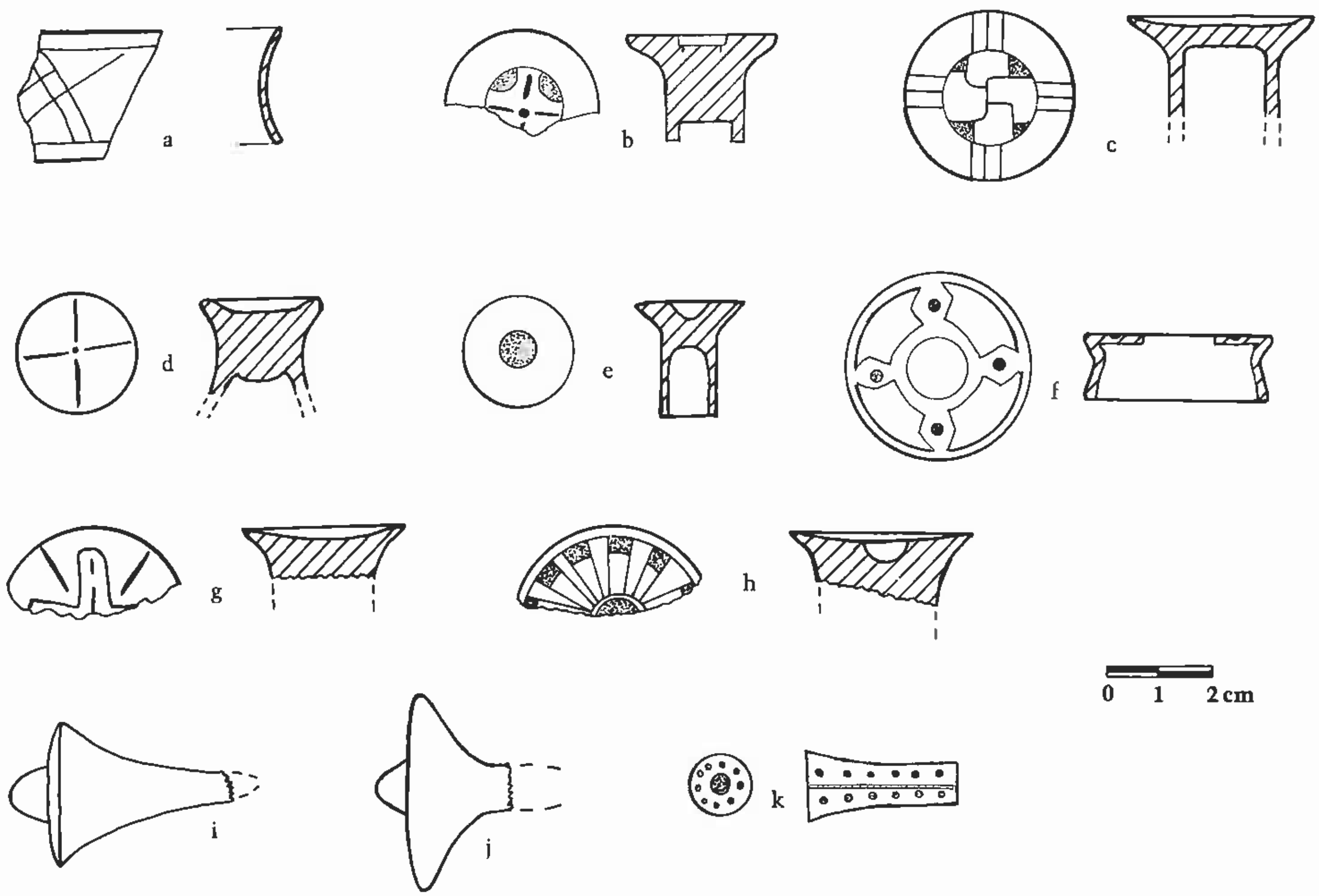


Figure 16.2. Earspools: *a*, thin-walled, hollow; *b–f*, capped, hollow and semi-hollow; *g–h*, solid flares; *i–k*, probable ear ornaments. Top and cross sections shown in *a–h*; side views in *i–j*, top and side in *k*.

deposits. For both ceramic and jadeite earspools, only fragments were found, and no whole pieces or large fragments were recovered. This earspool type is tubular, with very thin straight or very slightly convex walls, although some have a slight outward flare at one end. My impression from this limited and highly fragmentary sample is that the original length equaled or exceeded the diameter of the spool, thus setting these apart from so-called "napkin ring" earspools which also occur during the Formative period in Mesoamerica (although none were recovered at Chalcatzingo). Length of the spool fragments in our sample ranges from 22 to 35 mm, while diameters vary from 15 to 40 mm but cluster around 27–32 mm. Wall thickness is 2–3 mm. Only two of the fragments show incised surface decoration.

Our sample of this clay earspool type is small, and the distribution on the site therefore does not demonstrate any significant pattern. Two fragments were recovered from PC Structure 1, and one from the T-23 house. Significantly, while occurring in Cantera phase contexts such as the house structures, six of the fragments were recovered from Barranca phase levels.

Thin-walled tubular ceramic earspools were recovered by Vaillant at Zacatenco (1930: Pl. 40, bottom row no. 3) and El Arbolillo (1935: Fig. 25, nos. 11–14). He noted that the majority of those he recovered were black, as are the Chalcatzingo examples. At Zacatenco they occur in Middle Zacatenco levels, and at El Arbolillo in Late I and Early II levels. This temporal placement is in general agreement with the Chalcatzingo data.

The Mesoamerican distribution of tubular earspools is provided by Lee (1969: 90). While the major La Venta publications do not mention clay earspools, one of Matthew Stirling's *National Geographic* articles (Stirling and Stirling 1942: 642) briefly mentions a pair of blue-painted earspools found during his La Venta excavations. The San Lorenzo excavations recovered one fragment of a clay cylindrical earspool (Coe and Diehl 1980: 288, Fig. 410) from a San Lorenzo A context.

Capped Hollow and Semi-hollow Earspools ***(8; Fig. 16.2*****b–f*****)***

Eight spools are hollow to partially hollow, but have one end "capped." This "capped" end has carved or incised designs. The designs, individual characteristics, and size of these spools are shown in Figure 16.2*b–f*. One simple spool (Fig. 16.2*e*) may be Late Barranca subphase. Other, more elaborate examples are Late Cantera subphase (Fig. 16.2*b–d*). Although our sample is small, the distribution seems general and not restricted to any particular area of the site. One Late Formative example is certain (Fig. 16.2*f*), and is very similar to carved examples from Ticoman (Vaillant 1931: Pl. 82, bottom row). Our specimen occurred with T-27 Burial 133 (see Appendix C).

Solid Flare Earspools ***(2; Fig. 16.2*****g–h*****)***

Two solid clay flares occur in our sample. Both are decorated and are apparently Cantera phase in date.

Probable Ear Ornaments ***(3; Fig. 16.2*****i–k*****)***

Two solid clay "flares" with slightly tapering stems occur in our sample (Fig. 16.2*i–j*). Both are from the Cantera phase. They are not stamps and may have functioned as ear ornaments.

One smaller artifact is enigmatic but may have served as ear ornamentation (Fig. 16.2*k*). It is a hollow tube, 30 mm long, with a diameter of 12 mm at one end and 10 mm at the other. The inside diameter is 5 mm at each end but tapers to ca. 2.5 mm in the center. The wide end is decorated with small punctations, and three sections of punctations run along the length of the tube, separated by incised lines.

Pendants ***(7; Fig. 16.3)***

The sample of clay pendants is quite small. They vary from a small bird (Fig. 16.3*a*) to sherd discs which were drilled near the edge for suspension (Fig. 16.3*d–f*). One disc (Fig. 16.3*e*) was manufactured originally to be a suspended disc and the holes were perforated prior to firing. The most interesting of the pendants is from a Cantera phase context but unfortunately is a broken fragment apparently representing about one-half of the original piece (Fig. 16.3*c*). The pendant fragment depicts a shark-like face. The majority of the design is incised, but the eye is raised ca. 4 mm. Two suspension holes occur on the "fin." The pendant's broken length is 3.5 cm, and its original length must have been about 6 cm. Numerous small gold mica flecks occur in the temper of the clay of this artifact, an inclusion not found in local Chalcatzingo ceramics. Thus, the pendant is non-local in origin. While no similar pieces are known from other Formative sites in the highlands or the Gulf Coast, the shark-like profile suggests a provenience associated with the sea.

Roller Stamps ***(26; Fig. 16.4)***

Roller stamps, or seals, both hollow and solid, were found at Chalcatzingo. Such artifacts have been discussed by Frederick U. Field (1967) and illustrated by Jorge Encisco (1947; 1953). In central Mexico

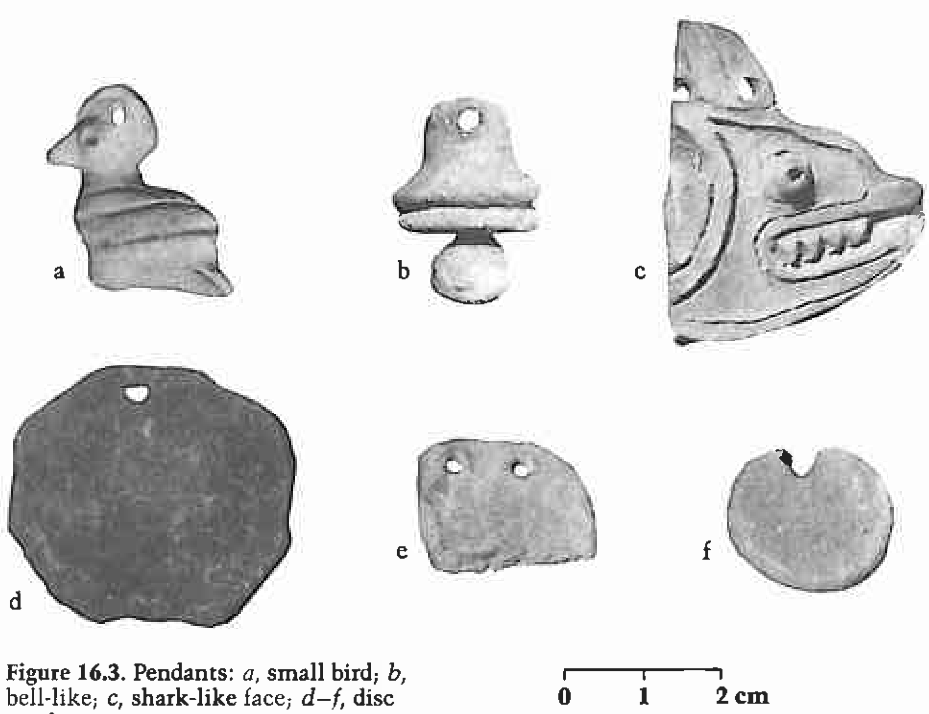


Figure 16.3. Pendants: *a*, small bird; *b*, bell-like; *c*, shark-like face; *d–f*, disc pendants.

***Table 16.1.* Distribution of Ceramic Personal Ornaments**

	Beads			*Earspools*				*Roller Stamps*		*Flat Stamps*	
Area	*Tubular*	*Spherical*	*Solid*	*Thin-Walled Hollow*	*Capped Hollow & Semi-Hollow*	*Solid Flare*	*Pendants*	*Hollow*	*Solid*	*Foot*	*Other*
PC Str. 1	1			2				3	1	1	
PC Str. 2					1	1		1	1		1
PC Str. 3											
PC Str. 4							3	1			
PC Str. 6										2	
PC other			1	3				1		2	3
ER Drainage									1		
T-4											2
T-6				1							
T-9A					1						
T-9B											
T-11		1			1				1		
T-15			1				2	5	1		1
T-17				1							
T-20					1					1	1
T-21			2						1	1	
T-23			4	1					1		
T-24					1		1	1			
T-25				1				1	1	1	
T-27			7		2	1		1			
T-29				3	1				2		
T-37											
S-39											
N-2											
N-5											
N-7											
CT-1											
CT-2											1
Tetla			4				1				3
Cave 1	3	1	4								
Cave 2											
Cave 3				1							
Cave 4											
Cave 8	1		1	1							
Other caves											
Surface									2		
Telixtac											
Huazulco											
Totals	5	2	24	14	8	2	7	14	12	8	12

they have been mistakenly termed "Olmec" seals, either directly (Field 1967) or by implication (Coe 1965a:54, Figs. 170–173). However, the distribution of such artifacts (e.g., Lee 1969:73–77) shows that they occur over a wide area of southern Mesoamerica and apparently continue in some areas at least into the Late Formative.

There are two regions in which their occurrence is limited either temporally or in quantity. It is my impression that roller stamps occur in greatest quantity in central Mexico (Valley of Mexico, Morelos, Puebla) in the Early Formative (to ca. 900 BC). Roller seals are found with Early Formative Tlatilco burials (Porter 1953:41–42, Fig. 16), in Ayotla (Early Formative) and Manantial phase (transitional Early–Middle Formative) levels at Zohapilco (Niederberger 1976: 240, Pl. 89), at Las Bocas (Early Formative: Coe 1965a:Figs. 170–172; Field 1967:Figs. 33–46), and from Early Formative Tlatilco culture sites in Morelos including Nexpa (Grove 1974b:Fig. 13) and Cacahuamilpa (Jorge Angulo V., personal communication).

It is also my impression that the presence of roller stamps at Gulf Coast "Olmec" sites is very limited, but this may reflect biases in sampling and excavation. Gulf Coast examples are illustrated from San Lorenzo (Coe and Diehl 1980: 289, Fig. 412), La Venta (P. Drucker 1952:141–142, Fig. 43*a*, Pl. 42, left *a*, *e* [?]), Tres Zapotes (P. Drucker 1943a:130, 132, Pls. 32*s*, 41*aa*, *bb*; Weiant 1943: 82, 117, Pl. 63), and Cerro de las Mesas (P. Drucker 1943b:66–67, Figs. 200–202). The temporal position of most of these artifacts is unclear, although the San Lorenzo example is Early Formative, while both the Tres Zapotes and La Venta stamps appear to be Middle Formative on the basis of the associated artifacts.

Chalcatzingo's roller stamps are all fragmentary. Two general categories can be defined (as with other Mesoamerican examples): solid and hollow stamps. There is no significant difference in quantity between solid and hollow in our sample (Table 16.1). Designs range from simple linear motifs to elaborate ones. The designs fall within the range depicted by Field (1967: Figs. 17–29, 33–46) and Lee (1969: Figs. 36–38). The distribution on the site is general enough to suggest that roller stamps were used by all members of the society (apparently for body decoration) and were not restricted to the elite or to elite areas.

This statement must be qualified, however, with the understanding that the sample is relatively small and that the contexts and temporal placements of these stamp fragments are questionable. While half come from Cantera or Barranca phase levels, only three occur associated with Cantera phase floors. The remainder are surface finds or from fill which includes Amate phase debris. Based on the dating of other central Mexican roller stamps, it is quite possible that the majority of Chalcatzingo's are Early Formative Amate phase fragments which in one way or another were introduced into the Middle Formative levels. In other words, it is still unclear how long into the Middle Formative the use of such stamps extended.

Flat Stamps *(20; Fig. 16.5)*

The majority of flat stamps excavated have a small stemmed handle on the back. Eight of the stamps are human feet (Fig. 16.5*a–e*), a common motif at Tlatilco (Field 1967:23, Figs. 30, 32; Porter 1953:42). Three of the Chalcatzingo foot stamps come from good Amate phase contexts; the remainder are from Cantera phase levels but may represent Amate phase stamps somehow introduced into later deposits. One Amate phase stamp shows a human figure with the head represented as concentric circles (Fig. 16.5*f*), again repeating a design found at Tlatilco (Encisco 1947:128, no. iv). Stamps similar to those recovered from Formative period deposits at Chalcatzingo have been illustrated from Ticoman (Vaillant 1931: Pl. 83, bottom row, nos. 1–2) and Gualupita (Vaillant and Vaillant 1934: Fig. 29, no. 5). Illustrated Gulf Coast examples (Coe and Diehl 1980: Fig. 413; P. Drucker 1943a: Pls. 41*x–ff*, 42*s–t*, 43*d*, 47*m*; Weiant 1943: Pls. 62, 73, nos. 4–6) appear to be post–Middle Formative.

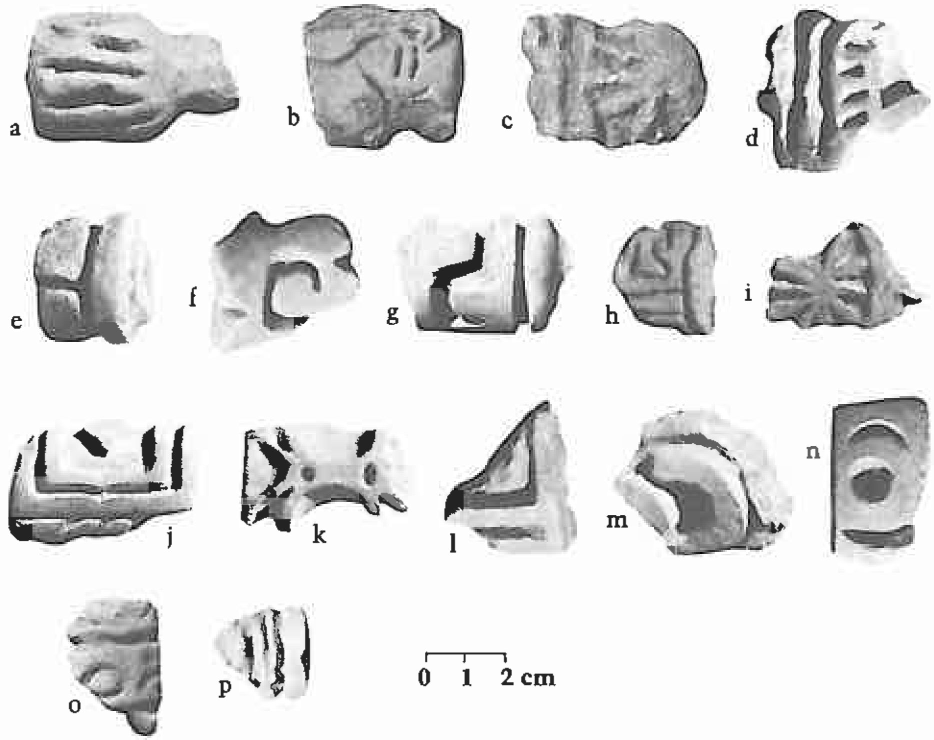


Figure 16.4. Roller stamp fragments: *a–i*, solid; *j–p*, hollow.

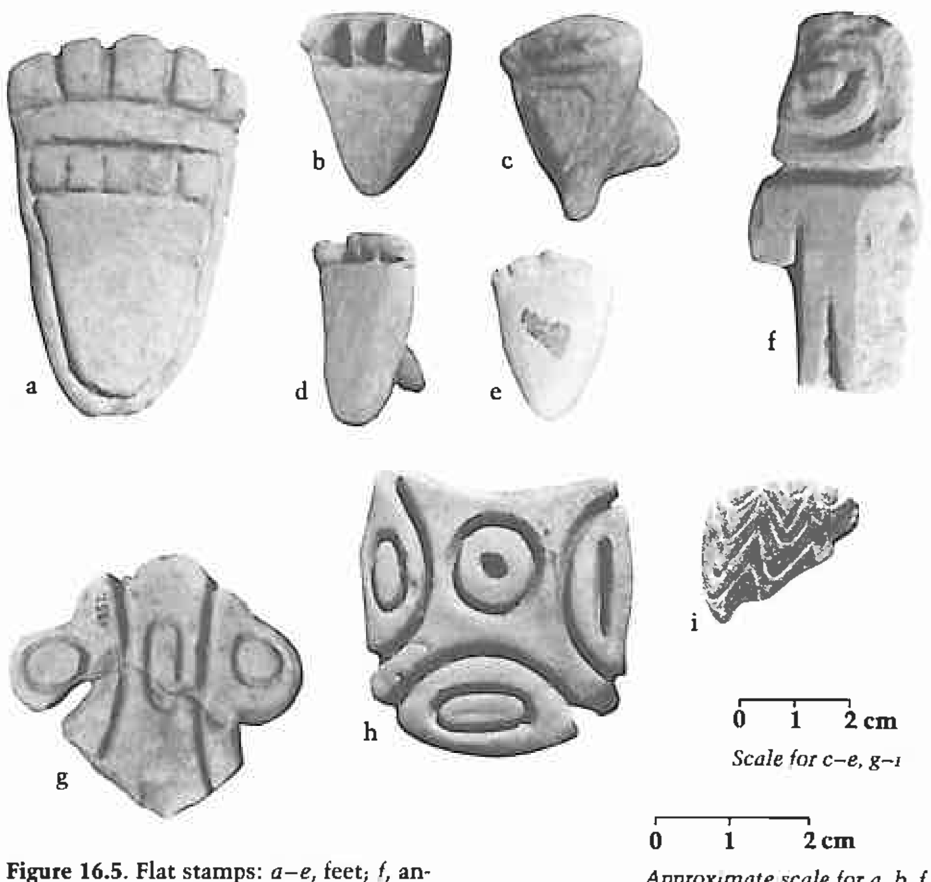


Figure 16.5. Flat stamps: *a–e*, feet; *f*, anthropomorphic figure; *g–i*, others.

Ritual Artifacts

Whistles and Ocarinas *(105; Fig. 16.6)*

Our artifact sample includes whistles, ocarinas, and flutes, most of which are from the Cantera phase. However, because we are working primarily with fragmentary artifacts, I have divided the sample into only two categories, whistles and flutes. Although I recognize the importance of the distinction Lee (1969: 65–66) makes between whistles (single note) and ocarinas (multi-note), it is difficult to ascertain whether most of our whistle-ocarina examples were originally single or multi-toned. Whistles are subdivided into four categories below, and mouthpiece types are also described. Flutes are discussed in a separate section.

Most whistles are manufactured from a sandy tan clay and are relatively simple in form. A few, however, are well-made zoomorphic representations. The majority of the whistle sherds recovered were fragments of the hollow oval sound (resonating) chambers. However, at least thirty percent of these have tab "wings" or other filleted appendages which suggest that many simple whistles are also bird effigies. Other fragmentary raised areas on some sound chambers also indicate that other large, possibly zoomorphic representations were appended as part of the whistles. Some artifacts have suspension holes.

Specific Zoomorphic or Anthropomorphic Whistles (11; Fig. 16.6*a*): Rather than being zoomorphic or anthropomorphic representations appended to the oval sound chambers, as in the case of the single and double chamber whistles discussed below, whistles in this category were created in the form of a particular animal. The animal is realistically depicted, and the form of the animal dictates the form of the whistle.

Single-Chamber Whistles (74; Fig. 16.6*b–h*): These are the most common whistle sherds from our excavations. The sound chamber is usually ellipsoidal, with outside diameters averaging 2–4 cm and lengths 2.5–5 cm. The chamber has one 3–4 mm hole at one end. The mouthpiece tab (see below) is constructed onto the chamber at this point. In addition, various appendages were often added to create a zoomorphic form. In all instances the animal or other representation is secondary to the oval shape of the sound chamber. In our sample most of the external appendages are broken and missing, and it is difficult to recreate the original forms that these whistles had. From a few recovered fragments, it appears that the forms include ducks, turtles, and small mammals (possibly opossums). If these identifications are correct, it is interesting to note that some cultures consider these same animals as intermediaries due to their ambiguous natures.

Double-Chamber Whistles (7; Fig. 16.6*i–j*): These are identical to the sound chambers on single-chamber whistles except that they are often larger and contain two chamber holes, one at each end. These holes apparently were functional, and all samples of this type show scars of some additional previous appendage around the second hole. Two whistle fragments from T-20 excavations have remains of clay tubes extending outward from the second hole. It is therefore possible that a second tubular, flute-like chamber was added to provide a two-tone or multi-tone effect.

Fat-Cheeked Human Faces (2; Fig. 16.6*k–l*): These two artifacts are pudgy-cheeked heads, termed by some as representing the "Old Fat God." Both of our examples are double whistles. On Figure 16.6*l* the forehead strap forms dual mouthpieces, one above each eye opening. These direct the air down into the eyes, the entrances to the sound chambers formed by the hollow cheeks. Neither head shows signs of having been attached to a body. A similar whistle was recovered by Niederberger at Zohapilco (1976: Fig. 2, no. 8).

Mouthpiece Types: Three different mouthpiece types (in addition to the specialized mouthpieces on fat-cheeked human face whistles) can be defined: *Direct or tab mouthpiece* (36; Fig. 16.6*c–d*). The mouthpiece is a clay protrusion or tab below the hole in the sound chamber. Usually 1–2 cm long, this tab serves to keep the lower lip the proper distance from the sound chamber. In about one-third of our sample, the mouthpiece tab was a wing-like fillet apparently representing a bird's tail. *Tab-strap mouthpieces* (15; Fig. 16.6*b*). In addition to the projecting tab, a thin, flat strap of clay has been appended in a small loop above the tab. This loop acts as a tunnel to direct air over the hole in the sound chamber. The clay strap and tab are normally the same size. Both vary in size in proportion to the size of the whistle's sound chamber. *Tubular mouthpieces* (4; Fig. 16.6*m*). A clay tube, attached to the sound chamber in front of the chamber hole, directs air to the hole.

Comments: The majority of the whistles come from Barranca and Cantera phase contexts. Both "Old Fat God" whistles come from subfloor levels of PC Structure 1, although one (Fig. 16.6*k*) is Barranca phase, the other (Fig. 16.6*l*) Cantera phase.

Few Chalcatzingo artifacts show close similarities to artifacts from Gulf Coast sites. One exception is the zoomorphic single chamber whistles. Certain Chalcatzingo examples portray animals with their paws held to their heads (Fig. 16.6*e–f*). Similar poses occur on Tres Zapotes whistles (P. Drucker 1943a: Pls. 28*r–s*, 41*i–j*; Weiant 1943: Pl. 50, nos. 1, 3–5, 7). General similarities occur with single chamber whistles (Coe and Diehl 1980: Fig. 405*a*; P. Drucker 1943a: Pl. 41*l–m*, *o–p*; Weiant 1943: 108–111, Pls. 47–52). Whistles similar to those from the Chalcatzingo sample were recovered by Vaillant at El Arbolillo (1935: 234–236), Zacatenco (1931: 155–156, Pl. 38, top row, nos. 1, 3–5, Pl. 40, top row, no. 4), Gualupita (Vaillant and Vaillant 1934: 98, Fig. 29, nos. 7–12), and Ticoman (Vaillant 1931: 400, top row, nos. 3–4).

Flutes *(39; Fig. 16.7)*

These are tubular ceramic pieces which range in outside diameter from ca. 1.5 to 3.5 cm. Wall thickness is usually no more than 3–4 mm. Fifteen come from excavations in Classic contexts. However, others are from unquestionable Middle Formative Cantera phase levels. Of these, several of the tubular sections have one finished end and one single hole penetrating the side of the tube. As mentioned in the description of ceramic whistles, several whistle chambers have tubular sections attached and interconnecting air holes. Thus, at least some of our Middle Formative "flute" sections may originally have been part of ceramic whistles (see Fig. 16.6*i*).

The distribution of ceramic flutes does not seem as general as that of ceramic whistles (see Table 16.2). T-23 had the largest number of flutes (sixteen), and they were rare on the Plaza Central, unlike the whistles.

Miniature Vessels *(43; Fig. 16.8)*

Miniature vessels were recovered which duplicate both common and special ceramic forms. Among the forms, miniature wide-mouth bowls appear most common (sixteen), followed by restricted neck olla forms (eleven), dishes (two), and double-loop handle censers (six, including handle fragments). Some of the olla forms include those similar to *can-*

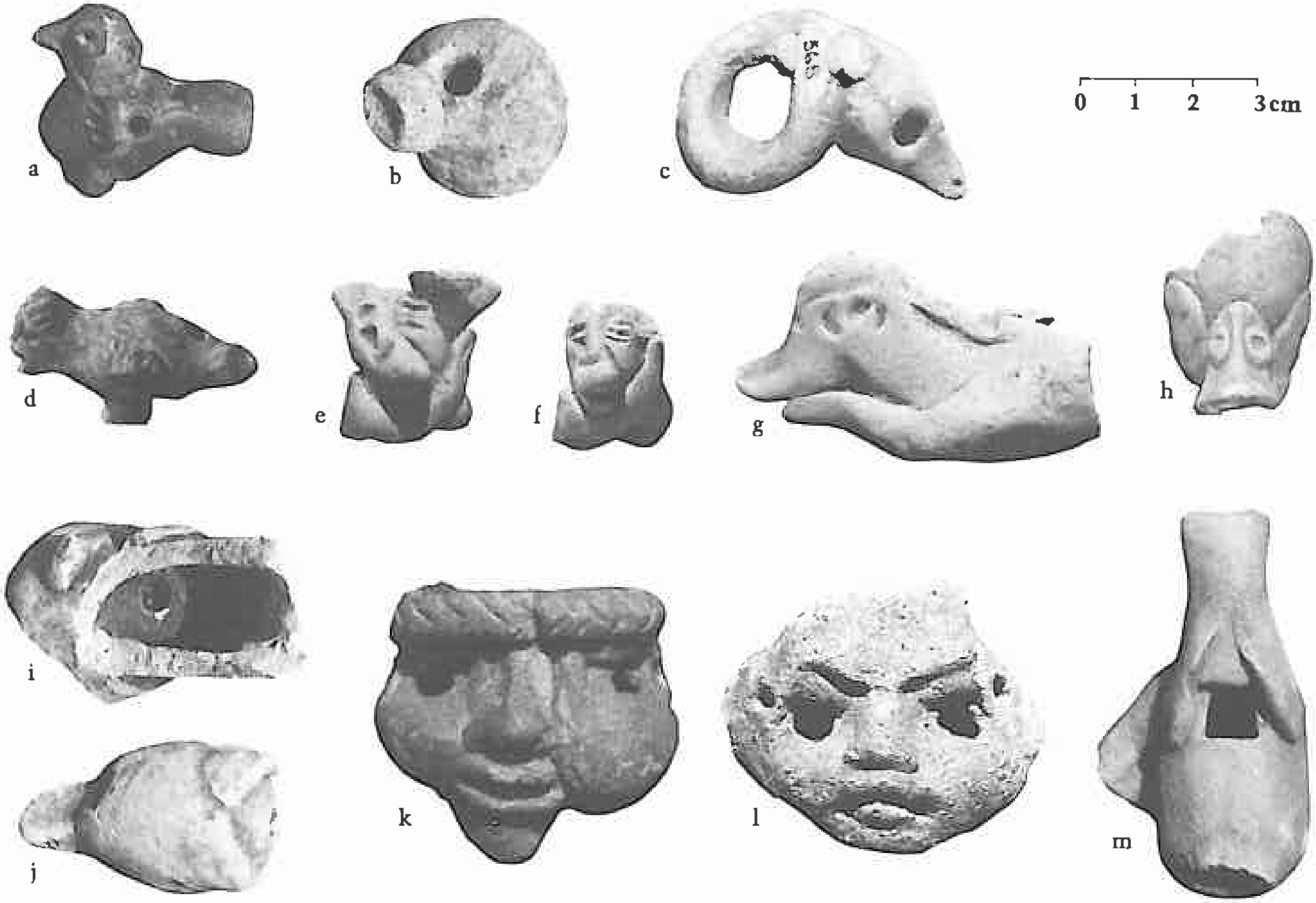


Figure 16.6. Whistles and ocarinas: *a*, bird; *b–h*, single chamber zoomorphics; *i–j*, double chamber; *k–l*, fat-cheeked human faces; *m*, whistle with tubular mouthpiece. Scale is approximate.

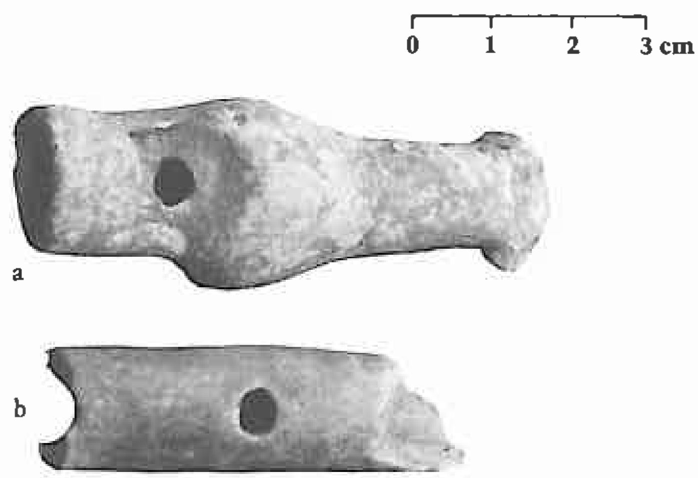


Figure 16.7. Flute fragments.

Table 16.2. Distribution of Ceramic Ritual Artifacts

	Whistles and Ocarinas								
Area	*Zoomorph*	*Single Chamber*	*Double Chamber*	*Fat-Cheeked Faces*	*Not Classified*	*Flutes*	*Miniature Vessels*	*Masks*	*Bars*
PC Str. 1	2	14	1	2		1	8	2	
PC Str. 2	1	16				3	5	1	1
PC Str. 3									
PC Str. 4									
PC Str. 6									
PC other		8				1	3		1
ER Drainage									
T-4	1	3				1	2	1	
T-6		1					1	1	
T-9A		2						1	
T-9B					1		1		
T-11	2	3					1		1
T-15		1			2	5	1	1	
T-17									
T-20	1	4	2		1	7	2		
T-21		2			1	1	2		1
T-23		3			1	16	4	2	
T-24	2	2	1				3		
T-25		3	2			1	2		
T-27	1	3			1	3	2	3	
T-29		2	1				1	1	
T-37		1			2		5		
S-39		2			1			2	3
N-2	1								
N-5									
N-7		1							
CT-1									
CT-2									
Tetla		2			1				
Cave 1									
Cave 2									
Cave 3									
Cave 4									
Cave 8									
Other caves		1							
Surface									
Telixtac									
Huazulco									
Totals	11	74	7	2	11	39	43	15	7

taritos, the small plain bottles often associated with higher status burials (see Chapter 8). Among the miniature vessels are small Amatzinac White bowls and Peralta Orange punctate bowls and ollas. Diameters of the bowls are approximately 8 cm, while miniature bowls and ollas range from 1.6 to 8 cm, although most average 2.5–5 cm. The double-loop handle censers average 2.4–2.8 cm in diameter. The distribution of miniature vessels on the site (Table 16.2) seems nonspecific, as they were found on most terraces excavated, but they are primarily associated with house structures on those terraces.

Circular Masks *(14; Fig. 16.9)*

Circular, slightly convex artifacts, usually depicting a simple human face, occur in Cantera phase contexts. Such artifacts are commonly referred to in the literature as masks (e.g., Coe 1965a: Figs. 161–169). No complete examples were found at Chalcatzingo. The fragments recovered represent rounded masks, ranging from 8 to 16 cm in diameter. Most examples have three suspension holes, two at the sides and one at the top. Open elliptical eyeholes are characteristic. The remainder of the face is depicted by appliqué strips and raised, horn-like tabs. The paste is generally an orange-brown (ca. 5 YR 6/6) and of local temper. One fragment shows traces of a white slip; another has traces of a red slip.

Among the mask fragments recovered in good context, one was from T-9A, two from the T-23 house excavations, three from T-27 excavations, two from S-39 excavations, and two from the subfloor area of Plaza Central Structure 1 (see Table 16.2). This distribution suggests that masks were not an item restricted only to elite areas of the site.

Similar circular masks have been recovered at Tlatilco (Piña Chan 1958: Pls. 26–27; Coe 1965a: Figs. 165–168), in "greatest quantities" in Zacatenco levels at Zohapilco (Niederberger 1976:233–234, Pl. 88), and in Vaillant's Middle period levels at Zacatenco (1930:156, Pl. 39). Vaillant labels his three illustrated fragments as "gorgets," raising the question of the actual function of these artifacts. An argument in favor of Vaillant's identification is that the slightly concave backs of these artifacts contain no room for a nose if worn on the upper face utilizing the eyeholes for seeing. Some Tlatilco figurines (Coe 1965a: Figs. 123–124; Covarrubias 1957: Fig. 6) illustrate that masks may have been worn in that manner. On the other hand, other Tlatilco figurines (e.g., Coe 1965a: Fig. 157) show circular masks being worn on the lower face area. Triple suspension holes would allow one supporting string to pass over the top of the head and two side strings to secure the mask at the back of the head.

Bars ***(7; Fig. 16.10)***

These enigmatic ceramic objects are long bars with rounded ends. Most of them resemble long, slightly curved handles, although we do not believe they served that function. In fact, it is possible that not all these objects served the same or similar functions. Unfortunately, six of the seven examples are broken. All but one have oval cross-sections, and four are decorated. Each of the specimens is briefly described below:

a. This bar (Fig. 16.10*a*) is unslipped and the surface is smoothed but not polished. It is decorated on both sides, whereas other decorated specimens have only one decorated side. The broken length of this artifact is 4.8 cm. It exhibits no wear pattern.

b. This example (Fig. 16.10*b*) has a smoothed but eroded rough-textured surface. One surface has an 8 mm diameter shallow hole. The broken length is 5.3 cm. No wear pattern was detected.

c. This example (Fig. 16.10*c*) is also undecorated with a smoothed but eroded and unslipped surface. It is the only unbroken specimen of the seven. Unlike the others, which have a slightly convex lower surface, the under surface of this artifact is slightly concave. Its complete length is 7.0 cm, and it lacks an apparent wear pattern.

d. This and the next two artifacts are decorated and white-slipped, setting them apart from the others. This example (Fig. 16.10*d*) is a long, slightly curved bar, slipped in Amatzinac White on all but the convex, curving underside. The upper surface has an incised design

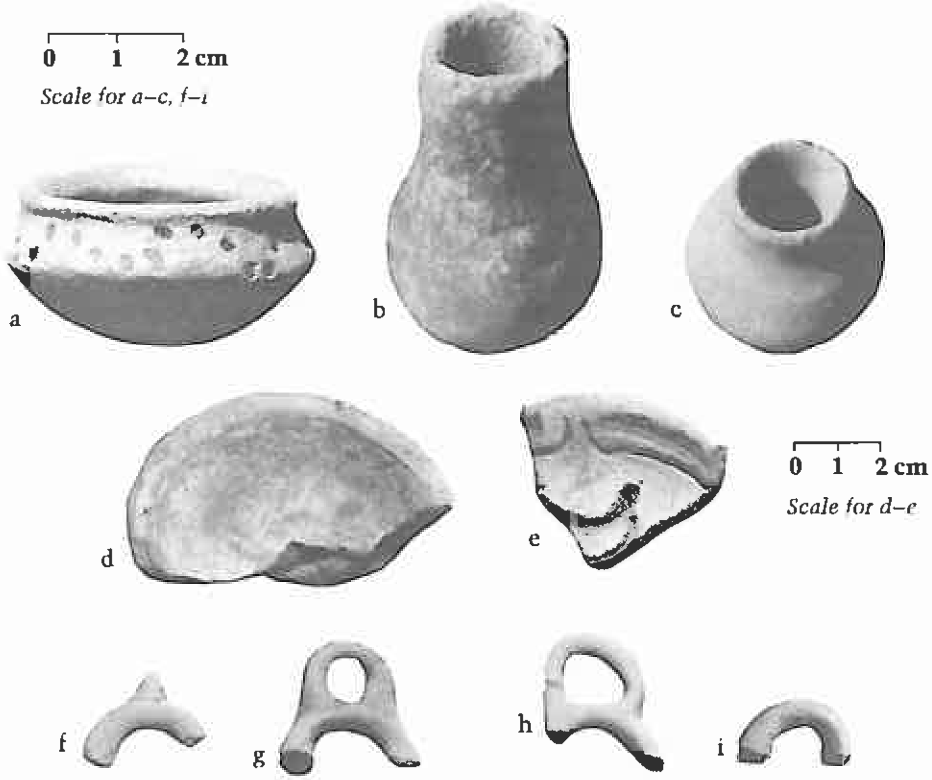


Figure 16.8. Miniature vessels: *a*, bowl; *b–c*, ollas; *d–e*, shallow dishes; *f–i*, double-loop handles from miniature censers.

Figure 16.9. Masks: *a*, T-23; *b*, PC Structure 2; *c*, T-9A.

which was executed after the white slip was applied. The undersurface is slightly roughened, but is smoothed in some areas, possibly representing use wear. The broken length is 10 cm.

e. This bar (Fig. 16.10*e*) is also slipped in Amatzinac White and has a design pattern identical to that of artifact *d*, although it is flat, not curved, and comes from a completely different site area. No basal wear is apparent. Broken length is 6.5 cm.

f. The decoration on this Amatzinac White slipped bar fragment (Fig. 16.10*f*) is unlike that of artifacts *d* and *e*, and the bar is more oval in cross-section. No visible wear pattern occurs. The broken length is 6.0 cm.

g. This specimen (not illustrated) was smooth, unslipped, and undecorated. Its broken length is 3.9 cm. No wear pattern is apparent.

Wear on most of these artifacts could be masked by the effects of erosion. Only *a*, an artifact decorated on two sides and far more pointed in shape than the others, comes from a Barranca phase context. All others are Cantera phase. As shown in Table 16.2, three of the bars, including two of the three white-slipped examples, come from excavation area S-39, an area which also yielded an abnormally large quantity of oval ground sherds (see below). Heavy co-occurrence of both types of artifacts at S-39 may indicate that they served similar functions, possibly related to ceramic manufacture.

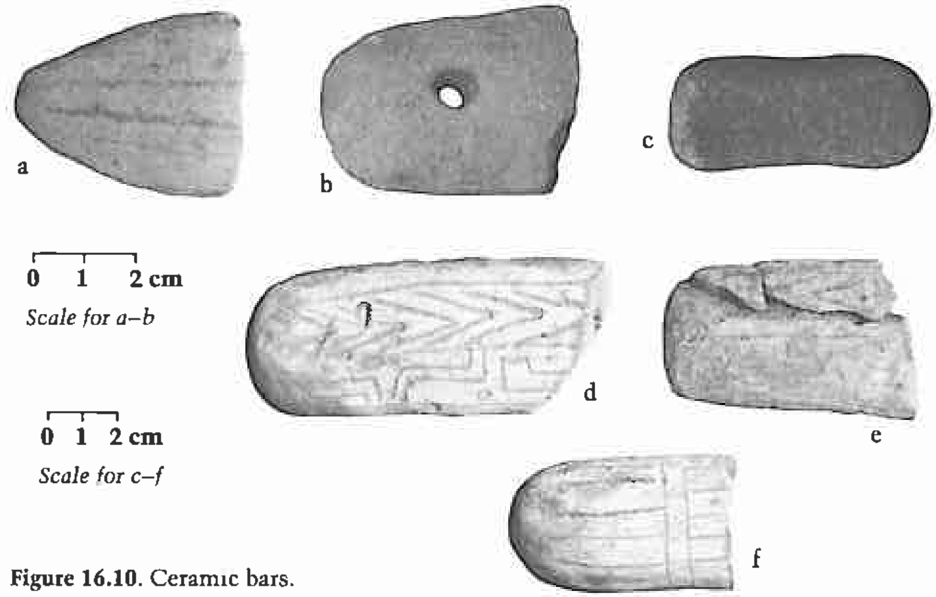


Figure 16.10. Ceramic bars.

Animal Figurines *(Fig. 16.11)*

A wide variety of animal figurines occur in Middle Formative contexts at Chalcatzingo, including birds, reptiles, and mammals. For some, the type of animal being portrayed is easily interpreted, while for others the identification is more difficult (e.g., were they depicting dogs or foxes?). As can be seen, the bird heads (Fig. 16.11*a–e*) include ducks, several possible turkeys, and numerous stylized and unidentifiable birds. Only a few reptilia are represented in the figurine sample: a turtle head and three snakes. Of these latter, two are relatively simple representations, while the third is a naturalistic depiction of a diamondback rattlesnake's head.

Among the many mammals depicted are dogs (Fig. 16.11*f–i*) both with and without fangs showing, animals with antlers which are probably deer (Fig. 16.11*j*), one squirrel (Fig. 16.11*l*; this figurine has a polished orange slip, a treatment usually reserved for C8 figurines), peccaries (Fig. 16.11*k*), numerous unidentifiable examples (a few of which may be opossums; e.g., Fig. 16.11*m*), a variety of monkeys (Fig. 16.11*n–p*), and a fish-shaped figurine fragment which has two breasts and thus may represent an aquatic mammal such as a manatee (Fig. 16.11*q*). Neither monkeys nor aquatic mammals are native to Mexico's central highlands.

As mentioned earlier, some of the animal figurine heads are probably broken-off clay whistles. It is important to note in this regard that animal figurine bodies (as compared to heads) are rare in the total figurine sample. This is in contrast to anthropomorphic figurines, for which bodies greatly outnumber heads recovered.

Only one figurine, relatively complete, combines both human and animal characteristics (Fig. 16.12). This unique figurine has an animal head (opossum?) and a woman's body. The animal's eyes are executed in the manner of Ch type figurines (see Chapter 14).

Utilitarian Artifacts

Spindle Whorls *(57)*

Twenty-five spindle whorls were recovered during excavations on the main site area and caves during the project's three field seasons, while thirty-two whorls were excavated at Tetla in 1974. All spindle whorls are analyzed and discussed in Chapter 25 and tabulated in Table 16.3.

Molds *(5; Fig. 16.13)*

Two types of molds occur in our sample, all apparently Late Classic and Middle Postclassic. The first type, represented by three examples, is a flat, shallow, stamp-like mold, apparently for use in mold-made vessel designs (*a–c*). The second type is a deeply concave figurine mold (*d–e*).

a. A nearly complete mold, this artifact is trapezoidal in shape, with the top wider than the base (Fig. 16.13*a*). A tapered or trapezoidal shape would seem logical for stamping designs onto vessels in order to avoid design overlap. The design is a human head wearing a plumed headdress. A speech scroll occurs in front of the person's mouth. This mold is from T-29.

b. This mold fragment has a design showing a seated human in profile (Fig. 16.13*b*). The person holds a plumed object or torch. The mold was found on the surface of T-29.

c. This is a flat-stemmed mold with a rabbit design (Fig. 16.13*c*), found on the surface of the T-15 ballcourt (T-15 Str. 2).

d. From a Classic period context on T-20, this figurine mold creates an eagle's head (Fig. 16.13*d*).

e. The second figurine mold (not illustrated) is from Tetla-11. Apparently Middle Postclassic in date, it is fragmentary, and the design is uncertain.

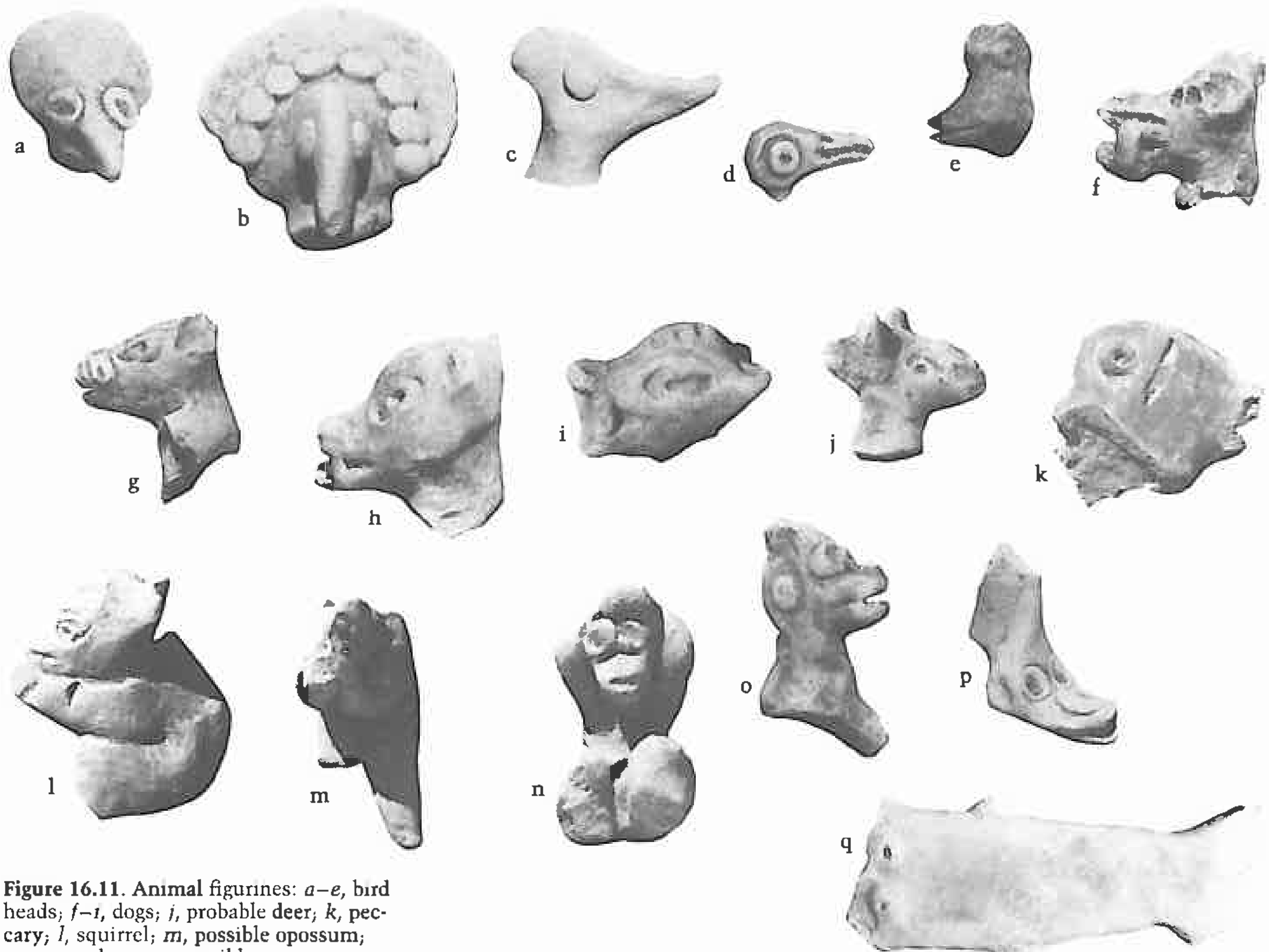


Figure 16.11. Animal figurines: *a–e*, bird heads; *f–i*, dogs; *j*, probable deer; *k*, peccary; *l*, squirrel; *m*, possible opossum; *n–p*, monkeys; *q*, possible manatee.

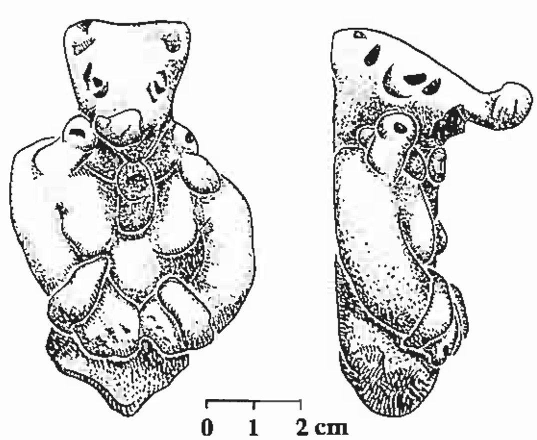


Figure 16.12. Animal figurine with opossum-like face and female human body.

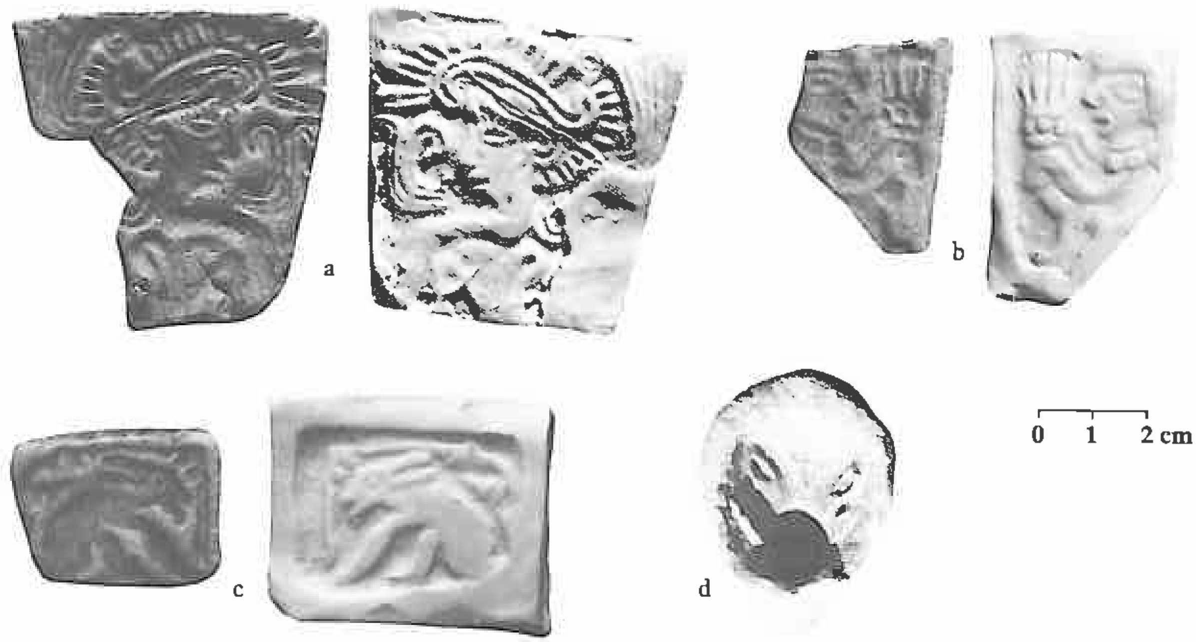


Figure 16.13. Ceramic molds: *a*, human head mold (*left*) and cast (*right*); *b*, seated human mold (*left*) and cast (*right*); *c*, rabbit mold (*left*) and cast (*right*); *d*, eagle head mold.

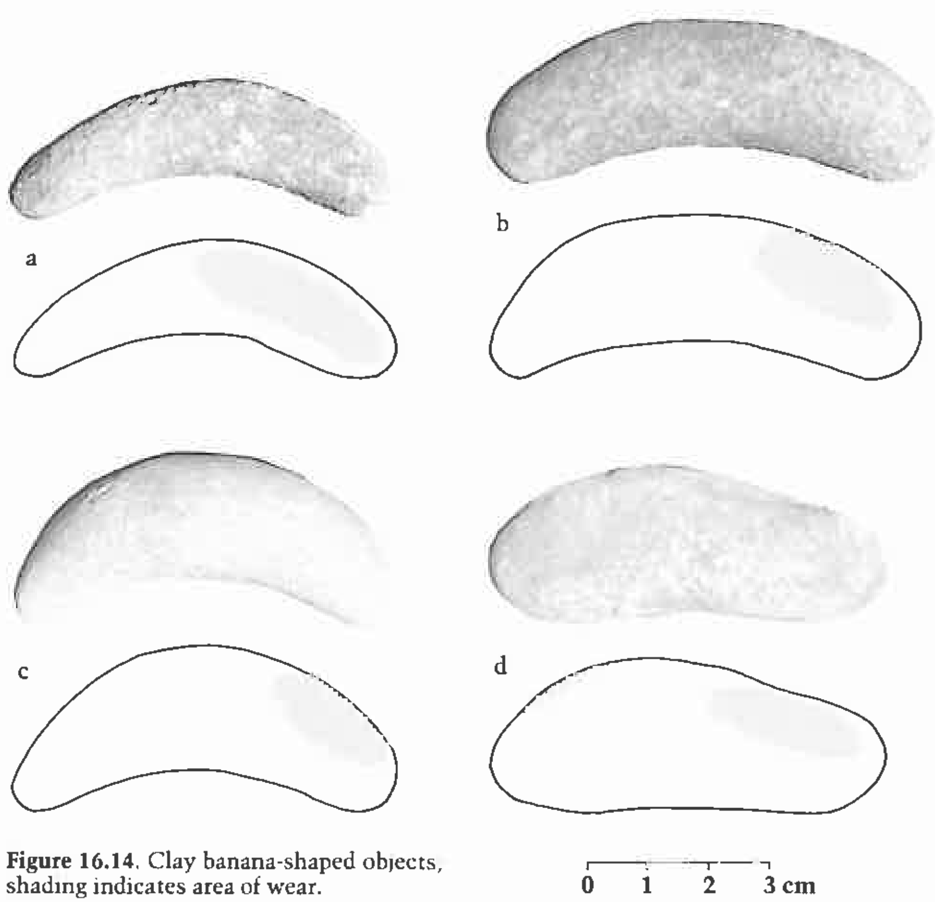


Figure 16.14. Clay banana-shaped objects, shading indicates area of wear.

"Bananas" ***(9; Fig. 16.14)***

These unusual crescent- or banana-shaped artifacts are rounded or oval in cross section. The surfaces of all nine examples are eroded, but several still show traces of polishing. All exhibit a specific wear pattern—a flattish worn area along one side, near one end of the crescent. Only two specimens have the wear pattern on both sides of the artifact. The largest of our specimens is 7.5 cm long; the smallest is 5.8 cm. Thus, the size range is relatively small. Maximum diameter is 3.6 cm and minimum is 1.5 cm. Surface color is variable, ranging from grey (ca. 10 YR 6/2–6/3–6/4) to brown (7.5 YR 5/2–4/2).

These artifacts were found only in Cantera phase contexts. Two come from the S-39 excavations, an area we believe may have been a ceramic workshop. The unusual wear pattern suggests that these crescent-shaped objects performed a smoothing or polishing function. Similar artifacts have been found at other Formative period sites in central Mexico but have drawn little attention. Harold McBride (1974:214–216) mentions those other occurrences, which include both Cuicuilco and Chupicuaro, and tends to favor the idea that these artifacts may have been potter's tools. Recent excavations at Loma Torremote in the Valley of Mexico (Santley 1977b:50; personal communication) recovered twenty-four such objects. Florencia Muller (personal communication to Robert Santley) notes that similar artifacts are used today in some areas of rural Mexico to support the base of pottery vessels during manufacture. However, an interesting similarity is seen with the limestone banana-shaped smoothers found in caches at Muna, Dzibilchaltun, and Mayapan in Yucatan (Andrews and Rovner 1973). In general the Yucatecan examples are nearly twice as large as those at Chalcatzingo but show the same general wear pattern. The Maya crescents were probably used in plaster working, and while we have no evidences of Cantera phase lime plaster, the S-39 excavations yielded both crescent-shaped artifacts and a Middle Formative lime deposit (Chapter 4).

Artifacts of Uncertain Function

Solid Balls *(27; Fig. 16.15)*

Solid ceramic balls occur at Chalcatzingo and other highland and lowland sites. Those from our sample are made from local clays. Their diameters range from 8 to 40 mm, with an average of ca. 20 mm.

Chronologically the solid ceramic balls from Chalcatzingo range from Early Formative to Middle Postclassic. Two balls (Fig. 16.15*d–e*) from Late Cantera subphase deposits (one from PC Str. 2, the other from T-24) have a light groove circling the circumference. Clay balls with an encircling groove have also been found at Tres Zapotes (Weiant 1943: 117–118, Pl. 65, bottom right). Clay balls of the same approximate size as our sample were found at San Lorenzo (Coe and Diehl 1980:287), at El Arbolillo, Zacatenco, and Ticoman (Vaillant 1930: 156, Pl. 39, middle row, Table I; 1931: 297, 396, Pl. 81, first two rows; 1935: 237, Table 18), and at Gualupita (Vaillant and Vaillant 1934:98, Fig. 29, no. 2).

***Table 16.3.* Distribution of Ceramic Utilitarian Artifacts**

	Spindle Whorls						
	TYPE I			*TYPE II*			
Area	*Undecorated*	*Incised*	*Mold*	*Incised*	*Mold*	*Molds*	*"Bananas"*
PC Str. 1	1						1
PC Str. 2							
PC Str. 3							
PC Str. 4							2
PC Str. 6							
PC other							
ER Drainage							
T-4							
T-6							
T-9A							1
T-9B							
T-11	1						1
T-15	1	1				1	
T-17							1
T-20	1					1	
T-21	2						
T-23							
T-24							
T-25							
T-27		1					
T-29						2	
T-37							
S-39							2
N-2							
N-5							
N-7							
CT-1							1
CT-2							
Tetla	4	11	13	2	2	1	
Cave 1	3	5	6				
Cave 2							
Cave 3							
Cave 4	1						
Cave 8				1	1		
Other caves							
Surface							
Telixtac							
Huazulco							
Totals	14	18	19	3	3	5	9

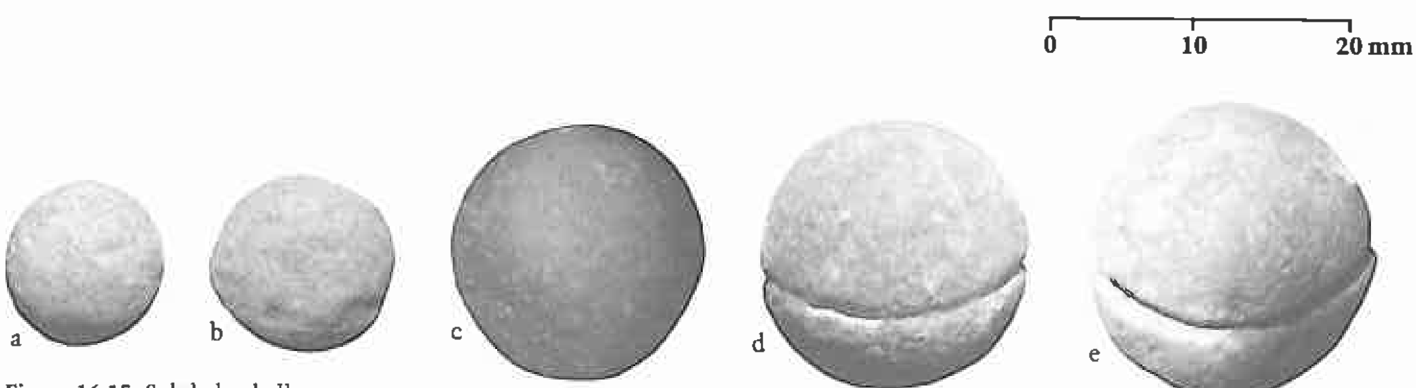


Figure 16.15. Solid clay balls.

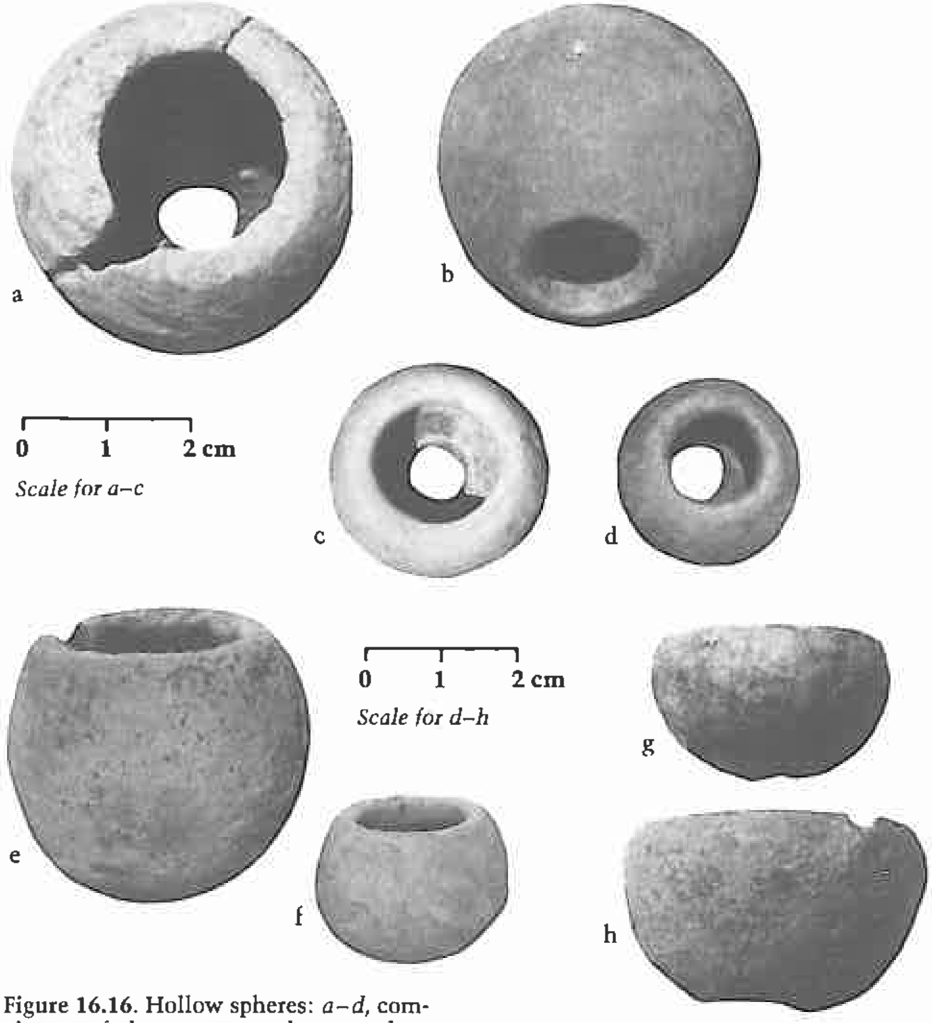


Figure 16.16. Hollow spheres: *a–d*, complete; *e–f*, three-quarter spheres; *g–h*, hemispheres.

Hollow Spheres *(433; Fig. 16.16)*
During the excavation of PC Structure 2, fragments of hollow clay spheres were uncovered, and soon thereafter three complete specimens were found. Sherds of similar hollow spheres were recognized in other excavation units, and the 1974 excavations at Telixtac produced further examples. Three basic sphere types can be distinguished based on the completeness of the sphere: complete spheres, three-quarter spheres, and hemispheres. All share certain attributes. One important feature is that all have well-made holes (finished as with vessel rims) at one end. By "end" I mean the portion of the sphere opposite the wide mouths of three-quarter and hemispherical examples. Complete spheres have a hole at each "end," with the holes unequal in size. The diameter of the smaller hole fairly consistently ranges from 0.8 to 1.2 cm.

In size, the majority of the spheres range between 3.8 and 5 cm in diameter. The smallest specimen has a diameter of 2.8 cm; the largest, 7.5 cm. Most of the artifacts are essentially true, round spheres, but elliptical and oval (along the axis between the holes) "spheroid" examples also occur. Elliptical spheroids are most common among the three-quarter sphere type.

In size, form, and quality of workmanship, sherds from spheres are easily distinguishable from miniature vessel fragments or sherds from the oval sound chambers of clay whistles. Hollow spheres have well-polished outer surfaces but rough interiors. Many show traces of either an orange or a fugitive white slip. Orange slip, which also occurs on some C8 figurines, appears to have been a treatment restricted to certain clay artifacts, perhaps marking them as "special." Red pigment traces are also found on some examples. Most of the spheres are undecorated, but a few have simple incised "rim" designs.

Complete Spheres (89; Fig. 16.16*a–d*): Among the complete spheres recovered were four whole specimens. Three were found in PC Structure 2, and the fourth came from excavations at the north end of T-25. The spheres, as mentioned above, generally vary between 3.8 and 5 cm in diameter. Ellipsoidal examples have a long-axis diameter about 10 percent greater than that of the short axis. The larger hole tends to vary in size proportionally with the sphere's size and ranges from 1.2 to 2.0 cm in diameter.

Three-quarter Spheres (85; Fig. 16.16*e–f*): This type has the same basic form as the complete sphere, with the exception that the sphere is only about three-quarters complete (this actually varies from 60 to 80 percent of the short-axis diameter). Essentially this is a truncated sphere which resembles a miniature *tecomate* with a well-made hole in the bottom. The larger opening is approximately 50 percent of the sphere's diameter.

From our sherd sample we know that most of these three-quarter spheres were manufactured originally in this form, with rounded or tapered rims on the larger opening. However, in about 10 percent of the sherds, the large opening has a flat, ground rim edge, suggesting that these artifacts may originally have been complete spheres which were then ground down to three-quarters form. Such grinding not only produces a flat rim, but also leaves grinding marks and exposes the carbon streak in the interior of the thin clay wall.

Hemispheres (67; Fig. 16.16*g–h*): These are simply half spheres, but with the characteristic small hole at the bottom. The exterior rim diameter of the "mouth" or large hole essentially equals the diameter of the sphere. Rims are usually rounded or slightly tapered, and interiors are often smoothed and polished along the interior rim area. Seven sherds of this sample have flat ground rims, indicating, as with three-quarter spheres, possible modification of a larger sphere.

Unclassifiable (192): These artifacts are so fragmentary that they cannot be classed into one of the three types above.

Comments: All three sphere types occur

Table 16.4. Distribution of Ceramic Artifacts of Uncertain Function

						Ground Sherds							
		Hollow Spheres				*Discs*			*Rectilinear*				
Area	*Solid Balls*	*Complete*	*Three-quarter*	*Hemispheres*	*Not Classified*	*Plain*	*Partly Perforated*	*Perforated*	*Rectangular*	*Trapezoidal*	*Triangular*	*Oval*	*Cut and Shaped Sherds*
PC Str. 1	4	4	10	3	8	13	5	5					
PC Str. 2	2	13	15	10	8	9	1	2					1
PC Str. 3													
PC Str. 4													
PC Str. 6												1	
PC other	3	5	5	2	7	20	3	3		1		3	
ER Drainage													
T-4	4	1	2	2	7	2		2					
T-6	2					7		1					
T-9A	1		3		4	6		1					
T-9B		2	2		1								
T-11		4	5	1	13	10	2	2	2			1	
T-15	1	3	1		2	5	1	2					
T-17													
T-20		3	5	3	16	2						1	
T-21		4		2	7	9						1	1
T-23	2	10	9	6	20	23		1				1	
T-24	1	11	5	3	25	16	1	1				1	
T-25		12	3	2	13	28	1		3				
T-27		6	4	2	28	2	2	1				1	1
T-29		1				2							
T-37		1	3	5	6	3	1		1				
S-39	1	3	4	10	17	28		1	3			17	
N-2		2	3	1	3	5	2		1	1			
N-5			1		2	2							
N-7			1		1	1							
CT-1	2					1							
CT-2						1							
Tetla	4					5		2					
Cave 1						1							
Cave 2													
Cave 3							1						
Cave 4									1		1	1	
Cave 8													
Other caves													
Surface													
Telixtac		4	4	15	4	6	1	2	1			1	
Huazulco													
Totals	27	89	85	67	192	207	21	26	12	2	1	29	3

in both Barranca and Cantera phase deposits. They are fairly generally distributed around the site, with only three major units actually lacking sphere sherds. Interestingly, the areas lacking spheres are the major platform structures: the two Cantera phase stone-faced platform mounds with stelae (T-6 Str. 1 and T-15 Str. 5), and the 70 m long earthen platform mound on the Plaza Central (PC Str. 4).

Current data do not elucidate the function of these artifacts. While the complete spheres could have functioned as clay rattles, no pebbles or clay balls occur within the four complete examples, and sherds from complete spheres show no unusual interior wear (if such wear would indeed be visible in a rattle). Further, I am assuming that all three types had a similar function, and a rattle function does not explain three-quarter spheres and hemispheres.

Only 6 of the 218 classifiable sphere sherds from Chalcatzingo (less than 3 percent) showed incised or engraved rim designs (unclassifiable sherds do not have rim areas and thus are not included in this tally). On the other hand, 3 of the 23 identifiable sherds (13 percent, including one complete hemisphere) from the smaller site of Telixtac had decorated rims. Interestingly, too, 65 percent of the Telixtac sample, as opposed to only 24 percent of the Chalcatzingo sample, are hemispheres. At both sites, complete and three-quarter spheres occur in almost equal proportions (see Table 16.4).

I have found only one similar artifact in the literature on the Formative period. Vaillant (1930: Pl. 40, bottom row, no. 4) illustrates a "hollow hemisphere, light brown pottery, perforated for suspension" from Late period deposits at Zacatenco.

Ground Sherd Discs ***(248; Fig. 16.17)*** These artifacts occur as part of the cultural assemblage at many Mesoamerican sites and have been identified in the

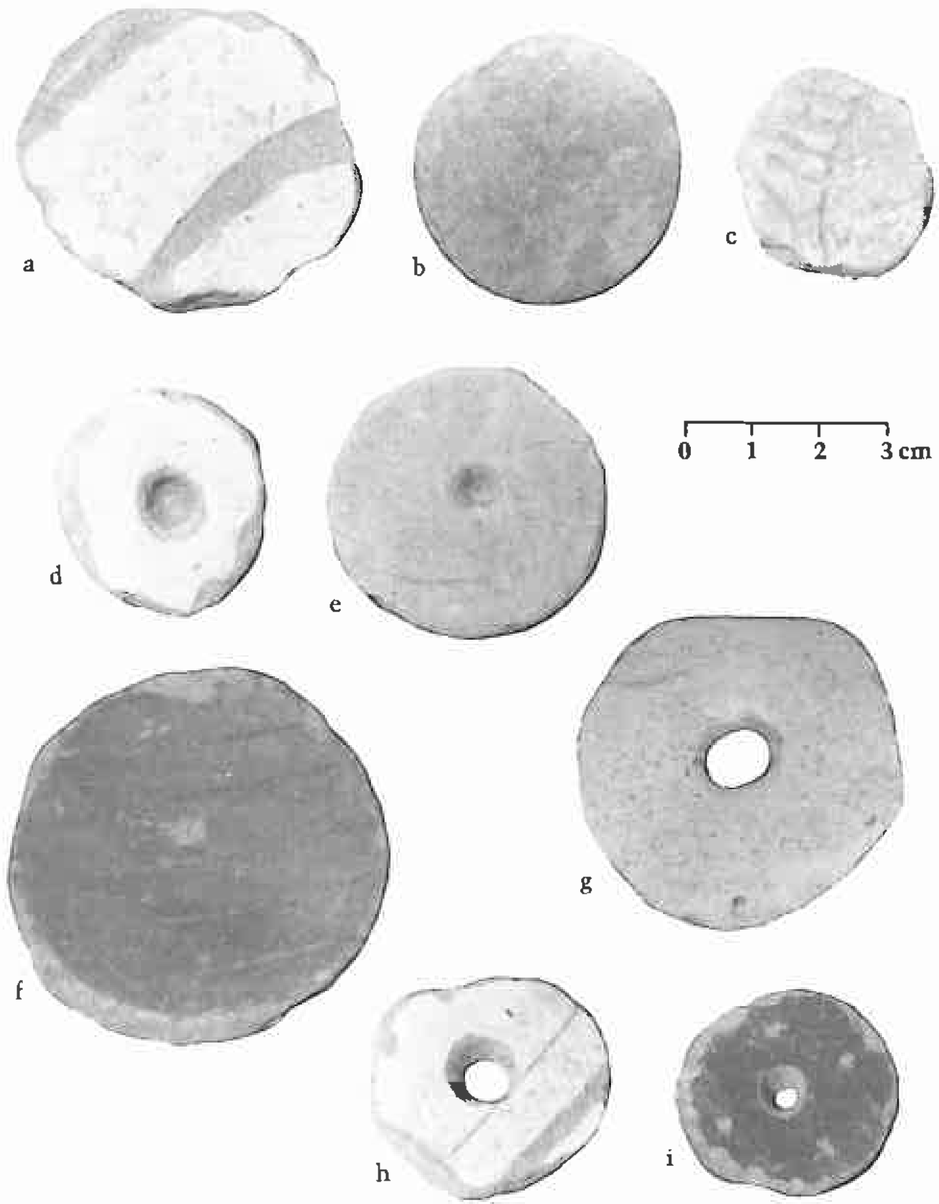


Figure 16.17. Ground sherd discs: *a–c*, plain; *d–f*, partially perforated; *g–i*, perforated.

literature as everything from gaming pieces to spindle whorls. Lee (1969: 99–103) provides a good discussion and bibliographic coverage of sherd discs, and there is no need to repeat his comments here. The discs are reworked fragments of broken pots, and it would be, as Lee (1969:97) notes, a valueless exercise to describe the pottery types from which these were manufactured.

In analyzing these artifacts a few simple tests were made to look for patterning in various attributes ("type," color, surface wear, etc.). No statistically significant pattern was detected. About 50 percent of the discs show surface erosion (as compared to abrasion), suggesting that any sherd on the site could be chosen at random to be made into a disc (or into other geometric forms described below). Many discs found in Barranca and Cantera phase contexts have been manufactured from Amate phase sherds, again suggesting that older surface sherds were collected and reworked. Most of the discs in our sample are made from plainwares, a fact to be expected if the original selection was random. Some sherd discs were made from decorated pot fragments, but in only two instances in our sample does the old design element appear to have been important to the disc's function. In these two instances the design was centered on the disc.

Smaller discs are generally better made than larger examples. The edges on small discs are generally ground smooth, while larger discs have most often been chipped rather than ground into a circular form (Lee 1969:99). Chiapa de Corzo discs include various examples with notched sides (Lee 1969:97–98, Fig. 52*q–u*). While those of the Chalcatzingo sample are not directly similar, nearly one-third of our whole discs (partial discs cannot be included in this observation) have one chipped area on the edge. Such "chip-notching" occurs not only on Middle Formative discs, but also on three Middle Postclassic discs from the Tetla area of the site. It is, however, difficult to tell at this time whether the chip-notched edges are functional or simply the result of natural actions over time.

Sherd discs vary in size from less than 2 cm to slightly over 8 cm in diameter. Three types of discs occur in our sample: plain, partially perforated, and perforated. Those with partial or complete perforations usually range in size from 2 to 5 cm. Of the six sherds with diameters of slightly over 8 cm, three were from Amate phase levels.

Plain Discs (201; Fig. 16.17*a–c*): These artifacts are circular to slightly oval in shape. Smaller specimens often have the edges well ground. The quality of edge grinding generally decreases as disc diameter increases.

Partially Perforated Discs (21; Fig. 16.17*d–f*): These are like plain discs except that on one side (normally the sherd's original interior side) there is a drilled hole at the disc's center. Holes vary from quite small and shallow (ca. 3 mm depth) to wide holes (ca. 10 mm diameter) which nearly penetrate the thickness of the disc. Most drilled perforations are conical, but several are more spherical and may have been reamed out.

Perforated Discs (26; Fig. 16.17*g–i*): These are identical to the partially perforated discs except that all have the center hole drilled completely through the disc. In the majority of our sample a conical hole was drilled through to the other side, and the disc was then turned over and the hole enlarged. The result is an asymmetrical hourglass-shaped perforation. There are a few instances when the perforation was drilled from both sides, with the intention for the holes to meet. In some of these latter cases the holes did not meet exactly, resulting in a lopsided perforation.

Perforations vary in diameter (at their narrowest point) from 3 to 10 mm. Perforation diameter does not relate to disc diameter. Some of the largest discs have both the largest and smallest holes.

Comments: Many investigators have speculated upon the use of ground sherd discs, but their actual function remains unclear. Although discs may have served a variety of functions, no single hypothesized use accounts for the three different types.

It is possible that some of the perforated discs functioned as spindle whorls, although we have no firm data on textiles or cotton from the Formative period in Morelos. Perforated discs comprise only a little over 10 percent of the total sample, and it should be noted that many perforated discs have holes too small to accommodate spindles and that many of the perforated holes are off-center. Partially perforated discs could also have served a function related to the spinning of fiber, for they could have been held in the palm of the hand to act as a bearing or resting place for the base of the spindle. Gourd pieces often serve that function today in areas of Mesoamerica where cotton is still spun on hand spindles. Such a "bearing" function might explain the "reamed" appearance of some of the partially perforated holes. Although I believe that evidence for a spinning function is very tenuous for perforated and partially perforated sherds, they both occur in approximately the same low percentages on the site. They co-occur in the same excavation units about 50 percent of the time, which statistically suggests that the co-occurrence could be random.

Unperforated ground discs have often been called "gaming pieces," the implication being that they were used in a prehispanic game such as *patolli*. Apparently stacks of ceramic *patolli* markers were found at Teotihuacan, and according to Robert Santley (personal communication), they exhibit the same size range as the Late Formative sherd discs which he recovered at Loma Torremote. If sherd discs did function as gaming pieces at Chalcatzingo, and if differentiation between discs was an important aspect of the game, then disc size, surface color, or even chip-notched edges may have served as differentiating attributes. However, our analysis of eighty-eight discs from our sample indicates that diameter, surface color, and edge chipping are not correlated with each other but appear to be random in occurrence.

Santley (personal communication) has also suggested that some discs may have served as scrapers or polishers for pottery manufacturing. Our studies show that edge grinding is uniform around the circumference of the disc, suggesting that our specimens were not used for scraping. Similarly, they lack surface wear which is indicative of use as polishers.

Finally there is the remote possibility that discs were used for record-keeping and differentiated into three types for use perhaps as tally or counting markers, each disc having a specific numerical value. This might account for the stacks of discs ("*patolli* markers") found at Teotihuacan. If Chalcatzingo's houses served storage functions (Chapter 6), the use of discs as record-keeping devices might explain their abundance in some house contexts. However, there currently is no good evidence for this hypothesis.

One Middle Postclassic disc from the Tetla area of the site has two small biconical suspension holes on the edges of the disc, indicating that it was worn or more probably sewn onto a garment. The design was also carefully incorporated into the sherd. This is the only example with small suspension holes near the circumference of the disc.

The distribution of sherd discs at Chalcatzingo appears to correlate strongly to house areas (see Table 16.4). Within the T-23 Cantera phase house remains, plain sherd discs and hollow clay spheres (see above) cluster in one area of the house. Of the twenty-five discs recovered from the T-25 altar area, twenty-four are plain.

Our present data do not provide information on finer temporal distinctions among the types. The discs begin with the Early Formative Amate phase and continue through the Cantera phase. Few were recovered from clear Late Formative or Classic contexts, and thus information on discs from those periods is tenuous. Seven Middle Postclassic discs from Tetla, ground from Middle Postclassic sherds, indicate their continued importance in that period.

Finer chronological distinctions may be possible in the future based on an observation made by Sheets (1978: Fig. 20) on discs from Chalchuapa, El Salvador. There, perforated discs begin in the Early Formative and continue into the Postclassic. Partially perforated discs also begin during the Early Formative but end sometime in the Late Formative. Plain discs do not begin until well into the Middle Formative but continue into the Postclassic. At Chalcatzingo, plain discs appear as early as the other two types.

Lee (1969: 97–103) and Sheets (1978: 66–68) have provided detailed distribution studies of ground sherd discs in Mesoamerica. Here I will only make some comparisons to the Formative Valley of Mexico and the Gulf Coast. Philip Drucker illustrates and discusses sherd discs from La Venta (1952: 143–144, Pl. 42, right, *a–d, g, j, k*). Notched examples (unlike the chip-notching from Chalcatzingo) he classifies as "weights" (ibid.: 144, Pl. 45). Tres Zapotes sherd discs are also shown by Drucker (1943a: 130–131, Pl. 30*l–m*; 32*t–u*). At San Lorenzo discs begin in the Ojochi phase and continue into the Villa Alta phase (Coe and Diehl 1980: 283). Central Mexican discs are found at El Arbolillo (Vaillant 1935: 237), where plain discs appear less frequent in the earliest deposits; Zacatenco (Vaillant 1930: 155, Pl. 38, middle row, nos. 3–7; bottom row, nos. 1–5); and Ticoman (Vaillant 1931: 396, Pl. 81, fourth row, nos. 1–2, 4–6; bottom row, nos. 1–3, 8–9).

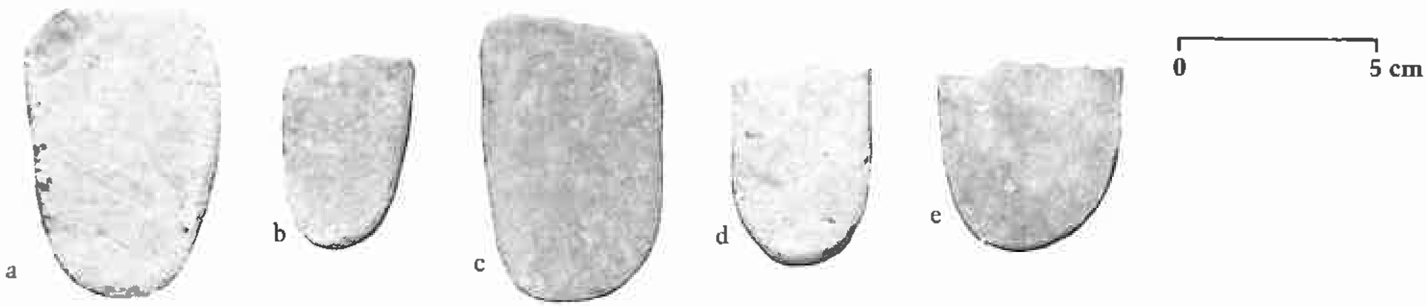


Figure 16.18. Oval ground sherds.

Oval Ground Sherds ***(29; Fig. 16.18)***
These artifacts are generally rectangular sherd pieces with rounded ends. They range from 2.8 to 5 cm in width and up to 7 cm long. Most of our specimens are broken, and thus actual length is difficult to establish. They occur from Early Barranca through the Late Cantera subphase.

Lee (1969:97) suggests that ground sherds of this shape functioned as scrapers in pottery manufacturing. This function was independently suggested to us by the distribution of these sherds at Chalcatzingo (see Table 16.4). Over 60 percent of the Chalcatzingo examples (seventeen sherds) come from one small site area, S-39. This area is enigmatic, with a large lime deposit and other unusual artifacts, such as ceramic bars. Although no kilns were located, S-39 may have been a ceramic workshop. However, even if these sherds functioned as ceramic manufacturing tools, their presence in Cave 4 and other site areas in minor numbers suggests that they could have had other functions as well.

Lee's Chiapa de Corzo examples (1969: Fig. 52*a–e*) are similar to those from Chalcatzingo. The one sherd illustrated from Chalchuapa and noted by Sheets as similar to the Chiapa de Corzo sample (Sheets 1978:66–67, Fig. 10*c*4) appears in the photograph to be closer to our rectilinear category, but his Figure 10*c*3, an "unperforated potsherd disc," looks similar to our sherd ovals. Two Ocós phase sherds from La Victoria (Coe 1961: Fig. 51*a*, *d*) also appear similar.

Ground Sherd Rectilinear Shapes ***(15; Fig. 16.19)***
Other ground sherds from our sample occur as rectangles (twelve), trapezoids (two), and one triangle. In most cases the sides of these are slightly curved rather than absolutely straight. The largest rectangular sherd is almost 9 × 8 cm, and the smallest 5 × 3.5 cm. All other examples regardless of shape fall within that range.

Ground rectilinear sherds are not commonly mentioned in the literature but do appear to occur in minor numbers at sites over a large area. Lee illustrates one from Chiapa de Corzo (1969: Fig. 52, no. 1), and five from Chalchuapa are discussed by Sheets (1978:66–67, Fig. 10*c*4). Two Conchas phase rectangles from La Victoria are illustrated by Coe (1961: Fig. 59*h*), and two trapezoids from the Jocotal phase at Salinas La Blanca are shown by Coe and Flannery (1967: Pl. 21*m*, *o*, *n*?). A notched rectangular sherd, possibly a net weight, is illustrated from San Lorenzo (Coe and Diehl 1980: Fig. 398*h*). Vaillant illustrates a rectangle and trapezoid from Ticoman (1931:396, Pl. 81, bottom row, nos. 4–5) and an unusual example from Gualupita (Vaillant and Vaillant 1934:100, Fig. 30, no. 9).

Most of the Chalcatzingo specimens occur in Barranca and Cantera phase contexts.

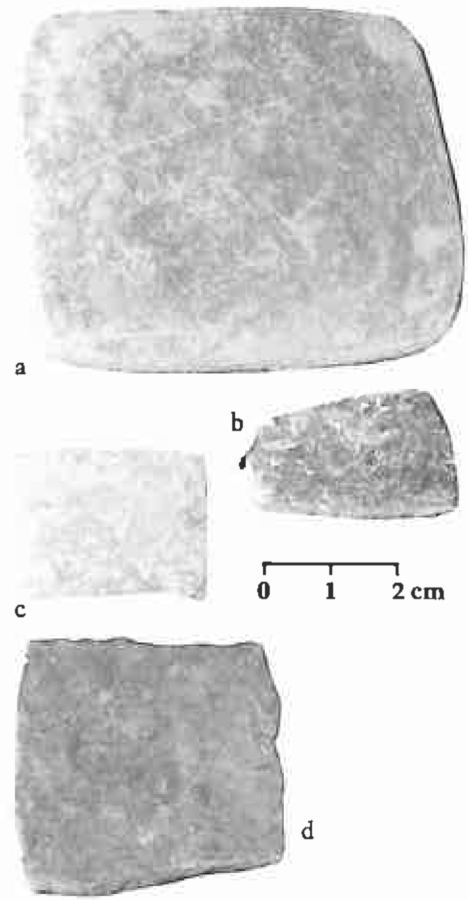


Figure 16.19. Rectangular ground sherds.

Cut and Shaped Sherds ***(3; Fig. 16.20)***
Three sherds were unusually cut and shaped, and they are described individually as follows:

a. This is a sherd shaped and ground to a rounded, awl-like point (Fig. 16.20*a*). The point is smoothed and evenly rounded, suggesting it was used in a rotary motion. The broken length is 4.3 cm, and the width is 2 cm. This specimen dates to the Cantera phase.

b. Trapezoidal shaped, this sherd has notches on the sides near the small end (Fig. 16.20*b*). No wear marks were present aside from those of shaping this

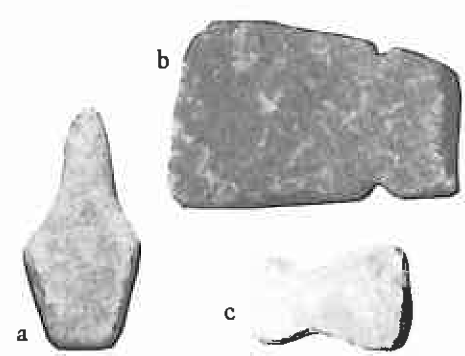


Figure 16.20. Cut and shaped sherds. (Scale varies; see text for dimensions.)

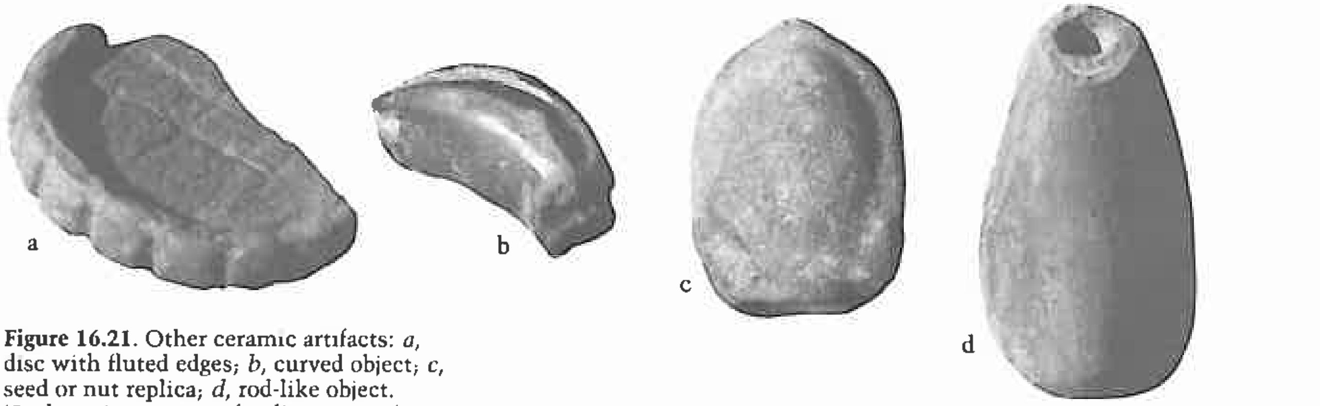


Figure 16.21. Other ceramic artifacts: *a*, disc with fluted edges; *b*, curved object; *c*, seed or nut replica; *d*, rod-like object. (Scale varies; see text for dimensions.)

object. Its length is 4.5 cm; maximum width is 3 cm. It has a plow zone context but was in an area of purely Cantera phase deposits.

c. This is a small bottle-shaped sherd (Fig. 16.20*c*). It is 2.8 cm long and 1.7 cm maximum width. Its context suggests a Late Cantera subphase date.

Other Ceramic Artifacts *(6; Fig. 16.21)*

a. Ceramic disc with raised fluted edges (Fig. 16.21*a*). The diameter is 3.7 cm and thickness at the edge is 5.5 mm. It probably dates from the Cantera phase.

b. A fragment of a black, curved object, oval in cross section (Fig. 16.21*b*). It has one suspension hole. The broken length is 2.7 cm, the maximum width is 1.2 cm, and the thickness is 10.5 mm. The outer edge has a 4 mm deep, V-shaped groove in which hematite stains occur. It dates to the Cantera phase.

c. A seed or nut replica (Fig. 16.21*c*). This unusually shaped object may replicate a fruit, seed, or nut. Its surface is smoothed but not polished. The color is brown. Its length is 6 cm, the width 4.5 cm, and it is 2.8 cm in maximum thickness. The bottom is slightly concave. It dates to the Late Barranca subphase.

d. A rod-like object (Fig. 16.21*d*), 6.5 cm long and 3.6 cm in diameter at the base, tapering upward to 1.6 cm. The small end has a hole in the center which is 8 mm in diameter and about 7 mm deep. It was found in Cave 4.

e. A circular clay ball, 45 mm in diameter (not illustrated). The ball has a cylindrical hole 15 mm in diameter and ca. 25 mm deep on one side. It may be significant that this object is unfired. It dates to the Cantera phase.

f. A clay pipe (Fig. 24.19) 34 cm long with an outside diameter of 10 cm. Clay pipes have been found at Tula (Healan 1974:22; Richard A. Diehl, personal communication) and at Tehuacan (MacNeish, Peterson, and Flannery 1970: Fig. 109). This pipe was found adjacent to a looter's pit at Tetla. It is apparently Middle Postclassic in date, as are the drain pipes at Tula and the one at Tehuacan.

MISCELLANEOUS ARTIFACTS

Iron Ore Artifacts

The thirteen iron ore mirrors and artifacts are almost all fragmentary. Seven of them were subjected to source analysis tests, the results of which are presented in Chapter 23. Although the total sample is small, the artifacts fall into tentative categories based primarily on shape: concave mirrors, mosaic segments, rectangle and disc mirrors, and miscellaneous. This last category is composed mainly of irregularly shaped fragments with one polished side, possibly from broken mirrors. All the mirrors date to the Cantera phase unless noted otherwise in the descriptions below.

Concave Mirror *(1)*

Burial 40, presumed to be one of the highest-ranking burials excavated (Chapter 8), was found with a concave mirror lying on the mandible (Fig. 8.4*f*). Two conical suspension holes in the mirror and its position on the skeleton suggest it had been worn as a pendant at the time of interment and had fallen onto the jaw area when the person was placed in the grave.

The mirror (M-1; Fig. 16.22*a*) was manufactured from high-purity magnetite. It is slightly trapezoidal in form, with tapered side and basal edges. The longest side (top) is 4.5 cm, the maximum width 3.3 cm. The thickness varies from 3.5 to 5 mm. Only one side of the mirror is polished. The concavity ground into the polished face is elliptical, 2.1 cm long and 1.6 cm wide, with a depth of about 1 mm. The axis of the ellipse is at an angle rather than perpendicular to any of the mirror's sides, a common trait in such mirrors (Carlson 1981).

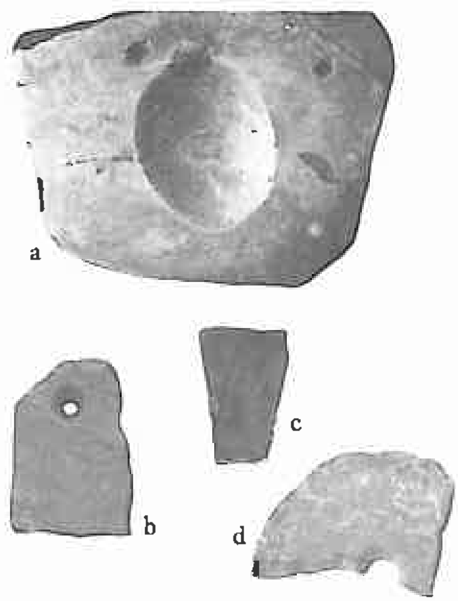


Figure 16.22. Iron ore mirrors: *a*, concave mirror (M-1) found with Burial 40; *b*, pendant (M-4); *c*, mosaic wedge (M-6); *d*, perforated disc (M-10). (Scale varies; see text for dimensions.)

Mosaic Segment *(1)*

A second polished mirror piece was found near the eye sockets of the skull of Burial 40. The mirror (M-2) is wedge-shaped and while nearly complete, the slight curvature of the top and bottom indicate it may have been part of a circular mosaic disc or ring. If this surmise is correct, and assuming the other pieces of the mosaic were of the same approximate form and size, the disc or ring would have been composed of ten segments, with an estimated outside diameter of 4.7 cm and inside diameter of 2.5 cm. Obviously the entire mosaic was not included in the burial. An alternative suggestion by the excavator (William Fash, personal communication) is that this mirror segment was part of a perishable object which included over ninety tiny turquoise mosaic squares (see Chapters 8, 17, Appendix F) also found around the skull.

The mirror segment is of ilmenite, with a thickness of 1.7–2.0 mm, sides 11.5 mm in length, and a taper from 12 mm at the top to 6.5 mm at the base.

Rectangles *(3)*

Three small, thin, and essentially rectangular mirrors comprise this category. Two are whole and one is a fragment. All are characterized by having one polished side and beveled edges.

a. Measuring 19 × 12 mm, with a thickness of 1.2–1.5 mm, this rectangle (M-4; Fig. 16.22*b*) has a conical suspension hole drilled from the back (unpolished side). The polished face is also the beveled face. The provenience is PC Structure 1d. The ore type is unidentified.

b. This trapezoidal specimen (M-6; Fig. 16.22*c*) lacks a suspension hole, and, unlike specimen *a*, has the polished face on the unbeveled side. The piece is 10 mm wide at one end and 5.5 mm at the other. The sides are 14 mm long, and the thickness is 1.8–2.0 mm. The material from which this was manufactured has not been identified. The piece was found in the plow zone level of PC Structure 6 excavations.

c. This specimen is a broken fragment (M-13) of unidentified iron ore. It is ca. 15 mm in length, with the edge beveled to the unpolished side. The broken width is ca. 9 mm, and these edges bevel to the polished face. The provenience is Cave 1.

Discs *(3)*

All one-piece circular mirrors have been placed within the category of discs. Only one unbroken disc occurs in our sample.

a. This specimen, associated with Barranca phase Burial 150, is a fragment of a perforated iron ore disc (M-10; Fig. 16.22*d*). The original diameter was ca. 26 mm, and the thickness ca. 4 mm. The conical perforation in the center of the disc, drilled from one side only, left a hole of ca. 3.5 mm diameter. The disc, manufactured from an unidentified iron ore, has a slightly rough surface and roughly rounded edges. It is unpolished.

b. Both sides of this broken magnetite disc (M-8) are polished. The specimen's diameter is 18 mm, and it is 2 mm thick. The edges are rounded. Found during the excavation of T-27 Structure 1, this artifact probably dates to the Cantera phase.

c. The ore from which this complete 13 mm disc (M-11) was manufactured has not been identified. The disc's thickness is ca. 2 mm. It is polished only on one side. It was found in the mixed uppermost 12 cm of Cave 1, a cave with both Middle Postclassic and Cantera phase deposits. Dating of this artifact is therefore uncertain.

Miscellaneous *(5)*

Three small irregular iron ore fragments, each with one polished surface, one irregular fragment with two polished surfaces, and a wafer-thin fragment with a rounded corner and one polished surface make up the specimens of this catch-all category. The irregular fragments include both hematite and magnetite specimens, and come from PC Structure 2 (M-5), PC Structure 6 (M-3), the surface of S-39 (M-9), and near Late Formative Burial 123 on T-27 (M-7). The wafer-thin specimen (M-12) comes from Cave 1, and its age is uncertain.

Shell Artifacts

Thirteen worked and six unworked shell fragments were recovered by our excavations. Importantly, twelve of these come from excavations of Caves 1 and 8. This may reflect better preservation within the caves, but may as likely be due to specific manufacturing or use loci. Only the shell earspool inset (artifact *a*) comes from a context which is currently clearly datable to the Middle Formative (Cantera phase). The shell fragments from the caves are from stratigraphic contexts which are still under analysis, and while probably Middle Postclassic, their exact dating is uncertain at this moment. Only the thirteen worked fragments are discussed here.

a. This piece of worked shell is a square, 1.5 cm on a side, with cruciform extensions and a diamond-shaped cutout in the center (Fig. 16.23*a*). It apparently functioned as an inset to one of the earspools associated with Burial 40, one of the highest-ranked Cantera phase burials uncovered at Chalcatzingo (Chapter 8). No matching inset was found with the burial's second earspool.

b. Excavations on the Barranca phase water-control construction at the northeast corner of T-15 (Str. 1) recovered one piece of a partially worked bivalve (genus unidentified) ca. 3 cm long and 1.8 cm wide. Its worked areas suggest it may be a section of a simple shell pendant (Fig. 16.23*b*). The shell's hinge has been drilled, as if for suspension. Because the drilling occurs on the interior of the hinge area, it is without question human-made and not the work of a predator gastropod. Further working on the shell includes a cut groove at the base of the hinge and the removal by cutting of an area of the right side of the valve. The context of this piece is mixed Barranca and Amate phase fill dirt.

c. This piece (Fig. 16.23*c*), 10 mm in length and 6 mm in width, may also be a pendant fragment. It is notched along one side, while the opposite side (broken) has the partial remains of a drilled hole. The provenience of this artifact is Cave 1.

d. It is unfortunate that this piece is fragmentary because it is the only one of our sample with an engraved design (Fig. 16.23*d*). The fragment is ca. 14 × 13 mm in size and has two drilled holes. One hole is partially outlined by an engraved arc, and is positioned in such a way as to suggest that it was a suspension hole. The engraved design cannot be determined. This artifact is from Cave 1.

e. This long triangular-like pendant, 25 × 11 mm, has the suspension hole drilled somewhat off center (Fig. 16.23*e*). It was found in the Cave 8 excavations.

f. Also found in Cave 8, this small rectangular artifact, 12 × 14 mm, has tiny "suspension" holes at two corners, and a crude central hole which may have broken the piece during drilling (Fig. 16.23*f*).

g. This worked Cave 1 shell is a small gastropod, 11 mm in length. It has been ground flat on each side to expose the shell's interior column.

h. This 10 × 6 mm fragment has one drilled hole. It was recovered during Cave 8 excavations.

i. These are five triangular shell pieces recovered from cremation Burial 161 at Tetla. Each triangular section is about 3 cm in length and has a transverse suspension hole drilled at the apex, indicating that these are neckline pieces.

Bone Artifacts

A variety of worked bone fragments were recovered, the majority of them awls. Other distinguishable categories are needles, bird bone tubes, and cut sections. Their proveniences are given in Table 16.5. Several notched bone fragments (listed as one item in Table 16.5; Fig. 16.24*a*) are reminiscent of musical instruments, although this function is hypothetical. Among the cut or "sawed" bone pieces of unknown function is one from T-20, which is a long bone with the end cut and the edges rounded (Fig. 16.24*b*). An awl fragment from T-27 exhibits several long straight cuts, almost as if they were thread cuts.

Sinew

During the excavation of Burial 40, a piece of sinew thread was recovered from beneath the skull. This thread, over 40 cm in length, is knotted near the center with a double loop knot. The jadeite beads found around the skull had probably been strung on this sinew thread. Whether this strand of beads was intentionally broken at the time of the interment or broke later is a matter for speculation. The orderly arrangement of most of the beads suggests the latter event.

Obsidian Bloodletters

Chapters 18 and 19 discuss Chalcatzingo's lithics in general terms rather than separating out certain specific artifacts. One small group of artifacts warrants special mention, thin, finely worked obsidian objects which most probably served for ritual drawing of blood. The majority of the objects are needle-like and retouched around their entire circumference, giving them a round or oval cross-section (Fig. 16.25*a–e*). Several specimens however are manufactured from blades and include the needle-like section, which then expands to a section of blade. On at least two examples the blade edge has been intentionally serrated (e.g., Fig. 16.25*h*); in others it has been reshaped by retouching (Fig. 16.25*f–g*). If these latter bloodletters were pulled entirely through the tongue or earlobe, they would have lacerated the area, an act similar to types of Maya bloodletting in which a cord with attached spines was pulled through the tongue. Obsidian bloodletters are found across the site and do not appear to have

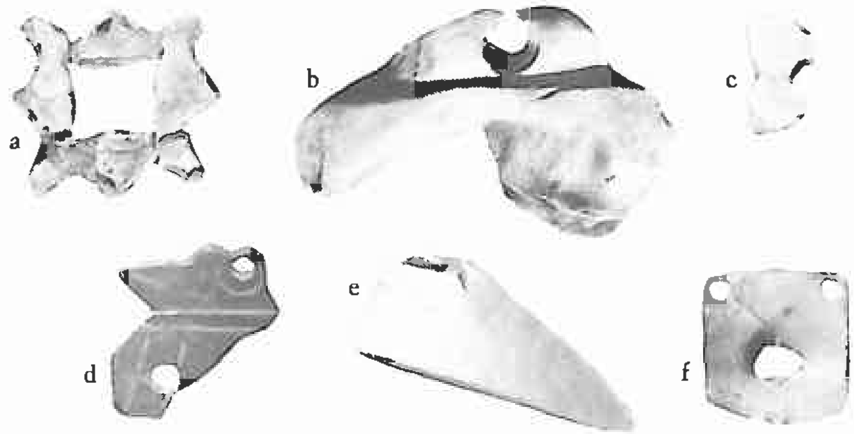


Figure 16.23. Worked shell artifacts. (Scale varies; see text for dimensions.)

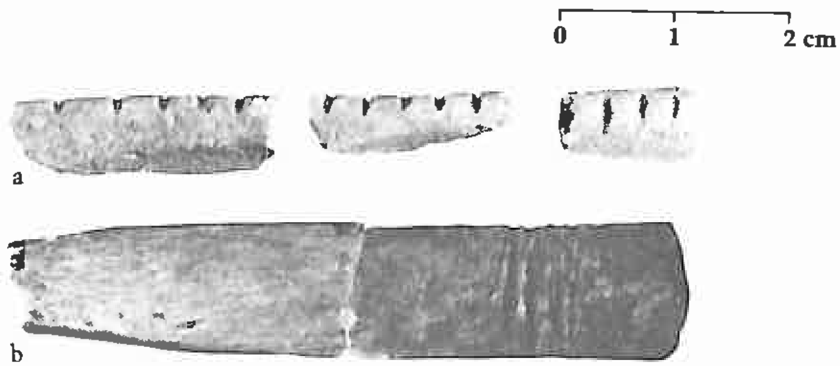


Figure 16.24. Notched (*a*) and cut (*b*) bone artifacts.

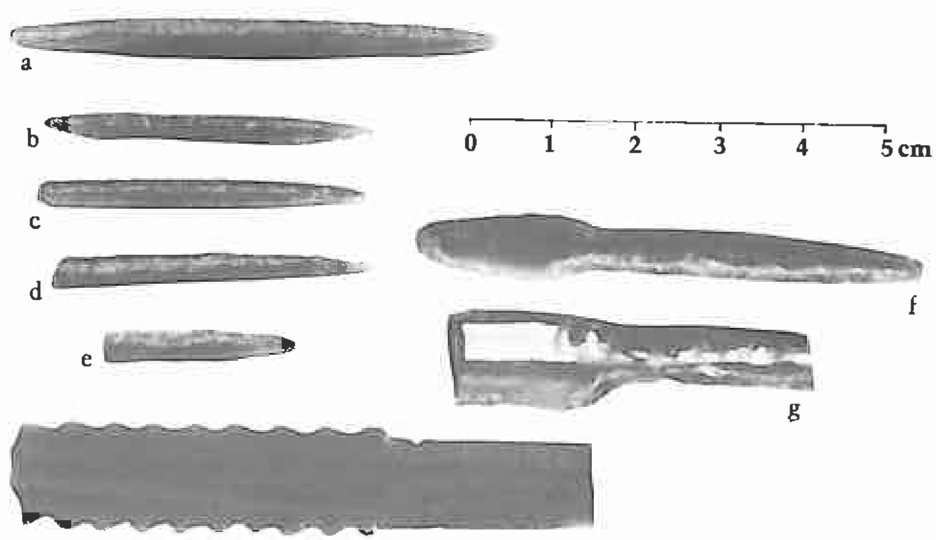


Figure 16.25. Obsidian bloodletters: *a–e*, needles; *f–h*, reworked blades (in *h* the blade area is serrated).

any special restricted distribution. The only other instance of the needle-serrated blade type bloodletter (Fig. 16.25*h*) of which I am aware is from San José Mogote, Oaxaca (Kent Flannery, personal communication).

ARTIFACTS FROM CAVE 2

Cave 2, on the eastern side of the Cerro Delgado (Fig. 12.37), had already been disturbed by looters at the time our project visited it in 1973. However, the looters' backdirt was screened, and a small remaining section of unlooted cave floor deposits was excavated and screened as well.

A large quantity of plant remains was recovered from both contexts as were a number of wooden artifacts, fiber, threads, etc. The plant macro-fossils are discussed in Chapter 3 and listed in Appendix A. The other major artifacts are described below. These are all presumed to date to the Middle Postclassic (through associated ceramics), although since the looters destroyed any significant stratigraphic data some might be more recent.

a. Wooden lath strip, 13.7 cm long, 2.7 cm wide, 0.5 cm thick, well smoothed and worked. This rectangular strip (Fig. 16.26*a*) and its counterpart (artifact *b*) have slightly beveled ends, and may be shuttles or other pieces of a back-strap loom.

b. Wooden lath strip, 11.8 cm long (broken), 2.7 cm wide, 0.3 cm thick, well smoothed and worked (Fig. 16.26*b*). This is presumed to be part of the loom described above.

c. Wooden tool tip, 4 cm long, 1.5 cm wide, and 1 cm thick. This piece (Fig. 16.26*e*) has a triangular shape and cross-section. The sides appear to have a light coating of some sort of pitch or resin, while the tip is polished.

d. Wooden tool, 19 cm long, 1.2 cm wide, with a triangular cross section (Fig. 16.26*c*). The rounded tip and edges are polished.

e. Wooden tool fragment, 18.5 cm long, 1.2 cm wide (Fig. 16.26*d*). This rectangular piece has a tapered, wedge-shaped tip. The tip and upper side are polished from wear.

f. Wooden lath piece, 16.5 cm long, 0.8 cm wide, 0.2 cm thick, with cut ends (not illustrated). This piece lacks the finishing of artifacts *a* and *b* above.

g. Wood chip, shaped, both ends burnt (Fig. 16.26*f*). Dimensions are 3.0 × 1.5 × 0.4 cm.

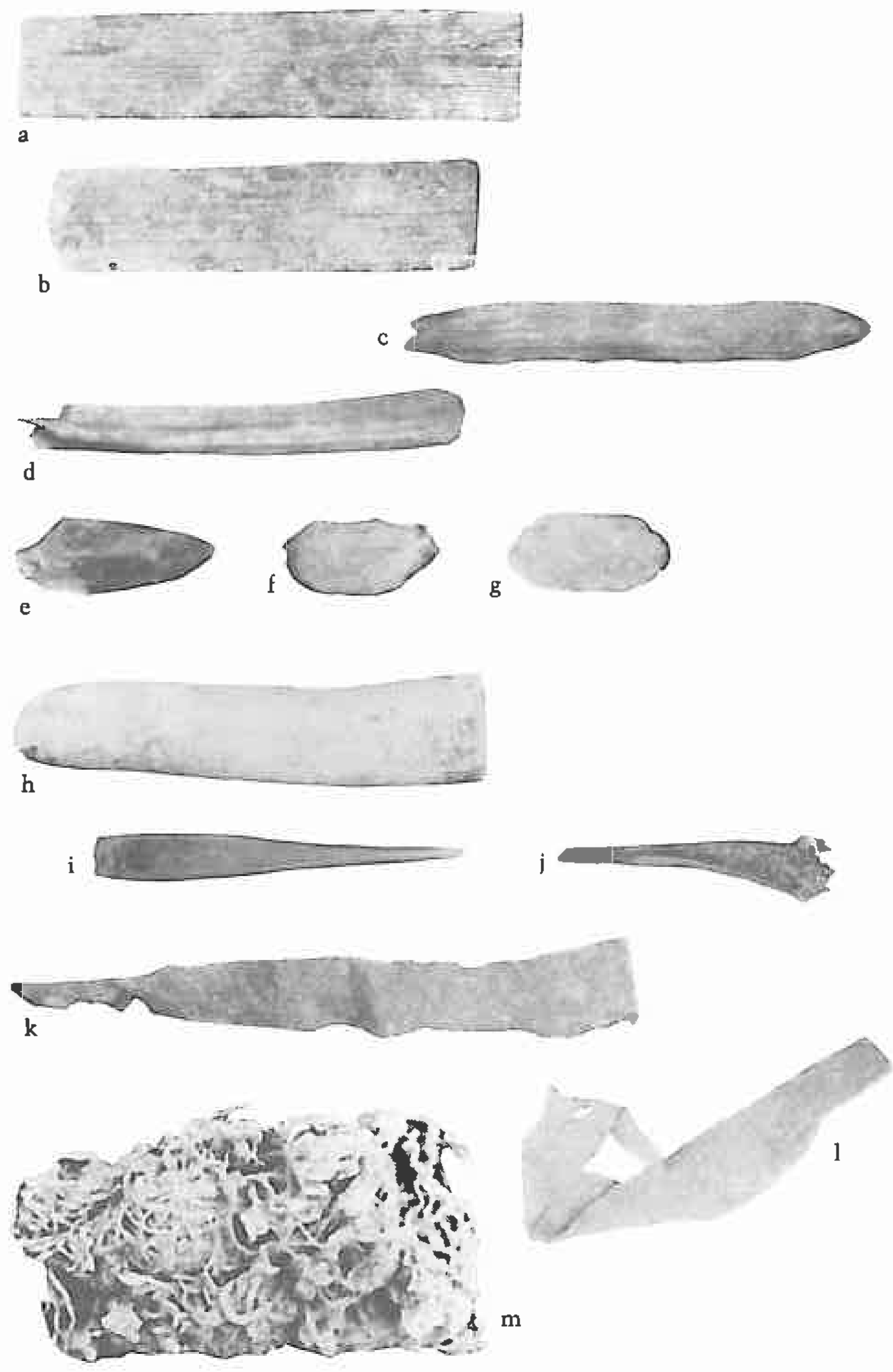


Figure 16.26. Artifacts recovered from Cave 2: *a–g*, wood; *h–i*, bone; *j*, maguey spine; *k–l*, leather; *m*, cotton. (Scale varies; see text for dimensions.)

h. Wood chip, shaped, burnt, 2.1 × 1.5 × 0.9 cm (not illustrated).

i. Wood chip, shaped, 3.3 × 1.5 × 0.3 cm (Fig. 16.26*g*).

j. Wooden spindle, 20 cm long, with a maximum diameter of 0.6 cm (Fig. 16.27*a*). This piece is tapered and worn at one end, suggesting that a clay spindle whorl had been wedged onto that section. The pointed tip is worn and rounded, also indicating that this piece was a spindle.

k. Polished bone section, 8.7 cm long, 2.0 cm wide (Fig. 16.26*h*). One end is rounded and the other is cut flat. The piece is well polished, and numerous cuts occur near the blunt end.

l. Bone awl, 17.2 cm long, with the tip highly polished (Fig. 16.26*i*).

m. Two leather strips, ca. 12 cm long, 1.5 cm wide, each with a short longitudinal slit near one end (Fig. 16.26*k–l*).

n. Wadded textile fragment, cotton, 5 × 4 cm. It has a double-warp, twined weave (Fig. 16.26*m*).

o. Twisted ixtli fiber cord and twisting stick (Fig. 16.27*b*), three twisted strands. This was apparently the end of a longer cord, with this section cut off after the cord was twisted and finished.

p. Two corn leaves, knotted (Fig. 16.27*c–d*).

q. Cotton thread wound onto a stick (not illustrated).

r. Ixtli fiber net fragments (?) (2) (Fig. 16.27*e*).

s. Maguey spine with attached but cut fibers (Fig. 16.26*j*).

t. Small hemispherical cut gourd section (broken), 7 cm in diameter (Fig. 16.27*f*). It was probably used as a small bowl.

In addition to the artifacts listed above, there were a number of pieces of twisted ixtli fiber cord and cotton thread. This assemblage, with few exceptions, is unquestionably part of a spinning–weaving–cord-manufacturing tool kit. Even the small gourd bowl may have been used to hold cotton (?) fiber as it was being spun.

The cotton recovered was studied by Juan DuBernard, a textile manufacturer with an extensive interest and knowledge of prehispanic textiles and fibers. The analysis indicated that this short-fibered cotton, similar to Egyptian cotton, was a "wild" cotton that had once been domesticated (DuBernard, personal communication). This identification suggests at least two possible explanations. If this is Middle Postclassic cotton, it may have been collected from

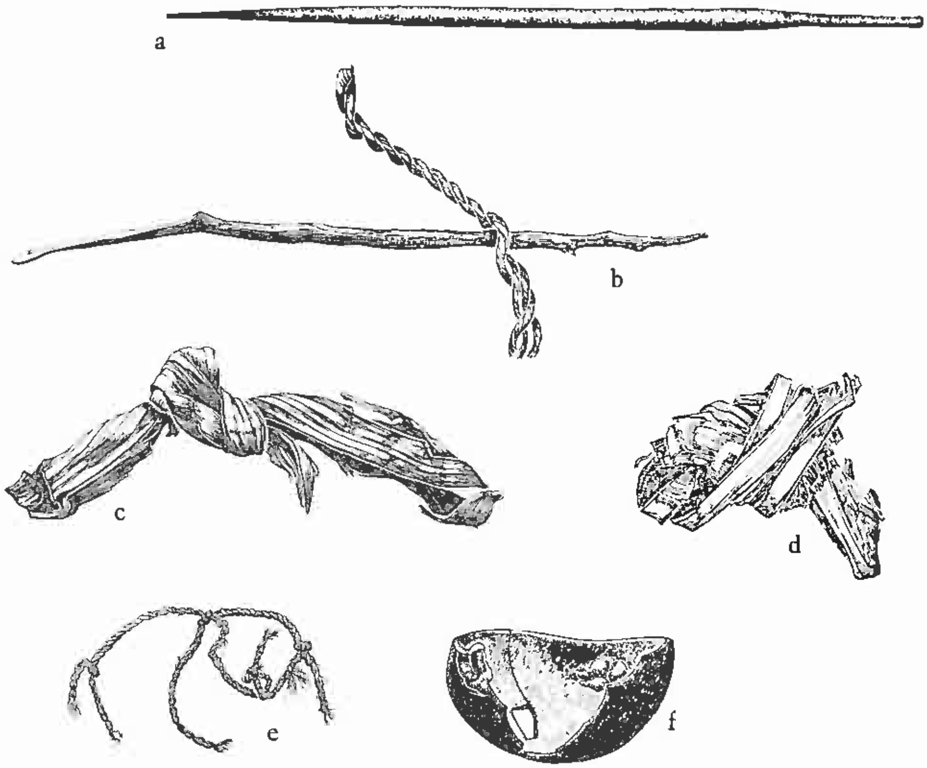


Figure 16.27. Artifacts recovered from Cave 2: *a*, spindle; *b*, twisted ixtli fiber and stick; *c–d*, knotted corn leaves; *e*, ixtli fiber net fragment; *f*, cut gourd. (Scale varies; see text for dimensions.)

Table 16.5. **Distribution of Worked Bone Artifacts**

Area	Cut Sections	Awls	Needles	Bird Bone Tubes	Other
PC Str. 1					Notched fragments
PC Str. 2	1				
PC Str. 6			1	1	Engraved fragment
PC other	1				
T-11					Bone "spindle"
T-15W	1				
T-20	1 (femur, end cut and rounded)				Notched human tooth
T-21	1		1		
T-23		1			
T-27 Level 1	2	1 (with cuts)			
T-25		2			Animal incisor pendant
T-37		1	1		Reworked femur head
N-2		1			
Tetla Exc. 1-A		1			
Tetla-11		7		1	
Cave 1		3	1	1	
Cave 2		1			
Cave 4		1			
Totals	7	19	4	3	6

relict "wild" plants in the area, remnants of domesticated cotton grown in the southern valley during the Classic period. Such an explanation would imply that access to domesticated cotton during the Middle Postclassic here was difficult. However, although the artifacts associated with the cotton in the disturbed deposit suggest that it is Middle Postclassic, it may instead be colonial and in fact an actual imported Egyptian cotton variety.

RESUMEN DEL CAPÍTULO 16

Además de los tepalcates y las figurillas, se recobraron muchos otros objetos de cerámica en Chalcatzingo. Estos han sido clasificados en tres categorías: de adorno personal, rituales, y utilitarios. Los objetos de adorno personal son cuentas de barro, orejeras, pendientes, y sellos. Las cuentas y los pendientes son bastante raros, en tanto que las orejeras sólidas o huecas son más comunes. Tanto los sellos huecos como sólidos, de rollo, así como los planos, aparecen en el muestrario.

Los artefactos de la categoría ritual consisten en pitos y ocarinas, flautas, máscaras, vasijas en miniatura, figurillas de animales, y barras de cerámica. El muestrario de pitos y ocarinas es grande y éstos ocurren en variedad de formas. Las "flautas" encontradas en Chalcatzingo bien pudieron haber sido parte de los pitos. Las vasijas en miniatura incluyen los tazones de boca ancha, ollas de cuello restringido, platos, y los incensarios de doble asa. Los fragmentos de "máscaras" con perforaciones para suspensión, se encontraban en los contextos de la fase Cantera, y del mismo modo que otros artefactos, que caen en la categoría ritual, no parecen ocurrir de modo restringido al sitio. Las barras de cerámica, por otra parte, se encontraron fundamentalmente en S-39, un área posible de manufactura de cerámica, y bien pudieron haber sido artefactos utilitarios asociados a la manufactura de vasijas, pero deben haber sido incluidos como objetos rituales dado que la mayoría aparecen con decoraciones y parecen no haber sufrido desgaste. Las figurillas zoomórficas ocurren con una gran variedad en su representación de animales, la cual incluye pájaros, reptiles, mamíferos, y peces. Algunas bien pueden ser partes desprendidas de los pitos zoomórficos.

Los artefactos utilitarios fácilmente identificables son las malacates y los moldes de cerámica. Además se incluyen en esta categoría los "plátanos" de cerámica porque presentan patrones de desgaste interesantes. Los plátanos aparecen solamente en los contextos de la fase Cantera, y es probable que sirvieran para pulir o refinar. Las malacates y los moldes presentan fechamientos del Clásico y Postclásico.

También hay artefactos de cerámica enigmáticos porque no caen en ninguna de las tres categorías dadas arriba. Éstos incluyen bolas sólidas, más de 400 esferas huecas, y más de 250 discos y óvalos de tepalcate molido, algunos de los cuales presentan perforación completa o parcial. No se ha podido determinar cuáles son las funciones de estos artefactos.

Además, hay artefactos entre los cuales se incluyen aquellos hechos de mineral de hierro, concha, hueso, y tendón. Se encontraron varios espejos de mineral de hierro y segmentos de mosaico, así como fragmentos de forma irregular. La mayoría se fecha en la fase Cantera. Los pocos artefactos de concha consiguen fundamentalmente fechamiento en el Postclásico Medio, y provienen de las excavaciones de las Cuevas 1 y 8. La mayoría de los artefactos de hueso son leznas, y ocurren en los contextos Formativo y Postclásico. Una pieza de tendón, el cordón para un collar para cuentas de jade, se recobró del Entierro 40 de la fase Cantera.

Finalmente, se encontraron bien conservados en la Cueva 2 un número de artefactos de madera, hueso, y fibra, debido a que es ésta una cueva seca ubicada en la parte oriente del Cerro Delgado. Estas herramientas y las fibras de agave y algodón son parte de un juego de herramientas para la manufactura del hilado y tejido de cordel.

17. Chalcatzingo Jade and Fine Stone Objects

CHARLOTTE W. THOMSON

Beginning in the thirteenth century BC, the Olmec of southern Veracruz and Tabasco created sculptural forms that were revolutionary in the New World. They not only carved multi-ton public monuments of basalt; they also made jade objects, the first well-documented occasion in the Americas of the working of this refractory stone. The art of the Olmec is profoundly serious, rational, "great" art, and it is in no way derivative.

To anyone who has seen and held Olmec jades, their strange artistic excellence is immediately apparent: in the grace, restraint, decorum of their lines, in their logarithmic curves and smooth, closed forms. Olmec jades are tactile as well as visual objects because of the extreme high polish with which they were finished. (The ancient Chinese had a term for this quality of jade: *pa wan*; literally, "hold and enjoy.")

The word *jade* derives from the Spanish *piedra de ijada* ("stone of the side"), for the stone was believed to have curative powers for liver ailments and side pains. Today the word *jade* is a general term and encompasses two varieties of the stone: nephrite and jadeite. This chapter uses *jade* and *jadeite* interchangeably.

While Olmec monumental art occurs in quantity outside of the Gulf Coast only at Chalcatzingo, Olmec style jade objects, being small, portable, and apparently of extremely high status value, occur over a wide area of Mesoamerica. Such jade objects range from Guerrero in the north to Yucatán and Costa Rica in the south. Unfortunately, most of these artifacts were not excavated by archaeologists, and therefore their contexts are undocumented. In all likelihood there were multiple centers of jade manufacture and, in some instances, attempts in other areas to copy the Olmec jade-working style.

The sites of La Venta, San Lorenzo, and Cerro de las Mesas are the only locations within the so-called Olmec heartland where Olmec jades have been excavated by archaeologists. Only one piece of jade was recovered at San Lorenzo, although a number of serpentine artifacts occur there (Coe 1970; Coe and Diehl 1980: 241–245). The one San Lorenzo jade is a blue jade axe, sawed in half lengthwise, reported by Matthew Stirling (1946) as found in the ravine between the southwest and south-central ridges at the site. At Cerro de las Mesas two Olmec jade figures of fine-quality stone and another twenty to fifty small objects of apparent Olmec manufacture were buried in a dedicatory cache of the Classic period (P. Drucker 1955).

At forty-one locations within Complex A at La Venta, buried offerings of jade and serpentine were encountered by the excavators. The C-14 dates for building activity in Complex A, 1000–600 BC, are the frame of reference for the burial dates of the jades (Berger, Graham, and Heizer 1967). The kinds of offerings made at La Venta include shaped blocks buried in quadrilateral pits intruded into court and platform construction, groups of celts, celts and mirrors, burials with jade regalia, and groups of stone figurines (P. Drucker 1952; P. Drucker, Heizer, and Squier 1959).

That La Venta artisans had ready access to supplies of stone is apparent in the sheer quantity brought into the site. In one feature in the southwest platform, 443 blocks of dressed serpentine were laid in twenty-eight courses with blue and olive clay. The excavators estimated that a thousand tons of stone were present in this one feature alone (P. Drucker, Heizer, and Squier 1959:95–97). The nearest known serpentine sources occur on the Pacific Coast side of the isthmus (Williams and Heizer 1965:12). Sources of the jade utilized are still unknown. Michael Coe (1968a:94) has suggested that sources might be present in Guerrero, and Grove (personal communication) has informed me of rumors that raw jade boulders have been found in Oaxaca along the upper course of the Río Papaloapan. The variety of jades at La Venta strongly suggests multiple sources for this stone.

The sculptured pieces from La Venta present a puzzling case: massive amounts of serpentine and jade were traded into the site or received as tribute, yet of twenty-eight stone figurines at the site, only eight were jade. This suggests that the trade of blocks and celts of precious stone was independent of their working into figurines and ornaments. The jade figurines at La Venta are in a number of different styles and, other than the consistent style of the group of sixteen in Offering 4, bear only a vague similarity to each other. This too suggests that stone working was independent of the stone trade, and that La Venta jades might have been made at a center or centers removed from La Venta.

THE FINDS AT CHALCATZINGO

In the excavations at Chalcatzingo, 365 artifacts and worked pieces of jade and greenstone were found. Of these, 145 objects, or 40 percent of the fine stone artifacts, were jadeite (Table 17.1). Approximately one-quarter were made of a distinctive jadeite dubbed "Chalcatzingo mottled." This material has a jadeitic matrix varying in color from nearly white to spruce green, and pebbly small inclusions of feldspar ranging in color from spinach green through spruce green to dark grey green (see Appendix F for a detailed discussion of color terms). Chalcatzingo mottled jadeite is the most characteristic stone in the inventory of fine stone materials. Fifty-five objects (15 percent), mostly earspools, were made of serpentine. Over half of the thin earspools found were made from fuchsite, a chromium or green mica. Chrysoprase and chalcedony were also prominent among the fine stone artifacts.

Jadeite and lesser-quality stones are treated together in this chapter because, as can be seen in Table 17.1, jadeite and other greenstones were interchangeable materials. The lapidary worker fashioned tools and ornaments alike out of fine greenstone, whether the stone was jade or not. Nearly all of the ornaments excavated at Chalcatzingo were green or greenish stone.

The lapidary and the wearer of the stone undoubtedly had notions and terms for quality, like the descriptive terms for different gems that come down to us from the sixteenth-century Aztecs. For the lapidary, jadeite would have been much more difficult to work than the other greenstones, requiring different abrasives, greater pressure for drilling, and incrementally longer time for the work process. The final result of this effort was a fine, high, even, durable polish that could not be achieved using the lesser stones.

Table 17.1. **Chalcatzingo Fine Stone Artifacts by Material**[a]

Type of Artifact	*Material*: *Jadeite*	*Chalcatzingo Mottled Jadeite*	*Serpentine*	*Fuchsite*	*Other or n.d.*[b]	*Total*
Stone figures			2		1	3
Pendants	3	1	5		18	27
Earspools						
Standard	4	8	3		9	24
Thin			29	44		73
Beads						
Spherical and subspherical	88	1	1		9	99
Bag-shaped		10			5	15
Tubular	4	6	1		4	15
Other	4	3	1		8	16
Tools						
Adzes/celts	1		3		9	13
Awl points	1		2		2	5
Other					7	7
Drill cores			4		2	6
Pulidores					5	5
Discs	2	2	1		4	9
Miscellaneous			1		6	7
Worked stone		7	2		32	41
Total	107	38	55	44	121	365

[a]Tetla artifacts are not included in this table.
[b]Includes other types of stone as well as unanalyzed and unidentified materials.

Table 17.2. **Distribution of Greenstone Artifacts at Chalcatzingo**[a]

Type of Artifact	*Area*: *PC1*	*PC2*	*PC4*	*PC Other*	*T-4*	*T-6*	*T-9A*	*T-9B*	*T-11*	*T-15*	*T-17*	*T-20*	*T-21*	*T-23*	*T-24*	*T-25 1*	*T-25 2*	*T-27 1*	*T-29*	*T-37*	*S-39*	*Other*	*Total*
Stone figures	1																				1	1	3
Pendants	3	4		4	1			1	3						3		1	1	1	1	2	2	27
Earspools																							
Standard	4	2	5	1	1	1			1				1	2			1		1	2		2	24
Thin	20	10		7	12	1	1	1	2	2		1		3	1	2	3		4		1	2	73
Beads																							
Spherical and subspherical	3	2	86							2		1					1					4	99
Bag-shaped						1						1			1							12	15
Tubular	1	1	3		1					1						5	1	1				1	15
Other	3	1		1	1	2				1		1				1	1	1				3	16
Tools																							
Adzes/celt			1	2					2							2				1		5	13
Awl points	2						1	1														1	5
Other	1	1		1								1										3	7
Drill cores		3		1		1	1																6
Pulidores	2		1											1								1	5
Discs	1		1	2						1					1					1		2	9
Miscellaneous		1		1					1	1				1	1			1					7
Worked stone	4	4	2	1	1	4	1			1				4	4	4	1				2	8	41
Total	45	29	99	21	17	10	4	3	9	9	0	5	1	11	11	14	9	4	6	5	6	47	365

[a]Tetla artifacts are not included.

Most greenstone artifacts came from nonburial contexts. Nevertheless, the finest-quality jade and the stone objects of greatest aesthetic interest were encountered, almost without exception, in graves of the Cantera phase. Fine emerald green jade beads with a cracked surface and red pigment adhering, a type of jade also excavated at La Venta, were found with burials. Blue-green tubular jade beads of "Costa Rican" jade were also found in graves, as were emerald green ear flares. Table 17.2 provides proveniences (by terrace) for all these artifacts (excluding those from Tetla).

The fine stone artifacts excavated at Chalcatzingo were classified into the following categories: stone figures, pendants, earspools, beads, tools, drill cores, *pulidores* (polishing stones), miscellaneous pieces (including discs), and worked stone.

***Stone Figures* (3 specimens)**

Olmec Standing Figure *(Fig. 17.1)*

An Olmec standing figure, made of grey serpentine, was encountered in a Cantera phase crypt (Burial 33) in PC Structure 1. This figure, 11 cm tall, is a frontal, immobile, jarringly direct composition, standing assertively with legs apart. The arms are foreshortened, held out in front of the body. The physiognomy of the face is typically Olmec, especially in the gaping, triangular, down-turned mouth. The figure is marked with arcs that indicate breasts, a scratched-away area indicating the navel, and saw cuts forming the pubic triangle. The figure's red pigment incrustations appear in some photographs of the piece to show a bearded face. Whether such a face was intended is conjectural; it is not a known feature of any other such Olmec figures.

Although clearly recognizable as Olmec in style, the figure diverges in several important respects from the canon for such figures established by the group of sixteen excavated in Offering 4 at La Venta (P. Drucker, Heizer, and Squier 1959:152, 158–162, Pls. 33–36). The head tilts backward on the body axis and is rectangular rather than pear-shaped. The shoulders are missing, as the line of the upper arm sweeps from the neck to the elbow. The holes drilled in the ears and nostrils are over large, and a raised, squared area is left around each eye.

The La Venta figurines, sixteen from Offering 4 and eleven from other parts of the site, themselves exhibit a wide range of stylistic variation. The group cached in Offering 4 is nearly homogeneous, while the others represent the works of different artisans, schools, or styles of Olmec stone carvings. Since the range of sculptural style is so wide at La Venta, which is the type site for Olmec jade and stone carvings, it is impossible to state with certainty the degree of artistic relationship of the Chalcatzingo figure to the ones from La Venta.

In a prior study (Thomson 1975) I pointed out that the subject matter of Olmec jade and stone carvings is not were-jaguars, as so often has been assumed. Rather, the range of figure carvings of the type excavated at La Venta encompasses developmental stages, perhaps in the life of a single individual, i.e., baby, adolescent, and adult. The Olmec jade figure with forward-reaching, foreshortened arms excavated in a Classic period cache at Cerro de las Mesas (P. Drucker 1955:Pl. 27) is a superb example of the infantile character. A good example of the progressive transformation from baby to adolescent is illustrated in three figures recovered in the 1943 excavations at La Venta (P. Drucker 1952:Pl. 50). The figures of La Venta Offering 4 are representative of the adult male stage, all having incised loin cloths or codpieces, and thus the ceremony or event depicted by this offering was one in which adult males participated.

The Chalcatzingo figure is similar to the Cerro de las Mesas figure and the 1943 La Venta figures in the forward projection of the arms and the absence of a codpiece. It differs in these same attributes from the Offering 4 figures. It is also at variance with all the Gulf Coast examples in its physical proportions. By comparison with the Olmec figures excavated at La Venta and the other Olmec figures discussed, it is apparent that the standing Olmec figure at Chalcatzingo represents an adolescent male.

Torso of a Seated Man *(Fig. 17.2)*

The second Olmec style sculpture excavated at Chalcatzingo is a superb but broken torso of a seated man. The figure is 5 cm high and is made of a soft, dark spruce green serpentine that takes a high polish. It was excavated in S-39 in a Cantera phase context.

The importance of this sculpture lies not just in its aesthetic superiority. It is one of only two known small-scale pieces from excavated sites that bear direct stylistic relationship to the monumental sculpture of the Olmec heartland. The other is a fragmentary serpen-

Figure 17.1. Anthropomorphic "were-jaguar" figurine, PC Structure 1, Burial 33.

Figure 17.2. Seated anthropomorphic figurine fragment, S-39.

tine torso, also with head, arms, and legs missing, which was excavated at La Venta (P. Drucker 1952: 148, Fig. 45). It is reconstructed as a figure seated cross-legged, with the arms resting on the thighs.

From illustrations of the major Olmec monuments depicting seated persons (e.g., La Venta Mons. 10, 23; San Lorenzo Mons. 11, 12, and 47; de la Fuente 1973: 67–68, 81–83, 192–196, 226–227), it is apparent that the ceremonial representation of a seated figure is the same in the great monuments as in the small-scale torso from Chalcatzingo. In all cases, a stocky, rounded body is indicated, with a corpulent torso mounded above the crossed legs. The figures in the monumental sculpture have badges of rank such as capes, ceremonial bars, and bracelets, while the Chalcatzingo fragment appears to be devoid of such trappings.

The Chalcatzingo figure is made of a spruce-green serpentine that is worked into half a dozen different kinds of artifacts at the site. "Paper-thin" earspools of this type of stone abound, while beads, pendants, tools, and drill cores are also found in this material. For this reason it is possible that the torso could have been made at or near Chalcatzingo. Abrader saws and jade adzes found at the site could conceivably have been part of the kind of tool kit necessary to manufacture such a figure.

The most puzzling aspect of the torso is its similarity in design to the monumental figures of the Gulf Coast Olmec. Did sculptors move back and forth between sites, or did designs travel on paper or in the mind? Could the Chalcatzingo figure have been a sculptor's copy or model of a large-scale monument such as Chalcatzingo Monument 16 (Fig. 9.18)? Resolution of questions such as these would also shed light on the major problem of the artistic genesis of the Chalcatzingo relief sculpture.

Teotihuacan-like Figurine Head *(Fig. 17.3)*

A characteristic Classic period Teotihuacan-like stone head, made of light brown material and 2.4 cm high, was found in Cave 10, high on the Cerro Delgado.

Figure 17.3. Teotihuacan-like figurine head, Cave 10.

***Pendants* (27 specimens)**

A variety of artifacts classified as pendants were found during the excavations. The majority come from Cantera phase contexts. It is important to note that some of these pendants are directly similar to minor materials excavated at La Venta, e.g., fang or tooth pendants (Fig. 17.4*a–c*), a duck-billed pendant (Fig. 17.4*d*), and two tiny T-shaped "spoon" pendants (Fig. 17.5). Similar materials have been found at La Venta (P. Drucker 1952: Pl. 58; P. Drucker, Heizer, and Squier 1959: Pl. 37). These Olmec pendants at Chalcatzingo are small in scale, as they are at La Venta. One of the fang or tooth pendants (Fig. 17.4*c*), of brown serpentine, has the earliest context of any of the jade and stone pieces at Chalcatzingo, coming from the Barranca phase. George C. Vaillant's Zacatenco excavations recovered a jade "jaguar tooth" pendant (1930: Pl. 60) similar to the three from Chalcatzingo.

A fine blue-green chalcedony pendant of a monkey with the suspension hole in its tail (Fig. 17.6) was excavated in the Plaza Central. It can be compared to a jade monkey from Guerrero in the American Museum of Natural History in New York (Easby and Scott 1970: No. 47). The Chalcatzingo monkey bears no stylistic relationship to other pieces excavated at the site, but blue-green chalcedony is not uncommon there. Fourteen other objects of chalcedony, including a few beads and a fragment of an earspool, were recovered. The fine straight bore of the holes in the monkey pendant is noteworthy, for they were probably made with a tubular drill.

Six "axe" pendants were found at Chalcatzingo (Fig. 17.7). One of these (Fig. 17.7*c*) was associated with a Classic period infant burial on T-25. These pendants are axe-shaped anthropomorphic figures pierced for suspension at the sides or at the top of the head. They are made of greenish stones, none of which are very hard. A tubular drill was held obliquely to the stone to cut arcs indicating facial features. This is a Classic period drilling technique not so far found among pieces of the Formative period.

The other pendants found at Chalcatzingo are a miscellaneous assortment of small circular jade pieces cut from a sphere, pendants shaped like miniature bowls, and other broken and irregular pieces pierced for suspension (Fig. 17.4*e–k*).

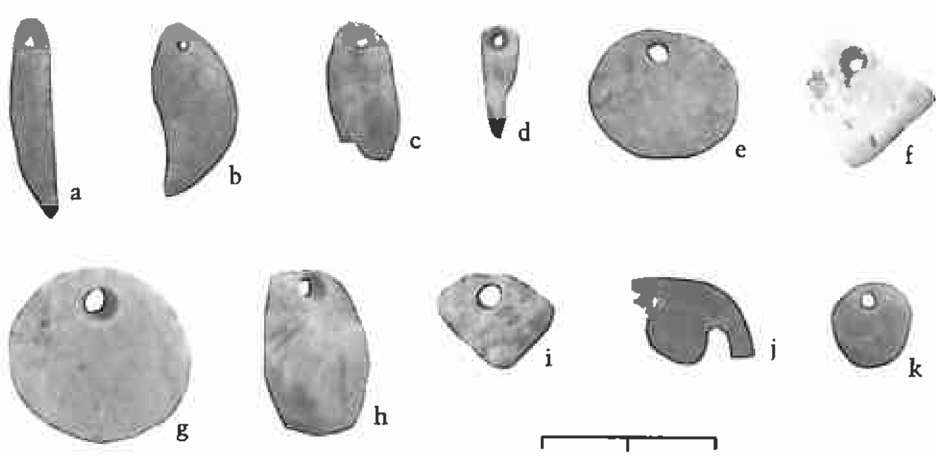


Figure 17.4. Pendants: *a*, PC Structure 1, Burial 32; *b*, T-27 Structure 1; *c*, T-9B; *d*, PC Structure 2; *e–f*, T-11; *g*, PC Structure 1, Burial 16; *h*, S-39; *i*, T-37; Burial 140; *j*, T-24; *k*, T-24, Burial 92.

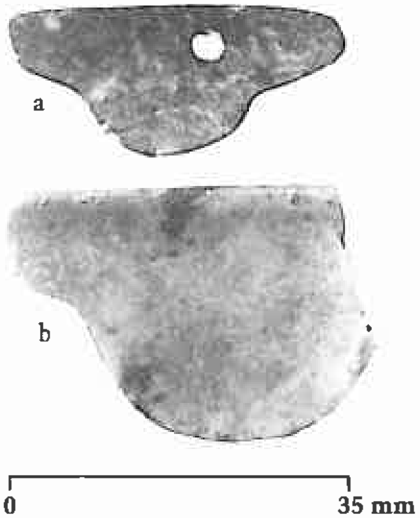


Figure 17.5. T-shaped pendants: *a*, T-24; *b*, PC Structure 1.

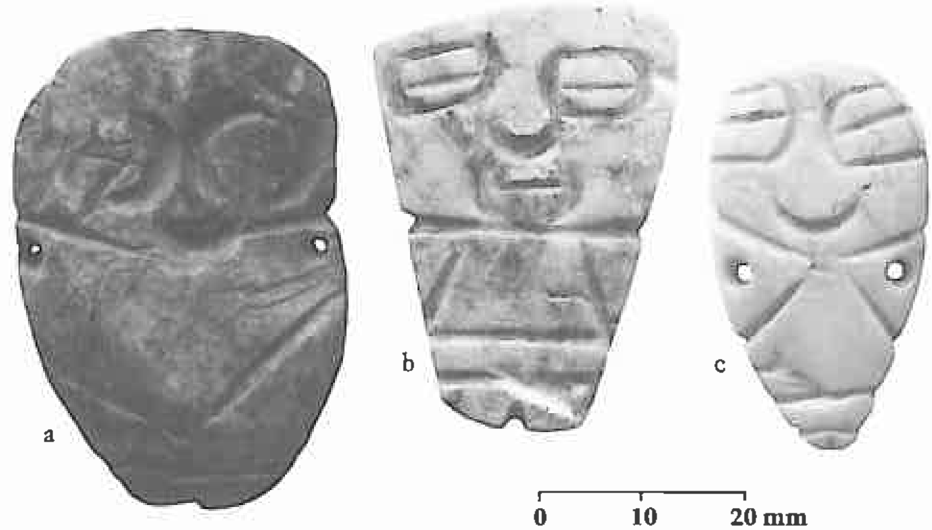


Figure 17.7. Axe pendants: *a*, T-4; *b*, PC Structure 1, plow zone; *c*, T-25, Burial 115.

Figure 17.6. Monkey pendant, PC excavations.

***Earspools* (97 specimens, mostly fragmentary)**

The earspools excavated at Chalcatzingo were classified into two groups—standard jade earspools with broad perpendicular flares (twenty-four specimens) and more cylindrical, "paper-thin" earspools made of highly polished chromium mica (fuchsite) and serpentine (seventy-three specimens). The former are found mostly in Cantera phase contexts and are believed to be a status-associated artifact. The latter are present in both Barranca and Cantera phase associations, and they are not as clearly an elite item.

The thin earspools (Fig. 17.8) are remarkable artifacts, ground down to a thickness of 0.5–1.3 mm. They are basically parallel-sided, exhibiting less flare than the other class of ear ornaments. The heights of the thin flares range from 11 to 21 mm. The outer diameter of the forward or flaring edge lies between 20 and 35 mm. The base diameter, the size of the hole in the earlobe, is similar to the base diameter of the standard flares, varying between 20 and 35 mm. From the point of view of manufacture, they represent a consistent series. The part of the thin earspools that was observed from the front (the inside of the flare) was always more highly polished than the rest of the piece. In addition, some of the earspools had minute double ridges at the base on the outside. These probably served to keep the spool in place in the earlobe (Fig. 17.8*e*).

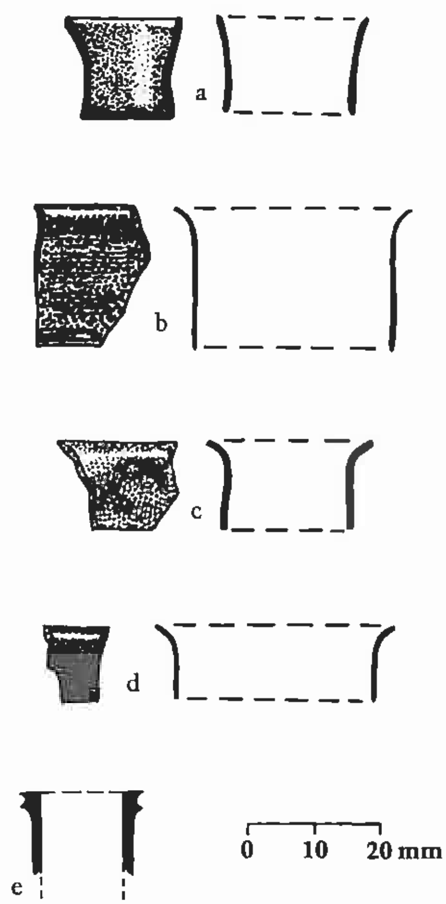


Figure 17.8. Thin earspools: *a*, PC Structure 2; *b*, T-20; *c*, T-11; *d*, T-25; *e*, T-4.

The materials used in the thin earspools were fuchsite and serpentine. Fuchsite, or green mica, was the material used in forty-four specimens. It is a dark spruce (blued) greenstone that is translucent to transparent spinach (yellowed) green when held to the light. Black seams and inclusions are found when the material is held to a strong light source. A few examples were translucent bottle green in ambient light. The serpentine employed in twenty-nine examples is an opaque light spruce green stone, often dull-surfaced. Rarely the thin serpentine earspools have a high, vitreous polish.

Thin earspools were found primarily in the excavations of PC Structures 1 and 2 and T-4 (see Table 17.2), although they were also recovered in minor numbers from most Middle Formative structures. They were found only as broken fragments. Thin-walled clay earspools (Chapter 16) also occur on the site but are rarer and have somewhat different distributional contexts (Table 16.1).

Standard earflares survived relatively intact, since they are thicker (thickness ranges from 1.9 to 3.5 mm) and were usually associated with burials. They are not a consistent series (e.g., Fig. 17.9). The variety of their forms, dimensions, and materials suggests that they may have derived from a number of different centers of manufacture. Their height from base to throat varies from 6 to 25 mm. They are 20–61 mm across, and the base penetrating the earlobe varies from 19 to 39 mm. They are made of imperial green jadeite, Chalcatzingo mottled jadeite, serpentine, and other materials now badly weathered. A weathered pair in Burial 40 was found with minute, finely-worked fragments of shell and turquoise mosaic.

Jade earspools are not restricted to Chalcatzingo during the Middle Formative. Vaillant's Zacatenco excavations found an earspool fragment (1930: Pl. 60, top row, no. 2), while his work at El Arbolillo uncovered an infant burial associated with a pair of earspools (1935: 244–245, Fig. 25). Turquoise mosaic pieces were also excavated at El Arbolillo in association with a burial (1935: Fig. 25, no. 10).

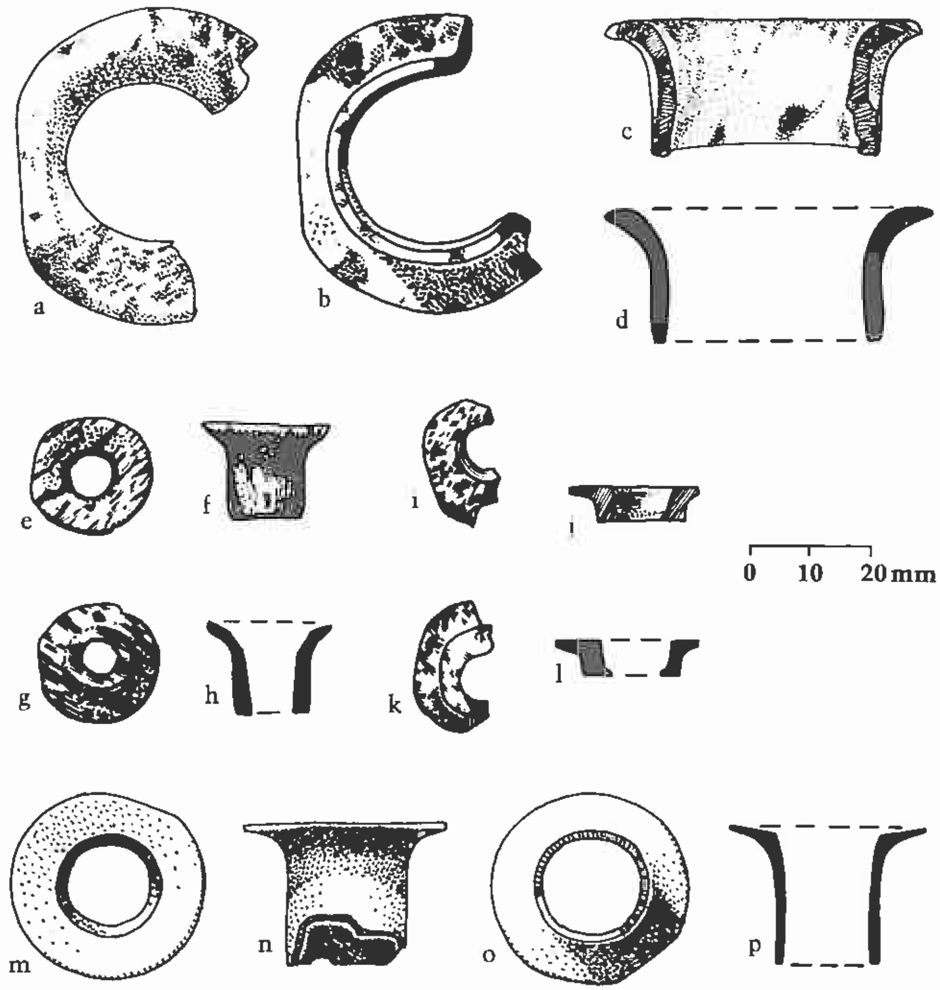


Figure 17.9. Standard earspools (four views each): *a–d*, PC Structure 1, Burial 28; *e–h*, from excavations in front of PC Structure 2; *i–l*, Cave 1; *m–p*, PC Structure 4, Burial 40.

Beads (145 specimens)

The beads excavated at Chalcatzingo were of four main types—subspherical, bag-shaped, tubular, and discoidal—as well as some irregular forms. The subspherical beads were by far the most numerous, comprising 67 percent of all beads (Fig. 17.10*a–d*). Most of the subspherical beads were made of jadeite and were biconically drilled. Many of these are of fine imperial green jadeite. Beads account for the majority of jadeite artifacts found at Chalcatzingo, and almost all of them occurred in the two high-status burials on PC Structure 4 (Burials 39 and 40), where they were strung and presumably worn by the individuals. Beads were also found in the mouths of several Cantera phase burials (a practice also known for the Aztecs).

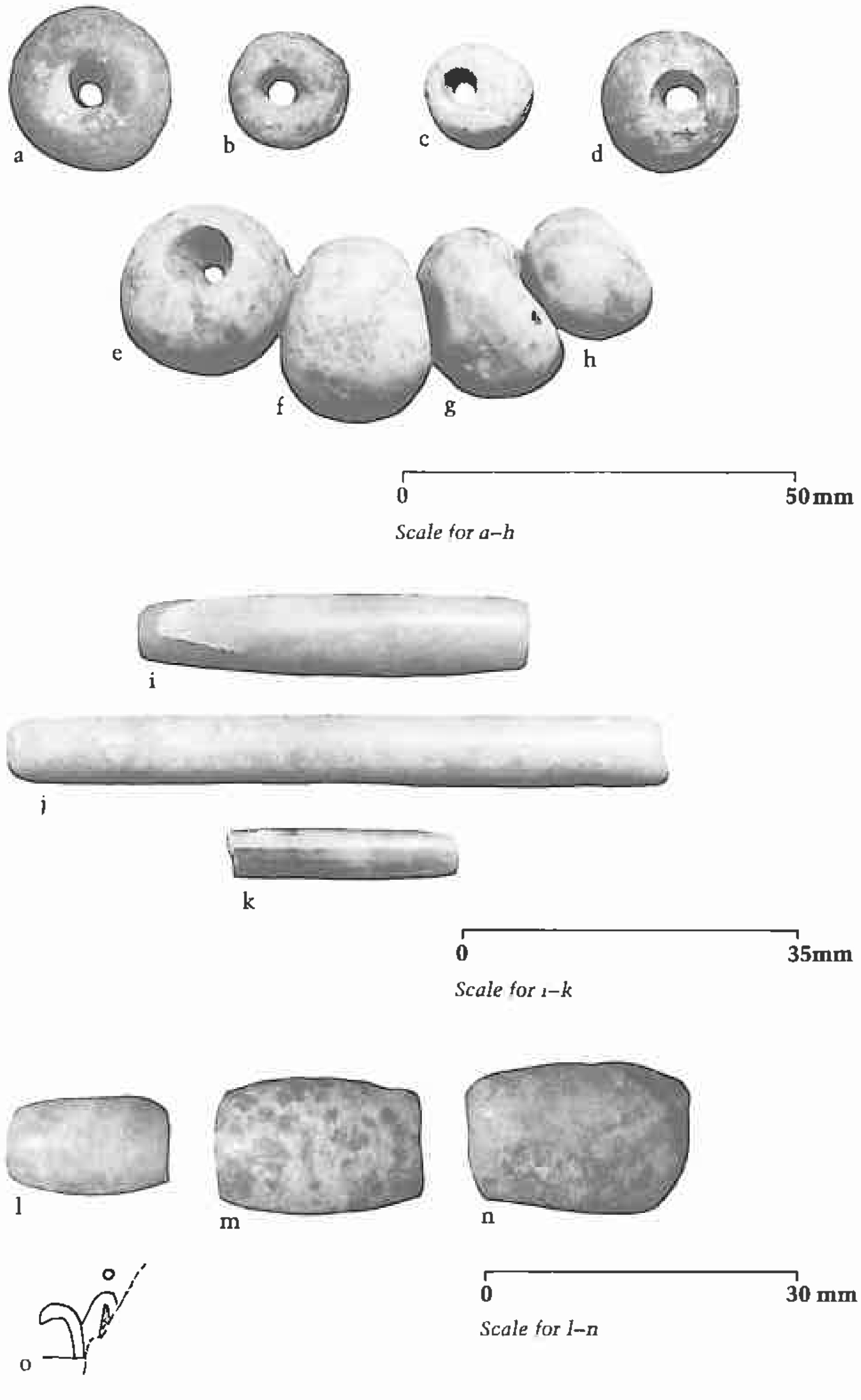


Figure 17.10. Beads: *a–d*, subspherical; *e–h*, bag-shaped; *i–k*, tubular (*i*, T-25, Burial 109; *j*, PC Structure 4, Burial 40; *k*, T-25, Structure 2); *l–n*, barrel-shaped; *o*, engraved.

Bag-shaped beads (Fig. 17.10*e–h*) are large, heavy beads pierced off-center by two drill holes intersecting at about a 120° angle. The sides of the bead converge toward the drill hole at the top. They tend to be made of Chalcatzingo mottled jadeite. The drill holes are conical and very large in proportion to the size of the bead. Two-thirds of the bag-shaped beads come from caves in the Cerro Delgado. They also occur in Classic contexts on T-20 and T-27 and at Postclassic Tetla. Only one has a certain Cantera phase date.

Tubular beads are of two kinds: elegant, long, thin, and highly polished with an extremely fine bore; and short, stubby, cylindrical beads. The longest tubular bead (Fig. 17.10*j*) is made of translucent sea-green jadeite and was found with Burial 40 on PC Structure 4.

Other beads were classified as discoid, barrel-shaped (Fig. 17.10*l–n*), and miscellaneous.

A hollow bell-shaped bead, unfortunately fragmentary, has an engraved design on it (Fig. 17.10*o*). A lobed bead of jadeite is similar to those found at La Venta (P. Drucker 1952: Pl. 52).

The fact that some greenstone types appear to correlate with specific bead forms (e.g., imperial green jadeite and subspherical beads) suggests the possibility that all of the Cantera phase beads at Chalcatzingo were not made at the same manufacturing source. Some may have been locally made, others imported.

***Tools* (25 specimens)**

None of the tools excavated at Chalcatzingo was found in what could be interpreted as a workshop context. Two adzes and two awl points were found in burials. I have included awl points in this category, although they may not have functioned as tools.

Twelve adzes were uncovered at Chalcatzingo (Fig. 17.11), from contexts ranging from the Barranca phase to Middle Postclassic. They are made of jadeite, serpentine, and other materials. The one jadeite adze (Fig. 17.11*d*) would have served as a good tool for shaving serpentine and other soft stones. The other adzes may have been woodworking tools. These tools were small in size, ranging mostly between 23 and 55 mm in length.

One celt was found in Cave 1, in a probable Middle Postclassic context; another celt was found at Tetla (not included in Chalcatzingo totals). The celt fragment excavated in the Tetla house

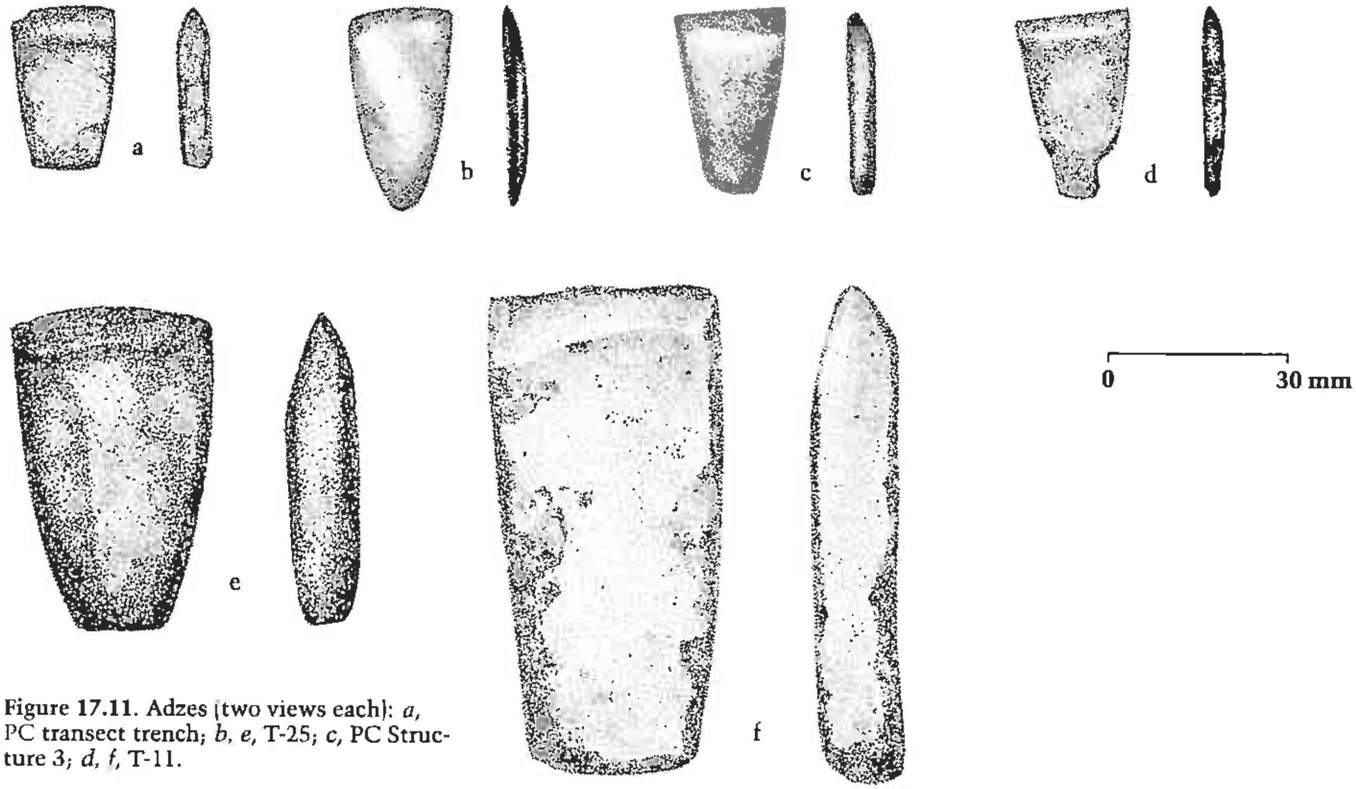


Figure 17.11. Adzes (two views each): *a*, PC transect trench; *b*, *e*, T-25; *c*, PC Structure 3; *d*, *f*, T-11.

excavations is a highly polished dark green. Lime plaster adhering to this artifact suggests that it was reused as a plaster smoother.

Five awl points were found (Fig. 17.12), the finest of these being transparent pale green jadeite shaped to a strong point (Fig. 17.12*d*). This awl occurred with the burial (no. 33) associated also with the serpentine Olmec figure (Fig. 17.1). Jadeite awls were found in tombs at La Venta (P. Drucker 1952: Pl. 53) and at a cache at Seibal dating to 800 BC (Willey 1970: 321). Awl points represent an artifact form which probably functioned for ceremonial mutilation and blood-letting.

Other tools include two abrader saws made of gritty sandstone, which could have functioned as either stone or woodworking tools. There were also five smoothed and rounded stones which may have been used for polishing pottery in the leather-hard state.

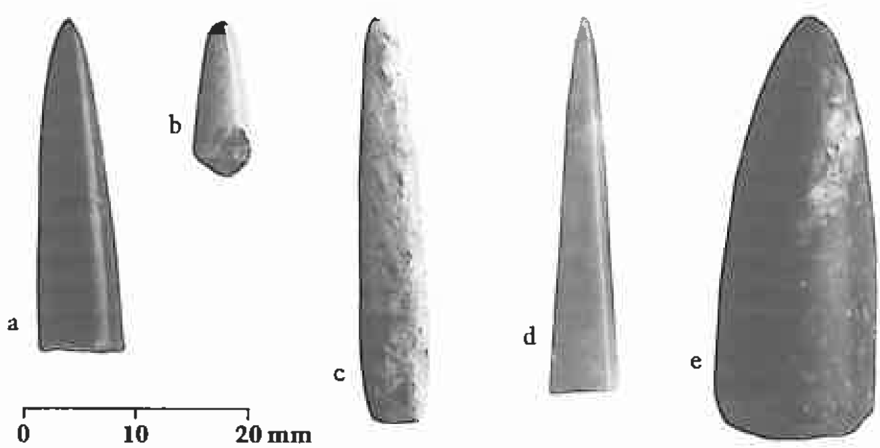


Figure 17.12. Awl points/bloodletters: *a*, T-9A; *b*, PC Structure 1, Burial 32; *c*, Cave 8; *d*, PC Structure 1, Burial 33; *e*, T-9B.

Drill Cores **(6 specimens)**

Drill cores, the cylinders left when a tubular drill has perforated stone, are prima facie evidence of stone-working activity. Four of the Chalcatzingo specimens are from good Cantera phase contexts. Most of these artifacts are made of serpentines common to other artifacts at the site. One drill core was of the same serpentine used to manufacture the "paper-thin" earflares. Its diameter (ca. 14 mm) would have been appropriate for the first stages of manufacturing a thin earflare.

Serpentine is a relatively soft stone and not difficult to work. There is no evidence, however, that the abrasives or technology necessary to work jade, an extremely hard and tough stone, were present at Chalcatzingo. The finding of serpentine drill cores is the strongest evidence for assuming that at Chalcatzingo serpentine and other soft stones were worked into artifacts. Serpentine was in broad use at the site, and artifacts of serpentine occur in every category of artifact except the *pulidor.*

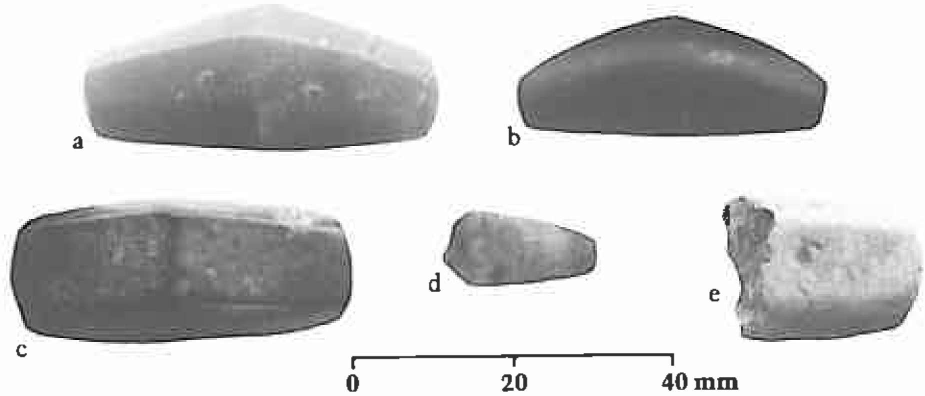


Figure 17.13. *Pulidores: a,* PC excavations; *b,* CT-1; *c,* T-23; *d–e,* PC Structure 1.

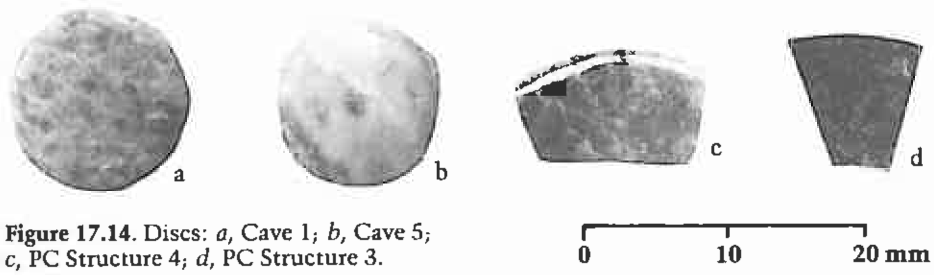


Figure 17.14. Discs: *a,* Cave 1; *b,* Cave 5; *c,* PC Structure 4; *d,* PC Structure 3.

Pulidores (5 specimens)

The *pulidores* at Chalcatzingo are the single exception to the generalization that the range of fine stones employed was green or greenish. The material of some *pulidores* is hard and translucent with a brown to orange hue.

The *pulidores* (Fig. 17.13) are so called because it was originally thought that they were tools and that their facets derived from abrasion in a number of different planes as the stones were worked against other materials. The faceting patterns on the five examples from Chalcatzingo are all different. The bodies of the four complete specimens are cut into twelve, six, five, and seven facets. It is my opinion that these were magical stones used by shamans for divination. One specimen was recovered by Vaillant at Zacatenco (1930: Pl. 61, bottom row, no. 2). They have also been found at Tlatilco (Tolstoy 1971b: 291) and are said to occur at sites in Guerrero.

Discs (9 specimens)

Two types of thin greenstone discs occur at Chalcatzingo. The first type, mosaic discs, is only probable, for the evidence consists of two wedge-shaped jadeite pieces which were apparently part of such mosaic discs. One of the specimens (Fig. 17.14*c*) was found within the looted tomb on PC Structure 4 (Chapter 4); it is made of fine imperial green jadeite. The second example (Fig. 17.14*d*) was recovered from PC Structure 3 excavations.

The second disc type is a thin circular disc (e.g., Fig. 17.14*a–b*). Among these greenstone discs, the earliest occur in Late Barranca subphase contexts. The small circular discs are reminiscent of and possibly predecessors to Classic and Postclassic Maya jade discs.

However, most of the discs at Chalcatzingo differ from Maya discs in an essential regard: only two are pierced. Maya jade discs are invariably pierced for suspension or attachment, usually through the center and again at one edge (Proskouriakoff 1974: Pl. 35).

Miscellaneous and Worked Stone (48 specimens)

Miscellaneous stone artifacts are not discussed here. Stone fragments showing signs of workmanship (forty-one specimens) include imperial green jadeite, Chalcatzingo mottled jadeite, chrysoprase, chalcedony, basalt, volcanic tuff, schist, pink quartz, serpentine, and other materials. These worked stones did not cluster in any part of the site that might have been interpreted as a workshop area.

CONCLUSIONS

Some of the lapidary work of Chalcatzingo, like the relief carvings on rock faces of the Cerro Chalcatzingo, shows relationships to the Olmec culture of the Gulf Coast. The nature and degree of relationship can be assessed along six lines of inquiry: the materials of the Chalcatzingo artifacts, their forms, their context, their workmanship, their abundance, and their time of deposition.

The forms of some of the Chalcatzingo jade and stone ornaments (lobed beads, duck-billed pendants, spoon pendants, the standing Olmec figure, and the torso of a seated figure) have direct counterparts in the burial artifacts at La Venta. The context for these objects is also a mortuary context. The workmanship of the Chalcatzingo stone artifacts might yield clues of relationship to Olmec artifacts if the La Venta and Chalcatzingo assemblages could be studied together.

The material of the Chalcatzingo fine

stone artifacts is the same as that of the La Venta grave goods. Specifically, the fine imperial green jade with cracked surface, the blue-green "Costa Rican" jade, and the use of lesser stones like fuchsite, chrysoprase, and chalcedony is the same at both sites. I believe that three Olmec figures from La Venta Offering 4, now in the Smithsonian Institution in Washington, D.C., are made of the stone I have called Chalcatzingo mottled jadeite. Thus, the inhabitants of Chalcatzingo during the Middle Formative were connected to the same supply mechanism for fine stones that served La Venta.

The time of burial of the jade and stone carvings at Chalcatzingo, mostly during the Cantera phase (700–500 BC), accords well with the time of deposition of similar artifacts at La Venta. The quantity of jade and fine stone encountered at Chalcatzingo, however, marks it as a minor provincial site, if La Venta is taken as the standard for the volume of stone in trade at this time. No jade celts, worked blocks of stone, or lavish offerings of jade were encountered at Chalcatzingo. The actual volume of excavated jade is very small.

Thus, if the jade and stone work excavated at Chalcatzingo is taken as an indicator of the site's importance in the Middle Formative, it would appear that the site was of minor religious and economic importance in the Olmec sphere of influence, though a consumer of Olmec forms and materials as evidenced by their appearance in the site's graves of that period.

RESUMEN DEL CAPÍTULO 17

Casi 400 piezas de jade y piedra preciosa fueron recobradas in Chalcatzingo. De éstas, 146 resultaron ser de jadeita, incluyendo una variedad llamada "jadeita moteada Chalcatzingo." Otras materias primas identificadas fueron la fusita, la crysoprasa, la calcedonia, y la serpentina. Se encontró poca evidencia en el patrón de uso de distintos materiales para artefactos específicos con excepción de la serpentina y la fusita, las cuales se emplearon principalmente en la manufactura de orejeras delgadas. La mayoría de los artefactos de piedra verde se recobraron de contextos ajenos a enterramientos, pero los objetos de mayor calidad provienen de las tumbas de la fase Cantera.

Los artefactos de piedra verde se clasificaron en las siguientes categorías: figuras, pendientes, orejeras, cuentas, herramientas, puntas de barreno, pulidores, miscelánea, y piedras parcialmente trabajadas. De las tres figuras de piedra, una es definitivamente de estilo olmeca (Cat. 73.1) aún cuando difiere levemente de las figuras olmecas de la costa del Golfo tales como las de la Ofrenda 4 en La Venta. Se recobró del Entierro 33 en cripta. Otras figuras de piedra fina son el torso de un hombre sentado, cuya posición es semejante a la del arte monumental olmeca, y una cabeza pequeña de piedra típica del Clásico teotihuacano.

Los pendientes presentan una variedad de formas, algunos muy semejantes a los artefactos de La Venta, p.e., pendientes de colmillo, un pendiente de pico de pato, y dos pendientes "cuchara" en forma T. *También se encontraron un pendiente en forma de mono bien hecho, y seis "hachas" pendientes los cuales presentan incisiones de figuras antropomórficas crudas mediante el empleo de la técnica del período Clásico.*

Fueron encontrados cerca de cien orejeras y fragmentos casi todos del Formativo Medio, la mayoría de los cuales son de la variedad "papel delgado," y la minoría con el ensanchamiento común. Las orejeras delgadas presentaron todas estado fragmentario, y casi todas fueron recobradas de contextos ajenos a entierro. Las orejeras comunes, por otra parte, se encontraron más frecuentemente asociadas a entierros y algunas estaban intactas.

Las 145 cuentas presentaron fundamentalmente forma subesférica aun cuando ocurrieron también en otras formas. Casi todas las cuentas, muchas de las cuales son de jadeita verde imperial fina, fueron encontradas en los dos entierros de alto rango en PC Str. 4, y las llevaban puestas los difuntos al momento de ser enterrados.

Las herramientas de piedra verde incluyen azuelas, hachas (Postclásico), puntas de lezna, sierras de desgastar, y posibles piedras para pulir. Algunas de estas herramientas pueden haber sido usadas para hacer otros objetos de piedra verde, y junto con los cilindros del hueco perferado constituyen buen testimonio de que algunos objetos de piedra finos se hacían en el sitio. Las puntas de lezna pudieron no haber servido como herramientas sino como artefactos para el sangrado ritual. Los llamados pulidores probablemente no fueron herramientas, sino que sirvieron también un propósito ritual.

Los discos de piedra verde ocurren como discos delgados completos y como secciones de disco, aparentemente parte de un mosaico. A diferencia de los discos mayas, no están agujereados y por ello su función es incierta (p.e., como adorno).

Casi todo el jade de Chalcatzingo se presenta en contextos del Formativo Medio, el mismo período cuando el jade se usó con mayor intensidad en La Venta. Las materias primas en Chalcatzingo parecen ser las mismas que se encontraron en la costa del Golfo, y las formas y los estilos con frecuencia son semejantes; sin embargo la cantidad de los objetos de piedra verde en Chalcatzingo es muy pequeña comparada con La Venta.

18. Middle Formative Lithic Industries at Chalcatzingo

SUSAN S. BURTON

At a site such as Chalcatzingo, with a complex and lengthy depositional history, it is often difficult to establish basic functional interpretations for specific site areas. Yet such interpretations are needed as a foundation for higher-level socio-economic inferences. With this problem in mind, the Chalcatzingo chipped stone analysis was undertaken not only to provide basic descriptive information but also to explore the possible usefulness of lithic data in supporting and amplifying intrasite functional interpretations. The analysis presented here is of an exploratory nature. It is explicitly designed as a rapid survey of selected features of the chipped stone collection. The results, it is hoped, will indicate the general value of such data at this kind of site.

The chapter is divided into two parts. The first is a description of the classes of lithic artifacts present in the collection. The second is the analysis of the artifacts in terms of intrasite functional variability. Supplementary data on the lithic artifacts are contained in Appendix G.

DESCRIPTION OF THE GENERAL LITHIC COLLECTION

Selection of the Sample

Selected chipped stone materials were analyzed to provide basic descriptive information regarding the Middle Formative lithic industries at Chalcatzingo. Selection of a statistically controlled sample of lithic specimens from the very large quantity of material recovered during the excavations at Chalcatzingo was not feasible and, given the limited aims of this study, did not seem necessary. Instead, a purposive sample was selected from areas where functional and chronological inferences were available based on other types of data. The first basis for sample selection was an association with ceramics dated to the Cantera phase. Within this context, materials were selected from several functionally distinct situations. One Barranca phase sample from T-9B was included for its comparative value.

Unfortunately, the Chalcatzingo excavations seldom yielded clearly definable house floors; however, a number of probable domestic structures were excavated, and possible floor levels and associated activity areas were identified. The analyzed lithic collections from Terraces 9A, 9B, 11, 23, and 24 were derived from such loci. Specifically, the collections from T-9A, T-9B, and T-23 are from possible floor levels within domestic structures. The T-11 collection came from a possible interior floor level and outside activity areas immediately adjacent to the structure on that terrace. Materials from T-24 came from an activity area and trash deposit probably associated with the domestic structure.

Samples were also drawn from more specialized areas. Materials were selected from the levels associated with the construction and use of the stone altar on T-25 and from the probable elite house structure, PC Structure 1. The PC Structure 1 sample came from the upper levels, which included the subfloor burials, and from the crypt burials and trash deposits.

The remaining analyzed collections represent less easily characterized areas. Materials from two features on T-37 were analyzed. The first of these, the concentration of obsidian workshop debris (T-37ob), is the subject of Chapter 19; however, description of tools from the concentration will be included here. The second collection (T-37fea) was derived from a presumed outside activity area evidenced by a line of three postholes cut into the floor of a bedrock depression. Materials were also selected from the possible ceramic manufacturing area on S-39 (see Chapter 16). The analyzed S-39 sample came from an activity area (possible house floor) and trash areas in the vicinity of the large lime deposit on that terrace.

Analytical Methods

The analysis of the lithic sample, which was carried out entirely on the macroscopic level, combined a basic descriptive classification with the recording of a small series of tool attributes selected for their potential functional significance. For each provenience unit, the chipped stone materials were initially divided on the basis of raw material type, obsidian vs. chert. Within each of these raw material categories, the assemblages were sorted into a series of general morphological classes: blades, flakes, cores, other debris (including chunks, chips), and modified pieces. Cores were further subdivided into a series of morphological subclasses linked with different technological approaches to flake/blade production. Certain specialized blade and flake types (i.e., crested blades, core recovery flakes, core platform rejuvenation flakes) directly related to reduction of obsidian blade cores were also identified as special subclasses. (See Chapter 19 for definitions of these types.)

Modified pieces are defined as lithic items showing macroscopic evidence of modification (i.e., chipping, grinding, crushing, and battering) through use as tools and/or through intentional retouch. The more cumbersome term "modified piece" is used here rather than the simpler "tool" because the analyzed sample includes large quantities of unmodified obsidian blades. The blade industry here and throughout Mesoamerican prehistory was a highly developed technological process which yielded a very high proportion of usable cutting edges as a direct product of core reduction. The vast majority of the blade fragments in the Chalcatzingo collection show no macroscopic evidence of use, but all have or at least once had extremely sharp cutting edges and thus may have functioned as tools or parts of tools. Blades used on soft materials which did not cause obvious damage to the working edges would show no direct evidence of use as tools. It is important then to realize that the class "modified pieces" probably includes only a fraction of the actual "tools" present in the Chalcatzingo lithic sample.

Modified pieces were divided into two major subclasses identified as "shaped" and "edge-modified." Shaped pieces have been retouched extensively enough that the overall outline of the original tool blank (blade, flake, core fragment, etc.) has been modified. Virtually all the shaped pieces in the analyzed Chalcatzingo collection show some attempt at a finished product with bilateral symmetry. However, it is the extent of retouching and shaping, rather than the occurrence of bilateral symmetry, which defines this subclass. Edge-modified pieces are chipped stone items which have not undergone overall shaping of the basic tool blank. Instead, the blank in large part retains its original form, and only an individual edge or edges have been worked. Edge modification on these pieces may be entirely the result of use or may involve intentional retouching designed to shape or sharpen the working edge. Within these two major subclasses, shaped and edge-modified, the analyzed pieces were further divided into a series of general morphological categories based on the extent, positioning, and general nature of the modification.

Edge-modified pieces were divided into a series of categories on the basis of tool blank type (i.e., blade, flake, chunk, core). Each of these was then further divided into subcategories on the basis of certain working edge characteristics: (1) utilization, (2) retouch, (3) grinding, and (4) battering. An individual edge-modified piece might have several working edges, and these edges might fall into different subcategories. Each working edge was analyzed independently. See Appendix G for a more detailed description of these categories.

Seven categories of shaped modified pieces were found to be useful in the analysis of the Chalcatzingo lithic sample: projectile points, drill-like pieces, wedge-shaped pieces, coarsely shaped pieces, finely retouched blades, other shaped blades, and unidentifiable shaped pieces. In general, an effort was made to avoid functional labels for these categories, although two which seem meaningful (projectile points and drill-like pieces) were used. The defining characteristics of each of these categories are outlined in Appendix G.

In addition to the morphological classification, a number of individual attributes were recorded for each modified piece. The attributes, all assumed to have functional significance, related to the working edges and included edge angle (measured in 5° intervals), edge shape, type of modification, and depth of chipping. These data are summarized in Appendix G.

Discussion

Grey obsidian, often with dark banding, is the dominant lithic raw material in the chipped stone collection analyzed from Chalcatzingo (see Chapter 23 for source analysis data). The principal products of the obsidian industry were prismatic blades, which occur in substantial quantities in all areas sampled (see Appendix G).

Obsidian flakes also occur throughout the site, both as debitage and as modified pieces; however, no obsidian flake cores were identified in the collection.This suggests that rather than being a primary product of core reduction, the entire obsidian flake assemblage was the result of blade core preforming and trimming. Excluding the T-37 obsidian concentration which is the subject of a separate discussion, some 20 percent of the flake debitage in the collection consists of flake types (core platform rejuvenation flakes and core recovery flakes) which are clear products of blade core trimming. The remaining 80 percent presumably includes waste from core preforming and possibly additional unidentified trimming flakes.

Although not universally present, obsidian blade cores occur in many areas of the site, and the analyzed obsidian collection includes a wide variety of modified tools. A more detailed discussion of these cores and artifacts is found in Appendix G. Table 18.1 provides data on distribution of obsidian blades, cores, and flakes. Distributional data for the modified obsidian artifacts are given in Table 18.2 (edge-modified pieces) and Table 18.3 (shaped pieces).

Although nowhere abundant, chert cores, debitage, and tools occur in all areas of Chalcatzingo included in the analyzed lithic sample (see Table 18.4). The raw material involved is variable, ranging in texture from coarse, quartzitic types to very fine, lustrous examples. Color is also variable, including dark to light grey, white, grey-blue, pink, dark red, and occasional yellows, oranges, and browns. The most common materials are light grey to white with a smooth but lusterless surface texture. It is presumed that this chert was obtained locally, although the total sample may not derive from the chert source in the southern valley (Chapters 21, 23; Appendix H, RAS-108).

Although not universally present, chert flake cores occur in most areas of the site and, in fact, are almost as numerous as obsidian blade cores. Excluding the special situation of T-37ob, the analyzed collection includes thirty-nine obsidian blade cores and fragments (twenty discarded and nineteen used as tools), while there are thirty-six chert flake cores. However, despite the relative frequency of chert cores, chert debitage and tools make up a much smaller proportion of the entire collection than do their obsidian counterparts. Of the total cores in the collection ($N = 75$), 48 percent are chert, but only seventeen percent of the total debitage ($N = 4{,}652$) and eleven percent of the modified pieces ($N = 858$) are chert. Although other factors such as patterns of core disposal may be involved, the different core-to-debitage ratios indicated here clearly reflect the more efficient use of raw material inherent in blade production.

The distribution of modified chert pieces is given in Table 18.5 for both edge-modified and shaped artifacts. Shaped chert tools are rare in the analyzed Chalcatzingo collection, and only three of the seven categories defined for obsidian artifacts are represented in chert.

The two chipped stone industries at Chalcatzingo are obviously very different in magnitude. Although the numbers of obsidian and chert cores in the analyzed collection are remarkably similar, in all other aspects obsidian is overwhelmingly dominant. Specifically, excluding the T-37 obsidian concentration, some 2,513 obsidian blades and 1,328 pieces of debitage compare with only 811 items of chert debitage. Among modified pieces, including those from T-37ob, edge-modified obsidian items number 610 with a total of 977 working edges, while there are only 84 chert pieces with just 98 working edges. The

Table 18.1. Obsidian Cores, Blades, and Debitage in the Analyzed Lithic Collection from Chalcatzingo[a]

Provenience	Blade Cores	Blades	Crested Blades	Core Platform Rejuvenation Flakes	Core Recovery Flakes	Other Flakes	Other Debris (Chunks)	Totals
PC Str. 1	5	942	3	18	46	226	40	1,280
T-9A	1	30	1	1	0	11	1	45
T-9B	0	46	0	3	5	10	4	68
T-11	0	20	0	1	1	4	3	29
T-23	1	176	1	14	14	63	9	278
T-24	12	1,060	3	49	47	541	34	1,746
T-25	1	133	2	7	10	34	9	196
T-37fea	0	24	0	1	5	9	1	40
S-39	0	82	0	13	12	67	5	179
Totals	20	2,513	10	107	140	965	106	3,861

[a]T-37 obsidian concentration not included.

Table 18.2. Distribution of Edge-Modified Obsidian Pieces by Working Edges in the Analyzed Lithic Collection from Chalcatzingo

	Working Edges on Blades				Working Edges on Flakes				Working Edges on Chunks			Working Edges on Blade Cores			
Provenience	U	R	G	Subtotals	U	R	G	Subtotals	U	R	Subtotals	R	B	Subtotals	Totals
PC Str. 1	114	0	8	122	38	19	3	60	0	3	3	0	7	7	192
T-9A	43	0	0	43	0	0	0	0	0	0	0	0	0	0	43
T-9B	43	0	0	43	10	2	0	12	0	0	0	0	0	0	55
T-11	24	3	3	30	1	0	0	1	0	0	0	0	0	0	31
T-23	117	1	7	125	12	7	0	19	1	1	2	0	0	0	146
T-24	12	0	1	13	9	14	0	23	0	0	0	0	0	0	36
T-25	140	4	6	150	45	7	3	55	0	0	0	1	1	2	207
T-37fea	5	0	0	5	0	1	0	1	0	0	0	0	0	0	6
T-37ob	25	2	0	27	9	5	0	14	0	0	0	0	0	0	41
S-39	92	2	89	183	20	6	11	37	0	0	0	0	0	0	220
Totals	615	12	114	741	144	61	17	222	1	4	5	1	8	9	977

U = utilized; R = retouched; G = ground; B = battered.

Table 18.3. Distribution of Shaped Obsidian Tools in the Analyzed Lithic Collection from Chalcatzingo

					Finely Retouched Blades				
Provenience	Projectile Points	Drill-like Pieces	Wedge-Shaped Pieces	Coarsely Shaped Pieces	Bi-Pointed	Constricted	Other Shaped Blades	Unidentifiable Shaped Pieces	Totals
PC Str. 1	20	2	5	19	3	1	10	4	64
T-9A	1	0	0	1	0	0	0	0	2
T-9B	2	0	0	2	0	0	0	0	4
T-11	1	0	0	4	0	0	1	0	6
T-23	0	0	1	13	1	2	1	3	21
T-24	8	2	3	5	2	2	7	2	31
T-25	5	1	3	11	4	0	1	0	25
T-37fea	0	0	0	1	0	0	0	0	1
T-37ob	2	3	1	6	0	1	3	3	19
S-39	0	2	0	20	1	6	2	1	32
Totals	39	10	13	82	11	12	25	13	205

Table 18.4. **Chert Cores and Debitage in the Analyzed Lithic Collection from Chalcatzingo**[a]

Provenience	Blocky Flake Cores	Prepared Flake Cores	Flakes	Chunks	Totals
PC Str. 1	5	3	235	59	302
T-9A	0	0	41	5	46
T-9B	1	3	20	4	28
T-11	0	0	22	30	52
T-23	0	0	40	10	50
T-24	9	1	154	33	197
T-25	1	1	14	6	22
T-37fea	1	0	26	4	31
S-39	11	0	91	17	119
Totals	28	8	643	168	847

[a]T-37 obsidian concentration not included.

Table 18.5. **Distribution of Modified Chert Pieces in the Analyzed Lithic Collection from Chalcatzingo**

	Edge-Modified Pieces (Number of Working Edges)								Shaped Pieces			
	Flakes				Chunks							
Provenience	U	R	G	Subtotals	U	R	Subtotals	Totals	PP	CS	US	Totals
PC Str. 1	7	7	0	14	0	2	2	16	1	0	1	2
T-9A	2	1	0	3	1	0	1	4	0	0	0	0
T-9B	2	4	0	6	0	0	0	6	0	0	0	0
T-11	4	1	0	5	0	0	0	5	0	0	0	0
T-23	2	1	0	3	0	0	0	3	0	1	0	1
T-24	8	6	0	14	0	1	1	15	1	0	2	3
T-25	7	2	0	9	0	0	0	9	1	0	0	1
T-37fea	2	0	0	2	0	1	1	3	0	0	0	0
T-37ob	1	1	0	2	0	1	1	3	0	0	1	1
S-39	10	11	13	34	0	0	0	34	0	4	0	4
Totals	45	34	13	92	1	5	6	98	3	5	4	12

U = utilized; R = retouched; G = ground; PP = projectile points; CS = coarsely shaped pieces; US = unidentifiable shaped pieces.

contrast in shaped pieces is similar, with 205 obsidian items as opposed to only 12 chert tools.

Unmodified obsidian blades are by far the largest component in the analyzed lithic collection, outnumbering the next most frequent lithic category (i.e., all obsidian flakes) by nearly two to one. They clearly were the principal available source of useful working edges, and it is assumed that many or most of the apparently unmodified specimens were, in fact, used as tools. The importance of blades as tools is also evident in the fact that they are the dominant blanks for both edge-modified and shaped tools.

The dominant modified tool form is the edge-modified item with utilized working edge. There are 760 such edges on obsidian blanks and 46 in chert for a total of 806 utilized edges. Edge-modified items with a ground edge are next in importance, with 131 obsidian and 13 chert or a total of 144 edges. Although the least frequent of the edge-modified pieces, items with a retouched edge still outnumber any of the categories of shaped tools. There are a total of 117 retouched edges, including 78 obsidian and 39 chert. (Note: The figures cited here refer to working edges. Many of the 694 edge-modified pieces have more than one such edge.)

Among the 217 shaped tools, coarsely shaped pieces (N = 87) are decidedly the most frequent items, accounting for 40 percent of the total. Projectile points (N = 42) make up 19 percent of the shaped pieces, and the remaining categories vary from 12 percent to 5 percent of the total. Among the latter, finely retouched blades (N = 23) and other shaped blades (N = 25) are the most substantial categories. With the exception of tool categories requiring blades as tool blanks, chert and obsidian seem to have been used in the same general manner for shaped tools although chert was obviously of very minor importance.

ANALYSIS OF THE SAMPLE LITHIC ASSEMBLAGES

The analyzed lithic collection was selected from a series of terrace areas which appear to fall into several functionally distinct categories. As stated previously, with one exception, all were drawn from Cantera phase contexts in order to hold constant possible temporal variability in the chipped stone materials. The exception, the T-9B sample, is derived from a Barranca phase residential structure and was included for comparative purposes. Preliminary functional assignments for the selected loci were based upon observations, primarily of architectural and ceramic data, made during excavation and laboratory analyses.

Using these functional assignments as a starting point, the present analysis begins by outlining certain logical possibilities or expectations regarding the lithic tool kits from the sampled loci. The overall contents of the various assemblages are then compared, and the results are related back to the expectations outlined here.

Expected Tool Kit Characteristics

Five of the sampled loci, T-9A, T-9B, T-11, T-23, and T-24, were identified as common residential areas on agricultural terraces (specifically, house floors and adjacent outside activity areas). A wide variety of activities would be expected for such loci, including, for example, food processing and preparation, manufacture and maintenance of clothing and household furnishings, maintenance and possibly some manufacture of agricultural implements and other household tools, and so on. It is expected that this range of activities would be reflected in the lithic assemblages in the following manner:

1. Relatively diverse assemblages. This is the logical adjunct of the wide variety of activities expected for these loci.

2. Emphasis on general-purpose tools. The wide variety of tasks to be performed should encourage the use of general-purpose items such as coarsely shaped tools and edge-modified blades and flakes with simple utilized working edges. More highly specialized items suited to single tasks may be present but are not likely to occur in quantity.

3. Debitage and possibly flake cores in moderate quantity. Obsidian blade manufacture was almost certainly a specialized activity which did not take place on the individual household level; however, other aspects of tool manufacture, hafting, and maintenance (resharpening, reshaping) may very well have taken place at these loci.

The other sampled loci are presumed to have been devoted to more specialized activities. PC Structure 1 is defined as an elite residence, the altar area of T-25 is an apparent ceremonial location, the obsidian concentration on T-37 (T-37ob) has been identified as a trash deposit from a blade manufacturing workshop, and S-39 may have been a ceramic manufacturing area. Although no specific function could be assigned to it, the posthole feature on T-37 (T-37fea) has no clear connection with a domestic structure and thus is grouped with the special-activity loci. The narrower range of activities expected at these locations would be reflected in the lithic assemblages as follows:

1. More restricted assemblages. This is the logical adjunct of the supposition that each of these loci was devoted to a delimited ceremonial, craft, or other activity or closely related set of activities.

2. Potential emphasis on special-purpose tools. The need for special-purpose tools would, of course, be dependent on the actual activity being carried out; however, such tools (e.g., finely retouched blades, edge-modified pieces with ground edges) are more likely in specialized assemblages.

3. Debitage potentially either very important or very scarce. Once again the actual activity being performed is crucial here. Lithic manufacturing areas should show very high proportions of debitage, but there should be other areas where tool manufacture is very unlikely (e.g., elite residences, ceremonial loci) and debitage is only a very minor component of the assemblage.

On the basis of the expectations outlined for common residential and special-activity tool kits, it is presumed that the two sets of assemblages will be significantly different. It is also expected that the residential collections will tend to share the same generalized tool kit. On the other hand, unless closely related activities are involved, the special-activity assemblages are expected to differ from each other as well as from the common residential materials.

Comparison of Assemblages

The ten lithic assemblages included in the chipped stone sample are evaluated here on the basis of a series of twelve general variables. First, the assemblages are compared on an individual variable-by-variable basis, and then a summary of these results is used to produce groupings of like assemblages.

As an initial analytical step, for each assemblage the relative proportions of each attribute state defined for a given variable were calculated, and the results were plotted as a simple line graph. Percentages rather than absolute frequencies were used because assemblage size varies so widely. The array of graphs illustrating the attributes of a particular variable for the ten assemblages were then visually compared, and assemblages which showed similar overall profiles were grouped together. The graphic comparisons for each of the twelve variables are outlined below. The basic data upon which the graphs are based are provided in Appendix G (Tables G.8–G.19).

Variable 1: Raw Material

Two attribute states are defined for the first variable, obsidian and chert, and all analyzed lithic items are included in the tabulations. The resulting graphs tend to form a continuum but may be divided into three classes (Fig. 18.1). In the first class, obsidian is highly dominant (over 80 percent): PC Str. 1, T-23, T-24, T-25, T-37ob. In the second, obsidian is still dominant but more moderately so (ca. 70 percent): T-9B, S-39. In the third class, the two raw material types are close to being equal in importance: T-9A, T-11, T-37fea.

Variable 2: General Assemblage Composition, Obsidian

The three attribute states defined for Variable 2 are modified pieces (including all edge-modified and shaped tools), unmodified blades, and debitage and cores. Again, three classes are observed (Fig. 18.2). In the first class, unmodified blades are clearly the most important feature of the assemblages: PC Str. 1, T-23, T-24, T-37ob, T-37fea. In the second, unmodified blades and modified pieces are roughly equal in importance, and both are more significant than cores and debitage: T-9A, T-9B, T-11, T-25. In the third, modified pieces are the dominant category with blades and debitage of lesser and roughly equal importance: S-39.

Variable 3: General Assemblage Composition, Chert

Variable 3, the chert complement of Variable 2, includes two attribute states, modified pieces and debitage/cores. There is very little variation among assemblages, but two classes are indicated (Fig. 18.3). In the first, the proportion of modified pieces is very low (15 percent or less): PC Str. 1, T-9A, T-9B, T-11, T-23, T-24, T-37ob, T-37fea. In the second, modified pieces are more significant (20–30 percent): T-25, S-39.

Variable 4: Lithic Workshop Identifiers

The six attribute states defined for Variable 4 include: unmodified obsidian

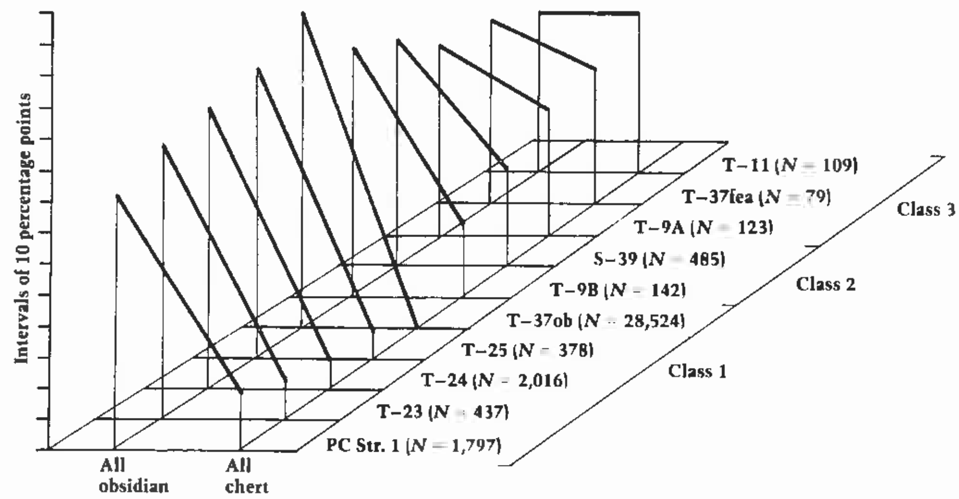


Figure 18.1. Comparison of Chalcatzingo lithic assemblages for Variable 1, raw material.

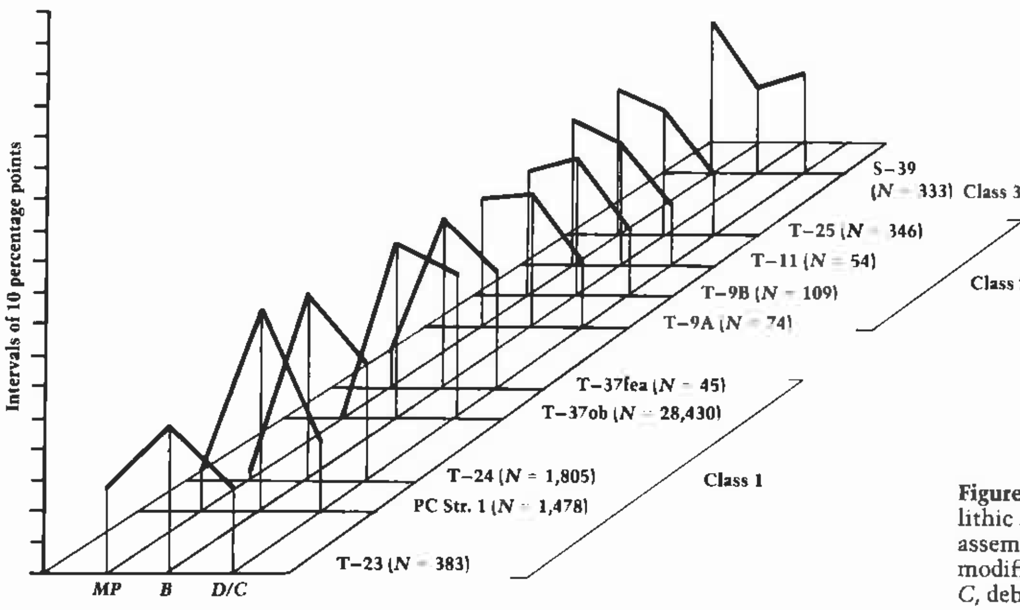


Figure 18.2. Comparison of Chalcatzingo lithic assemblages for Variable 2, general assemblage composition, obsidian: *MP*, all modified pieces; *B*, unmodified blades; *D/C*, debitage and cores.

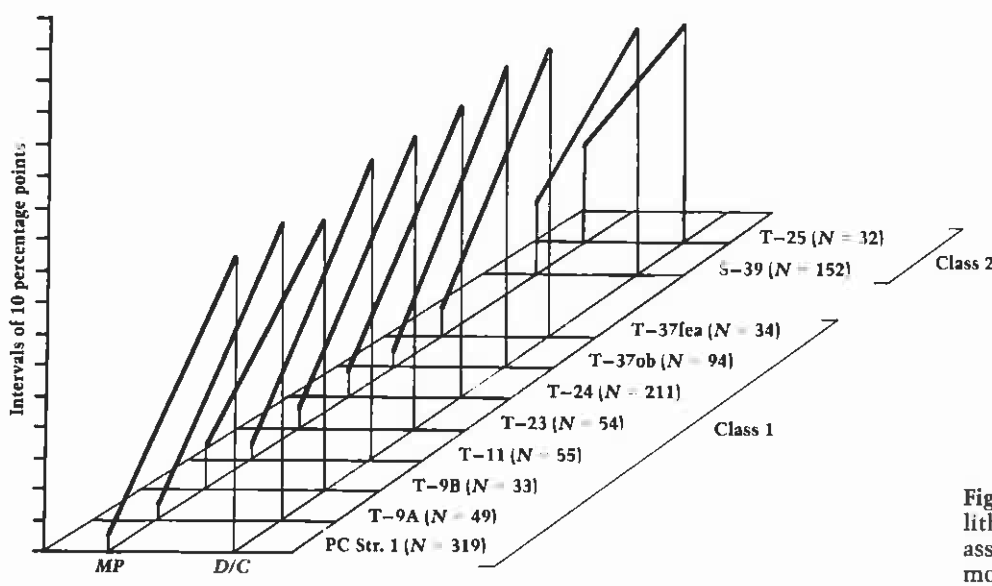


Figure 18.3. Comparison of Chalcatzingo lithic assemblages for Variable 3, general assemblage composition, chert: *MP*, all modified pieces; *D/C*, debitage and cores.

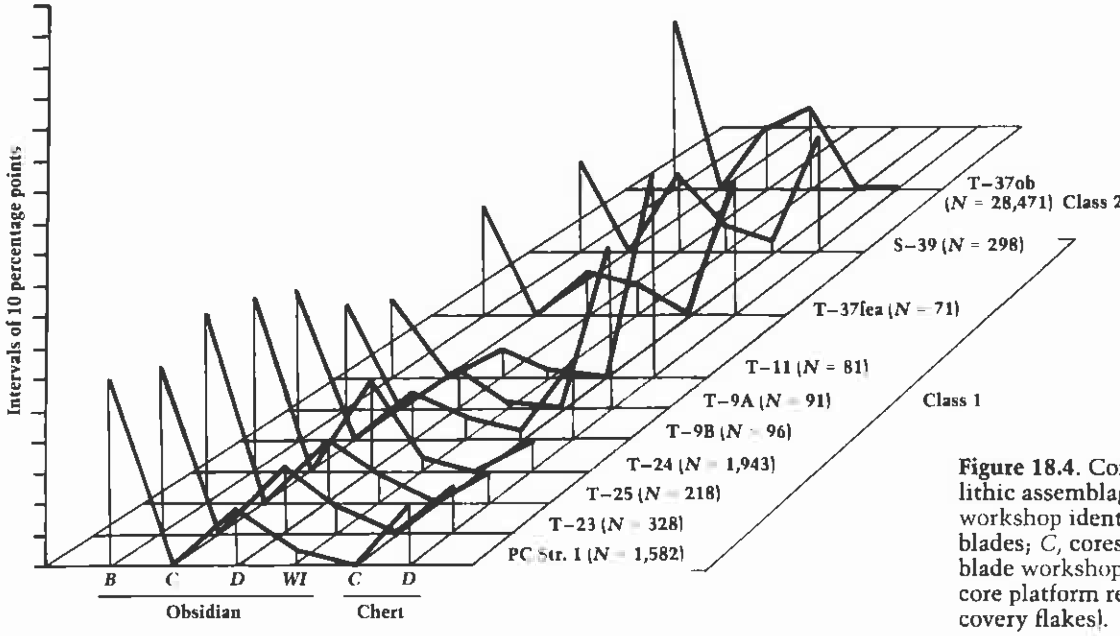


Figure 18.4. Comparison of Chalcatzingo lithic assemblages for Variable 4, lithic workshop identifiers: *B*, unmodified blades; *C*, cores; *D*, general debitage; *WI*, blade workshop identifiers (crested blades, core platform rejuvenation flakes, core recovery flakes).

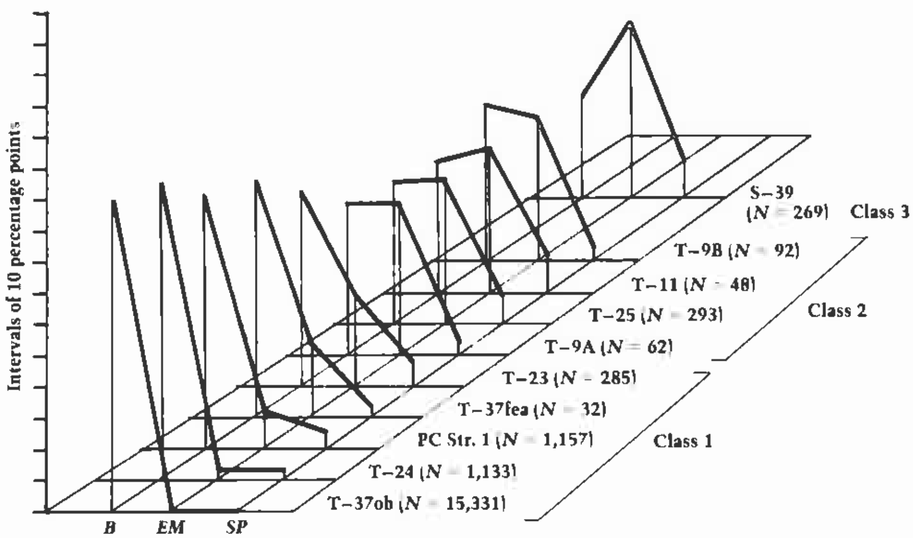


Figure 18.5. Comparison of Chalcatzingo lithic assemblages for Variable 5, general tool classes: *B*, unmodified blades; *EM*, edge-modified pieces; *SP*, shaped modified pieces.

blades, obsidian cores, general obsidian debitage, obsidian debitage directly relatable to blade manufacture (i.e., crested blades, core platform rejuvenation flakes, and core recovery flakes), chert cores, and chert debitage. The relative importance of obsidian cores, blade manufacturing debitage, and chert cores are the significant features here. Since the overall distribution of obsidian and chert has already been examined (Variable 1), variability on that level is not considered here.

Only two classes are indicated by the graphs for Variable 4 (Fig. 18.4). For all sampled areas other than T-37ob, various workshop identifiers are an insignificant feature of the overall lithic assemblage. In contrast, although cores continue to be unimportant, obsidian debitage directly relatable to blade manufacture accounts for a substantial portion of the T-37ob assemblage.

The importance of blade workshop identifiers in the T-37 obsidian concentration will be discussed in some detail in Chapter 19. Variable 4 was included in the comparative analysis as a means of separating out other lithic manufacturing loci should they exist in the areas sampled.

Variable 5: General Tool Classes

The fifth variable contrasts unmodified blades with the two general modified tool classes. The three attribute states are unmodified blades, edge-modified pieces (including blades, flakes, chunks, and cores), and shaped modified pieces. Both raw material types are included in these figures. All unmodified blades are regarded as possible tools although the actual fact of their utilization cannot be established.

Comparison of the graphs for Variable 5 indicates three classes of assemblages (Fig. 18.5). In the first class, unmodified obsidian blades are clearly the dominant feature (over 60 percent), with both edge-modified and shaped pieces of little importance: PC Str. 1, T-23, T-24, T-37ob, T-37fea. In the second class, unmodified blades and edge-modified pieces are of roughly equal significance with shaped tools still a minor element: T-9A, T-9B, T-11, T-25. In the third class, although unmodified blades are an important feature of the assemblage, edge-modified pieces are the dominant tool class: S-39. Although still the smallest tool class in the S-39 collection, shaped pieces are slightly more important than elsewhere.

Variable 6: Modified Tool Classes

The sixth variable eliminates the unmodified blades to provide a closer look at the general modified tool classes. The three attribute states for Variable 6 are edge-modified blades, other edge-modified pieces (flakes, chunks, cores), and shaped modified pieces.

The graphs for this variable are summarized in five assemblage classes (Fig. 18.6). In the first class, edge-modified blades are clearly the dominant tool class with both other edge-modified pieces and shaped tools of minor importance: T-9A, T-11, T-23. Graphs for the second class show an almost straight downward progression from edge-modified pieces to shaped pieces: T-9B, T-25, S-39. In the third class, the graphs approximate a straight horizontal line with all three modified tool classes roughly equal: PC Str. 1, T-37ob. In the fourth class, the progression seen in the second group is essentially reversed. In this case the near straight-line progression moves upward from edge-modified blades to the dominant class, shaped pieces: T-24. In the fifth class, edge-modified blades and other edge-modified pieces are roughly equal in importance while the proportion of shaped pieces is very low: T-37fea. It should be noted that the sample size for T-37fea is very low (N = 8) making its evaluation here somewhat uncertain.

Variable 7: Shaped Tool Categories

The attribute states for Variable 7 are the seven shaped tool categories defined for the Chalcatzingo lithic sample: (1) projectile points, (2) drill-like pieces, (3) wedge-shaped pieces, (4) coarsely shaped pieces, (5) finely retouched blades, (6) other shaped blades, and (7) unidentifiable shaped pieces. The resulting graphs are summarized in three assemblage classes (Fig. 18.7). In the first class, although projectile points have some prom-

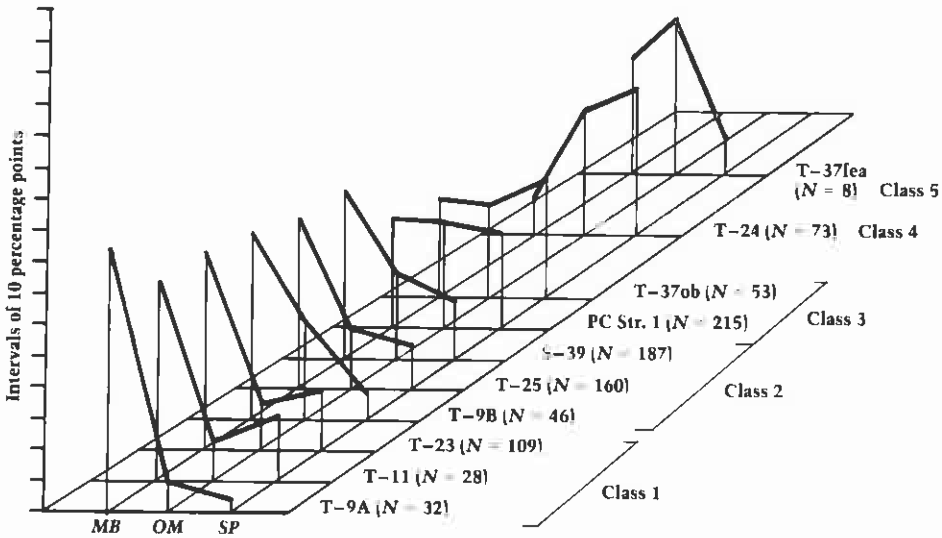


Figure 18.6. Comparison of Chalcatzingo lithic assemblages for Variable 6, modified tool classes: *MB*, edge-modified blades; *OM*, other edge-modified pieces (flakes, chunks, cores); *SP*, shaped modified pieces.

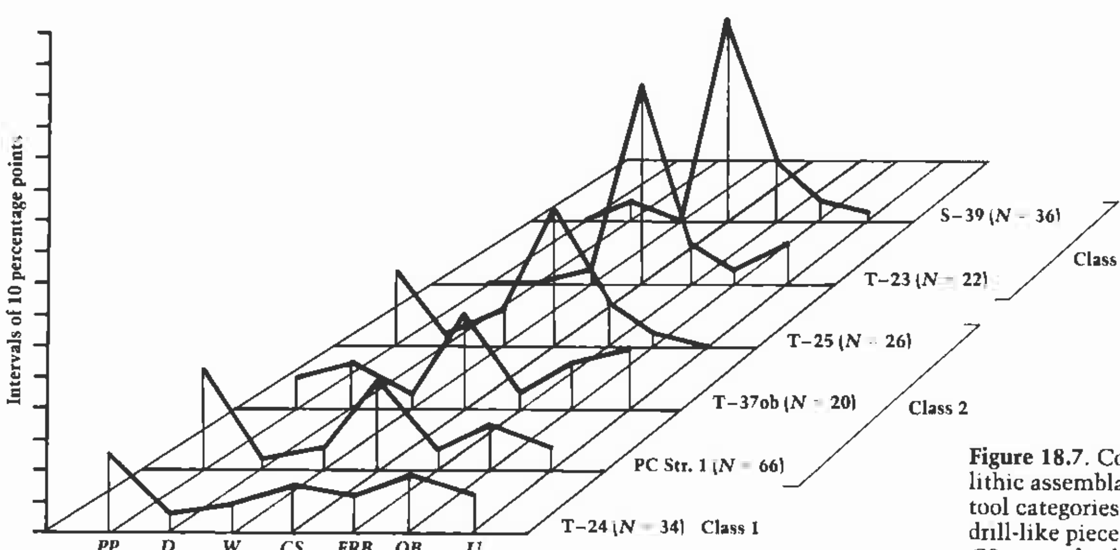


Figure 18.7. Comparison of Chalcatzingo lithic assemblages for Variable 7, shaped tool categories: *PP*, projectile points; *D*, drill-like pieces; *W*, wedge-shaped pieces; *CS*, coarsely shaped pieces; *FRB*, finely retouched blades; *OB*, other shaped blades; *U*, other unidentifiable shaped pieces. T-9A, T-9B, T-11, and T-37fea excluded because of small sample size.

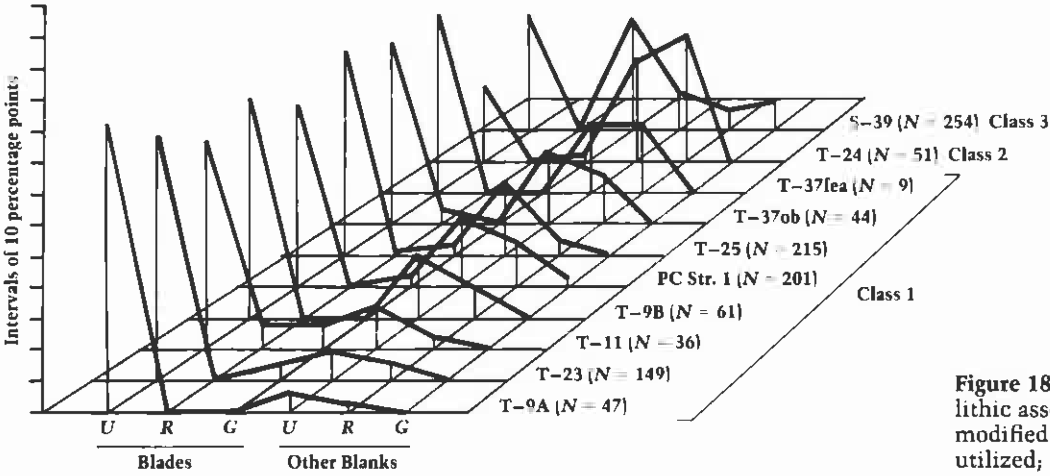


Figure 18.8. Comparison of Chalcatzingo lithic assemblages for Variable 8, edge-modified pieces, working edge types: *U*, utilized; *R*, retouched; *G*, ground.

inence, the graph approaches a horizontal line with all tool categories roughly equal in importance: T-24. In the second, coarsely shaped pieces and a second category (either projectile points or unidentified pieces) are of roughly equal importance with all others low: PC Str. 1, T-25, T-37ob. In the third class, coarsely shaped pieces make up the bulk of the sample (over 60 percent) with all other tool categories low: T-23, S-39. In four instances the shaped tool collections were too small to provide meaningful comparative data: T-9A (*N* = 2), T-9B (*N* = 4), T-11 (*N* = 6), T-37fea (*N* = 1).

Variable 8: Edge-Modified Pieces, Working Edge Types

The various working edge types defined for edge-modified pieces form the basis for Variable 8. The six attribute states used for comparison of assemblages include (1) utilized blade edges, (2) retouched blade edges, (3) ground blade edges, (4) utilized edges on other blanks (i.e., flakes, chunks, cores), (5) retouched edges on other blanks, and (6) ground edges on other blanks. Edges on blades were separated from edges on other types of pieces in order to get a fuller picture of assemblage composition. In order to avoid simply comparing relative proportions of blades and other pieces (see Variable 6), the definitions of assemblage classes for Variable 8 treat these two tool groups individually.

Three assemblage classes result from comparison of the graphs for Variable 8 (Fig. 18.8). The first class, which includes PC Str. 1, T-9A, T-9B, T-11, T-23, T-25, T-37ob, and T-37fea, is characterized as follows: (1) utilized blade edges are very important while the frequency of both retouched and ground blade edges is very low; (2) edge types on other pieces show a downhill progression from utilized to retouched to ground. The small size of the T-37fea collection (*N* = 9) makes it difficult to evaluate, and its inclusion in this class must be regarded as tentative.

The second class, which includes a single assemblage, T-24, differs only slightly from the first class: (1) blade edge distribution is like that of the first class; (2) on other types of pieces, retouched edges are slightly more important than utilized edges, while ground edges are again the least important type.

The third class also includes only a single assemblage, S-39; however, its characteristics are more markedly different than those of the other two classes: (1) ground blade edges equal utilized edges in importance while retouched blade edges are very scarce; (2) on other types of blanks, ground edges again nearly equal utilized edges while retouched edges are of minor importance.

Variable 9: Edge-Modified Pieces, Placement of Chipping

The four attribute states defined for Variable 9 include unifacial chipping on blades, bifacial chipping on blades, unifacial chipping on other blanks, and bifacial chipping on other blanks. Figures for utilized and retouched edges are combined in the examination of Variable 9. Again, the two major tool blank groups (blades and other types of pieces) are examined separately in the definition of assemblage classes.

Two classes result from the comparison of the graphs for this variable (Fig. 18.9). In the first, bifacial and unifacial chipping are of generally equal importance on blade edges while on other types of pieces unifacial chipping is the dominant variety: PC Str. 1, T-24, T-37ob, T-37fea, S-39. In the second, bifacial chipping occurs on the great majority of blade edges while on other types of pieces unifacial and bifacial chipping are roughly equal in importance: T-9A, T-9B, T-11, T-23, T-25.

Variable 10: Edge-Modified Pieces, Working Edge Angles

The five edge angle classes which serve as attribute states for Variable 10 were defined after examining the overall distribution of edge angles (measured in 5° intervals) for the collection of edge-modified pieces. Although utilized blade edges tended to have a unimodal distribution, there was sufficient suggestion of bimodality to justify the definition of two classes of angles. Angles of retouched blade edges and both utilized and retouched edges on other tool blanks showed a fairly clear trimodal distribution. The five attribute states for Variable 10 are thus defined as (1) utilized blade edges, 30–55°; (2) utilized blade edges, 60–95°; (3) all other utilized and retouched edges, 30–55°; (4) all other utilized and retouched edges, 60–80°; and (5) all other utilized and retouched edges, 85–105°.

Variation in the edge angles of utilized blades appears to be the only clear differentiating factor among the graphs for this variable (Fig. 18.10). Two assemblage classes are defined on this basis. In the first class, higher edge angle blades are equal to or more important than lower angle blades: PC Str. 1, T-24, T-37ob. In the second class, lower angle blades are

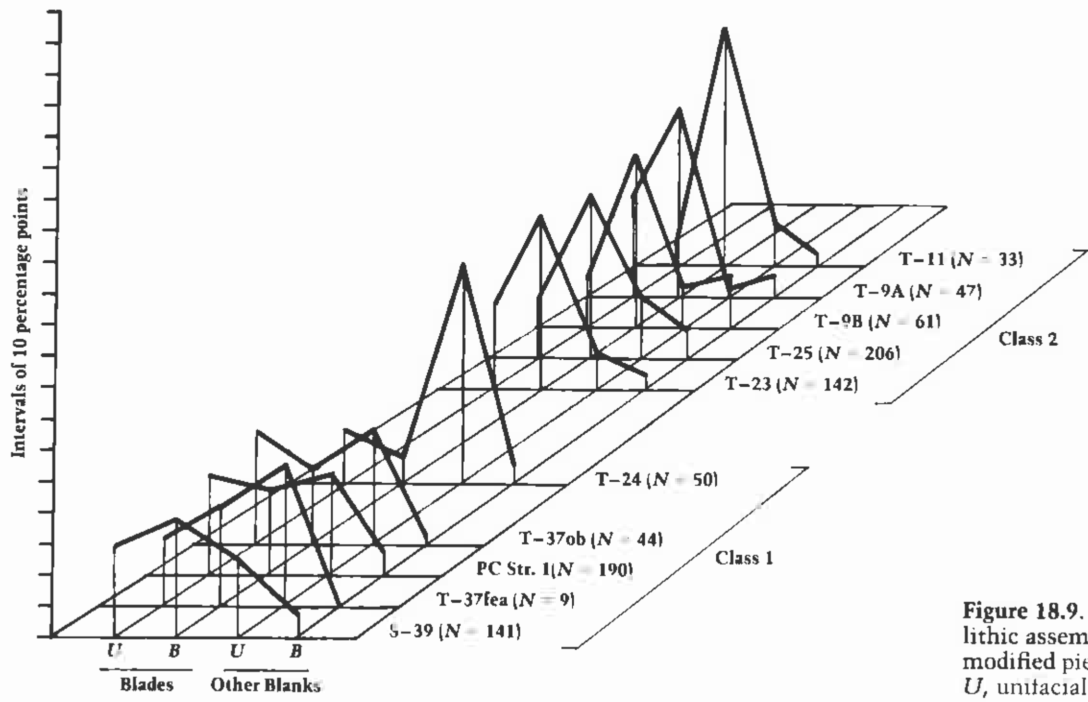


Figure 18.9. Comparison of Chalcatzingo lithic assemblages for Variable 9, edge-modified pieces, placement of chipping: *U*, unifacial; *B*, bifacial.

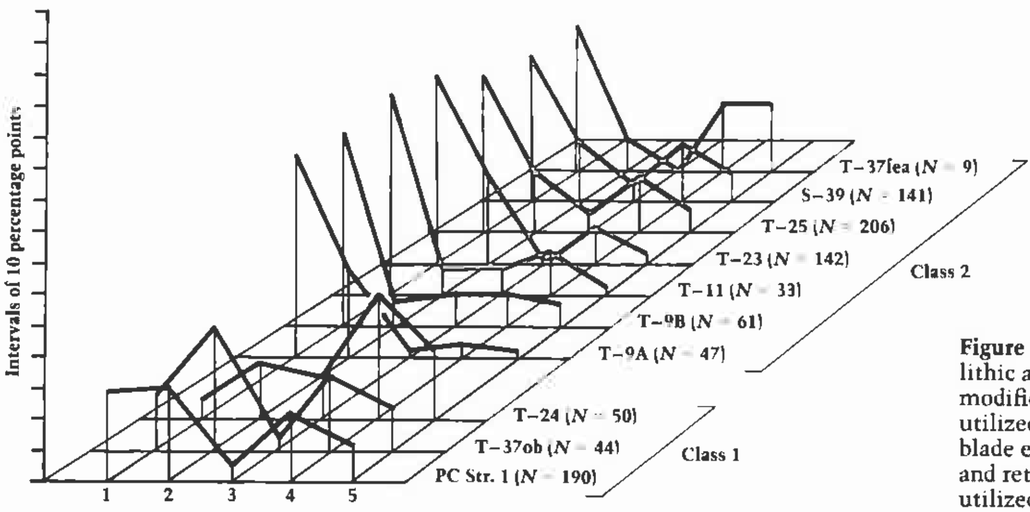


Figure 18.10. Comparison of Chalcatzingo lithic assemblages for Variable 10, edge-modified pieces, working edge angles: 1, utilized blade edges, 30–55°; 2, utilized blade edges, 60–95°; 3, all other utilized and retouched edges, 30–55°; 4, all other utilized and retouched edges, 60–80°; 5, all other utilized and retouched edges, 85–105°.

clearly the dominant category: T-9A, T-9B, T-11, T-23, T-25, T-37fea, S-39.

In virtually all cases, the edge angles on retouched blades and other utilized and retouched pieces show a pattern, with the intermediate edge angle category the most significant of the three. In two instances (T-9B and T-37fea), the intermediate category is equaled by either the high or low category, but the variation here is not sufficient to demand definition of separate classes for these two assemblages.

Variables 11–12: Edge-Modified Pieces, Working Edge Shapes

Variables 11 and 12 are essentially complementary. Variable 11 involves shapes of all utilized and retouched working edges on edge-modified blades. Variable 12 involves the same attribute states for utilized and retouched edges on other tool blanks. The attribute states for both variables are straight edges, convex edges, concave edges, and other shapes. Several additional edge shapes were recorded, but all are rare and so are simply combined as "other shapes."

On the basis of the graphs for blade edges (Variable 11), two assemblage classes are defined (Fig. 18.11). As would be expected, given the basic morphology of all blades, straight edges are by far the most significant category for all assemblages. Therefore, variations in the other categories are the source of class definitions. In the first class, the convex, concave, and other shape categories are all low and roughly equal: T-9A, T-9B, T-11, T-23, T-24, T-25, S-39. In the case of T-24, the concave category appears significantly lower than the other two;

however, the sample size here ($N = 12$) is relatively small and thus does not warrant definition as a separate class. In the second class, although still low, the concave category is somewhat more important than the convex and other shape categories: PC Str. 1, T-37ob. Sample size for T-37fea ($N = 5$) was too small to allow its inclusion in the Variable 11 analysis.

Three classes are indicated by the graphs for working edges on other tool blanks (Variable 12; Fig. 18.12). Most of the blanks in this group are flakes, and as would be expected on the basis of general flake morphology, convex edges tend to be the dominant form. In the first class, convex edges are clearly the most important category with all others relatively low: PC Str. 1, T-24, T-25, S-39. In the second class, although still the most frequent, convex edges are almost equaled by straight edges: T-9B, T-23. In the third class, concave edges are clearly the dominant category: T-37ob. Three assemblages were excluded from this comparison on the basis of small sample size: T-9A ($N = 4$), T-11 ($N = 6$), T-37fea ($N = 4$).

Summary

The variable-by-variable comparison of assemblages is summarized here in the form of a matrix specifically arranged to maximize the clustering of high values (Fig. 18.13). Each cell in the matrix indicates the number of variables for which the two indicated assemblages fall into the same class. A pair of assemblages identical on all variables would thus receive a score of 12 in the matrix. The cells along the lower diagonal of the matrix indicate the number of unique occurrences for each assemblage (i.e., the number of instances in which the assemblage was the only member of its class).

The summary matrix essentially provides a quick index to the overall similarity between assemblages. A general inspection indicates that there is a good deal of variability in the levels at which assemblages resemble or fail to resemble each other. Although no two collections are exactly alike, six pairs agree on eight to ten variables out of the twelve possible. On the other hand, while there are no complete misses, sixteen pairs agree on only one to three variables.

On another, more interesting level, two distinct groups of assemblages are evident in the matrix as clusters of high values. In both cases the groupings have good internal consistency, and even more significantly the two assemblage sets are clearly mutually exclusive. Specifically, internal consistency is evident in the fact that all possible assemblage pairs in a given cluster show relatively high scores. The exclusiveness of the two

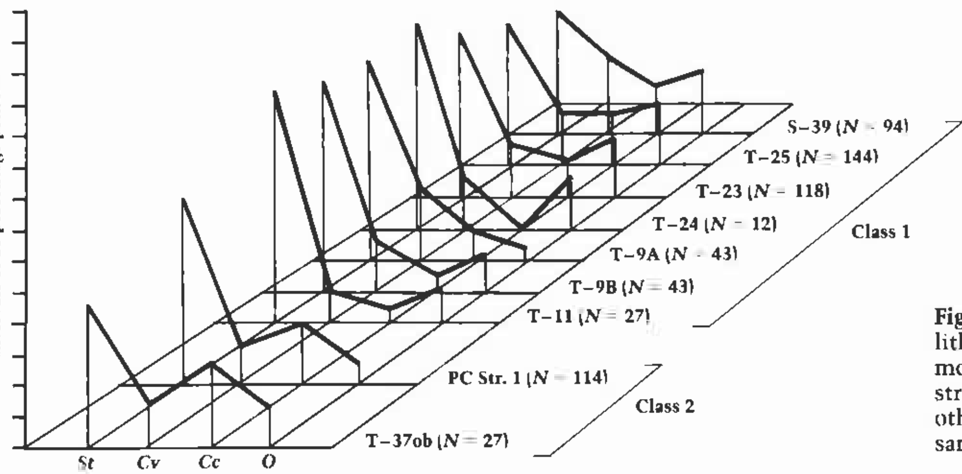


Figure 18.11. Comparison of Chalcatzingo lithic assemblages for Variable 11, edge-modified blades, working edge shapes: *St*, straight; *Cv*, convex; *Cc*, concave; *O*, other. T-37fea excluded because of small sample size.

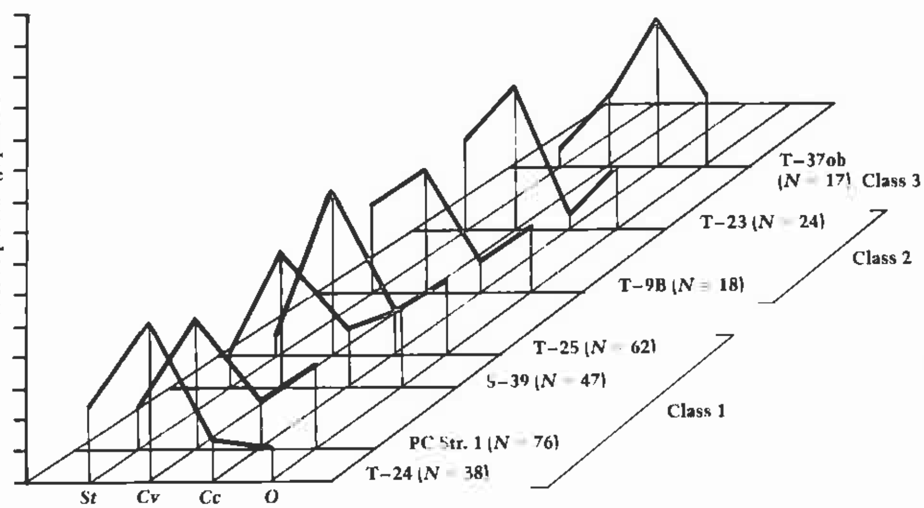


Figure 18.12. Comparison of Chalcatzingo lithic assemblages for Variable 12, other edge-modified pieces (flakes, chunks, cores), working edge shapes: *St*, straight; *Cv*, convex; *Cc*, concave; *O*, other. T-9A, T-11, and T-37fea excluded because of small sample size.

groups is demonstrated by the fact that all assemblage pairs combining members of opposing groups have low scores.

These two groups of assemblages do not entirely correspond to the expected functional differentiation of lithic tool kits outlined at the start of this analysis. Both groups include common residential areas and more specialized loci. Group A consists of three residential samples (T-9A, T-9B, T-11) and the supposed ceremonial area (T-25), while Group B includes the elite residence (PC Str. 1), the blade workshop trash deposit (T-37ob), and a common residence (T-24).

Among the three assemblages which fall outside Groups A and B, the other domestic area, T-23, resembles all other assemblages on a moderate level (i.e., scores for all possible pairings range from 4 to 7) and thus holds an intermediate position between the two groups while tending slightly toward Group A. T-37fea also falls in a position between the groups but tends to have a greater affinity with Group B. The generally low scores for pairings with S-39 separate this assemblage out as the one real loner in the collection. The greatest affinities of S-39 are with T-25 and T-9B, both members of Group A, but there is very little similarity between S-39 and the other two members of that group.

	T-37ob	PC-1	T-24	T-37fea	T-23	T-25	T-9B	T-9A	T-11	S-39
T-37ob	2*	10	6	5	5	3	2	2	2	1
PC Str. 1	Group B	0*	8	6	6	5	3	3	3	3
T-24			3*	5	6	4	3	3	3	4
T-37fea				1*	6	3	4	5	5	3
T-23					0*	6	7	7	7	4
T-25						0*	8	7	7	6
T-9B						Group A	0*	8	8	5
T-9A								0*	10	3
T-11									0*	3
S-39										3*

Figure 18.13. Matrix summarizing the variable-by-variable comparison of the ten sample lithic assemblages. Each cell indicates the number of variables for which the two indicated assemblages fall into the same class. Cells along the lower diagonal (*) indicate the number of unique occurrences for each assemblage. The matrix is specifically arranged to maximize the clustering of high values. Clusters of high values are indicated as Groups A and B.

Discussion

The variable analysis shows that there is some diversity among the ten assemblages making up the sample. Although the expected pattern of functional differentiation is not entirely borne out, there is a tendency for the assemblages from common residential areas to be similar. Three of the five residential collections cluster in Group A, while a fourth (T-23) shares many features with this group. Among the residential loci, only T-24, which falls into Group B, has a distinctive assemblage.

As was expected, the specialized loci, with the exception of T-25, tend to differ from the common residential areas; however, they do not differ as strongly from each other as was expected. Somewhat surprisingly, PC Str. 1, T-37ob, and T-37fea are all quite similar to S-39, the only really distinctive assemblage from a specialized area. In order to better understand the functional variability suggested by the analysis, the results are reviewed here with emphasis placed on the similarities and differences between both assemblages and assemblage groups.

Beginning on the most general level, the ten analyzed assemblages tend to share a number of characteristics providing a background against which the individual collections can be viewed. These shared characteristics present a basic pattern dominated by rapidly produced, multifunctional items such as unmodified blades, simple utilized blades, and coarsely shaped tools. The nature of this underlying pattern suggests that the generalized tool kit expected for residential areas actually forms some part of every assemblage.

The specific characteristics shared by the majority of assemblages include such basic elements as raw material types and general assemblage composition as well as some of the more detailed attributes related to tool form. Although the relative proportions vary, both local chert and imported obsidian are present at all loci. The great bulk of the chert tends to be debitage with both edge-modified and shaped tools quite rare. Within the obsidian component, unmodified blades are a major element of almost all assemblages. Unmodified blades are best regarded as potential tools. They may, in fact, include (1) actual tools briefly utilized in a manner leaving no macroscopic evidence, (2) potentially usable tool blanks, or the least likely possibility, (3) discarded workshop waste unsuitable for tool use.

Several more detailed attributes related to tool form are also almost universally shared. The majority of these characteristics suggest that beyond initial blank production only very limited effort was put into tool manufacture and maintenance. Shaped tools, in either obsidian or chert, form an insignificant part of all assemblages. Among the shaped items that do occur, the dominant form tends to be coarsely shaped pieces which are not refined for any specialized function. Edge-modified blades are generally the most important tool class, but this is hardly unexpected, given the overall importance of blades in the collections in general. Among all edge-modified pieces (i.e., blades, flakes, chunks, cores) utilization is a good deal more important than retouching or grinding; however, the relative proportions of unifacial and bifacial edges are variable. Finally, several widely shared characteristics of the edge-modified tool samples are essentially direct expressions of basic tool blank morphology. Specifically, working edges of edge-modified blades tend to be straight and to be worked at low angles (30–55°). Conversely, working edges on flakes and other blanks tend to be convex, and to be worked at moderate angles (60–80°).

On a more specific level, the various traits typical of Group A and the related collection from T-23 seem to support and possibly even to amplify the tendency of all assemblages toward an unspecialized tool kit. Generally, these collections, which are largely from common residential loci, involve diversity in raw material and very limited variety in modified pieces.

Among the Group A assemblages, both raw material types tend to be of significance and in some cases are actually of equal importance (T-9A, T-11). Exceptions occur, however, with the bulk of both the T-23 (88 percent) and T-25 (92 percent) collections made up of obsidian. Dominance of obsidian is typical of the Group B assemblages.

The significance of the relative obsidian-chert proportions is open to more than one interpretation. Chert, which was available nearby, was a "cheaper" raw material; thus its presence in quantity may reflect a lower economic status for a particular area. On the other hand, a mix of obsidian and chert may simply result from a lesser need for the special tool blank characteristics of obsidian blades. Both of these factors may have been operative in the sense that if the more specialized product is also the more "expensive," then it probably will not be obtained unless its particular properties are needed. Although chert is significant in several Group A assemblages, it is largely present as debitage showing no macroscopic signs of utilization; therefore, its real functional importance is difficult to ascertain.

The modified portions of the Group A assemblages share certain interesting characteristics. In most cases edge-modified pieces and unmodified blades are of equal importance; however, T-23 is again the exception with blades much more numerous than edge-modified tools. Although other types of utilized pieces achieve a secondary significance in two of the assemblages (T-9B, T-25), the great bulk of edge-modified tools in the Group A collections consists of utilized blades. Bifacial working edges with low edge angles and edge shapes concomitant with basic blank morphology (i.e., straight for blades and convex for others) are additional attributes typical of Group A tool kits.

Shaped tools occur in such low numbers in most of the Group A samples (T-9A, T-9B, T-11) that the relative importance of the various defined types cannot be assessed. Coarsely shaped pieces are the dominant shaped tools in the T-23 and T-25 assemblages.

The characteristics outlined for the modified portion of the Group A assemblages provide a basis for several generalizations. The utilized tools, which are such an important feature of these assemblages, must be the result of fairly heavy, and possibly repeated, activity sufficient to produce clearly visible edge damage. The low angle bifacial edges indicate cutting as the primary tool function. In general there seems to have been little need for specially shaped working edges (retouched) or purposefully shaped tools.

The inclusion of the T-9B assemblage as a typical member of Group A is of particular interest since this sample from a Barranca phase house (T-9B Str. 1) was included in the analysis for comparative purposes. While this structure cannot be considered as definitely representative of Barranca phase non-elite residences at Chalcatzingo, the fact that it is not significantly different from the Cantera phase Group A structures in its lithic assemblage suggests that there may have been no major changes in household tool kits and use patterns during the Middle Formative at the site.

The strong association within Group A of the T-25 assemblage with materials from common residential loci also has interesting implications. When the T-25 sample was chosen for analysis, it was assumed to be reflective of activities which took place in a ceremonial precinct around the table-top altar, Monument 22. If this assumption is retained, then the activities involved apparently were much like those which took place in ordinary households (food preparation, maintenance of tools and household goods, and so on). Alternatively, the basic assumption of a direct association between the altar and the lithic collection may be invalid, and the assemblage may actually reflect activities at a residential locus. Prior to altar construction, T-25 was the location of a Barranca phase residence; later it was the site of a post-altar platform mound (T-25 Str. 2) which may have been the substructure for an elite residence. The long, complex occupational history of this terrace (see Chapter 7) makes functional evaluation of the lithic assemblage difficult.

The general impression given by the Group B assemblages is in large degree the opposite of that given by the residential collections of Group A. Specifically, raw material is less diverse while modified pieces show greater variability.

Obsidian is clearly the dominant raw material (over 80 percent) among Group B assemblages. The largest portion of this obsidian consists of unmodified blades, which greatly outweigh modified pieces in importance. This abundance of blades points to a probable need for the sharp cutting edges provided by such tool blanks. The little chert present in Group B collections again occurs largely in the form of simple debitage.

In the Group B assemblages, utilized blades do not hold the same dominant position they occupy in the modified portion of the Group A collections. Not only blades but also types of blanks other than blades (i.e., flakes, chunks, cores) are of some significance among edge-modified pieces, and shaped tools actually equal or surpass edge-modified blades in importance.

Although utilization is generally the most frequent working edge form on edge-modified tools, here again variability is greater than it is in Group A assemblages. Among working edge characteristics for edge-modified pieces, unifacial chipping is generally more important than bifacial, preference is for moderate rather than low edge angles, and edge shapes are again largely those dictated by basic blank morphology. Among the shaped tools there is a tendency for at least two categories (i.e., coarsely shaped pieces and either projectile points or unidentified shaped pieces) to be of importance in most assemblages, and in the case of T-24 all defined types are virtually equal in significance.

In general, the modified portion of the Group B collections suggests a greater emphasis on matching tool characteristics to a fairly wide variety of specific functions. Tools which have been extensively shaped to meet functional requirements (i.e., shaped modified pieces) are more numerous in these assemblages and occur in a greater variety of forms. Among edge-modified pieces, both the variety of blanks used and the mix of working edge types suggest that rather than utilize any readily available piece, people selected tool characteristics to meet specific functional needs.

PC Structure 1 can be described as having the most "normal" of the Group B assemblages. It fits well with both the general pattern for all assemblages and the specific pattern for Group B areas and does not appear to have any special distinguishing features. It does show a slightly greater proportion of concave edges on edge-modified pieces than is usual, but this does not really serve to set it apart. The variable analysis certainly did not highlight any unusual tool types or combination of attributes identifiable as possible elite items.

It is at least logically possible that the "average" character of the PC Structure 1 assemblage is the combined product of numerous burial offerings of lithic items associated with normal everyday activities; however, during excavation, lithic items were almost never noted as intentional grave goods. It seems much more likely that the lithic materials from the upper levels of the structure and adjacent trash deposit reflect a variety of activities which took place in this general portion of the Plaza Central. The characteristics which are part of the general pattern possibly relate to basic household tasks, while the greater specificity in tool function seen in this and other Group B areas presumably relates to the performance of more specialized tasks or crafts.

Because of the special nature of the deposit (see Chapter 19), the strong affinities of the T-37 obsidian concentration with the other Group B loci come as something of a surprise. Within the context of the variable analysis, T-37ob clearly shares in both the general pattern defined for all assemblages and the more specific pattern pertinent to the Group B assemblages; however, it also has certain unique characteristics.

The first characteristic unique to T-37ob is, of course, the basic feature which links the deposit with the manufacture of obsidian blades, or, specifically, the very significant proportion of workshop debitage in the assemblage. This particular type of debitage occurs throughout the site, but only in this sample collection is it more than an extremely minor element.

The second unique feature of the T-37ob assemblage is an unusual frequency of concave edges on both edge-modified blades and other edge-modified blanks. This edge shape suggests possible wood- or bone-working activities, and it is intriguing, if highly speculative, to see a possible link between this and preparation of the pressure tools and clamps required for blade manufacture.

The remarkable density of the T-37ob deposit is another unique characteristic of this assemblage but one which is really not considered within the context of the variable analysis. Since the analysis focuses only on the relative proportions of materials within individual assemblages, it does not provide information on variability in the overall density of artifacts. Comparisons on this level are certainly of possible interest, but unfortunately the necessary data were not recorded for all sampled loci.

T-24 is the only common residential locus included in Group B. Its assemblage shares in the general pattern and in the pattern specific to Group B areas but also exhibits several unique characteristics. All these unusual features involve the modified portion of the assemblage. First, this is the only collection in which both edge-modified tools on non-blade blanks and shaped tools are more numerous than edge-modified blades. Second, retouching, rather than utilization, is the dominant working edge type on the unusually abundant edge-modified tools on non-blade blanks. Third, all seven of the shaped tool categories are significant.

The emphasis in the T-24 assemblage on retouched edges and on a diversity of shaped tools seems to be an extension of the greater specificity in tool function seen to some degree in Group B assemblages in general. The apparent importance of edge and overall tool shaping and the unusual variety among the shaped tools may actually point to T-24 as a specialized locus of tool manufacture.

Like the T-23 sample, the T-37fea assemblage falls in an intermediate position between Groups A and B. The T-37fea collection is small and as a result rather difficult to evaluate. Because of its inadequate size, it was not included in the analysis of several variables. It appears to share in the general pattern for all assemblages and in part in the pattern specific to Group B. However, lack of data on certain aspects of the modified portion of the collection (i.e., shaped tools and edge shapes for edge-modified pieces) makes it impossible to establish whether or not the tendency of Group B assemblages toward more specialized tool forms is actually present here.

In the summary matrix, the S-39 collection displays such an unusual combination of characteristics that it appears not to belong with any of the other analyzed samples. Closer inspection indicates, however, that its special situation is largely an artifact of analytical procedures rather than a true characteristic of the assemblage.

The S-39 sample includes a remarkable abundance of one particular lithic item which presumably reflects a special activity peculiar to that locus. This unique item, a kind of tool (edge-modified piece with ground working edges) influences the evaluation of several variables, and as a result, its importance in the overall analysis is somewhat inflated. Specifically, it appears not only as an unusual abundance of ground edges (i.e., nearly half of the working edges on edge-modified blades and a third of those on other tool blanks) but also as an unusual frequency of tools in general.

The ground edges which are such an important feature of the S-39 assemblage appear to be a direct product of tool utilization. In some cases, use chipping is partially smoothed over by subsequent grinding, but in many instances raw blade and flake edges have simply been ground down through use. The sharp corners of blade sections as well as their edges are often ground as a result of having been drawn across an abrasive surface. The probable source of these ground working edges, incising or engraving activities, could be related to the ceramic manufacturing believed to have taken place in this area (see Chapter 16).

If edge-modified pieces with ground working edges are set aside and the remainder of the S-39 assemblage examined, the results conform with the general pattern for all assemblages and show a mix of the more specific patterns for Groups A and B. As in most Group A areas, the raw materials used at S-39 include a significant proportion of chert, primarily in the form of debitage. Also as in these collections, modified pieces and unmodified blades are of equal significance in the obsidian portion of the assemblage. As in Group B areas, on the other hand, within the modified portion of the collection edge-modified blades, edge-modified pieces on other blanks, and shaped tools are equal in importance. Specific tool characteristics show a mix of Group A and B traits. Among the edge-modified pieces bifacial and unifacial chipping occur at about the same frequency, low angle working edges are the most common form, and edge shapes tend to conform with basic blank morphology. Coarsely shaped pieces are the only important shaped tool category.

Detailed evaluation of the S-39 assemblage thus suggests that, like the Group B loci, this area supported normal household tasks as well as some sort of specialized craft activity. This area differs from the other specialized loci in that its special function is reflected in the abundance of a single unique tool type, edge-ground pieces. Elsewhere, specialized activities are reflected in an overall tendency toward a greater variety of tools chosen or prepared to meet specific functional requirements.

Conclusions

On the basis of the foregoing discussion, it is evident that the preliminary functional interpretations for the ten sample areas are generally supported by the variable analysis. As was expected, the common residential areas and the specialized areas tend to separate into distinct groups with definite indications of general-purpose tool kits at the former and more specialized tool kits at the latter. In two cases a functional re-evaluation is indicated by the analytical results. The supposed specialized assemblage from T-25 actually seems to reflect ordinary household activities while the collection from T-24 is more specialized than expected for a non-elite residence.

Although the general dichotomy between common residential and specialized loci is supported, the more detailed expectations outlined at the beginning of the analysis are not entirely in accord with the final results. The general-purpose character of common residential tool kits was expected to be manifested in a variety of unspecialized tools occurring in small quantities accompanied by moderate quantities of debitage. The actual analytical results indicate that debitage in moderate quantities is present in virtually all the assemblages and, thus, is not a distinguishing feature of residential collections. In addition, instead of a variety of simple tools, the residential assemblages are dominated by a single generalized tool type, the bifacial utilized blade.

In opposition to the diversity proposed for residential assemblages, it was expected that the specialized collections would be much more restricted. These loci were envisioned as special-activity areas devoted to a single task or a closely related group of tasks. Such specialized activities were expected to call for only a small variety of lithic items, and at least some of these items were expected to be selected and/or prepared to meet very specific functional requirements.

The actual analytical results again seem to be the reverse of those expected. Generally, the specialized assemblages share a basic generalized tool kit much like that of the residential loci, but in addition to this, they share a certain emphasis on a variety of slightly more complex prepared working edges and/or tools. The expected tendency toward tool specialization is, thus, present, but the proposed emphasis on a strictly limited variety of tools is not. The S-39 assemblage with its one abundant unique tool type is actually the only collection which approximates the highly restricted special-activity-area tool kit outlined in the original expectations.

In general, although the basic functional dichotomy proposed prior to analysis is supported by the results, the more detailed tool kit expectations appear to provide an inaccurate model. Specialized loci apparently supported activities requiring more specialized tools than did common residential areas. However, these loci also supported activities much like those typical of ordinary household areas. Thus, the original model of intense, localized specialization occurring to the exclusion of all other activities is not supported.

To conclude briefly, detailed examination of the sample assemblages has revealed variability in the chipped stone collection with significance for general problems concerning site structure. Preliminary functional interpretations of specific loci have been either confirmed or revised, and for some loci suggestions relating to the specific activities involved have been advanced. The lack of evidence for intense localized craft activities carried out in isolation from more generalized household tasks suggests that full-time specialization, at least as evidenced by lithic tools, was not a feature of the late Middle Formative economic organization at Chalcatzingo.

RESUMEN DEL CAPÍTULO 18

Con objeto de obtener la información descriptiva básica y explorar la variación dentro del sitio de las actividades asociadas con las herramientas de piedra se emprendió el análisis de las esquirlas de artefactos de piedra. Se formó una muestra de artefactos intencionada (no al azar), proveniente de las áreas de los pisos de las casas elíticas y no elíticas de las residencias Barranca y Cantera, así como de algunas áreas más especializadas, tales como el altar T-25, la concentración de obsidiana en T-37, y el posible centro de manufactura de cerámica en S-39. El muestreo así reunido se clasificó de acuerdo con el material empleado (obsidiana o cuarzo), y después se dividió en clases morfológicas. También se hicieron las observaciones correspondientes a las características de la forma de trabajo de los filos.

El material lítico predominante es la obsidiana gris, y el producto principal del trabajo de la obsidiana son las hojas prismáticas, las cuales ocurren en cantidades importantes en todas las áreas donde se llevó al cabo el muestreo y fueron usadas como herramientas y como bases para hacer herramientas modificadas. La pedacería, herramientas, y centros de cuarzo también ocurren en todas las áreas de muestreo, pero en mucho menor cantidad.

Se espera que diferentes actividades requieran una variedad de herramientas de piedra para labrar, y que la distribución de los tipos de herramienta, a través del sitio, refleje las actividades realizadas. Las actividades relacionadas con el mantenimiento general de una casa habitación se presume necesitaban de un surtido de piedra que se caracteriza por la diversidad, con énfasis en las herramientas de uso general, una moderada cantidad de pedacería sobrante. Las actividades más especializadas, por otra parte, tales como la manufactura o las demostraciones público-rituales, pudieron caracterizarse por su surtido más reducido, con énfasis en las herramientas de utilidad especial, y restos sobrantes ya sean abun-

dantes o escasos, de acuerdo con la actividad de cada caso.

Estas situaciones ideales que conciernen a las herramientas asociadas a las áreas de actividad residencial común en oposición a las de actividad especial, se aplicaron al análisis comparativo de los artefactos al través del sitio. Se utilizaron doce variables como base para comparar las diferentes áreas de donde se obtuvo la muestra lítica, habiéndose comparado variable por variable en cada muestreo, se sumaron después todas en la forma de una matriz. Aun cuando existe bastante variabilidad entre los muestreos provenientes de cada terraza, la matriz revela la existencia de dos grupos distintos cuyas variables líticas parecen aglutinarse. Resulta de interés, el hecho de que los dos grupos de muestreo no correspondan completamente con las situaciones ideales propuestas para oponer los juegos de herramientas de residencia común a los de función especial, y el que ambos grupos incluyan los esperados restos residenciales y de lugares especializados.

El grupo A consiste en tres muestreos residenciales (T-9A, T-9B, T-11) y la supuesta área ceremonial (T-25). Estas colecciones líticas reflejan generalmente la existencia de un juego de herramientas no especializado, y presentan pocos ejemplos de herramientas con filo hecho a propósito o con los filos de trabajo retocados. El cuarzo constituye una materia prima de importancia además de la obsidiana. T-9B es una residencia de la fase Barranca, y el hecho de haberse incluido en el grupo A sugiere que haya habido poco o ningún cambio en los juegos de herramientas generales entre las fases Cantera y Barranca.

El grupo B está compuesto por la residencia elítica (PC Str. 1), el depósito de basura del taller de hojas en T-37, y una residencia común en T-24. Este grupo se caracteriza por mostrar menos diversidad en las materias primas, con el cuarzo casi ausente, y una mayor diversidad en las herramientas modificadas. Parece ser que aquí se dio mayor énfasis a emparejar las características de la herramienta con una aceptable variedad de funciones específicas. Aun cuando S-39 no cae dentro del grupo B, también parece ser un área que incluía las actividades normales de una unidad habitacional al mismo tiempo que alguna clase de actividades de trabajo especializado.

Aun cuando la situación esperada de que los juegos de herramientas se separen claramente en dos grupos, generales y especializados, a través de todo el sitio parece comprobarse, el hecho de asignar áreas a priori a uno de los dos grupos resultó ser falso en algunos casos, y no todas las situaciones específicas esperadas pudieron ser comprobadas. La pedacería de desecho se encuentra presente, en cantidades moderadas, en cada uno de las muestras ensambladas por lo que no resultó ser un rasgo distintivo de uno u otro juego de herramientas. Las muestras residenciales no se caracterizan por una diversidad de herramientas sino por la existencia de un solo tipo de herramienta de uso general, la hoja bifacial utilitaria. Al revés, las actividades especializadas que se presumía necesitaran tipos de herramienta más restringidos resultaron tener mayor diversidad que la esperada, mostrando una variedad de filos de trabajo preparados con mayor complejidad. Finalmente, el modelo original de que el localizar la especialización intensiva trajera consigo la exclusión de las otras actividades, más generales, correspondientes a las de unidad habitacional no fue confirmado por los datos.

19. Obsidian Blade Manufacturing Debris on Terrace 37

SUSAN S. BURTON

During the investigations at Chalcatzingo an extremely dense concentration of obsidian debris was noted on the surface of T-37. The apparent size of this concentration suggested that it was not just an ordinary trash deposit. An accumulation of blade manufacturing debris seemed an obvious possibility, and in the hope of verifying this the area was examined in detail.

DESCRIPTION OF THE CONCENTRATION

Excavation indicated that the surface manifestations were part of a remarkably dense deposit of obsidian flakes and blade fragments in a minimal soil matrix. A small quantity of sherds and other artifactual debris occurred mixed with the lithic material and provided a basis for dating the deposit to the Late Cantera subphase (Ann Cyphers, personal communication). Several features of apparent late Middle Formative age were recorded in the immediate vicinity of the obsidian concentration and presumably represent roughly contemporary activity in the area. Unfortunately, no direct connection could be established between the concentration and the features, which included two burials and a possible activity area evidenced by a line of three postholes cut into bedrock.

The obsidian concentration was excavated in 1 m × 1 m × 10 cm grid units (Fig. 19.1). Arbitrary levels were used since no useful natural or cultural strata were observable. The natural soil stratigraphy on the terrace generally involved only two zones, a loose plow zone and a grey-brown friable subsoil (Fig. 19.1). The highly disturbed plow zone was shoveled off without screening for artifacts. The remainder of the excavation was largely carried out with trowels and ice picks, at some hazard to the workers, who suffered many cuts and nicks from the abundant and very sharp obsidian.

The bulk of the concentration was recovered by screening through ¼″ screen. However, the overwhelming quantity of obsidian in the first screen loads made it obvious that complete recovery would be unreasonably time-consuming. As a result, only pieces approximately 1 × 2 cm or larger were saved. Even without the small pieces discarded from the screen and the material from the plow zone, the concentration still yielded over 28,000 individual obsidian pieces weighing about 51.4 kg altogether. The total area of the obsidian deposit below the plow zone was roughly 2 m^3; therefore there were approximately 25 kg of obsidian per m^3.

The concentration covered a horizontal area of about 2 × 3 m and extended from the ground surface to bedrock, a distance of approximately 40 cm (Fig. 19.1). The upper 10 cm level had been extensively disturbed by plowing and thus was spread out somewhat, but the main body of the deposit seemed to have fairly sharply defined boundaries. There was generally an abrupt shift from the obsidian deposit area to the surrounding normal situation for the terrace (i.e., soil with a light intermixing of artifactual debris including some obsidian). No change in the composition or color of the soil itself seemed to occur at the concentration boundary; the minimal soil matrix within the concentration appeared to be just like the surrounding terrace soil.

In addition to the small quantity of other artifactual remains mixed with the obsidian, a few fragments of human bone were recovered from the densest part of the concentration. Tentatively designated a burial (no. 138), this scatter consisted of skull fragments plus a second cluster of fragments including two poorly preserved long bones, possibly femurs. Obsidian was tightly packed around most of the bones, both above and below, making excavation extremely difficult. The possible femurs, which were resting side by side in a parallel alignment, occurred just at the southern edge of the obsidian concentration and extended beyond it into an unexcavated unit to the south.

It was not possible to obtain a clear picture of the depositional relationship between Burial 138 and the obsidian concentration; the bone was far too fragmentary and eroded. The only bones giving any suggestion of an articulated position were the probable femurs which occurred just at the edge of the concentration. This suggests that the burial may pre-date the obsidian and that the two may have become mixed during deposition of the lithic debris.

The overall evidence indicated that the obsidian concentration was a trash pile deliberately deposited on that spot by human agents. The configuration of the entire deposit, with its long axis perpendicular rather than parallel to the terrace slope, eliminated the possibility of wash from higher terraces. Furthermore, the extreme density and compactness of the concentration made it obvious that if the material was manufacturing waste, it certainly was not a primary deposit on a workshop floor. No indications that the obsidian filled a pre-existing pit were noted during the excavations, so it was presumed that the material was originally piled on the terrace surface. Subsequent deposition then raised the soil level until the trash pile was almost covered.

It seemed possible that evidence of a blade manufacturing workshop might be located nearby since there is no obvious reason for the waste to have been moved a great distance from its source. However, although test pits were excavated elsewhere on T-37 and on the terrace immediately above and to the south, no evidence of such an area was located.

COMPOSITION OF THE DEPOSIT

By an analysis of the items which made up the deposit, it should be possible to test our assumption that the concentration was trash from blade manufacturing activities. The types of debris to be expected from such activities can be outlined using Don Crabtree's (1968) detailed technological reconstruction of Mesoamerican obsidian blade production.

1. *Percussion flakes from core preforming.* Core preforming should produce a body of percussion flakes of various shapes and sizes. Since Chalcatzingo is not located at an obsidian source, the raw material for blade manufacture must have been transported into the site. Research at obsidian quarry sites (e.g., Holmes 1900; Graham and Heizer 1968; Spence and Parsons 1972; Sheets 1975) indicates that a substantial amount of core preforming, producing both biface blanks and "macrocores" (Hester 1972), was generally carried out prior to transportation. However, final shaping to produce such refinements as the desired overall core form, suitable core platform surface, and straight corner ridges presumably would have taken place at Chalcatzingo.

2. *Crested blades* (or *lames à crête*). These waste blades are the result of a particular pattern of core preforming. According to Crabtree, "an unconditional requisite of preforming polyhedral cores is to first establish corners (ridges) on the preformed core. Without these ridges there can be no polyhedral shaped and no prismatic blades, for they are used to remove and guide the blades, and they are the inception of the 'faceted' shape of this core. If the percussion preforming has left these corners (or ridges) uneven, or not straight, they must be straightened by careful retouch" (Crabtree 1968:460). One means of straightening these corners involves "removing a series of alternate short flakes along the vertical length of the material" (ibid.: 455). These prepared ridges will direct the first blades removed from the core, and the result will be the "crested blade" (Crabtree 1972:72) easily identified on the basis of the bidirectional flake scars on either side of the dorsal ridge.

3. *Waste blades.* Ideally, once the core is correctly preformed, blade production should generate little waste. However, as they are pressed off, the blades leave the core at considerable velocity, and accidental breakage and dulling were probably a continuing problem. Waste blades might also be produced by misjudging the angle and/or intensity of pressure applied in removing them from the core. Blades judged to be too thick or too short as well as blades ending in a hinge fracture or carrying away the entire distal end of the core might also contribute to the accumulation of waste blades in a workshop.

4. *Core recovery flakes.* During blade production, internal faults in the raw material and/or errors on the part of the maker may damage the core and interfere with the continued production of prismatic blades. In some cases careful trimming may correct problems of this type and allow for a fuller utilization of the damaged core (Crabtree 1968:466–467). Flakes produced during core rejuvenation of this sort would characteristically show remains of parallel blade scars on their dorsal side, edges, and/or flake platform.

5. *Core platform rejuvenation flakes.* During the actual analysis of the Chalcatzingo materials, core platform rejuvenation flakes were found to be both easily identifiable and relatively abundant, and as a result were tabulated separately from the bulk of more generalized core recovery flakes. Specifically, core platform rejuvenation flakes are flakes removed from the proximal or platform end of a blade core by a blow transverse to the core's long axis. Remnants of parallel blade scars occur around the edges of such flakes and are the characteristic feature which makes them so readily identifiable.

The attempt to rework the platform of a blade core by transverse flaking of this sort is suggested as a response to several possible situations. It might be used to correct the damage caused by crushing the platform edge during blade removal or to improve the configuration of the platform surface for better seating of the pressure tool. It might also be used on nearly exhausted cores to remove the proximal end which will have become severely constricted as a normal result of blade production. The slightly thicker bulbs of force at the tops of the blades will result in the top of the core constricting more rapidly than the lower portions (Crabtree 1968:457, 463, 467).

Crabtree indicates that the most efficient or ideal method of platform rejuvenation would involve the removal of the entire core platform with a single blow. Flakes of this sort are generally referred to as "core tablets" (e.g., Hester, Jack, and Heizer 1971; Sanger 1968; Movius et al. 1968). Although there are complete "core tablets" in the Chalcatzingo collection, there are also many other flakes removed transverse to the long axis of cores which did not carry away the entire platform. Many were probably produced subsequent to initial tablet removal to improve the configuration of the new platform. Both complete core tablets and these other transverse flakes from the proximal ends of cores are included in the category "core platform rejuvenation flakes."

6. *Exhausted cores.* Exhausted cores and fragments of cores are a probable component of workshop debris. However, exhausted cores are known to have been utilized as tools in a number of Mesoamerican contexts (see Hester 1973), and so their presence in large numbers cannot be regarded as an absolute requirement for a workshop deposit.

7. *Small trimming flakes.* A quantity of small pressure flakes should be produced while keeping the blade core in trim for continuing blade removal. This category of manufacturing debris is mentioned here as a final logical possibility. If such flakes were present in the T-37 obsidian concentration, most were probably too small to have been recovered by the screening procedures used during excavation.

Two technical steps which are sources of small pressure flakes are mentioned by Crabtree (1968:462–465). First, after the removal of each series of blades around the core, it is necessary to trim off the small lip or overhang left around the top edge of the core by the bulbs of pressure. Secondly, small flakes may be produced in preparing the blade platforms. A secure seat for the pressure tool used in blade production can be provided by removing a small flake at the edge of the core platform at right angles to the long axis of the core. Platforms may also be prepared by scoring or grinding.

Having outlined categories of debris which would be the logical products of a workshop, it is possible to evaluate the question of whether or not the T-37 concentration is in fact a deposit of blade manufacturing. For analytical purposes the deposit was divided into four quads (see Fig. 19.1). The actual composition of each of these units is presented in Table 19.1.

The analytical categories used in this

table do not precisely duplicate those just outlined and so require some further explanation. Complete blades, proximal blade fragments, distal blade fragments, and blade midsections are all self-explanatory categories of prismatic blades. The category "waste blades" discussed above, although a logical component of blade production debris, was not usable in an analytical context. Unless obviously malformed, waste blades and their fragments are likely to be very much like the remains of blades which have been used as tools and discarded. Breakage, dulling, and battering which occur after deposition as a result of natural erosional actions and later human activities should serve to strengthen the similarities between waste blades and blades discarded after use. Flakes and flake fragments serve as residual categories for all other flakes not included in the specialized categories, core recovery flakes and core platform rejuvenation flakes. Specifically, the category designated as "flakes" includes whole flakes and flake fragments with striking platform present. "Flake fragments" are portions of flakes which lack the striking platform area. "Chunks" is a residual category for blocky bits of debris which do not belong in any of the recognizable categories.

Turning to Table 19.1, it is evident that slightly more than 25 percent of the lithic material in the concentration falls into the categories which are definitely recognizable as workshop debris. Specifically, crested blades make up 0.6 percent of the deposit, core platform rejuvenation flakes make up 11.5 percent, and core recovery flakes make up 14.4 percent. Blade cores and fragments, however, are rare, accounting for less than 0.1 percent of the material.

When the frequency of these workshop identifiers in the T-37 concentration is compared with their frequency in the analyzed lithic sample from other areas of Chalcatzingo (see Chapter 18), the differences are clearly significant (Table 19.2). Comparing crested blades, core platform rejuvenation flakes, and core recovery flakes with all other obsidian flakes and blades, the workshop identifiers make up 27 percent of the obsidian concentration collection and only 7 percent of the collection from other areas of the site. This evidence strongly supports the identification of the concentration as a specialized deposit associated with blade manufacturing activities. On an associational basis, it can be assumed that most of the concentration debris classified in the more generalized flakes and blade categories was also a product of workshop activities.

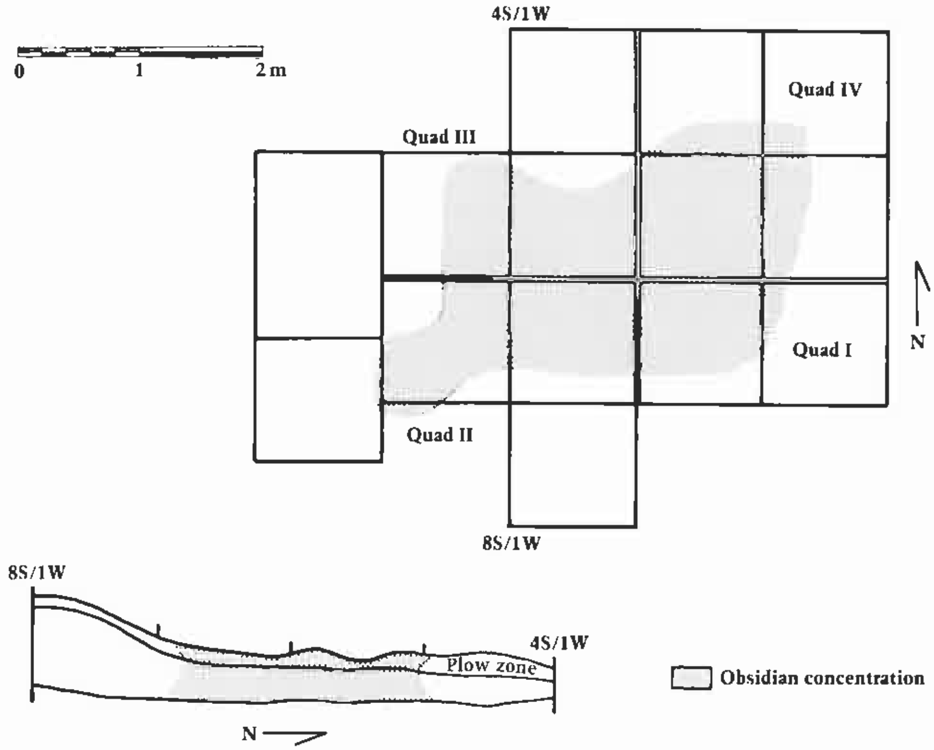


Figure 19.1. T-37 excavation units showing plan and profile of obsidian concentration (shaded).

It is interesting that polyhedral blade cores and core fragments make up only a tiny portion of the T-37 concentration. In fact, when compared with the rest of the analyzed Chalcatzingo lithic sample, it is obvious that cores are significantly more frequent in other areas of the site (Table 19.3). Comparing cores and core fragments with all obsidian blades, cores can be seen to be eight times more frequent in the lithic sample from other areas. Specifically, they make up 0.09 percent of the core/blade assemblage from the T-37 concentration and 0.79 percent of the same assemblage from other areas.

The evidence thus suggests that cores were disposed of in some special manner and did not remain with the general manufacturing trash. Discarded blade cores and/or fragments are found in small numbers in all areas of Chalcatzingo. In addition, cores which have been utilized and in some cases reshaped as tools are also known from various parts of the site. Their economic value as tools may, in fact, explain the separation of exhausted cores from workshop debris.

TECHNOLOGICAL DISCUSSION

This large accumulation of manufacturing debris supplies a variety of interesting insights into the blade manufacturing procedures used during the Cantera phase at Chalcatzingo. The absence of large, rough trimming flakes in the concentration and elsewhere on the site and the general lack of cortex on the flake debris indicate that obsidian entered the site as partially prepared core blanks rather than as nodules or large irregular chunks. The fact that the majority of exhausted cores have a half-cylindrical shape with one flat, unworked side suggests that the core blanks may have had a tabular form.

There are really no very clear indications of the original size of these blanks. All the known cores from the T-37 concentration and elsewhere are exhausted specimens. The dimensions of the three complete specimens from T-37 are generally typical: (1) 63 mm long × 23 mm wide with a platform circumference of

***Table 19.1.* All Lithic Materials Recovered from T-37 Obsidian Concentration**

	Obsidian Cores and Debitage										
Provenience	*Complete Blades*	*Proximal Blade Frags.*	*Distal Blade Frags.*	*Blade Midsections*	*Crested Blades*	*Flakes*	*Flake Frags.*	*Core Platform Rejuv. Flakes*	*Core Recovery Flakes*	*Complete Blade Cores & Frags.*	*Chunks*
Quad I											
10–20 cm	3	276	159	352	4	156	191	181	186	2	7
20–30 cm	5	717	364	930	28	447	442	390	394	0	14
30–40 cm	20	586	260	588	2	142	430	210	440	2	24
Quad II											
10–20 cm	1	381	222	515	9	191	228	218	225	0	15
20–30 cm	6	509	306	733	14	263	244	309	348	3	13
30–40 cm	1	315	205	294	13	132	139	191	279	4	19
40–50 cm	0	13	12	22	0	6	9	9	7	0	0
Quad III											
10–20 cm	4	704	501	895	26	316	336	445	653	0	31
20–30 cm	6	849	622	940	29	356	385	565	813	2	28
30–40 cm	1	36	31	50	0	24	17	28	37	0	1
Quad IV											
10–20 cm	4	401	238	465	14	186	240	356	278	0	13
20–30 cm	2	533	329	715	18	292	357	375	437	0	22
Subtotals	53	5,320	3,249	6,499	157	2,511	3,018	3,277	4,097	13	187
% of total collection	0.2	18.7	11.4	22.9	0.6	8.8	10.6	11.5	14.4	<0.1	0.7

					Modified Pieces			
	Chert Cores and Debitage				*Obsidian*		*Chert*	
Provenience	*Flakes*	*Flake Frags.*	*Blocky Flake Cores & Frags.*	*Chunks*	*Edge-Modified Pieces*	*Shaped Pieces*	*Edge-Modified Pieces*	*Shaped Pieces*
Quad I								
10–20 cm	4	3	0	0	2	0	0	0
20–30 cm	2	1	1	1	0	2	0	0
30–40 cm	0	5	0	0	0	1	0	0
Quad II								
10–20 cm	7	3	0	1	2	3	0	0
20–30 cm	0	4	2	5	2	2	0	0
30–40 cm	0	1	0	4	2	0	0	0
40–50 cm	1	0	0	0	3	1	1	0
Quad III								
10–20 cm	2	5	0	4	6	2	1	0
20–30 cm	7	4	0	2	6	5	0	0
30–40 cm	0	0	0	0	1	0	0	0
Quad IV								
10–20 cm	4	5	1	1	5	0	1	1
20–30 cm	3	4	2	1	4	3	0	0
Subtotals	30	35	6	19	33	19	3	1
% of total collection	0.1	0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1

Total obsidian cores and debitage	28,381 (99.5%)
Total chert cores and debitage	90 (0.3%)
Total modified pieces	56 (0.2%)
Grand total	28,527

Table 19.2. Comparison of Blade Workshop Identifiers in the T-37 Obsidian Concentration and in the Lithic Sample Analyzed from Other Areas of Chalcatzingo

Provenience	*Workshop Identifiers*[a]	*All Other Obsidian Blades and Flakes*	*Totals*
Obsidian Concentration	7,531	20,650	28,181
Other Areas	257	3,478	3,735
Totals	7,788	24,128	31,916
	$\chi^2 = 703.90$ $p < .001$		

[a]Crested blades, core platform rejuvenation flakes, and core recovery flakes.

Table 19.3. Comparison of Blade Core Frequency in the T-37 Obsidian Concentration and in the Lithic Sample Analyzed from Other Areas of Chalcatzingo

Provenience	*Polyhedral Blade Cores and Fragments*	*All Obsidian Blades*	*Totals*
Obsidian Concentration	13	15,121	15,134
Other Areas	20	2,513	2,533
Totals	33	17,634	17,667
	$\chi^2 = 57.62$ $p < .001$		

78 mm and a weight of 42 gm; (2) 67 × 16 mm with a 40 mm platform circumference and a weight of 19 gm; (3) 63 × 22 mm with a 62 mm platform circumference and a weight of 30 gm. Larger core sizes are indicated by platform circumferences of as much as 145 mm as evidenced by certain platform rejuvenation flakes which preserve the entire core tablet.

The presence of crested blades in the workshop debris indicates, as would be expected, that additional preforming of the cores took place after the core blanks reached Chalcatzingo. The general flake debris in the concentration is presumably at least partially a result of this activity also.

The abundance of general core recovery flakes and the specialized core platform rejuvenation flakes indicate that serious and presumably fairly extensive efforts were made to maximize the available raw material by reworking cores to improve their configuration after some blade removal had been accomplished. The platform rejuvenation flakes are of particular interest as evidence of this activity. Their frequency indicates that platform renewal was a standard procedure, while their size range (i.e., a significant proportion indicate larger platform areas than are typical of the known exhausted cores) suggests that such modification may have been effected more than once during the life of an individual core.

A second specialized type of core recovery flake was noted during analysis but because of the small size of the group was not tabulated separately. (Detailed attribute analysis would doubtless reveal other such subtypes.) This group consisted of relatively small flakes and short blades which had been pressed up from the distal end of the core in the direction opposite that of normal blade removal. Crabtree (1968:468) suggests just such a procedure as one means of correcting the problem created when a blade has hinged off rather than terminating properly: "This may be accomplished by creating a platform on the distal end of the core directly in line with the blade broken from the top of the core, though this is very difficult. When such a platform can be made, then the broken blade is pressed from the distal end of the core to intersect the hinge or step fracture and, if successful, the worker recovers the core and can continue in the original manner of blade removal."

Although not a major component of the workshop debris, the exhausted polyhedral blade cores are important technological indicators. The complete specimens and large fragments recovered from the T-37 concentration are typical of cores from the entire analyzed sample of Chalcatzingo lithics and as such will be described in some detail here. The dimensions of the three complete specimens have already been mentioned.

Three complete cores and five sizeable fragments were recovered from the obsidian concentration. Two raw material types were represented, a grey obsidian with dark banding (five specimens) and a grey obsidian with small, white, spherical inclusions (three specimens) (see Chapter 23 on obsidian source analysis). The majority of the specimens (five) had a half-cylindrical shape with one flat, unworked side. The three remaining specimens had had blades removed from their entire circumferences. Where present, the distal ends of all the cores were pointed.

Where it could be determined, the number of facets around the core circumference ranged from ten to thirteen, and maximum facet width ranged from 8 to 11 mm. Within this small sample, comparison of fully cylindrical and half-cylindrical cores did not indicate any differences in these ranges.

Only two specimens had intact core platforms; one was a single-facet surface and the other a multiple-facet surface. In both cases, the platform edges showed some crushing and other indications of final abortive attempts at blade removal. In the other three cases with proximal end intact, an attempt (apparently unsuccessful) had been made to rejuvenate the core. In each case, the old platform had been struck off by a single blow transverse to the core's longitudinal axis. The circumferences of the proximal ends of these five specimens ranged from 40 to 78 mm with a mean of 60.4 mm (SD = 14.975).

The exhausted cores in the concentration did share one characteristic not typical of cores from other proveniences—five of the eight specimens were fire-cracked. In fact, each of the three complete specimens was actually reconstructed from two or three fire-cracked fragments. This breakage had occurred after the cores were exhausted and platform rejuvenation, where present, had been attempted. This type of breakage was not observed elsewhere, and there is no clear explanation for its occurrence here. It may, however, explain the presence of these particular specimens in the workshop debris. As discussed previously, cores apparently did not normally remain with the workshop trash. The fire-cracked specimens were apparently broken in the workshop, either accidentally or as a result of some special usage, and then were swept up with the rest of the trash.

The blade fragments which make up the bulk of the obsidian concentration also provide certain technological information. As was indicated previously, the blades in the concentration do not generally seem to differ from the blade fragments found throughout the site. Again, an exhaustive attribute analysis might provide a basis for distinguishing between workshop waste and blades discarded after use, but at the present analytical level this was not possible.

As was true for the lithic sample in general, the blades in the concentration were parallel-sided and in a majority of cases showed two parallel ridges running the length of the dorsal side. A smaller proportion of the blades had a single dorsal ridge, and very rarely three or more parallel ridges were observed. At the proximal end, the blades constricted to a tiny platform which in the majority of cases was single-faceted; crushed platforms and more rarely multifaceted platforms were also noted in the collection. Neither blade platforms nor core platforms showed any signs of preparation by striating or grinding.

Based on a 10 percent random sample of blade midsections (N = 71) from the second level of unit 5–6S/0–1W (Quad III), blade width ranged from 7 to 26 mm with a mean of 13.6 mm (SD = 4.057). Blade thickness ranged from 1 to 7 mm with a mean of 2.5 mm (SD 0.976). For the same sample, 72 percent of the specimens had two dorsal ridges, while 28 percent had only one. None of the specimens in this particular group had more than two dorsal ridges. Turning to blade platform characteristics, a 10 percent random sample of proximal blade fragments (N = 61) from the same unit and level included 70 percent with single-faceted platforms and 30 percent with crushed platform areas. No multi-faceted platforms occurred in this sample.

A group of complete blades from the obsidian concentration were also examined in detail, and their physical characteristics are of some interest. It is, however, important to remember that if the entire deposit is workshop waste, then these complete blades almost certainly do not represent the optimal results of late Middle Formative blade production at Chalcatzingo. A collection of thirty blades from all four quads were analyzed. All of the specimens in this collection had normal distal ends (that is, none had hinged off). Blade length ranged from 42 to 93 mm with a mean of 61.2 mm (SD = 13.114); blade width ranged from 8 to 28 mm with a mean of 16.7 mm (SD = 5.192); thickness ranged from 2 to 9 mm with a mean of 4.3 mm (SD = 2.006); and blade weight ranged from less than 1 to 12 gm with a mean of 4.0 gm (SD = 3.918). Crushed platform areas were noted for 14 (47 percent) of the complete blades, while one specimen had a multifaceted platform; the remainder (fifteen) were single-faceted. Ten (33 percent) of the blades had a single dorsal ridge and four (13 percent) had three or more ridges; the remaining 16 (53 percent) had two dorsal ridges.

INTERNAL STRUCTURE OF THE CONCENTRATION

It was initially supposed that the obsidian concentration would be internally homogeneous, since the deposit seemed to be a secondary trash dump rather than a primary activity area. With a little further consideration of the problem, however, it was realized that secondary deposition would not necessarily lead to complete mixing of materials. Any original patterning of the material on the workshop floor would probably be reflected in a distorted and confused manner in the trash deposit. In addition, the very act of gathering up the debris and redepositing it might result in some unintentional sorting. An everyday example of this second possibility is evident in the way that particle sizes are sorted as dust is swept up into a dustpan.

The internal homogeneity of the obsidian concentration is examined in Tables 19.4 and 19.5. The overall results indicate that when the various excavation levels are compared across the entire deposit, homogeneity is quite evident (Table 19.4). However, when the four quads making up the deposit are compared, distribution of material is no longer random (Table 19.5). Specifically, although Quads I and III appear to be quite similar in composition, they are significantly unlike Quads II and IV. The vertical homogeneity is largely maintained when levels are compared on an individual quad by quad basis. Similarly, the nonrandom horizontal character of the deposit is generally supported when the quads are compared on a level by level basis.

The horizontal differentiation in the deposit presumably is a reflection of one or both of the potential sources of sorting mentioned above. The vertical homogeneity suggests that the manufacturing activities which produced the debris remained constant throughout the period of deposition. This in turn suggests that the entire period of deposition may have been relatively brief.

A second line of evidence also supports the idea that deposition occurred over a short period. As mentioned previously, each of the three complete cores recovered from the concentration consisted of several fragments. In one case, both fragments came from the same unit in Quad II, Level 2 (20–30 cm); however, the elements of the other two were more widely separated. One of these cores involved two pieces, one in Quad II, Level 3 (30–40 cm) and the other in Quad III, Level 2 (20–30 cm). The third core involved three pieces, one each in Quad I, Level 1 (10–20 cm); Quad I, Level 3 (30–40 cm); and Quad II, Level 3 (30–40 cm). Thus, Levels 1, 2, and 3 (10–40 cm) of Quads I, II, and III are all linked by these core fragments.

PRODUCTION ESTIMATES

Recognition of the obsidian concentration as a specialized deposit of workshop debris leads to the intriguing question of how much labor or how many original blade cores it might represent. Since the cores themselves are not present, the quantity of crested blade seems the best available basis for an estimate. Crabtree

(1968:460–462) indicates that a blade core can be started with only one prepared corner but may have two, three, four, or as many more as the knapper cares to create. The fact that the majority of the exhausted cores recovered from the concentration have a half-cylindrical shape with one unworked side suggests that corner preparation at the Chalcatzingo workshop was often restricted to only one or two ridges. Cores which are preformed with three, four, or more ridges will develop the full polyhedral shape. This observation, then, provides a basic assumption for use in estimating the number of cores represented by the deposit.

Other essentially uncontrollable factors also need to be mentioned, however. On the one hand, corner preforming can be accomplished without the special bidirectional flaking which results in a crested blade. In other words, the number of crested blades may be smaller than the number of prepared corners in the original group of cores represented by the concentration. On the other hand, the lithic items classified as crested blades during the analysis include both complete blades and fragments of blades. This means that several fragments from a single corner may be included as separate items, thus inflating the estimate of the number of cores represented. These two factors may tend to cancel each other out to some extent.

Keeping all these difficulties in mind, Table 19.6 provides estimates of the number of cores at T-37 based on one crested blade per original core and on two per original core. Using an estimate of 50–150 blades per core (Sheets 1975), it is then possible to estimate the total blade production these cores would have represented.

Assuming that all the blades in the concentration represent manufacturing waste, it is also possible to relate this figure to the estimated original cores and the blades they would have produced. Using two crested blades per core as a basis, the total waste per core is estimated at between 100 percent and 45 percent of core output. This would be an extremely low level of efficiency in the production of usable blades, and it suggests that if all the blades in the concentration are in fact waste, then the estimated number of cores is too small. When only a single crested blade per core is assumed, the waste per core becomes 66 percent to 20 percent, which seems more reasonable although probably still on the high side.

A second cross-check on the estimated number of cores is provided using the core platform rejuvenation flakes. No good estimate of the number of such flakes which might be produced in the reduction of a single core seems to be available; however, there is a tendency in the literature (Crabtree 1968:463, 467; Hester, Jack, and Heizer 1971:80) to see the process of core truncation as primarily a last-ditch effort to get a few more blades off a nearly exhausted core. This would suggest a rather small number per core. On the other hand, Crabtree also suggests that in some obsidian blade technologies difficulties in finding a secure seat for the pressure tool on the blade platform might lead to repeated core truncation. Specifically, he sees this problem arising where neither grinding nor scoring was used in platform preparation. Neither of these techniques is evidenced in the T-37 concentration. Hence, platform rejuvenation flakes might be somewhat more numerous per core. Still, it must be remembered that each truncation would shorten the core, making it doubtful that this operation could be carried out very many times before the core became too short for use.

Using two crested blades per core as a basis for estimating 80 original cores gives a total of 41 core platform rejuvenation flakes per core. Just as the propor-

***Table 19.4.* Comparison of the Composition of Levels 1, 2, and 3 for the Entire T-37 Obsidian Concentration**

Provenience: Levels (Quads I–IV)	*All Obsidian Blades and Fragments*	*All Obsidian Flakes and Fragments*	*Totals*
1 (10–20 cm)	*5,181.24*[a]	*4,378.76*	
	5,174[b]	4,386	9,560
2 (20–30 cm)	*7,626.61*	*6,445.39*	
	7,655	6,417	14,072
3 (30–40 cm)	*2,423.15*	*2,047.85*	
	2,402	2,069	4,471
Totals	15,231	12,872	28,103
	$\chi^2 = 0.77$		
	$p = .70$		

[a]Expected
[b]Observed

***Table 19.5.* Comparison of the Composition of Quads I, II, III, and IV for the Entire T-37 Obsidian Concentration**

Provenience: Quads (Levels 1–3)	*All Obsidian Blades and Fragments*	*All Obsidian Flakes and Fragments*	*Totals*
I	*4,283.19*[a]	*3,619.81*	
	4,294[b]	3,609	7,903
II	*3,409.54*	*2,881.46*	
	3,524	2,767	6,291
III	*4,698.34*	*3,970.66*	
	4,694	3,975	8,669
IV	*2,839.93*	*2,400.07*	
	2,719	2,521	5,240
Totals	15,231	12,872	28,103
	$\chi^2 = 19.69$		
	$p < .001$		

[a]Expected
[b]Observed

***Table 19.6.* Possible Estimates of the Total Number of Original Obsidian Blade Cores Represented by the T-37 Debris Concentration**

	Estimates Based on 1 Crested Blade per Core	*Estimates Based on 2 Crested Blades per Core*
Estimated no. of original cores (rounded) (157 crested blades used as basis)	160	80
Estimated total blade production (cores × blades per core[a])	8,000–24,000	4,000–12,000
Waste blades per core (5,373 waste blades[b] ÷ cores)	34	67
Proportion of total estimated blade production represented by waste blades (waste blades per core ÷ blades per core)	68%–23%	100%–45%
Core platform rejuvenation flakes per core (3,277 CPRF ÷ cores)	20.5	41

[a]An average of 50–150 blades is estimated for the typical Mesoamerican blade core (Sheets 1975).

[b]Complete blades (53) and proximal blade fragments (5,320) are combined to arrive at minimum total waste blades in the concentration.

tion of waste for the 80 core estimate seemed too high, this figure seems too large. When one crested blade per core is used to arrive at a 160 core estimate, the figure for platform flakes is reduced to 20.5 per core. As was the case with waste blades, this figure seems more reasonable although still on the high side. The final conclusion thus seems to be that the concentration represents the waste from a minimum of 160 cores and may well represent more.

Having set caution aside to a large degree in attempting to arrive at a figure for minimum estimated cores (MEC), it seems worthwhile to speculate a bit more. It should be kept in mind, however, that the MEC figure which forms the basis for these additional estimates is largely unsubstantiated.

It has been estimated that an expert worker would have needed from two to four hours per blade core for core preforming and removal of blades (Santley 1977a:8). This being the case, the 160 MEC represented by the T-37 concentration would have required 320–640 worker-hours for blade production. In other words, one full-time worker could have produced the waste deposit in two to four months. There is, of course, no reason to suppose that knapping was carried out on a full-time basis.

Using well-controlled data from a Late Formative site and a Classic village, Robert Santley (1977a:7) has proposed certain average annual rates of obsidian consumption. Although these figures may not be directly transferable to the situation at Chalcatzingo, they do provide a tantalizing means for taking the T-37 production estimates one tentative step further. For the Late Formative site, Santley estimates that a household of five discarded approximately forty obsidian fragments per year or the equivalent of six to nine blades and seventeen pieces of debitage. Using these figures as a basis, the 160 MEC represented by the T-37 debris would have produced the annual blade quota for approximately nine hundred to four thousand households or a ten-year supply for ninety to four hundred households.

Bearing in mind that these estimates are rough at best, the figures suggest that the T-37 blade manufacturing debris could easily have been produced by one or two part-time artisans. The volume of material produced would have been appropriate to supply Chalcatzingo and nearby smaller agricultural communities with obsidian tools for approximately a decade.

RESUMEN DEL CAPÍTULO 19

Las excavaciones T-37 revelaron la existencia de una abundante concentración de desperdicio de obsidiana en la subfase Cantera Tardío, lo cual hizo surgir la hipótesis de que fuera el resultado de la manufactura intensa de esquirlas cortantes en esta área. La concentración cubría un área de 2 × 3 m y se extendía 40 cm desde la superficie del suelo hasta el tepetate. Las perforaciones de prueba, hechas alrededor de la concentración, revelaron no haber muestra de que un taller de manufactura de esquirlas cortantes pudiera haber estado asociado a los desechos, aun cuando se pudo determinar que la concentración de obsidiana constituía un montón de basura puesto intencionalmente en ese lugar.

El análisis de las herramientas propiamente dichas y de los desechos que constituían la concentración revela que fueron definitivamente producto de la manufactura de hojas de obsidiana. Los identificadores del taller de hojas constituyen el 27 por ciento de los depósitos de basura y solamente el 7 por ciento del conjunto de obsidiana de las otras áreas del sitio. La ausencia de lascas de corte burdo y de cortex en el desperdicio de las lascas indica que la obsidiana que entró al sitio había sido preparada parcialmente en forma de núcleos limpios en vez de nódulos o pedazos grandes. La preparación adicional se llevó a cabo después de que los núcleos en blanco hubieron llegado al sitio. Los núcleos fueron retrabajados varias veces con objeto de conseguir el mayor número de esquirlas cortantes en la producción.

Si se emplea el número de hojas cumbreras como criterio para reconstruir el número de núcleos utilizados en la producción de este hacinamiento de desperdicio, puede llegarse a estimar el número de hojas provenientes de cada núcleo. El número mínimo de núcleos calculados, 160, se estima además haya requirido 320–640 horas hombre, tal vez el trabajo de uno o dos artesanos no totalmente dedicados a esta labor durante uno o dos meses. Es posible que el esfuerzo que refleja esta sola concentración de obsidiana haya producido la cuota anual de esquirlas cortantes que requería 900–4,000 unidades habitacionales, ciertamente lo suficiente para proveer a Chalcatzingo y las comunidades de sus alrededores durante varios años.

20. Ground Stone Artifacts

DAVID C. GROVE

During the course of the excavations, surface reconnaissance of the site, and other daily research activities, a variety of ground stone artifacts were found. For the purpose of lab analysis and description we have classified these into three major categories: utilitarian (manos, metates, barkbeaters, smoothers), miscellaneous (function unidentifiable), and portable sculpture.

The majority of the utilitarian artifacts are related to food preparation. Our analysis of these has been cursory, and the data presented in this chapter are primarily descriptive. We did not perform microscopic wear analyses of grinding stones, and thus cannot divide mulling stones from manos as did Richard S. MacNeish, Antoinette Nelken-Terner, and Irma and W. Johnson (1967: 101). Few significant patterns, either chronological or spatial, were ascertained during our analyses of these materials. Those which do occur are discussed within the descriptions which follow.

Although we could not ascertain the functions of certain artifacts, some questions have been raised by the patternings. For example, why are over 50 percent of the manos recovered during our research in fragments? Was the breakage accidental (which in most instances seems unlikely), or ritual, or for some other reason? Why do 23 percent of the manos recovered come from the area of the Plaza Central Structure 2 complex, a structure group which appears to have lacked domestic functions? Were broken grinding stones reused for other purposes in this area (either ritual or utilitarian purposes)? A similar question can be asked of the large quantity of spheroidal manos found in the same area.

As has been mentioned in other chapters, the fields at Chalcatzingo are heavily littered with stone. This abundance of surface stone is due both to the proximity of the archaeological zone to the cliffs and talus slopes of the site's two *cerros*, to prehispanic constructions of stone which once occurred on the site, and to the need during Chalcatzingo's long history for suitable stone for other purposes, such as food preparation. The barranca of the Río Amatzinac, near the foot of the site, provides an almost unlimited supply of igneous boulders and cobbles. Much of the surface stone at Chalcatzingo comes from this latter source.

The selection of stone for the different categories obviously varied. Food preparation tools such as manos and metates were manufactured usually from stones retrieved from the barranca. These are normally finer-grained than the granodiorite of the local *cerros*. Sculptures and carvings, on the other hand, are primarily from the granodiorite. Some denser, finer-grained stone may also have been brought from other areas (particularly during the Classic and Postclassic). However, in general it appears meaningless to attempt a "source analysis" of the ground stone artifacts (both utilitarian and carvings), for the variety of stones recoverable from the barranca source alone is so great that it would be nearly impossible to detect an "import" in the majority of the cases. Thus, our description of the artifacts does not give special attention to the petrographic composition of the individual pieces.

Comparisons in this chapter are drawn primarily from highland Formative period sites. Unfortunately, the comparative materials are not extensive. Although some data have been published from Gulf Coast sites (e.g., Coe and Diehl 1980), those comparisons which can be made do not appear to be meaningful.

UTILITARIAN ARTIFACTS

Manos (Fig. 20.1)

Turtle-Back Manos *(41 whole specimens, 95 fragments; Fig. 20.1*a*)*

Dimensions in cm: length, 11.7–27.0, average 18.1; width, 7.5–10.9, average 8.7; thickness, 4.9–8.4, average 5.9.

Turtle-back manos constitute 22 percent of the total manos recovered and were the most common type used at Chalcatzingo. They are characterized by their convex dorsal side. The ventral grinding surface is flat from side to side, but curved from end to end. Also characteristic is a sharp angular contact between the dorsal and ventral surfaces. The overall form strongly resembles a turtle shell. Their shape indicates that they were used in trough-like metates with a concave grinding surface, most likely rectangular tripod or legless metates.

Turtle-back manos occur in both the Barranca and Cantera phases. There are no data at Chalcatzingo suggesting they are earlier, but several have been found in Late Formative and Classic period contexts. Similar manos are found at Tlatilco (Lorenzo 1965: 36–37, Fig. 43), in the Ayotla and Manantial phases at Zohapilco (Niederberger 1976: Fig. 27, nos. 1, 2, 5, 6), and in the Ajalpan and Santa María phases at Tehuacan (MacNeish, Nelken-Terner, and Johnson 1967: 111, Fig. 91, bottom; 112–113, Fig. 93, bottom). Over 80 percent of the turtle-back manos recovered in our excavations were manufactured from vesicular basalt. Illustrated examples from Zohapilco and Tehuacan also appear to be of vesicular basalt.

Loaf-Shaped Manos *(5 whole specimens, 9 fragments; Fig. 20.1*b*)*

Dimensions in cm: length, 12.9–19.4, average 16.6; width, 7.4–10.5, average 8.6; thickness, 7.5–12.0, average 9.3.

Four of the five whole loaf-shaped manos are manufactured of vesicular basalt.

All specimens are shaped like bread loaves. Their thickness is usually equal to or greater than their width. The grinding surface is generally flat, or with only a very slight curve. Although one grinding surface is common, a few specimens have two, three, or four ground surfaces. Their shape indicates these manos were utilized with metates having a flat grinding surface.

These manos occur primarily in Cantera phase contexts. Two occur in the subfloor levels of Plaza Central Structure 1, one occurs on a Cantera phase floor of PC Structure 2, and others appear in similar contexts. No good comparison can be found at other central highlands Formative sites.

Quadrangular Manos *(14 whole specimens, 30 fragments; Fig. 20.1c)*

Dimensions in cm: length, 12.9–26.3, average 17.7; width, 7.1–11.3, average 9.0; thickness, 5.3–9.8, average 7.3.

Quadrangular manos differ from loaf-shaped manos in that their thickness is less than their width. The shape in top and side views is rectangular with rounded edges. The cross section is quadrate. The grinding surface is relatively flat, indicating their use on metates with flat grinding surfaces. They are manufactured primarily of vesicular basalt.

Although possibly occurring in the Barranca phase, quadrangular manos appear primarily in the Cantera phase, where they occur in domestic and burial contexts. Manos with the same general form are found at Tlatilco (Lorenzo 1965: 37, Fig. 46) and at Zohapilco in the Manantial phase (Niederberger 1976: Fig. 28, nos. 7, 8).

Large Triangular Manos *(14 whole specimens, 20 fragments; Fig. 20.1d)*

Dimensions in cm: length, 12.2–19.1, average 16.1; width, 6.3–11.9, average 8.6; thickness, 4.6–10.4, average 6.4.

Large triangular manos generally have two or three flat grinding surfaces, two of which come together to form an angle between 30° and 60°. They are similar in form to the two types described below, but are considerably larger.

This mano type is found most often in domestic contexts (house refuse and trash pits) from the Cantera phase. One example was found beneath an oval metate associated with Burial 54 on T-4. No examples were found in the few Barranca phase house areas excavated.

Triangular manos are found with burials at Tlatilco (Lorenzo 1965:37, Fig. 44) indicating presumably that, although not found in Early Formative contexts at Chalcatzingo, they were utilized in the central highlands during the Early Formative. Triangular manos also occur at Zacatenco (Vaillant 1930:37, 48, Pl. 47, nos. 4, 5, 7, 8).

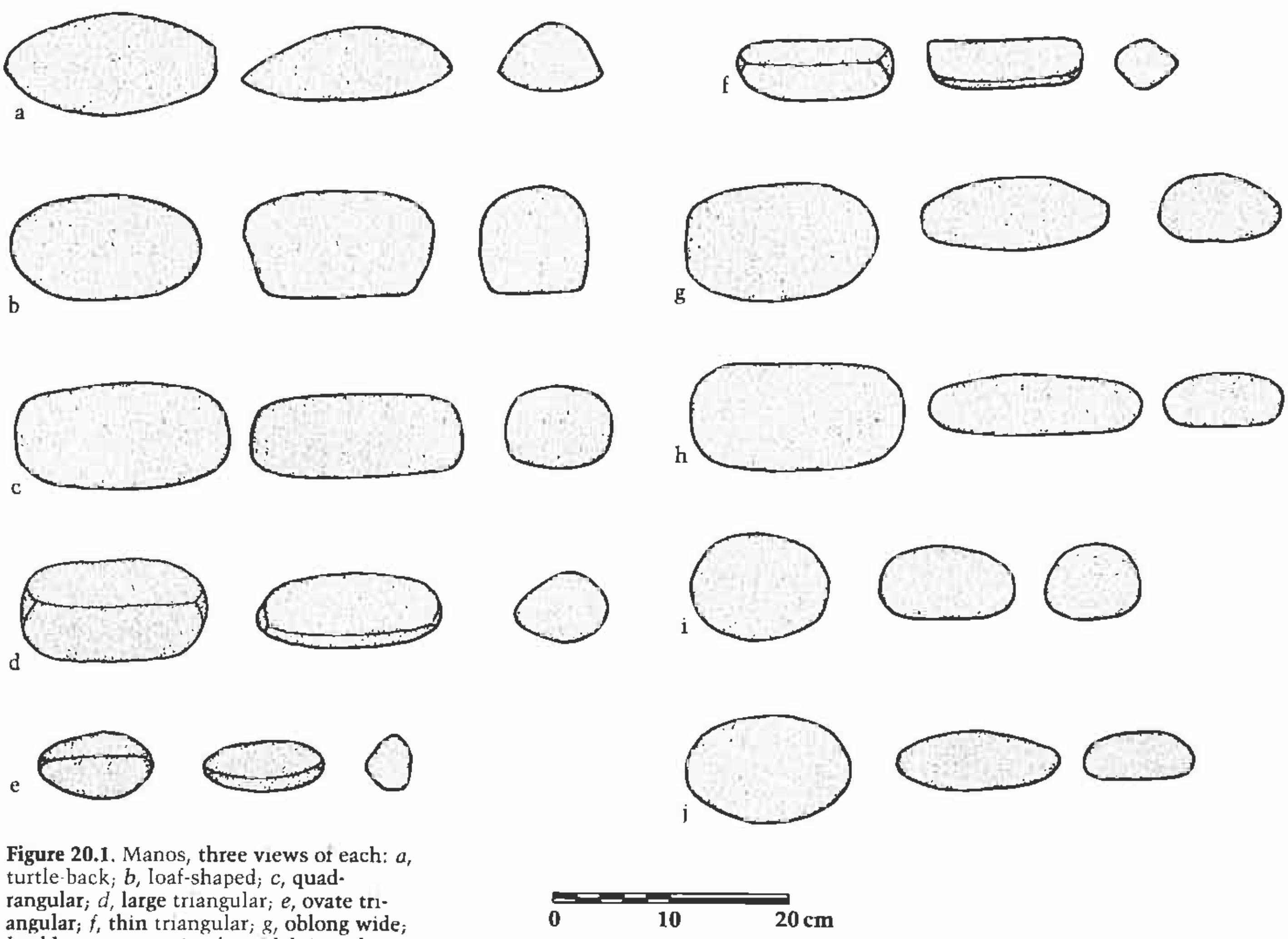


Figure 20.1. Manos, three views of each: *a*, turtle-back; *b*, loaf-shaped; *c*, quadrangular; *d*, large triangular; *e*, ovate triangular; *f*, thin triangular; *g*, oblong wide; *h*, oblong narrow; *i*, spheroidal; j, oval.

Ovate Triangular Manos *(11 whole specimens, 22 fragments; Fig. 20.1e)*
Dimensions in cm: length, 8.1–11.8, average 9.4; width, 4.2–6.7, average 5.4; thickness, 2.2–5.5, average 3.9.

Ovate manos are smaller than those described above, but like them have two to three flat grinding surfaces. Two grinding surfaces meet to form an angle of 30° to 60°. The width of this mano type is more than half the length. Their relatively small size suggests that they functioned for grinding purposes other than maize processing.

Seventy percent of the ovate triangular manos come from the area of the Plaza Central, the majority from the excavations of the Structure 2 complex. Of the thirteen specimens recovered from this area, only one unbroken example was recovered, the other specimens being fragments. The greatest quantity of iron ore fragments recovered on the site also come from PC Structure 2 (see Chapter 23). It is possible that some manos were used to grind hematite here. However, these manos do not appear to correlate with Str. 2 areas from which raw or ground hematite chunks were excavated, nor do hematite stains appear on the grinding surfaces of any of these manos (such a "stain" attribute apparently means very little). One ovate mano was recovered from a probable Barranca phase context; the others are primarily in Cantera phase contexts.

Similar manos are illustrated from Ticoman (Vaillant 1931: Pl. 89, bottom row, nos. 4, 5).

Thin Triangular Manos *(7 whole specimens, 18 fragments; Fig. 20.1f)*
Dimensions in cm: length, 8.1–15.8, average 13.2; width, 3.3–6.4, average 5.0; thickness, 3.9–5.8, average 4.5.

While similar to the above two types in form, thin triangular manos are smaller than large triangular manos, and are differentiated from ovate triangular manos in that they are thin, with their width less than half their length. Like ovate triangular examples, these seem too small to have functioned for maize processing.

These manos occur primarily in Cantera phase contexts. Although over half of the entire sample occurs in Plaza Central contexts, five of the seven whole manos were recovered from adjacent Terraces 25 and 27.

Oblong Wide Manos *(14 whole specimens, 43 fragments; Fig. 20.1g)*
Dimensions in cm: length, 10.3–16.4, average 13.1; width, 6.9–10.0, average 8.5; thickness, 4.4–6.6, average 5.6.

Thirteen of the fourteen whole specimens are manufactured from vesicular basalt. In top view these manos are oblong in shape. Their grinding surface laterally is flat. Their width is more than one-half their length, and their thickness more than one-third their length.

Although one whole oblong wide mano was recovered from the fill of a Classic structure, the other specimens are primarily from Cantera phase contexts.

Similar manos are illustrated from the Tehuacan Valley and cover a long time span in that region (MacNeish, Nelken-Terner, and Johnson 1967: 111, Fig. 90).

Oblong Narrow Manos *(10 whole specimens, 30 fragments; Fig. 20.1h)*
Dimensions in cm: length, 12.1–17.5, average 14.7; width, 6.4–8.9, average 7.8; thickness, 4.1–5.7, average 4.9.

These manos have an oblong shape, with their width usually less than half their length. Their thickness is approximately one-third their length. They generally have more rounded ends than oblong wide manos. Normally only one grinding surface is present. Among the whole specimens the sample is equally divided between manos made of vesicular basalt and those made of fine-grained igneous rocks.

Oblong narrow manos occur primarily in Cantera phase contexts. A mano of similar form but larger size is illustrated from Zohapilco (Niederberger 1976: Fig. 27, no. 3).

Spheroidal Manos *(76 specimens, whole and fragmentary; Fig. 20.1i)*
Dimensions in cm: length, 8.7–15.3, average 11.5; width, 7.1–11.8, average 8.8; thickness, 4.4–9.0, average 6.8.

Relatively round stones, spheroidal manos have at least one grinding surface, although some examples seem to have been utilized on all sides. This type of mano occurs primarily on the Plaza Central (66 percent), and there they occur in greatest quantities around the Structure 2 complex (57 percent of site total). Only one spheroidal mano exhibiting hematite stains was recovered. Of the nine metates and fragments from the same area, only three (two egg-shaped, one irregular shaped) have grinding areas of the type that would match the grinding surface of spheroidal manos.

With few exceptions, spheroidal manos from our sample occur in Cantera phase contexts. They are similar to the spherical manos from the Tehuacan Valley (MacNeish, Nelken-Terner, and Johnson 1967: 108–110, Fig. 89, top row), but larger than the stone balls recovered by Vaillant at Zacatenco, El Arbolillo, and Ticoman (see Balls, under Miscellaneous Artifacts, below).

Oval Manos *(18 whole specimens, 23 fragments; Fig. 20.1j)*
Dimensions in cm: length, 6.6–13.1, average 10.6; width, 3.3–9.1, average 6.9; thickness, 1.7–5.3, average 3.7.

Oval in form with relatively flat bottoms, the width of these manos is half or more than half their length. Normally only one grinding surface is present.

Oval manos occur in both Barranca and Cantera phase house contexts. They are similar to both ovoid mullers and ovoid manos described for the Tehuacan Valley (MacNeish, Nelken-Terner, and Johnson 1967: 106–108, Pls. 88, 89, bottom).

Irregular Shaped Manos *(9 whole specimens, 105 fragments)*
Dimensions in cm: length, 8.1–16.1, average 11.7; width, 5.2–9.5, average 6.8; thickness, 4.1–7.7, average 5.5.

These are unshaped, irregular rocks which exhibit at least one grinding surface. Because they are unshaped, they do not fit within any of the other mano categories. Although over 50 percent of the specimens recovered come from Plaza Central archaeological deposits, no whole specimens were found in this area. Whole irregular shaped manos were recovered in both Barranca and Cantera phase house contexts from other site areas.

***Metates* (Fig. 20.2)**

Rectangular Tripod Metates *(1 whole specimen, 27 fragments; Fig. 20.2a)*
Dimensions in cm: length (1 example), 38.9; width, 22.1–34.9, average 27.6; height, 5.6–9.8, average 7.4. Grinding surface: length, 34.1 (1 sample); width 20.4–30.0, average 23.7; depth, 0.1–7.2, average 3.4.

This metate type is characterized by its rectangular shape with rounded corners and by its three stubby legs. Two legs occur at one end of the metate, and a single leg is centered at the opposite end. This last leg may be slightly taller. Leg shape is rounded or ovoid. Our specimens occur in good Cantera phase contexts.

Rectangular tripod metates are not uncommon at other sites in the central highlands from the Formative through the Postclassic and exhibit little change except occasionally in leg form and

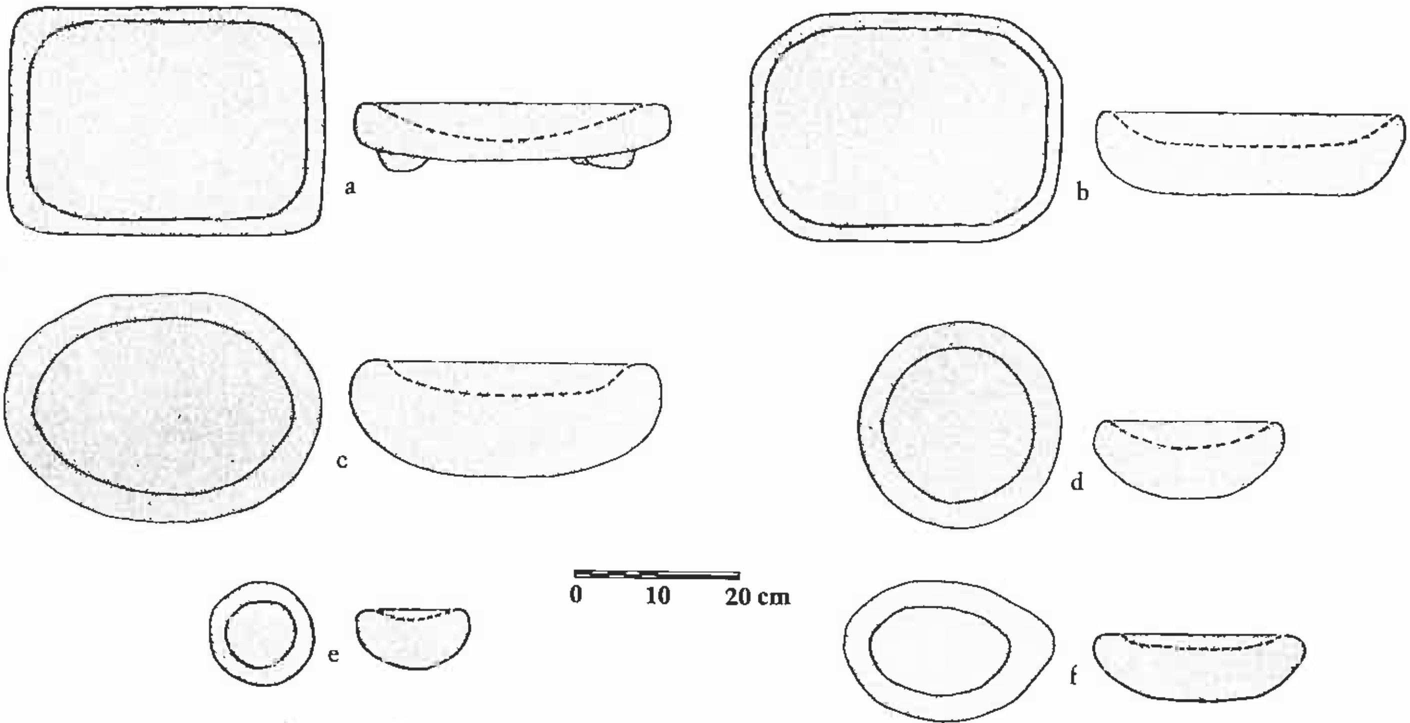


Figure 20.2. Metates, two views of each: *a*, rectangular tripod; *b*, rectangular legless; *c*, oval; *d*, circular; *e*, hemispherical; *f*, egg-shaped.

height. They are mentioned for La Nopalera cave during the Classic period (García Cook 1967:106, Pl. 37, Chart 24), and during the Classic and Postclassic at Tehuacan, where the change through time seems to be from ovoid to rectangular feet (MacNeish, Nelken-Terner, and Johnson 1967:120–121). No tripod metates are reported from the Early Formative at Tlatilco. Well-made tripod metates are illustrated by Vaillant from Zacatenco (1930:Pl. 66, nos. 1, 7), although the legs are better defined than those on our Chalcatzingo sample. Legged metates are also present at Ticoman (Vaillant 1931:Pl. 89) and San Lorenzo Tenochtitlan, Veracruz (Coe and Diehl 1980:1:228, Fig. 214).

Rectangular Legless Metates ***(4 whole specimens, 44 fragments; Fig. 20.2b)***
Dimensions in cm: length, 28.8–48.4, average 41.2; width, 18.2–34.8, average 28.4; height, 6.9–13.6, average 9.6. Grinding surface: length, 26.0–45.7, average 39.1; width, 15.4–31.6, average 24.1; depth, 0.7–7.3, average 4.3.

These legless metates are characterized by a generally rectangular shape although they have heavily rounded corners. While the basin- or trough-shaped grinding area usually has well-defined edges, in several samples the grinding surface is relatively shallow. Specimens come from both Barranca and Cantera phase contexts. Similar metates are found at Tlatilco (Lorenzo 1965:35, Fig. 41) and at Zohapilco (Niederberger 1976: Figs. 26, 27, no. 8). Although most of the Tlatilco and Zohapilco samples are from Early Formative contexts, one Zohapilco specimen is contemporaneous to our Chalcatzingo examples. No similar metates are illustrated from Zacatenco or El Arbolillo.

Circular Metates ***(3 whole specimens, 14 fragments; Fig. 20.2d)***
Dimensions in cm: diameter, 16.3–24.7, average 20.5; thickness, 6.3–9.7, average 7.6. Grinding surface: diameter, 7.7–20.2, average 15.2; depth, 0.1–2.7, average 0.7.

This category consists of circular or near-circular legless metates with shallow, slightly concave grinding surfaces. They occur in both Barranca and Cantera phase contexts. Circular "mortars" are present at Tlatilco (Lorenzo 1965:38, Fig. 48), but I hesitate to give that term to our specimens. Our examples are more similar to "saucer-shaped lipped metates" from Tehuacan (MacNeish, Nelken-Terner, and Johnson 1967:120), which are restricted to the Formative period in that area.

Hemispherical Metates ***(4 whole specimens, 3 fragments; Fig. 20.2e)***
Dimensions in cm: diameter, 10.9–12.6, average 10.8; thickness, 5.0–5.7, average 5.3. Grinding surface: diameter, 3.9–9.1, average 6.7; depth, 0.3–1.2, average 0.8.

These legless grinding stones are circular and in that respect similar to circular metates. However, they are significantly smaller, and in addition have an almost hemispherical cross-section. Interestingly, several also have a shallow concavity pecked into their base. As with small oval grinding stones, these do not appear to have functioned in maize processing. Because of the small quantity of hemispherical metates recovered during our research, their chronology and distribution pattern on the site is unclear.

Oval Metates ***(5 whole specimens, 17 fragments; Fig. 20.2c)***
Oval metates can be subdivided into two subcategories by size:

Large (1 whole specimen, 5 fragments). Dimension in cm: length, 37.3 (1 example); width, 19.8–28.7, average 24.0; height, 7.2–9.5, average 8.5. Grinding surface: length, 32.9 (1 example); width, 15.4–26.2, average 20.1; depth, 0.9–8.0, average 3.3.

Small (4 whole specimens). Dimensions in cm: length, 12.5–16.2, average 14.4; width, 9.7–11.1, average 10.2; height, 4.3–7.0, average 5.4. Grinding surface: length, 7.7–11.6, average 10.0; width, 5.4–7.3, average 6.6; depth, 0.2–1.0, average 0.7.

(Twelve fragments were not classified into the two subcategories.)

These metates, oval in shape and legless, fall into two definite size categories. Although the large metates were apparently used for maize grinding, it is uncertain what food or materials were ground on the smaller ones.

The differential distribution of these artifacts appears to be significant. The large oval metates are generally associated with Cantera phase house structures. One of the four complete metates comes from within the inner structure of the large Formative period earthen platform mound on the Plaza Central (Str. 4) and thus dates to the Amate phase. The remaining three come from T-25—two from a pre-altar, Barranca phase trash pit adjacent to the altar (see Chapter 7), the third in association with late Cantera wall lines on the north side of the terrace. Although no direct comparisons have been found between small oval metates and those described at other central highland sites, the large oval metates are similar to Tehuacan's boulder trough metates and basin-shaped metates (MacNeish, Nelken-Terner, and Johnson 1967: 118–120, Fig. 99).

Egg-Shaped Metates *(1 whole specimen, 10 fragments; Fig. 20.2f)*
Dimensions in cm: length, 25.4 (1 example); maximum width, 12.8–17.9, average 15.8; thickness, 3.6–10.2, average 7.1. Grinding surface: length, 17.2 (1 example); maximum width, 8.9–12.2, average 10.5; depth, 0.1–2.1, average 0.9.

These metates are egg-shaped boulders with oval grinding areas. While occurring in Cantera phase deposits, they may also continue into the Classic period. The closest similarities lie with the "boulder metate-milling stones" at Tehuacan (MacNeish, Nelken-Terner, and Johnson 1967: 118, Fig. 98).

Irregular Metates *(1 whole specimen, 8 fragments)*
Dimensions in cm for single whole specimen: length, 35.7; width, 20.0; thickness, 10.9. Grinding surface: length, 32.2; width, 15.5; depth, 0.4.

These are irregularly shaped boulders which do not fit within the categories above. They seem similar to "boulder metate-milling stones" described for Tehuacan (MacNeish, Nelken-Terner, and Johnson 1967: 118, Fig. 98). It is possible that our egg-shaped and irregular metates should be combined into a single category.

Flat Palettes *(11 whole specimens, 22 fragments)*
Dimensions variable.

These are irregular, unshaped flattish stones which exhibit grinding wear on one flat surface. They are similar to "whetstones" described by MacNeish, Nelken-Terner, and Johnson (1967: 126) from Tehuacan. Twenty-six of the thirty-three specimens from our excavations come from Plaza Central contexts, with 55 percent of the total quantity coming from the Structure 2 complex area. This area, as has been noted, produced the greatest quantity of iron ore fragments found on the site. Some of these iron ore specimens had been ground flat on one surface. However, none of the flat palette-like stones recovered contained any visible traces of hematite pigment.

Bark Beaters

Oval Beaters *(3 specimens; Fig. 20.3)*
Dimensions in cm: (*a*) length, 15; maximum width, 13.5; maximum thickness, 7.25; (*b*) broken length, 11.5; broken width, 10; thickness, 4.5; (*c*) broken length, 6.7; broken width, 9; thickness, 3.75.

Oval beaters are heart-shaped stones (maximum width near one end of the long axis, with a long taper to the artifact), with striations running parallel to the long axis. On artifact *a* (Fig. 20.3*a*), the striations are crudely engraved and not quite parallel. On artifacts *b* (Fig. 20.3*b*) and *c* (Fig. 20.3*c*) they are better executed. On *a* and *b*, the striations cover a surface area of only about 6 × 4 cm, while on *c*, they run across the entire width of the stone (which is broken, so their length is unknown). Artifacts *a* and *c* have curved surfaces which are striated, while *b* has a flat surface.

Artifacts *b* and *c* are surface finds. Beater *a* occurred in a Cantera phase archaeological context. Although some disturbance was present in the context, it

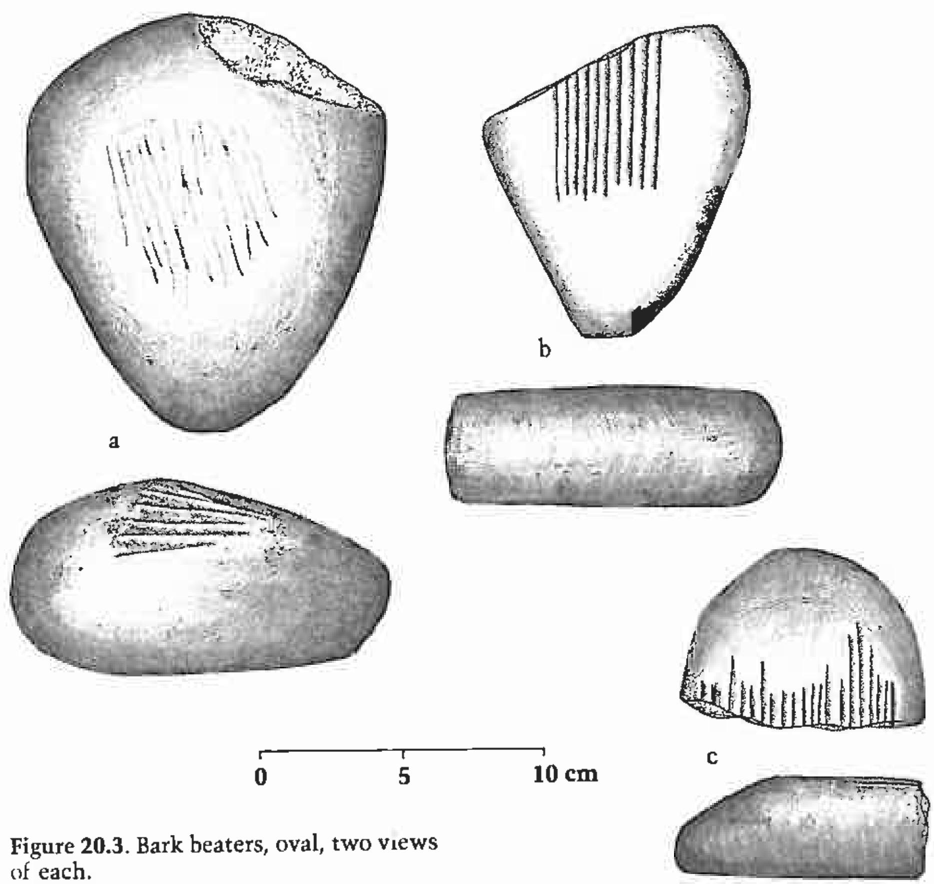


Figure 20.3. Bark beaters, oval, two views of each.

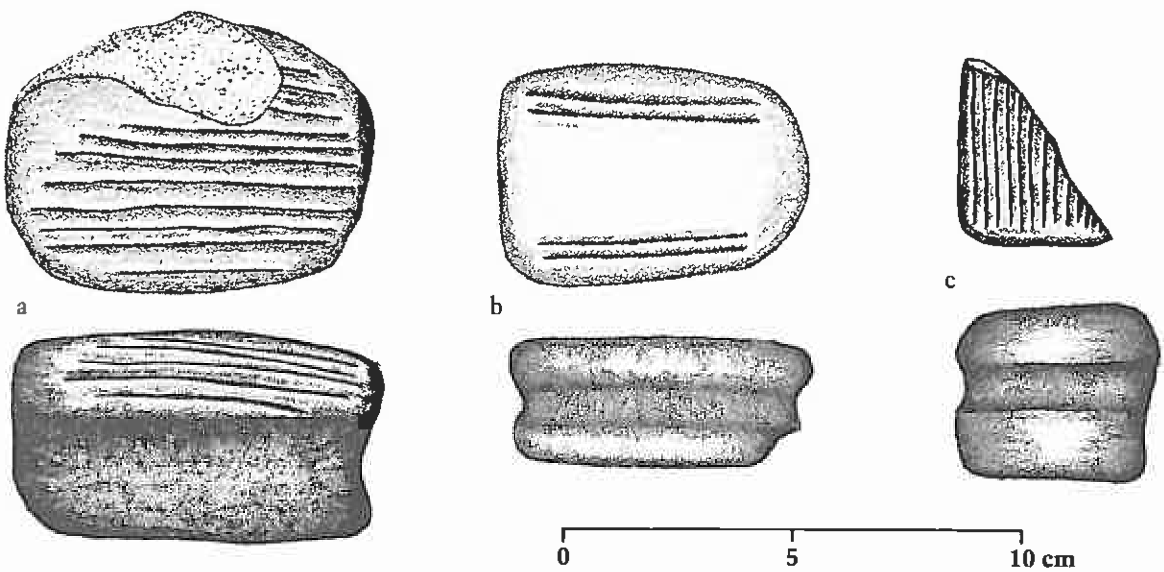


Figure 20.4. Bark beaters, rectangular, two views of each.

is due to intrusive Cantera phase burials. These artifacts could have been hand-held or anvil stones, for no hafting grooves occur such as are found with rectangular beaters (see below). Christine Niederberger (1976: Pl. 30, no. 10) illustrates a striated stone of slightly similar shape from Manantial phase deposits at Zohapilco. If these artifacts are bark beaters, they are the earliest reported for Mesoamerica.

Rectangular Beaters *(3 specimens; Fig. 20.4)*

Dimensions in cm: (*a*) length, 8.25, width, 6.25, thickness, 4.8; (*b*) length, 6.8, width, 4.7, thickness, 2.1; (*c*) too fragmentary to measure except thickness, 3.8. Hafting groove is 1 cm wide and ca. 4 mm deep.

The form of these three artifacts is typical of Mesoamerican bark beaters. They are rectangular stones which have an encircling groove around their side for hafting (see MacNeish, Nelken-Terner, and Johnson 1967: Fig. 135 for hafted example). Two artifacts in our sample, *a* (Fig. 20.4*a*) and *b* (Fig. 20.4*b*), have parallel striations on both sides, while *c* (Fig. 20.4*c*) has them on only one side. One striated surface of *a* is flat, and the other is slightly curved. The hafting groove on *a* is wide and shallow, while on *b* and *c* it is a deep channel. Both ends of artifact *a* are worn, as if part of the tip of the beater was used for grinding. Beater *b* has striations on both sides but only along the edges, suggesting that the central striations may have been ground down through other use of this artifact. Thus, two of the three beaters may also have been used for grinding.

Beater *a* is a surface artifact from the Plaza Central, while *b* and *c* are from Classic period deposits. Bark beaters and their distribution in Mesoamerica are well described most recently by Thomas A. Lee (1969: 129–131), and earlier by A. V. Kidder, Jesse Jennings, and Edwin M. Shook (1946: 143) and Paul Tolstoy (1963).

***Smoothing Stones* (Fig. 20.5)**

Flat Stone with Stub Handle *(1 specimen; Fig. 20.5*a*)*

Dimensions in cm: length, 13; width, 9; thickness, 5–6. The "handle" is ca. 4.5 cm in diameter and 6 cm long. It is located two-thirds of the way along the body of the stone.

This is a stone worked into a rectangular shape, with a projecting rounded "handle." The sides and base are shaped to flat surfaces, although the exterior is only slightly smoothed (rather than ground to a completely smooth finish).

Stones such as this could have been for flat grinding, and there is evidence that these may have been used as plastering trowels as well (Acosta 1964: 56). Although this type of handle is rare on these artifacts, odd-shaped handles do occur (Lee 1969: Fig. 83*a*; Tolstoy 1971b: Fig. 6*h*). As Tolstoy points out (1971b: 289), artifacts of this type begin as early as El Arbolillo I and may also occur at Tlatilco. They are not uncommon at Classic and Postclassic sites. The dating of the Chalcatzingo specimen is Cantera phase.

Flat Stone with Rectangular Handle *(1 specimen; Fig. 20.5*b*)*

Dimensions in cm: broken length, 6; width, 6.75; height including handle, 7.25.

Found on the surface of CT-1, this is a fragment of a flat-based rectangular stone, with the upper section sloping up into a vertical handle which runs almost the entire length of the artifact. The handle is slightly convex on both sides, allowing for gripping. This stone is more typical of smoothing stones than the artifact described above, and is like Tolstoy's "blotter variety" (Tolstoy 1971b: 289, Fig. 6f) which he states is most abundant at Classic sites, and like smoothing stones illustrated by Angel García Cook (1967: Pl. 33, nos. 1, 2).

Flat Stone with Perforated Handle *(1 specimen; Fig. 20.5*c*)*

Dimensions in cm: length, 7.75; handle length, 6.75; worn width, 5.75; estimated original width, ca. 7; height, 6.

This is a short rectangular smoother with a rectangular handle which is perforated through to form a rectangular loop. The handle is only 1 cm shorter than the body length. The sides of this artifact taper upward from the base at about 33°, but one side has been worn, apparently through use, into an opposite taper (inward toward the base) of ca. 40°.

This type of smoother is similar to Tolstoy's "flatiron type" (Tolstoy 1971b:

289, Fig. 6h) but not as well made. The wear pattern, if from use, suggests that the artifact was used for a grinding function rather than for smoothing plaster (a function normally attributed to these artifacts). This specimen is probably Classic period in date.

Flatiron Smoother ***(1 specimen; Fig. 20.5*****d)**

Dimensions in cm: flat arm length, 5; width, 3.5; thickness, 1.5; rounded arm length, 4; diameter, 2.

This is an L-shaped fragment of stone with one arm wide and flat and the other arm rounded. The surface is generally smooth. It is similar in shape to "flatiron pestles" described from Tehuacan (MacNeish, Nelken-Terner, and Johnson 1967: 85, Fig. 105). This specimen is a surface find and cannot be dated.

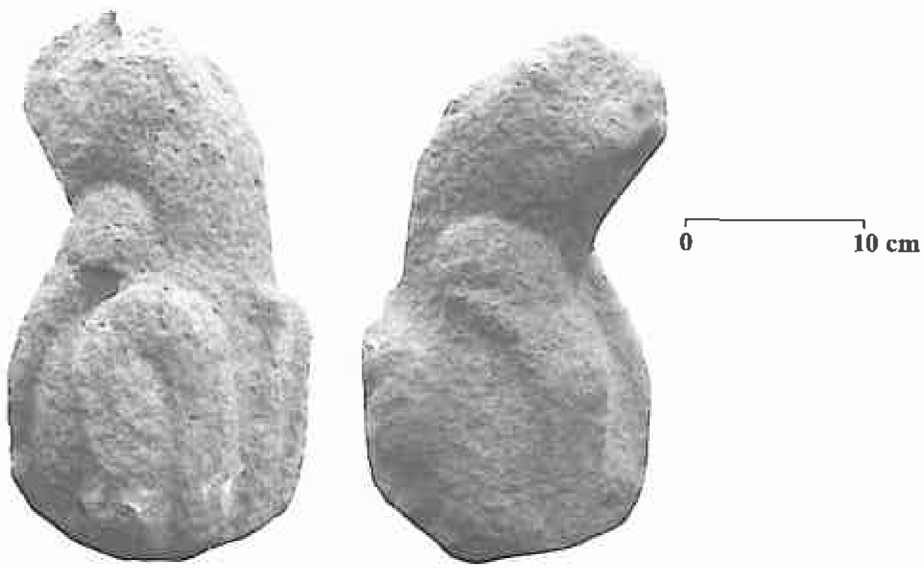


Figure 20.6. Animal sculpture, two views.

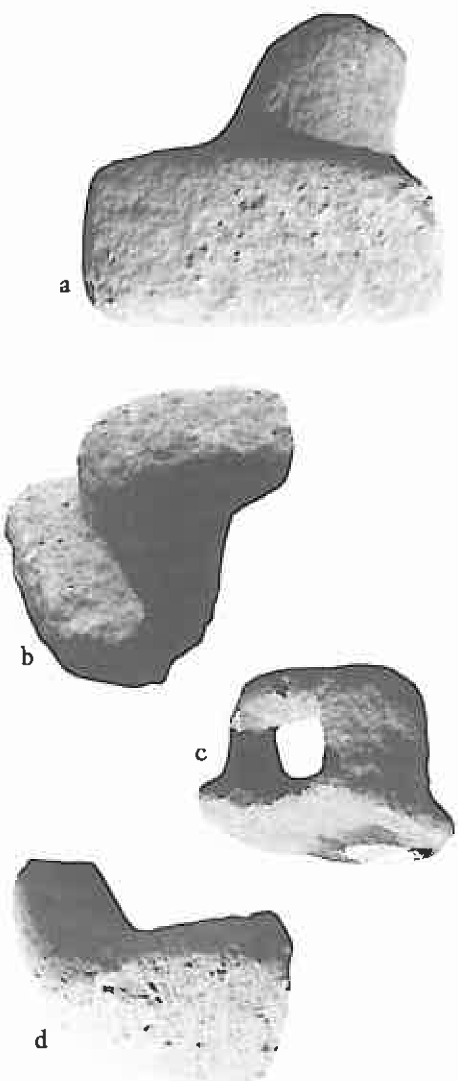


Figure 20.5. Smoothing stones. (Scale varies; see text for dimensions.)

PORTABLE SCULPTURE

A variety of artifacts have been placed within the category of portable sculpture. Most of them are stone heads or figurines. Several of the objects, such as the "plug," are more difficult to classify, and their inclusion within this category is highly subjective. To avoid confusion, Formative period sculptures are separated from Classic and Postclassic sculptures.

Formative Period Sculptures

Animal ***(1 specimen; Fig. 20.6)***

Dimensions in cm: height, 30; width and thickness, 15–16.

This small carving depicts a seated animal, presumably a feline or canine. The facial area of the head is broken, but two rounded ears (or bulging eyes) occur near the rear of the head area. A medium-sized tail is depicted running up the animal's back. There are no other known Chalcatzingo carvings that resemble this animal, and no other similar carvings have been reported in the central highlands from this time period, but the known carving sample is small. La Venta Monument 41 (Clewlow and Corson 1968: 175, Pl. 11b) depicts a small carved "jaguar." This indicates that occasional small animal carvings were made on the Gulf Coast during this period. The La Venta piece is similar to the Chalcatzingo carving only superficially: both are stone, both represent animals, and both are in a seated position. The context of the Chalcatzingo specimen on T-25 suggests it is Cantera phase in date.

Cylinder, Carved ***(1 specimen; Fig. 20.7)***

Dimensions in cm: length, 19; diameter, 12.5.

This stone cylinder has one broken end, indicating that it was part of a larger sculpture. A 7 cm wide shallow groove is carved across the unbroken end of this artifact. Such grooves also occur on several other sculptures described below. The circumference of the cylinder is carved with a pair of undulating lines which show similarities to "rattlesnake rattles" of stone carvings from later periods. Below the undulating lines is a line setting this area off from the remainder of the cylindrical shaft.

Figure 20.7. Carved cylindrical object.

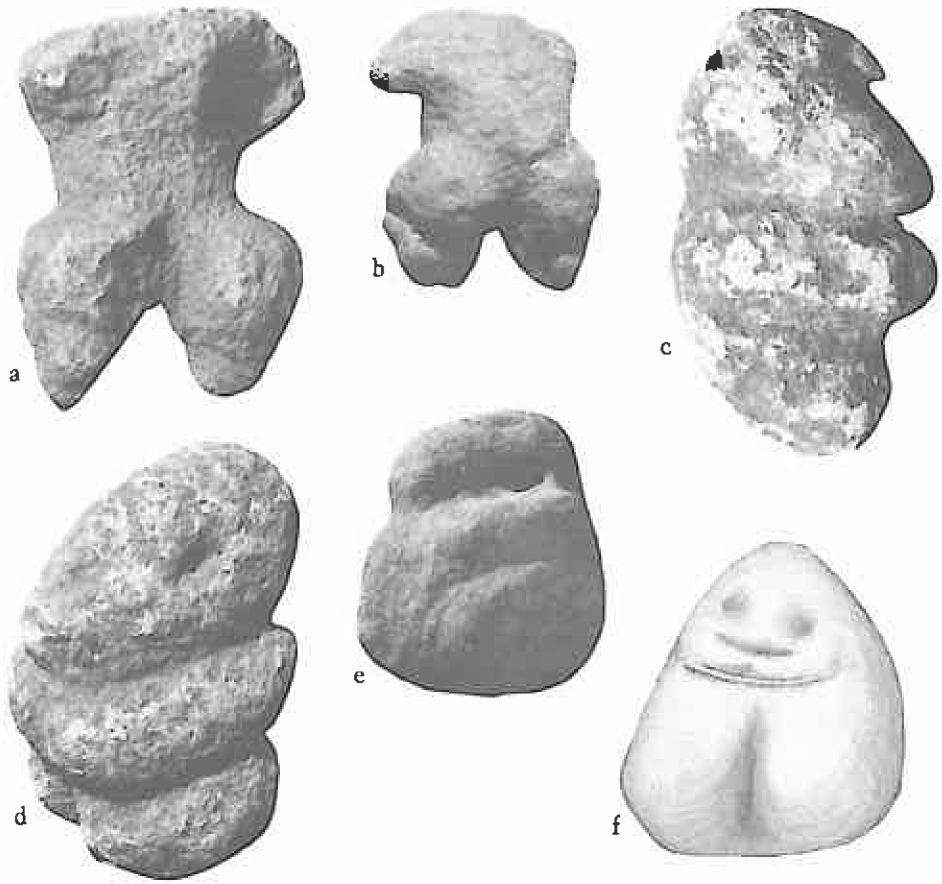


Figure 20.8. Carved figurines. (Scale varies; see text for dimensions.)

Found near Monument 22 (the altar) on T-25, the artifact comes from a Cantera phase context which predates the altar.

Figurine *(1 specimen; Fig. 20.8a)*
Dimensions in cm: height, 8; maximum width, 7.25; maximum thickness, 6.

This small anthropomorphic figure is missing its head and arms. The body is fairly naturalistic and is executed in a squatting position. The surface is granular and semi-smoothed. Dating of this figure is uncertain since it occurred in a mixed Cantera phase–Classic period level on T-11.

Figurine *(1 specimen; Fig. 20.8b)*
Dimensions in cm: broken height, 9; width at hips, 6.5; thickness, 3.

Unlike the other stone figurines described here, this figurine is very similar in its execution to the bodies of the Middle Formative ceramic figurines recovered during our excavations (see Chapter 14). This figurine is fragmentary, lacking the head and one arm. Its surface is granular and only partially smoothed.

Three-Section Figurines *(3 specimens)*
(*a*) (Fig. 20.8*c*). Dimensions in cm: height, 10; width, 4; thickness, 6.

This is a crude, oval anthropomorphic figure. The surface is granular and unsmoothed. Two pecked grooves circle the body, delimiting the head, torso, and lower body area. No arms or legs are shown, but a very simple face is depicted primarily by a nose and shallow eyes.

Although this particular figurine comes from a surface collection on T-4, it is very similar to figurine *b* (below) which was found in a good Cantera phase context. Thus figurine *a* is probably also a Cantera phase artifact.

(*b*) (Fig. 20.9*d*). Dimensions in cm: height, 10.5; maximum width, 7; maximum thickness, 7.5.

This is apparently a zoomorphic figurine, since the head appears as a long snout, with the eyes far back on the head. Nostrils and a small mouth are also shown. The surface is granular and unsmoothed. Two deeply pecked grooves circle the body, setting off the head, torso, and leg areas (as in figurine *a*). Small grooves on the figurine's front delimit fore and hind limbs.

This artifact was found within a layered Cantera phase trash deposit on T-21. A radiocarbon date from this deposit (N-1950) provided a date of 830 ± 85 BC, which is consistent with our other Cantera phase dates (see Chapter 5). Although only figurine *b* out of the three comes from a good archaeological deposit, figurines *a*, *b*, and *c* suggest that three-section oval or roundish crude stone figures may have been relatively common during the Cantera phase. No figurines of comparable antiquity are illustrated from other central Mexican sites.

(*c*) (Fig. 20.8*c*). Dimensions in cm: height, 7; maximum width, 6.75; maximum thickness, 5.5.

This oval figurine found on the surface of N-7 is shorter and wider than figurines *a* and *b*, but like them is divided by pecked grooves into three sections. The face has the eyes set well back, leaving a long, snout-like face. Legs are depicted by shallow grooves along the figurine's sides.

Pebble Figurine *(1 specimen; Fig. 20.8f)*
Dimensions in cm: height, 5.5; maximum width, 6; maximum thickness, 5.

This figurine is simply a large pebble, only slightly reworked to create a crude zoomorph by adding a face and taking advantage of the natural contours of the pebble. The back of the stone appears broken, but it is difficult to tell if this break took place before or after the simple face was added. If this artifact had not occurred in a subfloor trash pit feature within the site's elite Cantera phase residence, PC Structure 1, it would be tempting to view it as a recently made "joke" due to its simplicity and crudeness.

This figurine, together with the three-section figurines, indicates that crude stone figures were present on the site during the Cantera phase in both elite and non-elite areas.

Handstone *(1 specimen; Fig. 20.9)*
Dimensions in cm: length, 24.5; height, 19.5; width, 9.5.

The artifact is a three-quarter round stone circle with a carved-out handle offset to one side. The base of the carving is not flat but lightly undulating (shallow undulating grooves perpendicular to the object's long axis). The stone was found associated with Cantera phase PC Structure 2.

Objects of this type occur primarily along Mexico's Gulf Coast and in southern Mesoamerica. They are frequently described as ball game handstones, and are well discussed by Stephan F. de Borhegyi (1961; 1967). Although they generally occur in Late Classic period contexts, a Late Formative example is mentioned by Lee (1969:149); C. W. Weiant (1943:119) identifies "sling stones" with loop handles from the Ranchito zone of Tres Zapotes (undated context); and Borhegyi (1967: Fig. 2*a*, 2*b*) illustrates a circular stone ball with a loop handle from La Venta. This last is possibly a Middle Formative carving and thus contemporaneous with the Chalcatzingo example, although in form the two are not similar. In form the Chalcatzingo specimen is more similar to the Veracruz "padlock stones" illustrated by Miguel Covarrubias (1957: Fig. 72, second row) and to a more crudely made handstone from Kaminaljuyu, Guatemala (Borhegyi 1967: Fig. 7, no. 4).

The function of "padlock stones" is still unclear. That some objects of similar form may have been used in ball games in the Classic and Postclassic periods is clear from carvings and figurines (Borhegyi 1967), but, as others have pointed out, there are no data to suggest that heavier stone objects of the general form depicted as carried by ball players necessarily functioned in the same manner. This would be particularly true of Formative period examples. While some form of the rubber ball game was probably played on the Gulf Coast, possibly even in formal ball courts by the late Middle Formative (Coe 1970:29; Wyshak et al. 1971), there are no data to suggest that the Chalcatzingo handstone was necessarily connected to this.

Borhegyi (1967:215–216) has suggested that the "knuckle dusters" carried by individuals and some supernaturals in Olmec carvings may be similar in form and function to ball game handstones. Since they are carried at times by supernaturals, and since in form they are really dissimilar to known handstones, I see no validity to that argument based upon our present data. It should be mentioned that La Venta Monument 19 (P. Drucker, Heizer, and Squier 1959: 198) depicts a seated individual holding an object which is similar in general form to the La Venta handstone illustrated by Borhegyi (1967: Fig. 2*a*, 2*b*), although no function can be ascribed to the object except that by context it does not appear ball game related. Finally Weiant (1943:119) suggested that the Tres Zapotes "sling stones" functioned for "ironing" or smoothing. If such were the case for the Tres Zapotes artifacts, it does not appear to have been the function of the Chalcatzingo handstone because of its undulating base.

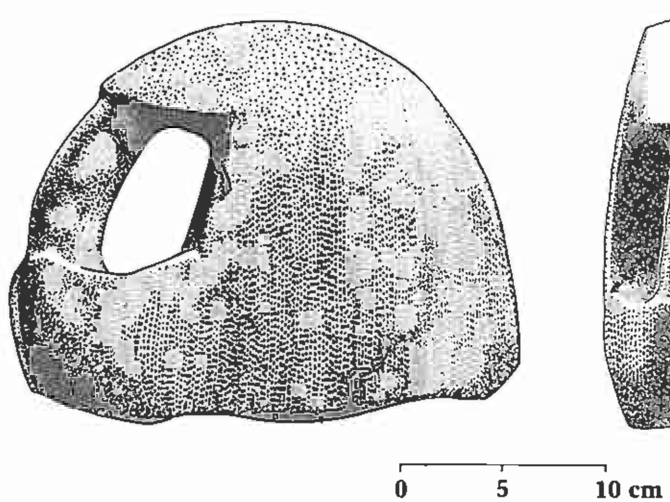


Figure 20.9. "Candado" handstone, two views.

Rectangular "Plug" ***(1 specimen; Fig. 20.10)***

Dimensions in cm: height, 32; maximum width of shaft, 16, tapering to 12. Base: length, 20; width, 20; thickness, 10.

This artifact is broken in two pieces. One end is a large square with rounded corners. A tapering rectangular shaft extends from this larger square section. The other, smaller end of the carving is flattish, but with a 7 cm wide shallow groove running across it.

This artifact was found during exploratory trenching of the T-15 earthen water control dam in a context which suggests that it postdates the dam construction. Dating is therefore uncertain, but it is probably Formative period. A similar stone "plug" found on the site is in the possession of a Chalcatzingo villager. La Venta Monument 43 (Clewlow and Corson 1968:175, Pl. 11c), while cylindrical, has a similar form.

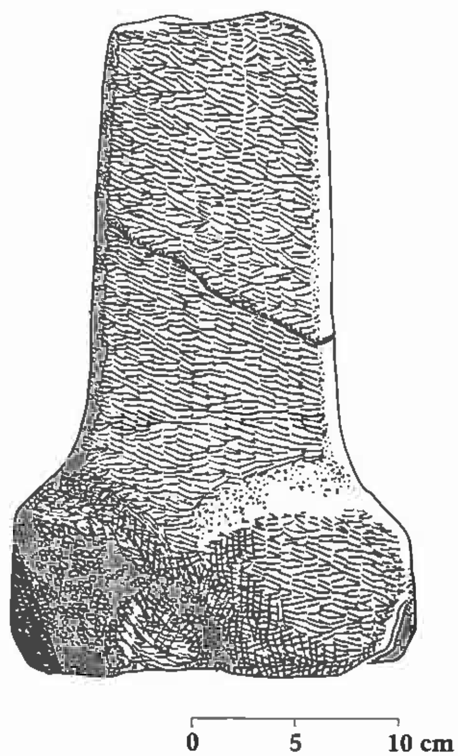


Figure 20.10. Rectangular "plug."

"Yuguito" Fragment ***(1 specimen; Fig. 20.11a)***

Dimensions in cm: external diameter, ca. 15; internal diameter, ca. 8.4; width, 12.5; external circumference of broken section, 16.5.

This fragment appears similar in shape to Formative period stone "yuguitos"

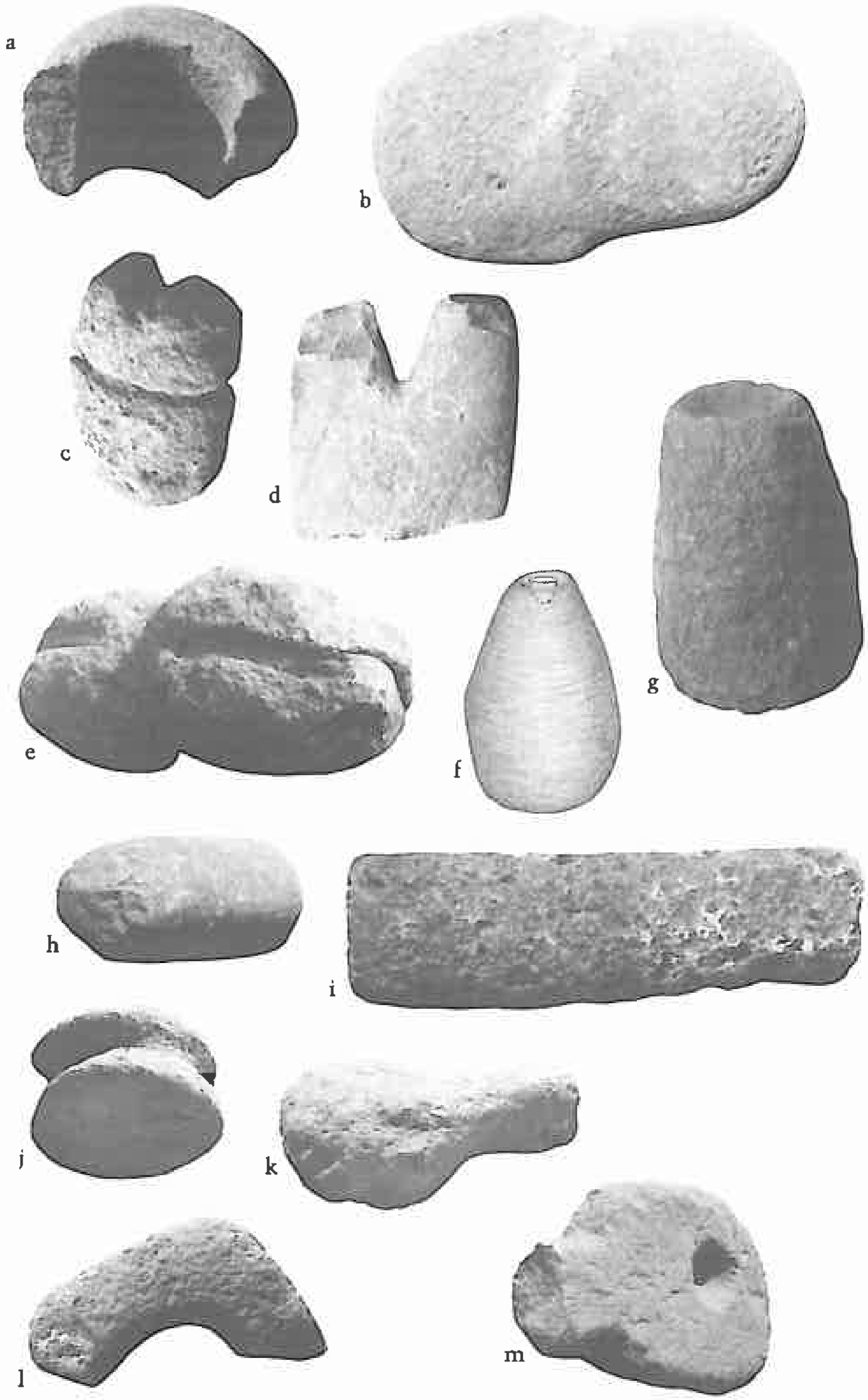


Figure 20.11. Miscellaneous stone objects: *a*, "yuguito"; *b*, T-shaped "axe"; *c*, V-notched stone; *d*, fragmentary V-notched stone; *e*, bi-lobed grooved stone; *f–g*, conical stones with perforated tops; *h–i*, cylindrical rods; *j*, disc; *k*, hammer stone; *l*, rectangular perforated stone fragment; *m*, unidentified stone object with ground depression. (Scale varies; see text for dimensions.)

(small yokes). It is undecorated but very well executed. The surface has been ground smooth. For purely descriptive reasons, it can be said that if the fragment were continuous, it would have formed a stone cylinder or "bead" with an outer diameter of ca. 15 cm and an inner diameter of ca. 8.4 cm. In transverse section the outer surface of the stone is slightly rounded from end to end, while the surface is relatively flat. There are no data to suggest the original complete form of this artifact. Both ends are broken. It is Cantera phase in data and was associated with PC Structure 2.

"Winged Phallus" ***(1 specimen; Fig. 20.12)***

Dimensions in cm: height, 32; maximum diameter, 22. The cap tapers in thickness from 6 to 4 cm.

This unusual artifact, somewhat reminiscent of Guatemalan mushroom stones, has a slightly tapering vertical body which ends in a truncated conical cap (tapering horizontally from front to back). The cap is lightly grooved on one side, lending a phallic appearance to the cap and the carving as a whole. The top of the cap is flattish and has a smoothed surface, indicating that the cap was purposely carved and not broken into the truncated form. The unusual feature of the carving is a pair of raised wing-like elements on the body. The base of the carving has a wide, rounded, shallow groove running from front to back. Such shallow basal grooves are a feature on several other specimens discussed in this chapter.

Aside from some vague similarities to mushroom stones, no similar carvings in this form are known from Formative period Gulf Coast, Chiapas, or central Mexican highlands. The wing-like elements and the flattish cap suggest that the carving is not a mushroom stone, nor is it a reworked mushroom stone. There is no evidence to suggest that this carving is in anything other than its original form. The carving was found at the base of a trash pit which occurred in a subfloor level of PC Structure 1, which dates to the Cantera phase.

Classic Period Sculptures

"Flower" ***(1 specimen; Fig. 20.13a)***

Dimensions in cm: maximum diameter, 21; thickness, 6.5; diameter of central hole, ca. 5.

This sculpture is in the form of two concentric circles from which emanate four petal-like lobes. The overall form is circular. The "flower's" center is a hole which passes through the carving. Each "petal" has a raised edge. This limestone artifact was found broken within a Late Classic trash pit intruded into the T-6 platform structure.

Tlaloc Head ***(1 specimen; Fig. 20.13*****b*****)***
Dimensions in cm: height, 15; width, 13; thickness, 10.

This is a crude, oval, coarse-surfaced stone Tlaloc head. The eyes are crudely executed depressions ringed by engraved circles. The nose is bulbous and protruding. The upper vertical line of the mouth extends almost completely across the lower section of the face, while below it seven vertical lines extend to the base of the stone. All lines are crudely engraved. A circular depression is pecked into the central area of the vertical lines, and perhaps once could have held a small greenstone inset. The bottom of the head is slightly flattened.

This head was found in association with the site's Late Classic circular pyramid. Such pyramids are normally considered to be affiliated with the wind god, and thus the Tlaloc association can be considered unusual. It is likewise unusual to find a Tlaloc head with a concavity apparently for the inset of a greenstone.

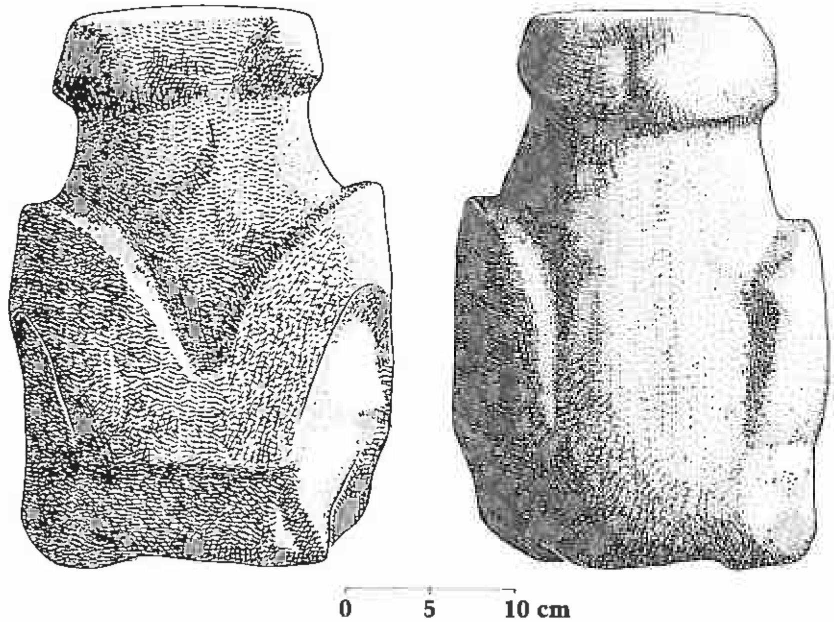


Figure 20.12. "Winged phallus," two views.

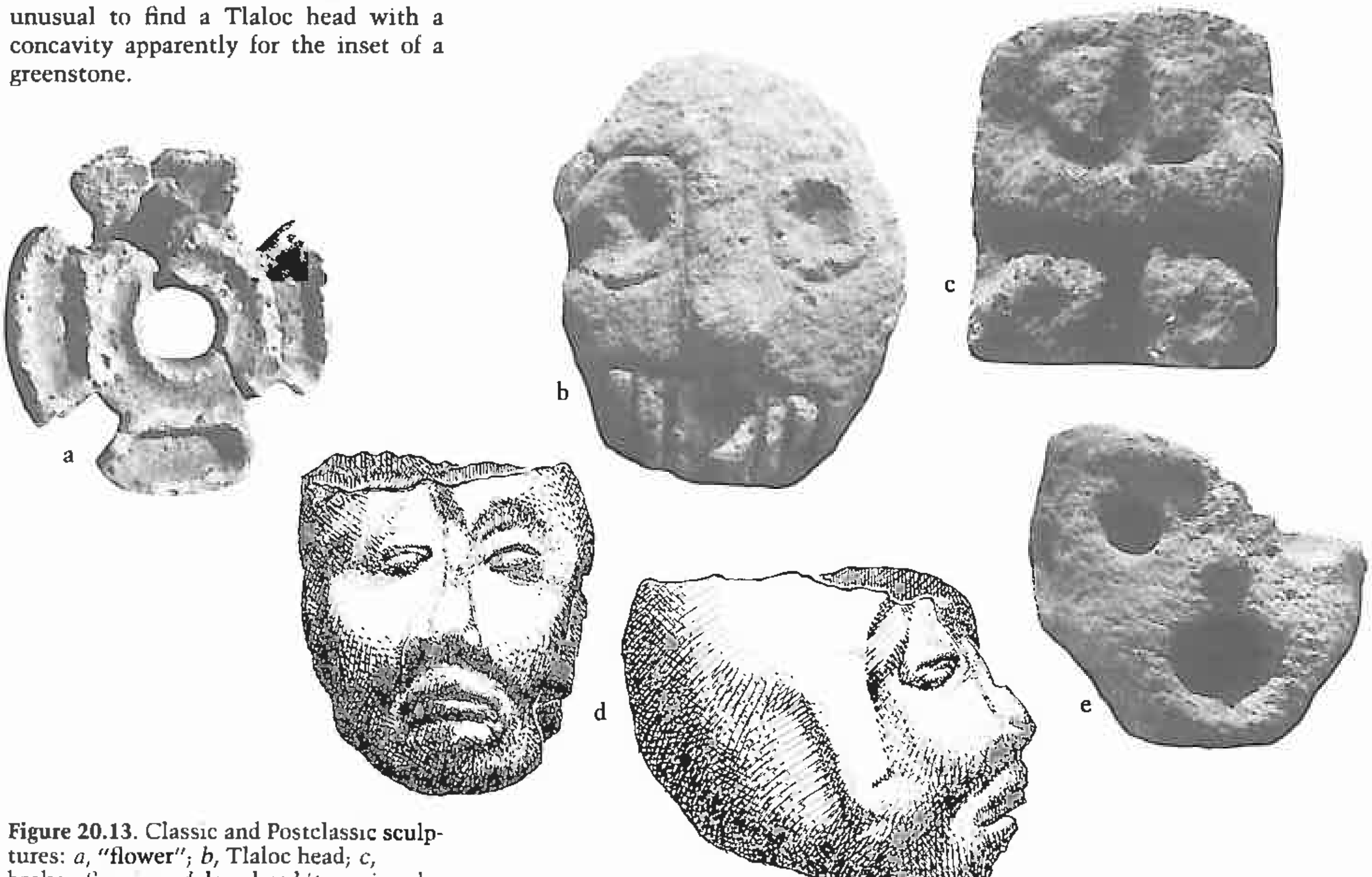


Figure 20.13. Classic and Postclassic sculptures: *a*, "flower"; *b*, Tlaloc head; *c*, broken figurine; *d*, lava head (two views); *e*, stone head. (Scale varies; see text for dimensions.)

Postclassic Period Sculptures

Figure *(1 specimen; Fig. 20.13c)*

Dimensions in cm: height (broken), 23; width, 19; thickness, ca. 9.

This blocky, rectangular, headless female statue has a rough surface, unsmoothed. Two breasts, simple arms held across the midsection, and two blocky legs are depicted. This sculpture is similar stylistically to Postclassic carvings from central Mexico.

Heads *(2 specimens)*

(*a*) (Fig. 20.13*d*). Dimensions in cm: height (broken), 10; width, 10; depth, 12.

This head of dark igneous stone is a single carving and not originally part of a statue. No neck area is represented. The forehead and top are broken and missing, but this break has the same color and weathering as the majority of the carving and thus is probably quite old. However, a relatively fresh break has destroyed a section of the right rear side of the head. The head is long and relatively narrow; the features are sharply defined. The ear area is covered by hair or a helmet. Stylistically this carving is Postclassic. H. B. Nicholson (personal communication) has noted similarities of this sculpture to representations of the Aztec deity Xochipilli.

No other carvings of this sophistication and style have been reported (or seen by us in villagers' collections) from the site. The carving was found on the surface while we were preparing to photograph the newly uncovered Monument 12. Much of the surrounding fill had Postclassic sherds, again suggesting that this head, if originally part of the slope wash in that area, is Postclassic.

(*b*) (Fig. 20.13*e*). Dimensions in cm: height (broken), 21; maximum width, 23; thickness, 16. Facial features: mouth diameter, 7; eye diameters, 5–6.

This broken simple sculpture of a human head is relatively flat. The eyes and mouth are deep ground depressions, giving the face the vacant stare of Xipe representations. The nose protrudes slightly. A raised eyebrow area occurs over the right eye. The entire forehead and part of the left eye have been broken off. Low relief carved ears occur on both sides of the head. A large carving with similar eye and mouth treatment was in the possession of a Chalcatzingo villager.

This carving was found on the surface of a small mound at the summit of the Cerro Delgado. Although this mound was not test-excavated, surface collections and test excavations of other areas of the upper Cerro Delgado indicate Middle Postclassic activities in that site area. It is therefore probable that this head is Middle Postclassic in date.

MISCELLANEOUS ARTIFACTS

Artifacts placed within this miscellaneous category are of unknown or dubious function. Unless otherwise noted, all artifacts are manufactured from igneous rock. Most of these objects date to the Formative period.

"Awl" *(1 specimen)*

Dimensions in cm: length, 7.5; width, 2; thickness, ca. 0.5.

This artifact, from a Cantera phase level on T-24, is flat and thin with a tapering rounded point. Its rounded tip may be wear-related. It is similar in general shape to chipped stone "perforators" (e.g., García Cook 1967: Pl. 30), although this is ground stone. The thinness of the artifact indicates that it could not have been used with great pressure.

"Axe, T-Shaped" *(1 specimen; Fig. 20.11b)*

Dimensions in cm: length, 24.5; body width, 12.5; maximum width of rounded flaring head, 14.5; maximum thickness, 7.5.

This is a large, well-made stone artifact whose surface has been ground relatively smooth. The artifact has an oval shape which slightly flares to a rounded T shape at one end. In cross-section both length- and widthwise, the artifact is an elongated oval.

The function of this piece is unknown. No clear wear marks occur. Its context on T-23, near a fragmentary wall line and adjacent to Cantera phase house walls, does not help indicate function but does date this object to the Cantera phase. The artifact has a smoother surface than most stone artifacts discussed.

Axe-like, V-Notched Stone *(2 specimens)*

(*a*) Complete axe-like stone (Fig. 20.11*c*). Dimensions in cm: length, 5.25; maximum width, 3.2; maximum thickness, 2.4; maximum notch depth, 0.5.

This small stone artifact is similar in general shape to "Olmec" axes in that one end is notched by a V-shaped groove. The object, in frontal view, tapers slightly from the wide, notched end. However, in side view there is little taper, and in this regard it is dissimilar to Olmec celts and axes. The surface is granular and only slightly smoothed. A groove runs across both sides and the front of the object 1.75 cm from the notched end, exactly one-third of the way from that end to the other. The notched end is flat, and the stone can stand upright when placed on it, while the opposite end is rounded.

No similar artifacts other than notched "celts" and "axes" are published for the Middle Formative. It may be that this artifact had a symbolic function. The notched celts may be symbolically similar to the notched fangs which emerge from the mouths of various Olmec supernaturals. A similar motif, a group of three notched elements, appears at the tip of the tail of the lower jaguar on Chalcatzingo Monument 4 (see Chapter 9). This specimen was recovered from the T-24 Cantera phase structure.

(*b*) Fragmentary notched stone (Fig. 20.11*d*). Dimensions in cm: broken length, 6.5; width, 6; thickness, 2.

This artifact is a fragment of an axe-like stone, found on the surface of T-9. It has a deep (2 cm deep, 2 cm wide) V-shaped notch at the unbroken end. The sides of the artifact are tapered (unlike artifact *a* described above), and the surface has been ground smooth. It is much better made than artifact *a*. While it is similar to Olmec celts, no engraving occurs on this piece. It is possible that the notch had some type of functional use, for the base of the notch is U-shaped and appears to have been ground or worn into this shape. But this wear may be related to the manner in which the notch was cut and the entire artifact smoothed rather than to artifact function. Possible symbolism of the notched axe is briefly discussed with artifact *a* (above).

Balls *(56 specimens)*

Dimensions in cm: diameters, 2.5–5.

These small stone balls do not have any differential grinding or smoothing on one surface to indicate that they may have functioned in grinding. The majority are made from vesicular basalt.

The distribution of stone balls at Chalcatzingo is interesting. Most occur in Cantera phase contexts but range from the Barranca to the Postclassic. Over half were found in association with Cantera phase structures on the Plaza Central, the ceremonial area of the site. Eleven balls come from excavations in the high caves on the Cerro Delgado and are primarily Early Postclassic in date.

Similar stone balls are found at many Formative period sites, including Middle and Late period Zacatenco, Period II and Late period El Arbolillo, and all periods at Ticoman (Vaillant 1930: Pl. 45, Table I;

1931:305, Pl. 89; 1935:243, Table 21), and equivalent phases at Zohapilco (Niederberger 1976:78, Pls. 29, no. 8, 31, no. 13).

Bi-lobed Grooved Stone *(1 specimen; Fig. 20.11e)*

Dimensions in cm: length, 21; width, 11; thickness, 9.

This unusual artifact is from a Cantera phase context on PC Structure 4. It is a very crudely shaped oval bi-lobed stone. Its surface is irregular, but some smoothing has been carried out. When viewed from the front, the artifact's general shape is that of a bi-lobed axe. However, the side view shows the stone to be thick, with little tapering toward the edges.

The unusual feature of this stone is a flat, shallow, ca. 1 cm wide groove which completely circles the stone's lateral edge, essentially bisecting the artifact. This groove follows slight undulating concavities in the stone's surface, indicating that the groove was cut purposely and is not the result of functional wear. The bi-lobed effect is caused by a wide, deep pecked and ground groove running at right angles to the artifact's long axis. This groove passes through the shallow flat groove, and therefore was cut following the engraving of the shallow groove.

Conical Stones with Perforated Tops *(2 specimens)*

(*a*) (Fig. 20.11*f*). Dimensions in cm: length, 6.25; diameter, 4; hole diameter, 1; hole depth, 1.

This small, egg-shaped stone with a shallow hole drilled into its narrow end was found in the T-9B Barranca phase house structure. Its surface is relatively rough.

(*b*) (Fig. 20.11g). Dimensions in cm: height, 20; maximum diameter, 14; minimum diameter, 10; concavity diameter, 9; depth, 1.5.

This granodiorite artifact is a tapering cylinder with a concave depression ground into the narrow end; the wide end is flat. The surface is smoothed. Dating is uncertain because the artifact comes from a mixed Middle Formative–Classic period deposit on T-24.

Artifacts *a* and *b* are similar in form but not in size nor apparently in function. The upper hole in *a* is small and appears to have been drilled. The upper concavity of *b* appears to have been made by grinding. The form of artifact *b* is similar to that of certain pestles, but there are no data to suggest it served such a function.

Cylindrical Rods *(2 specimens)*

(*a*) (Fig. 20.17*h*). Dimensions in cm: length, 16; diameter, 5.5–6.5.

This artifact is a cylindrical rod with one rounded and one flat end. The side surfaces are ground very smooth. Its context on T-4 is mixed Middle Formative–Classic period. Somewhat similar cylinders are shown from the Francesa phase at Chiapa de Corzo (Lee 1969:Figs. 103*d*, *e*, 104*c*), and described as "manos" at Tehuacan (MacNeish, Nelken-Terner, and Johnson 1967:Fig. 93, top and center) and La Nopalera (García Cook 1967:Pl. 38, no. 3). The rounded tip of the Chalcatzingo artifact is battered, suggesting that it was used at one time for pecking or hammering.

(*b*) (Fig. 20.11*i*). Dimensions in cm: length, 35; diameter, 9.5.

A relatively cylindrical rod with a slight taper and generally flat ends, this artifact has a rough surface. The roughened surface indicates that the object did not function as a grinding implement. It was found in the excavations of PC Structure 1 and is Cantera phase in date.

Discs *(4 specimens)*

(*a*) (Fig. 20.11*j*). Dimensions in cm: diameter, 6.75; thickness, 4.5; encircling groove width, 2.

This circular stone disc with slightly convex top and bottom is fully grooved around its diameter. It resembles a stone yo-yo. Its surface is fairly smooth. In general shape this artifact is similar to stone mauls or hammers (García Cook 1967: Pl. 41, nos. 2, 3; MacNeish, Nelken-Terner, and Johnson 1967:Fig. 109). MacNeish, Nelken-Terner, and Johnson (1967:130) mention that Tolstoy recovered a maul of this shape from El Arbolillo 2. The Chalcatzingo example shows no wear marks from pounding or grinding and is considerably thinner and flatter than the described examples. It was found on T-23 in a Cantera phase context.

(*b*) Dimensions in cm: diameter, 10.5; thickness, 3.5.

A circular stone disc, this artifact has flat ground surfaces and lightly rounded edges. A shallow, small hole has been pecked into the center of the disc on each side. A similar disc with pecked central holes is reported from Zohapilco's Ayotla and Manantial phases (Niederberger 1976:Pl. 30, no. 4). Niederberger (1976:75) suggests that these discoidal stones may have served as both grinding stones and anvil stones, but I am not convinced that the Chalcatzingo artifact functioned in that manner. Because it was found during the T-27 excavations in a Cantera phase area with Late Formative intrusions, this artifact is probably Cantera phase, although the possibility exists that it might be Late Formative.

(*c*) Dimensions in cm: diameter, 12.5; thickness, 4.5; maximum diameter of tapered perforation, 6; diameter of hole, 2.

This fragment is half of a circular stone disc with tapered perforations on each side. The tapered perforations meet to form a hole ca. 2 cm in diameter. The edges of the disc are rounded.

The function of this artifact is difficult to determine. It is similar in form to stone "rings" illustrated from Tres Zapotes (Weiant 1943:Figs. 2–3, 5–7) and to the Classic period "club head" from Teotihuacan illustrated by Tolstoy (1971b:Fig. 105). Stones of this form could also have functioned as digging stick weights. This artifact was found on the surface of T-9B, and thus the dating is uncertain. Surface artifacts from T-9 are primarily Barranca and Cantera phase. Barranca phase artifacts are generally from the northern (B) area of the terrace.

(*d*) Fragment. The curvature of the finished (serrated) edge suggests that if this were part of a disc, the diameter would have been ca. 17 cm.

This Barranca phase artifact was found in the PC trench excavation and is a small fragment of what appears to have been a stone disc with a thinner, serrated (notched) edge.

Hammer Stone *(1 specimen; Fig. 20.11k)*

Dimensions in cm: length, 13; width (diameter of circular area), 7.5; thickness, 4.

In front view, the artifact appears circular with a long tapering "handle," but it is nearly flat in side view. The surface is unsmoothed. Its shape and battered edges indicate that it may have functioned as a hammer stone. Uncovered in the PC Structure 5 excavations, it is Cantera phase in date.

Oblong, Polished Stones *(5 specimens; Fig. 20.14)*

Dimensions in cm: length, 1.9–5.1; width, 1.9–2.4; thickness, 0.7–1.6.

These are small, oblong stones with highly polished surfaces. Most of them are oval in cross-section. They may be similar to the *bruñidores* (polishing stones) from Formative period contexts at Zohapilco (Niederberger 1976:77–78, Pl. 31, no. 12) and to those described by Lee (1969:152, Fig. 108*a*) from Guanacaste-Horcones phase levels at Chiapa de Corzo. However, there are a variety of ways in which the surface of these small stones could have become polished.

One stone is from a Barranca phase context, three are from Cantera phase contexts, and the fifth is from a possible Classic context.

Rectangular Perforated Stone *(1 specimen; Fig. 20.11l)*

Dimensions in cm: length of complete side of rectangle, corner to corner, 11.75; interior to exterior dimension, 4.5; thickness, 4.5.

A fragment of a rectangular stone with slightly rounded sides, this artifact's center area has been ground out to a diameter of ca. 5–6 cm, leaving a hollow rectangle. It could have functioned as a rectangular handle for some implement, including a "ball game handstone" object. In form it is similar to "flat-iron pestles" described from the Tehuacan Formative (MacNeish, Nelken-Terner, and Johnson 1967: 105), although it does not have a wide smoothing area.

The dating of this artifact is uncertain. It was found on the surface of PC Structure 4, the large Middle Formative platform mound. Thus, it could be Cantera phase in date. However, it is also near the Classic period pyramid and a Classic period pavement.

Unidentified Stone *(1 specimen; Fig. 20.11m)*

Dimensions in cm: length, 10.5; width, 9; thickness, 4.5; length of broken "handle," 2.5; diameter of handle, 3.

This is a flat, relatively rectangular stone slab, with a short (broken) handle at one end. Ground into the surface of the slab is a circular depression, ca. 2.5 cm in diameter and ca. 2 cm deep. The surface of the slab has been ground relatively flat. The sides are crudely pecked and ground to a rough convex shape. There are other stone artifacts (and sherds) with shallow depressions. A possible functional use for some of these is as a bearing for some type of rotating implement. In this instance the stone slab could be held by the handle over (or under) the rotating shaft. If this interpretation is correct, this "bearing stone" may be part of an artisan's tool kit. This artifact is from a mixed Formative-Classic context.

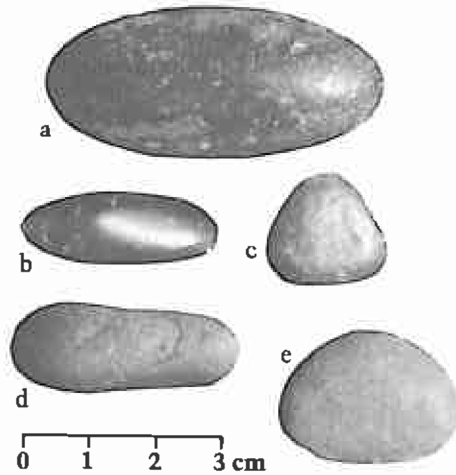


Figure 20.14. Small polished oblong stones.

RESUMEN DEL CAPÍTULO 20

Los artefactos de piedra corriente recobrados en Chalcatzingo se clasificaron en tres categorías con propósito descriptivo: utilitarios, misceláneos (i.e., función no identificable), y escultura. La categoría utilitaria incluye manos, metates, raspadores, y pulidores. Aun cuando algunos patrones temporales o espaciales lograron ser revelados mediante el análisis de estos artefactos y sus distribuciones, resulta interesante notar que más del 50 por ciento de las manos estaban rotas, quizá a propósito, y el 23 por ciento de todas las manos provienen de PC Str. 2, una estructura en la cual parecen estar ausentes otras indicaciones de haber existido actividades domésticas. La mayoría de las herramientas para la preparación de alimentos se hicieron de piedra graneada fina proveniente de la barranca, en tanto que las esculturas son fundamentalmente de granodiorita proveniente de los cerros.

La categoría escultura portátil es muy diversa e incluye ejemplos tanto de orden representativo como del no representativo. Los objetos se fechan desde el Formativo hasta el Postclásico. Entre los grabados sobresalientes del Formativo se encuentra un animal (felino o canino), una piedra de mano semejante a las asociadas con el juego de pelota mesoamericano, un "yuguito," y un "falo-alado" semejante a los hongos de piedra. La escultura Clásica y Postclásica incluye varias cabezas, entre las que se encuentra una con los atributos de Tlaloc.

21. Formative Period Settlement Patterns in the Río Amatzinac Valley

KENNETH G. HIRTH

The analyses of regional settlement patterns can make a valuable contribution to the understanding of the cultural and social evolution of a particular region. The location of human groups within their environments and the way in which this changes through time are the products of a multifaceted decision-making process. The location of settlements in relation to naturally occurring resources may be an indication of a variety of economic activities, either primary (agriculture, hunting and gathering, mining) or secondary (manufacturing, etc.). Settlements are also spaced in relation to existing social relationships, with competitive settlements tending to be more distant from one another than those which are strongly linked.

This chapter traces the growth and development of regional population organization in the Río Amatzinac Valley between 1250 and 150 BC. In doing so I try to hold to the distinction made between "settlement patterns" and "settlement systems" (Flannery 1976c:162) to the extent that surface reconnaissance permits. The "settlement system" is the set of rules behind the location of communities in the region. It is these rules which generate the actual configuration of sites found throughout the region which we call the "settlement pattern." In this research the configuration was identified through an extensive surface reconnaissance. Our understanding of the settlement system was derived from a qualitative and quantitative analysis of all site-specific and regional ecofacts measured both during and subsequent to the survey.

METHODOLOGY

The purpose of the settlement reconnaissance was to determine the relationship of Chalcatzingo to its larger physiotopographic region, the Río Amatzinac Valley, described in Chapter 2. Approximately 80–85 percent of the valley was surveyed with the intent of locating and mapping every site on the valley floor, establishing their chronological relationships, and reconstructing a picture of demographic development up until the Spanish conquest. In line with the overall objectives of the Chalcatzingo Project, particular emphasis was placed on the reconstruction of Formative period settlement systems.

Saturation coverage was the main objective of the survey. This guaranteed that enough small sites would be included in the site sample to accurately delineate the nature of relationships between ceremonial centers and their rural hinterlands. An intensive field methodology was selected which very closely resembles the type used in the Valley of Mexico surveys (Sanders 1965; J. Parsons 1971; Blanton 1972). A more vigorous strategy for sampling surface debris was employed, however. Every field in the study area was inspected, and collections of ceramics and chipped stone tools were made at each site. This enhances our ability to narrow our settlement phases as chronologies in central Mexico are refined in the future. Other modifications included the standardization of size/density measurements and ratios used in projecting population estimates, and the identification and control of conditions which can cause errors in the description and periodization of sites.

The Amatzinac Valley was surveyed as a cohesive unit without employing a probabilistic sampling design. We felt that it was worth the time and effort to obtain as large a contiguous sample around Chalcatzingo as possible since this was the first intensive survey ever conducted in Morelos. This also allowed us to use the Nearest Neighbor spatial statistic in later stages of the analysis, whereas random, cluster, or stratified designs using quadrant or transect sampling frames (see Plog 1976a) create a boundary problem for this spatial statistic which greatly reduces its descriptive capacity (Earle 1976; Haggett 1965).

Boundary effects were also decreased by rapidly surveying small areas along the edges but outside of the intensive coverage area. The largest of these zones of minimal coverage is shown as MC on Figures 21.2–21.4 and 21.6.

A variety of conditions guided our selection of specific field procedures. Maps suitable for use in the field were not available for the Río Amatzinac region, so aerial photos were used to locate and record sites. These could be purchased at scales of 1:30,000 and 1:5,000. Relatively permanent agricultural parcels partitioned the landscape into units which are readily distinguishable both on the aerial photographs and on the ground. Sites could be located using numerous visible points of reference, and the fields could be used as individual collection units.

Although much of the valley area occupied during prehispanic times is unpopulated today, special care had to be taken in the Zacualpan-Amilcingo area in the northern part of the valley, where contemporary population is dense. While traces of large and medium-sized sites could be located without difficulty, it is my impression that modern habitation has obliterated many of the small sites in this area. My estimates of population in the northern Pithecellobium Woodland zone may therefore be underestimated for some time periods.

Ground cover throughout the survey zone was thin except across sloping hill and mountain areas used largely for grazing and collecting firewood. Erosion and the redeposition of soil have not contributed significantly to the destruction of sites throughout the region. Agricultural disturbance is relatively consistent. Oxen plowing is the dominant cultivation technique. Deep tractor plowing has increased in frequency since 1973, spreading from the irrigated areas to most portions of the valley.

Field Procedures

Flat terrain and high ground visibility allowed us to use a "dragnet" approach. The daily work group was a team of five to eight trained crew members who were spaced at intervals of between 20 and 60 m during the sweeps. A total of 454 km^2 were surveyed during the five-month period between January and May of 1973.

The field spacing of survey crew members varied with the nature of terrain and type of work planned that day. A major goal was for the survey unit to work as a team. Each investigator was responsible for a wide range of general observations as well as a number of specific ones depending on his or her particular field of expertise (plant ecology, drainage, soil, etc.). Many sites needed the combined effort of two or three people to collect the necessary data in the shortest period of time. Small sites could be collected by one or two people, while village sites called for four or five. This procedure allowed us to maintain a degree of consistency in the way in which we collected the sites.

Site boundaries were established by following out the extent of surface debris, which was plotted onto the large-scale aerial photographs carried into the field. Collection areas were laid out, and a variety of other data was recorded on standardized site forms. Surface collections were taken at each site, and information on the quantity and type of archaeological material is summarized in site descriptions located in Appendix H.

We encountered a slight problem in defining sites in portions of the valley where fields were frequently irrigated. Although in situ materials could be located, individual sherds would occasionally be found in irrigation canals up to 500 m or more from the nearest site. Small collections were made of these materials, although in no way were they presumed to be in situ. When in situ materials were found, field boundaries and other points of reference were used to stratify the sites into a checkerboard of potential collection units. Collection units were standardized into units of approximately 2,500–3,500 m^2 in area, i.e., roughly 50 × 50 or 50 × 70 m units.

Because of the large area of our survey, we biased our collection toward getting a good sample of diagnostic materials. These included vessel rims, bases, handles, supports, and all painted or slipped body sherds, plus a good array of chipped stone artifacts. Approximately 300,000 sherds were collected. The quantity and nature of the ground stone artifacts were recorded, but the artifacts themselves were not removed from the site. Although these data can provide a rough idea about cultural affiliation, site function, and chronological periodization, they do not allow for more exhaustive analyses of site interaction and integration.

The density of ceramic debris was recorded in quantity-per-meter counts. These counts, along with the site area, were used to generate population estimates for the sites following the procedure outlined by Jeffrey R. Parsons (1971: 22–23) for the Valley of Mexico. Although there are numerous sources of potential error involved in using estimates of this sort, they do reflect differential human activity, and in the absence of alternative methods for calculating population can be useful heuristic measurements for testing a wide range of hypotheses.

Estimates were made by correlating Parsons' subjective categories such as "wide scattering" and "marked build-up" with our quantity-per-meter counts, represented in Table 21.1. These density types were then correlated with Parsons' estimates of persons-per-hectare (Table 21.2). Calculation of upper and lower site population limits was a simple extrapolation of the site area and the respective density measurements. No double counting of site area or surface debris was allowed.

Site areas were established by plotting the continuous distribution of materials in contiguous collection units. In multicomponent sites the intensities of surface debris were divided up according to the different time periods within the sample. When material from two time periods was equally represented, the surface density per m^2 was equally divided between the two components. When this could not be determined with confidence, the lowest density level (IA) was designated for the area as a whole.

Our reason for quantifying observations instead of using subjective categories was to derive not more *accurate* population estimates, but more *consistent* ones. Quantitative measures increase the comparability of measurements taken by a wide assortment of crew personnel, and these can be reassessed as our predictive ability increases. The site-size–debris-density correlation for estimating population needs more rigorous testing before we can assume that its figures are correct. Moreover, I have elsewhere identified a number of conditions which significantly modify a population estimate of this type (Hirth 1978c). Nevertheless, these estimates do allow us to identify demographic trends within the confines of small regions over time and should be viewed as relative and not absolute indices of population activity. Their utility resides in the fact that they are more sensitive to the amount of prior occupational activity than the size of the site expressed only in hectares. Although direct interregional comparisons of population levels are not possible, we can compare the general settlement composition and demographic trends of one region to another, and this is therefore a useful technique.

Vegetation and Landform Zones

In addition to recording basic data on sherd counts, architectural features, etc., we made other observations concerning the vegetation and generalized topographic zones. The vegetation zone classification has already been presented in Chapter 3. I have deviated from that classification in only one respect. The River Bottomland and Barranca categories have been combined into a Riverine Zone for purposes of statistical manipulation.

It would have been preferable to examine the independent effects of these zones on site location, since we know that the distribution of river bottom soil is often an important variable in determining the distribution of early agriculturalists. Unfortunately, time and project financing did not allow for the identification and mapping of regional soil types and agricultural productivity which would have allowed for reliable statistical manipulation. Since the River Bottomland is restricted in area and occurs as a subset of the broader Barranca category, it was felt that only a minimum amount of information would be lost by handling the data in this way.

The landform typology used was patterned after that of E. Hammond (1963). The topographical features observed in this typology are slope and local relief. These were combined to form eight categories: Flat Plains, Irregular Plains with

Slight Relief, Irregular Plains, Hills, High Hills, Low Mountains, Open Low Hills, and Low Hills (Hirth 1974: 70–71).

More than 90 percent of the survey area falls within the Plains categories, the predominant landform type in the valley. Irregular Plains with Slight Relief comprises possibly 10 percent of the valley, usually occurring between areas of greatly differing relief and where erosion is fairly active. Irregular Plains is found in only two locations, both in the southwest area of the valley. The Mountain and Hill categories are found most often along the valley borders, although isolated hills are also found in the middle of the valley. These latter, the Cerros Jantetelco, Delgado, Chalcatzingo, and Tenango, are all High Hills.

Settlement Hierarchy

Population estimates together with architectural features allowed us to construct an array of site types depicted in Table 21.3. Regional Centers are the largest and most densely nucleated communities in the region; as a result, they probably relied on a larger proportion of the surrounding hinterland for their subsistence requirements than did small communities. Regional Centers are always characterized by some degree of economic specialization, although whether full or part-time specialization cannot always be determined. These sites always have substantial complex civic-ceremonial architecture with high frequencies of associated material remains.

Villages are the most difficult settlement type to characterize in descriptive terms, since their composition varies and may change through time. During the Early, Middle, and Late Formative, individual villages were the residences of ranked lineages and loci of integrative ceremonial and economic activities.

The primary criterion for the Village category was population size: 101–1,000 persons, using our estimation technique. Sites were typically over 5–6 ha in area, a size which coincides fairly well with the normal range of sizes noted by Joyce Marcus (1976) for Early and Middle Formative villages throughout Mesoamerica. In the Río Amatzinac Valley, civic-ceremonial architecture could be present or absent at village communities. Such architecture ranged from platform mounds to residential terraces.

The category of villages was subdivided into large and small types on the basis of size criteria. Although important for later periods, the only instance of a Large Village during the time periods discussed here occurred during the Cantera phase: RAS-20, which grew into a Regional Center during the subsequent Late Formative period.

We also distinguished between "nucleated" villages, where only a fraction of the subsistence crops are grown in the residential area, and "dispersed" villages, where the opposite condition holds (J. Parsons 1971: 22). Settlements were considered to be dispersed when village population levels were reached with only C-type ceramic densities (Table 21.2).

Hamlets and Isolated Residences are the smallest communities in the settlement classification and appear to be the most sensitive to environmental diversity. Hamlets show clear indications of having been permanently occupied settlements, and surface indications range from house mounds to scatters of construction debris. Isolated Residences, on the other hand, are the smallest of sites, many under 0.25 ha, which generally lack indications of permanent structures. The relative and absolute frequencies of population residing in each of these settlement types during each particular phase are summarized in Table 21.4 and Fig. 21.1.

A set of hierarchical relationships between the communities is implied by these site categories, especially if we adopt a view of culture as an energy system along the lines suggested by Leslie White (1949), in which the most impor-

Table 21.1. **Sherd Density Types**

Type	*Sherd Count/Meter*	*Parsons' Categories*
IA	0.2–9	Very light to light
IB	10–19	Light to moderate
II	20–39	Moderate
III	40–59	Moderate
IV	60–79	Heavy
V	80 or more	Heavy

Source: Parsons 1971: 22–23.

Table 21.2. **Correlation between Population Size and Sherd Densities**

Population Designator	*Sherd Density Type*	*Population/Hectare*
A-type	Predominantly II, III, IV, V	25–50
B-type	Occasional IA, predominantly IB and II	10–25
C-type	IA, IB only	5–10

Source: Parsons 1971: 22–23.

Table 21.3. **Río Amatzinac Settlement Types**

Settlement Type	*Population*	*Architectural Features*
Regional Center	Over 1,000	Complex civic-ceremonial constructions
Large Village	501–1,000	Simple civic-ceremonial constructions
Small Village	101–500	With or without civic-ceremonial constructions
Hamlet	21–100	Usually no constructions beyond house mounds
Isolated Residence	5–20	No clear evidence of constructions

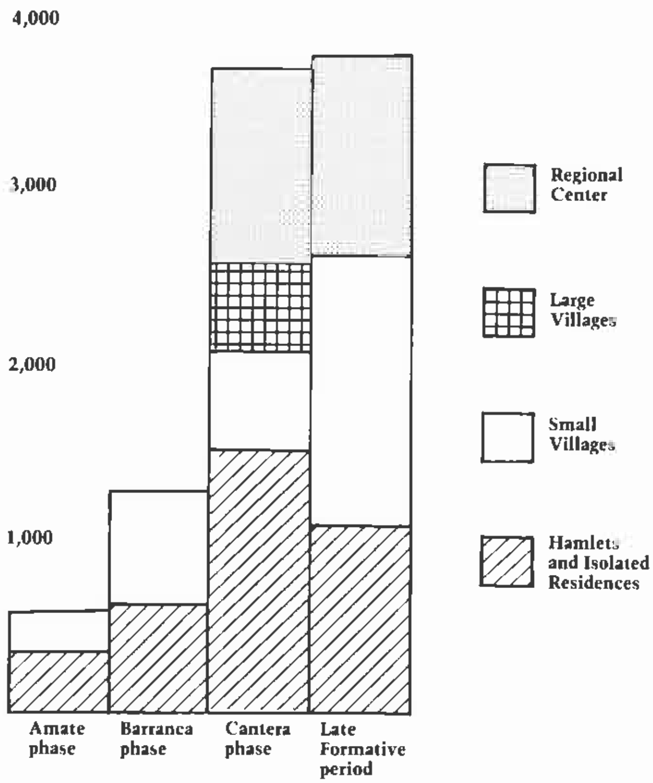


Figure 21.1. Proportions of total population by site hierarchy.

Table 21.4. **Percentage of Total Population by Site Type Hierarchy for All Phases**

Site Category	*Amate Phase*	*Barranca Phase*	*Cantera Phase*	*Late Formative*
Regional Center			30	31
Large Village			14	
Small Village	35	52	15	40
Hamlet	52	34	28	14
Isolated Residence	13	14	13	15

tant aspects of the society will be those which facilitate the conversion and utilization of energy. From this perspective, social institutions move energy throughout the society in an orderly and predictable fashion and are reflected archaeologically in the "numbers and distribution of people . . . their differential control of the total energy supply . . . [and] their utilization of various types of material objects" (Price 1974:451).

The size, internal plan, spacing, elaboration, and contents of settlements help us to establish the range of differences between communities. Although they do not specifically clarify *how* they were integrated or ranked within a settlement hierarchy, elite residences and public architecture do give us clues. As Barbara Price (1978:169) states, "The underlying rationale is that these dwellings represent differential expenditures of energy. Any construction in any center of any size in any site stratification hierarchy represents energy first produced, then taken out of circulation. A civic center represents the surplus energy produced by a population and consumed or spent in this essentially public form."

The settlement typology used here does not in and of itself explain the functional relationships between different sites or identify the number and boundaries of distinct sociocultural energy systems. Ethnographic studies have demonstrated, however, that only in extremely rare circumstances do communities exist in total ignorance of, or without interaction with, their neighbors. The ordering of settlements from large to small allows speculation about the dominant, subordinate, or independent relationships of communities with each other. In this study it is assumed that the relationship which exists, for example, between a seasonal microband camp (possibly manifested by an isolated Residence) and the permanent village to which its members belong is in some sense hierarchical. An "administrative" hierarchy may be said to exist when we find the autonomy of one group becoming subordinated to that of another.

Unfortunately, the processes which give rise to site hierarchies are poorly understood and hard to demonstrate archaeologically. Kent Flannery (1976c: 168–170) has suggested the founding of daughter communities by cadet lineages as a probable cause for the emergence of hierarchies during the Middle Formative. My discussion and reconstructed development of site hierarchies later in this chapter is based largely on the size, spacing, internal complexity, and location of settlements in relation to scarce resources. Implicit in the analysis is the assumption that large communities were normally more heterogeneous in composition and contained a greater amount and variety of service functions than smaller communities. Although this assumption of a strong positive correlation between community size and the number of activities found within communities still requires rigorous testing before we can accurately assess its appropriateness for ranked societies, it has been repeatedly shown to be true for modern communities at all levels of socioeconomic development (Berry and Garrison 1958).

This lawlike generalization does not specify, nor is it assumed in the course of this analysis, that all settlements of the same size had identical sets of functions or that larger centers had all the same functions as smaller centers. The reconstruction of site hierarchies and intrasite relationships is an uncertain business with the data at hand. The settlement reconstruction presented here awaits assessment by a research project which specifically examines the relationships between sites at the regional level, using excavation and intensive systematic surface collection.

Statistics

Several statistical techniques were used to interpret the settlement pattern and to discover previously unexpected associations among the many variables considered. A correlation statistic, Pearson's *r* (Blalock 1960:286), was used to examine the form and strength of relationship between a number of environmental and other variables (listed in Table 21.5). The environmental variables, such as landform type, drainage conditions, and vegetation zones, were included to help gain insights into subsistence strategies. Other variables, such as the size, spacing, length of occupation, and type of site, were added either as variables to be explained in the analysis or as factors in the social environment which were also important for site location. Correlation matrices for the different phases are found in Tables 21.6, 21.7, 21.8, 21.9.

The Nearest Neighbor (NN) statistic is a descriptive measure of the spatial relationships between sites and was useful in helping us to interpret at least a por-

Table 21.5. **Variables Used in Statistical Tests**

DSP	Distance to springs	PBAR	Percentage of the site's 1 km catchment in the Riverine vegetation zone
DRIV	Distance to rivers	PHUIZ	Percentage of the site's 1 km catchment in the Huizache Grassland vegetation zone
PITH-1	Pithecellobium Woodland vegetation zone within the 200 m site catchment	PCBS	Percentage of the site's 1 km catchment in the mixed Cerro–Barranca–Pithecellobium Woodland vegetation zone
BAR-1	Riverine vegetation zone within the 200 m site catchment	PFP	Percentage of the site's 1 km catchment in the Flat Plains topographic zone
HUIZ-1	Huizache Grassland vegetation zone within the 200 m site catchment	PIP	Percentage of the site's 1 km catchment in the Irregular Plains topographic zone
CER-1	Cerro (Interior Valley Cerros) vegetation zone within the 200 m site catchment	POLH	Percentage of the site's 1 km catchment in the Open Low Hills topographic zone
FP	Flat Plains topographic zone	PHHLMT	Percentage of the site's 1 km catchment in the High Hills and Low Mountains topographic zones
IPSR	Irregular Plains with Slight Relief topographic zone	POP	Maximum population estimates per site
PITH-2	Pithecellobium Woodland vegetation zone within the 1 km site catchment	HIER	Hierarchical classification by site
BAR-2	Riverine vegetation zone within the 1 km site catchment	CONOC	Continuous occupation at the site, Amate phase to Late Formative
HUIZ-2	Huizache Grassland vegetation zone within the 1 km site catchment		
CER-2	Cerro (Interior Valley Cerros) vegetation zone within the 1 km site catchment		
PPITH	Percentage of the site's 1 km catchment in the Pithecellobium Woodland vegetation zone		

Table 21.6. **Pearson Correlation Coefficients—Amate Phase (N = 10)**

	POP	HIER
DSP	−0.6304 (P = 0.025)	−0.5682 (P = 0.043)
DRIV	−0.0889 (P = 0.403)	−0.3191 (P = 0.184)
PITH-1	0.8256 (P = 0.002)	0.6881 (P = 0.014)
BAR-1	0.6035 (P = 0.032)	0.8001 (P = 0.003)
HUIZ-1	0.1775 (P = 0.312)	0.1846 (P = 0.305)
FP	−0.1775 (P = 0.312)	−0.1846 (P = 0.305)
IPSR	−0.2464 (P = 0.246)	−0.3015 (P = 0.199)
PITH-2	0.3510 (P = 0.160)	0.2632 (P = 0.231)
BAR-2	0.2464 (P = 0246)	0.3015 (P = 0.199)
HUIZ-2	0.3696 (P = 0.147)	0.4523 (P = 0.095)
CER-2	0.8043 (P = 0.003)	0.6784 (P = 0.016)
PPITH	0.0831 (P = 0.410)	−0.0457 (P = 0.450)
PBAR	0.2918 (P = 0.207)	0.3385 (P = 0.169)
PHUIZ	−0.3202 (P = 0.184)	−0.1098 (P = 0.381)
PCBS	0.5008 (P = 0.070)	0.3583 (P = 0.155)
PFP	−0.2048 (P = 0.285)	−0.2767 (P = 0.219)
PIP	−0.3452 (P = 0.164)	−0.2858 (P = 0.212)
POLH	0.8261 (P = 0.002)	0.7035 (P = 0.012)
PHHLMT	0.7690 (P = 0.005)	0.6339 (P = 0.025)
POP	1.0000 (P = 0.000)	0.9308 (P = 0.000)
HIER		1.0000 (P = 0.000)

Table 21.7. **Pearson Correlation Coefficients—Barranca Phase (N = 22)**

	POP	*HIER*	CONOC
DSP	−0.6328 (P = 0.001)	−0.8132 (P = 0.000)	0.3051 (P = 0.084)
DRIV	−0.0920 (P = 0.342)	−0.0875 (P = 0.349)	0.0870 (P = 0.350)
PITH-1	0.1330 (P = 0.278)	0.1840 (P = 0.206)	0.0713 (P = 0.376)
BAR-1	0.2020 (P = 0.184)	0.1800 (P = 0.211)	0.2232 (P = 0.159)
HUIZ-1	−0.2381 (P = 0.143)	−0.1840 (P = 0.206)	0.2424 (P = 0.139)
CER-1	0.3279 (P = 0.068)	0.2970 (P = 0.090)	0.1656 (P = 0.231)
FP	−0.2711 (P = 0.111)	−0.1955 (P = 0.192)	0.2281 (P = 0.154)
IPSR	−0.1814 (P = 0.210)	−0.2390 (P = 0.142)	−0.0247 (P = 0.457)
PITH-2	0.0293 (P = 0.448)	0.0476 (P = 0.417)	0.2214 (P = 0.161)
BAR-2	0.1252 (P = 0.289)	0.1650 (P = 0.232)	−0.1704 (P = 0.224)
HUIZ-2	0.1252 (P = 0.289)	0.1650 (P = 0.232)	−0.1704 (P = 0.224)
CER-2	0.2678 (P = 0.114)	0.2443 (P = 0.137)	0.1275 (P = 0.286)
PPITH	0.0278 (P = 0.451)	0.0376 (P = 0.434)	0.0189 (P = 0.467)
PBAR	0.1015 (P = 0.327)	−0.0059 (P = 0.490)	0.0664 (P = 0.385)
PHUIZ	−0.1644 (P = 0.232)	−0.1892 (P = 0.199)	−0.0492 (P = 0.414)
PCBS	0.3537 (P = 0.053)	0.3793 (P = 0.041)	0.0518 (P = 0.410)
PFP	−0.3007 (P = 0.087)	−0.2675 (P = 0.114)	0.0918 (P = 0.342)
PIP	−0.3553 (P = 0.052)	−0.4679 (P = 0.014)	0.0101 (P = 0.482)
POLH	0.7907 (P = 0.000)	0.4399 (P = 0.020)	−0.2045 (P = 0.181)
PHHLMT	0.4722 (P = 0.013)	0.3653 (P = 0.047)	0.0926 (P = 0.341)
POP	1.0000 (P = 0.000)	0.8056 (P = 0.000)	−0.4867 (P = 0.011)
HIER		1.0000 (P = 0.000)	−0.2755 (P = 0.107)
CONOC			1.0000 (P = 0.000)

Table 21.8. **Pearson Correlation Coefficients—Cantera Phase (N = 49)**

	POP	*HIER*	CONOC
DSP	−0.6725 (P = 0.000)	−0.7653 (P = 0.000)	0.6948 (P = 0.000)
DRIV	−0.0923 (P = 0.264)	−0.1274 (P = 0.192)	0.1378 (P = 0.173)
PITH-1	0.2046 (P = 0.079)	0.2341 (P = 0.053)	−0.3066 (P = 0.016)
BAR-1	0.2044 (P = 0.079)	0.3261 (P = 0.011)	−0.1417 (P = 0.166)
HUIZ-1	−0.1864 (P = 0.100)	−0.1405 (P = 0.168)	0.2501 (P = 0.042)
CER-1	0.2883 (P = 0.022)	0.1987 (P = 0.086)	−0.0913 (P = 0.266)
FP	−0.1156 (P = 0.214)	−0.0202 (P = 0.445)	−0.0580 (P = 0.346)
IPSR	−0.1440 (P = 0.162)	−0.2239 (P = 0.061)	0.2577 (P = 0.037)
PITH-2	0.1310 (P = 0.185)	0.0995 (P = 0.248)	−0.2057 (P = 0.078)
BAR-2	0.1666 (P = 0.126)	0.3078 (P = 0.016)	−0.2858 (P = 0.023)
HUIZ-2	0.1047 (P = 0.237)	0.1935 (P = 0.091)	−0.1229 (P = 0.200)
CER-2	0.2177 (P = 0.066)	0.2063 (P = 0.077)	−0.1299 (P = 0.187)
PPITH	0.0577 (P = 0.347)	0.0339 (P = 0.408)	−0.1303 (P = 0.186)
PBAR	0.1976 (P = 0.087)	0.2035 (P = 0.080)	−0.1219 (P = 0.202)
PHUIZ	−0.1933 (P = 0.092)	−0.1529 (P = 0.147)	0.2371 (P = 0.050)
PCBS	0.3261 (P = 0.011)	0.2278 (P = 0.058)	−0.1859 (P = 0.100)
PFP	−0.0665 (P = 0.325)	0.0784 (P = 0.296)	−0.0813 (P = 0.289)
PIP	−0.2059 (P = 0.078)	−0.2722 (P = 0.029)	0.2248 (P = 0.060)
POLH	−0.0669 (P = 0.324)	−0.1885 (P = 0.097)	0.2785 (P = 0.026)
PHHLMT	0.3976 (P = 0.002)	0.2883 (P = 0.022)	−0.1777 (P = 0.111)
POP	1.0000 (P = 0.000)	0.8292 (P = 0.000)	−0.5369 (P = 0.000)
HIER		1.0000 (P = 0.000)	−0.6847 (P = 0.000)
CONOC			1.0000 (P = 0.000)

tion of the social environment as it may have existed. The statistic was originally described by P. Clark and F. Evans (1954), and their method for computation and interpretation was followed. A basic assumption in the interpretation of the NN statistic is that the physical spacing of sites is a function at least in part of the interaction between sites and the environment.

Three conditions can be identified from this measure: randomness of site location, the degree of clustering, or the degree of regularized spacing of communities. Clustering results from the effect of key resources on settlement location or from new site formation as groups move away from existing communities and settle nearby. Regular spacing can result from situations of competition between sites where there is a conscious attempt to maintain the maximum distance between all settlements in an area to reduce or avoid potential antagonism.

The NN statistic will customarily range above and below the value of 1.0, which represents the random spacing of points. Values below 1.0 represent degrees of clustering where 0 is the point of maximum aggregation and all events are situated in one point. Values above 1.0 indicate degrees of regular spacing with 2.1491 approximating the norm of a hexagonally ordered point pattern. It is customary to eliminate sites whose Nearest Neighbor is farther away than that site is from the boundary of the study area, since including these sites in the analysis biases the results away from clustered patterns toward regular spacing. In this study, NN statistics reflect boundary elimination unless otherwise indicated. Results by phase for the Amatzinac Valley and for the Pithecellobium Woodland vegetation zone within the valley are presented in Tables 21.10 and 21.11.

THE EARLIEST OCCUPATION: AMATE PHASE

At the moment, the earliest evidence for human occupation in the Río Amatzinac Valley dates to ca. 1500 BC. The valley thus differs from neighboring regions such as the Valley of Mexico, the Tehuacan Valley, and the Valley of Puebla, where there is archaeological evidence for human occupation in the Archaic period. There are reasons for this, of which the most obvious may be the lack of research on the preceramic period. Outside of our own project there has been little attempt to detect Archaic occupations in Morelos.

Within the Río Amatzinac Valley, however, we can also identify a number of ecological variables which would have negatively influenced human activity during this period. For example, the area lacks contrasting environmental zones of the type favored by Archaic bands. A number of wild plant species which were staples of Archaic bands are rare or absent (Bugé 1978). There are some seasons when very few "collectagens" are available, although there is an overabundance at other times of the year, which would have presented problems in resource scheduling, making the valley less attractive for year-round occupation.

Periodically throughout the Archaic period, microbands from adjacent areas probably established temporary camps in the valley to exploit some of the seasonally abundant resources. Unfortunately, whatever cultural residue they may have left was not of sufficient magnitude to be detected during the course of the reconnaissance. A possible preceramic site has been found near Xalostoc (Grove, personal communication) immediately west of the survey area, although it has not been intensively investigated to determine the extent and duration of actual habitation.

A total of ten Amate phase sites (1500–1100 BC) were located during the surface survey, and these are shown in Figure 21.2. All are Hamlets or Isolated Residences with the exception of one Small Village located at the base of the Cerro Chalcatzingo (Table 21.12). Very little can be said about the range of activities in any Amate phase settlement from our surface collections alone. Eight of the ten sites are clustered in the northern half of the valley in prime agricultural areas which were densely inhabited during the Postclassic (Hirth 1974) and which have been under irrigation since at least Aztec times (Palerm 1954).

In addition to these sites, Francisco Plancarte y Navarrete (1934) reported Amate phase material from around Tepalcingo. Traces of this site could not be located, but it is possible that the site is now covered by the modern pueblo which spreads up the sides of the narrow river valley onto the neighboring hillside.

Most of the Amate phase material comes from multicomponent sites where it was either badly mixed with artifacts of later periods or recovered from such doubtful contexts as mound fill or freshly

***Table 21.9.* Pearson Correlation Coefficients—Late Formative (N = 57)**

	POP	*HIER*	*CONOC*
DSP	−0.6028 (P = 0.000)	−0.6378 (P = 0.000)	0.6376 (P = 0.000)
DRIV	−0.2112 (P = 0.057)	−0.2459 (P = 0.033)	0.2213 (P = 0.049)
PITH-1	0.0190 (P = 0.444)	0.0308 (P = 0.410)	−0.1877 (P = 0.081)
BAR-1	0.2366 (P = 0.038)	0.2399 (P = 0.036)	−0.2896 (P = 0.014)
HUIZ-1	−0.0044 (P = 0.487)	0.0528 (P = 0.348)	0.0858 (P = 0.263)
CER-1	0.0178 (P = 0.448)	0.3248 (P = 0.007)	−0.3838 (P = 0.002)
FP	−0.0121 (P = 0.464)	−0.1050 (P = 0.219)	0.2011 (P = 0.067)
IPSR	−0.0928 (P = 0.246)	−0.1878 (P = 0.081)	0.1346 (P = 0.159)
PITH-2	−0.0127 (P = 0.463)	−0.0334 (P = 0.403)	−0.1573 (P = 0.121)
BAR-2	0.1326 (P = 0.163)	0.1695 (P = 0.104)	−0.1557 (P = 0.124)
HUIZ-2	0.1089 (P = 0.210)	0.1629 (P = 0.113)	−0.2348 (P = 0.039)
CER-2	−0.0098 (P = 0.471)	0.2824 (P = 0.017)	−0.4887 (P = 0.000)
PPITH	−0.0538 (P = 0.345)	−0.0595 (P = 0.330)	−0.0472 (P = 0.364)
PBAR	0.0866 (P = 0.261)	0.1188 (P = 0.189)	−0.1454 (P = 0.140)
PHUIZ	0.0404 (P = 0.383)	0.0116 (P = 0.466)	0.1397 (P = 0.150)
PCBS	−0.0317 (P = 0.408)	0.1655 (P = 0.109)	−0.3458 (P = 0.004)
PFP	0.0910 (P = 0.250)	0.1261 (P = 0.175)	0.0356 (P = 0.396)
PIP	−0.1500 (P = 0.133)	−0.2915 (P = 0.014)	0.1174 (P = 0.192)
POLH	−0.0832 (P = 0.269)	−0.0449 (P = 0.370)	0.0377 (P = 0.390)
PHHLMT	0.0167 (P = 0.451)	0.3056 (P = 0.010)	−0.4291 (P = 0.000)
POP	1.0000 (P = 0.000)	0.7827 (P = 0.000)	−0.5200 (P = 0.000)
HIER		1.0000 (P = 0.000)	−0.6293 (P = 0.000)
CONOC			1.0000 (P = 0.000)

***Table 21.10.* Nearest Neighbor Statistics for All Measured Distances within the Amatzinac Valley (454 km²)**

	Amate Phase	*Barranca Phase*	*Cantera Phase*	*Late Formative*
All sites (Level I)	0.646	0.663	0.772	0.692
Pithecellobium Woodland	0.646	0.546	0.669	0.490
Huizache Grassland	NC	0.898	0.904	0.965
Level II sites (>75 persons)	0.938	1.271	1.03	1.960
Level II without boundary elimination	NC	1.315	1.209	2.051
Level IV sites (<75 persons)	0.476	0.663	0.766	0.763
Level IV without boundary elimination	0.551	NC	NC	NC

NC: no calculation.

***Table 21.11.* Nearest Neighbor Statistics for All Measured Distances within the Pithecellobium Woodland Vegetation Zone, Amatzinac Valley (55 km²)**

	Amate Phase	*Barranca Phase*	*Cantera Phase*	*Late Formative*
Level I (all sites)	1.702	1.270	1.379	1.119
Level II sites (>75 persons)	2.472	2.960	2.343	4.481
Level IV sites (<75 persons)	1.255	1.195	1.528	1.288

Note: Nearest Neighbor measurements for Level II and Level IV sites were calculated using the same r_E for all sites in the Pithecellobium Woodland.

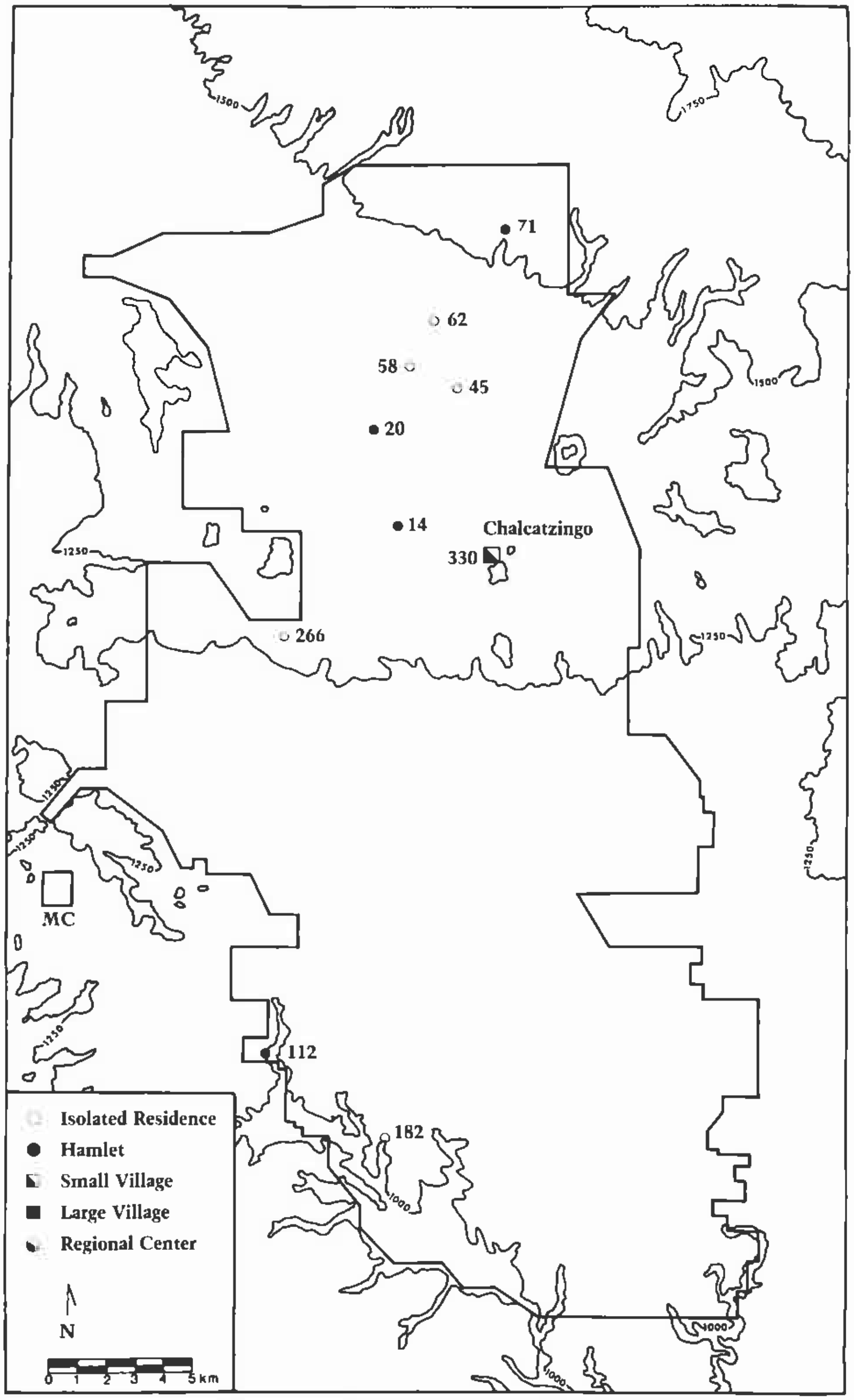


Figure 21.2. Amate phase settlements in the survey area.

eroded deposits in irrigation canals. At Chalcatzingo the Middle Formative settlement has obliterated virtually all surface signs of the Amate phase occupation, and all of our information on the size and function of the site has come from project excavations.

Although we lack comparable survey data from other areas of Morelos, we know that the Río Amatzinac Valley was definitely more thinly populated than central Morelos or the Valley of Mexico. Four of the twelve sites reported in the Valley of Mexico during the Coapexco-Ayotla subphase (1200–1000 BC) were substantial settlements of between 200 and 500 inhabitants (Tolstoy 1975). During the Manantial phase (1000–950 BC), which is roughly contemporaneous with our late Amate occupations, the number of large village sites increased to eight, and there were almost twice that number of hamlet communities averaging between 40 and 180 persons in each. Population for the entire Río Amatzinac Valley is estimated to have been between 210 and 575 individuals (Table 21.12). Even if we adjust this estimate for incomplete site recovery and underestimating the sizes of sites, a generous figure for regional population would not surpass 1,000 inhabitants. This places regional population density at less than 2 persons per km^2.

The largest community in the Río Amatzinac Valley was the Small Village at Chalcatzingo, at the southern extent of the Pithecellobium Woodland. Here the combination of drainage patterns, varied topography, and the presence of a spring created a complex mixing of plant communities (see Chapter 3). Nearly the full range of exploitable ecological niches found within the valley occur here in a single locale and, together with good agricultural land, would have offered a strong stimulus for residence at this site. I estimate that 100–200 people resided at the site by the end of the Amate phase. Excavation data place the area of occupation at 4–6 ha. In addition, Chalcatzingo is the only site known in the region with public architecture at this time (Chapter 6).

Settlement location and palynological analyses (David Bugé, personal communication) suggest that maize agriculture had become the dominant subsistence activity in the valley by this time. Six sites including Chalcatzingo (RAS-14, -20, -45, -112, -266, -330) are located at or within 200 m of perennial springs, indicating the importance of accessible water in the overall settlement strategy. In addition, all but two sites (RAS-182, -266) occur within areas of fertile agricultural land. This coincides with what we know about contemporary settlements in western and central Morelos, where farming villages are found adjacent to the agricultural lands of the floodplains of major rivers. The result then as now is a greater concentration of population in these areas.

In other areas of Morelos large sites are situated either at springs (Gualupita, Oaxtepec) or on terraces adjacent to rivers (Atlihuayan, Pantitlan, La Era, Nexpa, San Pablo). In the Río Amatzinac Valley permanent rivers flow the length of their courses within relatively inaccessible, sharply incised barranca channels. Only in the southern valley do the barranca sidewalls widen to create small pockets of rich farmland. Across the rest of the valley floor, runoff is rapid and soils do not readily retain moisture. On the whole, settlement is concentrated in those few locales where subsurface moisture is higher and retained longer. Under these conditions we might predict an early occupation of the small fertile zones of River Bottomland in the southern valley (see Chapter 3). Unfortunately, no evidence was recovered during the survey to suggest they were being utilized at this time. We have not found any traces of incipient irrigation systems, but we cannot discount the possibility of pot irrigation or small canals at the springs to facilitate year-round cropping. Hunting and seasonal collecting undoubtedly continued to be important supplemental activities for the diet throughout this period.

Roughly 90 percent of the Amate phase population was clustered in the northern half of the valley where we find the moister Pithecellobium Woodland zone. Two variables appear to be important in determining site size and location during this phase. There is a strong positive correlation between population and the number of sites located at or within 200 m of the Pithecellobium Woodland and Riverine zones (0.8256 and 0.6035, Table 21.6). Permanent water sources, especially springs, likewise may be important as seen in the inverse correlation between site size (HIER) and the distance to springs (DSP) (−0.5682). This simply means that sites near water sources exhibit a greater potential for growth. High correlations of population with a number of other variables (PCBS, POLH, CER-2, PHHLMT) reflect the utilization of these interrelated environmental zones by the large population aggregate at Chalcatzingo.

Specific site categories appear segregated by environmental zones. The Small Village and Hamlets occur adjacent to the Riverine zone alongside permanent rivers. There is also a strong tendency for Hamlet and Small Village communities to occur within 1 km of the Huizache Grassland zone, while only in one instance does a Hamlet occur within the zone itself (RAS-112), and this is where a spring issues forth. All but one of the Isolated Residences are found within 1 km of the Riverine zone but never at permanent water sources. Isolated Residences were not found within the Interior Valley Cerros, Cuajiotal, or Tetlalera zones.

The above settlement pattern is very similar to those described by Richard S. MacNeish, Frederick A. Peterson, and James A. Neely (1972:386–396) and by Kent Flannery (1976b) for regional exploitation in the valleys of Tehuacan and Oaxaca. The Small Village and Hamlet communities in the Río Amatzinac Valley were probably year-round communities. The Isolated Residences may represent microband camps of persons from permanent communities in the valley who engaged in seasonal activities, either foraging or cultivation in specialized zones. There is a strong positive correlation between site size and the presence of exploitable vegetation zones (PITH-1, BAR-1) within a 200 m radius (Table 21.6). Isolated Residences are restricted to single environmental zones, while the larger Hamlets and Small Village are found along the interface of zones where more collectable resources may have helped to augment agricultural activities and facilitated more permanent settlement. All of the Isolated Residences lack vestiges of residential architecture, storage vessels, or ground stone implements for processing food which would indicate any sort of permanent occupation. In addition, these camps are located more than 5 km from the nearest large settlements, the normal distance necessitating overnight encampments.

Except for RAS-266, all of the Isolated Residence/microband settlements are found some distance from permanent water. The location of RAS-266 at the Atotonilco springs would have provided favorable conditions for agriculture, and from the pattern elsewhere in the valley we should expect to find a permanent Hamlet community there. Unfortunately, prehispanic and contemporary occupation may have destroyed the remains of a much larger settlement and biased our data.

I believe that sites RAS-45, -58, and -62 are related to hunting and collecting of wild plants in the Pithecellobium Woodland zone. The importance of collectable resources from the Pithecellobium Woodland may have led to the establishment of a specialized resource hamlet or microband camp at RAS-71. This is the only community in the northernmost portion of the Pithecellobium Woodland zone, and its inhabitants could also have collected a variety of resources from the Upland Forest zone, which begins higher on the slopes of Popocatepetl, about 5 km to the north. RAS-182 probably fulfilled a similar function in the southern valley along the shallow-sided

***Table 21.12.* Amate Phase Population Summary, Río Amatzinac Valley**

RAS Site	*Size in Hectares*	*Site Class*	*Population*
14	2–3	Hamlet	21–100
20	2–3	Hamlet	21–100
45	≤1	Isolated Residence	5–15
58	≤1	Isolated Residence	5–15
62	≤1	Isolated Residence	5–15
71	1–2	Hamlet	21–50
112	1–2	Hamlet	21–50
182	≤1	Isolated Residence	5–15
266	≤1	Isolated Residence	5–15
330	4–6	Small Village	101–200
		Total population	210–575

barranca which carries water only during the rainy season.

Settlement clustering within the Pithecellobium Woodland zone appears to be a function of environmental variables in combination with regional population growth and community budding. Nearest Neighbor analysis indicates that within this zone all communities tend to be regularly spaced. Differential spacing of communities within the same environmental zone has been discussed by Timothy Earle (1976) for Formative period settlements in the Valley of Mexico. In similar circumstances Earle feels that regular spacing in key resource zones is a function of maximizing regional exploitation for key resources while minimizing competition between communities (ibid.: 205–206). The periodicity and sensitivity of small microband camps (Isolated Residences) to specific microenvironmental conditions is further characterized by their tendency to be more tightly clustered with respect to one another (0.476 for Level IV sites; Table 21.10) than to the larger and more permanent Hamlet and Village settlements (0.646 for all sites; Table 21.10).

Amate phase settlement patterns compare most strongly with what occurs in the Tehuacan and Puebla-Tlaxcala valleys at the same time. In the Tehuacan Valley, permanent year-round settlements appeared after 1500 BC (MacNeish, Peterson, and Neely 1972). The basic unit of residence in this area was the small hamlet, and larger settlements did not appear until after 850 BC. Communities were located on the valley floor where they could engage in maize agriculture, which MacNeish suggests formed a large proportion of their subsistence. To supplement the maize diet, small groups from the hamlet communities traveled to base camps in neighboring ecozones for seasonal foraging and hunting activities.

In the Puebla-Tlaxcala Valley early population clusters are reported along river courses and valley slopes during the Tzompantepec phase as early as 1400 BC (García Cook 1974; Mora 1975). The principal community type was the small agricultural hamlet numbering between 40 and 100 residents. Larger sites with populations up to 350 inhabitants have been identified during the subsequent Tlatempa phase (García Cook 1973). By contrast, however, all three of these regions—the Río Amatzinac Valley, the Tehuacan Valley, and the Valley of Puebla-Tlaxcala—differ from what we know of population density in the Valley of Mexico, where large village communities with populations as large as 500 persons are reported as early as 1200 BC (Tolstoy 1975; Tolstoy et al. 1977).

MIDDLE FORMATIVE SETTLEMENT PATTERNS

The Barranca Phase

A total of twenty-two Barranca phase sites were located during the survey (Fig. 21.3). Regional population is estimated at between 513 and 1,262 persons (Table 21.13), which is slightly more than double the Amate phase estimate. The annual growth rate necessary to produce such an increase, however, is less than 0.5 percent per year when spread over the 400 year phase. This assumes, of course, that all sites were contemporaneous and continuously occupied during these 400 years, which in itself is problematical.

During this phase population spread throughout the valley, and three cells or clusters of different community composition become evident—a tripartite division that continues into and becomes more sharply differentiated during the subsequent Cantera phase. The three clusters are a northern cluster of equivalently sized small Hamlets and Isolated Residences, a central cluster of high population density and settlement diversity with a wide range in the size of communities, and a southern cluster of dispersed settlement where Small Villages occur along with Hamlet-sized communities.

The central cluster is situated along the interface of the Pithecellobium Woodland and Huizache Grassland zones essentially along a line between RAS-300 and RAS-20 (Fig. 21.3). Soils in the central zone are deep, fertile, high in moisture retention, and easily cultivated using simple agricultural technology. All the settlements in this cluster, with the exception of RAS-5, are located in prime agricultural areas and were probably full-time agricultural communities.

Chalcatzingo (RAS-330), located in this cluster, was the largest community in the valley. A large portion of the site was terraced, and check dams were built to divert surface runoff away from the terraces. It is likely that simple feeder canals radiating out from the spring at the north end of the site were used to create several hectares of extremely productive agricultural land which could be cultivated year-round. The Chalcatzingo

Table 21.13. **Barranca Phase Population Summary, Río Amatzinac Valley**

RAS Site	*Size in Hectares*	*Ceramic Density*	*Site Class*	*Population*
1A	2.5	C	Hamlet	13–25
1B	2.8	B	Hamlet	28–70
5	0.6	C	Isolated Residence	5–15
14	3.5	B	Hamlet	35–88
20	6.5	B	Small Village	65–163
53	≤0.5	C	Isolated Residence	5–15
62	≤0.5	C	Isolated Residence	5–15
71	≤0.5	C	Isolated Residence	5–15
75	≤0.5	C	Isolated Residence	5–15
78	4.0	C	Hamlet	40–100
107	≤0.5	C	Isolated Residence	5–15
112	6.5	B	Small Village	65–163
144	1.5	C	Isolated Residence	8–15
164	2.5	B	Hamlet	25–63
182	≤0.5	C	Isolated Residence	5–15
189	1.5	B	Isolated Residence	8–15
232	≤0.5	C	Isolated Residence	5–15
243	1.1	C	Isolated Residence	5–15
266	5.0	C	Hamlet	25–50
326	3.5	C	Hamlet	18–35
328	1.5	C	Isolated Residence	8–15
330	13.0	B	Small Village	130–325
			Total population	513–1,262

elite would have had control over the most productive agricultural land in the region. The land and the concentration of wild collectagens found only at this site made the small area around Chalcatzingo the optimal zone for subsistence resources in the valley.

Residential debris was scattered across approximately 13 ha, and a population density of 10–25 persons/ha yields an estimated population of 130–325 persons. Chalcatzingo's size and the presence of public architecture make it among the most important sites in central Mexico at this time.

Paul Tolstoy (1975) reports up to fifteen sites from the Valley of Mexico which are over 10 ha during the First Intermediate period, but all of them lack evidence of public architecture. Generally speaking, communities over 20 ha were rare in Mesoamerica prior to 500 BC.

Equally interesting is the population clustering in the area immediately surrounding Chalcatzingo. Eight small Hamlets and Isolated Residences are found within a 5 km radius of the site. They range from less than 1 ha up to 3.5 ha in size. These communities were probably settled by groups either from Chalcatzingo or one of the other two Amate phase settlements in the central valley (RAS-14, -20) which continued to grow throughout this phase.

Village fissioning is symptomatic of weak and politically decentralized groups because the residents are unable to maintain internal order among the various kin-related segments (Chagnon 1968). If the population clustering immediately around Chalcatzingo is the result of group fissioning, it would also appear that Chalcatzingo was able to maintain at least a partial linkage between kin-groups after the fissioning took place. What is important to note is that settlements cluster around Chalcatzingo early in its development.

All of the sites within a 6 km radius of Chalcatzingo (including the older sites of RAS-14 and -20) lack civic-ceremonial constructions. Only three of the seven new sites in Chalcatzingo's immediate periphery had any sizable population (RAS-1A, -1B, -326). It is clear that during the Barranca phase Chalcatzingo developed the capacity to integrate and maintain a concentrated population in a single locale.

Sites in the northern valley area occur within the Pithecellobium Woodland zone, and only four small Isolated Resi-

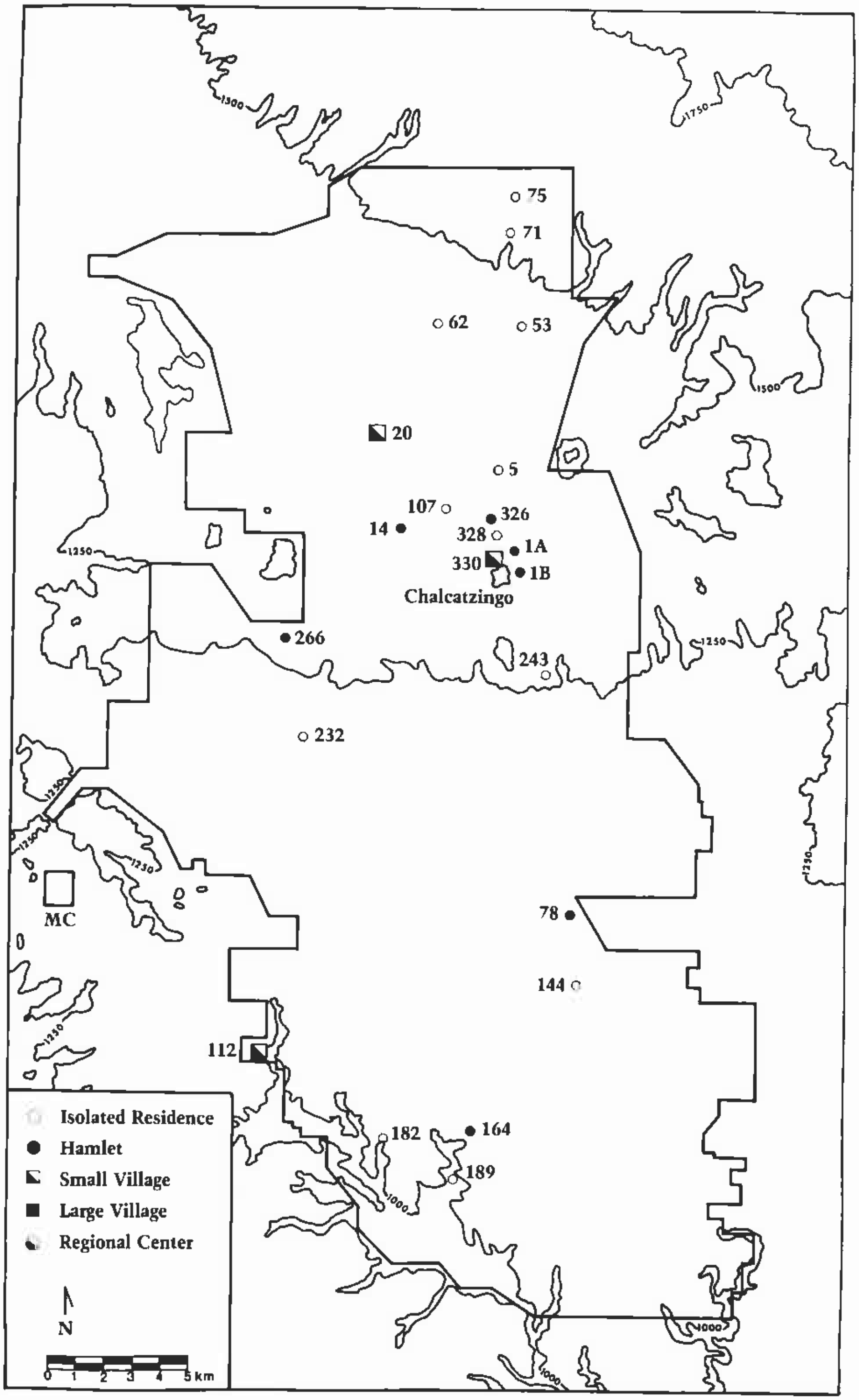


Figure 21.3. Barranca phase settlements in the survey area.

dences are found here for this phase. The population density was about the same as during the preceding Amate phase, although site location had changed. The small sites in this zone were probably agricultural communities which also engaged in seasonal collecting during the summer and fall. Although the northern valley receives proportionately greater amounts of rainfall than other areas of the valley, soils have higher clay content, making them more difficult to cultivate using simple digging stick technology.

Eight sites are located in the valley south and west of Chalcatzingo, along or below the 1,250 m contour interval. These sites occur within the Huizache Grassland environment, and the relative proximity of two sites (RAS-232, -266) to Chalcatzingo suggests that they may have been settled through population growth and village fissioning of groups in the central valley. Settlements are dispersed at uneven intervals throughout the southern valley, although the presence of springs is a key factor in determining the location of some sites (RAS-112, -164, -266). The site RAS-78 is located near the only area of River Bottomland along the Río Amatzinac where the river channel widens, the *barranca* sidewalls descend, and cultivation is possible along the river margin. The largest community in the south is RAS-112, which covered 6.5 ha and had a probable population between 65 and 163 inhabitants.

Each of the four largest communities in this zone (RAS-112, -164, -266, -78) is located in prime agricultural land and has as its nearest neighbor an Isolated Residence (RAS-266/-232; -112/-182; -164/-189; -78/-144). These smaller sites are all located at considerable distances from permanent water sources (1.5–2.5 km) and may have had specialized functions similar to the Amate phase Isolated Residences, which I suggested were microband camps utilized to expand resource procurement through seasonal collecting, rainfall agriculture, or both. Whatever the seasonal periodicity of these small sites, their pairing with larger sites was an important aspect of subsistence strategies in the Huizache Grassland environment. Many of these Isolated Residences grew in size and appear to have become permanent year-round settlements during the subsequent Cantera phase. Terraces for residential structures may have been constructed during the Barranca phase at RAS-112, but we have no evidence for Barranca phase public architecture in the valley outside of Chalcatzingo.

There is strong continuity between the Amate and Barranca phase settlement patterns. Areas where there are springs continued to be favored for site location, and all Barranca phase Hamlet and larger communities except one are found at such locales. Deviation from this pattern occurs only within the Chalcatzingo site cluster. The site of RAS-326 does not have a spring nearby, and the sites of RAS-1A and -1B are located a small distance from a spring on the eastern slopes of the Cerro Chalcatzingo. Variation within the Chalcatzingo site cluster is of interest because it suggests a deviation from purely environmental constraints related to agriculture which may be the result of enhanced social linkages (sharing, gift giving, or redistributions) between lineage members in different sites.

One measure of the continuity within the system through time is the extent to which earlier decisions regarding settlement location continue to be followed in subsequent phases. The continuous occupation variable (CONOC) was utilized in the correlation matrix to examine the continuity of settlement decisions in the Río Amatzinac Valley. In Table 21.7, high correlations between CONOC and other variables demonstrate that a continuity did exist. Negative values indicate the importance of relationships established during earlier periods, while positive values demonstrate the relationships between variables due to more recent decisions about site location. During the Barranca phase we find a positive correlation between the appearance of new sites and the distance to springs (0.3051) as sites are founded in areas without high water tables. At the same time there is a negative correlation with total population in the region (−0.4867). The large sites in the valley continue to be the older sites, those first occupied during the Amate phase (−0.2755) and which still contain the majority of regional population (−0.4867).

One of the obvious trends during the Barranca phase was a decrease in the correlation between single vegetation zones and small sites. Isolated Residences do not appear to specialize or cluster in single environmental zones as they did during the Amate phase. There is a substantial increase in the number and type of sites that have access to multiple environmental zones. Fifteen of the twenty-two sites from this phase (68 percent) are located within 200 m of two or more vegetation zones, which probably reflects a decrease in the exploitation of a small spectrum of resources through site specialization.

Population is more evenly spread throughout the region during the Barranca phase than in the Amate phase. A number of factors other than the simple selection of optimal agricultural zones appears to have influenced population movement throughout the valley, since many highly productive areas remained unoccupied until the subsequent Cantera phase. Nearest Neighbor analysis indicates only a slight decrease in the spatial relationship between all sites which remain highly clustered throughout the region (0.646 to 0.663, Table 21.10). There is a decrease in regular spacing for all sites in the Pithecellobium Woodland zone (1.702 to 1.270, Table 21.11).

When we look at particular types of sites, a number of additional trends become apparent. There is, for example, a trend for the small sites of less than seventy-five persons (Level IV sites, Tables 21.10, 21.11) to cluster more with respect to larger sites than to one another. This supports the arguments for the functional linkage of several large and small sites discussed above. There is an increase in the regular spacing of sites with seventy-five or more persons (Level II sites, Tables 21.10, 21.11) which may reflect the appearance of community boundaries and their competition over regional resources (e.g., Earle 1976). We must be careful in the extent to which we take this latter interpretation at face value, since the regular spacing of Level II communities is due at least in part to the relative location of springs throughout the valley.

Excavation data from the Valley of Mexico help to clarify some of the settlement trends observed during the Barranca phase. Tolstoy et al. (1977:99–100) report the importance of subsistence activities other than maize cultivation during the Early Horizon (Amate phase contemporary) in that area. During the First Intermediate Phase One-A, however (Barranca phase contemporary), there was a decrease in auxiliary hunting activity of deer, mud-turtle, and wild coot. These decreases, along with improved strains of maize during this time, suggest an overall increase in the productivity of maize agriculture.

A similar pattern is apparent in our region. Site selection strongly favored locales with good agricultural potential where there was also access to the broad spectrum of vegetation zones. More data will be needed from excavation contexts, but it appears that seasonal collecting continued to play an important role in the regional subsistence cycle.

The Cantera Phase

The Cantera phase settlement pattern is illustrated in Fig. 21.4. A total of forty-nine sites were located during the reconnaissance; regional population based on site size and density estimates is projected to have been between 1,429 and 3,623 persons (Table 21.14). This increase is impressive when graphed (Fig. 21.5) and represents almost a tripling of population from the Barranca phase to the Cantera phase. Although a dramatic increase for the period as a whole, the entire population increase for the two-hundred-year phase could be accommodated by an annual rate of population increase just under 0.75 percent per year. It must be re-emphasized that even this low rate of growth may be an overestimate if all the settlements were not fully contemporary or if some of the smaller settlements were periodic microband camps composed of groups from nearby permanent settlements.

There is strong continuity in settlement patterns between the Barranca and Cantera phases, and the tripartite division of settlement into distinct clusters (in the north, central, and southern portions of the valley) persisted. The main population cluster was still in the central valley, between the 1,400 and 1,350 m contour intervals. Chalcatzingo remained the dominant ceremonial and demographic center in the region, growing to its largest size during this phase. Continuous surface scatter at the site covers just under 0.5 km^2 (43.25 ha). Using the surface-area–debris-density correlations, I have roughly estimated the on-site population to have been between 433 and 1,081 persons. This is a higher estimate than that given in Chapter 6, which calculates the population using only excavation criteria.

Chalcatzingo was one of the largest sites in central Mexico at this time. Other sites reported thus far which may have been comparable in size were Cuicuilco and Chimalhuacan in the Valley of Mexico. Although we know relatively little about Cuicuilco, Chimalhuacan

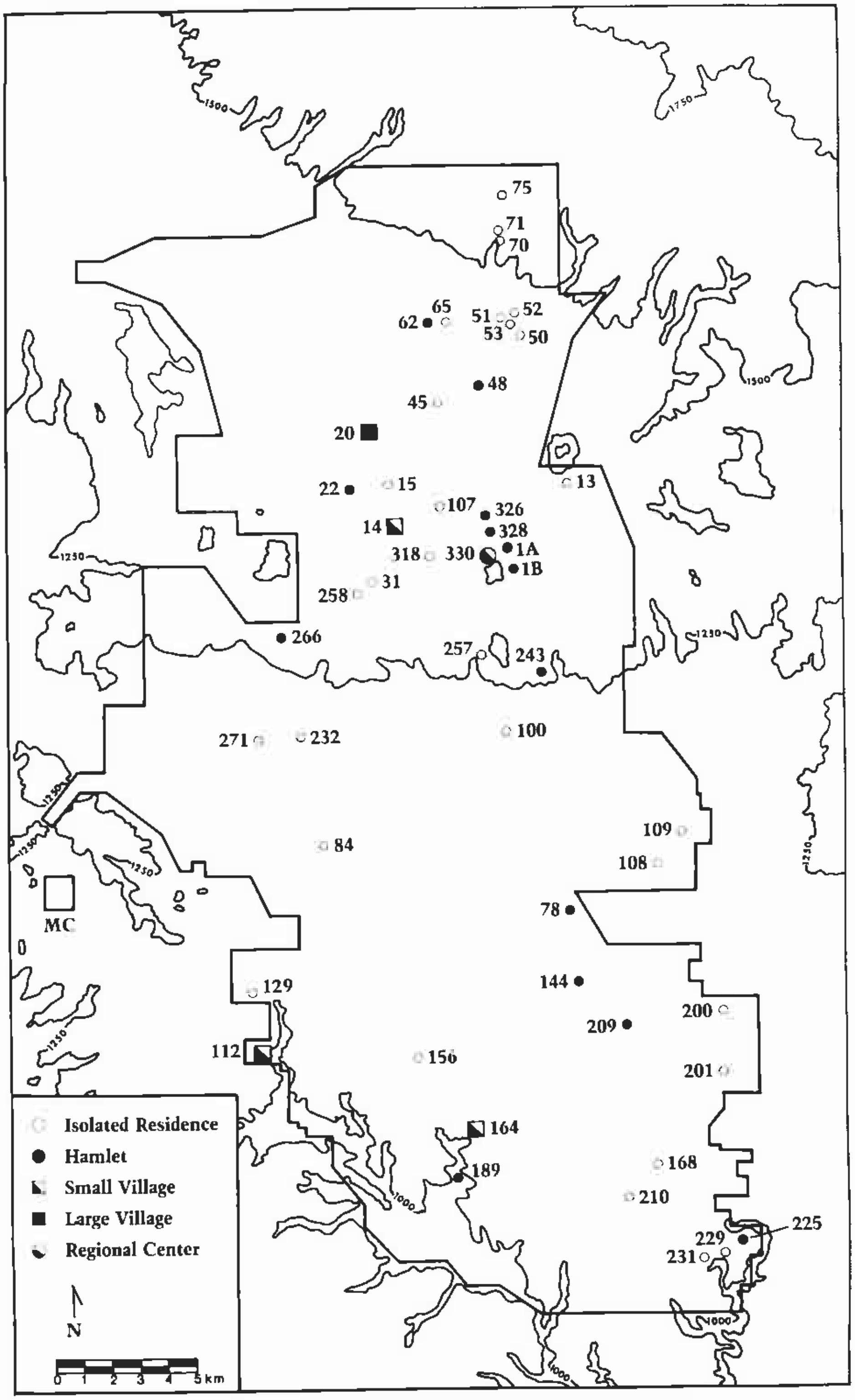


Figure 21.4. Cantera phase settlements in the survey area.

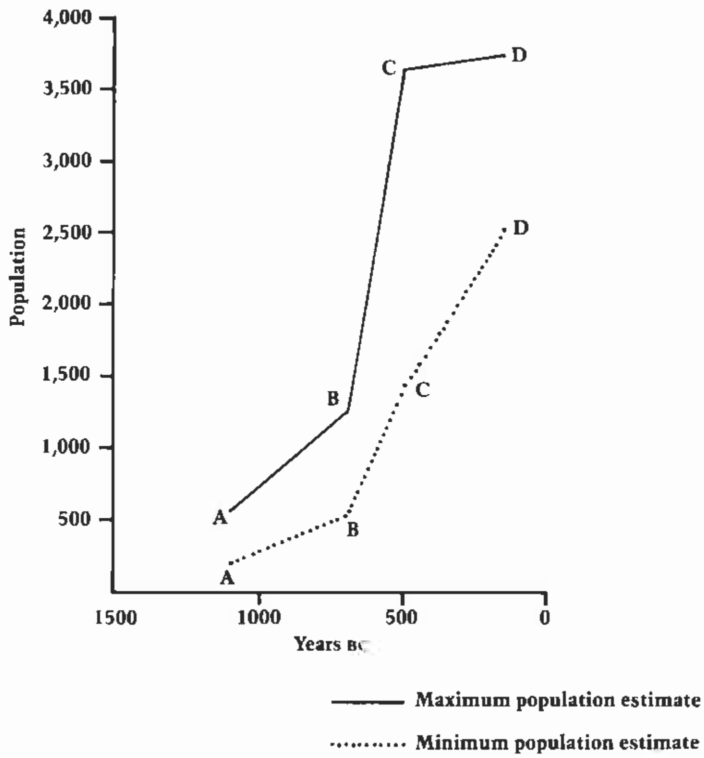


Figure 21.5. Change in regional population through time: *A*, Amate phase estimate; *B*, Barranca phase estimate; *C*, Cantera phase estimate; *O*, Late Formative estimate.

appears to have covered a total of 45 ha, for which Jeffrey R. Parsons (1971:28) calculates a population of 600–1,200 inhabitants. Although Chimalhuacan appears to have been slightly larger than Chalcatzingo, it lacks evidence for the sophisticated internal socioeconomic differentiation and complex civic-ceremonial architecture which would indicate a position of regional importance. The reverse is true for Chalcatzingo, which seems to have played a very important role at the regional level.

At least four small Hamlet communities are located within 1 km from the outer boundaries of Chalcatzingo (RAS-1a, -1b, -326, -328). These sites certainly interacted with the residents of Chalcatzingo on a regular basis and should perhaps be included within the calculation of Chalcatzingo's size. This conclusion is based on studies of contemporary agriculturalists by Michael Chisholm and others (Chisholm 1968; Abrams 1943), who place an outer spatial limit on probable daily interaction between 3 and 5 miles (5 and 8.35 km). These four sites increase the size of the community of Chalcatzingo by an additional 12 ha.

Heavy Classic and Postclassic occupation on the east slope of the Cerro Delgado (Tetla, RAS-1) may have obliterated Middle Formative residences there. This is most unfortunate since the RAS-1 residence areas may easily have been two or three times the magnitude reported here (see Table 21.14). Minimally therefore, we can possibly consider Chalcatzingo a "community" of about 55 ha. This would place Cantera phase Chalcatzingo on an even footing with such early large centers as San Lorenzo (53 ha at 900 BC) and Chiapa de Corzo II (49 ha at 500 BC) (Marcus 1976:88). Cuicuilco may have been equally large by this time, but we do not have the data to evaluate its development in the Valley of Mexico.

On the regional level, there are a number of important developments. If our population estimates are correct, roughly 25 percent of the entire regional population resided at Chalcatzingo during the Barranca phase. By 500 BC (the end of the Cantera phase), this percentage had increased only to 30 percent. Chalcatzingo had continued to grow throughout the Cantera phase, but at a slower rate than the appearance of new Small and Large Villages. The increase in intermediate-sized communities suggests an increase in social integration at the village level. At the same time there was an increase in the number of persons living in Hamlet and Isolated Residence communities which may suggest greater specialization in particular procurement activities.

The central valley appears to have been well integrated and directly under the control of Chalcatzingo. It is the most densely populated area in the valley and contains the complete range of settlement types found throughout the region, including Isolated Residences, Hamlets, a Small Village (RAS-14), and a Large Village (RAS-20) in addition to Chalcatzingo.

Both RAS-14 and RAS-20 contained relatively small civic-ceremonial constructions. The site of RAS-20 (Campana de Oro) had one or perhaps two small platform mounds which date to the end of the Cantera phase. The dimensions of these constructions were ca. 10 × 10 × 1 m and ca. 9 × 12 × 1.25 m. Sherds used in dating the larger of these structures came from an old looter's pit dug into the construction fill. The smaller structure had been largely destroyed before the survey started by farmers who were leveling the platform to amplify the area of their fields. Part of a small platform with Cantera phase offerings was encountered at Las Pilas (RAS-14) by investigators from the INAH Centro Regional de Morelos y Guerrero, who were excavating Classic period structures there.

There were also changes in the population structure of the northern and southern portions of the valley. The number of settlements in the northern Pithecellobium Woodland increased to eleven as compared to four during the preceding Barranca phase. Although this is a considerable increase in the number of settlements, all were still small Hamlets or Isolated Residences. Many of these sites appear to have been permanent year-round settlements where the primary activity was seasonal maize agriculture.

The number of sites increased from 9 to 24 in the southern valley below Jonacatepec. The southeast corner of the valley was occupied for the first time, and a new Small Village (RAS-164) appeared. There is definite evidence for platform mounds at RAS-112 and RAS-144, and two other settlements (RAS-164, -78) may also have had public architecture, indicating an increase in ceremonialism within these southern communities.

Residential terraces very similar to those at Chalcatzingo were constructed at RAS-112 (El Palacio). Some of these may date to as early as the Barranca phase. Classic and Postclassic occupation at this site destroyed most of the Middle Formative occupation; however, one badly destroyed low platform mound which covered approximately 300 m^2 could be identified as a Cantera phase construction. Telixtac (RAS-144) is a small site, covering about 5 ha, with two platform mounds. Excavations at this site are discussed in detail in Chapter 22.

Collections of Cantera phase materials were also made from small platform mounds at both RAS-78 and RAS-164. I believe that the structures date to the Cantera phase despite our inability to make more definitive assessments because of the Late Formative occupations at these sites. Middle Formative vessels were observed in private collections of residents of San Ignacio (RAS-78) and were reported to have been found with burials in a low platform where the town's new school was built.

The main population centers are again the oldest sites in the valley (Table 21.8, CONOC-POP coefficient of −0.5369). Although there is continuity in settlement location with the Barranca phase, there are many indications to suggest the increasing use of *temporal* (rainy-season) agriculture. New sites occur at greater distances from areas with high subsurface water tables (springs, permanent rivers) than during the preceding phases. During the Cantera phase six permanent Hamlet communities appear for the first time in areas where only *temporal* agriculture can be practiced.

Of these six hamlet communities, two are located in the north (RAS-62, -48), one is in the central valley (RAS-22), and three in the south (RAS-144, -189, -209). The Río Amatzinac passes close by RAS-48 within deeply incised barranca channels which prohibit simple diversion systems from being implemented or cultivation along the river margins within the barranca. RAS-22 and RAS-62 likewise do not have access to water for agricultural usage. The Río Frío-Tepalcingo becomes a permanent flow

***Table 21.14.* Cantera Phase Population Summary, Río Amatzinac Valley**

RAS Site	*Size in Hectares*	*Ceramic Density*	*Site Class*	*Population*
1A	3.8	B	Hamlet	38–95
1B	2.5	B	Hamlet	25–63
13	≤0.50	C	Isolated Residence	5–15
14	6.3	B	Small Village	63–158
15	≤0.50	C	Isolated Residence	5–15
20	21.0	B	Large Village	210–525
22	4.1	C	Hamlet	21–41
31	0.75	C	Isolated Residence	5–15
45	≤0.50	C	Isolated Residence	5–15
48	3.3	C	Hamlet	25–58
50	≤0.50	C	Isolated Residence	5–15
51	0.90	C	Isolated Residence	5–15
52	≤0.50	C	Isolated Residence	5–15
53	1.0	C	Isolated Residence	5–15
62	1.5	B	Hamlet	15–38
65	≤0.50	C	Isolated Residence	5–15
70	≤0.50	C	Isolated Residence	5–15
71	0.55	C	Isolated Residence	5–15
75	≤0.50	C	Isolated Residence	5–15
78	4.00	B	Hamlet	40–100
84	0.63	C	Isolated Residence	5–15
100	0.70	B	Isolated Residence	7–18
107	≤0.50	C	Isolated Residence	5–15
108	0.75	C	Isolated Residence	5–15
109	≤0.50	B	Isolated Residence	5–15
112	10.0	B	Small Village	100–250
129	0.90	C	Isolated Residence	5–15
144	2.10	B	Hamlet	21–53
156	0.51	B	Isolated Residence	5–15
164	6.00	B	Small Village	60–150
168	0.70	C	Isolated Residence	5–15
189	3.5	B	Hamlet	35–88
200	0.75	C	Isolated Residence	5–15
201	≤0.50	C	Isolated Residence	5–15
209	1.95	B	Hamlet	20–49
210	≤0.50	C	Isolated Residence	5–15
225	3.80	B	Hamlet	38–95
229	≤0.50	C	Isolated Residence	5–15
231	≤0.50	C	Isolated Residence	5–15
232	≤0.50	C	Isolated Residence	5–15
243	2.50	B	Hamlet	25–63
257	≤0.50	C	Isolated Residence	5–15
258	≤0.50	C	Isolated Residence	5–15
266	6.00	B	Hamlet	60–150
271	≤0.50	C	Isolated Residence	5–15
318	≤0.50	C	Isolated Residence	5–15
326	3.50	B	Hamlet	35–88
328	2.50	C	Hamlet	13–25
330	43.25	B	Regional Center	433–1,081
			Total population	1,429–3,623

only below RAS-22, where it is fed by spring seepage in the barranca channel. RAS-144 and RAS-189 are over a full kilometer from the nearest permanent water source. Finally, RAS-209 overlooks the Río Amatzinac in a locale where there is approximately 2 ha of cultivable land within the floodplain.

Topographic zones Irregular Plains and Irregular Plains with Slight Relief were apparently also important for settlement during this period. These are slightly rolling landscapes where differences in the immediately surrounding topography do not exceed 33 m (Hirth 1974:70). They can be important areas for early agriculturalists, since the slight differences in elevation allow for the spot accumulation of surface runoff during the rainy season. Seven new communities appeared in areas with slight relief during the Cantera phase (RAS-51, -52, -318, -168, -200, -201, -209). The total number of sites in these zones increased from four during the Barranca phase to ten during the Cantera phase, lending support to the proposition that *temporal* agriculture was growing in importance.

There are also indications that certain site categories, particularly Isolated Residences, once again tended to be located within specific ecological zones. During the Cantera phase the number of Isolated Residences occupying single niche environments increased from five to sixteen. Throughout the Río Amatzinac Valley, Isolated Residences tended to be located away from the Pithecellobium Woodland and Riverine zones, while Hamlets gravitated toward these zones. The increase in both the number of Isolated Residences and the percentage of population residing in them (Tables 21.8, 21.15) suggests a reintensification of environmental exploitation by small groups during this phase, possibly to facilitate resource collection by residents from larger Hamlet and Village communities.

Population growth during the Cantera phase probably stimulated pioneer settling of less favored zones throughout the valley where the most productive exploitative activity was rainfall agriculture. These included areas of the southern Huizache Grasslands, where runoff accumulated in a few natural pockets, and throughout the Riverine zone, where a few hectares of river margin land could be used in conjunction with *temporal* agriculture to the most productive ends (RAS-209 and the cluster of RAS-225, -229, and -231).

Table 21.15. **Additions to Site Categories and Old Site Abandonments in the Río Amatzinac Valley by Phase**

	Barranca Phase		*Cantera Phase*		*Late Formative*	
Site Category	*New*	*Abandoned*	*New*	*Abandoned*	*New*	*Abandoned*
Isolated Residences	9	2	25	2	30	21
Hamlets	6	0	9	0	8	7
Small Villages	2	0	2	0	2	0

An examination of Middle Formative microband camps in the Tehuacan Valley indicated that seasonal collection of wild plants continues to be part of the yearly subsistence strategy coexisting with maize agriculture (Flannery 1976b:111–116). This is of interest here because, by analogy, growing Cantera phase populations may likewise have been putting stress on available subsistence resources to the point which stimulated the (re)appearance of food procurement systems other than sedentary maize agriculture.

Within the Amatzinac Valley there is a re-emphasis on locating sites in areas where seasonal collecting could be practiced as a supplement to agricultural activities. Seasonal (impermanent) microband camps may have re-emerged as an important exploitative adaptation on the part of groups from larger Hamlet and Village communities. This probably was an often repeated pattern during the initial stages of *temporal* agriculture when yields could still vary considerably from year to year. Using this model we must be careful in our interpretations since not all of the new Isolated Residences found during this period may have been occupied permanently throughout the year. Unfortunately, there are few excavation data on the maize productivity and function of the small outlying sites in the Amatzinac Valley to test this hypothesis.

Nearest Neighbor analysis reveals some interesting changes in the spacing of the communities at the beginning of the Cantera phase. One is the decrease in site clustering throughout the valley. There is also a change in the relationships between communities in some of the older, more continuously occupied areas. We note, for example, decreases in clustering for all sites in both the Pithecellobium Woodland and Huizache Grassland vegetation zones from what they had been during the Barranca phase (Table 21.10).

There are also significant changes in spacing of particular site categories one to another. There is a decrease in the regularity of spacing between Level II communities (those with seventy-five or more inhabitants); the pattern which emerges closely approximates what we would expect under conditions of random location. The situation for Level IV communities (under seventy-five inhabitants) reflects a clear tendency away from clustering toward more random spacing (Table 21.10). This is particularly clear in the Pithecellobium Woodland zone (Table 21.11).

I believe Nearest Neighbor trends point to two separate developments. The relaxation of regular spacing between settlements at the upper level of the hierarchical spectrum partly reflects the greater social cohesions which existed in the valley. Competition is not between elites as much as it is between individual households or communities engaged in subsistence activities. Greater regularization of spacing between Level IV communities, for example throughout the Pithecellobium Woodland zone, suggests increased exploitation and competition over scarce resources. This is exactly the predictable spacing behavior which results when an ecozone begins to fill up. Equidistant spacing is a means of minimizing competition when the possibility for such exists, and should not necessarily be construed as representing a disharmonious social climate (Hudson 1969).

Numerous questions remain to be answered as to how the regional socioeconomic network evolved and operated, and what links, if any, were established between the elite at Chalcatzingo and those throughout the rest of the valley. It is interesting to note that the degree to which Chalcatzingo's material culture is shared with other sites in the valley is more a function of similar internal complexity than of mere proximity to Chalcatzingo. The distribution of material throughout the valley corresponds fairly well to that predicted by a gravity model, which proposes that the amount of interaction between communities is directly proportional to their population sizes or position within the ceremonial hierarchy and inversely proportional to the distance which separates them (Haggett 1965:35–40).

The quantity of coincidental occurrences of the same traits or artifacts at different sites is felt to be a function of interaction. During the Barranca and Cantera phase, we see a number of important influences emanating from Chalcatzingo and spreading out into the surrounding valley. A fairly homogeneous cultural assemblage is found among the sites which cluster around Chalcatzingo, while inequalities appear at sites in the northern and southern portions of the valley. Small sites in each of these latter zones, such as RAS-144 (Telixtac) and RAS-62 (Huazulco) (see Chapter 22), more closely resemble Chalcatzingo as partial pictures of its complete assemblages than they do one another.

An attempt was made during our research to measure the interaction between communities by using ceramic design variability as an indicator of social contact. The kinds of design elements best suited for such analyses include the complex incised motifs which can be found along vessel rims of the Amatzinac White wares. A similar study was conducted on Middle Formative White wares by Stephen Plog (1976b) for the Valley of Oaxaca. Our analysis was only partially successful because of the small number of elements recovered in our surface collections and the variability which existed in both the sample size and the recovery contexts of our surface collections. Nevertheless, a number of interesting irregularities exist which need to be analyzed further.

One area of artifact patterning relevant to our discussion is the distribution of ceramic types in the valley (Table 21.16). Amatzinac White and Peralta Orange ceramics occur in a multiplicity of forms throughout the region. Like most Middle Formative ceramics, they were probably manufactured locally by individual households or lineage groups. This is a reasonable assumption (Plog 1976b:262), especially in the absence of data to suggest the presence of pottery workshops operated by full-time specialists who distributed their wares at the regional level. The Amatzinac and Peralta ceramics are

***Table 21.16.* Summary of Major Ceramic Types by Settlement Clusters**

	Amatzinac White	*Peralta Orange*	*Laca*	*Pavon Fine Grey*	*Carrales Coarse Grey*
Northern Valley Sites					
45	X			X	
48	X	X			
50	X				
51		X			
52	X				
53	X				
62	X	X			X
65	X				
70		X			
71	X	X			
75	X	X			
Central Valley Sites					
1A	X	X	X	X	
1B	X	X			
13	X	X			
14	X	X	X	X	
15	X				
20	X	X	X	X	X
22	X	X		X	
31	X			X	
107	X				
258	X				
318		X			
326	X	X		X	
328	X	X	X		
330	X	X	X	X	X
Southern Valley Sites					
78	X				X
84	X				X
100	X	X			
108		X			
109	X	X			X
112	X	X	X	X	X
129	X				
144	X	X		X	X
156	X	X			
164	X	X	X		X
168	X				
189	X	X			
200	X				X
201	X				
209		X			
210	X				
225	X	X			X
229		X			
231		X			
232		X	X		
243	X	X	X		
257	X	X			
266	X				
271	X				

found at all sites throughout the region and are the principal types recovered from Hamlet and Isolated Residences communities.

A number of other types have more restricted distributions which may suggest more specialized functions. These include Laca, Pavón Fine Grey, and Carrales Coarse Grey. The Laca and Pavón Fine Grey ceramics share similar discrete and overlapping distributions. They are both most heavily concentrated in the northern half of the valley above the 1,250 m contour, primarily in Village and Hamlet communities in the central valley. The frequency and occurrence of these types in our surface collections dropped rapidly outside of the central cluster. In the southern valley, Laca ceramics are found in quantity only at the Small Village communities of RAS-112 and RAS-164. Solitary sherds occur at RAS-243 and RAS-232, but these occurrences may simply reflect the proximity of Chalcatzingo.

A similar situation exists for Pavón Fine Grey. This is a non-local ware (Chapter 13), which is largely restricted to the central valley. Pavón Fine Grey was found in the north only at RAS-45 and in the southern valley only at the sites of RAS-112 and RAS-144, where unusually large surface collections could be made. The opposite is true of Carrales Coarse Grey, a locally manufactured ware. It is found at only three sites in the central and northern valley (RAS-330, -20, -62) but occurs in one-third of all communities in the south.

Another kind of artifact useful for investigating intravalley integration is stone tools. Blades of imported obsidian were found at sites throughout the valley, but few sites, with the exception of Chalcatzingo, yielded evidence of cores or manufacturing debris. This suggests that Chalcatzingo may have been the main site for obsidian procurement (see Chapter 23) and may have functioned as the obsidian redistribution and workshop center for the valley.

At the same time there is evidence for the independent exploitation of local silicates by groups in the southern valley for manufacturing chipped stone tools. The site of RAS-108 is located atop a small outcrop of poor quality red chert, and the occupation here appears primarily related to its exploitation. This red chert was found most frequently at Cantera phase sites in the southern valley either in rough nodules or manufactured into simple scrapers or usable flakes. It is extremely rare in workshops at Chalcatzingo and was not worked into artifacts for further trade (Susan Burton, personal communication; Chapter 18). It seems to have been used instead as a supplementary source for manufacturing simple cutting tools in the southern valley (see also Chapter 23).

The distributional data allow us to suggest a number of interesting hypotheses about the nature of cultural integration within the valley. The correlation of Laca, Pavón Fine Grey, and Carrales Coarse Grey ceramic distributions with those predicted by the gravity model gives credence to the assertion of Chalcatzingo's expanded sociopolitical position within the Río Amatzinac Valley during the Middle Formative. I would hypothesize that the central valley population cluster was directly tied to Chalcatzingo via complex exchange relations. This would account for the greater frequency of Laca and Pavón Fine Grey pottery at all community sizes within the cluster. The same may have been true of the northern cluster, although the indications are less convincing. These types are restricted to the larger and hierarchically dominant communities in the southern cluster.

The differential distribution of Pavón Fine Grey and Carrales Coarse Grey ceramics as well as chipped stone tools and debris suggest the existence of two distinct networks of economic interaction, one centered on Chalcatzingo and a second in the southern valley, operating at least semi-independently. Obsidian tools, primarily blades, were obtained in their finished form from the Chalcatzingo workshops, while scrapers and flakes occurred in a wide range of silicates, including a locally available red chert exploited by a secondary lithic industry in the southern portion of the valley.

Middle Formative Settlement Patterns in Central Mexico: An Overview

To what extent are changes in settlement patterns throughout our survey area due to the unique development of Chalcatzingo or typical of changing regional demography elsewhere throughout central Mexico? To answer this question we must briefly examine the scanty but growing body of demographic data from neighboring areas, such as the Tehuacan Valley, the Valley of Puebla-Tlaxcala, and the Basin of Mexico.

The Middle Formative occupation in the Tehuacan Valley is represented by materials from the Early Santa María phase (900–500 BC; MacNeish, Peterson, and Neely 1972). Population more than doubled during this period, and nucleated village sites appeared for the first time. Five Nuclear Villages ranged in size from 2 to 3 ha and included a small central architectural precinct. The sites are located at permanent water sources, and small hamlet communities may have clustered in their immediate vicinity, suggesting that the Nuclear Villages were the centers for small sociopolitical units, perhaps chiefdom-level societies.

In the Valley of Puebla the picture is considerably more complex (Peter J. Schmidt 1975; Aufdermauer 1970; 1973). Large regional centers are found with complex civic-ceremonial architecture. The large site of Totimehuacan south of the modern city of Puebla is an example of one of these centers which appears to have grown substantially during the period between 700 and 500 BC (Spranz 1967; 1970). Villages approximating 20 ha in size with modest architectural remains appear to have been fairly common throughout the Valley of Puebla. Recent investigations suggest that a number of large regional centers appeared throughout the area, each of which maintained its individual political autonomy (Fowler et al. 1977).

In Tlaxcala the period between 1000 and 500 BC spans the last half of the Tlatempa phase, when Canoas White ceramics first appeared (García Cook 1974), and the first half of the Texoloc phase. Lineal hamlets were the most common community type, and preferred locations were hilltops or sharply sloping hillsides near permanent water sources. Evidence of ceremonialism intensified at the start of the Texoloc phase—public architecture began to appear in the larger village sites (García Cook 1973: Fig. 2). Nuclear Villages were present by 500 BC, with up to two hundred households apiece. Maize agriculture was apparently the principal subsistence activity and was practiced in combination with elaborate terrace-irrigation systems. Seasonal collection had declined in importance but continued to be practiced throughout the phase.

Perhaps our most complete data on settlement patterns in central Mexico come from extensive reconnaissance work in the Basin of Mexico (well summarized in Sanders, Parsons, and Santley

1979:1–12). Evidence indicates that population expanded significantly during this period, with the greatest population density in the southern half of the basin. Several large sites were found on the lakeshore fringe of Lakes Chalco-Xochimilco; another is at Chimalhuacan in the southeast corner of Lake Texcoco. These are Nuclear Villages varying between 10 and 60 ha in size and spaced at regular 8–10 km intervals around the lake fringe. Four equivalently sized communities are found in the Piedmont zone east of Lake Chalco and represent the first substantial settling of this area (J. Parsons 1976). Although the northern portion of the Basin of Mexico was settled, it remained distinctly marginal throughout the entire period.

The combination of a number of factors appears to have been important in structuring Middle Formative site location in the Basin of Mexico. These include the proximity to lacustrine resources, arable land with a natural slope and a high subsurface water table, and high rainfall in areas with the greatest number of frost-free days (J. Parsons 1974). The redistribution of economic resources at the regional level appears to have been a negligible factor, and the Basin of Mexico may have lacked the network of symbiotic-extractive interrelationships that linked communities throughout the highlands during subsequent periods. The lack of differentiation between sites in terms of environmental location suggests that there was little vertical population integration throughout the Basin at this time. Tolstoy (1975), on the other hand, has identified discrete population clusters which occupy narrow environmental settings and may represent potentially competitive sociopolitical groups.

Our settlement data show general developmental trends very similar to those of the rest of Middle Formative central Mexico. Following a low Amate phase population, a sharp demographic rise occurred during the subsequent Barranca and Cantera phases. Chalcatzingo was as large as or larger than most contemporary centers in either the Basin of Mexico or Puebla-Tlaxcala. Large village sites between 10 and 20 ha were present in the Amatzinac region, though not in the same frequency as elsewhere in central Mexico. Nuclear Villages of the type reported in Tehuacan are similar to some of the smaller villages in the Río Amatzinac Valley, such as RAS-144 or RAS-62, although they do not take the leading role in intravalley integration.

The Nuclear Settlement–Regional Center configuration appears to have been fairly typical throughout central Mexico during this period. What makes Río Amatzinac Valley pattern somewhat different is the central role which Chalcatzingo seems to have played in regional integration. Intraregional hierarchies appeared and were reinforced by the procurement and distribution of economic resources. There was a strong tendency toward population clustering in the central valley around Chalcatzingo. Judging from the size and number of sites reported thus far, the Río Amatzinac Valley appears to have maintained a larger and more diversified population profile than other regions of central Mexico. The extent to which this may or may not have been due to more efficient means of sociopolitical integration found only in eastern Morelos at this time is still undetermined.

THE LATE FORMATIVE

The settlement pattern during the Late Formative is illustrated in Fig. 21.6. Fifty-seven sites were located during the reconnaissance, and regional population rose to between 2,516 and 3,737 persons (Table 21.17). Distinct changes in regional settlement patterns occurred, possibly in conjunction with a decline in the importance of Chalcatzingo as a major site and its replacement by Campana de Oro as the major regional center. Chalcatzingo was largely abandoned, and remaining habitation was very thinly scattered. Settlement clustering within the 2 km radius around the site disappeared. Apart from Chalcatzingo, most large centers from the Cantera phase continued to be occupied, but there was a significant change in the location of rural communities.

Interesting changes in the population structure are shown in Fig. 21.5. The Late Formative population estimates show two divergent trends in the same calculation. The maximum estimate suggests a trend toward a leveling-off of population. On the other hand, the minimum estimate indicates continual population increase. Which is the case? What apparently occurred was a decrease in the number of individuals living in Hamlets and Isolated Residences even though the number of sites increased (Tables 21.4, 21.17). On the other hand, the percentage of population living in Small Villages increased and became 11 percent greater than the combined Large and Small Village total for the Cantera phase with no substantial change in the size and proportion of population living in the Regional Center. Thus, what apparently happened was not the disappearance of Hamlets but greater population density at the Village sites. Instead of sites with a light debris scatter over the surface, we find the same or slightly smaller surface area at sites but with much greater density of debris.

The number of Hamlets decreased slightly from fourteen during the Cantera phase to twelve during the Late Formative. This difference is accounted for by the fact that two Hamlets (RAS-78, -225) grew to Village proportions. Nine Hamlets were abandoned or decreased in size after the Cantera phase (RAS-1A, -1B, -62, -144, -189, -209, -266, -326, -328), but these are offset by the appearance of nine new Hamlets during the Late Formative (RAS-1C, -19, -31, -54, -84, -95, -111, -121, -264). Only three of the Cantera phase Hamlets remained at the level throughout the Late Formative (RAS-122, -48, -243). These trends seem to represent an actual increase in population density. Even when the two Middle Formative phases are lumped together, as was done during the initial stages of analysis (Hirth 1974), the Middle Formative residence pattern still appears more dispersed than that of the Late Formative.

At the end of the Cantera phase there was a significant decline in population and an abandonment of the fertile area immediately surrounding Chalcatzingo. Small Hamlets and Isolated Residences increased in number in the northern half of the valley as population around Chalcatzingo apparently dispersed throughout the Pithecellobium Woodland. The number of Hamlet-sized and smaller communities in the Pithecellobium Woodland north of Campana de Oro (RAS-20) increased from eleven at the end of the Cantera phase to twenty during the Late Formative.

Campana de Oro was the second largest site in the valley during the Cantera phase and grew to become the principal community in the valley during the Late Formative. It appears to have been a tightly nucleated settlement covering a total of 29 ha. Fourteen mounds of various sizes have been mapped for the Later Late and Terminal Formative occupation (Fig. 21.7). Five of the mounds definitely

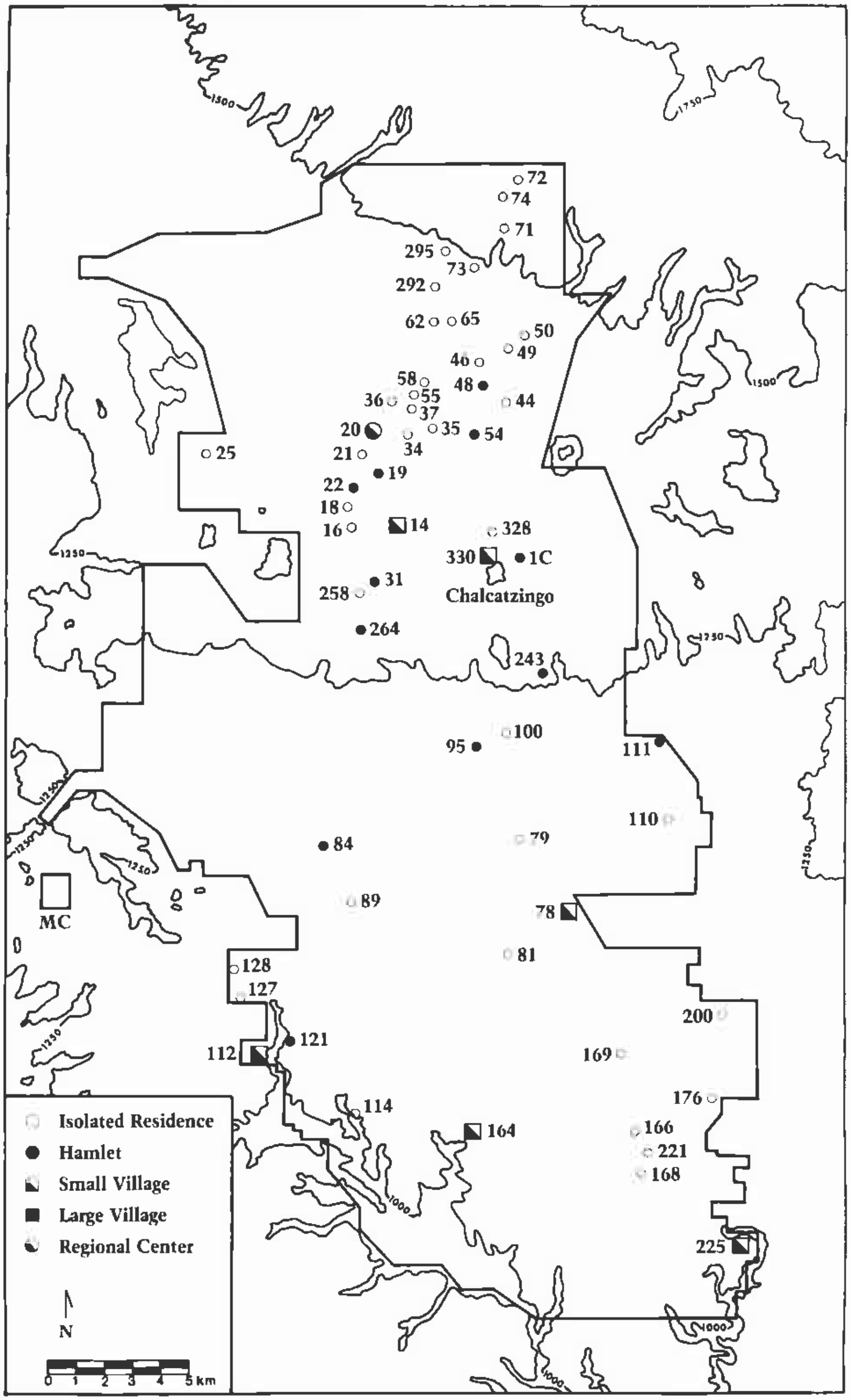


Figure 21.6. Late Formative settlements in the survey area.

appear to date to the Late Formative.

During the Cantera phase there was a high concentration of population in the northern and central portions of the valley. More than 70 percent of the regional population was located above the 1,250 m contour interval. During the Late Formative this situation changed. Population in the northern half of the valley above the 1,250 m contour interval declined from an estimated maximum of 2,610 persons during the Cantera phase to a maximum of 2,150 persons during the Late Formative. There was a more uniform distribution of population throughout the valley, although roughly 55 percent of the population was still located in the north. Four Small Villages were found in the south. Each was the focus of ceremonial activity and constructed and maintained a small-scale civic-ceremonial zone of two or three mounds.

A number of basic trends in the subsistence pattern can be detected in the Late Formative settlement configuration, including (1) the continued expansion of population throughout the valley into previously unoccupied environmental niches, (2) an increase in the number of small agriculture communities within the northern Pithecellobium Woodland environment, and (3) a greater exploitation of the southern Huizache Grassland zone with a large number of sites found for the first time away from permanent water sources and in areas of low ground water. In the north, there was a dense population clustering throughout the Pithecellobium Woodland as much of the area "filled up" with small Hamlet communities. In the south, settlements were linearly arranged due to their location along shallow-sided barrancas which contain water during the rainy season of each year. No less than four such linear arrangements occurred: (1) RAS-100, -95, -79, -78; (2) RAS-111, -110; (3) RAS-84, -89; and (4) RAS-169, -166, -221, -168. This linear arrangement is absent in the north because there are very few shallow-sided barrancas of any length there. Where they are found, some degree of linearization is found, as in the case of RAS-31, -258, -264.

These linear patterns may reflect the inception of diversion irrigation systems in conjunction with *temporal* agriculture. Although such systems are extremely difficult to document archaeologically, they do appear to have played an important role in the southern half of the valley from this time on. The number of Hamlet communities located adjacent to shallow-sided barrancas increased into the Classic period, when they were part of a well-organized agricultural network whose primary function appears to have been the production of subsistence commodities for Teotihuacan (Hirth 1978b).

These changes in settlement location may be a response to changes in environmental conditions which affect regional agricultural practices. Investigators in the Valley of Mexico (e.g., Sanders, Parsons, and Santley 1979:406) suggest that climatic conditions became increasingly drier during this period. Alternative data available from the Puebla-Tlaxcala area suggest that climatic conditions during the Late Formative were wetter than during the Middle Formative (Heine 1973). If conditions were drier during the Late Formative, it would be reasonable to expect that seasonal collecting would have again become an important subsistence activity which would favor site location in areas of microenvironmental diversity.

Data for the Amatzinac Valley support the interpretation of wetter environmental conditions, at least insofar as there is no apparent correlation between population size or site type with specific environmental variables (Tables 21.8, 21.9). Although the largest sites in the valley are still found adjacent to permanent water sources, there is a decrease in the occupation of sites having multiple vegetation zones within a 1 km radius. On the whole, environmental zones within the valley appear to decrease in importance as site location criteria, as wetter conditions permitted rainfall agriculture to be practiced on a broader scale.

For reasons not altogether clear, Chalcatzingo rapidly decreased in size after 500 BC. The population clustered around Chalcatzingo during the Cantera phase was dispersed throughout the valley with a major spillover into the northern Pithecellobium Woodland. Thirty-six sites were newly established during the Late Formative. Although the rates of new site foundings are roughly identical during the Cantera phase and the Late Formative, the rates of old site abandonment differ significantly. The rate of site abandonment between the Barranca and Cantera phases was about 9 percent, as compared to 57 percent between the Cantera phase and the Late Formative.

Population shifts throughout the valley present a picture of increased settlement clustering at the regional level when viewed from the perspective of Nearest Neighbor analysis (Table 21.10). This is especially true in the Pithecellobium Woodland after the population reductions in the central valley. There is, however, an increase in the regular spacing of Level II communities, perhaps a result of slightly greater competition between village level sites associated with a decrease in regional social cohesion following Chalcatzingo's decline. Small sites for the first time are less clustered with respect to one another than they are to the larger sites (0.763 as compared to 0.692 in Table 21.10). This clustering of small sites around large sites suggests the appearance of clearly defined social territories at the village level throughout the region.

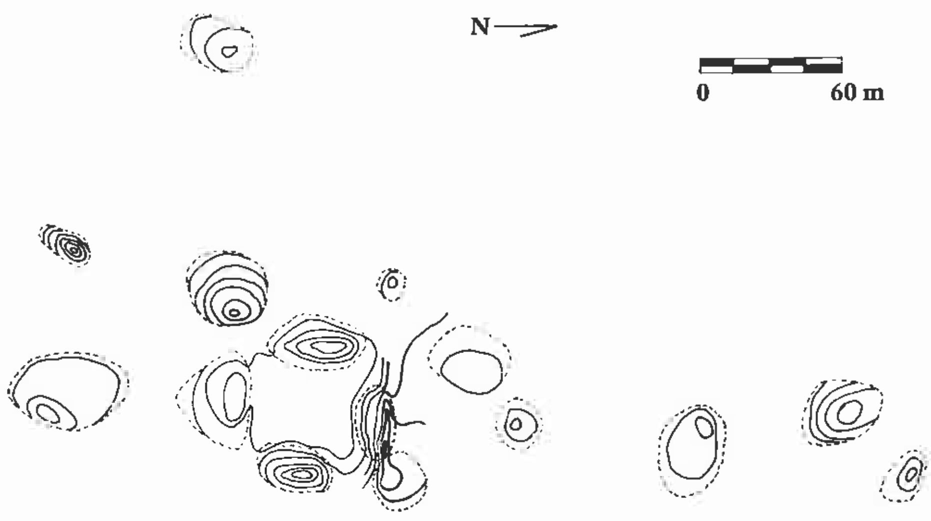


Figure 21.7. Campana de Oro (RAS-20). Contour interval 0.5 m.

The Late Formative period throughout central Mexico was a period of continual population growth and differentiation. In the Tehuacan Valley the Late Santa María phase was one of substantial demographic change represented by an increase in total site area. A total of thirty-eight sites have been found in the valley, with regional population swelling to between five thousand and eight thousand individuals. Large Villages appeared for the first time, referred to as Nuclear Towns (MacNeish, Peterson, and Neely 1972:397). These are large permanent settlements with two or more plazas, public architecture, and a variety of structures which may have housed full-time specialists. These sites grew as large as 12 ha in size and included up to fourteen mounds.

In Tlaxcala the Late Formative period corresponds to the last half of the Texoloc phase (García Cook 1973; 1974; Mora 1975) and the first century of the subsequent Tezoquipan phase (Davila 1975). Population grew substantially in this region. During the Late Texoloc, terrace-canal systems incorporating diversion dams are found with increasing frequency on sloping hillsides. After 300 BC there was an increase in complex irrigation systems, and canal grid-works appeared in conjunction with the growth of larger, more complex sites. The growth of regional chiefdoms is evident in both the number and the complexity of large sites throughout the region, and we see the beginnings of such large centers as Tlalancaleca (García Cook 1973).

The same pattern is evident in Puebla. Large Regional Centers such as Amalucan appeared. Amalucan is just under 1 km^2 in size and has an impressive early irrigation system (Fowler 1969). Village and Hamlet communities clustered within a 1–3 km radius in and around the large centers. Six such clusters have been reported from the Valley of Puebla, and it is suggested that these clusters symbolize the development of symbiotic

***Table 21.17.* Late Formative Population Summary, Río Amatzinac Valley**

RAS Site	Size in Hectares	Ceramic Density	Site Class	Population
1C	4.00	C	Hamlet	20–40
14	5.5	B	Small Village	55–138
16	≤0.50	C	Isolated Residence	5–15
18	≤0.50	C	Isolated Residence	5–15
19	1.0	B	Hamlet	10–25
20	31.0	A/B	Regional Center	543–1,163
21	≤0.50	C	Isolated Residence	5–15
22	5.0	C	Hamlet	25–50
25	≤0.50	C	Isolated Residence	5–15
31	1.00	B	Hamlet	10–25
34	0.75	C	Isolated Residence	5–15
35	≤0.50	C	Isolated Residence	5–15
36	≤0.50	C	Isolated Residence	5–15
37	≤0.50	C	Isolated Residence	5–15
44	≤0.50	C	Isolated Residence	5–15
46	≤0.50	C	Isolated Residence	5–15
48	9.20	C	Hamlet	46–92
49	0.92	C	Isolated Residence	5–15
50	1.0	C	Isolated Residence	5–15
54	2.0	C/B	Hamlet	15–30
55	0.68	C	Isolated Residence	5–15
58	1.5	C	Isolated Residence	8–15
62	≤0.50	C	Isolated Residence	5–15
65	≤0.50	C	Isolated Residence	5–15
71	≤0.50	C	Isolated Residence	5–15
72	≤0.50	C	Isolated Residence	5–15
73	≤0.50	C	Isolated Residence	5–15
74	≤0.50	C	Isolated Residence	5–15
78	30.00	C	Small Village	150–300
79	≤0.50	C	Isolated Residence	5–15
81	≤0.50	C	Isolated Residence	5–15
84	1.00	B	Hamlet	10–25
89	1.50	C	Isolated Residence	8–15
95	2.10	B	Hamlet	21–53
100	≤0.50	C	Isolated Residence	5–15
110	≤0.50	C	Isolated Residence	5–15
111	3.50	C	Hamlet	18–35
112	10.00	A/B	Small Village	175–375
114	≤0.50	C	Isolated Residence	5–15
121	2.10	C	Hamlet	11–21
127	≤0.50	C	Isolated Residence	5–15
128	0.75	C	Isolated Residence	5–15
164	9.10	A	Small Village	228–455
166	0.60	C	Isolated Residence	5–15
168	≤0.50	C	Isolated Residence	5–15
169	0.80	C	Isolated Residence	5–15
176	≤0.50	C	Isolated Residence	5–15
200	≤0.50	C	Isolated Residence	5–15
221	≤0.50	C	Isolated Residence	5–15
225	4.50	B	Small Village	45–113
243	8.50	C	Hamlet	43–85
258	≤0.50	C	Isolated Residence	5–15
264	1.26	B	Hamlet	13–32
292	≤0.50	C	Isolated Residence	5–15
295	≤0.50	C	Isolated Residence	5–15
328	1.10	C	Isolated Residence	5–15
330	11.0	C	Small Village	55–110
			Total population	2,516–3,737

"demographic zones" in the valley (Fowler et al. 1977).

In the Basin of Mexico the Late Formative period (500–200 BC) is represented by the Ticoman and Cuanalan ceramic assemblages. Population quadrupled, and continued cultural development is seen in the appearance of civic-ceremonial architecture and increasing differentiation of community types. Cuicuilco grew to become the largest and most important settlement in the valley, much of its growth resulting from the relocation of population out of the southern shore line of Lake Xochimilco and into the center (J. Parsons 1976).

Two general trends characterize the Late Formative settlement pattern: the expansion of population into ecological zones which had not been previously settled and the maximization of productive activities through site specialization (J. Parsons 1976:78). There is evidence for a movement of population away from lakeshore areas to Lower Piedmont zones, and several sites in the Texcoco and Ixtapalapa regions were situated below the conquest period lake level. If the Late Formative was drier than preceding periods, the high subsurface water table enjoyed by sites along the Lakeshore Plain would have been lost. Piedmont zones would then have become favored because of their fertile loose-grained soils and the seasonal runoff from higher elevations, which could have been utilized to irrigate crops.

The Late Formative in the Basin of Mexico documents the transition between simple and complex chiefdoms. Small, politically autonomous centers were established throughout the greater Texcoco, Chalco, Ixtapalapa, and Cuicuilco regions. These centers were the focal points of regional resource pooling and redistribution throughout their newly formed but economically unstable hinterlands. Although characterized by both dispersed and aggregated population hierarchies, the Late Formative "contrasts with the Middle Formative situation where there was a single large community in a prime ecological niche with only scattered occupation over the rest of the area" (J. Parsons 1971:184). There was an increase in the number of communities which were part of a more cohesive economic network emerging at this time throughout the Basin of Mexico.

The Río Amatzinac Valley lost its important role in central Mexico after the decline of Chalcatzingo. It now lacked a Regional Center of pan-Mesoamerican importance, and its population profile became similar to those of neighboring portions of the central highlands. Definite indications of hydraulic agriculture are not found until the subsequent Terminal Formative period (Hirth 1980). Sites are tightly nucleated, and MacNeish's concept of the Nuclear Town (see above) is an appropriate hallmark for the phase as a whole, suggesting an increase in social solidarity at the community level. The larger settlements existed in a symbiotic relationship with smaller communities clustered in the immediately surrounding area.

Recent research in western Morelos indicates similar developmental processes in the Coatlan region, with Regional Centers reaching 70–80 ha in size. Whether the Late Formative population clusters found in Morelos, Puebla, Tlaxcala, and the Basin of Mexico represent small chiefdom societies still remains to be tested. The suggestion is a plausible one, however, which would account for a general trend toward larger and architecturally more complex sites during this period.

CONCLUSIONS

The original intent of the Río Amatzinac Survey was to determine the relationship of Chalcatzingo to its larger physiographic region. A methodology was devised so that the greater extent of the region could be covered, locating all sites where traces of surface residue still existed. Finer-scale analyses of intersite variability and composition had to be forsaken for the broader picture. A multistage methodology was considered in which the initial survey could be followed by intensive problem surface collection; unfortunately the lack of time, money, and trained personnel did not allow its implementation. As a result, the reliability of the conclusions reached from this study rest upon the overall comparisons of the relative size, spacing, periodization, and location of settlements in the region with like data from neighboring areas in central Mexico. Additional speculations are the result of narrative luxury and should be viewed as hypotheses to be tested through further investigation.

During the Amate phase there was a light sprinkling of population in the northern half of the Amatzinac Valley. Chalcatzingo appears to have been the oldest continually occupied settlement in the region and by 1100 BC had become the principal community in the valley, with modest public architecture. There were also different-sized sites located in different resource zones. This has led me to suggest that some of the small outlying sites were impermanent camps engaged in seasonal resource collection or rainy season maize agriculture. However, many of these settlements may not have been simultaneously occupied during the Amate phase. The function of these sites has been inferred from their relative environmental relations; the precise nature of activities carried out in each and the functional linkages between them can be established only from intensive excavation.

The Amate phase settlement configuration conforms fairly well to settlement patterns found elsewhere in central Mexico at this time. Early populations clustered in the most productive agricultural zones. Permanently occupied villages in the best agricultural areas may have exploited seasonally available resources in adjacent zones by establishing impermanent camps to harvest additional or alternative products (Flannery 1976b: 112–117). As population increased and/or social pressures within permanent villages could not be mediated, group fissioning may have led to the establishment of permanent settlements in these same diversified resource zones. Under these conditions the functional relationships between activity sites would have changed through time from locales occupied by the same group to linked communities occupied by different groups.

Ongoing work in the Valley of Mexico has supported the idea of seasonal resource collecting during the Early Formative (Tolstoy et al. 1977). Nevertheless, the presence of lake and lakeshore environs and the greater number of exploitable resource zones which they provided made the Valley of Mexico different from other areas of central Mexico at this time. Seasonal collecting appears to have been more important as a supplement to agriculture in the Valley of Mexico (Tolstoy 1975) than it was in either Morelos or Puebla. As a result denser population nucleation would have been possible there as an incipient agricultural complex was combined with lacustrine resources to produce a protein-rich diet which included quantities of fish, waterfowl, insect larvae, and waterfowl eggs.

During all phases, groups residing in the Amatzinac Valley faced a narrower set of exploitable environmental resources and must have relied upon agriculture for a greater amount of their total subsistence base. Despite a slow beginning, regional population densities soared during the Cantera phase, surpassing contemporaneous levels in the Valley of Mexico. This presents an interesting question. Was the growth of Cantera phase populations and society due in part to a burst in *tierra templada* maize productivity with a commensurate lag in its adaptation to the higher and colder Valley of Mexico? It is impossible to resolve this question with the limited amount of paleobotanical material presently at our disposal. I would suggest that Chalcatzingo's development was due primarily to modifications in social relationships, although changes in subsistence strategies and their productivity may also have been involved.

The growth of social networks throughout the Barranca and Cantera phases appears to have been based on a combination of the exploitation of scarce resources, community budding, and the maintenance of relationships between lineage members. The diversity of environmental zones at Chalcatzingo provided a mosaic of exploitable microenvironments available to early agriculturalists. An unusually high proportion of the regional population was clustered in the immediate vicinity around Chalcatzingo during the Barranca phase, and I would suggest that many of these settlements were probably formed by groups which budded off from Chalcatzingo.

I believe that the earliest ceremonial activity at Chalcatzingo was probably aimed at maintaining an integrative equilibrium in the resident population. Social conflict within communities often led to group fissioning among Early and Middle Formative societies. Social controls that appeared at Chalcatzingo during the Barranca phase allowed the site to grow to large proportions and maintain an integrated society well into the Cantera phase. The expansion of the site's ceremonial zone during the Barranca phase coincides with the first significant penetration of settlement into all of the region's environmental zones. It is possible that formal social linkages were maintained between sites in different environmental zones to maximize regional resources at the same time that overt competition was diminished. If such links existed, they probably would have been based on lineage ties and cemented by group ceremonialism using the special-purpose facilities at Chalcatzingo. Chalcatzingo's central social importance can perhaps be related in part to the formalization of socioeconomic relationships which first appeared during the Amate phase.

Civic-ceremonial architecture outside of Chalcatzingo does not appear until the Cantera phase and even then does not suggest a lessening in Chalcatzingo's role as the region's major ceremonial center. To the contrary, it may well reflect the formalization of its hierarchical position. A greater diversity of ceremonial paraphernalia and long distance trade items are found in a wider array of sites than during the Barranca phase. Cantera phase population increases, but there is no break in settlement continuity which would suggest developing frictions between competing elites within the valley.

The Middle to Late Formative transition presents a number of problems which can be resolved only by future investigation. Considerable differences can be noted in the orientation and organization of settlement after the Cantera phase. There is less internal diversity in the Late Formative settlement patterns, and one could surmise that there was less specialization in certain types of subsistence activities than occurred earlier. There is no large site completely comparable with Cantera phase Chalcatzingo in either size or ceremonial architecture. On the other hand, we should not be led to believe that Chalcatzingo society suddenly "collapsed" to be followed by a period of cultural decadence or stagnation. The organization of the Late Formative population resembles that of a small regional chiefdom similar to those found in other areas of central Mexico during this period.

Population within the valley shifted toward more generalized exploitation patterns during the Late Formative with greater reliance on agricultural activities in a restricted number of environments. I have suggested a decrease in seasonal collecting in conjunction with this change. It is important to note, however, that this is part of a general adaptive change beginning at the end of the Amate phase and continuing throughout the Formative. During the Amate phase seasonal collecting was presumably still important in supplying a portion of the total subsistence picture; as a result small microband camps clustered in the key resource areas throughout the region. In terms of the Nearest Neighbor analysis this was represented by a greater clustering of small settlements one to another than to all sites both large and small. This relationship, however, changes through time. During the Amate phase the measure of site clustering for all sites in the region (Level I) is 0.646 compared to 0.476 when only the small (Level IV) sites are examined. By the Late Formative this "cluster ratio" dropped to 0.692/0.763 indicating a lesser clustering of small sites than for all of the sites regardless of size (Table 21.10).

Chalcatzingo's decline was fairly rapid, starting during the latter part of the Cantera phase and terminating at the start of the Late Formative. It is unfortunate that we cannot trace the transition in terms of settlement patterns, but at present we lack tight chronological control for this transition phase. The Late Formative was a period of readjustment but not stagnation or decline. The quantity of surface remains at small sites in the valley suggests that overall settlement densities may even have risen. If this was the case (the alternatives to this explanation have already been discussed), there may well have been a situation of overall population increase during this period.

Our general lack of understanding of the sociopolitical processes taking place during the Late Formative makes comparison of the Amatzinac developments with those in other areas of Mesoamerica difficult. In general terms, however, the key factor in central Mexico at this time appears to have been growing regionalization in conjunction with an increase in centralized authority. Complex chiefdom societies became more numerous and characteristic of most areas at this time. Denser populations made the need for resource pooling at the regional level more critical than it had been during previous periods. Architectural constructions with ceremonial functions became much more prevalent, and statuses and regional entities themselves were more sharply distinguished from one another in terms of their internal corporate composition and interaction. Whatever the nature of their internal organization, these entities began to diverge in terms of the quantity of shared attributes of material culture. Distinctly regional ceramic styles began to replace the horizon styles of the Middle Formative. Interregional exchange continued but was more restricted in scope, with a greater percentage of the exchanges occurring between a smaller number of individuals in the upper statuses of each society.

Changing interregional exchange relationships had a pronounced effect on Chalcatzingo's position as a major center in central Mexico. It would appear that the conditions which shaped the nature of Cantera phase society were not sufficient to maintain it throughout the Late Formative. The Amatzinac Valley did not take a step backward in terms of its sociopolitical development as much as it fell back in line with the general level of cultural activity found throughout central Mexico outside of the Mexican Basin. Although the Amatzinac Valley remained in close contact with the Valley of Mexico throughout its later history, it never again played a pivotal role in interregional exchange nor had a center of supraregional importance. The growth of Chalcatzingo is an interesting case because it serves to point out the potency of trade as a stimulus in the early stages of cultural evolution. At the same time its instability in the face of changing interregional relations is enough to clarify that trade in the absence of other conditions is not sufficient, in and of itself, to generate the prolonged and steady development of complex society.

RESUMEN DEL CAPÍTULO 21

Los primeros poblamientos en el valle Amatzinac ocurren durante la fase Amate del Formativo Temprano. La ausencia de pueblos durante el Arcáico puede obedecer a la escasez de plantas silvestres comestibles en la localidad y a la distribución desigual de alimentos de recolección durante el año. Fueron localizados diez sitios de la fase Amate durante el reconocimiento realizado en el valle, todos ellos Residencias Aisladas y Caseríos con la excepción de una Pequeña Población (Chalcatzingo). El bajo nivel de la población local contrasta con las ocupaciones más densas, contemporáneas, en el Valle de México y en el centro de Morelos. La mayoría de los sitios se localizan junto a manantiales perennes y tierra agrícola fértil, lo cual indica la importancia que tenía la agricultura para estos pobladores tempranos. Ocho de los diez sitios se encuentran localizados en la mitad norte del valle, esto es, en la zona más húmeda de Bosque Pithecellobium de tierras más ricas.

Dentro de la jerarquía del sitio, los Caseríos y la Pequeña Población ocurren dentro de la zona intermedia colindando con varias zonas de vegetación, en donde mayores recursos recolectables pueden haber aumentado las actividades agrícolas. Las Residencias Aisladas, por otra parte, se encuentran restringidas a una sola zona de medio ambiente y generalmente distantes tanto del agua como de los asentamientos más grandes. Seguramente se trata de campamentos de microbandas con personas provenientes de las comunidades permanentes y más grandes, las cuales se ocupaban en actividades estacionales dentro de las zonas más especializadas, p.e., de caza o recolección de plantas u otras provisiones.

Durante la fase Barranca la población en el valle sobre pasó al doble. Tres agrupamientos de población surgen en esta fase, un agrupamiento de pequeños Caseríos y Residencias Aisladas al norte, un agrupamiento central de alta densidad de población y diversidad de asentamiento, y un agrupamiento al sur formado de asentamientos dispersos con Pequeñas Poblaciones y Caseríos. Chalcatzingo era la comunidad más grande en el agrupamiento central, y durante ese tiempo una porción grande del sitio fué terraceada. Se estimó que su tamaño era de 13 ha, y su población de 130 a 325. Esto permite la comparación favorable con otros sitios grandes en el Valle de México. Varios sitios más pequeños se agrupan alrededor de Chalcatzingo.

Hay una continuidad fuerte entre los patrones de asentamiento Amate y Barranca, siendo la distancia al agua todavía un factor importante en la ubicación del sitio. Las diferencias encontradas en la fase Barranca incluyen un aumento en el número y tipo de sitios con acceso a zonas de medio ambiente multiple (lo cual incluye las Residencias Aisladas), y una distribución más pareja de la población a través de la region. Algunos de los sitios más pequeños se encuentran obviamente ligados a sitios específicos más grandes.

La fase Cantera representa casi el triple de la población del valle. La división tripartita del valle persiste en esta fase, y Chalcatzingo creció hasta llegar a ser el Centro Regional, con lo cual continuó dominando el centro del valle. Su tamaño aumentó hasta justo por debajo de 0.5 km², con un cálculo de población de 433–1,081. Otra vez, este tamaño es comparable al de los sitios contemporáneos grandes en cualquier parte del centro de México.

Dentro del valle hubo un aumento en la aparición de comunidades de tamaño intermedio, Poblaciones Pequeñas y Grandes, a costa de sitios más pequeños, lo cual indica un aumento en la integración social. Algunas de las poblaciones del agrupamiento central, el área más densamente poblada, ya tenían construcciones civico-ceremoniales relativamente pequeñas. También hay muestra de montículos de plataforma en el agrupamiento del sur, en tanto que el agrupamiento del norte continúa teniendo sólo sitios pequeños.

Uno de los cambios mayores de ubicación de sitio se debió al aumento en el uso de la agricultura temporal, p.e., se fundaron nuevos sitios más alejados de las áreas con humedad en el subsuelo, o en áreas con topografía levemente rolada, la cual pudiera acumular suficiente corriente superficial durante la temporada de lluvias. El asentamiento en estas áreas de mayor marginalidad, probablemente fue estimulado por el aumento en la población. Las Residencias Aisladas, una vez más, tienden a estar localizadas dentro de zonas ecológicas específicas, y estos pequeños sitios presentan una distribución espacial más uniforme, debido probablemente a la competencia por los recursos.

La interacción social se midió utilizando para ello los factores de distribución de los tipos de cerámica y las herramientas de piedra. En tanto que Chalcatzingo aparentemente ejercía algún control sobre el agrupamiento de población central y las herramientas hechas de obsidiana para todo el valle, al mismo tiempo existía un segundo centro de intercambio localizado en el parte sur del valle, el cual tenía como base la explotación de una fuente local de aprovisionamiento de quarzo.

Comparado con otras áreas del centro de México, el patrón de asentamiento del valle Amatzinac presenta tendencias semejantes de desarrollo. Inmediatamente después de un nivel de población bajo en el Formativo Temprano, hay un incremento demográfico intenso en el Formativo Medio. Chalcatzingo surge como Centro Regional comparable a los de la Cuenca de México y Puebla-Tlaxcala. Lo que distingue al valle del Río Amatzinac de estas otras áreas es el papel central que Chalcatzingo parece haber tenido en la integración regional.

Diferentes cambios ocurren en el patrón de asentamiento del Formativo Tardío, dados posiblemente en conjunción con el ocaso de Chalcatzingo como Centro Regional. El porcentaje de personas que viven en las comunidades de tamaño intermedio aumenta, en tanto que se reduce la población en los Caseríos y las Residencias Aisladas. Existe un índice alto de abandono de sitios entre la fase Cantera y el Formativo Tardió. Con el desmoronamiento del agrupamiento central, aun cuando la población continuó en aumento, ésta se dispersó hacia las partes del valle previamente no ocupadas. El valle perdió la importancia que tenía en el centro de México dado que carecía ya de un Centro Regional de importancia Pan-Mesoamericana.

22. Excavations at Telixtac and Huazulco

TERESITA MAJEWSKI

One of the project's research goals was to excavate smaller Middle Formative sites in the Río Amatzinac Valley to provide comparative data as well as information on intravalley interaction during this period. Time and funds were limited, so the decision was made to test excavate one site in the valley north of Chalcatzingo and another south of Chalcatzingo. We wanted sites at the lower range of the settlement hierarchy to gain a more complete perspective on Chalcatzingo's sociocultural role in the Amatzinac Valley settlement system.

After visiting many prospective locations, Huazulco (RAS-62) in the northern sector and Telixtac (RAS-144) in the southern section were chosen (see Fig. 21.4). These two sites were accessible and had good Middle Formative debris. Part of the Telixtac site is bisected by railroad tracks; thus, in addition to regular permits, permission to work near the right-of-way had to be obtained from railroad officials. Telixtac was test excavated in March 1974 and Huazulco in April 1974.

TELIXTAC

The site RAS-144 (Figs. 21.4, 22.1) is located on part of the *ejido* land belonging to the small village of Telixtac, about 15 km due south of Chalcatzingo in the drier Huizache Grassland zone. In this area Middle Formative settlements are located either along permanent rivers or near springs. Several sites were found along the Río Amatzinac where barranca sidewalls widen and open onto alluvial terraces which could have been utilized for floodwater irrigation.

This portion of the valley is also characterized by shallow-sided impermanent drainages. Telixtac lies at the confluence of four of these small drainages. It is also near a small spring. Surface debris covers over 2 ha between two east-west running drainages (dry at the time of excavations). Ground cover is minimal since the site is used for annual maize cultivation.

Telixtac is a shallow site, with sterile soil and *tepetate* occurring at a depth of about 1–1.5 m. Much of the site has been destroyed by repeated plowing, and cultural debris begins within what is now the plow zone (0–20 cm below surface). To the east, a separate limited Postclassic occupation was noted, consisting of a small circular mound and some scattered ceramic debris. None of this material overlay the Middle Formative occupation.

The only indication of Middle Formative architecture is a low, linear platform mound, approximately 100 × 23 m, which is bisected along its long axis and about half destroyed by a railroad cut. Mound architecture dating to this period is rare in the highlands and occurs only at Chalcatzingo and major sites in the surrounding valley. Thus its presence here indicates that Telixtac was relatively important in the regional hierarchy.

Most excavation units were dug in four areas (I–IV) of maximum sherd concentration, which had been determined by a surface survey of the site. Test Pit 1 was excavated to sample an area of relatively low sherd density.

Area I

Only Area I had surface indications of architecture—the low linear mound. This type of platform mound is unusual due to its length; it is similar at first glance to later period range structures. Two profiles (totaling 6.5 m) were cleaned along the west face of the north-south railroad cut bisecting the mound (Fig. 22.1). Although at least one of the structures found in Area I had associated midden buildup extending onto the mound, the stratigraphy indicates that the mound is not midden but was a purposeful construction. The terrain at the site slopes downward from west to east to a northwest-southeast trending bench (20 m wide) of constant elevation. The linear mound was constructed along this natural bench, extending to the southeast.

Excavations immediately adjacent to the mound revealed evidence of a structure having two building phases. A 24 m² area along the west side of the mound was horizontally stripped to 40–50 cm below surface level, uncovering part of the wall lines of a rectangular structure oriented north-south and east-west (Fig. 22.3). The structure originally extended northward; the double foundation wall partially shown in the northern part of Figure 22.3 had been destroyed by subsequent excavation for construction. The indented double wall, measuring approximately 1 m in length (at the center of Fig. 22.3), may have been part of a recessed entrance, opening to the west, on the downslope side of the mound. The structure apparently extended eastward onto the mound.

In some parts of the structure, we uncovered remnants of what may have been a stone underlayer to a floor. This is a common subfloor construction technique at Chalcatzingo, possibly designed to facilitate drainage. The overlying floor had probably been of packed earth. The only artifacts found in situ were concentrations of crushed whole and partial vessels and a mano found on part of the wall foundation.

Clay daub fragments, some of them burned, were recovered in the areas adjacent to the wall lines, indicating that some structure walls had been constructed of wattle and daub. Some of the daub fragments had wattle (*Tithonia tubaeformis*) impressions, while others were flat-sided. While many of the flat-sided pieces from wall surfaces at Chalcatzingo had traces of white pigment (Chapter 6), there is no evidence for this at Telixtac.

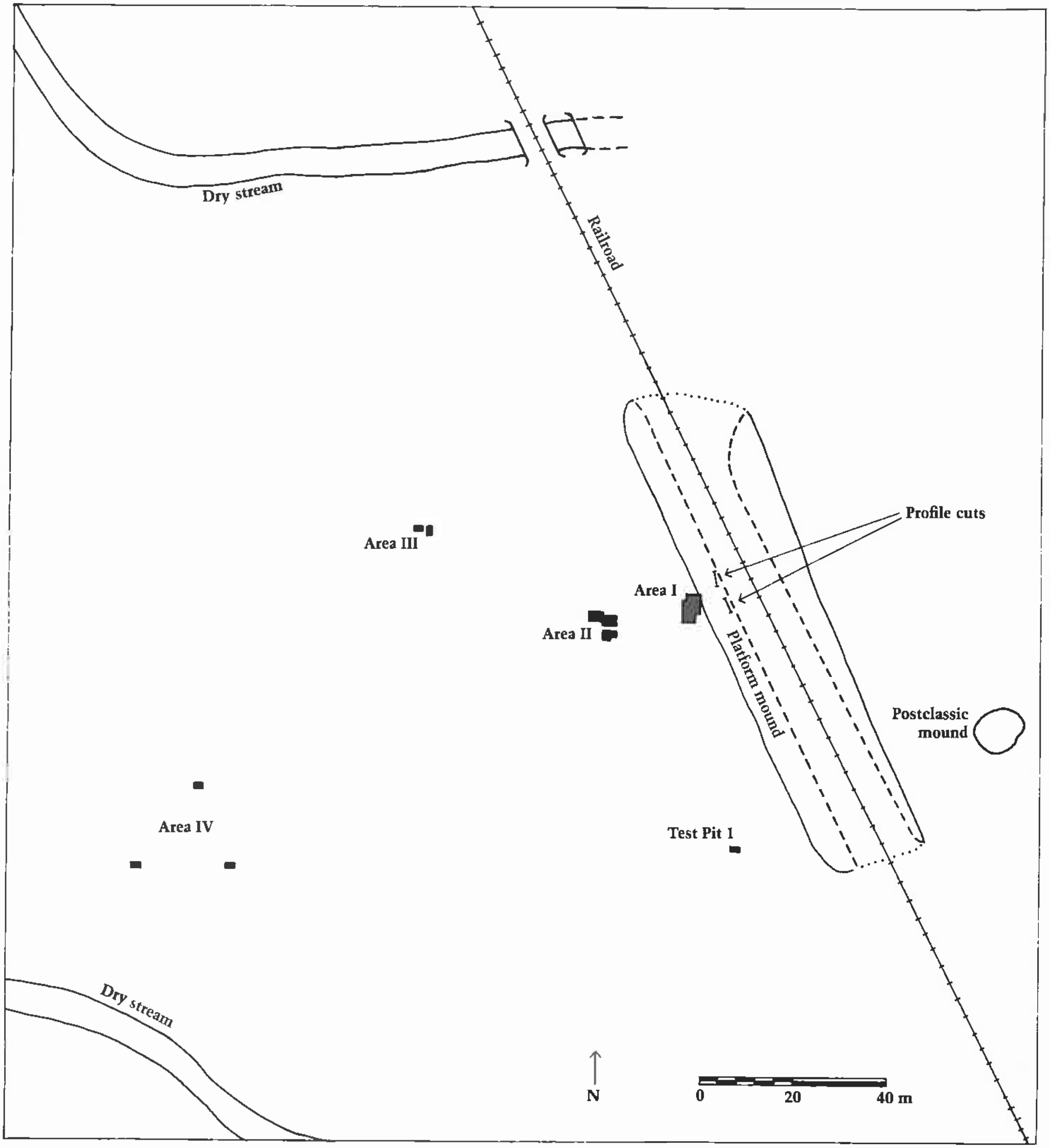


Figure 22.1. Telixtac, showing location of excavation units.

Figure 22.2. Telixtac Area III excavations (*foreground*). The Cerro Gordo and Cerro Chalcatzingo are in the background.

Two trash pits (not illustrated) were associated with this structure. One, on the mound itself, had been dug through part of a wall foundation associated with an earlier construction. It could not be excavated as it was within the railroad right-of-way. For that reason it is not clear whether this pit was inside or outside of the structure. A flexed burial (Burial 3) was found to the north of this trash pit.

The second pit was outside the structure, to the west. Refuse in this pit, which had been excavated into *tepetate*, included ceramics, lithics, ground stone tools, and animal bone. Fragments of human bone occurred in the refuse, and a skull (Burial 2) associated with a partial jade bead and a Carrales Coarse Grey ovate bowl was found at the base of the pit. The pit's basal level has an associated radiocarbon date of 2600 ± 70 BP (720–580 BC; N-1956), well within the Cantera phase limit.

The construction techniques and the presence of subfloor burials, trash pits, and utilitarian artifacts define this structure as a residence, similar to houses at Cantera phase Chalcatzingo. The positioning of this structure adjacent to the long platform mound is quite similar to the relationship between PC Structure 6 and PC Structure 4 (the platform mound) at Chalcatzingo. In neither instance are there data suggesting that these are elite residences, although their association with important public architecture strongly implies that they were special in some regard.

I believe that the linear mound also served a very utilitarian function at Telixtac, probably diverting rainwater and/or barranca overflow away from the living areas.

Area II

What were probably remnants of wall foundations were uncovered in several sections of Area II, but they lay so close to the surface that they had been badly damaged by plowing. The occupation debris in this area is shallow, with sterile soil occurring at approximately 50 cm below surface. Floor debris appears to have accumulated directly on top of the sterile horizon. Part of a straight-sided pit was uncovered in profile, having been cut into the sterile layer.

Ground stone tools were common in Area II, and only Area I had more burned daub fragments. Area II is unusual because all excavated levels contained more than 60 percent eroded sherds. This was not the case in any other area of the site. The only bone material recovered was a human premolar.

Area III

Excavations in Area III were limited to two 1 × 2 m units. Cultural debris was relatively light; only 5 gm of adobe were recovered. Worked animal bone was found as well as several ground stone artifacts, including two mano fragments and a tubular arrow shaft straightener.

One burial (Burial 1) was found in Area III. Unfortunately, this burial was removed by looters before it could be properly excavated. The associated artifacts were eventually recovered, however, and most basic data concerning burial form can be reconstructed. The interment was flexed and appeared to have been a young adult about 15–20 years old, placed in a shallow grave pit. Associated offerings included two whole C5 figurines, a small incised Amatzinac White shallow bowl, an animal effigy pot, and a Pavón Fine Grey pinch-sided ovate bowl. A fourth bowl (Fig. 22.4, upper center) was recovered from looters' backdirt after they vandalized the burial one night, before it was completely excavated. The vessel, probably associated with the burial, is Amatzinac White and has rim form RB-78.

A comparison can be made between this Telixtac burial and the subfloor burials of Chalcatzingo PC Structure 1 (Chapter 8; Appendix C), one of which (Burial

28, a crypt burial) also had an animal effigy pot. The inclusion of Amatzinac White shallow bowls in burials was also a common practice at Chalcatzingo. Although there is no direct evidence for a structure here, this burial may have been associated with a household cluster.

Area IV and Test Pit 1

These areas are considered together here since they are stratigraphically similar. In Area IV, the area farthest from the platform mound, three 2 × 1 m pits were excavated. Debris here was light, and the remnants of possible wall foundation lines were found in only one unit.

Test Pit 1, which also measured 2 × 1 m, was placed near the mound, about 110 m east of Area IV and 45 m south of Area I. A line of rocks, which may have been part of a structure wall, appeared in this unit, as well as a partial straight-sided pit in profile. Debris in the area of this excavation was moderately heavy, but was concentrated in a small area. Ground stone tools (a whole mano and a partial metate) were recovered from the test pit, but none were found in Area IV. Animal bone was absent in both areas.

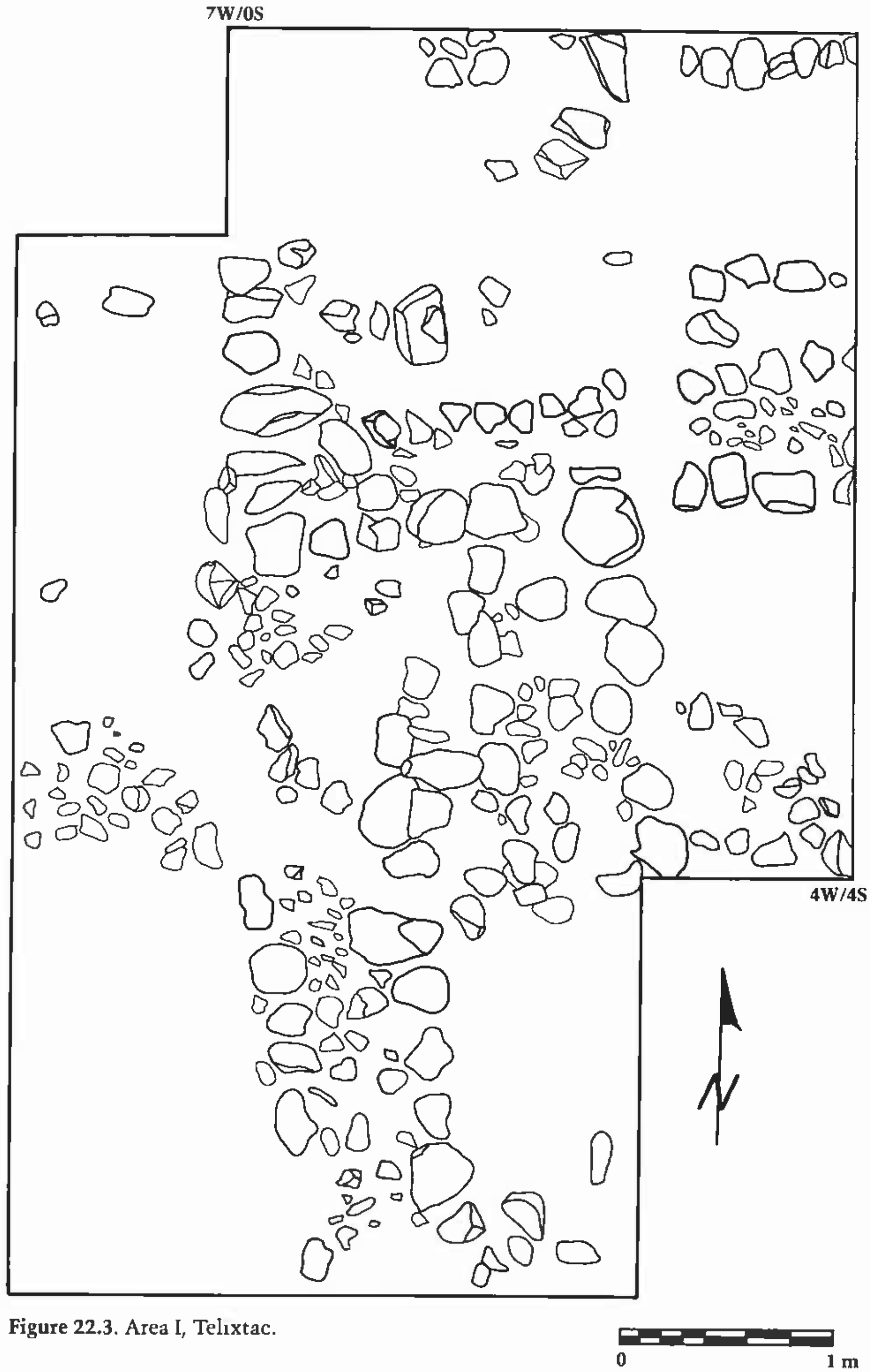


Figure 22.3. Area I, Telixtac.

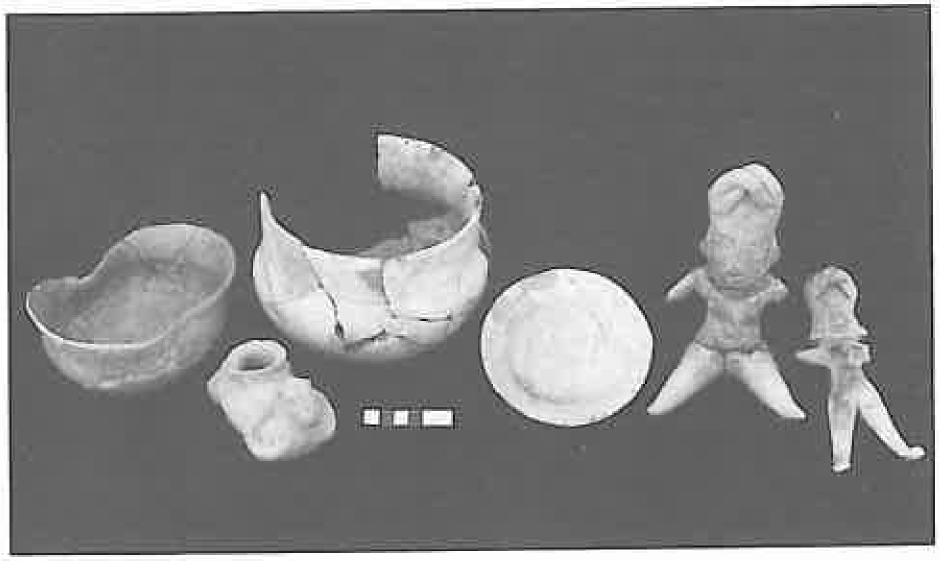


Figure 22.4. Telixtac Burial 1 ceramics.

HUAZULCO

The site of Huazulco (RAS-62) is about 10 km northwest of Chalcatzingo in a flat, moderately wooded area at an elevation of about 1,500 m. It lies about 600 m east of the Río Frío. This entire area of the valley is within the Pithecellobium Woodland environmental zone.

Middle Formative cultural debris was scattered in an area of less than 0.25 ha in the center of a 2 ha cornfield southwest of modern Huazulco. Sherds were concentrated in the southern part of the site, and a 13 m long north-south trench was placed in this area (see Fig. 22.5). Several small additional units were excavated north, east, and west of the trench outside of the ceramic scatter which defined the site, but they revealed no significant cultural remains.

Two habitation floors were found in the southern portion of the main trench. The most recent was at the base of the plow zone, and an earlier construction lay directly above a *tepetate*-like soil, about 1 m down. An incomplete stone foundation wall oriented east-west, forming the southern wall of a structure, was associated with the earlier floor. A disturbed subfloor burial (Burial 1) associated with the uppermost floor only 20 cm below the surface was directly north of this wall. The burial lacked mortuary furniture.

Large amounts of burned earth and pole-impressed daub fragments were recovered throughout the trench, further evidence for a structure, yet no compan-

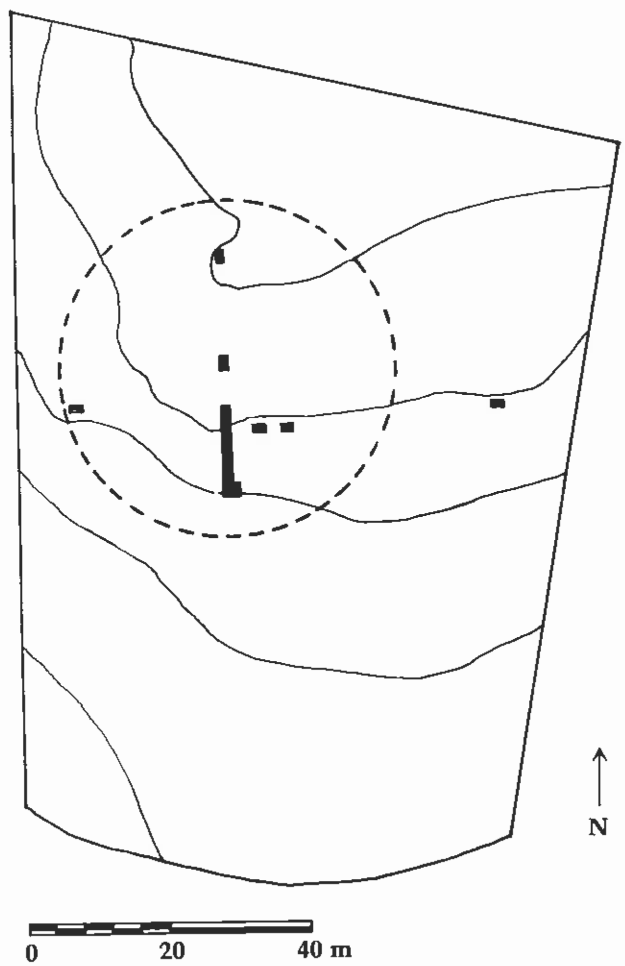


Figure 22.5. Huazulco site area. Solid line is field boundary; dashed line marks the extent of the destroyed mound. Contour interval 50 cm.

ion wall for either floor was found to the north. This could have been due to plowing disturbances. However, such a wall may have been constructed of adobe brick, which probably would not have been preserved (see Chapter 6). One complete brick was found in the northern part of the trench.

Almost 11 kg of adobe debris (some burned and some with flat surfaces) was recovered from one 4 × 1 m area of the trench. This suggests that at the time of destruction of this structure, one wall caved inward (south) toward the probable center of the house. The positioning suggests that the wall may have been located in an unexcavated area at approximately 3S/0E. The combination of daub and adobe brick fragments implies that one or both of the constructions uncovered in the trench may have had both adobe brick and wattle and daub walls such as occur with Cantera phase houses at Chalcatzingo. (Wall types, wall combinations, and house destruction are discussed in Chapter 6.)

Two additional floors occur in the northern part of the main trench. One extended along the base of the plow zone, but its exact dimensions are unknown. A wall of small rocks and burned earth was associated with it. About 50 cm below this floor there appears to have been another floor, with some of the adobe base present in the upward-sloping northern portion. An east-west wall of large boulders was at the southern limit of this floor, continuing east for at least 6 m. Although we cannot date this structure, the boulder wall line is similar to Barranca phase T-9B Structure 1 at Chalcatzingo. Fill over the lower floor was put in before the upper floor was constructed, suggesting an intentional raising and rebuilding of the structure, a practice also known from Chalcatzingo.

The small Middle Formative occupation at Huazulco was almost entirely covered by a Postclassic mound. This low, circular mound, said to have been faced with stone, has been destroyed by recent plowing and leveling activities. Burials are reported to have been removed from the mound, but none of the associated artifacts were available for study. Only about 10 cm of the mound soil still remained, all of it within the plow zone, enabling us to map the structure, which was about 30–40 m in diameter. The mound boundaries have been reconstructed on the contour map of the site (Fig. 22.5).

Most likely the mound represented a raised platform upon which several houses or a house compound would have been constructed. The burials could have been subfloor interments within the structures.

ANALYSIS AND INTERPRETATIONS

Ceramics and Figurines

The main purpose of the Telixtac and Huazulco research was to facilitate cultural comparisons with Chalcatzingo. The ceramic typology and chronology developed for Chalcatzingo were employed in the analysis of ceramics recovered during the excavations (Chapter 13).

Based on the ceramic analysis, the Middle Formative component at Huazulco dates to the Late Barranca and Early Cantera subphases. Unfortunately, there are no radiocarbon dates for Huazulco to verify this placement. Amatzinac White, Peralta Orange, and Tenango Brown types dominate the assemblage. The only evidence that Huazulco is primarily a Cantera phase site is the presence of Xochitengo Polychrome, Amayuca Ruddy, and Atoyac Unslipped Polished I ceramics. Pavón Fine Grey, an "import ware," is notable for its rarity at Huazulco.

Telixtac can be tentatively dated between about 650 and 500 BC. Atoyac Unslipped Polished I, Amayuca Ruddy, and Xochitengo Polychrome sherds, all Cantera phase markers, are present in the ceramic assemblage. Xochitengo Polychromes occur in greater abundance at Telixtac than at Huazulco.

Vessel forms were much more useful as temporal indicators at Telixtac than at Huazulco. Especially common in Area I at Telixtac were outcurving wall bowls (RB-25) with complex interior and exterior rim design and *raspada* incising, diagnostic of the Early and Late Cantera subphases. Also diagnostic are the double-loop handle censer (RB-101), the Amatzinac White shallow bowl, and the animal effigy pot.

It is important to note that Peralta Orange and Pavón Fine Grey ceramics occur at both Telixtac and Huazulco, though Pavón Fine Grey is rare at Huazulco. As mentioned in the ceramic descriptions of these types (Chapter 13), Peralta Orange is a type common at Chalcatzingo and is apparently restricted principally to Amatzinac Valley sites, while Pavón Fine Grey is a non-local, imported type. While Peralta Orange could have been made in ceramic-making villages throughout the valley, Pavón Fine Grey would probably have been diffused through the valley site hierarchy by redistribution. This may help explain why Huazulco, a much smaller site than Telixtac, has so few Pavón Fine Grey sherds. It should also be noted that while the punctate decorations on Peralta Orange at Chalcatzingo are normally triangular, those on Telixtac sherds were made with a circular instrument, indicating that different pottery workshops supplied these two settlements.

Figurines from Telixtac and Huazulco are comparable to those of Chalcatzingo, although the Huazulco sample is quite small. Of the definable figurine types, C8, Ch1-3, and Ch1-5 forms are the most prevalent. As at Chalcatzingo, C8 figurines are usually more carefully made and are sometimes orange-slipped and/or polished.

The two C5 figurines found with Telixtac Burial 1 (Fig. 22.4) are indistinguishable from Chalcatzingo's C5 figurines. However, three other figurines recovered from Area I (Fig. 22.6) are similar to Chalcatzingo's Ch1-5 type, yet differ in eye treatment from those. The eyes of the three Telixtac figurines are created by circular impressions with central punctations. This eye treatment may be a Telixtac variant of the Ch1-5 eye form and, like the Peralta Orange ceramics, suggests that Telixtac had its own workshops producing ceramics similar but not identical to those of Chalcatzingo.

A differential distribution of figurines is apparent at Telixtac. All of the excavated C8 specimens there are from Area I, in the residential structure associated with the platform mound. Also, two unusual C8 figurines closely resembling the head of Monument 10 at Chalcatzingo (Figs. 9.27, 22.7*a–b*, 27.1*j–l*) were recovered from the Area I structure. In the three seasons of excavation at Chalcatzingo, only three others of these figurines were found, and they share identical features with the Telixtac examples.

Internal Site Organization

Based on the surface distribution of artifacts recorded during the reconnaissance of Huazulco and other northern valley sites, Kenneth Hirth (Appendix H) interprets Huazulco as having been an Isolated Residence during the Barranca phase and a Small Hamlet in the Cantera phase. Our excavation data suggest to me that there were from one to several rela-

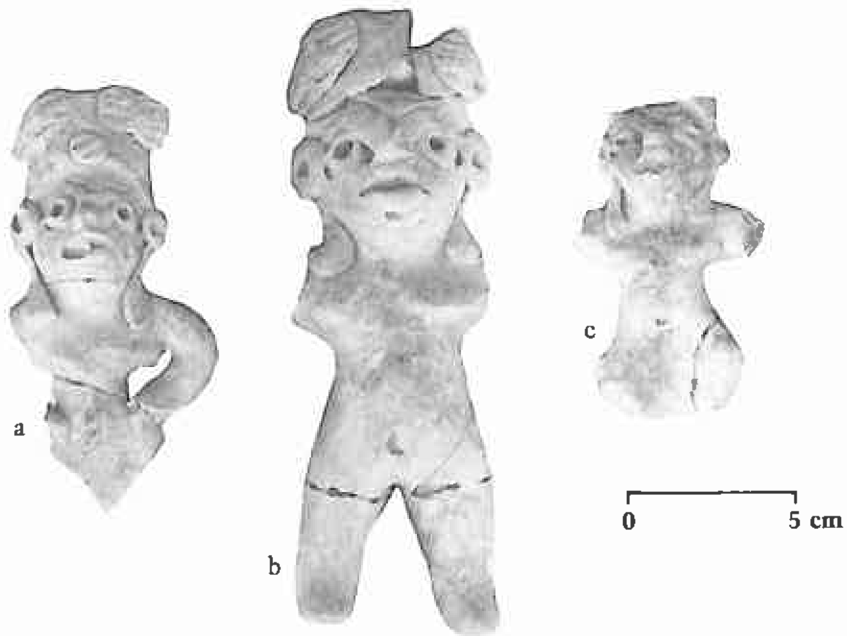


Figure 22.6. Telixtac C5 aberrant figurines.

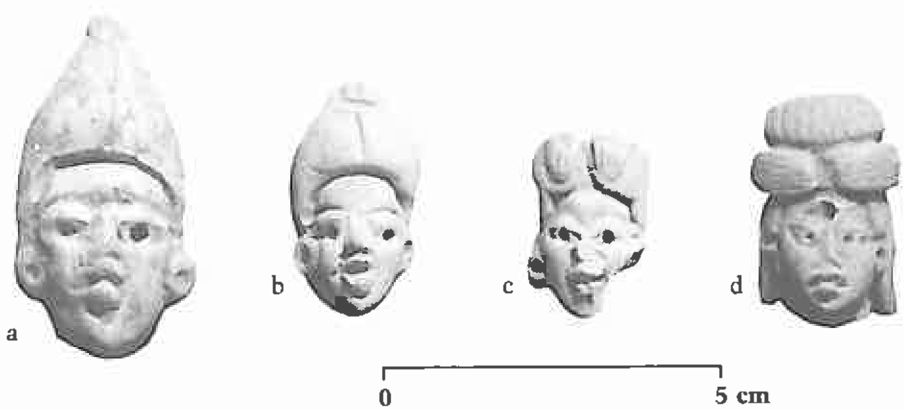


Figure 22.7. Telixtac C8 figurines.

tively contemporaneous household clusters, although superimposed floors were noted. It is unfortunate that house dimensions could not be ascertained to compare to the unusually large residences at Chalcatzingo.

Hirth classifies Telixtac as a Barranca phase Isolated Residence and a Cantera phase Hamlet (Appendix H). However, my surface reconnaissance and excavations revealed no firm evidence for the Barranca phase occupation.

Telixtac had at least five roughly contemporaneous household clusters, with evidence for two sequential constructions in Area I. Wall foundation lines were noted everywhere but Area III, and some had associated refuse pits, ranging in depth from 50 cm to 1 m. The double foundation wall of the Area I structure, although made of smaller stones than similar walls at Chalcatzingo (where stone is far more accessible), suggests that structures may have had adobe plus wattle and daub walls as at Chalcatzingo.

One important similarity between Chalcatzingo and Telixtac is the presence of a Cantera phase structure built beside a linear platform mound (Telixtac Area I and Chalcatzingo PC Structure 6), mentioned above. The Area I excavations at Telixtac also produced a cylindrical jade bead associated with a possible skull burial. These factors, as well as the quality of the artifacts found in Area I (e.g., Xochitengo Polychromes, C8 figurines), indicate that the Area I structure may have been an elite residence. Burial 1, Area III, is also similar to an elite burial at Chalcatzingo (see discussion above).

Perforated sherd discs with modified edges were abundant in Area I at Telixtac. These artifacts may have served as spinning counterweights, which would indicate that the occupants of the Area I structure were involved in the spinning of fiber.

On the other hand, in terms of the analysis of Chalcatzingo's lithics (Chapter 18), the stone tools from Telixtac and Huazulco most closely conform to the Group A pattern (common residences). The lithic artifacts at these sites are high in modified pieces, include few shaped tools, and exhibit a proportionally greater dependence on chert than at Chalcatzingo.

At both Telixtac and Huazulco, lithics needed for household use were probably produced within, or procured by, each living unit. Debitage is almost nonexistent at both sites. It is probable that unworked obsidian arrived first at Chalcatzingo, where it was worked (heavy workshop debris was found on T-37 at Chalcatzingo; see Chapter 19) and then redistributed to outlying areas. The obsidian cores exhibit reuse and exhaustion, strongly suggesting that obsidian was not available in abundance. Chert artifacts made of local materials were always more abundant than those of obsidian, the reverse of the situation at Chalcatzingo (see Chapter 18). Thus, compared to Chalcatzingo, there was a heavier reliance on local as opposed to imported raw materials at these smaller sites.

SUMMARY

The map illustrating the Cantera phase settlement pattern (Fig. 21.4) clearly shows that Huazulco is clustered with ten other small sites in the northern valley. The northern valley appears to represent an early area of colonization during the Formative period. This area came under the control of Chalcatzingo or one of the secondary centers in the central valley region during the Middle Formative.

In contrast, the southern valley exhibits a more dispersed settlement pattern of generally larger sites. Colonization of the southern valley began somewhat later than in the north but developed into at least a two-stage hierarchy of sites, which included secondary centers with platform mounds. The southern valley was integrated through the control of elite living at these secondary centers, which varied in size, e.g., San Ignacio (RAS-78) and Telixtac.

Huazulco and Telixtac, as representatives of smaller sites in the valley, shared a general cultural pattern with Chalcatzingo, one which was different from that of surrounding regions. Two important diagnostics restricted primarily to the valley—Peralta Orange ceramics and C8 figurines—both occur in the rural sites as well as at the main center, Chalcatzingo. At the same time, other objects, such as greenstone pendants and beads, are rare outside of Chalcatzingo.

In terms of more exotic artifact content, Telixtac appears more similar to Chalcatzingo than does Huazulco, although both sites were part of a local network supplementing Chalcatzingo's supply of subsistence goods. The similarities between Chalcatzingo and Telixtac are important, however, since Telixtac was larger than Huazulco and had at least some lower-level elite, while Huazulco was strictly a small rural settlement.

RESUMEN DEL CAPÍTULO 22

Dos sitios de la fase Cantera dentro del valle del Río Amatzinac fueron excavados con objeto de ganar una perspectiva más completa de las interacciones de Chalcatzingo con otras comunidades. Estas son Telixtac, al sur de Chalcatzingo, y Huazulco, un sitio más pequeño hacia el norte.

Telixtac tiene un montículo plataforma largo y en línea, lo cual indica su importancia relativa en la jerarquía regional. Las excavaciones revelaron muestra de una estructura a lo largo del lado poniente del montículo, una residencia semejante en técnica de construcción a los domicilios contemporáneos en Chalcatzingo, y otros cuatro agrupamientos de unidades habitacionales. La ubicación de la casa adyacente al montículo probablemente indica que se trata de una clase de residencia elítica, en base a la analogía que presenta la asociación de PC Str. 6 junto al montículo plataforma (PC Str. 4) en Chalcatzingo. También se descubrieron entierros en el subsuelo y artefactos semejantes a los recobrados en Chalcatzingo.

Huazulco es un sitio mucho más pequeño cuyo componente del Formativo Medio fué cubierto en algún tiempo por un nuevo montículo del Postclásico ahora destruido. Las limitadas excavaciones revelaron muestra de, por lo menos, una estructura con un entierro asociado en el subsuelo, lo cual también pone de manifiesto semejanzas con Chalcatzingo.

Los tipos de cerámica y las formas ubicadas en las fases de Chalcatzingo sirvieron para fechar los dos sitios, con lo que Huazulco fundamentalmente se fechó Barranca Tardío–Cantera Temprano, y Telixtac en el Cantera Tardío. Los dos sitios no tienen la misma distribución de cerámica, p.e., Pavón Gris Fino, una importación quizás controlada por Chalcatzingo, es mucho más raro en Huazulco, probablemente porque tenía menor jerarquía que Telixtac. Las decoraciones a base de puntos de los tepalcates Peralta Naranja de Telixtac se hicieron con un instrumento diferente al que se utilizó en la decoración de sus contrapartes de Chalcatzingo, lo cual indica que se hicieron en otra parte, tal vez en Telixtac mismo. Algunas figurillas de Telixtac también varían de aquellas de Chalcatzingo, aun cuando pueden ser clasificadas dentro del mismo tipo y nuevamente indican la existencia de un taller aparte, dedicado a manufacturar artefactos del estilo Chalcatzingo en Telixtac. Aun cuando los dos sitios obtenían la obsidiana de Chalcatzingo, predominaban los artefactos de cuarzo, lo cual demuestra una mayor dependencia en las materias primas localmente existentes.

En conjunto, los dos sitios participaban del mismo patrón cultural general mostrado por Chalcatzingo. Dos artefactos diagnósticos restringidos al valle, la cerámica Peralta Naranja y las figurillas C8, ocurren en ambos sitios mientras que los artefactos más exóticos, tales como los objetos de piedra verde, se encuentran limitados a Chalcatzingo y quizás a otros sitios grandes poco numerosos.

23. Raw Materials and Sources

DAVID C. GROVE

Archaeologists have recently begun paying greater attention to the raw materials from which artifacts were manufactured. Although "trade artifacts" have long been identified and used for general hypotheses concerning interregional "influences," today artifacts can be scientifically analyzed and sources of their raw materials specifically defined. While these analyses are clearly superior to earlier visual comparisons between artifact composition and source material, scientific characterization is not a Rosetta stone. Characterization provides source data on only a small percentage of the actual (as opposed to the archaeological) cultural inventory. It thus does not serve as a means of documenting entire interaction networks. Nevertheless, it is of substantial value and has contributed greatly to our understanding of some segments of the archaeological record, and has frequently documented that which had previously been conjecture in the realm of trade and exchange.

The Chalcatzingo Project placed special importance upon raw material characterization since both Kenneth Hirth (1978a) and I (Grove 1968c) felt that trade/exchange may have been a significant factor, if not the *raison d'être*, for Chalcatzingo's growth and importance. The results of the characterization studies have been inconclusive in this regard, as perhaps should have been expected. While they demonstrate that Chalcatzingo received raw materials and/or artifacts from other regions, the total data do not elucidate the strength or significance of these inputs, and much remains to be inferred. In fact, the characterization is perhaps most valuable at the local level, where it demonstrates Chalcatzingo's exploitation of resources within the valley.

The exploitation of certain local raw materials which are rare in other regions suggests that Chalcatzingo may have acted as a distributor of these materials to other regions. An intermediary role in the exchange of materials between other regions is also possible. Yet both roles, distributor and intermediary, are difficult to ascertain from the Chalcatzingo data alone, and characterization studies are generally lacking at sites which might have been recipients.

This chapter discusses seven materials found at Chalcatzingo: iron ore, obsidian, greenstone, kaolin, lime, chert, and granodiorite (*cantera*). All of these except kaolin occur in both raw and manufactured states at the site. A generalized map locating the sources of most of these materials in the Río Amatzinac Valley is provided (Fig. 23.1).

IRON ORE

Unworked iron ore fragments as well as worked and polished pieces were recovered at Chalcatzingo from both the surface and excavations. Of the eighty specimens of ore found, only four show any purposeful alteration. In each instance the alteration is present as a relatively roughly ground flat surface. The coarseness of the grinding suggests it was for the purpose of making powder, presumably for use as pigment. The grinding does not seem to be related to the manufacture of polished iron ore artifacts. In addition to the unworked and coarsely ground pieces, thirteen mirrors, including one complete concave mirror found in association with a high-ranking burial (no. 40), were recovered (see below and Chapter 16). Source analyses performed on both the unworked and the polished ore pieces reveal that almost all of the former derive from a local source, while the polished specimens seem to be manufactured only from non-local ores.

Distribution of raw iron ore and polished mirror fragments across the site is non-random. As can be seen in Table 23.1, 58 percent of the raw ore was recovered in the excavations of PC Structures 1 and 2 and T-24. Six raw ore pieces were also recovered from the surface of T-31, suggesting that this unexcavated site area may also have had a significant relationship to iron ore use. Polished mirrors occurred in greatest abundance in the Plaza Central excavations but were also found on T-27, N-5, and S-39, as well as in Cave 1. No raw ore was recovered in these last four excavation areas. Polished iron mirrors usually do not derive from the same contexts or areas which possess the unworked or coarsely ground ore.

Analyses

The most thorough and up-to-date analysis of Mesoamerican iron ore artifacts is currently the work carried out in the Valley of Oaxaca by Jane Pires-Ferreira (1975; 1976b) using Mössbauer spectroscopy (Evans 1975). Through an extensive survey of potential sources in the Valley of Oaxaca and Tehuantepec area, fifty-four sources were sampled, and these provided a base against which to compare raw and worked iron ores being uncovered by the research of Kent Flannery and his associates in the Valley of Oaxaca.

Pires-Ferreira (1975:48–57) has classified and labeled the Oaxacan sources according to their primary composition as follows: Group I, magnetite; Group II, hematite; Group III, ilmenite; and Group IV, mixed magnetite and ilmenite. Groups are frequently subdivided with letter affixes (e.g., I-A, I-B). Some of these groups are relevant to our analyses (below).

The Mössbauer spectroscopy of the Oaxacan samples was conducted by B. J. Evans of the University of Michigan (Evans 1975). For the sake of comparability and consistency in results, Evans consented to run a quantity of the Chalcatzingo samples. Originally fifty-three pieces of iron ore (including four with ground surfaces) and seven mirror fragments were analyzed. Later an additional five samples from a possible source in the Río Amatzinac Valley were analyzed (see below).

The analysis of the Chalcatzingo raw ore samples yielded six distinct clusters. These we have labeled Groups A–F to clearly distinguish them in our discussions from the Oaxacan groups. The comments on the six Chalcatzingo groups are primarily those of Evans (personal communication). On-site distribution of these groups is given in Table 23.1. *Group A.* These are hemomagnetites, in which magnetite is the major phase and hematite is present only in minor amounts (Fig. 23.2). They are not derived from the Oaxacan Group V source and are only grossly similar to artifacts from Oaxacan Group I-A. Thus, they do not appear to be from Oaxacan sources. Of the fifty-three samples analyzed from Chalcatzingo, fourteen (26 percent) are Group A. *Group B.* These are magnetite-hematite ores in which the ratio of magnetite to hematite is approximately 2:1 (Fig. 23.3). They are similar to Oaxacan Group V ores but also different enough to determine that the Chalcatzingo samples are not from Group V sources. Eighteen specimens (34 percent) of the sample analyzed belong to this group. *Group C.* This group has a hematite to magnetite ratio of about 1:4 (Fig. 23.4). While the six samples (11 percent) constituting this group are similar to the Group I-A archaeological samples from San José Mogote, Oaxaca, the Chalcatzingo specimens are not from that Oaxacan source. *Group D.* The solitary specimen from this group is ilmenite (Fig. 23.5) and has a possible match with Pires-Ferreira's Group III-A, a Oaxacan group with no known source (defined solely on the basis of artifacts). Mirrors from La Venta, Arroyo Pesquero, and San Lorenzo likewise match this unknown source (Pires-Ferreira 1975:Table 15). The Chalcatzingo specimen is from T-24, one of the excavated terraces with abundant iron ore fragments. *Group E.* These five specimens (9 percent) contain less than 2 percent iron, although they may be metallic ores. *Group F.* Similar to Oaxacan Group II, these nine (17 percent) hematite specimens (Fig. 23.6) have a qualitatively different character from Oaxacan source ores, and thus a match is doubtful.

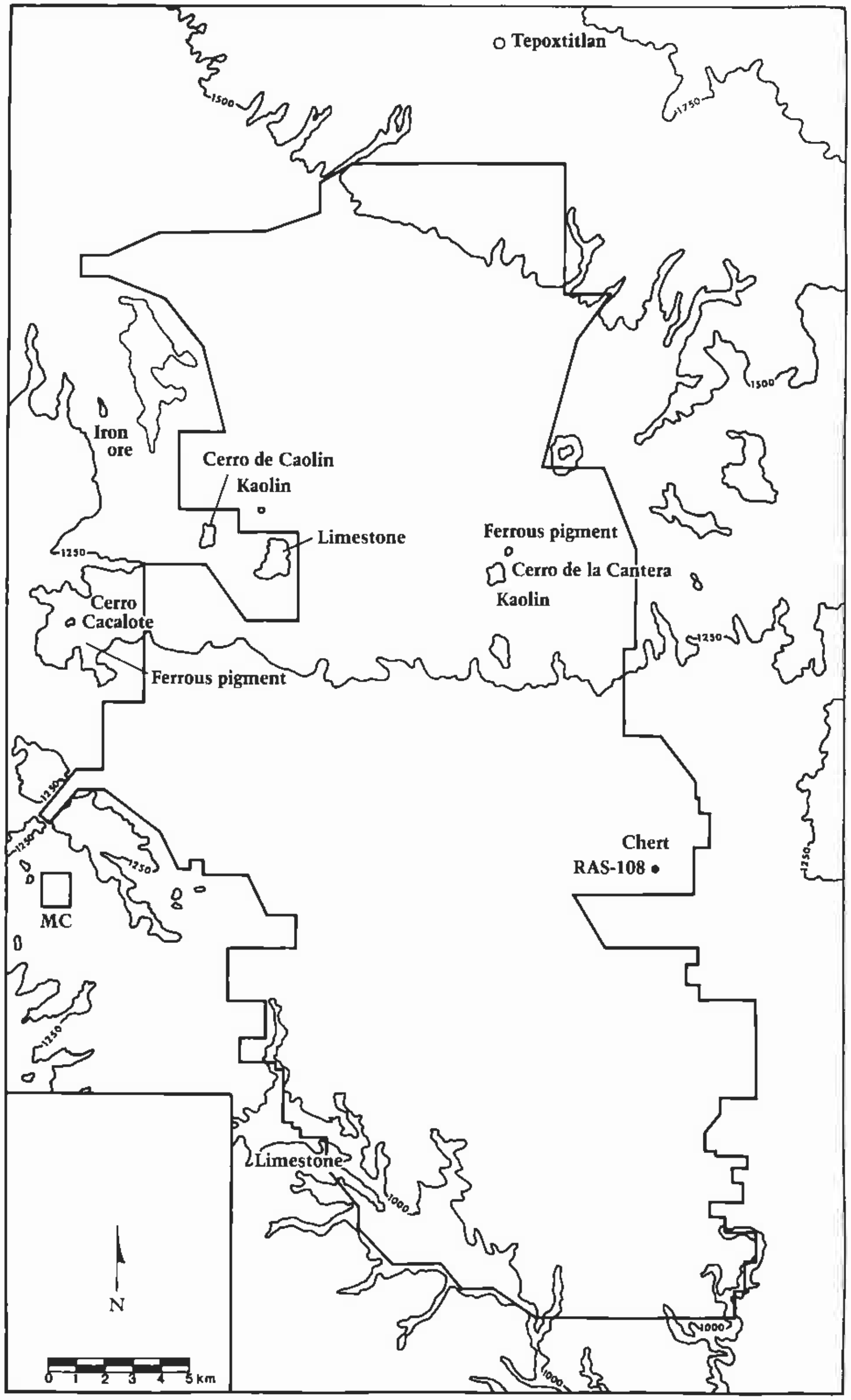


Figure 23.1. Amatzinac Valley, showing locations of mineral resources.

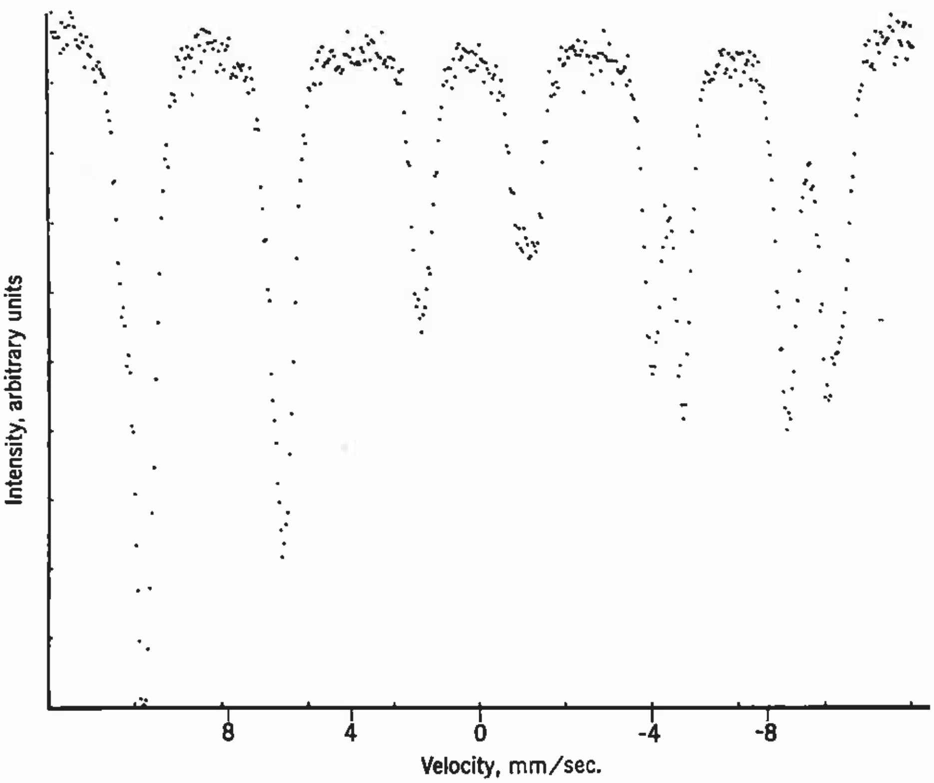


Figure 23.2. Iron ore spectrum, Group A.

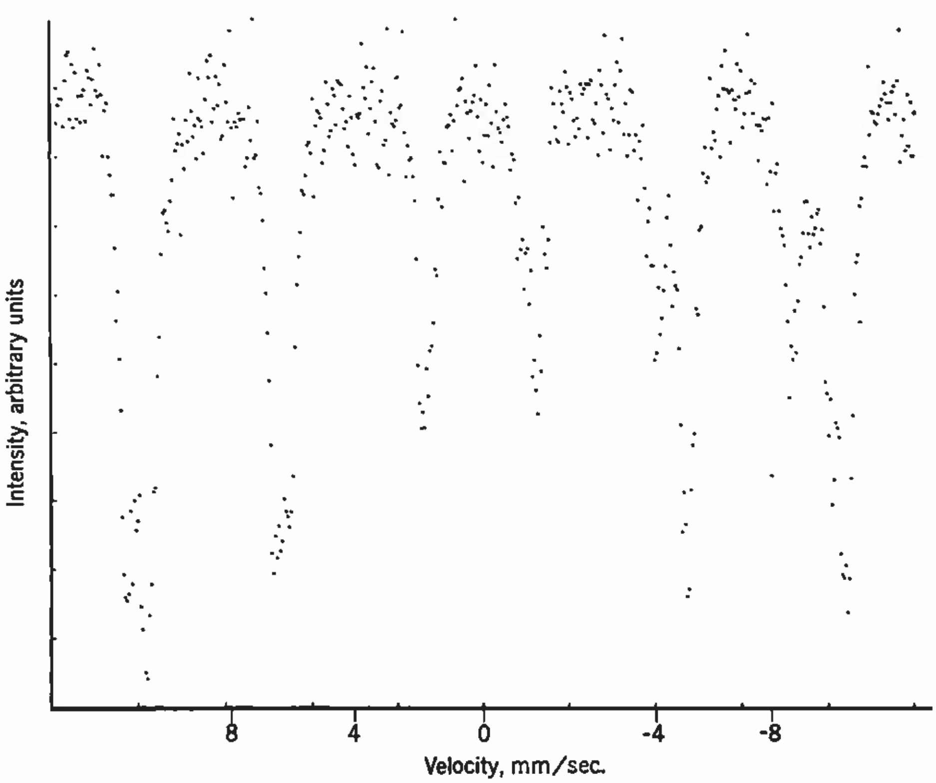


Figure 23.3. Iron ore spectrum, Group B.

Sources

It was not necessary to look outside of the Río Amatzinac Valley area for possible iron ore sources. The valley has long been known as an important source of iron-rich rock. According to Alfonso Luis Velasco (1890:90), the first Spanish iron smelter in Mexico was established at Tepoxtitlan (La Ferrería) near Zacualpan in the northern valley. At least some of the ore for this operation was mined from the hills forming the southwest border of the valley, particularly the Cerro Cacalote. Pit type mines on the Cerro Cacalote were sampled, the material collected consisting of powdered iron oxides rather than solid ore. The bulletin of the Instituto Geológico de México (1923a:216; 1923b:92) also lists hematite and magnetite as occurring near Xalostoc.

Carl Fries (1966) identified a ferrous-rich area near Chalcatzingo. This locale, in the barranca of the Río Amatzinac northwest of Tetla, gives indications of having been lightly mined by the excavation of a shallow cave along a section of the iron-rich sedimentary strata. This "mine," presumed to have been prehispanic due to the presence of Middle Postclassic sherds, would have produced red sediments suitable only for pigment.

At the time of Evans' analysis of the iron ore pieces found on the site, the sources mentioned above either had not been found or had not yielded solid ore samples. Following the analyses, which lacked close similarities to Oaxacan sources, we began a serious attempt to locate the published sources in the western valley. Aside from the pit-like mines on the Cerro Cacalote and the small cave-like feature in the barranca behind Tetla, no other vestiges of prehispanic or colonial mining were found. Ultimately, a hillside between Atotonilco and Xalostoc was surveyed and discovered to have numerous iron ore chunks scattered over the surface. These ore fragments were visually identical to those recovered at Chalcatzingo.

Five samples from this locale were analyzed by Evans. Four were surface specimens taken from widely scattered parts of the hillside (to present a representative sample, if such was possible). The fifth sample came from a modern shallow mine near the top of the hill. Visually this last sample was substantially different from the four surface specimens submitted for testing.

The analysis showed samples 1, 2,

and 3 to be hemomagnetites and good matches to the Chalcatzingo Group A specimens (Fig. 23.7). Sample 4 is magnetite-hematite and matches well with Group B ores (Fig. 23.8). Because minor mining activities have been carried out in the area for a long period of time, it is possible that the surface samples represent spill from loads being carried from other areas of the hill. However, there seems little doubt that this area is the source for both Group A and B specimens, 60 percent of the Chalcatzingo sample analyzed.

Sample 5 is very complex in terms of iron phases present and has no matches with any analyzed archaeological materials.

Mirrors

Seven of the thirteen polished mirrors from Chalcatzingo were analyzed. None are manufactured from Group A or B materials, and all are attributed to imported ores. (See Chapter 16 for provenience of these specimens.) *Mirror M-1.* This complete concave mirror (Fig. 16.22*a*) is unusual, for it consists primarily of high-purity magnetite along with a small amount of some other iron-containing phase which may be an iron sulfide. Evans (personal communication) notes that it is the first time he has seen that kind of spectrum (Fig. 23.9). More unusual is the fact that none of the large mirrors tested for Pires-Ferreira (1975: 48–65) have such a high magnetite content. They are normally ilmenite. There is no match to any known source.

Mirror M-2. This fragment is composed exclusively of ilmenite, and its spectrum is identical to the single ilmenite Group D specimen found on T-24. It is also similar to Oaxaca Group III-A, but the match is not perfect. The presence on T-24 of unworked ilmenite ore and a mirror fragment from the same source suggests that the mirror was not necessarily imported as a finished product but could have been manufactured locally from imported ore. Artifactual evidence of mirror manufacturing (numerous small worked and unworked fragments) such as occurs at San José Mogote, Oaxaca (Flannery et al. 1970), does not occur in excavations or as surface scatter at Chalcatzingo. *Mirrors M-3, M-7, and M-9.* These fragments are made from high-purity hematite ores and are closely similar to our Group F ores. Group F, as stated earlier, is similar but probably not related to Oaxaca

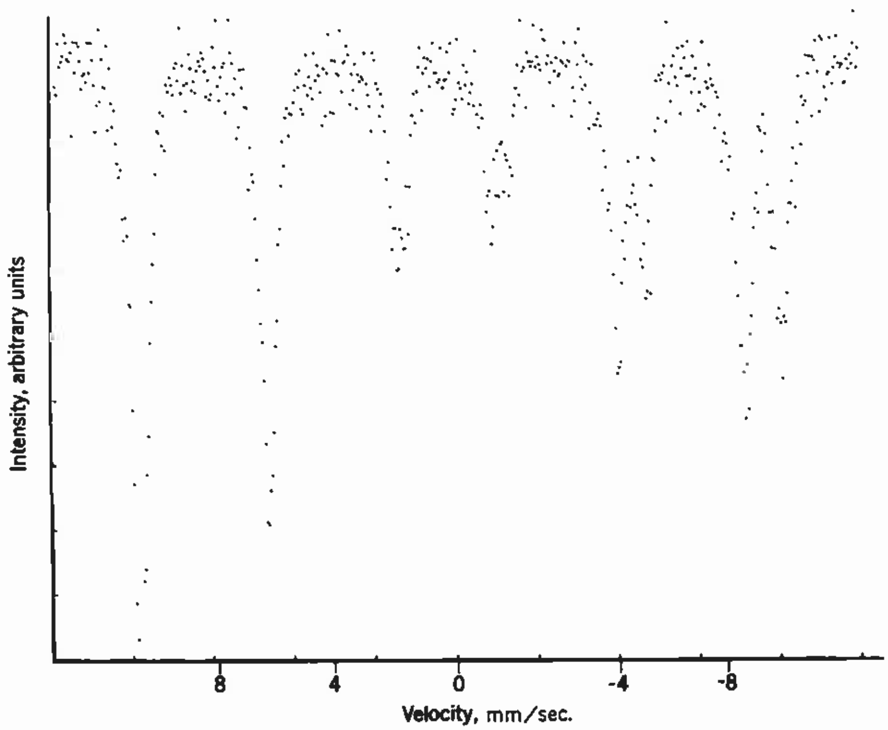


Figure 23.4. Iron ore spectrum, Group C.

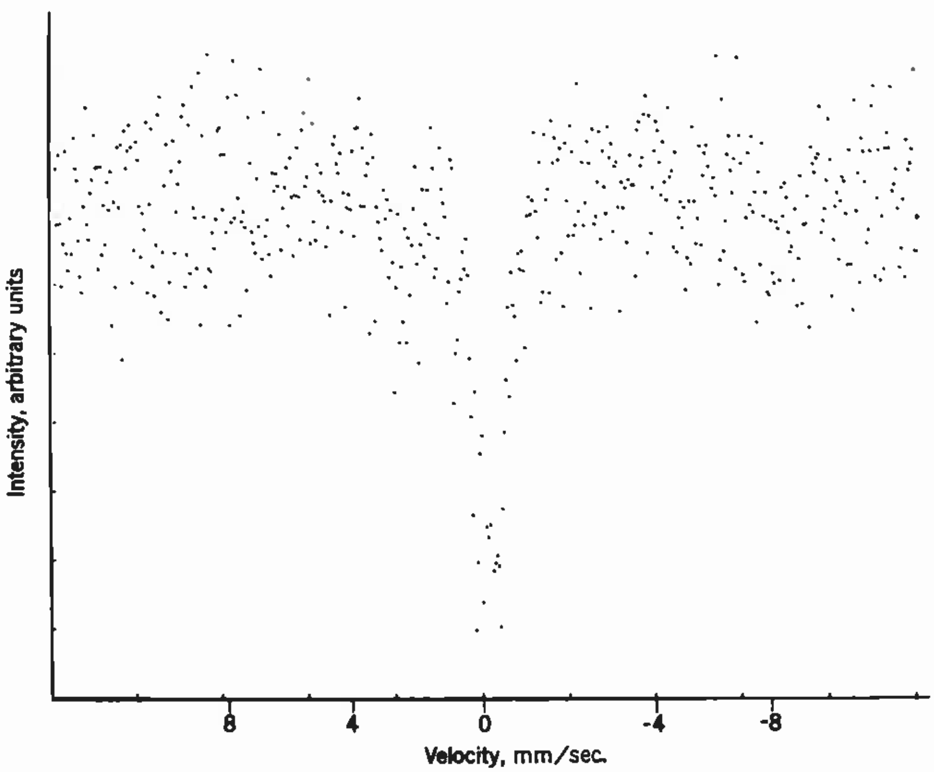


Figure 23.5. Iron ore spectrum, Group D.

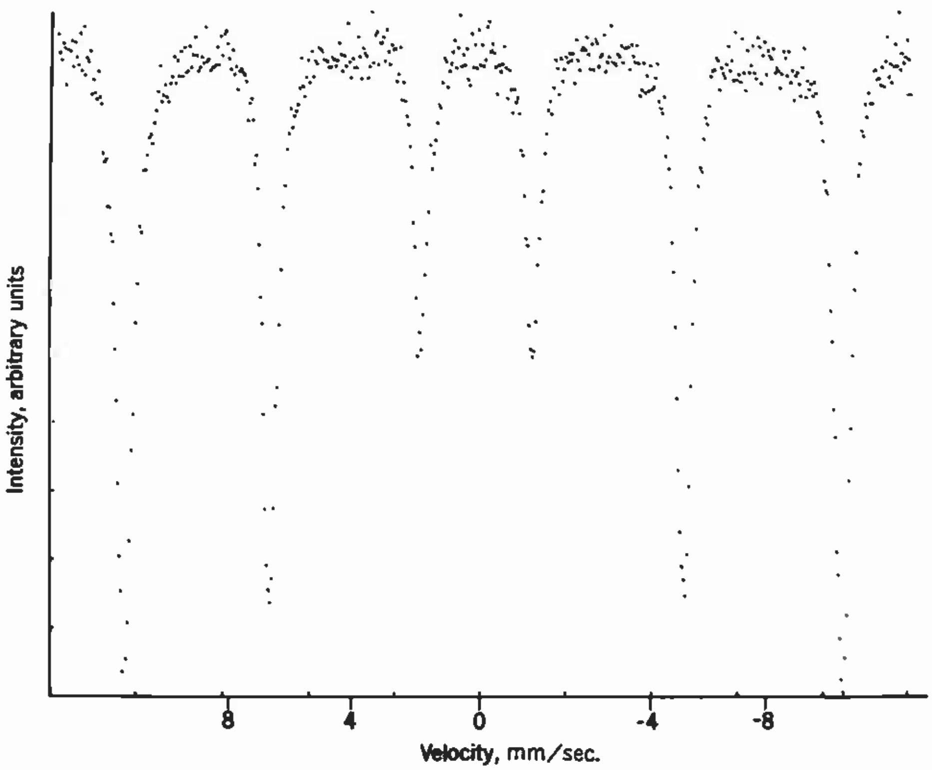


Figure 23.6. Iron ore spectrum, Group F.

Group II. Group F ore specimens have the widest and most varied distribution on the site (Table 23.1). Their source is still undetermined. If the presence of polished and unworked fragments from the same ore source can be taken as evidence of workshop activity (e.g., Mirror M-2), then these data suggest that such activity took place at Chalcatzingo, apparently with non-local iron ores.

However, it is again worth noting that while Group F unworked ore pieces occur at eight different contexts at Chalcatzingo, those same contexts did not yield any polished fragments or other debris which might be expected if individual houses (the context of most specimens) also functioned as mirror workshops. There are other explanations for imported ore fragments in house contexts, including the possible use of the ore for grinding into pigments, or the storage of iron ores in the houses as part of an exchange system participated in by the site's occupants. *Mirrors M-5 and M-8.* These consist exclusively of magnetite, although not as pure as the magnetites found in some Oaxacan mirrors (Evans, personal communication). According to Evans, these two mirror fragments are a "perfect match" to Oaxaca Group I-A, the Loma de la Visnagra source near the north end of the Valley of Oaxaca (Pires-Ferreira 1975:49–54, Table 11). One other Morelos mirror fragment is also known to derive from this source (ibid.:Table 11). It is presumed on the basis of present data that these mirrors were imported into Morelos in an already manufactured form.

Table 23.2 summarizes the identification of ore sources for the analyzed Chalcatzingo mirrors.

OBSIDIAN

Nearly every level of every unit excavated at Chalcatzingo yielded obsidian chips, blades, or small chunks (Chapter 18). Literally thousands of pieces were recovered. In addition, excavations of T-37 uncovered a Cantera phase dump of obsidian debris which yielded over 28,000 pieces (Chapter 19). Because only a limited quantity of the total sample could be source analyzed, a sampling decision had to be made to provide a test sample covering adequate chronological and spatial distributions as well as providing representation of the possible range of sources. My decision was to take, where possible, non-random, selective samples from floor area contexts of most house structures and, where such contexts were not available for certain phases, to take non-random samples from units pertaining to that phase. These non-random samples, which consisted of three to five obsidian pieces from each major unit, were selected visually for what appeared to be different types of obsidian (cloudy, clear, banded, black, etc.).

In addition, a random sample of twenty-five pieces was collected from the T-37 obsidian dump. Further small samples from Late Formative T-27, Telixtac, and Huazulco materials (see Chapter 22), the Tetla Postclassic house (Chapter 25), and comparative Early Formative samples from San Pablo and Nexpa (Grove 1974b) were submitted for analysis. Our analysis comprised a total of ninety pieces of obsidian.

In approaching the trace element characterization of Chalcatzingo's obsidian artifacts, we were aware that a great variety of methods had been utilized in previous analyses of Mesoamerican obsidian, and the results of such studies were therefore not always comparable. To date, three major analytical techniques have been used. The obsidian from San Lorenzo was analyzed with optical spectroscopy (Cobean et al. 1971). Berkeley researchers used both X-ray fluorescence (Jack and Heizer 1968; J. Weaver and Stross 1965) and neutron activation (Stross et al. 1968) in analyzing obsidian from a number of Mesoamerican sites, and Pires-Ferreira (1975; 1976a) likewise used neutron activation for the obsidian recovered by Flannery's Human Ecology Project in the Valley of Oaxaca. Neutron activation appears to be becoming the most popular analytical technique, and this method was chosen for our analysis.

One major problem which had to be faced in planning the Chalcatzingo analysis lay in the number of elements to be selected for the final characterization. While other analyses had tested for up to sixteen chemical elements, only two, three, or four elements were ultimately used for source identification and comparison. The elements most frequently selected were iron (Fe), manganese (Mn), sodium (Na), rubidium (Rb), strontium (Sr), zirconium (Zr), and yttrium (Y). Pires-Ferreira's analysis of Oaxacan obsidian artifacts used only Na and Mn. More commonly, three elements—Rb, Sr, and Zr—were tested and plotted upon a tri-pole graph (e.g., Jack and Heizer 1968; Stross et al. 1968). The use of a limited number of elements obviously lends itself to simple graphs for the identification of clustering.

Another source of variability among obsidian characterization studies lies in the manner in which the quantity of each element in a sample is expressed: percentages (Pires-Ferreira 1975; 1976a), counts per second over background (Stross et al. 1968), or parts per million (Cobean et al. 1971). Compounding this problem is the use of different calibration standards. The result is a series of site-specific analyses which are not readily comparable. Thus, as we approached our analysis of the Chalcatzingo obsidian, there was no standard methodology, reporting procedure, or standardized source data to draw upon. Our solution to this last problem was to conduct our own characterization of source material.

Source materials were made available by Thomas Charlton and Robert Zeitlin (Table 23.3). Although highland Guatemalan sources were included among the samples provided, we restricted our analysis to the central Mexican samples, since previous studies (Cobean et al. 1971; Pires-Ferreira 1975; 1976a) strongly indicated that the expected exploitation pattern would be of only central Mexican sources. The results bear out that assumption. Among the eighteen sources tested were Otumba (the so-called Teotihuacan Valley–Barranca de los Estetes source), Paredon (a source north of Teotihuacan recently rediscovered by Charlton), and Guadalupe Victoria, Puebla. This last source, on the lower slopes of Orizaba Volcano, is known to have been an important contributor of obsidian to the Gulf Coast Olmec center of San Lorenzo (Cobean et al. 1971).

Neutron activation analyses were carried out on the Chalcatzingo samples by Philip Hopke of the Environmental Research Laboratory of the University of Illinois. Thirty different chemical elements were recorded. The analytical methods followed are discussed by Charlton, Grove, and Hopke (1978). Because we did not want to restrict ourselves initially by using only a few elements to compare site samples to source samples, computer programs for discriminate cluster analyses using four different dissimilarity matrices and seven possible clustering criteria were carried out for twenty-seven of the thirty chemical elements. We then eliminated some elements which appeared insignificant, and carried out additional computer runs with eight and later with four elements. We constantly checked the clusters provided by the computer against our own observations of possible patterns. The results were generally consistent and definitely surprising. All of the programs clearly identified a significant portion of the Chalcatzingo samples as coming from the Paredon source.

Although the Chalcatzingo obsidian characterization study was the first to utilize samples from the rediscovered Paredon source, previous studies had not

Table 23.1. **On-Site Distribution of Iron Ore Groups (Excavation and Surface Specimens Excluding Mirrors)**

	Group						
Provenience	*A*	*B*	*C*	*D*	*E*	*F*	*Unanalyzed*
PC Str. 1	5	7	1			1	6
PC Str. 2	3	5	1		2	1	2
PC Str. 6					1		3
PC other							2
T-4	1					1	3
T-6							1
T-7		1					
T-11		1					
T-15					1	1	
T-19	1						
T-20	1					1	
T-23	1					1	1
T-24	2		2	1	1	1	5
T-25		2	1				2
T-31		1	1			2	2
Cave 4		1					

Table 23.2. **Iron Ore Mirrors and Sources**

Chalcatzingo Group F	*Oaxaca Group I-A*	*Oaxaca Group III-A / Chalcatzingo Group D*	*Source Unknown*	*Unanalyzed*
M-3	M-5	M-2	M-1	M-4
M-7	M-8			M-6
M-9				M-10
				M-11
				M-12
				M-13

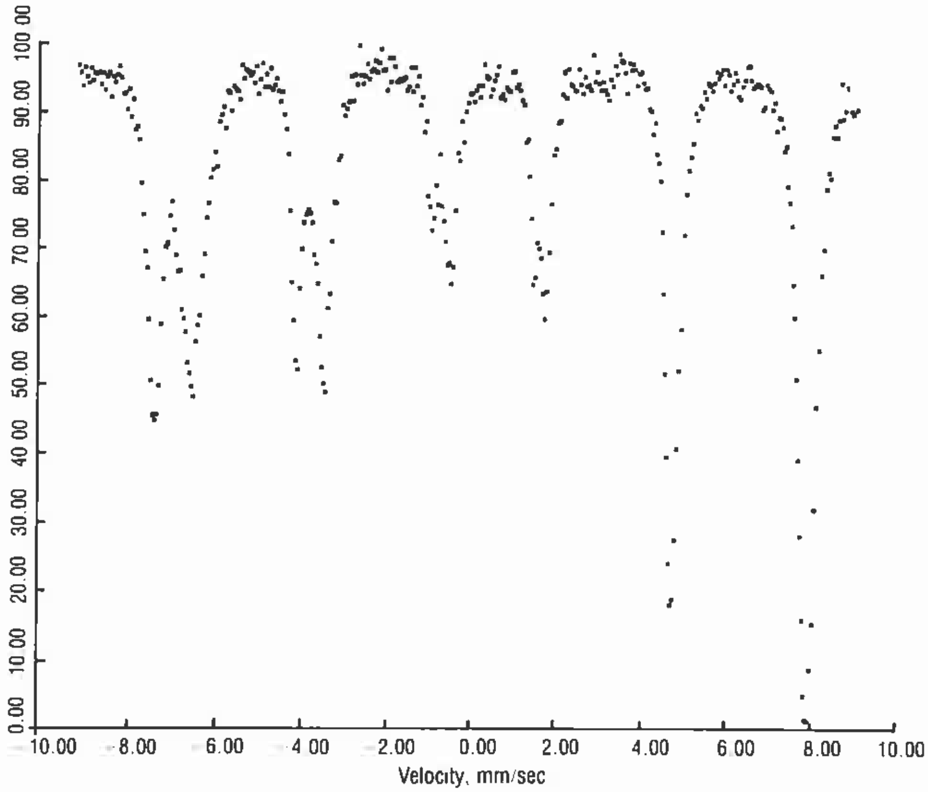


Figure 23.7. Iron ore spectrum, Source Sample 1 (matches Group A).

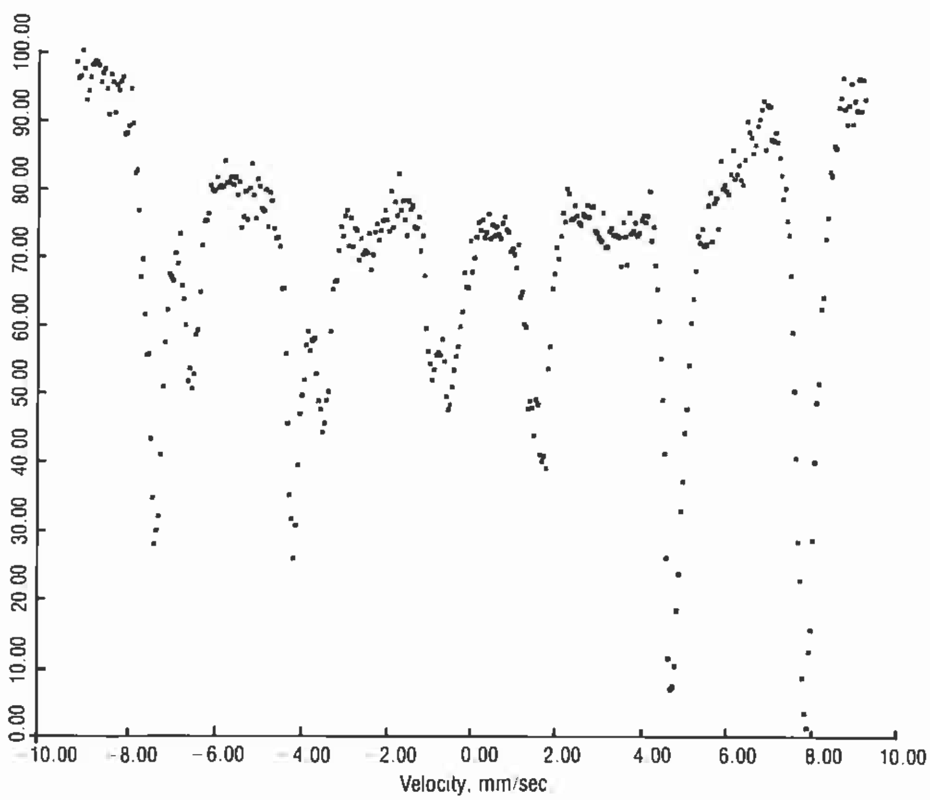


Figure 23.8. Iron ore spectrum, Source Sample 4 (matches Group B).

set apart an "unidentified" source among their samples. Table 23.4 demonstrates that distinguishing between Otumba and Paredon obsidian is virtually impossible with the elements commonly used in obsidian analyses: Mn, Na, Rb, Sr, and Zr. The elements which serve to differentiate these two sources are barium (Ba), lanthanum (La), and arsenic (As). Thus, obsidian from archaeological contexts in Oaxaca and the Gulf Coast previously identified as from the Teotihuacan Valley (Otumba) source probably includes Paredon obsidian as well.

The fact that our analysis was able to separate Otumba and Paredon sources is significant because all of the obsidian tested from the Early and Middle Formative levels at Chalcatzingo originated at these two sources. The Guadalupe Victoria source, so important in the Gulf Coast lowlands, is unrepresented, and logically so. If obsidian exchange is viewed in terms of "cost efficiency" for handling and transportation, then sources nearest to the site should show the greatest amount of exploitation, and at Chalcatzingo this seems very clearly to be the case. In fact, because Otumba is nearer to Chalcatzingo than Paredon, it should be expected that Otumba obsidian would constitute the larger percentage of the sample, and the data show exactly this. Otumba obsidian makes up 68 percent of the random sample from the T-37 Cantera phase obsidian trash dump, while Paredon contributed 32 percent. Only two Pachuca green specimens, a type common during the Classic period, occur in the Cantera phase materials tested.

Amate phase, Barranca phase, Late Formative, and Middle Postclassic samples, as well as those from the valley sites of Huazulco and Telixtac and Nexpa–San Pablo in central Morelos, were selectively chosen. With the exception of the Middle Postclassic specimens, all sample groups contained both Otumba and Paredon obsidian. The Middle Postclassic sample, from the floor of the Tetla house (Chapter 25), contained four Otumba specimens and one piece of Pachuca green obsidian. Because these samples were selective, their percentage distribution is meaningless.

From the data gathered during this analysis it is clear that Formative period Chalcatzingo received obsidian from two sources almost exclusively, Paredon and Otumba. The minimal data from Telixtac, Huazulco, Nexpa, and San Pablo suggest that those sites likewise received obsidian originating from the same two sources. The exclusivity of Otumba and Paredon sources in Morelos during the Formative, together with the proximity of those two sources to each other, suggests that the obsidian was probably pooled prior to its arrival in Morelos. This pooling, I presume, was carried out by a Valley of Mexico community acting as intermediary. If two separate exchange systems, one tied to each source, had been in operation, greater intraregional variation and stronger ties of one site to one source might be expected. Such is not the case.

My undocumented observation is that Chalcatzingo has a greater quantity of surface obsidian debris than have other Middle Formative sites in the Río Amatzinac Valley. This observation, together with the presence of a workshop, suggests that the site was probably a redistribution center for both worked and unworked obsidian in the valley (and perhaps an intermediary in obsidian exchange over greater distances). However, until further work is carried out, this remains simply conjecture.

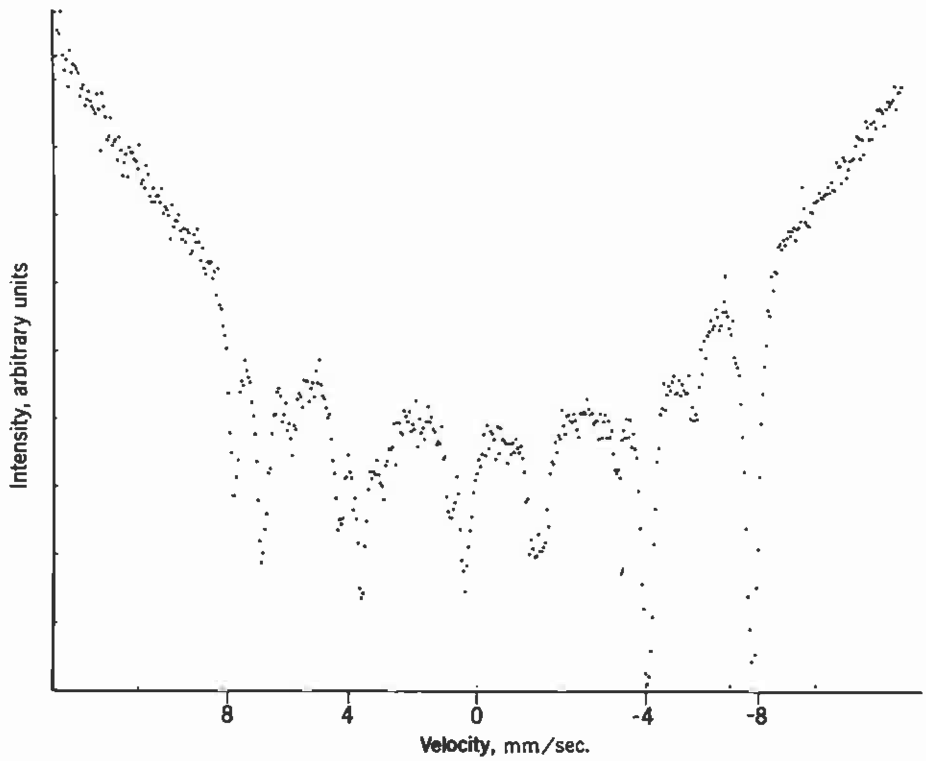


Figure 23.9. Iron ore spectrum, Burial 40 concave mirror.

GREENSTONE

Characterization studies of greenstone (jadeite, serpentine, etc.) are still in their infancy, particularly outside of the southern Maya area. Central Mexican greenstone sources remain essentially at the hypothetical level. Data suggest that jadeite may occur near Acatlan, Puebla (Ortega-Gutiérrez 1974), an area which William Foshag (1957:12) notes may have been a source for the antigorite used in some "Olmec" figurines. The chlorite schists of north-central Guerrero may likewise have yielded jadeite (e.g., Coe 1968a:102–103), but little related exploratory field work has been carried out anywhere in the central highlands.

At this time the only recent characterization study relevant to our materials is that of Phil Weigand, Garman Harbottle, and Edward Sayre (1977) on turquoise exchange between the U.S. Southwest and Mesoamerica during the Classic period. A great number of tiny mosaic fragments, apparently turquoise, were found adjacent to the skull of Chalcatzingo Burial 40. Turquoise is rare in Middle Formative archaeological contexts, and characterizations of the Chalcatzingo mosaic pieces would be of substantial interest. However, we attempted no greenstone characterization since without source data such analyses would be of little value.

The Chalcatzingo greenstone artifacts and raw materials were studied by Charlotte Thomson (Chapter 17, Appendix F). She distinguished five categories of greenstone in our sample: jadeite (several types and thus probably several sources), Chalcatzingo mottled jadeite, serpentine, fuchsite, and other (chrysoprase, chalcedony, etc.). All of these are apparently non-local, since geology appropriate to the presence of greenstone does not occur in this area of eastern Morelos. Her analysis concludes that Chalcatzingo and La Venta received their finer-quality greenstones from the same supplier (and the same sources). Current data do not permit any more elaborate conclusions.

Drill cores and partially worked fragments of greenstone indicate that some lapidary activities were carried out at Chalcatzingo. These activities appear to have been minor, however, and were probably only for consumption at the site and within the Río Amatzinac Valley.

KAOLIN

Circumstantial evidence points to kaolin clay (kaolinite) as probably having been a significant local raw material exploited and perhaps exported by Chalcatzingo. The only source of kaolinite in the Morelos–western Puebla area, according to the Instituto Geológico de México (1923a; 1923b), is in the *municipio* of Jonacatepec, Morelos. Chalcatzingo lies just outside the *municipio's* northern boundary, and in fact, the southern slopes of the Cerro Chalcatzingo are within the *municipio*. The presence of kaolinite to the south of the site is confirmed by the biological and mineralogical map of Morelos (Mazari 1921).

Informants mention that kaolin clay from this source or sources was exploited until the Zapatista revolution. It was apparently used as a white colorant for sugar produced by the local haciendas. The revolution wiped out the sugar industry in eastern Morelos, and the kaolin demand apparently died with it. We were able to locate only two people who remembered kaolin mining near Jonacatepec. One man, in his nineties, was too infirm to show us the source he remembered and at the same time insisted that

Table 23.3. **Obsidian Source Samples Tested**

Contributor	*Contributor's Sample ID No.*	*Source*	*Description*
T. Charlton	5704	Tulancingo, Hgo.	Green-brown, clear
	5705	Pizarrín	Goldish, clear
	5706	Navajas (Nopalillo)	Fine green, clear
	5707-A	Navajas	Gold bands in black obsidian, inclusion dots
	5708	Otumba (Barranca del Muerto)	Cloudy grey (grey caused by tiny bubbles)
	5709	Otumba (TA-79)	Cloudy grey (grey caused by tiny bubbles)
	5710	Otumba (TA-325)	Clear to cloudy with black bands
	5712-1	Paredón	Clear
	5712-2	Paredón	Clear
	5713	Paredón	Clear
	5714	Paredón	Clear, some dot inclusions
R. Zeitlin	MB-1-1	Penjamo, Gto.	Clear
	MC-1-1	Zinapecuaro, Mich.	Cloudy
	MD-2-1	El Paraiso, Qro.	Clear to streaked
	MD-4A-1	Fuentezuelas, Qro.	Clear light grey
	MD-5-1	Cadereyta, Qro.	Ink black
	ME-1-2	Tulancingo, Hgo.	Grey-green
	ME-2-1	Rancho Tenango, Hgo.	Banded green-brown
	ME-6-1	Teotihuacan	Cloudy, streaked
	ME-7-1	Metzquititlan, Hgo.	Dark streaky grey
	ME-8-1	Cruz de Milagro, Pachuca	Goldish
	ME-10Z-7	Huasca, Hgo.	Very black
	ME-11-1	El Ocote, Hgo.	Clear green
	ME-12-1	Otumba	Cloudy, streaked
	MF-1-1	Guadalupe Victoria, Pue.	Cloudy, black dot inclusions
	MF-3-1	Pico de Orizaba, Ver.	Clear, light streaks
	MF-4-1	Altotongo, Ver.	Very dark brown

Table 23.4. **Neutron Activation Results on Otumba and Paredón Obsidian**

Element	*Otumba Ranges*	*Paredon Ranges*
Na	2.94–3.16	2.92–3.16
Mn	364–386	351–360
Rb	114–133	130–178
Sr	102–211	120–162
Zr	56–105	71–119
Ba	708–909	80–179
Ln	23–30	51–64
As	3–6	11–16

rather than tell us where the "mine" was, he would take us there personally. We made numerous inspections of aerial photographs as well as reconnaissances of the area on foot. We sampled a number of exposures of "*tierra blanca*," but none proved to be kaolinite.

A second informant, working for the state government in Cuernavaca, told us of kaolin mining in the past near the village of Tlayca to the west, across the valley from Chalcatzingo. A hill immediately south of Tlayca is locally termed the Cerro de Caolin (Fig. 23.1). Unfortunately, at the time we went to Tlayca to take samples from exposures and tunnels on the hill, we were prevented from doing so due to an unfavorable local political situation.

At the moment, the value of locating kaolin sources for any reason other than to verify their presence is questionable. Unlike obsidian and iron ores, which can be characterized by trace minerals, kaolin, once fired, apparently cannot. Thus, present analytical techniques do not permit raw kaolin or kaolin ceramics to be associated with specific kaolin sources or analytically compared.

The question arises as to how important kaolin was in the Middle Formative. Amatzinac White sherds from Chalcatzingo were analyzed by X-ray diffraction at the Illinois Geologic Survey. The featureless readings strongly suggest that the slip is kaolin. It was definitely not a carbonate (lime) slip. We tested over 100 Amatzinac White sherds, taken at random from many site locations, with hydrochloric acid, which would have detected a lime carbonate slip, with negative results. "Whitewashed" daub fragments from a Cantera phase structure were also tested with hydrochloric acid, and again the results were negative. This suggests that the white pigment was probably kaolin.

In sum, the evidence for kaolin exploitation by Middle Formative Chalcatzingo is circumstantial. Kaolin was apparently used as the slip on the ubiquitous Amatzinac White ceramics, which data suggest were locally manufactured. Kaolin was also apparently used as a pigment for "whitewashing" structures. Chalcatzingo lies close to a kaolin source (or sources) known to have been exploited early in the twentieth century. If Formative period Chalcatzingo residents exploited this local kaolin, as they probably did, then they may have also exchanged kaolin to more distant villages lacking this clay. Although the Instituto Geológico de México (1923a; 1923b) data may be out of date, as of 1923 the source near Chalcatzingo was the only kaolin source listed for Morelos and one of only seven listed in all of central Mexico. If most Middle Formative white wares utilized kaolin slip (a hypothesis remaining to be tested), then the demand for kaolin would have been extensive, while the sources may have been few. Kaolin would have thus been an important commodity in the Middle Formative exchange networks.

CHERT

During the surface reconnaissance which covered almost the entire valley (Chapter 21), a small hill in the south-central valley (RAS-108, Appendix H) was found to be composed primarily of red chert. Numerous chert cores were found here, and red chert is found at many other sites in the valley. This suggests that RAS-108 was an important local chert source. Some of the chert artifacts at Chalcatzingo probably derived from this source, although the color variability among the Chalcatzingo sample suggests the possibility that other unidentified sources were being exploited as well (Chapter 18).

More data are needed on the color variability, quantity, and distribution of the RAS-108 chert within the valley and at sites outside of the area as well in order to determine to what extent Chalcatzingo and other communities were exploiting this source and how this chert was transmitted along exchange networks.

LIME

Limestone outcrops occur in the hills on the west and south flanks of the valley (Fig. 23.1). Some of these sources are commercially exploited today. Our evidence for lime use during the Formative period at Chalcatzingo is quite restricted. Excavations on S-39, the southernmost occupation area, uncovered a thin but somewhat extensive deposit of processed lime underlying Cantera phase vessels and burials (Fig. 4.36). Gravel-sized lime pebbles (also processed by firing) were occasionally found during excavations at other site areas (e.g., the Plaza Central cross-trench, T-9B, T-25), but never in associations which would allow the identification of their function.

There are data which lead us to believe that S-39 may have been a ceramic workshop area (Chapter 16). At the same time, we have no data indicating that lime was used in ceramic manufacturing. Our tests on Amatzinac White slip (above) suggest it is kaolin and not lime. Other slips, such as Laca, remain to be tested.

Lime could have been used in the preparation of corn, although the S-39 deposit is the only large lime concentration uncovered. While there are no substantial data to indicate that corn was processed with lime during the Middle Formative, the flat shallow plates with roughened bases (see the RD ceramic forms, Chapter 13 and Appendix D) may be early *comales* (griddles) which would further imply that tortillas made from processed corn were part of the Chalcatzingo diet.

Evidence for Classic period lime use is more extensive since three lime kilns from this period were found during our excavations (Chapter 24). The lime processed at Chalcatzingo was probably utilized in both maize preparation and the making of stucco. Traces of lime plaster occur on T-3 Structure 1, the round pyramid. The Postclassic hillside shrine also shows extensive use of lime plaster.

Figure 23.10. Boulder on hill with large cut.

Figure 23.11. Boulder on hill showing two cuts.

GRANODIORITE

Chalcatzingo's Formative period free-standing monuments are manufactured from the local granodiorite (*cantera*). While large boulders are abundant on this hillslope and could have been worked into almost any form, mining may have taken place at selected areas on the *cerros*. During the project we encountered an area midway up the southern slopes of the Cerro Chalcatzingo with a large partially worked and grooved slab (MCR-12) and other probable slab fragments nearby. More recent investigations of stone exposures above this area indicate that here the rock has natural lamellar fractures which would produce slabs suitable for stelae, etc., with less reworking necessary than would be required with other rocks. Two large, thick, horizontal-lying boulders in the immediate area had been partially cut through (Figs. 23.10, 23.11). These data indicate that quarrying and initial reworking of some *cantera* took place in this locale. Since we have no evidence for Classic or Post-classic use of large worked slabs, we presume this quarry to have been utilized during the Formative period.

Although there has been hacienda period and recent "mining" of *cantera* boulders at the base of the hill for use elsewhere (Chapter 2), there is no evidence that this was an important prehispanic source of monumental-size stone for the rest of the valley. Other sites in the area did not, to our knowledge, utilize stone stelae or monuments, and utilitarian implements would have been more readily fashioned from river stones easily accessible almost anywhere in the valley.

RESUMEN DEL CAPÍTULO 23

En el proyecto tuvo especial importancia la caracterización de las materias primas de los artefactos como medio para ganar información acerca del comercio e intercambio locales y distantes. Se centra la discursión alrededor de siete tipos de materia prima: mineral de hierro, obsidiana, piedra verde, kaolín, cal, quarzo, y cantera. Los resultados de los análisis probaron ser de valor fundamentalmente para entender la explotación de los recursos minerales dentro del Valle del Río Amatzinac.

La espectroscopía Mössbauer reveló que, de los muchos trozos de mineral de hierro encontrados en Chalcatzingo, la mayoría proviene de un área de recursos situada en la sección poniente del valle. Varios fragmentos de espejo pulido, sin embargo, son iguales a los que provienen de los recursos del Valle de Oaxaca, lo que sugiere que éstos hayan sido importados.

La activación de neutrón se utilizó para buscar la caracterización de elementos en los artefactos de obsidiana del sitio. El análisis indica que la obsidiana del Formativo Temprano y Medio proviene de dos recursos, Otumba y Paredón, ambos situados al nororiente del Valle de México. La información sugiere que la obsidiana probablemente fuera "reunida" antes de llegar a Morelos.

Los artefactos de piedra verde no se sujetaron al análisis de caracterización, por no existir suficientes datos de las áreas de recurso. Toda la piedra verde parece ser de importación en Chalcatzingo. Hay alguna muestra de que el trabajo del tipo blando de piedra verde se realizara en Chalcatzingo, probablemente limitado al consumo dentro del área local.

El kaolín era una materia prima importante utilizada para el engobe de la cerámica Amatzinac Blanco de Chalcatzingo y para blanquear algunas casas. Se conoce un recurso de kaolín cerca del sitio, pero el kaolín es una de las pocas materias primas que por naturaleza no pueden ser actualmente caracterizadas con éxito. Sin embargo, la proximidad de Chalcatzingo a esta importante materia prima implica que el sitio pudo haber jugado un papel importante en la distribución de este material durante el período Formativo Medio en las tierras altas del centro de México.

Se encontró una loma de quarzo al sur del valle (sitio RAS-108). Este material parece haber sido explotado localmente y distribuido por medio de una red de intercambio centralizada aquí, al sur del valle y no en Chalcatzingo.

La piedra caliza se encuentra en las lomas a lo largo del poniente y del sur del valle. La cal procesada se encontró en un contexto del Formativo Medio en Chalcatzingo, pero los usos a los cuales haya sido destinada no han sido determinados. La cal pudo usarse en el procesamiento de maíz, pero no parece haber sido usada como pigmento blanco en la manufactura de cerámica.

La cantera de la localidad sirvió como material para los monumentos con soporte propio encontrados en el sitio. Los trozos de roca se obtenían de los macizos que sobresalen en las laderas del sur del Cerro Chalcatzingo, en donde hay muestra de estos talleres todavía a la vista.

24. Classic and Postclassic Chalcatzingo

RAUL MARTÍN ARANA

In addition to Chalcatzingo's major Formative period occupation, there are components from later time periods as well. Román Piña Chan's 1952 research showed that Montículo A (our T-3 Str. 2), one of two mound structures which face a small rectangular plaza, dated to Teotihuacan III–IV (1955:7–9). Excavations during the three major field seasons of our project uncovered several additional Classic period structures on the main site area. Late Classic and Early–Middle Postclassic structures were also mapped in the Tetla zone of Chalcatzingo, and minor excavations were conducted. Classic and Postclassic artifacts occur as well in caves on the Cerro Delgado. Only one definite Postclassic architectural feature was found in the main site area, the so-called *adoratorio* which is discussed below.

CLASSIC PERIOD

Chalcatzingo was neither large nor apparently important during the Classic period. Several other sites in the valley overshadowed Chalcatzingo in these respects. San Ignacio (RAS-78), in the southern valley, may have been the area's major center. This fact is significant, for until the Classic period the southern valley was relatively unimportant, and the shift in focus to this area points to a major shift in the economy during this time, a shift which terminated with the end of this period (Hirth 1980).

Central and eastern Morelos reflect strong Teotihuacan influences during the Classic period, especially during the Teotihuacan III–IV phase. That such influences are far weaker in western Morelos is undoubtedly at least partially a reflection of central Mexican geography. Central and eastern Morelos are situated adjacent to the Amecameca pass in the Sierra de Ajusco. This pass connects those regions of Morelos with the eastern Valley of Mexico and Teotihuacan. Western Morelos is far more isolated geographically from the Valley of Mexico, and was certainly within the sphere of Xochicalco rather than Teotihuacan.

The small Classic occupation at Chalcatzingo pertains primarily to Teotihuacan III–IV. The largest site near Chalcatzingo at this time was Las Pilas (RAS-14), only a few kilometers to the southwest. This site, situated near a large spring, has recently been excavated and partially reconstructed (Martínez Donjuan 1979). These excavations uncovered a number of large caches of Teotihuacan III–IV ceramics. Several of the mound structures at Las Pilas are characterized by *talud*-cornice architecture, and such architecture also occurs at San Ignacio to the south.

The fall of Teotihuacan affected Classic period settlement throughout central and eastern Morelos. In the Río Amatzinac Valley the settlement pattern shows a shift in population back to the northern valley. The main site area at Chalcatzingo seems to have been abandoned, but occupation may have continued at Tetla. A comprehensive discussion of the valley during the Classic has been written by Kenneth Hirth (1980).

Pyramid Group (T-3)

The major Classic period monumental architecture on the main site area consists of two small pyramid mounds facing a plaza, as well as a small ball court to the north of the plaza. The pyramid-plaza group is situated on Terrace 3, near the northwest end of the site's uppermost and principal terrace, the Plaza Central (T-1). The largest mound, T-3 Structure 1 (Piña Chan's Montículo B; 1955:8), slightly over 9 m high, faces west onto the plaza. Our 1973 excavations of this structure were intended to define its dimensions and form.

Those excavations indicated that the structure is a circular pyramid (actually more ovoid than round), approximately 35 m in diameter at its base (Fig. 24.1). The pyramid's main staircase, including balustrades, is 8.01 m wide. R. David Drucker (1977) has suggested that Teotihuacan utilized a measurement unit equivalent today to 0.805 m. This mound's stairway width appears to be a basic multiple (10 ×) of that measuring unit.

The round pyramid was built onto the western end of the 70 m long Middle Formative period platform mound, PC Structure 4, which delimits the north side of T-1. The pyramid has an earthen core and an exterior facing of undressed stones, laid with their flattest sides outward. This stone exterior was once plastered, although only traces of the plaster remain today. The pyramid may have originally risen in three stages; however, our excavations and reconstruction were carried out only on the lowest stage. A small area of Classic period stone pavement had been laid onto the upper surface of the platform mound, adjacent to the rear of the pyramid (Figs. 24.2, 24.3).

The plaza area measures approximately 40 × 40 m. Piña Chan (1955:7) gives the dimensions as 60 × 50 m, but these may relate to the basal measurements of the plaza, which is raised above the terraces to the north (T-15) and west (T-5).

Piña Chan's excavations concentrated on the smaller of the two pyramid structures. The excavated and partially reconstructed structure, Montículo A (our T-3 Str. 2), lies on the plaza's south side. It is a two-stage quadrilateral structure. The lower stage, which measures 24 m per side, had a height of approximately 1.4 m. It may have had *talud-tablero* architecture. The upper stage, 18 m per side, had a height of 1.7 m (Piña Chan 1955:7). Although Piña Chan's project partially reconstructed this structure, it is today again a featureless mound.

Figure 24.1. T-3 Structure 1 pyramid.

Figure 24.2. Pavement behind T-3 Structure 1.

T-15 Ball Court **(T-15 Str. 2) (Figs. 24.4, 24.5)**

Our initial surveys of Chalcatzingo in 1972 determined that a long low mound occurred on T-15 (Str. 2) slightly north of PC Structure 4, the 70 m long platform mound. It was suspected that this smaller mound might have somehow functioned as part of a ball court structure in conjunction with PC Structure 4, although the T-15 mound is dwarfed by PC Structure 4, which rises nearly 8 m above it. Excavations in 1973 began with a north-south cross-trench across the T-15 mound and onto the northern slopes of PC Structure 4. Additional trenches were placed in the area between the mounds in order to identify "end zones," the playing alley floor, and other features. This work served to delimit the structural features on the north and south portions of the T-15 mound as well as Classic period construction on the north slope of PC Structure 4.

The Classic portions of PC Structure 4 represent additions onto that Middle Formative structure. These constructions changed parts of the north slope of PC Structure 4 into the south range structure of the ball court. This construction terminated in a long east-west wall about halfway up the slope of PC Structure 4 (Fig. 24.6). Unfortunately, heavy erosion on the slopes has destroyed almost all other vestiges of that construction.

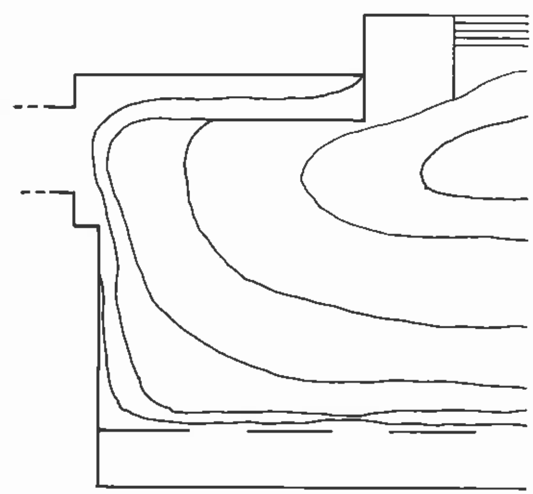


Figure 24.4. Topographic map and profile of T-15 Structure 2 ball court.

Figure 24.3. Close-up of pavement behind T-3 Structure 1.

T-15 Structure 2, the north range of the ball court, is 41.5 m long and is oriented N87½W (true north). Two building episodes were found for this structure. The earlier structure is 11 m wide, while the later addition increased the width to 12.3 m. The sloping playing bench of the second episode may have had an angle of 10° and a width of about 9 m. The slope of the earlier bench cannot be determined.

The first building episode of the north ball court structure used large stones turned flat side outward. There is no plastering apparent on the stones. The outer (second) structure exhibits faced, perfectly laid stones, re-covered with plaster. Plaster was also used on the playing alley floor of the second (later) ball court. The back or north side of T-15 Structure 2 is characterized by a 23.5 m long stairway of three steps bordered on each end by a 2.3 m wide balustrade. The stones that support the exterior ball court walls were carved in a special form. They are well shaped and well faced, and each has a wide raised upper front edge (Fig. 24.7). These stones serve as the front basal stones for the balustrade. Sloping stones rest against them, and the raised front edge provides support for the upper stones and prevents their slippage. This construction form is characteristic of sites of this period in Morelos, the Valley of Mexico, and Teotenango in the State of Mexico. Above the rear stairway,

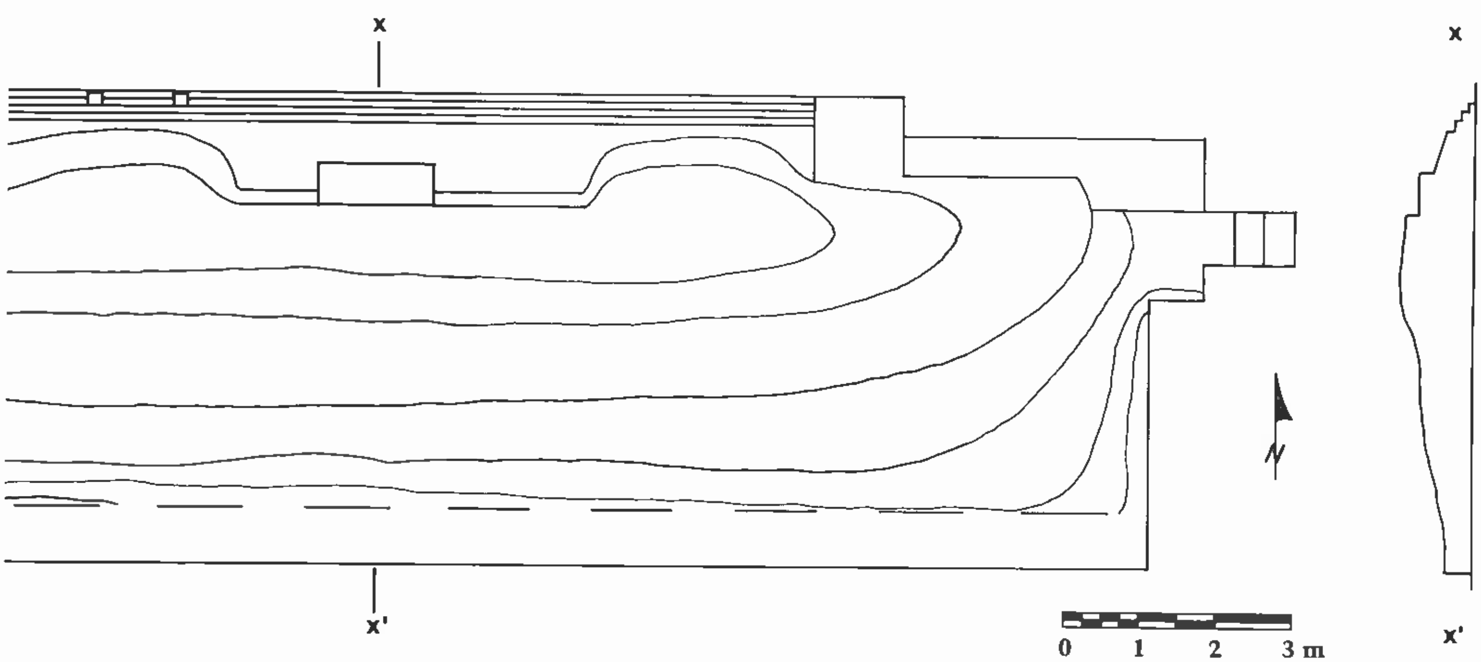


Figure 24.5. Reconstruction of ball court steps. Photo taken several years after reconstruction.

Figure 24.6. Ball court upper wall on slope of PC Structure 4.

and centered at the back of the ball court structure, is a small rectangular altar-like construction 3 m long by 1 m wide and about 30 cm high.

Excavations within the playing alley area disclosed no structural features at either end of the ball court, indicating that the playing alley was open-ended. Its length therefore cannot be determined, but its width for the second building episode was 8 m. A test trench in the center of the playing alley uncovered an offering of five seated clay figurines, 60 cm below the playing alley floor (Fig. 24.8). Four of these figurines were grouped in a circular fashion around the central figure (Fig. 24.8*c*). All of the figures were handmade, decorated with red and blue paint, and relatively elaborate. Each is between 10 and 15 cm high. Also within the center of this circular group was a disc of greenstone, perforated in the center, and a cylindrical object of clay with streaks of paint.

T-15 Platform **(T-15 Str. 4)**

The 1972 and 1973 field research included monthly false-color infrared "aerial" photography of the site to detect unusual moisture and vegetation growth patterns (Chapter 1). These photographs clearly illustrated an unusual moisture pattern on T-15, with some areas drier than others. Upon field inspection, these drier areas were found to be slightly raised and to have surface sherd quantities greater than the surrounding areas. One such raised area occurred 60 m north of the T-15 ball court, adjacent to the terrace's north edge. Excavations were initiated on this slightly elevated portion of the terrace in 1974 and immediately uncovered walls both within and slightly below the plow zone. The wall lines delimited a rectangular structure with an entrance threshold on the west side (Fig. 4.26).

The structure apparently had two building episodes. The earlier is represented by walls delimiting a principal floor area of ca. 5 × 6 m. The exact dimensions are impossible to define because the southern end of this structure has been destroyed by plowing. An enlargement to the floor area approximately 1 m wide later increased the principal floor to 6 × 6 m. The wall alignment of the earlier building stage is N16½E, while the alignment of the second stage is N13½E, only one degree different from the T-4 platform alignment.

Figure 24.7. Shaped stones forming part of exterior ball court walls.

Included in the wall line of the structure's threshold are nicely faced stones with a wide raised edge, identical to those found on the balustrades of the T-15 ball court. From their position it seems unlikely that these stones served the same "support" function here that they did on the ball court. Grove (personal communication) is of the opinion that the persons originally constructing this platform structure removed these stones from the ball court structure. This suggests that the ball court was no longer functional at the time of this construction. Since we have no dates for either of these structures, this remains conjecture.

Although they are within the plow zone, some of the floor area and exterior wall lines have sections of plaster remaining. The exterior wall stones of this structure are small in comparison to those of other Classic structures on the site. It is my impression, although the structure is quite destroyed (particularly on the east and south sides), that it originally had a height of about 50 cm from the base of the threshold to the floor. No postholes were discovered on the floor level. Because looters' pits and plowing have destroyed many sections of this "platform," all traces of any upper building on it may have likewise been destroyed. We can therefore only speak of this as a platform-like structure. Associated artifacts clearly indicate that it is Late Classic in date.

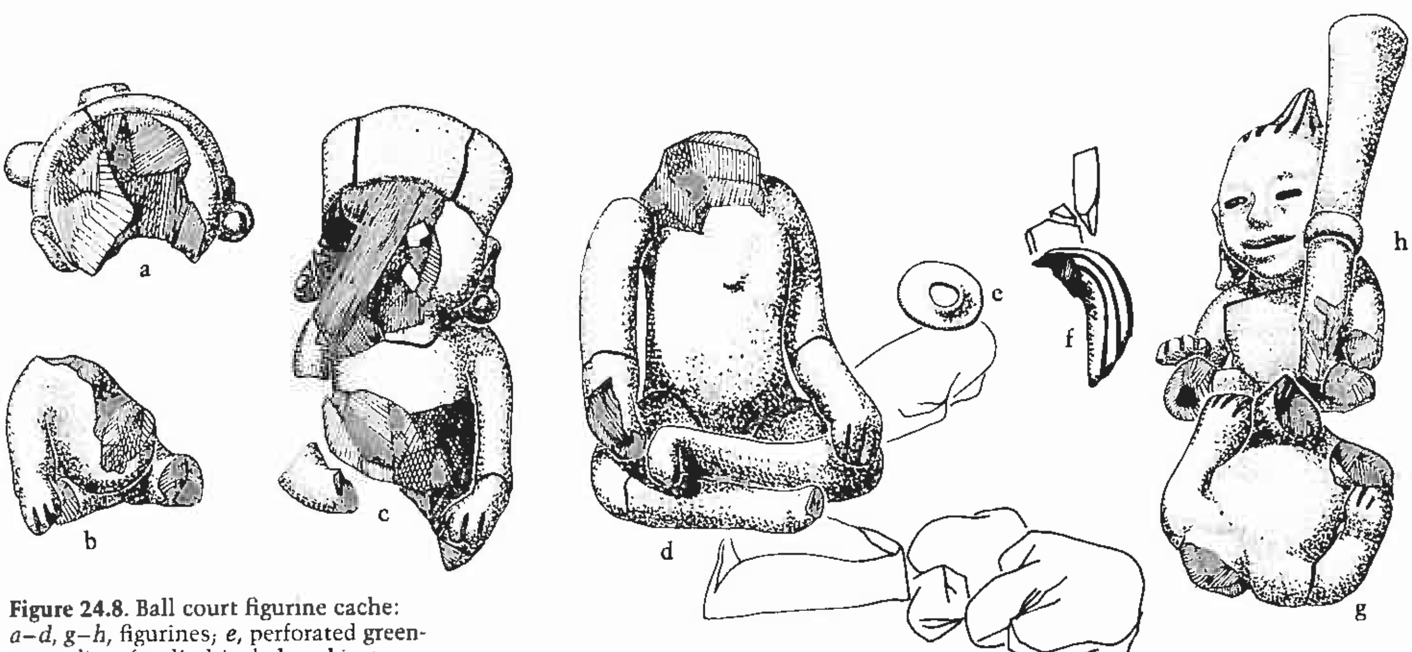


Figure 24.8. Ball court figurine cache: *a–d, g–h,* figurines; *e,* perforated greenstone disc; *f,* cylindrical clay object.

***T-4 Platform* (T-4 Str. 3)**

Our 1982 excavations on T-4 uncovered, amid a confusion of Middle Formative wall lines, a low Classic period platform structure (T-4 Str. 3; Fig. 4.15). The structure, which is quadrilateral, measures 4.8 m in width and has "back wall" lines at 3, 3.8, and 4.8 m from the front of the structure. The walls of the structure are highly destroyed and in their present condition are not straight. Therefore, the exact dimensions and orientation of this platform structure are generally difficult to ascertain. The front of the structure and the balustrade have an apparent orientation of N12½E (true).

The platform rises only about 20 cm, and the walls are delimited by faced stone. The front of the structure has a 2.2 m wide balustrade, although on a structure this low, the balustrade appears to have been of a "formal," obligatory architectural nature, rather than functional feature. The stones along the front of this platform are slightly sloped (Fig. 24.9), a characteristic typical of many Classic period constructions at Chalcatzingo. It is apparent that this platform was constructed not by building upward, but by excavating the surrounding soil from around the areas desired for the platform, leaving the platform rising from this excavated area.

Figure 24.9. Slightly sloping front wall of T-4 platform (T-4 Structure 3).

The Classic period excavations which created this raised platform went through the floor of a Middle Formative structure, and thus the upper surface of the platform is also the floor surface of that Middle Formative (house?) structure. It is probable that some of the damage to the T-4 Middle Formative architectural features uncovered by the project's excavations is due to Classic period construction and destruction and the Classic period use of Middle Formative wall stones.

It is perhaps significant that the large rock which we designate as MCR-19 (Figs. 11.18, 11.19) with a quadrangular design of pit marks and grooves, lies only a few meters west of the raised platform. Naked-eye sightings taken along the alignments of the pit marks cross both the large round Classic pyramid (T-3 Str. 1) and the T-4 Classic platform (Grove, personal communication). The alignment of the MCR-19 quadrangle is likewise within 1° of that of the platform. Because the platform had been reburied prior to the discovery of MCR-19, exact sightings between the quadrangle and the platform's features could not be made, although a meaningful association between the stone and the structure is presumed.

***Lime Kilns* (T-4 Str. 4, T-23 Feas. 4 and 7)**

Three Classic period lime kilns were uncovered during the excavation of Middle Formative structures. The largest kiln is located on T-4 (Fea. 4). Two smaller kilns were found on T-23 (Feas. 4 and 7). All three kilns are subterranean and intrusive into Middle Formative structures. All are described and discussed in detail by Teresita Majewski (1976b), who also draws comparisons with ethnographic examples in Mesoamerica. Only a few basic details of the kilns are presented here.

The T-4 kiln (Figs. 24.10, 24.11) was almost round, with a diameter varying between 2.8 and 3.1 m and an approximate depth from lip to base of 2.3 m. The walls of the kilns slant inward at an angle of approximately 75°, thus creating an inner basal diameter of approximately 1.8 m. The kiln walls are constructed of large, relatively flat stones, flat side facing inward. They have been set in a mud mortar.

The upper 1 m of this feature contained fill which was largely loamy soil, sand lenses, and one concentration of calcitic rock. Near the bottom of the feature were layers of calcitic rock sandwiched between layers of charred earth, charcoal, and ash. When the feature was completely cleared, fire blackening of the lower sides was evident.

Over five hundred cobble-sized stones were removed from the lower levels of the feature. Of these three hundred were tested with hydrochloric acid, and 82 percent tested calcitic. Many could be seen to be in various stages of calcinization from limestone to lime. These data indicate that the function of this feature was indeed that of lime burning.

Ceramic material within the kiln was relatively sparse, but the fill did include both Middle Formative and Classic period debris. In one of the lowest levels, a Teotihuacan IV mold-made figurine head was found together with Teotihuacan IV sherds. A radiocarbon sample from the lowest charcoal layer in the kilns (N-1694) yielded a date of AD 690 ± 80 (Table 5.1).

The 1974 excavations of Middle Formative structures on T-23 uncovered two small intrusive Classic period lime kilns. One (Fea. 4) has a diameter of about 2 m, the other (Fea. 7) of 1.2 m. Both kilns have lip-to-base depth of about 1 m. Neither kiln was excavated due to time limitations.

It is probable that the western end of T-23 where the two kilns occur, as well as the area immediately to the north (between T-31, and T-33 and T-35) was an area of Classic period lime production. Limestone rocks, some partially calcined, occur on the surface of this area. Limestone is not indigenous to this hill or this section of the valley, but outcrops do occur in the southwest portion of the valley (Fig. 23.1).

T-17 Platform and T-7 Wall Lines

Northwest of the T-3 Classic pyramid-plaza group, at the western end of T-15, there is an approximately 2 m rise onto T-17. Excavations on the western end of T-17 uncovered, at a depth of 35 cm below the surface, the top of a 70 cm tall, well-built sloping wall running north-south (declination N6½E). This wall, when taken with the raised configuration of this entire terrace, suggests that most of T-17 itself is a raised, stone-faced Classic period platform. This platform covers an area of roughly 35 × 70 m. It is possible that a small mound structure might be present on the northwest end of this platform (see topography, Fig. 4.2), although we did not test for such a structure. This large raised platform appears to form the western end of the Classic period ceremonial complex.

On T-7, directly south from T-17, a number of large boulders protrude from the ground surface. These boulders occur in two straight lines with alignments of roughly N83½E and N86½E. One stone in this group, excavated by a villager one weekend in 1974, was discovered to have the faint, weathered remains of a bas-relief carving, and is apparently a Middle Formative stela (Mon. 24), which had been buried upside-down as part of the wall line. This suggests that the wall is post–Middle Formative. The fact that the boulder line has a general right-angle alignment to the T-17 platform wall, as well as its proximity to the T-17 platform, suggests that the boulder line dates to the Classic period.

T-20 Structures 2 and 3

Surface reconnaissance showed a concentration of Middle Formative white ware sherds in the area of a marked slope change on T-20, a hillside terrace. Excavations in this area uncovered within the plow zone the partially destroyed remnants of Classic period walls and floors which are part of structures overlying Middle Formative deposits (Fig. 4.28). Looting and erosion are responsible for bringing substructure Middle

Figure 24.10. Classic lime kiln (T-4 Structure 4) at beginning of excavation.

Figure 24.11. Classic lime kiln (T-4 Structure 4) after excavation.

Formative sherds onto the surface of this area, as well as for the general destruction of the Classic period structures.

Only the south side of Structure 2 was well preserved (Fig. 24.12). The exterior walls are of large unfaced, naturally smooth stones, placed flattest side outward. Rounded river cobbles are also included in the exterior wall line. No evidence of plastering occurs on the walls or floor area.

One wall section of Structure 3 (Fig. 24.12) was built of flat stones set at a slope of about 60°. Similar sloping *talud* sections are found on the T-4 Classic platform's front face, and also occur on a far larger scale on the T-17 platform walls. Such a sloping *talud* suggests that the southern wall of this structure was the front wall.

Nine Classic period burials were uncovered during the T-20 excavations, seven of which were within the probable subfloor area of the structures. The subfloor burials usually occurred in groups of two to four individuals (adults, children, or both; see Appendix C, Burials 67–72, 74–76). The presence of these burials suggests that these structures were residential rather than ceremonial constructions. Two Middle Formative burials and destroyed wall lines were also recovered in the excavation of this area, indicating that a Middle Formative structure once existed here as well.

Figure 24.12. Classic period walls on T-20: Structures 1 (*background*), 2 (*center*), and 3 (*right foreground*).

***T-27 Structure 2* (Fig. 4.34)**

Excavations at the north end of the thumb-like terrace of T-27 uncovered walls within the plow zone. These appear to be part of a Late Classic (Teotihuacan IV) structure. Time did not permit the clearing of the entire structure, but several features are worth noting. The walls are all composed of large unfaced stones. There are no sloping walls such as were found with the T-4 platform or the T-20 structure, and the construction is far more massive than that of other Late Classic structures found on the site.

Three burials were recovered during the excavations (nos. 121, 125, 135). Burial 135, highly fragmentary, was found within a small rectangular stone crypt located in a wall line on the southeast side of the excavation. Associated with this interment was a cache of thirteen Teotihuacan IV vessels (Fea. 1), seven of which were Thin Orange ring-base bowls (Fig. 24.13).

T-9A

T-9A excavations disclosed the remains of a very destroyed Middle Formative structure. However, the area apparently was also utilized during the Late Classic, since excavations also revealed one Late Classic vessel, and two of the four radiocarbon dates run for T-9A pertain to the Classic period (N-1414: AD 510 ± 80, N-1415: AD 560 ± 80; Table 5.1). It is possible that Classic period inhabitants of this terrace reutilized existing wall foundations from the Middle Formative structure. Heavy erosion and modern plowing, both responsible for destroying most of the Cantera phase structure, undoubtedly removed almost all traces of the overlying Classic remains.

CT-2

On the slope below and east of Relief Group I-A (Mon. 1, "El Rey") and immediately to the west of the El Rey Drainage is a small stone platform excavated in 1973. When excavations began, the feature looked like a random pile of small rounded river cobbles. However, clearing excavations showed it to be a platform structure approximately 3 × 3 m², with a small extension to the east giving the entire structure an L-shape. Although the majority of the stones comprising the structure are rounded river cobbles, several lines of larger, flatter stones delimited its outer walls. The small platform, on its highest (north, downhill) side, is only about 45 cm tall. An inverted metate near the front center may have served as a "stair" onto the platform. Classic sherd fragments serve to date this platform.

Classic Period Burials

Classic period burials occasionally occur intruded into Middle Formative structures (see Chapter 8 for discussion). They are usually individual occurrences (e.g., T-4, T-24, T-25), and are catalogued in Appendix C.

Classic Pictographs

A large number of rock paintings occur at Chalcatzingo, and they are discussed in detail in Chapter 12. Because most consist of very simple motifs, they are difficult to date through stylistic similarities to other Mesoamerican art. However, the paintings found in Cerro Delgado Cave 19 (Fig. 12.45) are more complex and exhibit strong similarities to the art of Teotihuacan, while sharing attributes with Chalcatzingo's cruder paintings as well. This suggests that the majority of the paintings may date to the Classic period.

Figure 24.13. T-27 Structure 2, Feature 1 vessel cache.

Figure 24.14. Postclassic shrine (*adoratorio*) on hillside below Monument 2 (reconstructed).

Tetla

One other Late Classic occupation zone occurs at Chalcatzingo: the Tetla zone, located on the northeastern side of the Cerro Delgado. Our knowledge of the Classic period here comes through surface collections and a few stratigraphic pits. Because many of Tetla's mounds appear to be Middle Postclassic (although some may overlie earlier Classic constructions), the description of Tetla is given in the next section of this chapter.

POSTCLASSIC PERIOD

Postclassic structures and artifacts were found on two areas of Chalcatzingo: the main site zone and the Tetla zone behind the Cerro Delgado.

Wall lines and plaster fragments were discovered while clearing brush on the hillslope below Monument 2 during the first year of the project (Grove and Angulo 1973:25–26). Subsequent excavations uncovered a series of wide stairways and platforms, all with traces of plastered surfaces. These extend for about 30 m up the hillside, attain a maximum width of over 10 m, and end at the base of the boulder cluster containing Monument 2 (Fig. 24.14). This Postclassic structure, which the project reconstructed, we term the *adoratorio* (shrine). This structure is unique in the region, and its location strongly implies that it was directed toward the veneration of Middle Formative Monument 2. Grove (1972b:36) has noted that this (or the Cerro Jantetelco) might be the Teocuicani shrine mentioned by the sixteenth-century chronicler Fray Diego Durán.

Ceramics recovered during the excavations of the *adoratorio* include large brazier fragments with pendant clay ears of corn, figurine fragments, and Tlalhuica Polychrome sherds (Fig. 24.15). The sequence of Postclassic ceramics is still in question in this area; the structure may be Middle or Late Postclassic in date. Similarities between the *adoratorio* sherds and those from the house excavated on terrace Tetla-11 (Chapter 25) argue for a Middle Postclassic date.

The evidence of Postclassic "occupation" on the main site area consists mainly of a few Mazapan figurine fragments recovered from a trash pit in T-27 Structure 2 (Fea. 1; Fig. 4.34). There is, however, good evidence for a significant Postclassic occupation at Tetla. The Tetla zone lies between the barranca of the Río Amatzinac (which runs east and then

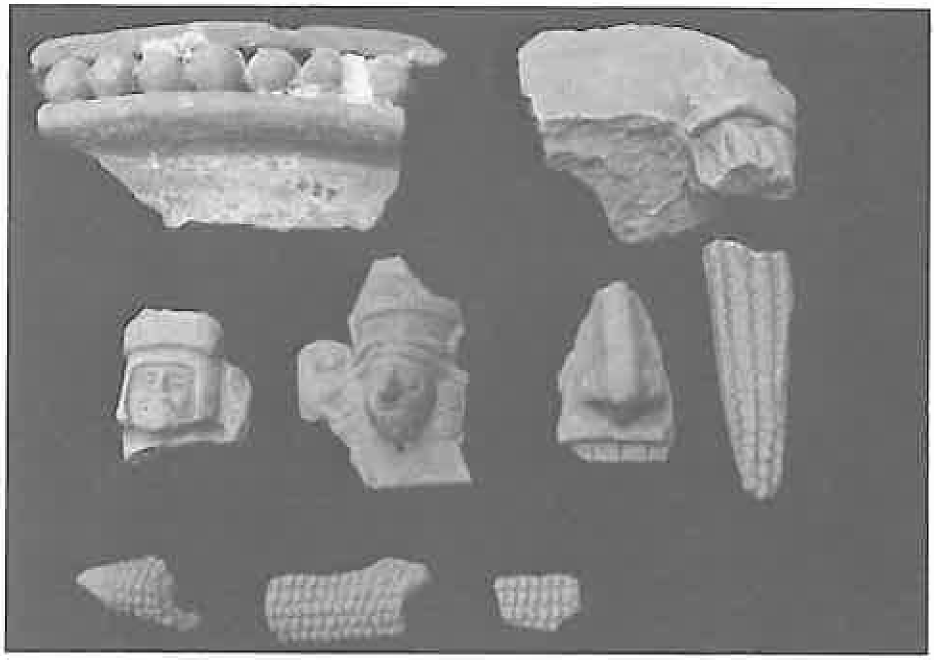


Figure 24.15. Postclassic vessel sherds and figurine heads from excavation of shrine.

south to delimit two sides of the zone) and the eastern (rear) face of the Cerro Delgado (Fig. 24.16). Surrounded by the deep barranca and the cliffs of the *cerro*, Tetla has relatively restricted access and is in a naturally defensible position. This may or may not have been a significant locational factor for the Late Classic–Middle Postclassic occupation here.

Tetla has approximately 14 ha of flat terrain between the barranca and the steep hillslopes which define the zone's western and southern limits. A large portion of this L-shaped flat expanse, which extends along the northeast and east of the Cerro Delgado, may represent Formative, Late Classic, and Early–Middle Postclassic modifications of the original ground surface. A deep stratigraphic test pit on the terrace Tetla-11 revealed nearly 3 m of mixed fill which included Late Classic sherds and thus can be tentatively dated to that period.

This flatland area contains the largest mound structures at Tetla and includes the three "occupation zones" defined by the project's regional settlement survey (Appendix J: RAS-1A, -1B, -1C). At the northeast end of the area is a low, artificially leveled hill surmounted by two large mounds (Str. A-1, A-2) and at least one plaza area (Figs. 24.17, 24.18). Debris from a looter's pit on the east side of one mound included a tubular clay drainpipe (Fig. 24.19) similar to those from Tula, Hidalgo, described by Dan M. Healan (1974). South of the hill are a variety of small mound groups as well as a large raised platform (Str. B) made up of a rock and earth core and supporting a mound (Figs. 24.17, 24.18).

To the west of the main hilltop structures is a second grouping of mounds, including a definite ball court (Fig. 24.7). This ball court (Str. C), on Tetla Terrace 1, consists of two parallel mounds about 30 m in length and 1.5 m in height, separated by a playing alley ca. 6 m wide. The approximate orientation of the ball court is N64½W. An old colonial period road running from Chalcatzingo to Tenango cuts through Tetla and may have destroyed the eastern end of the ball court.

To the east of the ball court is a large, unusual horseshoe-shaped mound (Str. D) about 2 m tall, with the mouth opening to the west. The path from the mouth to the interior of the structure drops another 2 m, making the interior area ca. 4 m lower than the top of the surrounding stone walls. This inner area measures approximately 10 m east-west × 6 m north-south. One characteristic of this odd-shaped mound, seen in the quantity and type of vegetation growing there today, is the greater moisture within the inner area. This suggests that the structure may surround an old spring or well. Small springs do occur along the base of the *cerros*, and a spring or well would have been a possibility here.

It should be noted that water for Tetla was probably taken from the barranca, and one of the few access trails to the barranca begins just north of this structure. In the barranca, at the end of this trail, is a bedrock mortar group adjacent to the river (MCR-21; Fig. 24.20). During times of heavy rain when river water is extremely muddy, or in periods of dryness when the river is a mere trickle, or possibly during periods when the site was being defended, an on-site water source would have proven to be of value. Obviously the true function of the U-shaped mound remains to be tested by future research.

Excavations in 1974 revealed a Middle Postclassic house structure on Tetla Terrace 11, to the north of the horseshoe-shaped mound. This house is described in Chapter 25.

To the north of Tetla's flatlands are the steep eastern and northeastern slopes of the Cerro Delgado. Here are long, thin terraces which create a total of about 4.5 ha of additional land for cultivation. These terraces are still maintained and farmed today. Small mounds occur on several of the terraces, and surface debris includes great quantities of Late Classic and Early–Middle Postclassic undeco-

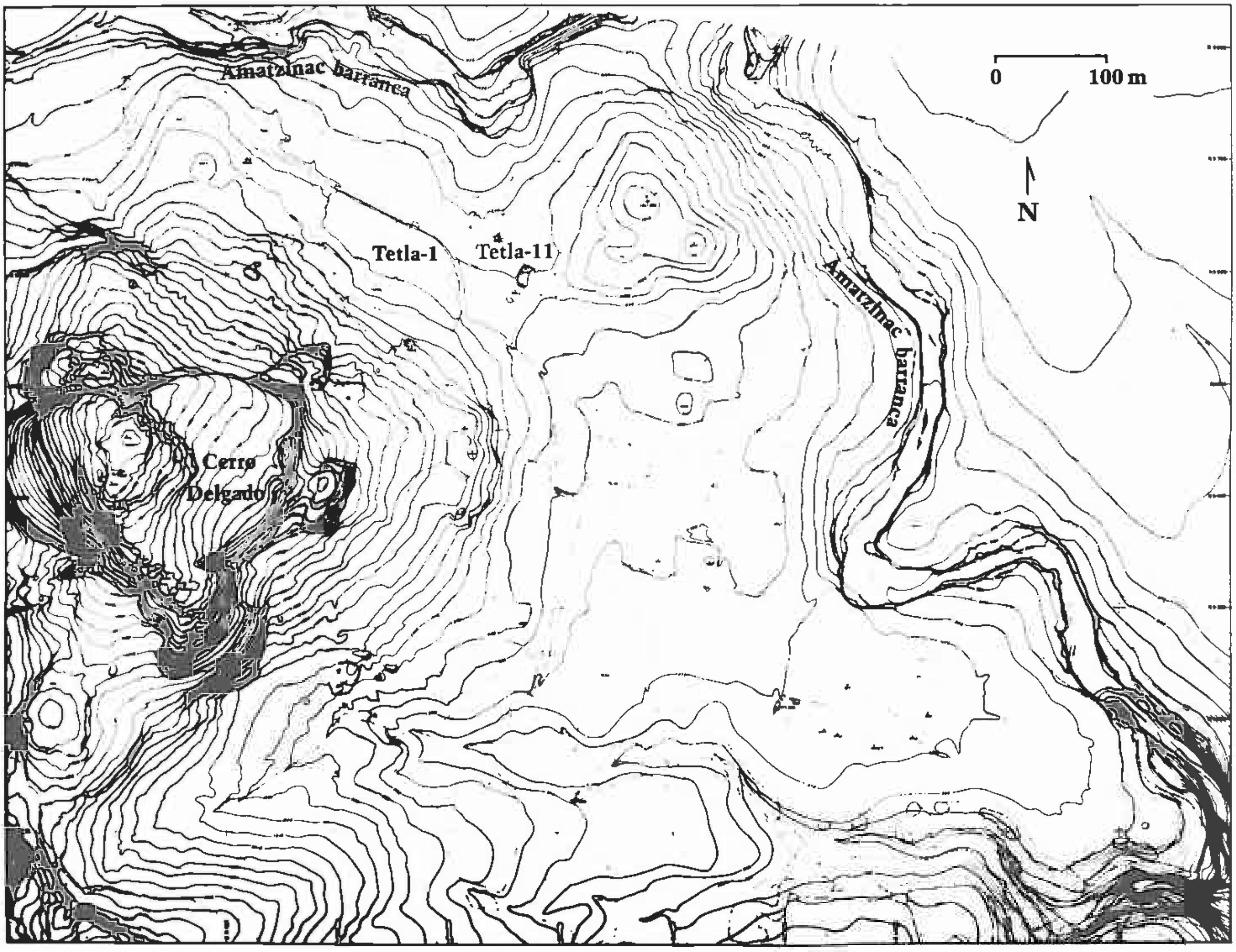


Figure 24.16. Tetla site area.

Figure 24.17. Northeast section of Tetla, showing **ball court** (*center foreground*) and pyramid-plaza complex atop hill (*right background*).

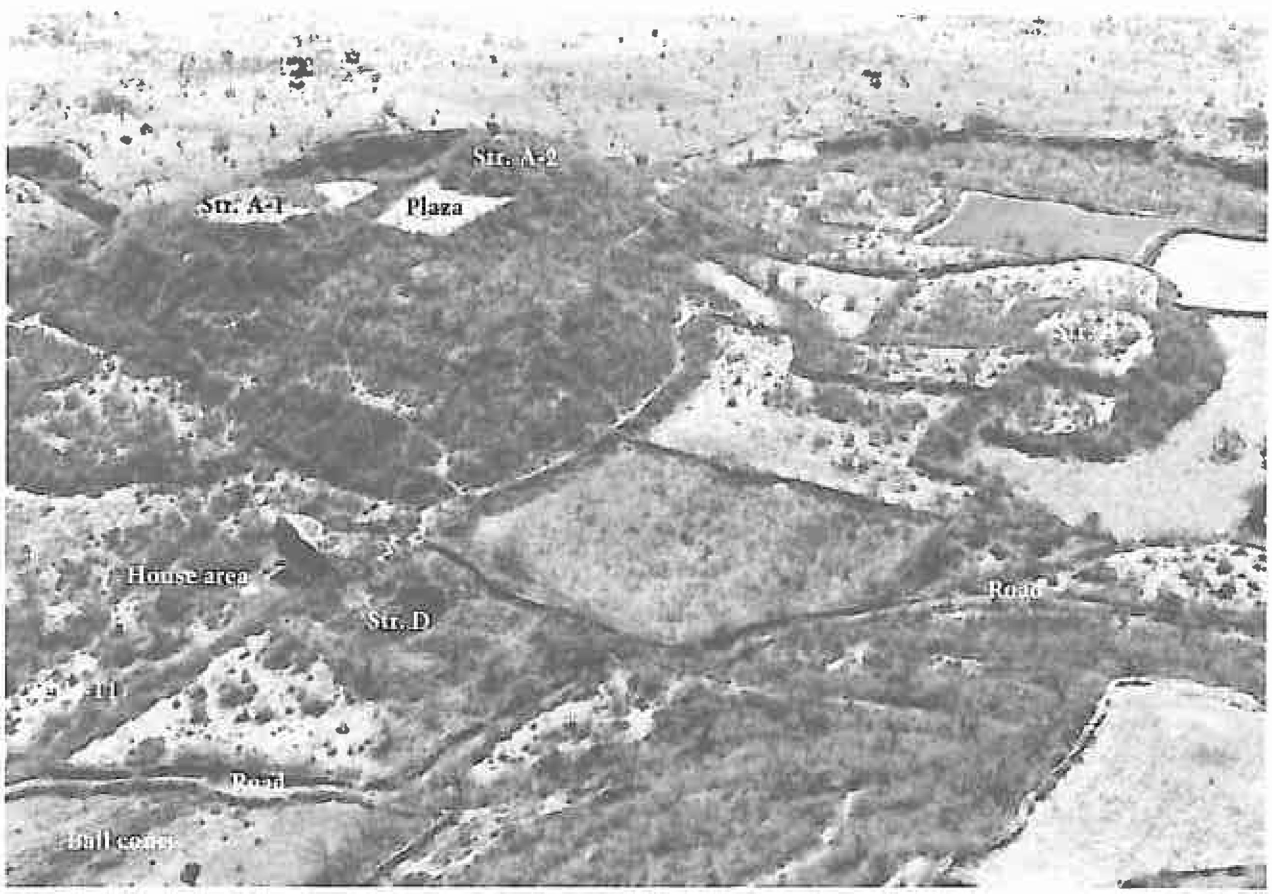


Figure 24.18. Eastern section of Tetla.

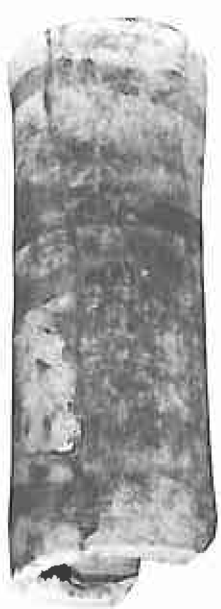


Figure 24.19. Postclassic tubular pipe (stripes are clear tape holding object together). Length: 34 cm.

rated utilitarian ceramics as well as obsidian and other stone artifacts. The surface assemblage implies that at least one function of these terraces was habitation. Many small and naturally flat sections of the hillslopes have concentrations of ceramics and stone artifacts as well, indicating that these too served as habitation areas.

The southern border of the Tetla zone is formed by a long ridge which extends eastward from the back of the Cerro Chalcatzingo to the river barranca. Grove's reconnaissance of this ridge in 1967 (Grove 1968b: 277) and subsequent surface surveys during this project located a number of small terraced areas with occupation refuse on the ridge's north (Tetla) side.

Above Tetla, at the junction between the cliffs of the Cerro Delgado and the steep talus slopes, are several caves (nos. 1, 2, 16; Fig. 12.37). Today these are sometimes used for storing bundles of grass to be used as cattle fodder. Informants have told us that the caves were also used as a refuge by Zapatista revolutionaries, and excavations in Cave 1 yielded a one-*centavo* coin with an 1890 date, while Cave 16 contains the remains of a stone wall and a small trench, possibly for defensive purposes. The caves also contain Formative, Classic, and Postclassic period artifacts. Floral remains recovered from Cave 2 are listed in Appendix A.

The top of the Cerro Delgado is partly comprised of an eastward-sloping plateau (Fig. 12.37). Access to the plateau is possible only from Tetla, and vestiges of highly eroded pecked footholes still exist on one cliff slope. One village family still climbs the cliffs sometimes to plant tomatoes on the ca. 1.5 ha of usable land on the plateau. Several small caves are found in the cliffs at the uphill portion of the plateau (see also Chapter 12). The plateau's surface is littered with ceramic debris identical to that on Tetla's flatlands. A small mound built atop an artificial platform occurs at the highest point on the Cerro Delgado.

COMMENTS

It is worth noting that there are a wide variety of ceremonial and habitation zones at Tetla. While Tetla's earliest settlements appear to be Middle and Late Formative, its heaviest occupation seems to have taken place during the Early–Middle Postclassic. The variety of habitation areas at Tetla suggests that the site could yield interesting data on social stratification patterns. The one house excavated (Chapter 25) was located within the Middle Postclassic ceremonial zone. It was a large, well-made house with plaster floors. However, the hillside slopes also contain habitation debris, but either on small terraces or natural flat areas on the hillsides, neither of which is large enough to sustain a dwelling the size of the excavated structure. Plaster fragments are also missing from these latter locales.

Taken as a whole, these data suggest three types of residential structures, possibly related to levels of the society: (1) large houses; (2) houses on small artificial hillside terraces; and (3) houses on natural flat areas of the hillside slopes. A possible fourth type could be related to cave habitations, although it is not clear at this time whether cave utilization was for habitation, specialized activities, or ritual use.

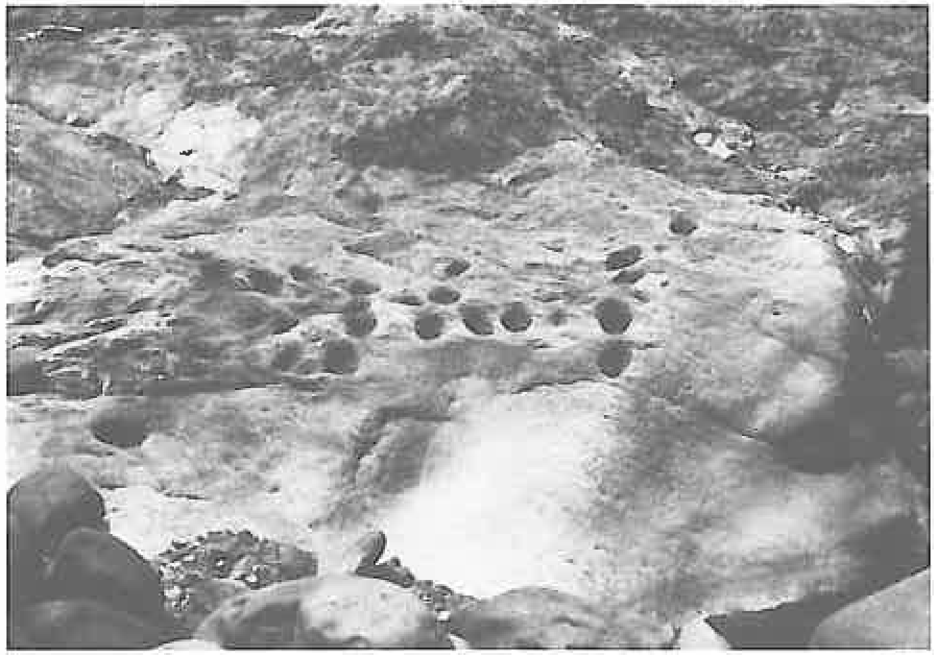


Figure 24.20. Mortar holes (MCR-21) in barranca below Tetla.

RESUMEN DEL CAPÍTULO 24

El pequeño poblamiento del Clásico en Chalcatzingo pertenece fundamentalmente al período Teotihuacan III–IV. La arquitectura monumental importante del sitio para este período consiste de dos pequeños montículos piramidales que miran hacia la plaza (T-3) y una cancha de pelota al norte de esta plaza en T-15. El montículo más grande, T-3 Str. 1, es una pirámide redonda. Las otras construcciones del período Clásico en la zona principal del sitio incluyen varias plataformas, tres hornos de cal, y posibles estructuras de casas con entierros asociados. Algunas de las pictografías más elaboradas del sitio pueden fecharse al período Clásico, sobre la base de que presentan semejanza de estilo comparadas con los murales teotihuacanos. Tetla también tuvo un poblamiento pequeño del Clásico, pero su componente más importante está fechado en el Postclásico Medio. La única estructura del Postclásico, encontrada en la zona principal del sitio, es el complejo escalera-plataforma que conduce hacia arriba al santuario dedicado al bajorrelieve del Formativo Medio, Monumento 2. El fechamiento de esta estructura usando la cerámica asociada permanece incierto, aun cuando es probable que sea Postclásico Medio. La arquitectura del Postclásico en Tetla incluye un número de estructuras, entre las que se encuentran un complejo montículo-plaza en la cima de una pequeña loma artificialmente elevada, y una cancha de pelota. A semejanza de la zona principal del sitio, existen aquí terrazas artificiales, las que probablemente ubicaban algunas de las estructuras de las casas, así como las tierras de cultivo. Además, algunas de las cuevas del Cerro Delgado tuvieron ocupación durante el Postclásico Medio.

25. The Excavation of a Postclassic House at Tetla

LYNETTE NORR

The Tetla zone of Chalcatzingo lies on the north and east sides of the Cerro Delgado (Chapters 2 and 24). Reconnaissance during the 1972 and 1973 field seasons together with data gathered in 1967 (Grove 1968b:277) indicated the presence of Postclassic occupation and ceremonial structures there. One major question prior to excavations at Tetla in 1974 was whether Tetla represents the Late Postclassic period village site of Chalcatzingo, as stated in village tradition (Morayta 1980:36). Results of our research show Tetla to have been occupied primarily during the Middle Postclassic (Second Intermediate: Phase Three [AD 1150–1350]; Sanders, Parsons, and Santley 1979), with Epiclassic and possibly some Early Postclassic occupation, but no Late Postclassic. Middle and Late Formative materials were also recovered during the excavations and in surface collections.

This chapter concentrates on terrace Tetla-11, where the 1974 excavations uncovered a four-room habitation structure. The spatial distribution of artifacts within the structure is described, activity areas are identified, and the probable uses of each room are discussed. A description of the artifacts can be found in Appendix I. The chapter concludes with a discussion of the implications of these data in terms of this period of central Mexican culture history.

THE EXCAVATIONS

The Tetla-11 terrace lies north of the Cerro Delgado and west of the major Postclassic mound structures of the site (Figs. 24.16–24.18). At the time of the excavations the land had been unplowed for many years and functioned mainly as pasture. Much of the area was covered by short grass and *huizache*. The excavation area was laid out at the eastern end of the terrace at the base of an 8 m tall boulder which dominates the field. The units were established with a grid orientation of N54½W.

Upon beginning the excavations it quickly became apparent that a well-preserved structure floor lay less than 30 cm below the surface. Over 57 m² of area was opened, exposing a four-room structure (Fig. 25.1). All artifacts directly on the floor were mapped in place.

On the southwest side of the structure is what may be a courtyard or patio area. This area is littered with many small stones mixed with adobe and burned hard-packed earth. No walls such as are typical of house courtyards today were found enclosing the area.

THE STRUCTURE

The structure appears to have been a house, constructed in two stages. The eastern three rooms, B, C, and D (see Figs. 25.2, 25.3), constitute Construction Stage 1. An interior double wall and the specific artifact remains found on the floor of the larger western room, A, suggest that Room A was a later addition, Construction Stage 2. This addition created a narrow hallway entrance at the southwest corner of Room B. What was probably the main entrance to the house is in the southern wall of Room C, and is marked by three dressed threshold stones. Access to the western room, A, was limited to an outside doorway in the northern wall.

A stucco floor was present in all rooms and in the entrance, although not always in a perfect state of preservation. Two shallow earthen steps at the southern entrance to Room B also showed evidence of a stucco surface. Where no stucco was preserved, the floor was of smoothed, hard-packed dirt. A cross-section of the stucco floor in Room B showed that it had been resurfaced at least three times, with each resurfacing having added 5–6 cm to the floor. At least the earliest of these floors had been painted red. Below the floors was a prepared house platform of dirt fill mixed with small flat stones and ceramic debris. Approximately 30 cm below the house floor and 1 m west of the wall foundation of Room A was a parallel wall which probably functioned as a secondary foundation or retaining wall for the house platform.

All wall foundations were constructed of cobbles varying in diameter from 5 to 30 cm and larger dressed stones up to 1 m in length. Excavations outside the house along the west and north walls showed that the wall foundation continued some 15–20 cm below the house floor. Adobe and stucco-faced adobe bricks from the collapsed walls were found throughout the excavation area. This basic form of stone and adobe residential architecture is also present at about the same time at Tula (Healan 1974:47–50), and is documented by Bernardino de Sahagún (Soustelle 1972:131) for sixteenth-century Aztec residences. The people of Chalcatzingo still use a similar house wall construction today.

There were no indications as to how the structure may have been roofed. The large boulder which overhangs a portion of Rooms B, C, and D was probably integrated into the roof construction.

ACTIVITY AREAS AND ROOM USE

A plan view of the house floor, with associated features, artifacts, and debris, is shown in Figure 25.2. A study of the horizontal distribution of artifacts and debris from the floor defined units of activity. Artifacts of relative abundance and random distribution throughout the house and courtyard were considered to be of little importance in determining activity areas or room use and are discussed later as to their significance as temporal markers or, as in the case of the

Figure 25.1. Foundation walls of Postclassic house, Tetla.

spindle whorls, their function as related to form. The distribution of unique or special-function artifacts was noted in order to determine the significance of their location within a particular room, given the possibility that certain rooms may have been used primarily by males or by females. Activity areas and inferred male or female work areas are shown in Figure 25.3.

Generalized food preparation activities occurred within both Rooms A and B. These activity areas surround hearths located against the west wall of each room. Near the hearths are numerous sherds of cooking pots, large jars with lime-encrusted interiors, *fondo sellado* ("stamped bottom") bowls, and ceramic *molcajetes*. Two large manos, a ceramic spoon with orange pigment, and a dense concentration of small (1–2 cm) unretouched chert flakes were also found on the Room A floor. The generalized food preparation area of Room A covers an area approximately twice that of the similar area in Room B. The associated debris of Room A is also much greater in quantity and less fragmentary than that of Room B, suggesting that Room A was the primary area of food preparation.

The courtyard area southwest of the house may have been utilized for maize grinding. Two manos and two metate fragments were found here, as well as *comal* sherds (which were rare within the house). This suggests that the grinding of the *nixtamal* (lime-processed corn kernels) and the toasting of the tortillas took place in the courtyard, while the actual soaking of the kernels in lime water took place indoors in the general food preparation areas.

Directly north of Room A, from the doorway to the limits of the area excavated, was a garbage/midden area covering more than 5 m² to a depth of about 45 cm below the house floor. This area was not a garbage pit, but simply accumulated material presumably swept or thrown out of the room, including ceramic and lithic debris mixed with animal bone, spindle whorls, and bone awl fragments.

Four figurine fragments occur within the food preparation area in Room A (two are shown in Fig. 25.4*a–b*) and three within the garbage/midden area. This location may indicate that they relate ideologically to the occupants' subsistence and well-being. Another artifact of probable ideological significance is a grey-black obsidian trilobal eccentric found in the south section of the room. Most of the sixty-three trilobal eccentrics reported from Tula by Terrance Stocker and Michael Spence (1974: 88) also came from residential structures. Figurine fragments in Room B (Fig. 25.4*c–d*) are also clustered near the hearth and thus possibly associated with food preparation.

A second activity, related to sewing, perforating leather, or perhaps weaving, can be postulated for Room A. Four bone awls were found in the north half of the room, and a fifth one was found in the doorway. No other artifacts or debris were associated which might indicate their specific use.

Nearly 50 percent of the area of Room A was used for generalized food preparation and for sewing or weaving, tasks suggesting that the room was used mostly by women. The limited access to Room A through the single, northern doorway may have been a means of separating "women's chores" from other household activities. The fact that Room A may be a later addition to the house is in complete accordance with ethnographic data presented by Jacques Soustelle (1972: 131–132) for Tenochtitlan. There, the number of rooms in a house increased with the family's wealth, and when possible one or more rooms were reserved for the women. While Room B may have originally been for women's activities (e.g., cooking), the addition of Room A may have created a shift in activities, and Room B may have taken on a more generalized living function.

Two distinct activity areas can be defined within Room C. Obsidian debitage including flakes, blades, and a core was found in the southwest area of the room, and the only clustering of projectile points within the house occurred in the center of the room. These artifacts suggest a male usage of the room, with some lithic manufacturing or retouching activity.

The room's second activity area is not necessarily male oriented. What is suggested here to be a small stucco domestic shrine is located against the room's east wall. This portion of the wall foundation is formed by dressed and fitted stones, and the stuccoed floor is raised ca. 10 cm above the floor of the rest of the house, forming a niche-like area under the overhang of the large boulder.

Two unique artifacts come from this area. A green obsidian crescent eccentric was found in the subfloor fill in this portion of the room. Obsidian crescents are also found in residential contexts near temples at Tula (Stocker and Spence 1974: 88). A small shoe-pot with a fire-clouded toe (Fig. 25.5) had been buried nearby and covered with the stucco flooring. The shoe-pot is too small to be of domestic utility and was probably used ritually

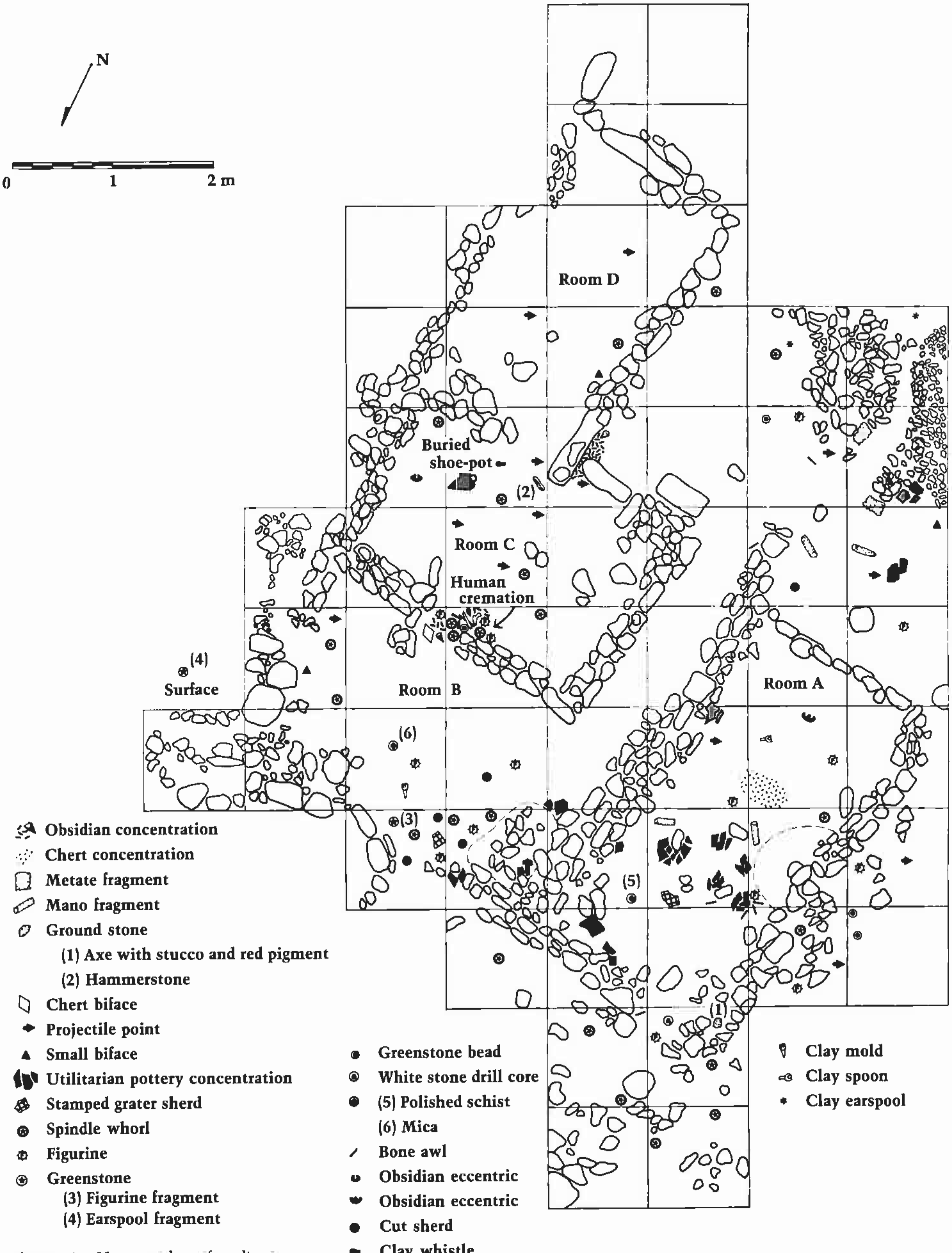


Figure 25.2. House with artifact distributions indicated.

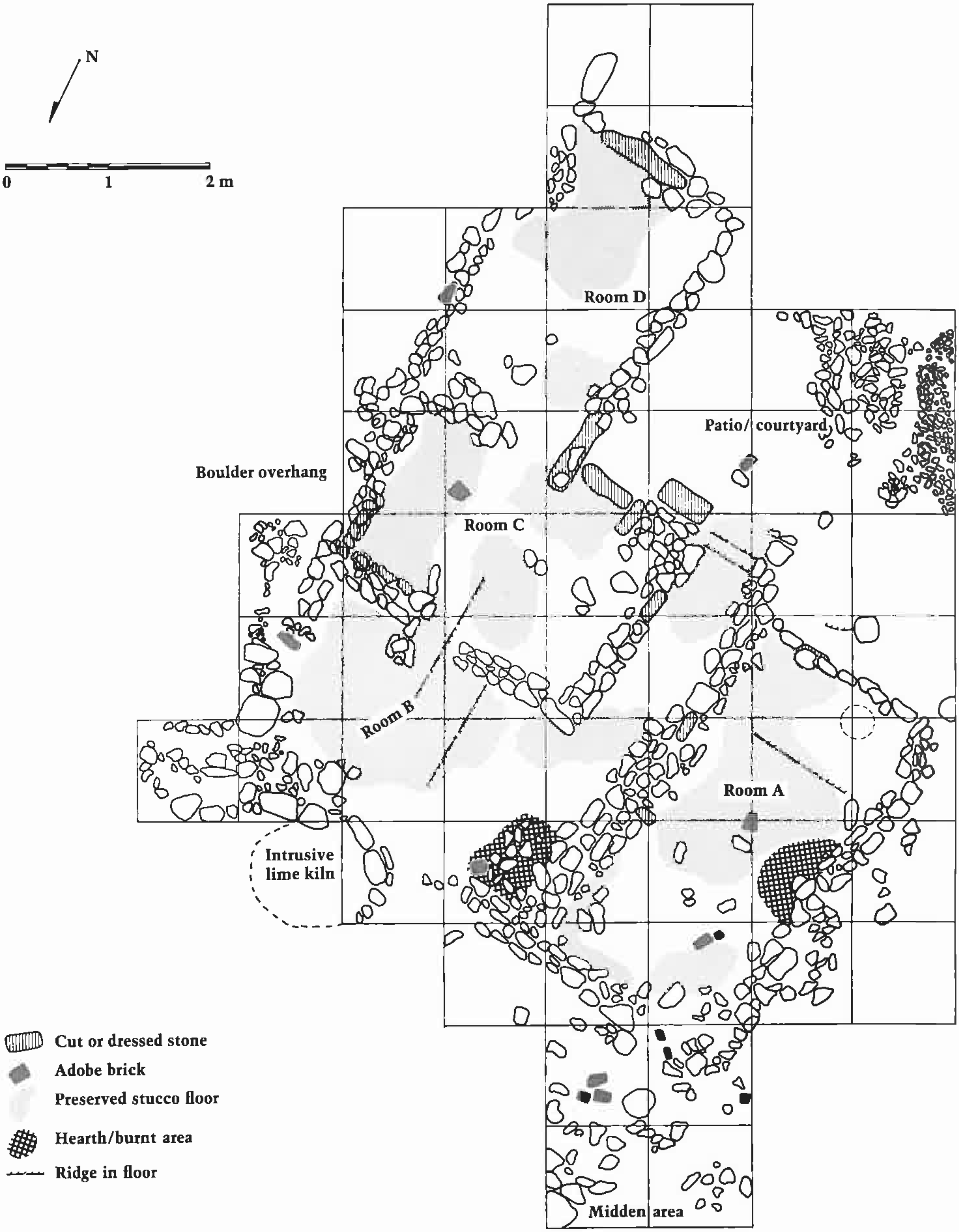


Figure 25.3. House with activity areas indicated.

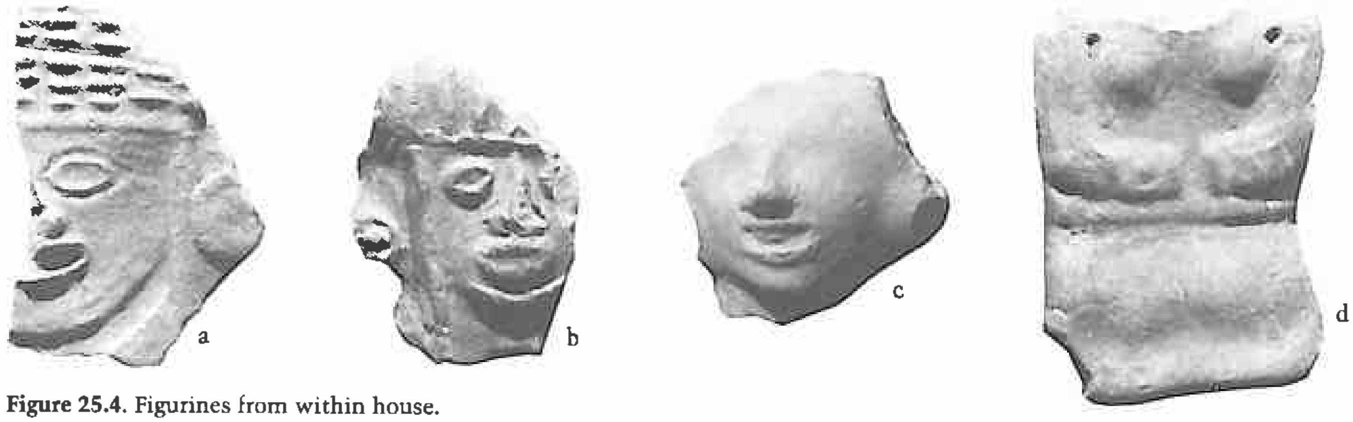


Figure 25.4. Figurines from within house.

in association with the shrine area.

Representative of a single event rather than an area of habitual activity is the subfloor human cremation burial in the Room B-C doorway (Burial 160). The burned bones were accompanied by a variety of burial offerings, including a Graphite-Black on Red ware vessel fragment, a carefully made bifacial, bipointed, mottled pink and white chert knife, two obsidian cores and a small cache of blades, three figurine fragments (one of which is a Middle Formative C8 type), a pale green jadeite bead, three spindle whorls (Fig. 25.6), and a bone awl like those found in Room A.

Room D is the least specific of the house's four rooms in terms of identifiable activity areas. The debris from the room's fill consists mostly of sherds and lithic material. Two partial vessels, a White-Slipped Orange ware polychrome vessel (Fig. I.10*a*; cf. Noguera's polychrome *firme*; 1954: 122–136) and a Black on Red vessel (Fig. I.5*b*), both with raised interior bases, were found in this room. Because of the general absence of specific artifacts, it is possible that this room functioned primarily as a sleeping area.

It is interesting to note that the Tetla-11 residential structure shares many similarities with a Late Postclassic (Late Horizon) small village residential structure from the Teotihuacan valley (Sanders, Parsons, and Santley 1979: Fig. 5.16a). These similarities include general building form, orientation, southern hallway entrance, and west wall hearth placement. This suggests that a regional cultural norm may have existed for rural residential constructions.

Figure 25.5. Shoe-pot. Length: 16 cm.

SPINDLE WHORLS AND SPINNING AS A HOUSEHOLD ACTIVITY

The excavations recovered twenty-four spindle whorls, apparently randomly distributed throughout the house, courtyard, and midden areas. An additional forty-four whorls were recovered from surface contexts at Tetla, from the Cerro Delgado cave excavations (of probable Middle Postclassic context), and from Classic and Postclassic levels on the main site zone. All sixty-eight whorls were measured and classified as Type A (small) or Type B (large), and further differentiated by surface treatment (incised, moldmade, or undecorated). This information, as well as data on provenience and illustrations of the whorls, can be found in Appendix I.

Mary Parsons' analysis of whorls from the Teotihuacan Valley and the Texcoco region of the Basin of Mexico defines three whorl types based upon clustering in the attributes of maximum whorl diameter, hole diameter, weight, and decoration. Her results suggest that small whorls were used to spin a fine fiber such as cotton, and larger whorls a heavier fiber, probably maguey (M. Parsons 1972). The analysis of the Tetla whorls utilized maximum whorl and hole diameters, weight, and height to define the two Chalcatzingo whorl types, A and B. The Chalcatzingo whorl types are not identical to those found in the Texcoco region and the Teotihuacan Valley, so letter designations for our types have been chosen in order to avoid confusion with Parsons' Types I, II, and III, and to emphasize their difference, which is probably both temporal and regional rather than functional. Histograms of measurements of the four attributes on all sixty-eight whorls (Fig. 25.7) show that the greatest difference between the two whorl types is weight, followed by whorl diameter. Whorl height was found to be of little importance in distinguishing the two types, except that an increase in height (or diameter) will obviously increase the weight.

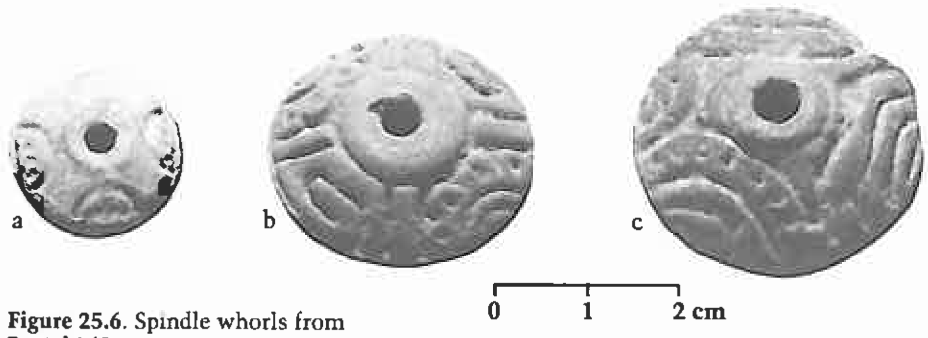


Figure 25.6. Spindle whorls from Burial 160.

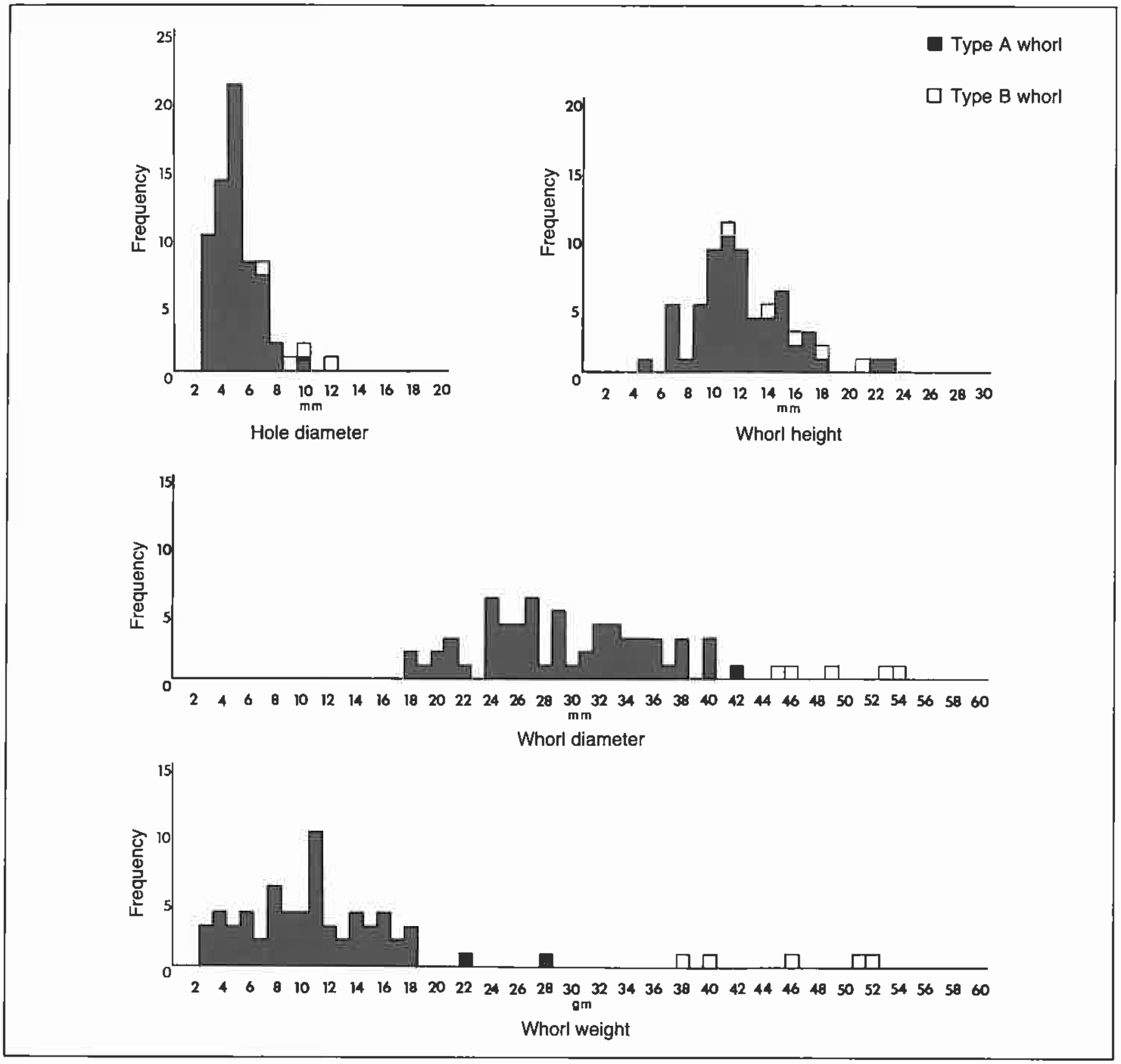


Figure 25.7. Histograms of measurements of Type A and Type B spindle whorls.

The clear bimodal separation between our Type A and Type B whorls seems to support Mary Parsons' analysis and conclusion that two sizes of whorls were used to spin two kinds or sizes of fiber. Fig. 25.8 shows that variation exists within Type A, for most mold-made whorls are larger than undecorated or incised examples. This could indicate that different weights of the same fiber, presumably cotton, necessitated a slightly different-sized whorl, and that spinning tool kits had various sized whorls to accommodate thread weight.

Mary Parsons worked primarily with whorls from Late Aztec contexts. She was therefore uncertain whether the presumed cotton whorls (her Type III, our Type A) had been present in similar quantities earlier, or whether perhaps the large number of these whorls might relate to increased cotton procurement through trade or tribute during the Late Aztec period. Our data do not clarify that question, but do demonstrate that during the Early Aztec period (Middle Postclassic), small whorls predominate and thus cotton was apparently the primary fiber spun at Tetla-Chalcatzingo. The Cave 2 finds (Appendix A) include a quantity of raw cotton as well as some cotton thread.

Type B whorls, used for a heavier fiber such as maguey, are relatively uncommon in the Chalcatzingo sample. This seems to imply that everyone within our sample universe had easier access to cotton, and that maguey thread was rarely spun. This is in agreement with the project's data on crops grown in the Río Amatzinac Valley today and at the time of the conquest. Maguey is rare in the area, but cotton may have been an important crop in the southern valley. Maguey spinning may have become widely used in central Mexico only after the Triple Alliance restricted the wearing of cotton garments to the nobility. At the same time they demanded heavy tributes in cotton garments from provinces in Morelos.

The Tetla spindle whorls came primarily from within one residential structure. Our excavation data thus cannot tell us whether twenty-four whorls is an unusually high number for a residence. If in the future other residences are excavated at Tetla, their spindle whorl yield will be of interest. An unequal distribution of whorls between domestic structures across the site would suggest some specialization within the site.

BOTANICAL REMAINS

Thirty-one carbonized corncob fragments were recovered from the hearth area in Room B. The sample is homogeneous, consisting of ears with a slight taper, little or no twist, hollow cobs, and eight rows. The cupules are broad (5–7 mm) with relatively long, hard glumes. No cobs had attached kernels, nor were there any loose kernels in the sample. The largest cob is 33 mm long and 10 mm in diameter (David Bugé, personal communication).

It is difficult to be certain without evidence from the kernels, but the type of corn represented in the Tetla samples seems closely related to the eight-rowed corn of west Mexico, Harinoso de Ocho. The width of the cupule, the thickness of the cob, and the consistent occurrence of eight rows fit almost nothing else. The modern variety of corn grown at Chalcatzingo is Pepitilla (see Chapter 26), which is distinguished by a high row number (average 15.5) and long, narrow-beaked kernels (Wellhausen et al. 1952). The Tetla samples likewise do not compare with the corn recovered from Chalcatzingo Cave 2 (apparently Middle Postclassic). The majority of Cave 2 corn is classifiable as Nal-Tel–Chapalote, which has eleven or twelve rows and small kernels.

The Tetla samples also differ from the modern corn of Tepoztlan (E. Anderson 1951) in displaying significant influence from west Mexico. Edgar Anderson (ibid.: 449) noted that Morelos lies at the border of the west Mexican and central Mexican regions and was surprised to find so little influence from west Mexico in the corn today. It seems, however, that Chalcatzingo shows three separate influences in its corn: an early Nal-Tel–Chapalote, probably imported from the Gulf Coast, an eight-rowed corn from west Mexico, and the modern Pepitilla which is found throughout the Balsas region. The last seems to be a very recent introduction, given the lack of archaeological evidence for its early arrival.

CERAMICS AND DATING

The Tetla ceramic typology, based primarily upon surface treatment, decoration, and paste texture, is presented in Appendix I. Six decorated ceramic wares were defined, and when appropriate, a ware was subdivided into descriptive decorative types. Four undecorated wares and an "eroded" category were also defined.

The comparison of Tetla ceramics to other Postclassic ceramic assemblages met with initial problems in 1974 when the analysis was begun. Little is known and almost nothing is published on Postclassic Morelos ceramics, and data are even scarcer for eastern Morelos. Thus, the use of ceramics alone as a means of dating the occupation at Tetla rested on shaky ground.

The two decorated ceramics which were most abundant at Tetla, painted and incised Polished Red ware and Black-on-Orange ware, were the most useful in establishing a ceramic phasing for the Tetla occupation. The Tetla Black-on-Orange ceramics (Figs. I.1–I.3) are very similar to Culhuacan Negro sobre Naranjado or Aztec I (Griffin and Espejo 1947; 1950; Séjourné 1970), and the Polished Red wares (Figs. I.4–I.8) are most similar to those found in association with the same Black-on-Orange ceramics at several locations in the southeast portion of the Basin of Mexico (Jeffrey Parsons, personal communication; Blanton and Parsons 1971: 298–299; O'Neill 1962: 121–141).

There are also a number of Postclassic ceramic types which are common in the central highlands of Mexico but conspicuously absent at Tetla. These include Red-on-Buff Mazapan varieties and Black-on-Orange types II, III, and IV. The Black on Orange ceramic types were once thought to be temporally sequential, mutually exclusive, and a part of the Postclassic ceramic assemblage perhaps as early as the Early Postclassic Mazapan ceramics (Franco 1949: 185; Griffin and Espejo 1950: 13; Séjourné 1970: 63). New Basin of Mexico data (Jeffrey Parsons, personal communication; Sanders, Parsons, and Santley 1979; Charlton 1979), supported also by the Tetla analysis, indicate that Mazapan ceramics are earlier than the Black on Orange ceramics, Black on Orange types I and II are contemporaneous but regionally separate, and Aztec III ceramics continue into colonial times.

Thus, while the Tetla ceramics are contemporaneous with Aztec I–II (Second Intermediate: Phase Three) in the Basin of Mexico, they postdate the AD 950–1150 Mazapan ceramics and predate the Late Horizon Aztec III–IV ceramics. This dating is confirmed by two radiocarbon assays from the Tetla house. A charcoal sample from Room B (ISGS 508) produced a date of 720 ± 75 BP (AD 1230 ± 75), while a lime kiln feature

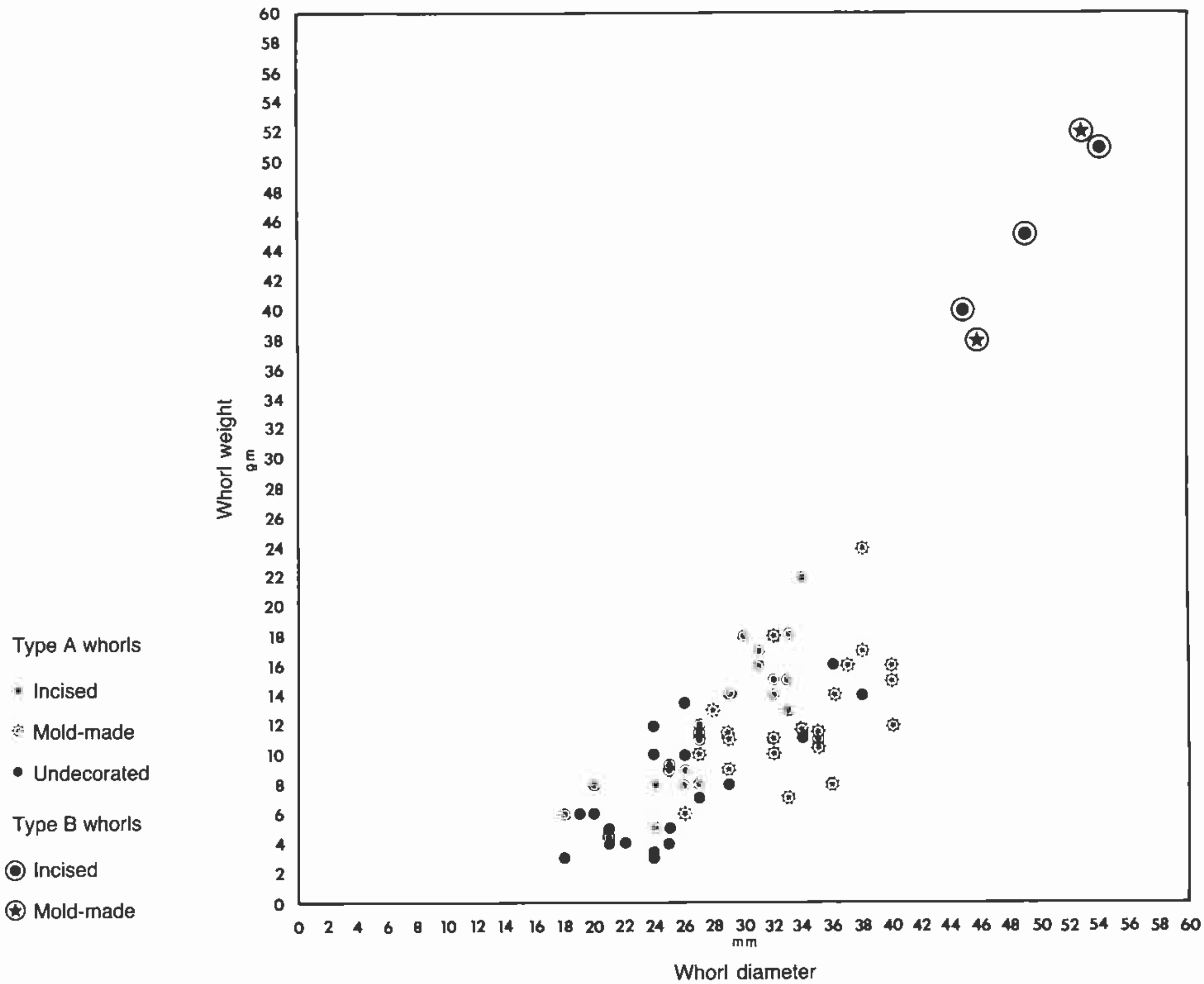


Figure 25.8. Type A and Type B spindle whorls distinguished by weight and whorl diameter.

intrusive into Room B (ISGS 509) dated 610 ± 75 BP (AD 1340 ± 75).

A REGIONAL PERSPECTIVE ON THE MIDDLE POSTCLASSIC AT TETLA

Data obtained during the surface surveys of Tetla and the analysis of ceramics underlying the Middle Postclassic Tetla-11 house platform indicate that there was also a relatively extensive Late Classic occupation at Tetla. During the Early Postclassic, however, despite various references to Toltec expansion into Morelos (e.g., Hirth 1977; Muller 1949) or to strong ties between eastern Morelos and Tula (Hirth 1977), there is very little evidence at Tetla either for a significantly large local population or for Toltec influence. The near absence of an Early Postclassic component suggests either a partial abandonment of Tetla at that time or a local Late Classic to Middle Postclassic transition lacking "diagnostic" Toltec and Mazapan materials.

During the Middle Postclassic, settlement in the Basin of Mexico was heavily weighted toward the southern part of the basin. Surveys there identified six or seven large nucleated sites, including Culhuacan, Xochimilco, Cuitlahuac, Mixquic, Chalco, Xico, and Amecameca in the mountains to the southeast. There is a clear economic and/or sociopolitical separation in the Basin of Mexico between southeast and northwest areas.

The most obvious material difference is in the decorated ceramics, where the contemporaneous Aztec I and Aztec II Black-on-Orange ceramics have independent distributions. A strong economic and/or sociopolitical link is most probable between the Chalco-Xochimilco region in the south and the Puebla-Cholula area, while the northern Basin of Mexico seems to be more closely linked to the collapsed Tula sphere (Sanders, Parsons, and Santley 1979:149–153).

As should be expected on the basis of geographical proximity, ceramic similarities link Tetla most closely to the southeastern Basin of Mexico and the Puebla-Cholula area. Nearly 95 percent of the Tetla decorated ceramics are like the predominant decorated wares in the southeastern basin of Mexico at Culhuacan (Griffin and Espejo 1947; 1950; Séjourné 1970), Chalco-Xochimilco (O'Neill 1962; J. Parsons et al. 1981), and Texcoco (J. Parsons 1971). Although the decorated wares occur in different frequencies at various sites, they generally include Aztec I (and some Aztec II) Black-on-Orange, several types of Polished Red ware, ceramics similar to some of the Tetla Orange ware polychromes (e.g., Chalco polychromes), and the Red on Burnished Buff (and zoned incised type) ware. The similarities to the Puebla-Cholula area's ceramics (Noguera 1954; Muller 1978) and those of the Tehuacan Valley (MacNeish, Peterson, and Flannery 1970) are more often in vessel and appendage form than in surface decoration.

Five percent of Tetla's decorated sherds, the Black on White ware and some of the Orange ware polychromes, are found more frequently in western Morelos and northern Guerrero (Paul Schmidt 1977; M. Smith 1981; Jorge Angulo, personal communication).

During the Middle Postclassic, eastern Morelos was apparently not densely populated and lacked a nucleated center the size of those in the southeast Basin of Mexico. The Río Amatzinac Valley was on the southern periphery of a large interaction sphere encompassing rapidly growing nucleated centers in the Basin of Mexico and the Puebla-Cholula region to the east. The strongest sociopolitical and/or economic ties were in those directions.

It was suggested above that one commodity which the Río Amatzinac Valley had to offer in tribute and exchange (within that interaction sphere) was cotton (M. Parsons 1972:65; Hirth 1977:44). Imports into the valley certainly included lithic raw materials (obsidian, metamorphic stone, etc.) and possibly some ceramics as well. While Tetla's undecorated utilitarian ceramics were probably locally made, some of the decorated ceramics (less than 4 percent of the ceramic assemblage), figurines, and spindle whorls could have been imported (ceramic whorl molds do indicate some local manufacture as well). A petrographic analysis of clay minerals and temper from the Tetla ceramic sample is now in progress and may help differentiate local from imported artifacts.

RESUMEN DEL CAPÍTULO 25

Las excavaciones realizadas durante 1974 en la zona de Tetla en Chalcatzingo fueron enfocadas a la estructura residencial localizada al poniente de los montículos principales del Postclásico. La casa de cuatro cuartos fué construida en dos etapas, siguiendo el modelo de construcción de piedra y adobe típico de las habitaciones del Postclásico del centro de México. Los artefactos fueron localizados "in situ" dentro del plano levantado de los pisos de la casa, y sus distribuciones fueron usadas para definir las unidades de actividad. Las actividades de preparación general de alimentos estaban confinadas a dos de los cuartos, así como a un área de patio al suroriente de la casa. Las labores de perforación o costura, deducidas por la presencia de leznas de hueso, parecen haber tenido lugar en uno de los cuartos, en donde también se trabajó la obsidiana. En base a la analogía etnográfica, se puede postular que algunos cuartos de la casa se reservaron para las actividades femeninas, y otros cuartos para las masculinas.

Un artefacto importante, que en la distribución del interior de la casa aparentemente resulta ser al azar, es el malacate, de los cuales veinticuatro se encontraron en la casa, en el patio, y en las áreas de basura. Éstos y otros malacates de Tetla se clasificaron como Tipo A (pequeña) y B (grande), siendo los dos tipos claramente identificables por su peso. En base a la analogía con los malacates de la Cuenca de México, se sugiere que los malacates Tipo A hayan sido usadas para una fibra fina, posiblemente algodón, y el Tipo B para una fibra más pesada tal como la de maguey. La superioridad numérica de los malacates Tipo A en Tetla encaja bien con la información etnográfica acerca de la importancia del cultivo de algodón en Morelos durante el Postclásico.

Los olotes de maíz que se recobraron de uno de los hogares en la casa aparentemente representan una variedad de maíz intimamente relacionada con el ocho-líneas Harinoso de Ocho del poniente de México. Este maíz es diferente del Pepitilla de hoy día en Chalcatzingo y aún del Nal-Tel–Chapalote que fué el maíz que se recobró de los componentes del Postclásico Medio en la Cueva 2 en el Cerro Delgado.

Se definieron seis acabados decorados y cuatro sin decorar para la cerámica de Tetla. Éstos son Negro sobre Naranja, Rojo Pulido, Polícromos Naranja con Baño Blanco, Negro sobre Blanco, Rojo sobre Amarillo Quemado, Café con Vetas Bañado Naranja, Café o Naranja Bañado Utilitario, Quemado sin Baño, Tetla Burdo, y Mica Templado Burdo. En base a las semejanzas de cerámica, Tetla parece haber estado ligado intimamente a los sitios del suroriente de la Cuenca de México y el area de Puebla-Cholula. Los dos acabados más abundantes eran el Rojo Pulido, pintado y con incisiones, y el Negro sobre Naranja (el cual es muy semejante al Azteca I), y resultaron ser estos dos acabados muy útiles para establecer las fases de la cerámica.

Los diagnósticos de cerámica Mazapan Postclásico Temprano y los tipos posteriores, Negro sobre Naranja II, III, y IV se encuentran ausentes en Tetla, cuyo poblamiento se coloca en el rango de 1150–1350 DC (Intermedio Segundo: Fase Tres), ésta es una fecha que confirman dos ensayos de radiocarbono en materiales provenientes de la casa. Por ello, el sitio aparentemente carece de poblamientos del Postclásico Temprano y Tardío, pese a las referencias sobre expansiones "Tolteca" hacia esta área y los mapas de conquista de este período, así como a las narraciones sobre la existencia de una población del Postclásico Tardío conocida como Chalcatzingo.

26. Contemporary Agriculture at Chalcatzingo

DAVID E. BUGÉ

The close physical proximity of the present village of Chalcatzingo to the archaeological zone reflects a continuity of prehistoric and contemporary agriculture. Despite the influx of new technology, subsistence farming has changed little since the Formative period. Oxen, plows, and fertilizer have added to the farmer's repertory and production has increased, but the constraints of land, labor, and crops still limit the farmer's ability to change. Even more important, today's farmers are part of an international economy which ultimately determines the success or failure of their adaptive strategies.

The present agricultural system at Chalcatzingo is the outcome of a long history of individual decisions made as farmers attempted to provide food for their families and supply their other needs. In any one year there are new and different problems, which may be met by innovative solutions but which are usually solved through traditional means. This chapter examines the character of the agricultural system in terms of the constraints on farmers' decisions. These constraints are, in turn, selective of certain adaptive strategies or "the patterns formed by the many separate adjustments that people devise in order to obtain and use resources and to solve the immediate problems confronting them" (Bennett 1969:14).

Aspects of both environment and culture are considered as factors of a single system, subsistence agriculture. These elements form the "socio-environmental stresses" or constraints in Kent Flannery's (1972:409) terms. These constraints determine the decisions which a farmer must make throughout the course of the agricultural cycle. Decisions, however, are not all of the same importance. Two levels, the tactical and the strategic, can be defined. The first involves adjustments to variations in climate, labor supply, and household needs, while the second involves goal-setting and choices between different adaptive strategies. The pattern of daily activity results from tactical decisions, but the overall character of the agriculture system is the result of strategic choices.

Because choices on different levels have different constraints, these levels must be distinguished during analysis. Therefore, the chapter proceeds from a discussion of those factors which constrain tactical decisions to an analysis of different adaptive strategies and their selective constraints.

LAND

In 1926 a grant of 901 ha of land (Fig. 26.1) was made to the village of Chalcatzingo by the Mexican government as a result of the land reforms begun by the Revolution of 1910–1916. Control of the land is vested in the *comisario ejidal* and his assistant, elected officials of the *ejido* of Chalcatzingo. Of the land in the grant, 8.7 ha are irrigated today and the remainder is *temporal* or unirrigated land. The average holding by members of the *ejido* is 2.89 ha with a range from 0.5 to 7.5 ha.

Three classes of land were included in the grant. The *fundo del pueblo* is private land and consists of houseplots in the village, a small number of unirrigated fields, and a section of privately owned irrigated land along the stream between the village and the site. This land can be bought, sold, rented, or sharecropped without restriction. Some plots of private land have recently been sold to people living outside the village, but there is strong pressure to keep the land under village control.

The irrigated land west of the village is *ejido* land, which cannot, in theory, be bought or sold, but which is frequently sold or rented. It may be rented by non-*ejido* members, but there are social sanctions against selling land to outsiders. The irrigation system is fed by canals from a reservoir at Monte Falco (ex-hacienda Santa Clara). The reservoir is, in turn, fed by canals originating on the Río Amatzinac above Zacualpan. The system has only minimal value, however, because water is so heavily utilized by villages closer to the source that no water reaches the reservoir during the dry season. Chalcatzingo has protested to the state government, but lacks sufficient political power to get changes made. As a consequence of the limited irrigation water supply, farmers tend to grow valuable cash crops on irrigated land, using irrigation to supplement rainfall to insure a good crop.

The majority of the *ejido* land is *temporal*, usable only during the rainy season. There are two named areas, La Joya just south of the village and La Esperanza to the east across the Río Amatzinac. Among the thirty-four people who presently have fields in La Joya, the average holding is 2.0 ha, with a range of from 0.3 to 2.5 ha. The land in La Joya is of variable quality but is generally better than that in La Esperanza. That coupled with the fact that La Joya is closer to the village makes it more desirable. La Joya was completely irrigated during the hacienda period, but the reservoir and canals have fallen into disrepair and no longer function. A small section, less than 10 ha, of La Esperanza is irrigated by a new reservoir, but this system functions only during the rainy season.

The remainder of the village land is *cerril*. This section includes the highly prized terraces of the archaeological zone, the steep and rocky masses of the Cerro Delgado and Cerro Chalcatzingo, and the fields of the Tetla zone. With the exception of site terraces and the Tetla fields, this *ejido* land is used primarily for grazing and for collecting.

SOILS

The farmers of Chalcatzingo use a hierarchical classification system for ranking the potential production of agricultural land. The two major categories of land, *tierra amarilla* and *tierra negra*, are distinguished on the basis of their soil color, which reflects both the mineral composition of the soil and its organic content. Within the *tierra negra* class of soil there are two further types which are recognized by farmers: *arena* (sand) and *barro* (clay).

Tierra amarilla or yellow soil consists of coarse light brown to yellow soils which have low organic content and poor moisture-retention capacity. It is the least productive soil under normal conditions but can exceed that of the other types in years of extremely high moisture. The majority of La Esperanza and parts of the hillslopes of La Joya consist of *tierra amarilla* soils. Corn and peanuts are the preferred crops on this soil, as they have low moisture requirements and grow well in friable soils.

Tierra negra or dark soil is a highly organic, fine-grained soil with good moisture-holding capability. *Tierra negra* is about twice as productive as lighter soils due to its greater fertility and ability to maintain moisture during short dry periods. The disadvantage of *tierra negra* is that it may become waterlogged during periods of prolonged heavy rains.

Sandy soil is better for crops when there is a great deal of rainfall, since water percolates through it more easily. It has good moisture-holding capacity but does not become waterlogged as easily as clay. Its production is somewhat less than that of clay in normal years, but its overall long-term production is higher. Thus, it is the most consistently productive soil type. Sandy *tierra negra* is preferred for tomatoes, since they are harmed by too much moisture as well as too little.

Clay is heavy and hard to work, but is the richest soil and performs well during drought. Clay soils are preferred for corn because of their normally high productivity, but they are susceptible to waterlogging if there is heavy rain at the beginning of the season. In the worst possible year, one which is too wet during the early summer and dry during the remainder of the growing season, corn production on clay soils can be as low as 500–750 kg/ha.

Of the land within the *ejido* of Chalcatzingo, 60 percent is *tierra negra de arena*, 20 percent is *tierra negra de barro*, 10 percent is *tierra amarilla*, and another 10 percent consists of trails, streams, and other uncultivated areas.

Soil and crop preferences represent a system of cultural adaptation of crops to given soil conditions which reflects both the moisture and nutrient requirements of the crops and the characteristics of the soil. Although most farmers recognize the ideal strategy of planting crops in all three types of soil, they do not always have access to them. Therefore, they must contend with production which varies from year to year depending on climatic conditions. They try to remember rainfall conditions from past years and use these data to predict succeeding years, usually with little success, as also found by Anne Kirkby (1973) in Oaxaca.

Table 26.1 shows the three main soil types and the crops which are preferred for them based on informants' responses. Since not all farmers have access to all soil types, the table represents a desirable, but not necessarily actual situation.

Corn will grow well in all soils, but the preference for clay soil indicates that farmers try to fit the higher moisture requirements of corn with the good retention capacity of clay. This preference also indicates that drought is a more typical condition than an excess of moisture and that farmers try to minimize its effects by planting on clay soil.

Beans and squash when planted as separate crops require high moisture and are not preferred on *tierra amarilla*. Peanuts have lower moisture requirements, are easier to harvest, and grow better in the more friable soils. Tomatoes are the most sensitive crop and are planted only on sandy *tierra negra*.

As part of our research, soil fertility was measured on fourteen sample plots with a Sudbury testing kit. This test is not as accurate as some others but was the most practical. It gives results in the form of percentage of deficiency from an arbitrarily defined optimum and provided an objective measure of the relative fertility of the different soil types at

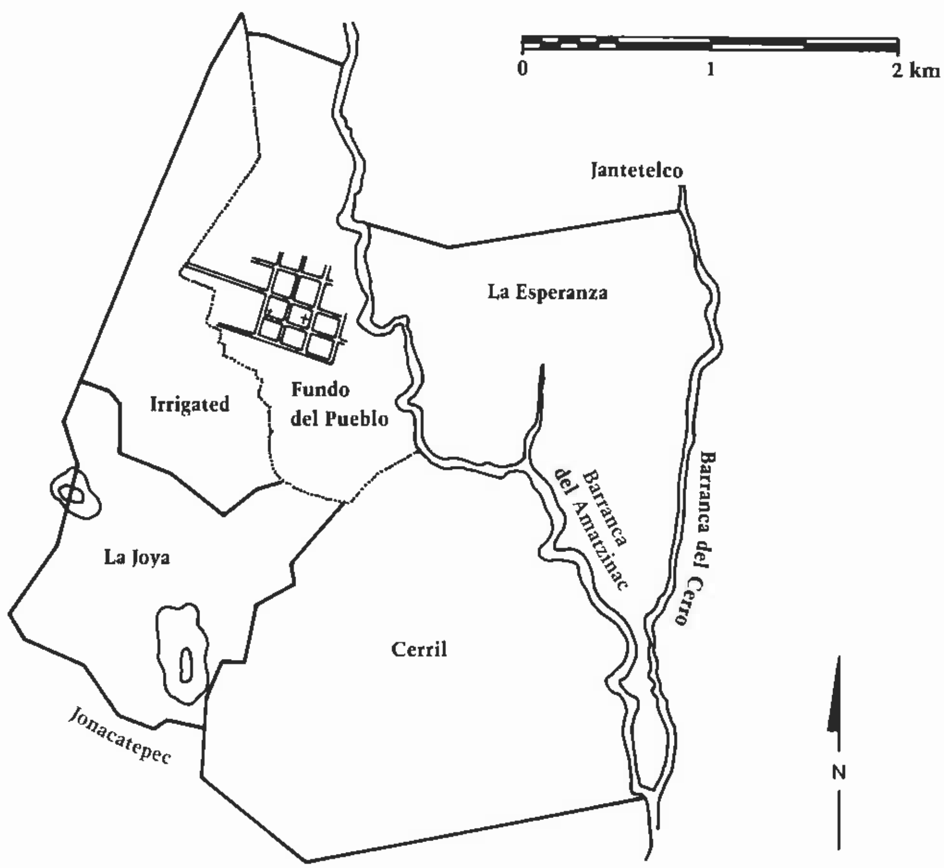


Figure 26.1. Land grant map of village of Chalcatzingo.

Chalcatzingo. The data are presented in Table 26.2 as average deficiencies for nitrogen (N), phosphorus (P), and potash (K). This table shows the greater fertility of *tierra negra*, especially in respect to phosphorus as well as to nitrogen, an important nutrient for corn.

In spite of the limited conservation practices which modern farmers utilize, the soil at Chalcatzingo is relatively fertile. Apparently the differential fertility of *tierra amarilla* and *tierra negra* soils, coupled with their different water-retention characteristics, leads to differences in production between the two.

***Table 26.1.* Preferred Crops for the Different Soil Types**

	Crop				
Soil Type	*Corn*	*Beans*	*Squash*	*Peanuts*	*Tomatoes*
Tierra amarilla	(+)	–	–	+	–
Tierra negra					
Arena	(+)	+	+	+	+
Barro	+	(+)	+	–	–

Plus signs indicate preferred crops. Plus signs in parentheses indicate acceptable conditions. Minus signs indicate unacceptable conditions.

***Table 26.2.* Average Mineral Deficiencies in Chalcatzingo Soils**

Soil Type	*Nitrogen*	*Phosphorus*	*Potash*
Tierra negra	4.0	8.0	4.0
Tierra amarilla	5.0	10.9	4.6

CROPS

Although some differences in the ecological requirements of various crops can be determined from the interrelations of plants and soils, detailed studies of each crop are necessary to relate the tolerance ranges, productivity, and problems of each crop in the traditional agricultural system.

Corn

In recent years hybrid corn has been planted experimentally by a number of farmers, but it has not met with a great deal of success. While its potential productivity is ultimately greater than that of the indigenous variety, it is difficult for the Chalcatzingo farmer to achieve that potential. Although hybrid varieties were not seen in the Chalcatzingo fields, they were being grown in irrigated fields elsewhere in the valley.

Most Chalcatzingo farmers stated that they did not plant hybrid corn because they did not like the taste or consistency, but there are other reasons for its lack of success. For optimum production, hybrid corn needs careful attention to water requirements and fertilization. Irrigated land is a practical necessity, and chemical fertilizers must be used to insure maximum production. Fertilizers are expensive, complicated to use, and difficult to purchase and transport; therefore, they are not used on a large scale.

Most corn today is planted without prior fertilization, but fertilizer may be applied after the plants reach 0.5–1.0 m in height. The farmers do not fertilize the soil, but fertilize the individual surviving, healthy plants. Small (single pinch) applications of fertilizer applied to each plant reduce costs and insure that none of the fertilizer will be wasted on plants which will not produce.

The failure of hybrid corn to compete with local varieties indicates the importance of the *strategy* of the farmers at Chalcatzingo. This strategy is not optimization of production, but "satisficing" (Simon 1957). That is, the farmers try to meet a preset production goal with a minimum of inputs. The goal is not maximum production, but only enough to meet the farmer's needs.

Hybrid corn requires optimization, for it demands high inputs of fertilizer, labor, and irrigation to achieve maximum productivity. If these inputs are not provided, the yield of hybrid corn is less than that of the traditional variety. Farmers therefore find that hybrid corn requires a different and unacceptable strategy. Since most farmers attempting to use hybrids cannot meet the increased input demand, their production decreases and they soon return to the traditional variety.

The indigenous corn, *maíz criollo*, is ultimately less productive than hybrid varieties, but is more broadly adapted and will produce better under adverse climatic conditions. Production figures for *maíz criollo* are given in Table 26.3 and Figure 26.2. *Criollo* is related to *pepitilla* (Wellhausen et al. 1952) and is common in Morelos and Guerrero. The cobs average 15–20 cm long and are slightly tapered from butt to tip. Rows average fourteen or more, but a few twelve-rowed ears are found. Kernel color is white to light yellow, with some blue or black kernels. The kernels end in a turned-over apex or beak which is a distinctive feature of this variety. The rows are widely spaced, straight, and not interlocked.

Criollo differs from the corn at nearby Tepoztlan. Edgar Anderson (1951) felt that the corn there was derived from west Mexico rather than central Mexico. The corn at Chalcatzingo shows little evidence of genetic connections with west Mexico, perhaps indicating the existence of different cultural interaction spheres within Morelos.

Archaeological samples of corn preserved in Cave 2 at Chalcatzingo are of a completely different variety than *criollo*. Samples were collected from mixed deposits dating from the Postclassic to the early historic period. Only three kernels of beaked corn (*criollo*) were found in the sample of thirty-one kernels. The archaeological sample cobs have a mean row number of twelve and are significantly different in morphology from the modern type. They are related to the *naltel–chapalote* complex, an ancient variety common to southern and eastern Mexico.

Beans

Two types of beans are grown today at Chalcatzingo. *Enrededor* is a pole bean, much like "Kentucky Wonder." The seeds

***Table 26.3.* Average Corn (*maíz criollo*) Production (kg/ha) for Differing Soil Types and Rainfall Conditions**

	Rainfall Conditions		
Soil Type	*Wet*	*Normal*	*Dry*
Tierra amarilla	1,500	1,000	500
Tierra negra			
Arena	1,500	1,500	1,000
Barro	1,000	2,000	1,500

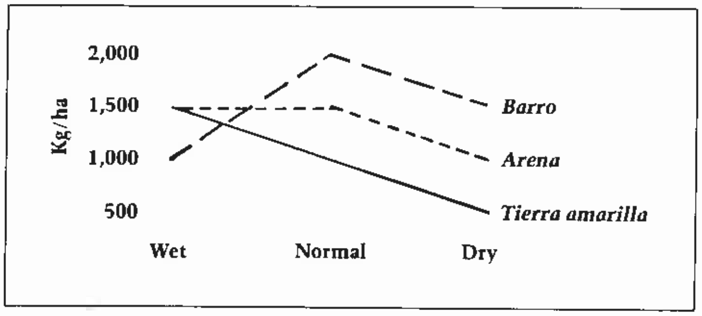


Figure 26.2. Average corn (*maíz criollo*) production (kg/ha) for differing soil types and rainfall conditions.

are light brown. Although there is no standard pattern for planting, beans are mixed with the corn at a rate of about 1 plant per 10 cornstalks, or about 200–300 plants per ha. One interplanted hectare yields about 175 kg of beans.

Frijol chino, a highly productive bush bean, is also planted, usually alone, not intermixed with corn. One hectare produces about 1,750 kg of seed. Most farmers do not plant *chinos*, since they require a great deal of additional labor and their harvest tends to coincide and interfere with the harvest of corn.

Squash

Three types of squash are planted. The most common, *calabasa champolla*, is interplanted with maize. This squash is grown only for its seeds, which are toasted and eaten. *Champolla* produces about 300 squash per ha which yield about 150 kg of seed.

The two other kinds of squash are grown in small numbers. *Calabasa dulce* is kept through the dry season for use as a boiled vegetable, served with a thick honey syrup. *Calabasa castilla* is grown by a few farmers for the blossoms, which are used in soup. Only a few plants of both types were seen in the fields during 1975.

Peanuts

Peanuts are the major cash crop for most farmers. They are planted in May, just before the beginning of the rainy season, and are harvested in November before the corn harvest. Planting and cultivation of the crop require a minimum of labor, but the harvest is arduous and time-consuming. At harvest the field is first plowed, and the plants are uprooted and stacked. The peanuts are then picked from the vines. Although it takes five days for the harvest of 0.5 ha, the work is simple, so all members of a family usually participate. Production is approximately 1,750 kg/ha, and at 1975 prices of 2 pesos/kg, 0.5 ha produced enough to fill half of the cash needs of an average family.

Tomatoes

Tomatoes are grown as a cash crop, in either irrigated or *temporal* fields. Farmers plant commercial hybrid seed. *Temporal* crops must be staked to prevent the fruit from touching the moist ground and rotting. Therefore, they require a large investment in stakes and wire. Stakes can be cut on the *cerros* or may be bought locally or from peddlers who cut them in the upland forests.

Irrigated tomatoes are grown in La Esperanza on some of the better soils. These crops are planted in August and are harvested in November or December when prices are higher. The late crop does not need to be staked, as the ground is not moist then. Although most crops are sold in nearby markets, some farmers have taken their tomatoes to markets in Cuernavaca, Puebla, and Mexico City.

Tomatoes are a difficult crop because they are very sensitive to variations in moisture, temperature, and soil fertility. There is also trouble with disease, but this can be mitigated by repeated treatments with fungicide. Yields are high, however, with 0.5 ha producing 4,700 kg of tomatoes over three harvests during and after the *temporal* season. Irrigated tomatoes commonly yield less, due to the scarcity of water in late November and December.

In 1975 a yield of 4,700 kg of tomatoes sold at 10,800–13,500 pesos. From this amount must be deducted the wages of field workers and costs of fertilizer, stakes, wire, fungicide, and insecticide. The net income from 0.5 ha of tomatoes amounted to 5,000 pesos or about one-half the value of the crop.

Other Crops

Other crops which are sometimes planted are onions, chiles, *tomatillos* (husked tomatoes), and watermelons. None of these are common, although some farmers plant them every few years or so. Chiles are grown on *temporal* plots by only one farmer in the village. Onions are occasionally grown on irrigated land. Melons and *tomatillos* are sometimes grown on *temporal* land, or may be planted in small quantities in irrigated fields. None of these crops, with the exception of chiles, are of major economic or subsistence importance.

TRANSPORT

The transport of the harvest from the field to the house plot and from the house plot to the market is an important consideration in village agriculture today. With a normal harvest of sufficient size to maintain a family, a farmer may spend ten days transporting the crop from the fields to the house. More important, transport to the market is usually in the hands of an intermediary who owns a truck and sometimes a stall in the market. The cost of transportation is high and almost entirely outside the farmer's control. The only possible leverage which can be gained by the farmer is by establishing a personal relationship with a trucker, either on the basis of friendship, *compadrazgo*, or long-term economic relations.

STORAGE

Storage is, of course, essential for household units, given the periodicity of the harvests. Household supplies of corn, beans, squash seeds, and fruits are stored in a *cuexcomate*, a circular clay structure with a thatched roof (Fig. 26.3). The *cuexcomate* is built atop a stone base which allows for the circulation of air. It is an efficient storage structure which allows the corn to dry fully and protects it from insects and mildew. Corn is shelled before storage and may be drawn out either from the top or from an opening on the side. Corn withdrawn from the *cuexcomate* six months after harvest usually has no visible insect damage.

Efficient means of storage such as the *cuexcomate* represent a marked increase in the stability of peasant agriculture. Their occurrence in the archaeological record should mark an important shift in the strategy and capacity of the subsistence system, with decreasing emphasis on gathered foods and more dependence on agriculture. However, to date no definite examples have been found archaeologically.

Cuexcomates continue to be made at Chalcatzingo, although there are now only two men who are considered to be experts in their construction. The efficiency of the *cuexcomate* for corn storage insures a continuing demand.

Figure 26.3. *Cuexcomate* in house yard in the village.

AGRICULTURAL CYCLE

The agricultural cycle is largely determined by the seasonal nature of the climate. With the exception of irrigated crops, farming activities occur just before, during, and after the summer months. Harvests are from November until the end of December. Within the constraints imposed by the environment, there is a rigid schedule of activities during the farming season.

Figure 26.4 shows the annual agricultural cycle for the major crops at Chalcatzingo. There are two corn harvests. The first, when the corn is still green, strips the stalks of the leaves (to use as fodder), but the ear is usually left to dry (although sometimes harvested green for immediate use). The second harvest is of the dried ear of corn.

It can be seen that the schedule for the basic crops, including peanuts, minimizes conflict. Peanuts are planted earlier than corn and are harvested between the first and second corn harvests. *Temporal* tomatoes also fit the schedule of corn, providing an alternative cash crop but one which involves more investment and risk. Irrigated tomatoes seem to fit the schedule, but as they require high labor inputs at the same time as the second corn harvest, when labor is in short supply, they are not necessarily a viable alternative.

Scheduling of agricultural activities is a major constraint on the agricultural system. The present schedule minimizes conflict but does not permit a large number of viable alternatives. Farmers who desire more cash income cannot produce more of the traditional crops without incurring labor shortages and scheduling conflicts; therefore, they are faced with a situation in which a shift to an entirely different strategy is necessary.

LABOR

At the most basic level, labor is organized along kinship lines. As Eric Wolf (1966) has pointed out, the family is the unit of production and consumption in a peasant society. In Chalcatzingo, however, there is a rather fluid boundary between the kinship units which are important for economic relations. The nuclear family is possibly the most strongly bounded unit, but beyond that the kinship units which are actualized in economic relations are highly flexible.

The critical labor periods are planting and harvest. Planting must be accomplished within a relatively limited period, or the entire schedule can be thrown off. Although one person can manage all of the jobs alone, time pressure causes conflict in the scheduling of activities.

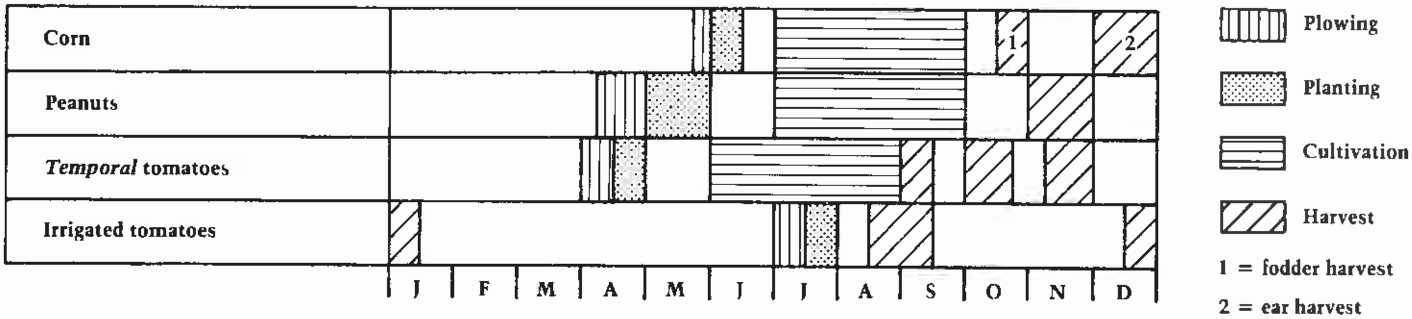


Figure 26.4. Annual agricultural cycle.

The minimal unit for farming is said to be two people, but this is a baseline which applies only at certain times. In fact, work groups of less than three persons are rarely seen in the field.

The most common task group is a man and his brothers or sons. One man plows and the others clear the weeds or sow the seeds. Often two or more brothers share both the labor and the harvest of a field. These arrangements are made on the basis of verbal agreements. The produce from the field may be pooled or divided, depending on the living arrangement and the type of storage facilities available.

Beyond the family unit, other kin ties may be called into play to accomplish given tasks. Often more distant relatives agree to a share of the crop in payment for labor for part or all of the season. This arrangement, called *en medias*, has benefits for both parties. On the one hand, the owner of the plot does not have to pay a fixed amount if the harvest is poor, and he is assured of the fact that his laborers will have an interest in the jobs. On the other hand, the worker who may be without land has the opportunity to invest his labor without the chance of disastrous loss. If this form of contract is possible, it is preferred by most parties. Another important fact is that the relationship between the workers is not one of employer-laborer, but is more reciprocal and equal. Such relationships are generally preferred over wage labor.

Contract wage labor is the third form of organization. In this case, a verbal contract concerning the type of work and the amount of pay is agreed upon before the beginning of the agricultural season or before the particular task. In 1975, payment ranged from 35 to 45 pesos per day, depending on the skill of the laborer and the job to be done. Although workers can be hired at any time, the most common need for labor is during the harvest season in December. Due to the rigid schedules which govern most of the farmers in the village, there are often shortages of labor during this period. In cases when labor is insufficient, the completion of the job must be delayed, causing further schedule conflicts or delaying the sale of the crop.

Consideration of the available labor supply and the timing of activities can be used to differentiate traditional and cash farming. The activities of traditional farming are scheduled so that conflicts are minimized. However, cash farming, especially of irrigated tomatoes, results in overlaps between the periods of traditional farming activity and those for the cash crop at the critical harvest period (see Fig. 26.4).

CONSUMPTION

Anne Kirkby (1973:89–90) determined that the average household of five persons in Oaxaca produces 2.4 metric tons (2,400 kg) of corn per year, half of which is used for subsistence and half as a "salable excess." At Chalcatzingo, the average consumption for a family of five (two adults and three children) is between 800 and 1,000 kg per year of corn. This figure was arrived at by questioning farmers as to their subsistence needs and by asking their wives how much corn they needed per day and then calculating the yearly consumption. Both estimates were almost the same within a family.

To the consumption of corn can be added a minimum of 175 kg of beans, 100 kg of squash seed, and chile in amounts which were not precisely determined. At Chalcatzingo, peanuts, rice, and other foodstuffs should be considered, as they make up an important part of the yearly consumption.

As Kirkby's estimates show, peasant agriculturalists do not only produce for consumption but must also meet other demands, such as a replacement fund (seed for the coming year), funds to maintain social relations, and funds for rent (Wolf 1966).

In 1972 and 1973, the average family of five at Chalcatzingo spent 3,000–5,000 pesos per year on food, clothing, and other items. Most expenses were not fixed but varied widely from family to family and from time to time. Given the average landholding of 3 ha, with a production of 1,500 kg/ha of corn, the average production was about 4,500 kg per family. If 1,000 kg was consumed and the other 3,500 sold for 1,000 pesos per metric ton (1972 prices), the family had a cash income of 3,500 pesos and had minimally met its needs. In addition, wage labor, the sale of fruits or other gathered products, or the sale of craft items can produce an income in excess of needs.

At worst, given the same amount of land and the minimal production rate of 500 kg/ha, the average family still produces 500 kg of corn beyond its subsistence needs. Therefore, in times of extreme stress, the family remains secure in meeting its subsistence needs but not its cash needs. During such times, family members seek wage labor outside of the village in order to meet their cash needs. If this is not possible, they try to reduce their expenses.

The Chalcatzingo data emphasize the contrast between the "breadbasket" state of Morelos and other Mexican states. The average family at Chalcatzingo consumes directly less than one-third of the agricultural production of its land, and the surplus is available for the support of additional persons through trade, taxes, or other means. Even in the worst of years some surplus is available, and with the reactions of different types of land to differing climatic conditions, careful management through spatial averaging or alternative agricultural strategies can provide even more. Although the productivity of agriculture is a function of the environment, the crops, and the technology, it is clear that a major factor in determining the ultimate production is what Wolf (1966:77) calls the "social imperatives."

DECISION PROCESSES

The present agricultural system of Chalcatzingo represents the outcome of a long history of individual decisions. At one level, agriculture can be viewed as a complex, goal-oriented, homeostatic system, but at the personal level, agriculture is the result of individual decisions made on the basis of personal goals and constrained by factors in the perceived environment. Although the latter perspective is largely beyond the reach of archaeological data, the individual decision-making procedures do have important consequences for the interpretation of prehistoric subsistence and settlement systems.

The goal of most farmers at Chalcatzingo is to provide their families with food and the required necessities for maintaining their households. To achieve this in the face of the changing productivity of their land takes considerable knowledge and planning. The important constraints on the individual farmer can be determined by an analysis of the decisions which are made and the alternatives which are available.

The diagram of the sequence of decisions and their consequences is shown in Figure 26.5. Beginning with the primary decision—the setting of the production goals for the year—the succeeding decisions are indications of the constraints on production. As described previously, land, labor, and capital are the critical factors which determine the amount of land cultivated. The individual farmer must compromise his goals with what, in reality, is possible. If land, labor, or capital are lacking, the farmer must either acquire them or must reset his goals accordingly.

As long as agricultural activities remain confined to the household, there are maximum limits on the amount of land which can be worked. With most families, land is the critical variable in the system. The average landholding is about 3 ha, but it is possible for a farmer to cultivate 4 ha without undue difficulty. Therefore, the problem for most farmers is to either acquire more land or reset the production goals.

Labor requirements are easier to meet, as there are numerous means available for sharing or hiring labor. Labor inputs are, of course, variable throughout the agricultural season but tend to be minimized at the planning stage. Careful planning plus the rigid scheduling system tends to minimize labor problems. Similarly, capital is not a major problem for traditional farming since a minimum of capital investment is involved.

Comparison of the decisions made at Chalcatzingo with those made by farmers in Oaxaca (Kirkby 1973:56ff.) shows points of similarity and difference between the two areas. Oaxacan farmers also are not oriented toward maximal land use but tend to satisfy fixed goals. There, farmers calculate the amount of land needed, the amount to be fallowed, and the distribution of the crops. However, in Oaxaca the farmer also decides on the date of planting, the density of the crops, and the varieties of corn planted. At Chalcatzingo, none of these latter decisions are made; rather the Chalcatzingo farmer makes decisions at the strategic level.

As indicated by the diagram, the goal-setting decision is influenced by a number of factors, many of which tend to change from year to year. The farmer's strategy, however, is a major factor in determining the agricultural goals, and is not significantly influenced by yearly variation in the contributing factors. Therefore, it is possible to determine two logical levels of decision making, a higher "strategic" level resulting in the setting of goals and the "tactical" level involving the means of achieving those goals. With the exception of the goal-setting decision, the majority of decisions in Figure 26.5 are tactical, as they involve the means for achieving the goal once it has been set.

Strategic decisions are determined by the amount of subsistence production necessary, the sociological imperatives, and the sociocultural constraints which are in operation. Four distinct choices can be made at the strategic level. The farmer may follow the traditional strategy of producing partly subsistence and partly cash crops, he may produce only subsistence crops, he may produce only cash crops, or he may not engage in agriculture at all.

Strategy Alternatives

If a subsistence strategy is followed, approximately 1 ha of land is sufficient to supply a family of five if cash expenditures are kept at a minimum. Very few families are or have been in such desperate circumstances that they must rely on subsistence agriculture alone; however, it has happened in the past and is likely to occur again. Such a situation might occur with the incapacitation or death of the head of the family.

Few families practice no agriculture. Since the termination of the *bracero* program, most family heads have not chosen to restrict themselves to wage labor alone, although an exclusive wage labor strategy may be followed by those without access to land. The majority of wage laborers are young adults who migrate to the city. A mixed strategy of farming plus wage work is also possible for those with special skills, such as farmers who raise subsistence crops during the agricultural season and work for wages as masons, etc., during the dry season.

The most common form of agricultural strategy is the traditional pattern of mixed subsistence and cash farming. Due to the scheduling system and the distribution of land within the village, some farmers attempt to grow a crop of irrigated tomatoes in addition to the usual crops of corn and peanuts. The tomato crop matures in late December during the corn harvest. While the mix of corn and peanuts is typical of Chalcatzingo, only 6 percent of the farmers attempt to grow irrigated tomatoes each year.

Since the tomato crop is viable in terms of scheduling, it would seem that the increased investment in terms of cash and labor is the major constraint on its acceptance. Tomatoes are a risky crop, and many farmers complain that they are difficult to grow. In 1975 all but one field of irrigated tomatoes in La Esperanza had been affected by disease and failed to produce salable crops. The only productive field at that time was owned by a farmer who cash crops on a full-time basis and who had stopped the blight by daily applications of fungicide. In his case, the reduction of risk was dependent upon his experience with the crop and his ability to vastly increase his labor and cost inputs. Not all risk with tomatoes will respond to increased labor, however. Too much or too little rain may significantly decrease the production, as will high temperatures, improper fertil-

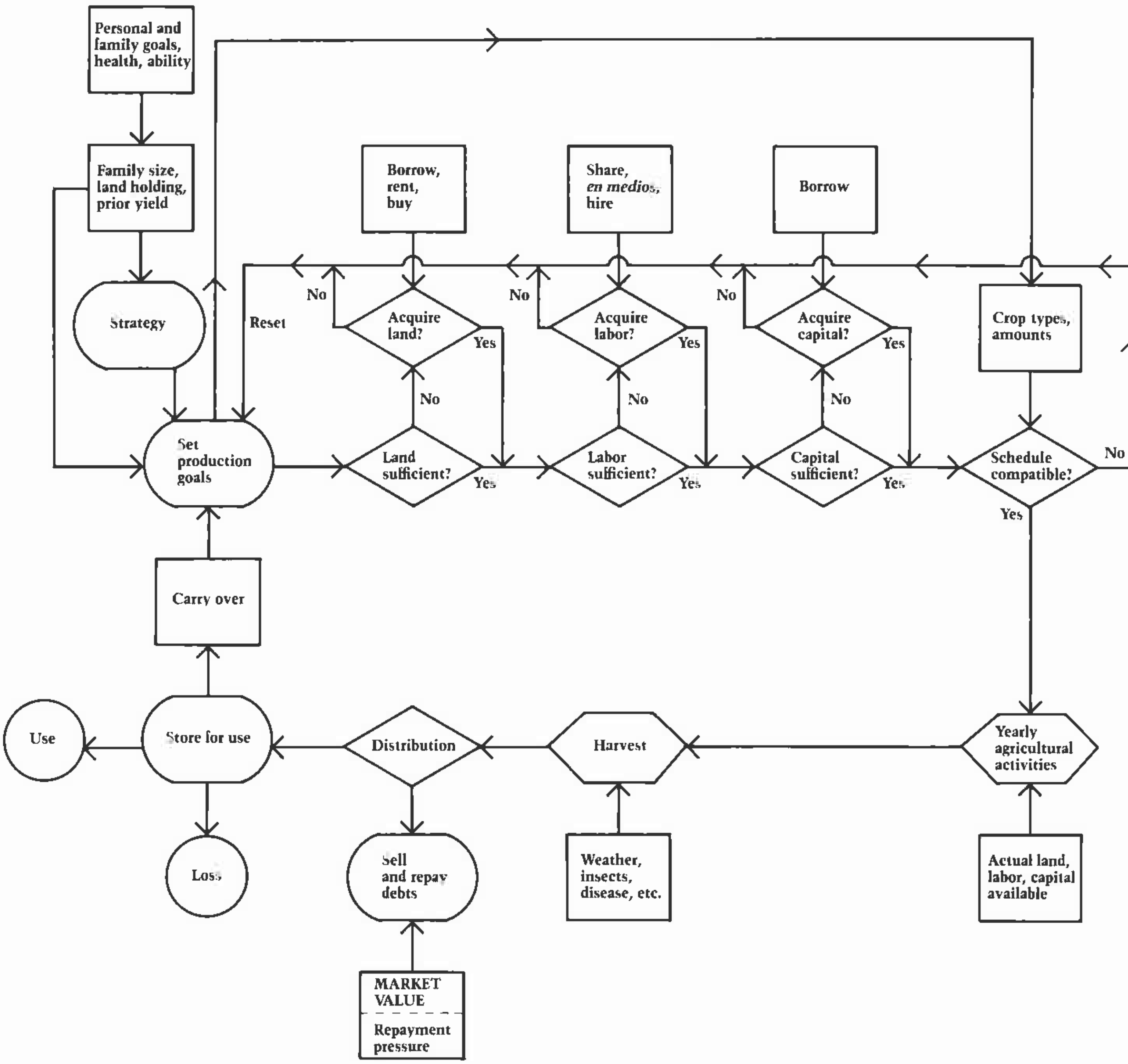


Figure 26.5. Agricultural decision-making flow chart.

ization, or other complications.

The fourth alternative is the planting of cash crops alone. This is a very limited possibility today, due largely to the small amount of irrigated land available. At other villages in the valley upstream from Chalcatzingo, farmers who have access to irrigated land often grow cash crops of onions, tomatoes, chiles, beans, or sugarcane. At Chalcatzingo, there are only two farmers who regularly plant only cash crops. Another four farmers grow only cash crops during some, but not all, years. Since failures with cash crops are often total when they occur, this strategy is not viable without some sort of backing. Those villagers planting only cash crops were able to fall back on kinsmen who provided them with food and cash in case of a total crop failure.

Alternative Tactics

Measures which Kirkby (1973:54–59) found to vary in Oaxaca, such as date of planting, plant spacing, distribution of crops on different soil types, and the area planted, are almost without variation at Chalcatzingo. The system here is marked by stability, a lack of tactical decision-making, and very little game-playing.

Planting dates are set by custom; the reasons for the dates are unknown and planting at different times is not done. The planting dates are not changed, although farmers try to predict the beginning or intensity of the rains. Since only one type of maize is commonly used, there is no attempt to plant early and late crops or insurance crops, as is the case with Oaxaca and Veracruz (Kirkby 1973; Coe 1974).

Peanuts are planted from May 1 to May 30, depending on when the plowing is done. Maize is planted from June 13 to June 23. Beans and squash are planted at the same time as corn. Irrigated crops such as tomatoes, chiles, and onions are planted from August 2 to August 5.

The inflexibility of the planting dates represents a subtle working out of the seasonality (environmental timing) of climatic factors and the requirements of individual crops. The planting dates minimize the effects of climatic variation and reduce conflicts of scheduled activities. The June planting dates for corn are late enough to insure that the rainy season has begun, but early enough to avoid damage to the plants in the dry period in August. Although corn could be planted earlier in some years, false starts of the rainy season are common. In 1972, the rains seemingly began in May, but there followed a month-long dry period until the middle of June. Had corn been planted with the rains in May, it would not have survived. On the other hand, if corn is not planted early enough, it does not have sufficient storage capacity to enable it to survive the August dry period.

Similarly, if corn were planted earlier, then the timing of the harvest would conflict with the harvest of peanuts. If it is planted later, green corn would not be available during the summer months (when there is the greatest food shortage), and the harvest would reduce the time available for wage labor and would probably result in lower prices for the corn that is sold. Therefore, variability in planting dates, because of the systemic nature of agricultural activities, would have resultant effects throughout the agricultural cycle. Dislocations at the beginning of the year bring scheduling conflicts later.

In the case of other potential sources of variability such as plant spacing, other explanations must be sought. Plant spacing is determined by the techniques of plow agriculture (Fig. 26.6). The planters follow the plow and every two steps drop the seed and cover it. Row spacing is determined by the spacing of the yoke of oxen. Plant spacing measured in three fields averaged 85.6 cm with a range of 56–114 cm and a variance of 8.4 cm. Row spacing averages 86 cm with a range of 80–100 cm and a variance of 7 cm. Plants average 4.1/m². These figures were found to remain constant despite differences in soil type and location. The data suggest that plant and row spacing are not varied as the result of tactical decisions.

The distribution of crops within the Chalcatzingo area is also not the result of a tactical, event-matching decision but is determined by strategic decisions made before the agricultural season begins. The decisions are made on the basis of how well the production of the preceding year met the actual needs of the farmer. The distribution of crops, the particular mix of subsistence and cash crops, depends upon such factors as family size, expected cash needs, production in the preceding year, and important personal factors such as health, ability, and the desires of each farmer. This analysis of Chalcatzingo concurs with that of Oaxaca by Kirkby (1973) that a basic constraint on the productivity of the agricultural system is the desire on the part of the farmer to meet his expected needs with a minimum of labor expenditure.

Therefore, the goal of the agricultural system at Chalcatzingo—to provide a consistent and adequate supply of food and crops for sale—is met despite environmental variability. Farmers attempt to estimate their needs and set their production goals at the beginning of the season. Once the season has begun, there is very little game-playing or variation in techniques since farmers are constrained by their labor supply and the schedule of agricultural activities.

Figure 26.6. Traditional and modern agricultural methods.

Due to this rigidity of the farmer's schedule and the limited amount of land and labor available, there are few viable alternatives to the traditional agricultural system. Although farmers experiment with new crops and techniques, change seems to occur only when a new *strategy* is attempted. The success of these alternatives is largely dependent on the nature of the larger socioeconomic system of which Chalcatzingo is only a part.

IMPLICATIONS FOR AGRICULTURAL DEVELOPMENT

Studies of the modernization of peasant agriculture fall into two broad categories: those which take an evolutionary approach and those which emphasize the dependence of peasant farmers on the world capitalist economy (Long 1977:9). The former stress the role of sociocultural factors such as traditional values and ritual obligations which are seen as barriers to modernization (Foster 1962; 1965; 1967; Rogers 1969). Dependency theorists, on the other hand, see peasants as rational decision-makers who are barred from development by the economic domination of the world economy (Baran 1957; Frank 1969a; 1969b; Matos Mar et al. 1969; Stavenhagen 1969).

At Chalcatzingo neither ritual obligations nor traditional values seem to present barriers to modernization; yet the barriers which do exist are not as simple as the dependency theorists suppose. While it is the case that farmers are for the most part rational, efficient, and profit-oriented, constraints on development exist at many levels. These have been enumerated with the consideration of decision-making and alternatives which exist at the tactical and strategic levels. The basic parameters of the system are the amount of land available for agriculture and the demographic factors which determine labor availability and production goals. Ecological constraints are revealed in the character of the climate and the soils and in the requirements of different crops. The scheduling system integrates the lower-level parameters and variables into a coherent functional whole. The socioeconomic context determines the viability of the system in terms of the national economy.

Experimentation with new techniques and crops is constant at Chalcatzingo, but most attempts to change do not prove viable, given the constraints of the system. Under the conditions of farming at Chalcatzingo, there is little margin for error, as most farmers do not have the resources to survive either a single crop failure or a year of low prices. Mechanisms to decrease risk are simply not available to the majority of families. Therefore, most farmers follow the conservative strategy of traditional agriculture which will meet their needs with a minimum of risk.

IMPLICATIONS FOR ARCHAEOLOGY

Applying these conclusions to prehistoric agriculture, it is evident that the most likely cause of change in adaptive strategies is the character of the selective pressures in the socioeconomic environment, given the stability of other factors. Agricultural intensifications such as the construction of terraces and water-control systems during the Formative were, I believe, in some way related to contact with the Gulf Coast. But, following Flannery (1968:79–80), the problem is to explain changes in subsistence strategies without invoking Olmec migrations, missionaries, or conquests. Similarly, the system of long distance trade in exotic raw materials (Flannery 1968; Grove 1968c) is not likely to have affected the subsistence base.

Both Flannery (1968:105–107) and William L. Rathje (1972) have proposed explanations for the growth of Formative cultures which emphasize the process of economic symbiosis. Both have proposed the import of raw materials into the Olmec heartland. In turn, the Olmec may have exported religious knowledge, symbols, and "status trappings" (Flannery 1968:105) or "systems of social integration" (Rathje 1972:386–387). It is difficult to specify how either symbols of status or ideas of organization could have been responsible for the massive building projects at Chalcatzingo. What is lacking in both models is a means of social control.

The hypothesis I propose here is that calendric knowledge and associated rituals may have provided the missing mechanism. Scheduling, especially of the initiation of agricultural activities, is the single most important factor determining the viability of agricultural innovations. Scheduling organizes and determines variables such as the amount of land planted, the distribution of crops, and the type of crops. In order to be accepted, new techniques and crops must be compatible with the scheduling system.

Given the fact that farmers are poor predictors of the onset of the rains, individual scheduling decisions would tend to reduce overall production and lead to a diffuse pattern of activities. If, on the other hand, scheduling decisions were vested in a few individuals with esoteric knowledge of calendrics, predictability would be increased, crop losses reduced, and activities synchronized. Calendric regulation of the agricultural cycle would therefore provide the local elite with a powerful means of social control, a means whose accuracy was demonstrable and reinforced by ritual. With such controls, the elite could gain the leverage necessary to begin the processes of agricultural intensification and control the subsistence system.

Calendric organization of the agricultural cycle also leads to the definition of non-agricultural periods. Without scheduling, farmers may tend to scatter their non-agricultural activities throughout the year, as at Tepoztlan (Lewis 1951:150–153), leaving no time available for community activity. Calendrically defining a non-agricultural period would have made labor available for the massive construction projects which were carried out at Chalcatzingo during the Formative period. Introduction of a calendar may have been a first step for a group of specialists establishing social control. The emphasis of some carvings at Chalcatzingo on weather "control" and fertility (Chapter 10, Area I-A monuments) suggests that such an event may have occurred with Olmec contact.

RESUMEN DEL CAPÍTULO 26

El sistema agrícola en Chalcatzingo en el presente es el resultado de una larga historia de decisiones individuales tomadas por los campesinos con la intención de proveer de alimento a sus familias y poder cubrir otras necesidades. Las variables que entran en juego al hacer las decisiones en materia agrícola son muchas—tierra, labor, capital, requerimientos de los cultivos, disponibilidad de almacenamiento y facilidades de transporte, etc. La tierra agrícola es ejido, o es de propiedad privada. Una pequeña cantidad es de riego y la mayoría de temporal. Los campesinos distinguen dos tipos básicos de suelo, tierra negra, el suelo orgánico más productivo que se subdivide en los tipos arena y barro, y la tierra amarilla. Ciertos cultivos serán más productivos en uno o en otro tipo de suelo, y en tierra irrigada o en la de temporal, pero dado que todos los campesinos no tienen acceso a todos los tipos de suelo y tierra, deben escoger qué cultivos emprender y en dónde, cada estación del año, en función de las necesidades que tengan.

Los cultivos en Chalcatzingo incluyen tanto los de subsistencia como los de venta. Los cultivos de subsistencia básica son el maíz, los frijoles, y la calabaza. El maíz es de la variedad indígena, maíz criollo, el cual está relacionado con el pepitilla. El maíz híbrido podría ser más productivo, pero no ha tenido éxito porque requiere grandes inversiones de capital (en la forma de fertilizante), labor, e irrigación para lograr productividad máxima. Los cultivos de venta importantes son los cacahuates y los jitomates, los cuales requieren una inversión de trabajo bastante pesada, y los jitomates además necesitan mayor inversión de capital en forma de cajas, antiplagas, e insecticidas.

El trabajo puede ser un factor crítico en la agricultura dado que la cantidad que de él se requiere varia a lo largo de la temporada agrícola. Los periodos críticos de trabajo son la siembra y cosecha, los cuales son diferentes para los distintos cultivos. El campesino debe escoger sus cultivos basándose no sólo en los cálculos de sus necesidades, sino también con respecto a esperar los menores conflictos posibles al pretender utilizar el trabajo familiar o asalariado. Las actividades agrícolas tradicionales han sufrido una evolución a lo largo de un período grande de tiempo y han llegado al punto en que los problemas de programar el trabajo debieran no presentarse. Sin embargo, el cultivo para venta tiene como consecuencia el que tenga que sobreponerse a los períodos agrícolas tradicionales, con los cuales entra en conflicto precisamente en el momento crítico de la cosecha.

Dadas todas estas restricciones, el campesino tiene que hacer frente cada año al problema de escoger entre cuatro estrategias básicas: emprender sólo cultivos de subsistencia, emprender sólo cultivos de venta, emprender ambos cultivos de venta y subsistencia, y no emprender ningún cultivo. La estrategia seguida más comunmente es la tercera, o sea emprender ambos cultivos de subsistencia y venta con objeto de poder alimentar tanto a la propia familia, como también tener un ingreso adicional, aun cuando los campesinos con ello tienen que hacer frente a problemas de programación de la tierra y de empleo del trabajo en una situación de conflicto entre dos estrategias relativamente inflexibles.

Una vez hecha la decisión de qué estrategia seguir al principio de la temporada agrícola, cada campesino tiende a seguir las prácticas agrícolas de costumbre desarrolladas para minimizar los riesgos de pérdida. Por ejemplo, la programación, el factor más crítico, se encuentra fuera del alcance de cada campesino una vez que decide qué cultivos emprender, dado que las fechas para la siembra están dadas por la costumbre.

Si éste hubiese sido el caso dado en el pasado, i.e., si las decisiones de programación hubiesen sido hechas no por cada campesino sino por unos cuantos individuos dotados de conocimiento esotérico sobre el calendario, ello podría ayudar a explicar el surgimiento de una élite local con un medio de control social bastante poderoso. Esta élite pudo haber determinado la programación no sólo de las actividades agrícolas sino también de las no agrícolas, i.e., públicas o ceremoniales. La introducción de un calendario, controlado por una élite en ascenso, pudo haber sido un acontecimiento principal en la evolución de la complejidad sociopolítica en Chalcatzingo.

27. Comments on the Site and Its Organization

DAVID C. GROVE

GENERAL COMMENTS

Location

The Río Amatzinac Valley is agriculturally marginal when compared to the fertile river valleys of Morelos lying to the west and the Izúcar de Matamoros valley to the east. The river, which has cut a deep barranca, has few areas of broad alluvial soils or high natural humidity. While it is possible to hypothesize that the rise of certain early centers, such as San Lorenzo on the Gulf Coast, was related to agricultural productivity and surpluses, such cannot be the case for Chalcatzingo.

The initial population of the valley by early agriculturalists most probably involved splinter groups from the Río Cuautla settlements to the west, an area with great population and land pressures. The Early Formative inhabitants of the Río Amatzinac Valley, in moving into this more marginal region, were obviously motivated in their choice of settlement locations by three major factors: proximity to accessible water, to good agricultural land, and to a variety of vegetation zones with collectable plant resources. Taking all three factors into consideration, the Chalcatzingo hillside was probably the most favorable location in the valley. A spring occurs at the bottom of the hillslope, and the water of the Río Amatzinac, while in a deep barranca, is nearby and accessible. The hillslopes and the spur known today as La Joya (which lacks archaeological remains) are elevated above the valley floor and the Pithecellobium Woodland cover, and today are considered to be good agricultural land. The woodlands lie to the north and west of the site, Huizache Grasslands to the south, and the hills and barranca provide a further range of plant communities for exploitation.

The Community and Its Support

While Chalcatzingo was the largest valley settlement during the Early Formative Amate phase, it does not seem to have attained the size of villages to the west in the Río Cuautla Valley (e.g., San Pablo; Grove 1974b). Further data are needed on the architecture of central Mexican Early Formative period settlements before it can be ascertained whether Chalcatzingo's Amate phase mounds are unusual for the region and would mark the site as already special by ca. 1000 BC. The lack of identified public architecture outside of the Río Amatzinac Valley during the subsequent Middle Formative period suggests that Chalcatzingo may indeed have been unique or special in the Early Formative as well.

Although a few small hillside terraces may have been constructed during the Cantera phase or possibly even during the Classic period, the major terracing at the site took place during the Early Barranca subphase. The archaeological data from the site do not illuminate any of the possible causal factors behind the community decision to create the terraces. For instance, we lack fossil pollen from the Early Barranca subphase and thus are unable to recreate environmental conditions at that time. It seems probable that the terracing was not directly stimulated by observation of other functioning terraces (and their advantages) in the region, for as far as we can determine such terracing is uncommon in eastern Morelos and the Amatzinac valley.

R. A. Donkin's (1979) analysis of aboriginal terracing in the Americas provides some possible causal explanations. For example, terracing normally occurs in areas of marginal rainfall, that is, where annual precipitation is less than 900 mm (ibid.: 7). Such terracing not only eases the problems of cultivating hillslope land but also creates a surface which better traps and retains sparse rainfall and moisture. As noted in Chapter 2, most of the Amatzinac Valley, including Chalcatzingo, has a yearly rainfall approximating 900 mm; thus terracing would have improved moisture retention while at the same time the built-in water diversion systems protected the agricultural land and habitation areas from excessive rainfall runoff.

Michael Coe and Richard Diehl (1980: 1:387) suggest that the San Lorenzo plateau was constructed in the form of a giant bird. Donald Lathrap (personal communication) believes that at the site of Las Haldas, Peru, the terraces topographically symbolize a stylized cayman's jaw. Whether the form of Chalcatzingo's terraces had symbolic as well as practical value remains a matter for speculation. An obvious and prominent artificial topographic feature at Chalcatzingo is T-27, which forms a rectangular thumb projecting northward from near the center of the lower terraces (Fig. 4.2). Its central position suggested to us the possibility of symmetrical arrangements on the site, and this hypothesis was tested during our excavations. For instance, the site's table-top altar, Monument 22, was found just to the east of T-27. Excavations in the same area on the west, however, found absolutely nothing. No center line caches or unusual features were found by the excavations atop T-27 either. With imagination the T-27 thumb could be conceived of as the bottom lobe of a cruciform earth-monster mouth such as characterizes Monument 1, 9, or 13. In the same vein it might be significant that a line projected toward the true north from Monument 1 on the hillside crosses T-27 along its approximate center line. However, it is far from certain that the builders of the terraces incorporated symbolic motifs in the terrace constructions, or that T-27's location is due to any other reason than that it covers a protruding ridge of bedrock and *tepetate* which extended too far northward to be covered by the regular terracing.

Other layouts on the site are of more certain importance in terms of religious symbolism. The major public structure (PC Str. 4) and the major public terrace (T-1, the Plaza Central, location of the elite residence and high-ranking burials) are situated at the upper part of the hillslopes and are close to the cleft separating the mountain's twin peaks. This placement seems clearly related to the sacred character of the mountain and the cleft.

The main settlement occurred on the terraces below the Plaza Central. Because the residences sit alone on individual terraces or field plots, spaced as much as 100 m from their nearest neighbors, we have described the pattern as "dispersed" (Chapter 6). This "dispersed" settlement spreads out from the nucleus represented by the Plaza Central terrace and its 70 m long platform mound. It is difficult to determine whether this "dispersed" or noncompact residence pattern was common for Middle Formative central Mexico, since the other archaeological data available are not comparable. Those data derive from the regional surface surveys conducted by Jeffrey Parsons, Richard Blanton, and William Sanders in the Valley of Mexico, and their conclusions depend heavily upon sherd densities and site extent for the settlement classifications (e.g., Sanders, Parsons, and Santley 1979:37–39, 55–58). The Valley of Mexico surveys define both "nucleated" and "dispersed" villages during the Middle Formative period (e.g., ibid.: Maps 9, 10). Dispersed villages were determined on the basis of "light" sherd concentrations, or 9–25 sherds/m² (ibid.:39, 56). Nucleated occupations have "light-to-moderate" or "moderate" densities, or up to 200 sherds/m². Our Río Amatzinac Valley survey (Chapter 21) used more generalized criteria, but no Cantera phase settlement, including Chalcatzingo, had greater than a "B" density (10–39 sherds/m²; Tables 21.1, 21.2).

If the Valley of Mexico criteria are used, all larger sites in the Río Amatzinac Valley ("B" density) can be classified as dispersed. But does a dispersed settlement identified on the basis of surface sherd scatter really equate with the dispersed residence pattern recovered by both intensive reconnaissance and excavations at Chalcatzingo?

Each terrace or field at Chalcatzingo has one area of dense ceramic debris which serves to identify the house location. We do not know if "dispersed" villages in the Valley of Mexico exhibit the same pattern, nor are there excavation data there to ascertain whether the residences in villages classified as "nucleated" or "compact" are actually more closely spaced than those in "dispersed" villages, or whether the "dispersed" villages lack nuclei. Before speculating on the reason for both compact and dispersed settlements in central Mexico, it must first be determined that such a dichotomy is real.

A strict dependence on surface collection data for settlement classification can lead, in this instance, to misclassification. Based upon criteria other than sherd densities, Mary Prindiville and I (Chapter 6) have suggested a very low population for Cantera phase Chalcatzingo. Our estimates do not agree with the population estimates given for the site in Chapter 21 and Appendix H. If classificatory criteria are used, our population estimate would designate Chalcatzingo a Small Village, which we believe it was. At the same time we also realize that Chalcatzingo was a Regional Center, but without the population of two thousand or more people "required" for such a classification (Table 21.3; J. Parsons 1971:22).

Chapter 6 also suggests that individual terraces or field units, each with its residence, were passed on in a hereditary manner, either through family or lineage. At Chalcatzingo the Plaza Central terrace was apparently the residential area of the site's major elite ("ruling") lineage, and the individuals buried atop PC Structure 4 may have been members of that lineage. This situation appears similar to that in later Classic Maya centers, where each plaza with its surrounding structures was the residence, ritual, and burial area of a specific lineage.

The presumed nonresidential areas surrounding each of Chalcatzingo's Cantera phase houses could have served as garden plots for food production. Using the data on modern agricultural yields from Chapter 26, and halving the yields to account for more primitive forms of maize, it is probable that a hectare of land could have supported a family of five. However, few terrace units and fields at the site approach a hectare, and most are substantially smaller. This implies that other land in the vicinity was also farmed.

As stated above, the major terrace construction dates to the Early Barranca subphase. Included in this massive construction effort was the placement of thumb-like check dams across the two major rainwater drainages. The diversion of El Rey Drainage protects almost all upper terraces from erosion due to rainwater runoff from the Cerro Chalcatzingo. The T-15 diversion dam (T-15 Str. 1) is built onto one of the lower terraces. Because its function was ultimately to protect fields lower on the hillside from uncontrolled rainwater runoff, it can be inferred that an extensive area below T-15 was utilized for agricultural purposes. Today most of the land below the terraces is privately owned and is irrigated by a simple gravity flow system (Chapter 2). Such an irrigation system possibly operated during the Formative period as well.

It is also possible that, as a regional center, the community at Chalcatzingo received additional agricultural support as tribute or via exchange with the valley's other settlements. In addition to basic vegetable staples such as maize, beans, and squash, animal protein may also have been imported. This is suggested by the large quantity of dog bones in the refuse (Appendix J). Deer and rabbit seem to have been secondary meat supplements, although whether gained through hunting by local residents or as another import cannot be determined.

Intra-Valley Relationships

The Río Amatzinac Valley, an area differentiated archaeologically from the surrounding areas, was clearly the local interaction sphere for Chalcatzingo. Survey data (Chapter 21) have delimited northern, central, and southern valley settlement clusters, and these seem to be at least somewhat distinguishable by some artifact attributes. However, these artifact variations are minor in terms of the strong influence exerted throughout the valley by Chalcatzingo. The overall valley cultural cohesion is most apparent in ceramic types such as Peralta Orange and in the Ch1 and C8 figurines, all of which are abundant within the valley but rare or absent on the outside.

Such valley ties likewise extend into architecture. Middle Formative period public architecture is virtually undocumented in areas of central Mexico other than the Río Amatzinac Valley, where at least four Cantera phase settlements other than Chalcatzingo have mound architecture. The presence of public architecture at these sites may mark them as secondary centers, perhaps formed through the fissioning of or marriage into Chalcatzingo's elite lineage(s). Unfortunately, the interpretation of surface reconnaissance data does not agree completely with the postulated link between mound architecture and secondary center status. Campana de Oro (RAS-20) is classified by survey criteria as a Large Village, and El Palacio (RAS-112) as a Small Village, yet both sites have mound architecture (Appendix H). Mound architecture is also found at an unnamed Small Village (RAS-164) and at Telixtac (RAS-144), a Hamlet. Teresita Majewski (Chapter 22) disagrees with the Hamlet classification of Telixtac, and the presence of the large mound there does suggest that it may have been larger and more important than reconnaissance data alone indicate.

Because of the relatively small sample of artifacts, burials, and residential structures at Telixtac and Huazulco, a question remaining to be answered is how different the sociopolitical complexity in these communities was in comparison to Chalcatzingo's. Of particular interest would be the differences in rank or status between the regional center and the various lower levels of the valley settlement hierarchy. Although not elucidated by the present data, it could be possible that everyone living in the regional center had a generally higher rank or status than persons living elsewhere in the valley.

Markers of Ranking

The analysis of ranking or status at Chalcatzingo itself has been drawn primarily from the burial data (Chapter 8). Stone crypt graves and jade artifacts were taken as the two major identifiers of high rank at the site. The presence of *cantaritos* placed inside shallow bowls with burials of apparently high-ranking individuals at both La Venta and Chalcatzingo indicates that these otherwise unimposing vessels probably became important markers when placed together as a unit in a grave. The quantity of vessels apparently meant less than a particular quality which was perceived for certain pottery items. This illustrates a problem in attempting to identify individuals' social rank through grave associations, for the cognitive value system of their culture was obviously very different from ours. A person's rank or status and role in a society during life are obviously symbolized in a variety of ways. Most such symbolization is seldom preserved in the archaeological record. It is also possible that certain artifacts associated with burials are less indicators of individual rank and more indicators of ritual status. While the two may often correspond closely, in some instances they may not. Persons ritually sacrificed may have had a low rank in life, but the ritual associated with their death might require elaborate grave furniture.

Location and burial data suggest that Late Cantera subphase PC Structure 1*d* housed the site's highest-ranking elite. Thirty-eight burials were recovered from the subfloor area of this residence, almost four times the number from any other excavated house. The quantity of burials from the other residences seems low if it is assumed that the residents of each household were buried only under their house floor. As Marcia Merry de Morales has suggested in Chapter 8, special members of other households, possibly prominent lineage heads, may have been interred beneath PC Structure 1*d* rather than within their own residences. The data also show that many individuals were interred in nonresidential contexts, e.g., the T-25 patio area.

Workshop Areas

Whereas at San José Mogote, Oaxaca, workshop functions can be attributed to many of the residences, and occasionally a great deal of variation exists in manufactured products between houses (Flannery and Winter 1976:38–41; Kent Flannery and Joyce Marcus, personal communication), few workshop activities are apparent at most of Chalcatzingo's house structures. An exception is found with PC Structure 2, a structure associated with the Cantera phase elite residence. Here drill cores and quantities of iron ore (some with ground surfaces) indicate workshop activities.

Although no house structure was located on T-37, the large concentration of obsidian debitage there (Chapter 19) indicates a workshop somewhere in that area. A minor dichotomy exists in the chipped stone tool assemblages among certain houses (Chapter 18), but the implications of that dichotomy, particularly in terms of any possible "workshop" functions, are unclear. Other possible workshop areas, far more tenuous, are mentioned below. However, the general lack of workshop activities at the site may well indicate that unlike the situation at San José Mogote, such activities were not important to Chalcatzingo's overall role and maintenance.

Based strictly upon the quantity and variety of figurines recovered on T-24, Mark Harlan (1979:488) hypothesized that a figurine workshop was there. However, excavations did not uncover supporting evidence in the way of kilns, wastage, etc. In the same manner, certain data have suggested to us that S-39 might have had ceramic workshop functions, yet kilns and wastage are also lacking there and elsewhere on the site. If anywhere on the site kilns were separate from structures, they would probably have been missed by our excavation sampling techniques but should have been recognizable, if near the plow zone, by surface indications (some Classic period lime kilns were discovered in this way). If kilns were constructed on the interterrace slope areas, they remain undetected. Due to the role of Chalcatzingo as a regional center and its interaction with other areas (Chapter 28), it is possible that the pottery used at the site was manufactured at another village in the valley. If this was the case, the village would probably have been north of Chalcatzingo, since minor decorative variations set the Peralta Orange ceramics of the southern valley subsphere apart from those of Chalcatzingo.

Rituals of Termination

The fill of every excavated house structure yielded fragments of greenstone artifacts, primarily thin jade earspools, even though jade was absent from all house burials except those of PC Structure 1. These jade fragments could be interpreted as "workshop debris," yet other evidence of jade working was generally lacking, and social strictures prohibiting jade workers from being jade wearers (at death) would have to be hypothesized. Recent data from the Late Formative period site of Cerros in Belize provide another and more probable explanation. At Cerros, David Freidel (personal communication) and James Garber (1983; personal communication) have identified ritual activities associated with the termination of the use of major structures. These rituals included the breakage and scattering of ceramics and jade.

It was pointed out in Chapter 6 that Chalcatzingo's house structures had been periodically destroyed. The reasons for the destruction may have been pragmatic, such as the residence's age and deterioration, or ideological, such as the death of the dwelling's main personage. It is quite possible that rituals accompanied the destruction and that these included the breakage of ceramics and jade, just as rituals of termination resulted in similar artifact breakage at Cerros. Thin earspools would be the most easily broken items of Chalcatzingo's jade assemblage. The house structures were subsequently rebuilt, and debris from the termination ritual would have become incorporated into the fill. It is normally assumed that potsherds found in house excavations are the result of normal breakage related to household activities. In light of the possibility of termination rituals involving both jade and ceramics, this notion must be reexamined.

The destruction of specific monuments at Chalcatzingo and in the Olmec heartland can likewise be attributed to termination rituals, in these instances coincident with the death of the personage portrayed (Grove 1981b). In Chapter 10 Jorge Angulo offers the possibility that figurine decapitation may be the equivalent of monument mutilation but on a non-elite level. The Chalcatzingo figurine sample, like that from many Mesoamerican assemblages, consists primarily of detached heads and bodies. Very few whole figurines were recovered. The common and purposeful mutilation of figurines by breaking off their heads seems to indicate that some important ritual function was served by this breakage.

Figurines

The typology of figurines presented in Chapter 14 follows that of George C. Vaillant very closely. This approach presented problems in the analysis (Chapter 14) because variability exists within Vaillant's types, and some attributes crosscut types (see Vaillant 1930; 1935). These shortcomings, together with regional variation, have made typological consistency between the Chalcatzingo figurines and those of the Valley of Mexico difficult to attain. Nevertheless, Chalcatzingo's figurines, more than any other artifact category, compare closely with those of the Valley of Mexico, and a large number are identical. On the other hand, Harlan's classification (Chapter 14) is important in that it recognizes that an equally large number of figurines, while similar in all other attributes, exhibit a distinctive eye treatment. This eye treatment distinguishes them not only from Middle Formative period Valley of Mexico figurines but from those of central and western Morelos as well. While the eye treatment seems to be restricted to the Río Amatzinac Valley, our sample does not indicate any major intra-valley differentiation.

"Baby-face" figurines are Early Formative. Only a few were recovered by our excavations (Fig. 14.4), since our work in Amate phase levels was minimal. Almost all Early and Middle Formative period figurines recovered were solid, but a few hollow examples occur (Fig. 14.8*a*). Among these latter was the top of the head of a white-slipped hollow (and presumably "baby-face") figurine found adjacent to a foundation wall of PC Structure 1*a*. Some Middle Formative figurine bodies depict enlarged stomachs, suggesting pregnancy (Appendix E). Many of these show slits in the sternum–upper belly area.

Because the figurine sample is so large, the quantity of unusual figurines recovered is also larger than "normal." A few of these show facial and hair treatments similar to those of Xochipala figurines from Guerrero (Gay 1972b). This suggests interaction with that region and implies that many of the elaborate Xochipala figurines may be Middle Formative in date. However, it should not be assumed that all unusual figurines result from interaction with as yet undetermined areas. Many could be local innovations. Thin-section analysis of the figurine clays, as was done for the site's major ceramic types (Chapter 13), will assist in the recognition of non-local figurines.

A figurine type which can be considered local to the Río Amatzinac Valley is the type defined by Vaillant (1930:112) as C8. While C8 figurines have been found in the Valley of Mexico and in western Puebla in minor quantities, at Chalcatzingo they constitute 41 percent of the Middle Formative figurine heads, and they seem to be similarly important throughout the valley. While most central Mexican Middle Formative figurine heads show generalized, stylized facial features, the facial features of C8 figurines are far more specific and realistic. Variation in facial features is so specific that subtypes can be classified, which correlate in turn with specific headdress forms.

The C8 facial-headdress subtypes are so individualistic that these figurines must be interpreted as portrait figurines. By analogy to portrait monumental art (Grove 1981b), they depict in all probability individual chiefs, rulers, or important lineage heads. In Olmec portrait monuments the headdress seems to have served as the identifier. The correlation of C8 figurine facial types with headdress forms indicates that a similar identification device may have been in use with these figurines.

At least twenty different individuals, represented in multiple occurrences, have been distinguished in single pieces. Several individuals are illustrated in Figure 27.1, and these can be compared with the more generalized figurine types illustrated in Chapter 14. Although in almost all cases the headdress form correlates perfectly with the facial type, one facial type does seem associated with three headdress forms (Fig. 27.1*g*–*n*).

Since both portrait monuments and portrait figurines are found at Chalcatzingo, correspondences in individuals between the two should be expected. One definite match does occur, and another match is possible. One problem in attempting to match monuments with figurines obviously lies in the fact that many portrait monuments are decapitated and the head sections are missing or effaced. Monument 10, a bas-relief showing a frontal human face with a peaked headdress (Fig. 9.27), is duplicated in C8 (Person D) figurines found at both Chalcatzingo and Telixtac (compare Figs. 22.7*a*–*b* and 27.1*j*–*l*). A more tenuous association, based primarily upon headdress form, is between Monument 17, a carved statue head found with Burial 3, and the C8 subtype denominated Person A (Fig. 27.1*a*–*c*). Only one burial, no. 29, was in a possible association with a complete C8 figurine (Person O; Fig. 27.2). While the association of Monument 17 with Burial 3 suggests that the monument represented the buried individual, such a conclusion for Burial 29 and C8 Person O is premature.

Since Chalcatzingo's portrait monuments and their mutilation are strong reflections of Gulf Coast culture, the C8 portrait figurines and their certain correspondences with individuals shown on monuments suggest by analogy that portrait figurines may have Gulf Coast counterparts and antecedents. While the Gulf Coast Middle Formative figurine sample is poorly published, some figu-


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Figure 27.1. C8 portrait heads: *a–c*, Person A; *d–f*, Person B; *g–i*, Person C; *j–l*, Person D; *m–n*, Person E; *o–q*, Person F (two variants); *r–s*, Person G; *t–u*, Person H; *v–w*, Person I; *x–y*, Person J; *z–aa*, Person K; *bb*, Person M; *cc*, Person Q.

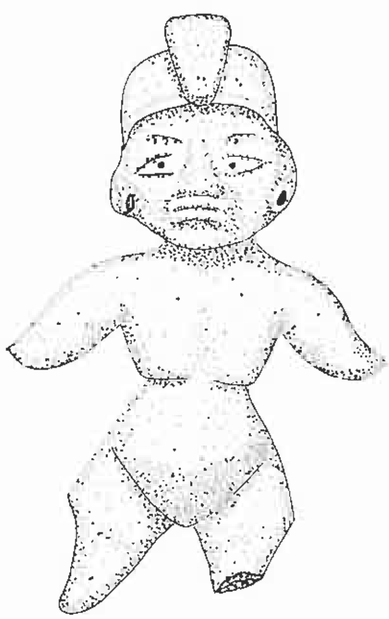

Figure 27.2. Whole C8 figurine, Person O, found in possible association with Burial 29.

rines shown seem to have portrait characteristics (P. Drucker 1943a: Pl. 44; 1952: Pl. 28; Weiant 1943: Pls. 22, 27), though a larger sample is obviously needed. At the same time, while C8 figurines could have Gulf Coast antecedents, it should be mentioned that in eyebrow treatment they are not exactly like central Mexican and Gulf Coast figurines and are most similar to San Jeronimo figurines from near the Pacific Coast of Guerrero (Brush 1968: Pls. 21–26; Vaillant and Vaillant 1934: Pl. 17).

While Chalcatzingo's figurines seem to be portraiture, as presumably are certain Gulf Coast figurines, C8-like figurines from central and western Morelos are not as well made and appear more stylized and generalized. These are perhaps local attempts at replicating the C8 style without portraying a specific individual. Many punched-eye Type A figurines (e.g., Vaillant 1930: Pl. 21) may be closely related to C8's. The figurine typology of Rosa María Reyna Robles (1971) in fact incorporates C8's within Type A. It is my impression that Type A figurines are more common in the Valley of Mexico and that they are possibly the generalized equivalents of C8's in that region.

At the same time, a few well-made C8 figurines, completely identical to those from Chalcatzingo and its local interaction area, have been found at sites in the Valley of Mexico and western Puebla, usually in surface collections. Vaillant (1930: Pl. 17, second row) illustrates several C8's from Tetelpan in the Distrito Federal, including a Chalcatzingo Person Q. Reyna Robles (1971: Pl. 100) shows a C8 (Person A) from Tetelpan as well as several C8's from Epatlan, a village near Las Bocas and Izúcar de Matamoros, Puebla. Most Epatlan C8's duplicate unnamed examples in the Chalcatzingo sample. As noted elsewhere, many of Chalcatzingo's ceramic ties through time are with the Izúcar de Matamoros valley. Further archaeological work will obviously be necessary to understand the distribution of C8 figurines and the implications of C8 figurines (representing "Chalcatzingo personages") found at other central Mexican sites.

The Cult of the Ruler

The functions of the generalized, stylized figurines, which certainly comprise the overwhelming majority in Mesoamerica, have yet to be satisfactorily explained. However, Thomas A. Lee's (1969: 62–65) summary is one of the best available. C8 figurines, because they are portraiture, require a different explanation. As Susan Gillespie suggests in Chapter 15, these figurines cannot be viewed independently from the portrait monuments, for together they serve to identify what can be termed a Cult of the Ruler (see also Grove and Gillespie 1984). This cult apparently was present in Early Formative Gulf Coast sites and continued during the Middle Formative, when it expanded outward to Chalcatzingo and several other sites. Originally apparently expressed only in stone monuments, by the Middle Formative rulers' portraiture was also exhibited on jade artifacts and in ceramic figurines. The cult placed a special importance upon the person of the ruler, presumably both in life and in death. The cult at Chalcatzingo seems to demonstrate a special sociopolitical status which seems, at least overtly, very different from current reconstructions of the social complexity at other Middle Formative period sites in central Mexico.

Many monuments symbolically demonstrated a ruler's links to the supernatural and confirmed his "right to rule" (Grove 1973; 1981b). The ruler was cognized as imbued with supernatural power. The concept of "deities" probably did not exist during the Middle Formative, and it would thus be incorrect to ascribe "divine" status to these rulers, but they were certainly supra-mortal. The Cult of the Ruler expresses and communicates through various media this special position.

The Cult of the Ruler appears to have also embodied aspects of an ancestor cult. Genealogical links were communicated in the iconography and placement of some Gulf Coast monuments (Grove 1981b: 67). The communication of lineage ties ("I am ruler because my ancestor was so-and-so") may be an important theme in Olmec iconography as part of the Cult of the Ruler. It is probably present but as yet unidentified at Chalcatzingo (see below). These ancestral aspects of the cult are perhaps exhibited in two monuments, Monuments 1 and 10. Monument 10, depicting a puff-eyed face topped by a pointed cap, sits atop the Cerro Chalcatzingo and not on the residential terraces where portrait monuments normally occur. Its iconography does not communicate the right to rulership or imply the embodiment of supernatural power. Carlo Gay (1972a: 66) has interpreted the carving as a "rain deity," but, as previously noted, the old man represented is duplicated in C8 figurines found both at Chalcatzingo and Telixtac. It is probable that this individual had been an important person in life. In ancestor cults the revered ancestors are often associated in one way or another with aspects of rain and fertility (Klein 1980:174; Marcus 1978a); thus a portrait depiction in a context suggestive of rain (see Chapter 10 concerning rain aspects of the sacred mountain) need not be surprising. In this same vein, the personage of "El Rey" (Mon. 1, discussed below) may also represent an ancestor strongly associated with rain and fertility.

Perhaps the strongest similarities to the Formative period Cult of the Ruler occur in the monuments of the Classic period Maya. Here again the depiction of the rulers, with glyphic texts related to significant aspects of their lives, was all-important (see also Pasztory 1978: 130). It is probable that the roots of the Maya cult lie ultimately in Gulf Coast antecedents.

MONUMENTAL ART

In studying Chalcatzingo it is very easy to overemphasize the site's numerous monuments to the detriment of the many mundane activities which were the more important aspects of life at the site. Yet the monuments are there, and to understand them aids in understanding something of the cognitive system of the population that inhabited the site. Angulo's analysis of the monumental art in Chapter 10 followed what can be termed a "direct historical approach" utilizing ethnohistorical documents and codices and assuming continuity through time. This differs from my approach to the analysis of Olmec art (e.g., Grove 1981b), which is to recognize Gulf Coast Olmec as clearly a tropical forest culture with a basic belief system which was shared with tropical forest societies in South and Central America. This approach also accepts continuity through time in belief and symbols. While the prehispanic Maya belief system can likewise be considered as tropical forest and serves as a valuable source of information, the belief system of highland central Mexico is quite distinct and less useful as a source of data (even though in some aspects continuities with Olmec art probably exist).

It is difficult to compare Postclassic iconography, related to very complicated religious and sociopolitical systems, with the data from much less complex Formative period societies. The religion of Postclassic societies in highland central Mexico involved an elaborate pantheon of deities, while Formative period religions apparently involved not deities but supernaturals. Among the Gulf Coast Olmec and at Chalcatzingo these supernaturals were usually represented in zoomorphic or anthrozoomorphic forms. Joyce Marcus (1978a) has suggested that Maya religion too was based upon supernaturals rather than deities. With this different perspective in mind, much of the remaining portion of this chapter involves a variety of observations, comments, and some alternative interpretations of the monuments.

Archaeological dating of Chalcatzingo's monuments through associated artifacts or radiocarbon samples is nearly impossible. The hillside reliefs, Groups I-A and I-B, are situated in areas of extensive and repeated erosion and redeposition. Similar problems occur with almost every other monument; thus, most can be placed chronologically only on stylistic grounds. The monuments share their greatest similarities with La Venta's Middle Formative period carvings, particularly those of phase IV, equivalent in time to Chalcatzingo's Cantera phase. Included in the similarities are bearded figures, circular ornaments in front of the upper lips of personages ("nose dots"), and figures seated with arms parallel and extended forward toward their knees. Further similarities are mentioned in individual discussions below.

Area I-A Monuments

The long-known and often-studied Area I-A reliefs high above the site on the Cerro Chalcatzingo are presented in Chapter 10 as forming a sequence which begins with the easternmost carvings (Mon. 11) and culminates in the large "El Rey" relief (Mon. 1). In that interpretation the clouds move toward the Lord of the Mountain in Monument 1. However, the motion in the sequence could also be seen as in the opposite direction. Monument 1 depicts large scrolls, possibly wind or mist, issuing from the mouth of the cave in which "El Rey" is seated. Perhaps the rain-laden clouds are formed at the sacred mountain of Chalcatzingo and dispersed by the wind (from the cave). The small zoomorphic figures appear to be blowing the clouds away toward the east. There the clouds are thinner and the raindrops fewer as their load becomes dissipated. This alternative is more in line with the Postclassic concept of rain being "brewed" in caves from which it was dispensed over the countryside. The alternative, however, does not explain the presence of squash plants on the three carvings nearest to "El Rey" unless they simply symbolize the fertility of the area closest to the sacred mountain.

While probably meant to be viewed as a sequence or unified whole, the Group I-A reliefs exhibit individual variability (shown in Table 27.1). Of the six carvings, only five have clouds (interestingly, Monument 7, which lacks a cloud and raindrops, sits between Monument 1 and the others). Two stylistically different cloud forms are shown. Monuments 11 and 15 have thinner, more elongated and sinuous clouds; the others have the thicker cloud form typical of those hanging above "El Rey." Since this variation occurs *within* the sequence, it seems probable that the change in style reflects two different periods of carving, although not necessarily implying any significant time span between the periods.

There is also variation among the zoomorphic creatures, but they all seem to be small lizard-like saurians, probably highland adaptations of the symbolic concepts embodied in the cayman-saurian of Gulf Coast Olmec art. Such transformations between cayman and lizard are documented by Mary Helms (1977) for Central America and are apparently present here as well. Small lizard-like zoomorphs with flame eyebrows also occur in highland Formative period ceramic vessels (Fig. 27.3) and jade artifacts (Joralemon 1976: Fig. 9d).

Angulo (Chapter 10) likens the bifurcated scrolls emanating from the mouths of most of the zoomorphs to the "breath of life." Such an identification also has close parallels to the Zapotec concept of *pe*, which Marcus (1978a:174) notes is translated variously as "wind," "breath," or "spirit," "the vital force that made all living things move."

These small animals relate to earth, fertility, and rain in their symbolism. Yet, from a practical point of view, they can be associated with rain because they "forecast" the beginning of Chalcatzingo's rainy season. Our field experience at the site has shown that lizards "appear" in late May, a few weeks prior to the rains. They are thus the harbingers of rain. In fact, in some parts of Mesoamerica early rains are called "iguana rains."

"El Rey," the major relief of the Area

***Table 27.1.* Group I-A Reliefs**

	Mon. 1 *(I-A-1)*	*Mons. 6–7* *(I-A-2,-3)*	*Mon. 15* *(I-A-4)*	*Mon. 14* *(I-A-5)*	*Mon. 8* *(I-A-6)*	*Mon. 11* *(I-A-7)*
Bifurcated scroll from animal's mouth			X	X	X	
Scroll as base for animal or person	X	X	?	X		X
Squash plant		X	X	X		
Thin cloud with outcurving ends			X			X
Thick cloud with downcurving ends	X			X	X	
Number of raindrops	Many	0	2?	5–6	2	3

Figure 27.3. Vessel of the lizard-like supernatural, National Museum of Anthropology.

I-A monuments, depicts a personage sitting within the stylized mouth of the earth-monster. The mouth here is shown in profile, while Monuments 9 and 13 offer full-faced views. The form of the mouth in all three depictions is significant, for while symbolizing a cave, the upper half of the cruciform is identical to the hill glyph of Monte Albán, Oaxaca. Since bromeliads are shown growing from the inner corners of each of Chalcatzingo's cruciform earth-monster mouths, just as they grow today on the rock faces of the Cerro Chalcatzingo (Fig. 10.11), the cruciform mouth can be seen symbolically as both cave and mountain.

There seems little doubt that "El Rey" personifies a concept such as Lord of the Mountain. The position of the carving high on the mountainside, the symbolism of the cave-mountain, and the numerous raindrops in the garment and headdress worn by "El Rey" all suggest that this is a supernatural personage. Yet anthropomorphic supernaturals are not common in Olmec art, and "El Rey" lacks the symbols which usually identify such supernaturals: cleft heads, flame eyebrows, feline-like mouths, etc. Just as headdress motifs serve to identify specific real personages in Olmec art (Grove 1981b), the two quetzal birds at the rear of "El Rey's" headdress could also serve as an identifier, implying that the personage is not a generalized supernatural. Moreover, the real and the supernatural may not be mutually exclusive. "El Rey" may represent a divinized ancestor who, in the Cult of the Ruler (discussed above) has assumed supernatural proportions or who mediates with the supernaturals for the good of the society.

The pair of quetzal birds may not be the only identifying motif of importance in the headdress of "El Rey." Also present are two distinct sets of three !-shaped raindrops. This triple raindrop motif is not unique to "El Rey." It also appears on the headdress of the personage seated within the altar niche of La Venta Altar 5 (P. Drucker 1952: Fig. 52). In the altar the person holds a supernatural baby, while "El Rey" holds a large rectangular object with an S-shaped scroll, perhaps different manifestations of the same supernatural element. Like the triple raindrop symbol, the paired quetzal motif is also found on a La Venta monument (see the discussion of Monument 12 later in this chapter). Both motifs can be used to infer significant symbolic links between Chalcatzingo and La Venta, and even the possibility that the same personages are being depicted on monuments at both sites.

Area I-B Monuments

The carvings from Area I-B have been discussed at length in Chapter 10 and in various publications, and only a few comments will be added here. While Coe (1965a: 18; 1965b: Fig. 49) has identified the objects held by the two central figures of Monument 2 (Fig. 10.13) as clubs, and Angulo (Chapter 10) interprets the same figures as warriors, Jeremiah Epstein (personal communication) has pointed out to me the similarity between the "clubs" and South American agricultural digging sticks. My subjective impression is that the monument depicts a ritual related to agriculture, although if considered in the context of the iconography of the other four monuments in the area (see below) it is difficult to hypothesize an agricultural theme for the entire group.

All four figures in the scene have "bird-serpent" masks identical in style to the small masked figures which form the "background" of La Venta's Stelae 2 and 3 (in most drawings the La Venta masked figures are misinterpreted and are shown with long noses rather than masks, but photographs and actual examination of the stelae show the figures to be masked; P. Drucker 1952: Figs. 49–50; Heizer 1967: Pls. 1–2). The significant person in the Chalcatzingo carving seems to be the seated individual, not only because he alone is in that position, but also because he wears a horned headdress and his mask has been turned to the back of his head, exposing his face. During our excavations at Chalcatzingo some figurines of a nearly identical personage were recovered (Fig. 27.4). From these it can be inferred that the seated person of Monument 2 was of an importance that transcended the relief alone, since the figurines come from scattered site areas and all are perforated for suspension.

Monument 3 (Figs. 9.10, 10.15), showing a large feline whose tongue touches a tall branching object, has details which were covered by fiberglass resin when molds were made of this relief in the 1950's. The major obscured motif, which Angulo and I have studied both together and independently, may be crucial to understanding the symbolism of the branching motif and the relief as a whole. The resin-encrusted area is located between and below the feline and the branching object. Although I previously described the branching motif as similar to the cardon cactus (Grove 1972a: 155), it is now clear that the base of the "cactus" begins simply as a large U-element which lacks a trunk or stem connecting it to the "ground." The obscured motif may make that link.

The anthropologist Iker Larrauri, visiting the site in 1973, offered an interesting interpretation for the large branching motif. He suggested that the circular elements at the tips of the branches might represent water sources (springs) and the long branches, rivers. Angulo (Chapter 10) also interprets the circles as water sources. If this motif is taken as a very schematic representation of the river barrancas in the valley above Chalcatzingo, the branches approach the actual pattern. The feline, which in such an interpretation could be the representation or "glyph" of the site, drinks water from the source nearest the site, the spring and stream at the foot of the hill. However, this interpretation rests to a great extent upon the ultimate identification of the motif today obscured by fiberglass resin. Angulo (Chapter 10) sees the motif as a human with right arm raised. If that identification is correct, then the feline is licking the upraised arm and not drinking from a water source.

Monument 4 (Figs. 9.11, 10.16, 10.17) depicts felines and humans, while Monument 5 (Figs. 9.12, 10.18) depicts a cayman-like creature with a human. Although their role here is unclear, the feline and the cayman are major Olmec supernaturals of earth, sky, and water. In these scenes they attack humans who are so identical stylistically that the two carvings can be assumed to be contemporaneous. Because the lower feline in Monument 4 has an unusual headdress motif identical to that worn by person *c* in nearby Monument 2, all three carvings may be contemporaneous and interrelated. With such a unity among the I-B reliefs, Monument 3 is probably also an integral part of this group. Since Monuments 4 and 5 depict humans with upraised arms in association with zoomorphic supernatural creatures, Angulo's suggestion in Chapter 10 that Monument 3 includes a human with upraised arm in front of the large feline seems plausible. If Monument 3 is part of this group thematically, then perhaps the symbolic content of these four carvings was also meant to be viewed sequentially, as Angulo suggested for the Area I-A monuments.

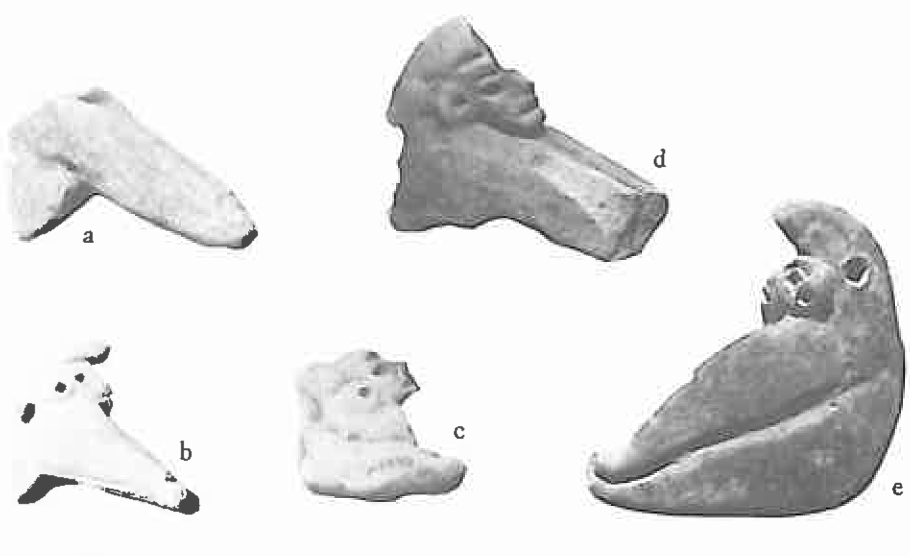

Figure 27.4. Figurines similar to seated figure in Monument 2: *a–d*, Chalcatzingo excavations; *e*, private collection, reported to be from Chalcatzingo.

Monument 12

The paired quetzal symbol at the rear of "El Rey's" headdress is also found on two other monuments. The first, Chalcatzingo's Monument 12, the so-called "Flying Olmec" carving (Figs. 9.14, 10.19), depicts a pair of quetzal birds flying above a human figure. Unfortunately, the personage's headdress, which may have contained other iconographic information, is largely destroyed. Although the monument depicts a supernatural act, it is not inconceivable that the actor was a specific personage, perhaps identified by a headdress motif (now missing) or by the paired quetzal motif.

The second monument with paired quetzal birds is La Venta's Monument 19, a carving with remarkable stylistic similarities to Chalcatzingo's Monument 12, although the personage of Monument 19 is not "flying" but is seated within the curved body of a supernatural serpent. Above this person's head is a motif which Philip Drucker, Robert Heizer, and Robert Squier (1959: 199) describe as "a horizontal rod with a long tassled end." Actually, each end is tassled, and close inspection shows that the tassles are long-tailed birds, presumably quetzales (Fig. 27.5).

The similarities between Chalcatzingo Monument 12 and La Venta Monument 19 are so strong that I believe the person responsible for carving the Chalcatzingo monument must have been intimately familiar with the La Venta monument as well as with the background figures in La Venta Stelae 2 and 3, for the "Flying Olmec's" pose and dress closely duplicate figures on those latter monuments. There are no antecedents to monument carving in central Mexico prior to Chalcatzingo and thus the similarities of Monument 12 to certain La Venta carvings suggests that the carving was executed by an artisan trained on the Gulf Coast.

La Venta's Monument 19 was found in a good La Venta IV context, suggesting that we are correct in dating Monument 12 to the Cantera phase. The personages in both monuments are depicted with nose dots in front of their upper lips, an attribute also found on Middle Formative period figurines. The La Venta Monument 19 personage holds an object somewhat similar to the handstone (Fig. 20.9) found in the excavations of PC Structure 2. The "Flying Olmec" of Chalcatzingo Monument 12 holds two objects, one a torch, the other indistinguishable. By analogy to jades with a similar flying person theme (Cervantes 1969: Figs. 7, 9, 10), the second object was probably a so-called knuckle duster. Angulo (Chapter 10) identifies the personage as a ball player based upon the objects held and the flying or leaping pose. I believe the theme is not related to the ball game. The parrot beneath the personage indicates that the artist clearly intended to indicate an act of flying rather than leaping after a ball, and the torch held aloft suggests possibly a flight through the underworld, perhaps with the personage as mediator between the upper and lower realms. There is also increasing evidence that the knuckle duster and torch symbols may be somehow related to bloodletting rituals, a topic beyond the scope of this chapter.

Figure 27.5. Close-up of La Venta Monument 19 showing paired quetzal birds.

Assuming that the long-tailed birds depicted are indeed quetzales, they are clearly birds foreign to the Chalcatzingo area. In later Mesoamerican cultures the quetzal symbolized the east, but whether such symbolism is intended here is a matter for further analysis. The presence of the paired long-tailed bird (paired quetzal) motif on Chalcatzingo's Monuments 1 and 12 and on La Venta Monument 19 indicates at the minimum an important symbolic link between the two centers. If the motif is an identifier for a particular personage, then the presence of that personage in the art at both sites, including on Monument 1 in the possible role of revered ancestor as discussed earlier in this chapter, carries even greater significance. As noted earlier, the personage in Monument 1, "El Rey," also shares the triple raindrop motif with the personage of La Venta Altar 5.

Monuments 21, 26, 27, and 28

Chalcatzingo's Monument 21 (Fig. 9.21, 10.21) is the only certain female depicted in Mesoamerican monumental art of the Early or Middle Formative. The monument can be placed in time because it had been erected in front of a Late Cantera subphase stone-faced platform, T-15 Structure 5. The woman on Monument 21 stands upon an earth monster mask (Fig. 10.21), the earliest datable use of this symbol in Mesoamerica. Only one other possible Middle Formative example is known, Monument 1 at Los Mangos, Catemaco, Veracruz (de la Fuente 1973: 161). The earth monster mask is far more typical of Late Formative Izapan art (e.g., Norman 1976: Fig. 2.7), and is but one of several traits at Chalcatzingo which are more common to Late Formative period southern Mesoamerica (see Chapter 28).

Since monuments functioned to communicate a set of ideas, the fact that the personage shown on Monument 21 is female is highly significant. Ann Cyphers Guillén (1984) has suggested that the stela commemorates a marriage alliance between a Gulf Coast center and Chalcatzingo. In ethnographically recorded alliances related to trade and exchange, the woman is usually sent from the major partner to the lesser partner. In Chapter 10, it was suggested alternatively that the area from which the woman came was glyphically expressed within the scene's basal earth mask and was not the Gulf Coast. Instead, the *tierra caliente* of Guerrero is postulated. That interpretation was based upon a diamond motif. The possibility of a Guerrero alliance being commemorated by this monument has been strengthened since the writing of Chapter 10 by the discovery of a new site in Guerrero, Teopantecuanitlan (Martínez Donjuan 1982), which contains four Olmec-style monuments set in the walls of a rectangular patio similar to Chalcatzingo's patio on Terrace 25. Each monument depicts a massive baby-face supernatural wearing a headband containing four cleft rectangle motifs (e.g., Mon. 1, the only one of the four yet published; ibid.: Fig. 4). From photos taken by archaeologists who have visited the site, it appears that the cleft rectangle motifs on one (and possibly two) of the unpublished monuments are identical in form and interior symbols to the unusual cleft rectangles found on the pillar-like object on Chalcatzingo's Monument 21. The presence of an unusual motif on monumental art at both sites indicates to me that they were in significant contact and suggests that the motif could have functioned as a "place glyph" for one of the sites which was incorporated onto a monument at the other site to attest to their ties.

The undulating motif with elongated oblongs, which covers most of the vertical pillar and appears beneath the pillar as the background of the earth-monster mask, is also found on Monument 27 (Figs. 9.25, 10.22), where it decorates the body of the animal being carried (or animal cape being worn) by the personage shown on that stela. It also appears on the ledge of Monument 22, Chalcatzingo's table-top altar (Fig. 27.6). This latter context offers possible clues to the symbolism of the motif, for on Gulf Coast altars the iconography of the upper ledge appears to symbolize the earth. The elongated, rectangularly shaped, inverted-U elements which represent the upper tooth row of the cayman or saurian supernatural decorate the ledges of La Venta Altar 4 and Potrero Nuevo Monument 2. This motif is identical to the upper tooth row on ceramic depictions of the saurian supernatural (e.g., Joralemon 1976: Fig. 7) and in symbolism seems to carry over to the basic Middle Formative double-line-break motif decorating vessel rims (Donald W. Lathrap, personal communication). Rarely, the altar ledge may depict a sky cayman supernatural or have jaguar associations (Grove 1970a: frontispiece; 1973), but earth symbolism appears most common. Thus the undulating line motif at Chalcatzingo may symbolize some aspect of the earth. The elongated oblongs within the undulating lines are reminiscent of later symbolism of flowing water, and thus could relate not only to earth but to earthly water as well.

The personages shown on Monuments 21 and 27 are probably specific individuals (e.g., Grove 1981b). Both of these monuments were associated with stone-faced platforms related to the individuals portrayed. The presence of the undulating design on both stelae suggests that they are closely contemporaneous and perhaps even implies a relationship between the persons portrayed (e.g., the Monument 21 woman as wife or mother of the Monument 27 person; their carving techniques are different, suggesting that they were not executed at the same time). If the motif indicates a relationship between the stelae, their relationship to the table-top altar which also has this motif is confused by the altar's possible anachronism (see above).

Chalcatzingo's largest known stela, Monument 28 (Figs. 10.23, 10.24), was found buried at the western edge of T-6, a terrace also containing Monument 27 in situ in front of a stone-faced platform. In Chapter 6 it was suggested that terraces were "owned" and passed on through family or lineage. Rulership may also have been passed on through a certain lineage. The presence of two portrait or rulership monuments on T-6, one buried and one standing in situ, suggests that the Monument 28 personage not only preceded the Monument 27 personage in time but was his ancestor as well. Monument 28 could in fact have once stood in front of one of the earlier building stages of T-6's stone-faced platform mound (T-6 Str. 1).

As noted in Chapter 9, the personage on Monument 28 is adorned with plume-like ornamentation. Curiously, the plume-like motif is the inverse, on a smaller scale, of the large branching motif found in front of the feline on Monument 3 (Fig. 9.10). Just as Monument 28 is earlier than Monument 27, Monument 3 may be the earliest of the Area I-B reliefs (Monument 4 was erected onto the boulder of Monument 3 and is stylistically more similar to Monuments 2 and 5 than it is to 3).

It is probable that the upper, missing, portion of Monument 26 (Fig. 9.24) was also a portrait carving of an important individual, and thus T-6 can claim three such monuments. It is noteworthy that in its form and execution Monument 26 is crude and ovoid in cross-section and therefore very similar to Monument 28 but very different from the well-executed and nearly rectangular (in cross-section) Monument 27. If these features have chronological significance, then some degree of contemporaneity can be hypothesized for Monuments 26 and 28.

Monuments 9 and 24

The broken remains of Monument 9 (Fig. 9.17) were found by looters on the upper area of the Plaza Central's long platform mound (PC Str. 4). Two motifs on this large earth-monster face deserve further mention: the long, undulating eyebrows, which terminate in bifurcated elements, and a cartouche which occurs between the eyebrows. The undulating "cleft-eyebrow" motif is not unique to this monument nor to Chalcatzingo. It occurs on other examples of Olmec-related art, including Chalchuapa Monument 5 (D. Anderson 1978: 171), and more commonly on engraved jades (see for example Joralemon 1976: Figs. 12*e*, 14*a*, 17*l*). The presence of the motif at both Chalcatzingo and Chalchuapa, sites with Olmec-style carvings, is of particular interest.

The cartouche contains a "face" composed of two oval "eyes," below which are two short vertical "fangs." Two similar cartouches occur on Monument 24, but if the positioning of this latter monument proposed in Chapter 10 is correct (see Fig. 10.25), the cartouches are upside down. The similarity of the inverted cartouches to the raindrop motif has led to the ambiguity in the correct positioning of Monument 24. I favor the positioning of the stela as erected on the site today, based upon the orientation of the cartouche in Monument 9 and the large uncarved tapering section of the stela, which can only be its basal section.

Monument 24 is incomplete, since its upper section has been broken off (see Fig. 9.22). Natural exfoliation of the rock has likewise damaged much of the remaining carved area, and only a few fragments of the original design exist below the paired cartouches (Fig. 27.7). The most visible motif below the right cartouche appears to be the flaked remnant of a flame eyebrow, beneath which is a section of an elongated eye. The eye section can be seen on the left side of the carving as well. A few diagonal elements occur lower on the carving which with imagination resemble the "tears" beneath the eyes of the face of the supernatural depicted on Tres Zapotes Stela C. The extant carving may have been an earth-monster mask such as forms the base motif on Monument 21 (one vertical bar on the carving may be part of an upcurved fang). The stela's main design was obviously on the missing section. Of interest is the association, on two monuments, of the cartouche ("face") with the earth-monster face.

Monument 18

Although most Chalcatzingo monuments were erected vertically, Monument 18 (Fig. 9.20) may have been meant to lie horizontally, for its small carving is adjacent to a "water ritual hole" (Chapter 11). In Chapter 10 Angulo states that a vaguely carved face visible only at certain times of the year occurs within the concentric oblongs of this relief. My recent reinspections of this monument and of Monument 4, in which he feels that a face is carved in the cleft "ear" element on the head of the lower jaguar, indicate that no such faces exist. Natural irregularities and grains in the rock may have caused misleading features to appear in the rubbings of these monuments.

THE SACRED MOUNTAIN

With its bas-relief carvings, Chalcatzingo is unique among Middle Formative sites in highland central Mexico. Its monumental public architecture adds to its uniqueness. Its location in the Río Amatzinac Valley rather than elsewhere raises several questions. Other highland valleys were far more fertile but were not chosen. Other cliffs were suitable for bas-relief carvings but remained uncarved. Numerous locations have far easier access to much more abundant water. Therefore, there was obviously something about this location that transcended its selection beyond simply materialistic criteria. That special something was apparently the cognition of the twin hills of Chalcatzingo as a sacred mountain (Chapter 10). While other mountains could and did have sacred connotations, the cleft or "split-hill" form of these mountains made the sacred character of the location symbolically apparent (Cook de Leonard 1967: 63–66). The cleft in the mountain was the entrance to the underworld, the source area of supernatural power, making this a most sacred of sacred mountains. This presents a chicken-and-egg type paradox, for it is uncertain whether the original Early Formative period settlers of Chalcatzingo located here at least partially because they perceived this symbolism, or if the symbolism played a role only in the site's later development.

The placement of the monuments at the site is directly related to the symbolism of the locale. The Area I-A reliefs occur high on this hillside, along the natural watercourse which carries rainwater runoff from the western hillslopes. That these particular carvings symbolize rain, water, and fertility is not surprising. But in the largest relief of this group, Monument 1, the personage is depicted as seated within a cave. This, of course, may have a generalized "heart of the mountain" meaning rather than symbolizing an actual cave, yet a cave may have existed here. In the letter to the Mexican government reporting the discovery of "El Rey" (Chapter 1), the villagers who cleaned the carving state that they heard the noise of an "interior rockfall" which suggested to them that a "temple or tomb" lay buried beneath the jumble of boulders to the left of the carving. This possibility was not investigated by our project due to the risk such work would impose for Monument 1.

While the Area I-B reliefs occur just below the cleft in the sacred mountain, a more important criterion seems to be their location at the base of a massive

Figure 27.6. Eastern ledge of altar, Monument 22, showing undulating motif with elongated oblong.

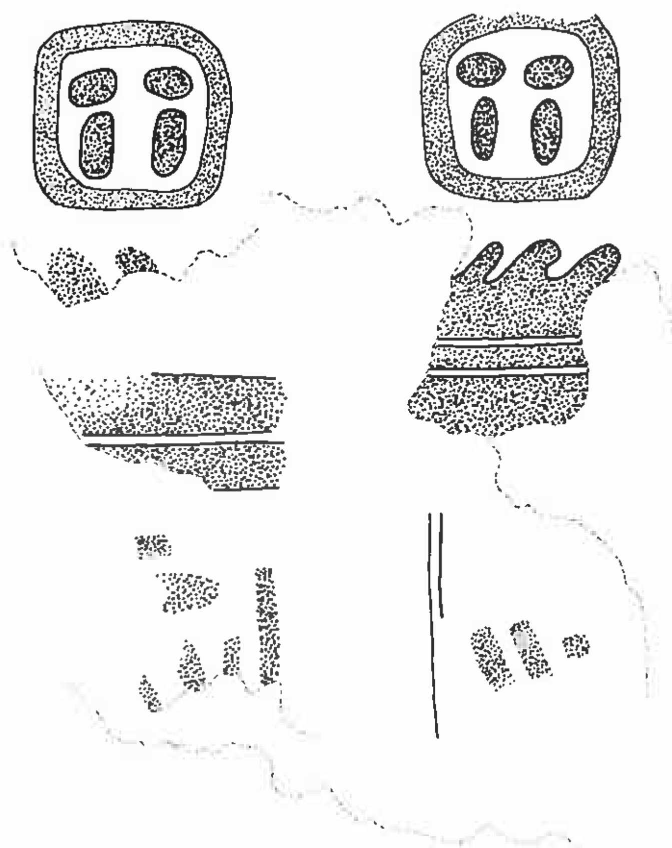

Figure 27.7. Details of Monument 24, as interpreted by Grove. Dashed lines indicate exfoliation.

fracture in the Cerro Chalcatzingo itself (Fig. 27.8), a wide secondary cleft into the sacred mountain. Groups I-B and I-A both deal with mythico-religious rather than rulership themes. Their positioning on the sacred mountain itself is clearly related to their thematic content.

The terraces at the base of the sacred mountain served as "public" and residential areas, the former expanding through time. Monuments associated with these terraces related largely to the commemoration of specific individuals and the Cult of the Ruler. It is these monuments which are mutilated. Those on the hillside, dealing with ritual or supernatural themes, sit unmolested. Although we do not have good chronological data on most of the site's monuments, the differences between the hillside carvings and those of the terraces seem to be functional/thematic and not strictly chronological.

Although the painted art at Chalcatzingo may date to the Classic period (using the Cave 19 art as a reference; Chapter 12), it is interesting that a distinct dichotomy exists between the location of the painted and the carved art. The mythico-religious carvings occur only on the Cerro Chalcatzingo, and with only one exception the red paintings on the *cerros* occur on the Cerro Delgado and in the "saddle area" (the cleft between the *cerros*). Implicit underworld symbolism is present even in the painted art, for almost all occur in caves or niches, and within these locales many paintings are associated with concavities in the rock.

As Angulo noted in Chapter 10, the sacred character of the *cerros* continues today, although in a Christian guise. Crosses have been erected atop both hills, and both public and private rain-related ceremonies are carried out. Whether the regional cultures of the Postclassic, Classic, and Late Formative attached as great an importance to this sacred mountain is a matter of conjecture, but earlier inhabitants clearly recognized the sacred nature of their locale. They dwelt at the entrance to the underworld and by implication had greater access than others to the supernatural powers therein; this would have made them more "powerful" in the eyes of others as well.

Figure 27.8. Northeast side of Cerro Chalcatzingo showing massive fissure above the Group I-B monument area.

RESUMEN DEL CAPÍTULO 27

Algunos de los principales datos referentes al sitio y a su organización están resumidos y comentados en este capítulo.

Chalcatzingo está ubicado en la zona más favorable del Valle del Río Amatzinac. Cuenta con el agua de un manantial, con buenas tierras agrícolas, así como con varias zonas ecológicas accesibles para la recolección. En la fase Amate, Chalcatzingo era el mayor asentamiento del Valle, pero no había alcanzado aún el tamaño de las aldeas situadas en el valle del Río Cuautla, que era agrícolamente más rico. Durante la fase Barranca Temprana, fueron construidas las terrazas. El patrón residencial, durante el período Formativo, parece haber sido "disperso," contándose sólo una habitación principal por terraza. Es difícil comparar este patrón "disperso" con aquellos asentamientos del Valle de México que han sido considerados "dispersos," ya que estos últimos están basados únicamente en datos obtenidos a partir de reconocimientos de superficie. Si las terrazas también eran utilizadas para la agricultura, una hectárea de tierra pudo haber mantenido a una familia de cinco personas. La cantidad limitada de terrazas en Chalcatzingo hace suponer que otras porciones de tierra cercanas también eran cultivadas. Es probable que aprovisionamientos adicionales de alimentos hayan podido ser adquiridos por medio de intercambios o de tributo, inclusive perros, cuyos restos abundan en los basureros de Chalcatzingo.

Todo el Valle del Río Amatzinac estaba estrechamente aliado con Chalcatzingo y fuertemente influenciado por él. Algunos tipos cerámicos, como son el Peralta Naranja, las figurillas Ch1 y C8, así como la arquitectura pública, son escasos fuera del Valle. Existen cuatro sitios más de la fase Cantera en el Valle, que tienen arquitectura pública. Probablemente hayan sido centros secundarios.

Sólo algunas casas dan muestras de actividades artesanales claras. Esto parece indicar que probablemente los talleres no eran importantes para el papel que el sitio jugaba.

Mientras que una sola casa (P.C. estructura 1) tenía entierros asociados con jade, el material encontrado debajo de los pisos de casi todas las casas incluía pequeños fragmentos de jade. No se trata de material de manufactura, sino de piedras de jade intencionalmente rotas y depositadas durante los rituales realizados al ser destruída la casa (antes de su reconstrucción).

Las figurillas del sitio son similares a los tipos del Valle de México, originalmente descritos por Vaillant. Existe, sin embargo, una importante excepción: las figurillas C8, que representan el 41 por ciento de la muestra de Chalcatzingo, son escasas o inexistentes en cualquier otra parte del Centro de México. Estas figurillas son retratos, probablemente de dirigentes locales y de jefes de linaje. Pueden ser distinguidos más de veinte individuos diferentes. Uno de los personajes es igual al que se encuentra representado en el Monumento 10.

Los retratos, en figurillas y en monumentos, permiten pensar en un Culto al Dirigente. Este culto, que también está presente en la Costa del Golfo, era, en cierta medida, un culto a los ancestros. También está asociado a la religión, ya que el ancestro empezó a ser venerado y asociado a la lluvia y a la fertilidad.

La cultura Olmeca de la Costa del Golfo tiene fuertes semejanzas con las culturas de los bosques tropicales de Centro y Sud América. El arte Olmeca puede, entonces, ser mejor analizado a través de analogías etnográficas con esa región. Varios relieves han sido estudiados en esta forma, y su localización permite suponer que los cerros en Chalcatzingo tenían un carácter sagrado.

28. Chalcatzingo in a Broader Perspective

DAVID C. GROVE

Although various chapters in this book have occasionally commented upon Chalcatzingo's interactions with other areas of Mesoamerica, the major emphasis has been on the site itself. It would be difficult, however, to discuss Chalcatzingo without considering contemporaneous developments in Central Mexico, the Gulf Coast, and Mesoamerica in general. Thus, this chapter begins with summary discussions, placing Chalcatzingo within larger frameworks. It concludes by reviewing various hypotheses which have been previously offered for the development of Chalcatzingo and with a presentation of my own personal observations and hypotheses. Admittedly there are occasional conflicts or contradictions in the reconstruction, at least some of which I must attribute to the nature of the data and the unfortunate lack of comparative archaeological data elsewhere.

INTERACTIONS WITH OTHER AREAS

Chalcatzingo and the Central Highlands

Early Formative settlements in Morelos and the Valley of Mexico consisted primarily of hamlets and small villages. No large centers have been defined for this early period. Throughout the region the ceramic assemblage is characterized by Red-on-Brown "exotic bottles," and D2, K, and red-slipped hollow D-K figurines. A minor component (less than 10 percent) of the assemblage consists of vessels with so-called Olmec iconographic motifs ("jaguar-paw-hand" and "fire serpent") and baby-face C9 figurines. This minor component occurs on all settlement levels from solitary rural residences to villages, here as well as elsewhere in Mesoamerica. It does not seem to be indicative necessarily of Gulf Coast contacts or influences (Flannery and Marcus 1976b; Grove 1974a).

While regional variation exists within this Morelos–Valley of Mexico ceramic assemblage, the far stronger similarities allow the identification of a "Tlatilco culture" interaction sphere encompassing this area. Economic interaction between villages within this sphere can be inferred not only from certain of the exotic ceramics (which may have been manufactured at only a few production villages) but also through obsidian analysis. Characterization of obsidian from sites within the sphere shows it to be mainly from the Otumba (Teotihuacan Valley) and Paredón sources (Charlton, Grove, and Hopke 1978). These sources were apparently controlled by villages within the interaction sphere.

The Amate phase artifact assemblage from Chalcatzingo contains Red-on-Brown "exotic bottle" sherds (Cuautla Red-Slipped, Chapter 13), D2 and C9 figurines (Chapter 14), and Paredón and Otumba obsidian (Chapter 23), indicating that the site was within the "Tlatilco culture" interaction sphere. At the same time, Del Prado Pink sherds, identical to those in surface collections from the site of Las Bocas in the Izúcar de Matamoros Valley to the east, indicate some form of interaction with that area as well. The ceramics from Las Bocas, apparently typical of Early Formative ceramics from the Izúcar de Matamoros Valley in general, have been incorrectly associated in the literature with the Tlatilco culture assemblage (e.g., Coe 1965a). Although some similarities exist, enough major differences are present to indicate that Las Bocas ceramics are part of a different interaction sphere. Chalcatzingo is apparently situated at the eastern extent of the Tlatilco culture interaction sphere and on the western border of the Izúcar (Las Bocas) sphere.

In contrast to the cultural cohesiveness in Morelos and the Valley of Mexico area during the Early Formative, when we can speak of a Tlatilco culture interaction sphere (demonstrated in ceramics and obsidian), greater intra-regional variation occurs during the Middle Formative period. Shared ceramic attributes within the region include white-slipped vessels decorated with the double-line-break motif and some basic figurine types, such as C1–C7. In fact, it is primarily in the figurines that Morelos–Valley of Mexico similarities are most apparent.

The Middle Formative period is not well documented in the archaeology of central Mexico. Comparative published materials come primarily from El Arbolillo and Zacatenco (Vaillant 1930; 1935) and Atlamica (McBride 1974), and intra-regional differences are apparent in these collections. The nature of these communities remains virtually unknown, although some inferences can be made with El Arbolillo data. Wall lines and burials uncovered in El Arbolillo Trench C (Vaillant 1935: Fig. 8) seem to represent the remains of a house foundation and the house's subfloor interments. Most of the Trench C graves were slab-covered and/or lined, making them very similar to the crypt graves of Chalcatzingo's PC Structure 1. A pair of jade earspools was discovered with a non-crypt infant burial in Trench C, and George C. Vaillant (1935: 175) notes that the burials from this trench were richer than others recovered. By analogy to Chalcatzingo, the Trench C structure seems to represent the remains of an elite residence. The other burials recovered by Vaillant at the site would thus be the remains of lesser-ranking individuals. The lack of architectural features with or near these other burials suggests that they may not be residential subfloor interments.

Crypt ("cist") elite graves are also known from La Venta (P. Drucker 1952: 67–71). While the use of such burial embellishment at Chalcatzingo could be taken as evidence of Gulf Coast influence, the presence of crypt graves at El Arbolillo as well suggests that crypt graves for elite individuals may have been a relatively widespread practice.

One problem in understanding the position of Chalcatzingo within the larger scope of central Mexico during the Middle Formative lies with the nature of the site of Cuicuilco at that time. This site, in the southwest Valley of Mexico, was the major Late Formative period center in the Valley of Mexico prior to 100 BC. However, its size and importance during the Middle Formative are uncertain. Robert Heizer and James Bennyhoff (1972) interpret the data from their limited excavations there to indicate that Cuicuilco had been a large Middle Formative ceremonial center with platform mounds and pyramids. But the Cuicuilco excavation data and chronology present numerous problems. Much of the excavated material comes from mixed levels, and while there may have been a Middle Formative community at Cuicuilco, the size and architectural component of that community are still very uncertain.

If Heizer and Bennyhoff are correct, then the presence of such a large center contemporaneous to Chalcatzingo but with more numerous and elaborate architecture would necessitate a reconsideration of Chalcatzingo's role in the highlands. The Chalcatzingo antecedents hypothesized for Cuicuilco by Heizer and Bennyhoff (1972:98) are no longer tenable in terms of new data from both the Valley of Mexico and Morelos. Reconstruction of Chalcatzingo's non-ritual functions later in this chapter is based on the assumption that Cuicuilco was not a large center at the time Chalcatzingo was at its prime. It is possible, however, that Cuicuilco's growth did take place during the Middle Formative period. If so, the ascendency of that center in the southwestern Valley of Mexico may be partially responsible for Chalcatzingo's decline.

If viewed solely on its ceramic and figurine inventory, with no thought to monumental art and greenstone artifacts, Middle Formative Chalcatzingo has to be classified as culturally central Mexican. As in the Early Formative period, the site's strongest ties outside of the Río Amatzinac Valley were with the Valley of Mexico, but with additional interaction with the Izúcar de Matamoros Valley and western Puebla. The Izúcar de Matamoros interaction is particularly demonstrated by the C8 figurines found in that area, and general ties with western Puebla are suggested by Pavón Fine Grey ceramics. Not only are grey ceramics more common in the Puebla area (as well as Oaxaca, and, as noted in Chapter 13, they are found on the Gulf Coast as well), but thin-section analyses (Chapter 13) show Pavón Fine Grey to have a clay body with aplastics derived from metamorphic rocks. Metamorphic rocks occur in a band across the southern part of the state of Puebla, starting almost at the Río Amatzinac Valley and running eastward. Some occur in the area of the Izúcar de Matamoros Valley.

Chalcatzingo and the Gulf Coast

The similarity of Chalcatzingo's bas-relief carvings to those of the Gulf Coast Olmec has long been recognized. A number of other artifacts recovered by our excavations likewise have Gulf Coast counterparts and are mentioned in various chapters of this book. It is obviously important that these Olmec traits at the site be viewed in a balanced perspective and be neither overemphasized (as is normally the case) nor completely dismissed. These traits are briefly reviewed here, and later in this chapter they will be used in discussing the validity of a number of hypotheses concerning the nature of Chalcatzingo.

As mentioned frequently throughout this book, the Middle Formative period ceramics from Chalcatzingo and the Río Amatzinac Valley include a component which is not found in the rest of the central Mexican highlands and which I have used to define the Río Amatzinac Valley as the local interaction area of Chalcatzingo. Included in this ceramic component are Peralta Orange ceramics, Pavón Fine Grey ceramics, three-pronged braziers, and C8 portrait figurines. Traits found at Chalcatzingo (but whose distribution elsewhere in the valley is uncertain) include the placement of *cantaritos* within small bowls as mortuary furniture for some higher-ranked individuals, and animal whistles depicting opossums, etc., with paws over their muzzles. Each artifact type of this component is virtually absent at other highland sites but can be found on the Gulf Coast (see Chapter 13).

Artifacts other than ceramics can be added to the list of Gulf Coast traits. Chapter 17 discusses a variety of jade artifacts, such as T-shaped and duck-bill pendants, which replicate pendants from La Venta in form. At the same time, no large celt offerings such as were found at La Venta (P. Drucker, Heizer, and Squier 1959:133–146, 174–189) or even San Isidro, Chiapas (Lowe 1981) were found in our excavations. With few exceptions there is nothing spectacular about the jade recovered. Rumors exist of an "engraved green axe" found by a visiting schoolteacher (who when located and interviewed denied any such find). Frans Feuchtwanger (personal communication) recalls that a jade figure in the collection of the National Museum of Anthropology (Pohorilenko 1972:Fig. 68) was originally provenienced in museum records as from Chalcatzingo, but this remains unverified by us. In Chapter 17, Charlotte Thomson suggests that the dearth of jade at the site may indicate that Chalcatzingo had only minor religious and economic importance to the Gulf Coast. Other data do not bear this out. It is more probable that Gulf Coast control and demand for jade effectively relegated Chalcatzingo to the role of intermediary rather than consumer of this and other exotic materials.

Middle Formative period Gulf Coast centers are notable for their mound architecture, which includes both long platform mounds flanking plazas and, occasionally, pyramid-like structures (e.g., Bove 1978: Map A; Coe and Diehl 1980: Map 2; P. Drucker, Heizer, and Squier 1959: frontispiece, Fig. 4). Mound and plaza arrangements at this time were not unique to the Gulf Coast but occurred in Chiapas as well (Lowe 1977:224–226). In the central highlands of Mexico, however, long platform mounds are currently known only from Chalcatzingo and the Río Amatzinac Valley. As mentioned earlier, the evidence for public architecture at Cuicuilco is extremely tenuous.

The inspirational source of Chalcatzingo's mound architecture has not yet been determined, and in one sense presents a paradox. PC Structure 4d, the 70 m long Cantera phase platform mound, resembles the long platform mounds in the Olmec heartland. However, this mound is only the final stage of several mound rebuildings, with the earliest mound (Str. 4a) apparently dating to the Amate phase (see Chapters 4 and 6). Evidence of significant interaction between the Gulf Coast and Chalcatzingo (specifically) during the Amate phase is lacking. Whether the Amate phase Structure 4a was an indigenous development or Gulf Coast–

inspired cannot presently be determined.

There is little question that Chalcatzingo's reliefs contain a multitude of stylistic similarities to Gulf Coast monumental art. These similarities are not simply iconographic but also extend to the types of monuments, to the techniques of manufacture, and to the monuments' ultimate disposition (mutilation). At the same time, strong dissimilarities are present in the art, and the same dissimilarities can be found in the monumental art at sites such as Chalchuapa, Xoc, Piedra Parada, Pijijiapan, Oxtotitlan, and San Miguel Amuco. In fact these differences are so standardized that an Olmec "frontier art style" can be distinguished (Kann and Grove 1980). At all of these "frontier" sites, including Chalcatzingo, there are no local antecedents to bas-relief rock art. The concept and techniques were imported fully developed. The similarities and standardized dissimilarities to the Olmec heartland style, together with the inescapable fact that only the Gulf Coast is known to have a monumental art carving tradition, imply that the variant "frontier" art style was specifically taught as a separate style on the Gulf Coast and disseminated outward from there.

Olmec monumental art, whether in the heartland or in its frontier variant, was meant to communicate a set of ideas and messages to those viewing it. The presence of a separate style for sites outside the Gulf Coast, to communicate ideas somewhat different from those presented on Gulf Coast monuments, suggests that the frontier monuments' messages were directed to non-Olmec audiences. It is also highly important to recognize that for those specific sites outside the Olmec heartland there was a felt need to communicate via monumental art.

That this presentation was for peoples not familiar with Gulf Coast iconography and symbolism can be demonstrated with Chalcatzingo's hillside art. Here the symbolism which was only implied in Gulf Coast iconography is overtly and graphically expressed. For instance, the implied symbolism of the shallow niches found on the front of Gulf Coast altars is explicitly detailed in Chalcatzingo Monument 1, where the niche is shown as the mouth of the earth monster, the underworld, the heart of the earth, the source of rain and plant fertility.

Frontier art may have served to legitimize the presence, no matter how small or infrequent, of Gulf Coast persons at those sites, or it may have been commissioned (with Gulf Coast assistance) by a local ruler to demonstrate his special power through showing that he controlled and understood the complex esoteric knowledge of the supernatural realm, gained via interaction with the Gulf Coast (e.g., Helms 1979:119–129). Whatever the reason, those sites which manifest such art were clearly special, and different from the communities in their respective areas lacking the art.

Chalcatzingo has two different but integrated and contemporaneous artifact assemblages, one central Mexican, the other with ties to Puebla and to the Gulf Coast. These distinctive components must not be used to infer two separate ethnic populations in the Middle Formative community. The artifact components occur together and are not separated between houses, *barrios*, etc. Their nature, however, is different. The Gulf Coast–like component is strongly ritualistic and rulership-oriented. During the Cantera phase this can be seen in the monuments, jade figurines, C8 figurines, and mound architecture. The central Mexican component includes more utilitarian pottery types and generalized figurines. From this it can be inferred that Chalcatzingo's Gulf Coast ties were through the ruler (directly or by marriage), and that via these ties a number of traits from the Gulf Coast inventory were introduced to the site. At Chalcatzingo these traits blended with the local assemblage and ultimately diffused throughout the Río Amatzinac Valley. Their presence at Chalcatzingo and their ultimate local diffusion occurred over a long period of time and does not imply that a large number of Gulf Coast persons were involved.

Gulf Coast contacts were most probably periodic rather than sustained and continuous. In either case, they appear to have increased in importance and intensity through time. Mound architecture may be the earliest trait to appear, but as mentioned earlier, the inspirational source for the few examples of Early Formative period mound architecture at Chalcatzingo is uncertain. Even Gulf Coast mound architecture is poorly documented for this period. It is Chalcatzingo's Middle Formative Cantera phase platform mound, PC Structure 4d, which is similar to Gulf Coast structures.

Other artifacts which may represent Gulf Coast influence do not appear in the Chalcatzingo artifact assemblage all at once but range from early to late Middle Formative. Peralta Orange ceramics were first present in significant quantities in the Early Barranca subphase, and this type became increasingly popular through time. However, the most important attributes linking this ceramic type to the Gulf Coast, punctations and ridged necks on olla forms, appeared first in the Early Cantera subphase. Pavón Fine Grey first appeared in the Early Cantera subphase but became most important in the Late Cantera subphase. Three-pronged braziers, abundant in the Cantera phase, were first present in the Middle Barranca subphase. The chronological control on C8 figurines needs further refinement, but present data suggest that they occurred only during the Cantera phase. The dating of the site's monuments is also extremely tenuous, but their symbolism and iconography appear most similar to La Venta's period IV monuments, placing them also within the Cantera phase.

Unfortunately, it is difficult to draw specific conclusions from the occurrence of these traits within Chalcatzingo's chronological sequence because a good comparative sequence for the Gulf Coast Middle Formative has yet to be completely worked out. The sequence at La Venta is not well documented, that of San Lorenzo contains hiatuses, and the data from Tres Zapotes and Laguna de los Cerros are too scanty. For these same reasons, no specific Gulf Coast center can be designated as the source of the heartland traits found at Chalcatzingo.

Chalcatzingo and Southern Mesoamerica

While many artifacts at Chalcatzingo have counterparts in highland central Mexican Middle Formative assemblages and certain others in Gulf Coast assemblages, a few important traits which have not been specifically identified at heartland Olmec centers can only be designated as "southern Mesoamerican" (Guillén and Grove 1981). The most important example of this generalized southern trait group is Chalcatzingo's round altar and stela combination, Monuments 25 and 26. These Cantera phase monuments compose the earliest round altar–stela combination known in Mesoamerica. They have no specific antecedents. Such combinations occur at Izapa on the Pacific coast of Chiapas (Norman 1976:4), but they are currently dated as Late or possibly even Terminal Formative.

The earth-monster mask forming the basal section of the Monument 21 relief is a further example of a Late Formative Izapa-like motif which appears at Chalcatzingo during the late Middle Formative. Only one Gulf Coast monument (Mon. 1, Los Mangos, Veracruz; de la Fuente 1973:159–160) carries this motif.

Within the Chalcatzingo ceramic assemblage were sherds from plate-like vessels with roughened bottoms (RD-2; Fig. D.3). Many of these sherds are strikingly similar to *comal* sherds of later culture periods. *Comal*-like plates have been recovered from Eo-Archaic levels at Yarumela, Honduras (Canby 1949: Plates 3–5). These were found below strata containing rocker-stamped *tecomate* sherds, suggesting that the Eo-Archaic is probably Early Formative in date. *Comal*-like sherds occur also in Middle Formative Kal phase deposits at Chalchuapa, El Salvador (Sharer 1978:125).

In southern Mesoamerica these plate-like forms may have functioned as manioc griddles. The probable lack of manioc in central Mexico as an important food plant, together with the presence of a lime deposit on field S-39 at Chalcatzingo, raise the possibility that at Chalcatzingo the plates could have functioned as *comales* for tortilla preparation. Tortillas are not normally considered to have been a Formative period food item.

None of the southern or Gulf Coast traits remained in the highlands following the end of Chalcatzingo as a regional center. Instead they disappeared or withdrew. None of these traits left a lasting impact on highlands culture.

Some traits, such as orange wares and three-prong braziers, are found both on the Gulf Coast and in southern Mesoamerica in general. Others, e.g., polychrome ceramics, occur at Chalchuapa, El Salvador, and Chalcatzingo, but have not been identified in the Olmec heartland. The impression given is that certain southern traits bypassed the Gulf Coast but appeared along the Soconusco coast and at Chalcatzingo. The Soconusco-Chalcatzingo distribution seems likewise reflected in the distribution of frontier monumental art, and at least hints at the possibility of a Pacific coastal interaction route through which frontier sites were linked and along which some southern traits moved.

The presence of certain widespread southern traits such as orange ceramics and three-prong braziers on the Gulf Coast and at Chalcatzingo has some implications for the interpretation of Gulf Coast culture history. Arthur Andrew Demarest (1976) and Gareth W. Lowe (1977) have presented reconstructions of the culture history of the Gulf Coast and Chiapas which are in disagreement as to the direction of influences. Lowe argues that Olmec influences penetrated into Chiapas and the Maya area. Demarest, on the other hand, feels that late in the Middle Formative period there was an expansion from the Maya area into the Gulf Coast. However, orange ceramics and three-prong braziers are far more abundant throughout southern Mesoamerica than on the Gulf Coast, suggesting that they were traits adopted by Middle Formative Olmec culture. This seems to support Demarest's reconstruction, although it is obvious that both may be correct, for diffusion is not necessarily a one-way street.

WHAT WAS CHALCATZINGO?

In the years which followed the first publication on Chalcatzingo (Guzmán 1934), scholars proposed a number of hypotheses and ideas in print and informally concerning Chalcatzingo as a site as well as its relationship to Gulf Coast culture. The trend in these hypotheses is reflective of the nature of archaeological explanations for their times. The earliest ones evoked migration and/or colonization and often had a religious orientation. The most recent ideas are usually based on specific economic models which link Chalcatzingo to the Gulf Coast via trade or exchange.

In reviewing some of these ideas and presenting my own, it must be made clear that no model yet provides a completely satisfactory explanation of the processes leading to Chalcatzingo's development or its *raison d'être*. The great quantity of data recovered by our project raises in my mind more questions than it answers. For this reason I am certain that some of us will continue to review and reanalyze the data for years to come. In any case, a better understanding of Chalcatzingo will ultimately rest upon an increased knowledge of many other areas of Formative period Mesoamerica.

Direct versus Indirect Contact

Ignacio Bernal (1968:12) has suggested that some Olmec "colonies" existed in the highlands of central Mexico, including Tlatilco and, by implication, Chalcatzingo. However, at Tlatilco, an Early Formative period site, "Olmec influences" are limited to a few design motifs on ceramic vessels and roller stamps, and the presence of C9 "baby-face" figurines. As mentioned at the beginning of this chapter, such traits are not restricted to Tlatilco but are found at every village or hamlet within the Tlatilco culture sphere for which we have archaeological data. Unless it is hypothesized that every settlement in the highlands during the Early Formative was populated by some Gulf Coast colonists, then the use of certain decorative attributes as a sign of direct Gulf Coast presence is improper.

The two major decorative motifs usually identified as "Olmec" are the "fire serpent" (cayman) and the "were-jaguar." Kent Flannery (personal communication) has pointed out to me that while such motifs are found on Gulf Coast ceramics, they seem to occur in greater frequency on Early Formative Oaxacan ceramics. The same could be true for central Mexico. This suggests that they are important for their symbolic value and that they cannot be ascribed as motifs derivative from any specific archaeological culture, at least based upon frequency within the total assemblage.

Flannery's archaeological work in Oaxaca has greatly clarified the nature of these motifs. Expanding upon the analysis which Nanette M. Pyne (1976) carried out on the Oaxacan ceramic data, Flannery and Joyce Marcus (1976b:381–382) point out that these distinctive ceramic motifs are generally found separated in different areas or wards of the village site of San José Mogote. Smaller settlements elsewhere in the Valley of Oaxaca seem to be associated with either one motif or the other. Flannery and Marcus and Pyne interpret the "fire serpent" and "were-jaguar" motifs not as signifying Olmec contacts or influences, but as symbols related to local Oaxacan lineages or descent groups. This interpretation seems likewise valid wherever the motifs are found in Early Formative Mesoamerica, including sites on the Gulf Coast and in Mexico's central highlands.

Olmec culture did not remain static over seven hundred or so years. By 900 BC the use of the "fire serpent" and "were-jaguar" motifs on pottery had disappeared. Also disappearing were ceramic baby-face figurines. Jade apparently replaced ceramics as the important medium for symbolism. On the Gulf Coast and throughout much of Mesoamerica, white-slipped ceramics decorated with the double-line-break motif became common. The change is not as abrupt as portrayed by some scholars at this time (see Grove 1981a:378). It does reflect a general change in cultural symbolism and values which has yet to be adequately explained.

It is after 900 BC that a few sites outside the Gulf Coast manifested Olmec-like monumental art. As previously discussed, this art appeared in areas with no previous stone-carving tradition and indicates a very different type of "influence" than that which occurred during the Early Formative period. The Early Formative data do not seem to indicate direct contacts between the Gulf Coast and other regions. However, the appearance of Olmec-style monumental art at a few sites far distant from the Olmec heartland implies that during the Middle Formative period some direct contact did take place. Chalcatzingo is one site which apparently received such contacts.

Whether the Gulf Coast contacts at certain distant sites represent an actual colonization by Gulf Coast peoples is perhaps a matter of semantics. How many individuals from the Olmec heartland must be present at a site at any one time for it to be considered a colony? The preponderance of central Mexican–style ceramics and artifacts at Chalcatzingo suggests that it was inhabited primarily by people who were culturally highlanders. The Cantera phase data suggest to me that a few Gulf Coast individuals might have resided, if only periodically, at Chalcatzingo, but it is difficult to ascertain how many. Colonization implies a large group of individuals, and it seems improbable that any such large group, originally adapted to a tropical habitat and riverine agricultural system, ever resided at the site.

Religion and Militarism

Religion was undeniably always an integral and important facet of Mesoamerican cultures, and visible in the archaeological record from the Formative period onward. However, models based upon the idea of Chalcatzingo as a purely religious center ignore the site's many other equally important aspects.

In 1972, Carlo Gay (1972a) hypothesized that Chalcatzingo was an Olmec religious sanctuary. At the time his book was published our project had just been initiated, and Gay and others were unaware of the site's public architecture. Because he thought Chalcatzingo lacked architecture Gay suggested that it might predate the Olmec heartland centers with architecture. This hypothesis was also consistent with his belief in non–Gulf Coast origins for Olmec culture (e.g., Gay 1972b). Our project's recognition and discovery of public architecture and residences from a community which functioned and grew over more than half a millennium demonstrate that Chalcatzingo was more than a religious sanctuary. It is clear today that the site's Cantera phase zenith is relatively late in the course of Olmec cultural developments in the heartland. We uncovered no data which would suggest that anything at Chalcatzingo is antecedent to the indigenous development of complex culture on the Gulf Coast now documented in the San Lorenzo stratigraphic record (Coe 1970; Coe and Diehl 1980; Grove 1981a).

Based upon the scattered distribution of Olmec-style art, particularly monumental art, Michael Coe (1965b:771–772) proposed that this art was diffused by "missionaries" from the Olmec heartland. This again was based on the assumption that such art is purely religious, which, as has been pointed out for ceramics and monuments, is not completely correct. At the same time, Coe (1965a:18; 1965b:775–776) felt that there was a militaristic aspect to the monumental art found outside of the Gulf Coast, and he interpreted the two central figures of Chalcatzingo's Monument 2 as carrying "war clubs." Jorge Angulo (Chapter 10) likewise identifies these same figures as warriors. The three other carvings from the same group (IB), Monuments 3, 4, and 5, can be interpreted as showing the domination of supine humans by animals with supernatural aspects (e.g., Grove 1972a:159). However, in these instances I consider interpretations of militarism and conquest to be completely subjective evaluations. While Olmec contacts with the highlands could conceivably have been backed by military protection, this is not demonstrated in the excavation data. Such hypotheses do not serve to answer the greater question of what a Gulf Coast army, or missionaries, or colonists were doing at this particular site in this particular valley in the central highlands, or why their presence or dominance should be communicated here and not elsewhere.

Trade and/or Exchange

Economic models often seem the most satisfactory to archaeologists, since archaeologists normally deal with nonperishable artifacts, often manufactured of materials which can be analyzed in terms of their ultimate sources (e.g., mines). Even so, these source data seldom satisfy the complexities inherent in these models.

A just criticism of all economic models is that they are overly simplistic. The acquisition of goods was seldom the entire motivation for trade and exchange, particularly among chiefdom-level societies. Often the symbolic power and status which a chief acquired in trade or exchange alliances was of equal or greater importance than the actual objects exchanged, and in fact those items may have been relatively few in number. This should be kept in mind as several economic models are discussed below.

In dealing with the Olmec heartland, it is obvious that most of the sumptuary items in the artifact assemblage were manufactured from materials not native to the coastal plains of southern Veracruz and Tabasco. Raw materials ranging from huge blocks of stone for monuments, or jade for jewelry, to more mundane materials such as obsidian for tools, were imported. The best source analysis data for any of the imported raw materials on the Gulf Coast come from San Lorenzo's obsidian artifacts. R. H. Cobean et al. (1971) have shown this obsidian came from many sources. However, no source area has yet yielded evidence of Olmec occupation or "influence." Since obsidian was a ubiquitous commodity during the Formative period, its exploitation and distribution were probably generalized and not subject to the more controlled patterns of exploitation possibly given to more valued substances.

By the Middle Formative period, jade had become one such valued substance. One of the first economic models proposed to explain Olmec presence in the central highlands of Mexico was Coe's "Jade Route" hypothesis (1965a:123; 1968a:194), which suggested direct Olmec involvement in the exploitation of jade sources in Guerrero. This basic premise is strengthened by the actual distribution of Middle Formative sites with monumental Olmec-style art. The central Mexican sites (Chalcatzingo, Juxtlahuaca, Oxtotitlan, San Miguel Amuco, Techaya, and Teopantecuanitlan, Guerrero) stretch across a mineral-rich area of west-central Mexico. The distribution of the second group of sites along the Pacific coast of southern Mesoamerica (Pijijiapan, Piedra Parada, Abaj Takalik, Chalchuapa, etc.) perhaps reflects what can be hypothetically termed the Cacao and Motagua Jade Route.

Coe (1965a:123) has also suggested that Chalcatzingo was possibly a *pochteca* center which served to collect and warehouse highland materials for transport to the Gulf Coast. This hypothesis further assumes that sites in various parts of Guerrero served as ports-of-trade visited by these *pochteca*, where raw and finished materials were obtained. The entire *pochteca* concept implies a formalized merchant organization with highly structured trade mechanisms. Thus, Coe's hypothesis has come under strong criticism (e.g., L. Parsons and Price 1971), for it is unlikely that such a formalized trade organization had developed among Gulf Coast Formative period chiefdoms.

Although one part of the *pochteca* hypothesis appears unacceptable, the suggestion that Chalcatzingo may have functioned as a collection center or intermediary for goods ultimately destined for the Olmec heartland may have some merit. Such a function for the site was first proposed by Philip Drucker, Robert Heizer, and Robert Squier (1959:270) and later in my initial work there (Grove 1968c). Strict archaeological proof of such a function for the site is lacking, but there is circumstantial evidence in its favor. For example, Chalcatzingo's house structures are far larger than those known from other areas of Mesoamerica and may have served not only as residences but also for the storage of trade goods (Chapter 6). The site's location itself may relate to an important route of trade and communication (Grove 1968c; also discussed below).

The port-of-trade concept has been the subject of two recent archaeological efforts, one at Cozumel, an island off the eastern coast of Yucatan (Sabloff and Rathje 1975), the other near Kaminaljuyu in the highlands of Guatemala (Brown 1977:304–352). Ports-of-trade have been defined as communities (or regions) which functioned as neutral meeting places for trade. Ports-of-trade developed at political or geographical transition zones, such as political "weak spots" between two large states or empires, or at the border of major ecological zones (Chapman 1957:116; Revere 1957:52). William Rathje and Jeremy Sabloff (1975) refine the definition, mentioning that ports-of-trade are located at a distance from powerful resource centers and may also have served as shrine centers.

Strictly defined, ports-of-trade imply administered trade, meaning that the trade was between states rather than simply between individual traders. It is questionable whether during the Middle Formative period there were two powerful states or chiefdoms such that a neutral area with a formal port-of-trade was necessary. While Gulf Coast centers working together as a unit could have served as one trading group, it is presumptuous to imply that a second cohesive and powerful chiefdom or other sociopolitical unit existed in the Valley of Mexico, Morelos, or central Mexico in general, as the second trading partner. If with further archaeological research Cuicuilco turns out to have been a major regional center contemporaneous with Chalcatzingo, then the role of Chalcatzingo as a port-of-trade or other type of intermediary between a powerful highland center and the Gulf Coast centers will have to be reconsidered. Today such data do not exist. In fact, Chalcatzingo's monumental art implies a one-sided relationship with the Gulf Coast and not the neutrality expected of a port-of-trade.

A one-sided relationship is one attribute of a "gateway city," Kenneth Hirth's (1978a) model for Chalcatzingo. Like ports-of-trade, gateway cities are located at transitional points at one end of a center's tributary area. They serve as the "gateway" to the resources of an extended hinterland. Gateway cities are characterized by having an elongated, fan-shaped service area spreading outward in a direction away from the center which they supply (Burghardt 1971). The service area feeding in to Chalcatzingo could have encompassed almost all of central and western Mexico.

A gateway city implies an administered collection of resources, but it does not require *pochteca*-like traders penetrating into distant regions. The materials or goods received from the hinterland service area could have been collected through many networks of indirect exchange and funneled to Chalcatzingo. Some items moving westward into the hinterland from Chalcatzingo might have originated on the Gulf Coast, while others such as iron ore and kaolin may have come from local, Río Amatzinac Valley, resources. In either direction, the overall administration of the exchange and the temporary warehousing of goods would have been an important function for Chalcatzingo as a gateway community. If it was a gateway community, it will be important in the future to determine how Chalcatzingo was functionally linked to the Gulf Coast (for transport purposes, etc.), nearly five hundred long and mountainous kilometers to the southeast.

CONCLUSIONS

Concluding chapters in some archaeological reports turn out to be "just-so" stories, and, although this is seldom admitted, they are predicated as much upon the feelings of the author as upon the actual data. Thus, I want to make explicit that these final pages represent my interpretations and my feelings, which are in some disagreement with Hirth's more internal model in Chapter 21.

In terms of the processes leading to the development of Chalcatzingo and its distinctive features, I favor an economic model which includes the understanding that as trade and exchange took place, the symbolism of those acts may have been as important to the participants as the items themselves.

Since the time of my initial investigations at Chalcatzingo in 1966, I have felt that its location was very favorable in terms of routes of communication, not only for the passage of goods eastward but also for economic interactions with central Mexico and a large area to the south and west. Although Thomas Charlton, Angel García Cook, and others have discussed the possibility that the Valley of Mexico's Classic period eastward trade outlet passed through Tlaxcala (see García Cook and Carmen Trejo 1977), the data suggest that the Valley's Formative period link to the east was via a more southern route: the Amecameca pass into Morelos and then eastward. An important Aztec period trade route followed that same path (Jiménez Moréno 1966), which, after Amecameca, skirted the southern foothills of the volcano Popocatepetl, then moved southward in the Río Amatzinac Valley before turning eastward to Itzocan (Izúcar de Matamoros). The Morelos area is also a logical junction point for goods or raw materials moving out of western Mexico toward the Valley of Mexico or eastward, for the rivers of Morelos all flow as tributaries to the Río Balsas.

The region is also accessible by land routes. Chalcatzingo, at the eastern end of the broad plains of Morelos, and a visible landmark from many locales in the region, does sit in a commanding "gateway" position for goods moving eastward. The mountain's sheer size, grandeur, and visibility—and because of these characteristics its strong symbolic importance—were undoubtedly factors as important in leading to the role it assumed as was its geographical location. In fact, because of the regional topography, more logical routes of travel across the valley bypass Chalcatzingo by several miles to the north or south (e.g., Gay 1972a: 104). This is not a situation to which modern locational geography is applicable, such as the placement of stores and gasoline stations at the junctions of formalized highway systems. In this instance it is not the route which dictates the precise location of the site but the major centers served which dictate the general course of the route, even to the extent of detouring several miles off the most direct path. The "sacred mountain" aspect of Chalcatzingo cannot be divorced from the site's economic growth and development.

It has been mentioned several times in this book that during the Early Formative period a cultural cohesion existed across the Valley of Mexico and Morelos region which was manifested in ceramics. This I termed the Tlatilco culture sphere. The redistribution system within this sphere apparently also controlled the obsidian exploitation and distribution of central Mexico's two major Formative period obsidian sources, Otumba and Paredón. (The Pachuca source was not heavily exploited at this time.) Other regional commodities, including those from the Río Amatzinac Valley, likewise were redistributed throughout the sphere. Gulf Coast interaction with this sphere was only indirect.

The Río Amatzinac Valley lay within the Tlatilco culture sphere, and within the valley Chalcatzingo was the center of redistribution for local raw materials (kaolin, chert, iron ore for pigment) as well as for goods non-local to the valley, such as obsidian. It is probable that some of the valley's raw materials were in demand not only within the Tlatilco culture sphere but outside the sphere as well. Through Chalcatzingo's position on the sphere's border, Chalcatzingo's chiefs not only redistributed goods locally, but also had links with centers to the east (for example, the Izúcar de Matamoros valley, and indirectly probably ultimately to the Gulf Coast as well). In fact the Chalcatzingo chiefs may have been the major eastward link for the communities (and chiefs) of the Tlatilco culture sphere.

By the end of the Early Formative period much of Mesoamerica had grown in cultural complexity and in population. Old interaction networks seem to have dissolved, and (at least in the archaeological record) regionalism seems to have increased. With the rise in population and many new regional centers came the increasing demand for both utilitarian materials and status exotics. While during the Early Formative period the demand in the Olmec heartland for highland raw materials was adequately served through a system of indirect exchange links, this seems to have changed during the Middle Formative. The increased demand for all commodities probably jeopardized the Gulf Coast Olmecs' previously secure supply. Their response to this supply-and-demand situation for exotic items such as greenstone and cacao seems to have been to establish more direct and formalized relationships with a few distant centers having the ability to provide the goods desired.

These relationships probably developed over time, and initially may have taken the form of alliances, including marriage alliances. I believe that the evidence of these reinforced exchange ties lies in the monumental art found at Chalcatzingo and a series of sites in Guerrero, as well as at a number of sites along Mesoamerica's southern Pacific Coast. Just exactly what is being commemorated in the introduced monumental art remains to be clearly defined. In some instances a regional chief may have symbolized his alliance by erecting one or more monuments, and through this display gained further regional prestige and power (e.g., Helms 1979: 76). Even Gulf Coast rulers would have gained status and power by demonstrating to their communities their ability to secure scarce commodities.

The presence at Chalcatzingo of stelae and other monuments which deal with rulership can be interpreted in at least two ways. The carvings of specific individuals may represent the local chiefs who are symbolizing their ties to the Gulf Coast and thus their importance and power. Alternatively, those carvings may depict high-ranking Gulf Coast personages who at one time or another visited or even assumed administration of the community. Whichever interpretation one favors, it must be remembered that the entire concept of monumental art and its technology was imported into Chalcatzingo and must have included skilled rock carvers trained on the Gulf Coast. The monuments imply far more than a local chief copying a distant symbol system. Their presence emphasizes the importance of the individuals portrayed and their communication of power, and reiterates Chalcatzingo's ties, both real and symbolic, with the Gulf Coast. Those ties were not superficial, for ultimately communities throughout the Río Amatzinac Valley received certain attributes of Gulf Coast Olmec culture, and those attributes set the valley dwellers apart culturally from their neighbors in the central highlands.

Chalcatzingo's chiefs clearly had ties with other highland chiefdoms. Monument 21, if commemorating a marriage alliance (see Chapters 10, 27), may show that alliance to be with a center in Guerrero (Teopantecuanitlan?). In fact, several sites in Guerrero exhibit frontier monuments, and it will be instructive in time to see how they were allied to Chalcatzingo.

While a gateway function can be hypothesized for Chalcatzingo, actual demonstration of that function is difficult. Because of the importance of the symbolism of exchange, a center's role in such a system cannot be measured by simply estimating hypothetical quantities of goods in the system, for in these instances quantity can never match symbolic quality. We currently have no idea what quantity of goods a center like La Venta required, but it is safe to assume that the exotics they received were not only utilized locally but also went out in exchanges to establish new ties and alliances with other centers, near and far.

Exactly when and how the Middle Formative community at Chalcatzingo ceased to function is uncertain. The fact that the site's houses appear to have been cleaned of usable goods, rather than having been abandoned with objects still in place, indicates that the termination of the occupation was gradual and planned. That the abandonment was complete is documented by the lack of substantial evidence of a continuing Late Formative settlement. If any Late Formative occupation of the site did occur (Appendix H labels Late Formative Chalcatzingo as a "Small Village," an assessment I disagree with), it followed a long period of abandonment.

By 500 BC in central Mexico we see new regional centers and increasing nucleation, at least partially supported by intensive agriculture in the highlands. Through the greater agricultural surpluses such intensification created, these highland centers soon eclipsed the Gulf Coast by gaining control of the procurement networks. Perhaps an analogy to Teotihuacan serves here. Developing centers on the periphery of Teotihuacan's control seem ultimately to have successfully competed with that major city for its once uncontested supply of imported food and raw materials and hastened its demise. Similarly, perhaps by 500 BC the Gulf Coast centers could no longer maintain long distance control of the symbolically reinforced exchange system which had facilitated their acquisition of a variety of commodities upon which their material and spiritual livelihood depended. If Chalcatzingo's major role had come to be that of a community which used its alliances throughout the highlands to acquire commodities desired on the Gulf Coast (and elsewhere in southern Mesoamerica), it may have become too specialized to survive when it could no longer fulfill that function.

In reality, a good terminal date for Chalcatzingo is lacking, as are any comparable dates for events in the Olmec heartland, and thus it is impossible at this time to actually determine whether Chalcatzingo's demise predated, postdated, or closely coincided with the end of Gulf Coast centers such as La Venta, Laguna de los Cerros, and Palangana phase San Lorenzo. Even if Chalcatzingo survived the Gulf Coast decline, its abandonment might still have been related to the developments which characterized the beginning of the Late Formative period in much of Mesoamerica—the rise of new, larger, and more nucleated regional centers, and a shift in regional populations to these centers. For Chalcatzingo the new center may have been Late Formative Campana de Oro (RAS-20), a few miles to the north.

RESUMEN DEL CAPÍTULO 28

El desarrollo del período Formativo en el sitio de Chalcatzingo no puede ser entendido si no se le estudia dentro del marco más amplio de acontecimientos contemporáneos en el Centro de México, en la Costa del Golfo, y en Mesoamérica en general. El primer asentamiento del sitio, durante la fase Amate, participó en lo que se ha llamado la esfera de interacción denominada "cultura de Tlatilco" en Morelos y el Valle de México.

La interacción económica en esta esfera puede ser inferida a partir de ciertos estilos cerámicos exóticos y a partir de análisis de obsidiana. Esta proviene, casi exclusivamente, de las fuentes de Otumba y de Paredón. Además, parece haber existido relaciones entre Chalcatzingo y la esfera de Izúcar (Las Bocas), al este.

Durante el Formativo Medio hubo mayor variación intra-regional en el Centro de México. Entre los atributos cerámicos que comparten las dos áreas se encuentran las vasijas de engobe blanco con motivos de doble línea interrumpida y los tipos comunes de figurillas, particularmente del C1 al C7. La alta frecuencia de figurillas C8 en Chalcatzingo indica algún tipo de ruptura con el Valle de México y evidencía, al mismo tiempo, la existencia de contactos con la zona de Izúcar de Matamoros. Por otra parte, la cerámica Pavón Fine Grey sugiere tambien posibles vínculos con el Oeste del estado de Puebla. El papel que pudo haber jugado Chalcatzingo en la integración del Centro de México durante esta época no está claro todavía, ya que el tamaño y la importancia de Cuicuilco en este tiempo no han sido valorados aún. Las hipótesis sobre el surgimiento de Chalcatzingo que aquí se presentan, se basan en el supuesto de que Cuicuilco no era, todavía, un centro mayor durante el Formativo Medio.

Por lo que se refiere a los contactos con la zona del Golfo, las similitudes estilísticas que existen entre los relieves de Chalcatzingo y los que fueron encontrados en el área Olmeca metropolitana han sido reconocidas desde hace tiempo. Pero el proyecto ha revelado, además, una serie de nuevos rasgos comunes, los cuales no aparecen en otros sitios contemporáneos del Centro de México. Entre ellos se encuentran: un componente cerámico formado por el Peralta Orange y el Pavón Fine Grey, braseros con tres asas, y figurillas-retrato C8. Entre los artefactos no cerámicos se encuentran objetos de jade, como son los pendientes en forma de T *y de pico de pato, y la figurilla de jade. Tanto Chalcatzingo como los sitios de la Costa del Golfo tienen en común los conjuntos arquitectónicos de montículos y plazas, pero todavía no se sabe con certeza si la arquitectura monumental de Chalcatzingo fué inspirada en un prototipo de la Costa del Golfo.*

En cuanto a los monumentos, no hay duda de que los relieves de Chalcatzingo presentan muchas similitudes estilísticas con el arte monumental de la Costa del Golfo, pero existen también diferencias significativas. Estas son las que caracterizan el arte de Chalcatzingo y el de otros sitios con influencia Olmeca, como son Chalchuapa, Pijijiapan, etc., y es posible definir un estilo artístico "Olmeca fronterizo." Este estilo pretende comunicar ideas un tanto diferentes, y frecuentemente, en una forma menos abstracta que la de los mensajes dirigidos al público Olmeca del área metropolitana, ya que los pueblos "fronterizos" estaban menos familiarizados con la iconografía y con el simbolismo de la Costa del Golfo.

Chalcatzingo posee dos conjuntos de artefactos diferentes: uno de ellos está relacionado con el Centro de México, y el otro con la Costa del Golfo. Este último complejo está vinculado con el liderazgo y el ritual, mientras que el complejo del Centro de México contiene elementos más utilitarios. Esto sugiere que los vínculos con la Costa del Golfo se daban a través del dirigente y que estaban ligados a sus funciones político-religiosas dentro de la comunidad. En Chalcatzingo, estos rasgos fueron combinados con el conjunto local de elementos, y, finalmente, difundidos por todo el Valle del Río Amatzinac. Los artefactos de la Costa del Golfo parecen haber sido introducidos a lo largo de varios siglos, lo cual permite pensar en contactos, poco frecuentes pero regulares, entre las dos áreas.

Chalcatzingo también tiene algunos rasgos importantes en común con el área llamada "sur de Mesoamérica": el altar circular combinado con la estela, que aparece por vez primera en Chalcatzingo; la máscara del monstruo de la Tierra, que se encuentra en la base del Monumento 21; posibles comales, cerámica polícroma y naranja, y braseros con tres asas que están presentes tanto *en la Costa del Golfo como en el sur de Mesoamérica. Estos datos parecen respaldar la teoría según la cual hubo una expansión del área Maya hacia la Costa del Golfo durante el Formativo Medio.*

Ha sido elaborada una serie de modelos para explicar la transformación de Chalcatzingo en un gran centro regional. Estos modelos incluyen la hipótesis de que Chalcatzingo era una colonia Olmeca o bien un santuario religioso; pero este concepto ha sido rechazado gracias a la comprensión, cada vez mayor, de la presencia de la Costa del Golfo en Chalcatzingo y en otros sitios del Altiplano Central. Chalcatzingo es esencialmente un sitio del Centro de México. Los modelos económicos que consideran al comercio y/o al intercambio como el estímulo son más aceptables. El papel jugado por Chalcatzingo en cuanto a las actividades económicas intra-regionales aun no está totalmente claro y varias hipótesis han sido adelantadas, por ejemplo, las que consideran que Chalcatzingo era un centro de colección de tipo pochteca, un puerto de comercio o un asentamiento portuario. Tanto el modelo pochteca como el del puerto de comercio implican un nivel de complejidad cultural mucho mayor que el que alcanzara Chalcatzingo. En cuanto al concepto de asentamiento portuario, existen evidencias suficientes para apoyarlo. Los materiales recolectados en una de las áreas de servicio de la periferia, como son el hierro, la mena férrica, y el kaolín, pudieron haber sido canalizados hacia Chalcatzingo para su posterior transporte a otras regiones, por ejemplo a la Costa del Golfo. Paralelamente, Chalcatzingo habría administrado las materias primas importadas a la periferia. El área de servicio que abastecía a Chalcatzingo pudo haber abarcado casi todo el Centro y el Oeste de México. Chalcatzingo se encuentra situado cerca de rutas de comercio bien conocidas.

El desarrollo de Chalcatzingo como centro económico comenzó probablemente durante el Formativo Temprano, cuando funcionaba como un centro de redistribución para el Valle del Río Amatzinac. Hacia el final de este período, se habían disuelto las viejas redes de interacción, se había incrementado el regionalismo, y se habían desarrollado redes de intercambio más formalizadas. Chalcatzingo cobró nueva importancia como punto de contacto entre el Centro de México y otras regiones, principalmente la Costa del Golfo. La aparición de nuevos centros regionales en el Centro de México, así como la decadencia de los centros de la Costa del Golfo, a fines del Formativo Medio, contribuyeron a la abdicación progresiva de Chalcatzingo.

APPENDIX A
Plant Macrofossils from Cave Excavations

DAVID E. BUGÉ

This appendix lists the various plant remains recovered from excavations in Caves 2 and 8 by Robert Burton. All "local" plant names were provided by informants from Chalcatzingo. In some instances the modern genus and species are not identified (see Table A.1).

Cave 2, a looted dry cave on the east side of the Cerro Delgado, provided four samples. Samples A, B, and D were recovered by screening the mixed deposits left by looters. Sample C comes from a small unlooted area of the cave excavated by Burton.

Dating of the Cave 2 deposits is problematical due to the extensive disturbance by looters of the very shallow deposits. Sherds recovered are Middle Postclassic (see Chapter 25), but the possibility exists that some material could be more recent. The Cave 8 deposits remain to be analyzed by Burton, but also appear to be Middle Postclassic.

Table A.1. **Floral Materials from Caves 2 and 8**

		Cave 2 Sample Lots				
Common Name	*Genus-species*	*A*	*B*	*C*	*D*	*Cave 8*
English:						
Avocado	*Persea americana*	5			1	
Beans	*Phaseolus* sp.		6			
Bottle gourd	*Lagenaria siceraria*		1			
Corn	*Zea mays*		[a]		[a]	
Cotton	*Gossypium hirsutum*		[b]			
Peanuts	*Arachis hypogaea*		11			
Squash	*Cucurbita* sp.		4		5	
Chalcatzingo:						
Batalla			6			
Cabellito	*Calliandra anormala*	1				
Cacachis	*Karwinskia humboldtiana*				9	
Capulin	*Prunus capuli*				2	
Chila cayota		1				
Chile	*Capsicum* sp.				1	
Chipil	*Coursetia glandulosa*	12			2	
Chirimoya	*Anona chirimola*	1				
Chupandilla	*Cyrtocarpa procera*	12			1	
Ciruela	*Spondias purpurea*		243	8		6
Copal	*Bursera copalifera*	1	3			
Coyul	*Acrocormia mexicana*	1				
Composites	*Tithonia*(?) sp.	4	8			
Garras del diablo		5				
Guaje	*Leucaena collinsii*	1			6	1
Guaje oaxpelón	*Leucaena esculenta*				5	
Guamuchil	*Pithecellobium dulce*	2				
Hueyacan		1				
Jacaranda	*Jacaranda acutifolia*	3				
Jicama	*Pachyrhizys erosus*				3	
Jicamilla	***Jatropha*** **sp.**				27	
Japote		1				
Maguey	*Agave* sp.		[c]			[c]
Mata ratón	*Glincidia sepium*	16				
Pancololote		1				
Pochote	*Ceiba parvifolia*	1	1		5	1
Quebracha	*Acacia unijuga*				3	3
Tapaqueso					2	
Tepeguaje	*Leucaena pueblana*				3	2
Torito						1
Uña de gato	*Mimosa* sp.				1	

[a]Corn: 31 kernels, 31 grams of cob fragments in Sample B, 3 cob fragments in Sample C.
[b]Cotton: 22 grams of fiber, 7 grams of bolls and seeds.
[c]Maguey: 8 grams of twisted fiber from Sample C, one spine from Cave 8.

APPENDIX B

Selected Stratigraphic Units

ANN CYPHERS GUILLÉN

This appendix provides supplementary data and illustrations for the thirty-eight Selected Stratigraphic Units (SSU) used in the chronological phasing of the Formative period occupation at Chalcatzingo (Chapter 5). Radiocarbon dates are given where pertinent, but it should be remembered that assignment of subphase to strata is made on the basis of ceramic composition and not according to the date indicated by radiocarbon samples. Comments on the radiocarbon dates are given in Chapter 5.

The level designations (in Roman numerals) apply only to each individual unit and do not refer to particular strata found across the site. That is, the levels in the profiles are not comparable to each other except in the few instances where several excavation units in a restricted area reflect the same depositional events. In these cases, the different units either were considered together as a single SSU (e.g., SSU 2, SSU 30, SSU 32, SSU 38) or, while taken as separate SSU's, were lumped together for purposes of discussion (SSU 12–13, SSU 16–19, SSU 35–36).

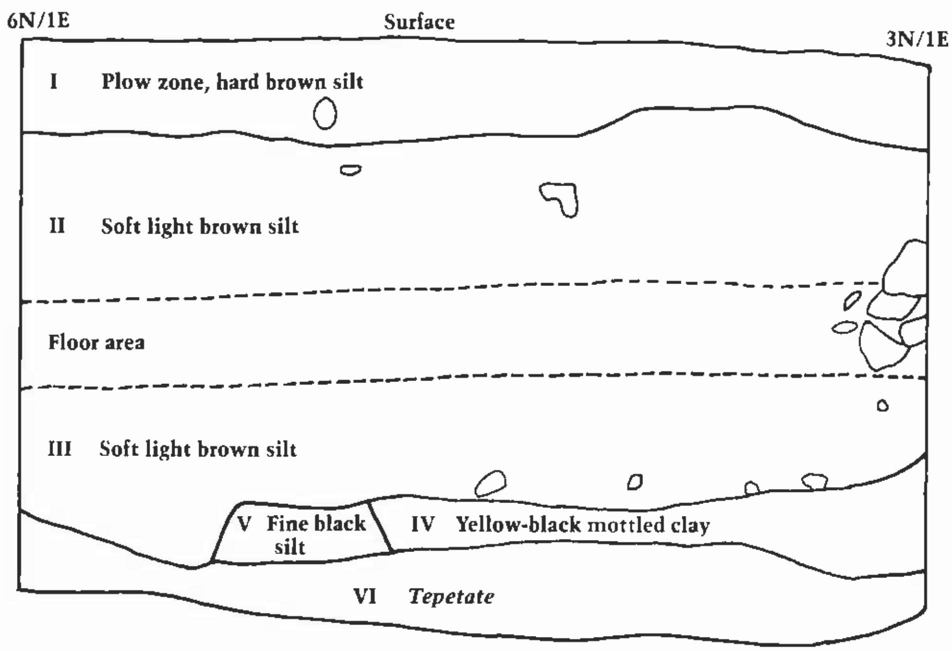

Figure B.1. SSU 1 profile: N-2, 3–6N/0–1E.

***SSU 1* (Fig. B.1)**
N-2: 3–6N/0–1E.

Level:	*Subphase:*
I	
II	LATE CANTERA
FLOOR	LATE BARRANCA–EARLY CANTERA
III	LATE BARRANCA
IV	AMATE
V	
VI	

Comments: The plow zone, Level I, was eliminated from the study because of its high percentage of eroded materials. The lower two levels, V and VI, were not utilized due to a virtual lack of cultural materials.

C-14 Dates:
Level III N-1954 770 ± 95 BC

***SSU 2* (Fig. B.2)**
T-6: 17–18S/0–2W, 11–12S/1–2E.

Level:	*Subphase:*
I	
II	
III	
IV	LATE AMATE

Comments: In both units, the level above sterile *tepetate* is the only undisturbed stratum. Level IV predates the three-stage stone-faced platform with associated stela.

C-14 Dates:
Level IV N-1947 1000 ± 90 BC

***SSU 3* (Fig. B.3)**
N-7: 10–13N/0–1W.

Level:	*Subphase:*
I	
II	LATE CANTERA
III	EARLY CANTERA
IV	LATE AMATE
V	LATE AMATE

Comments: The plow zone, Level I, was the only level not used in the study. No structures were found in this unit.

C-14 Dates:
Level V N-1955 1070 ± 75 BC

***SSU 4* (Fig. B.4)**
T-9A: 8–10S/0–2W.

Level:	*Subphase:*
I	
II	LATE CANTERA
III	EARLY CANTERA
IV	LATE BARRANCA
V	LATE AMATE

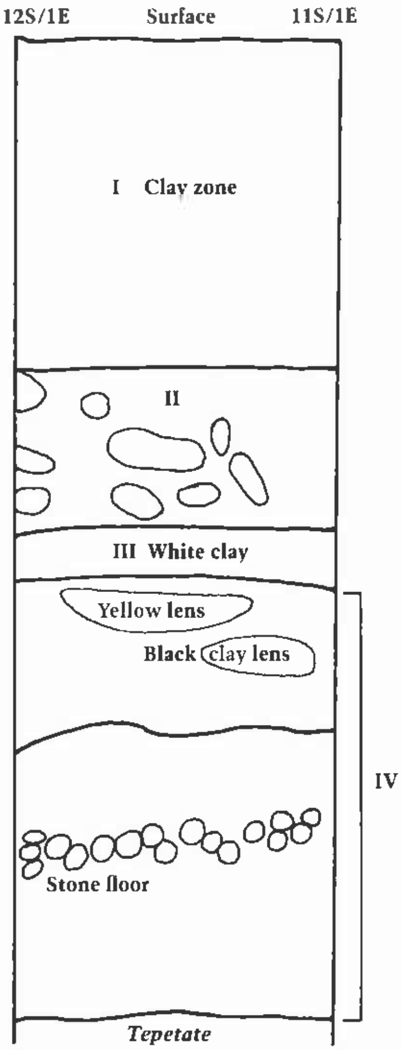

Figure B.2. SSU 2 profile: T-6, 11–12S/1–2E.

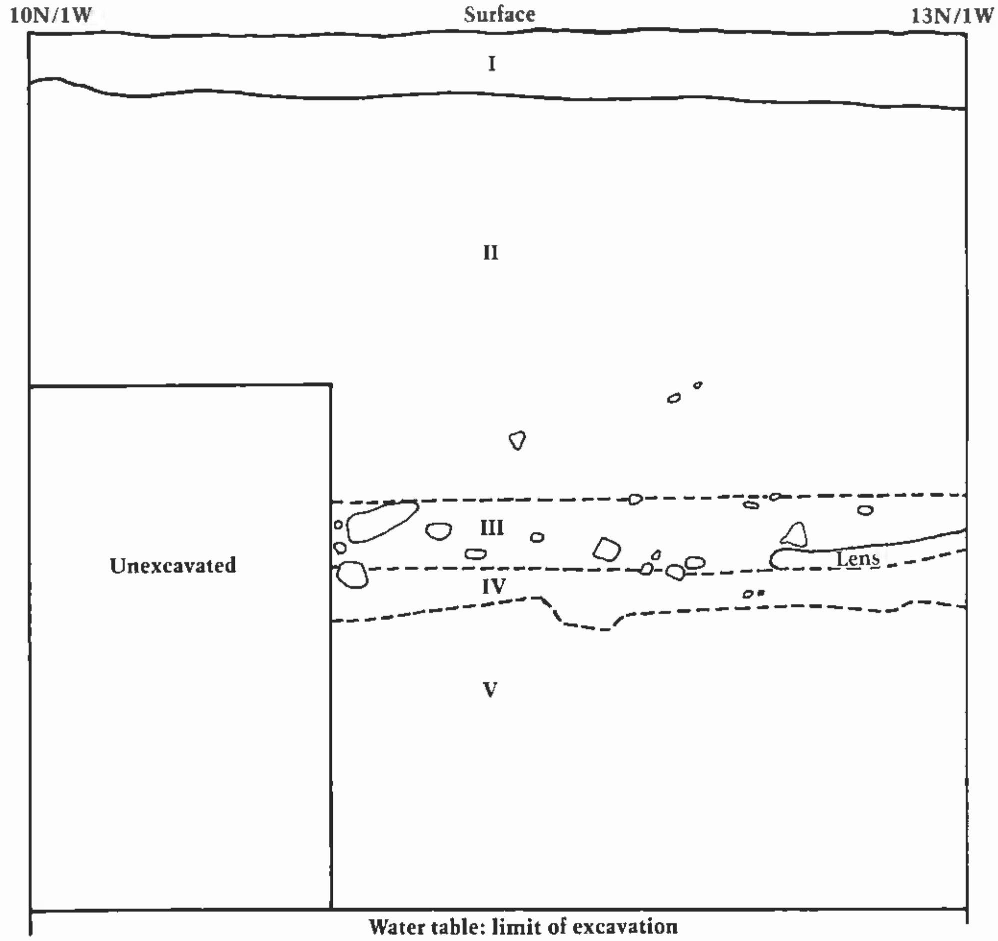

Figure B.3. SSU 3 profile: N-7, 10–13N/O–1W.

Comments: The plow zone, Level I, was not utilized in this study. Level III is an intrusive feature into Level IV, and contained large quantities of stone and sherds. The function of the feature is unknown. Level IV predates a stone construction and due to the high frequency of debris is considered a midden or dumping area contemporaneous with the T-9B structure.
C-14 Dates:
Level IV N-1416 1170 ± 135 BC

***SSU 5* (Fig. B.5)**
T-11: 1–2N/0–2E.

Level:	*Subphase:*
I	
II	
III	LATE CANTERA
IV	EARLY CANTERA
V	LATE BARRANCA

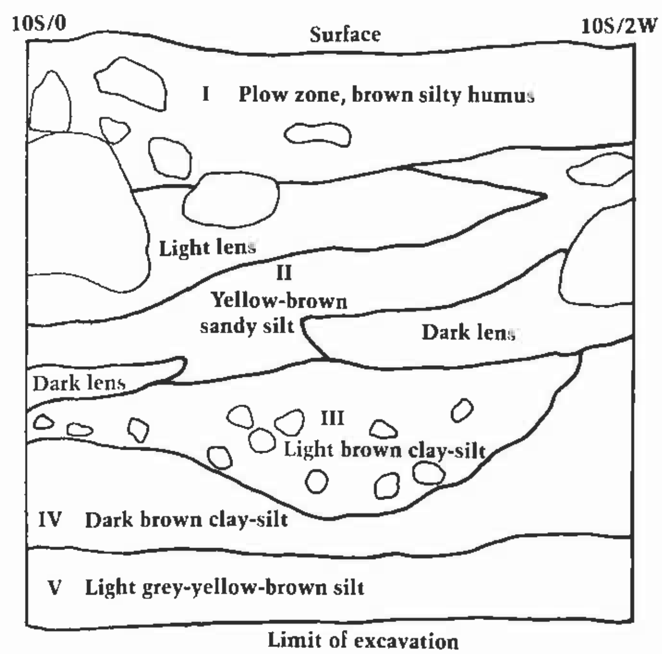

Figure B.4. SSU4 profile: T-9A, 8–10S/O–2W.

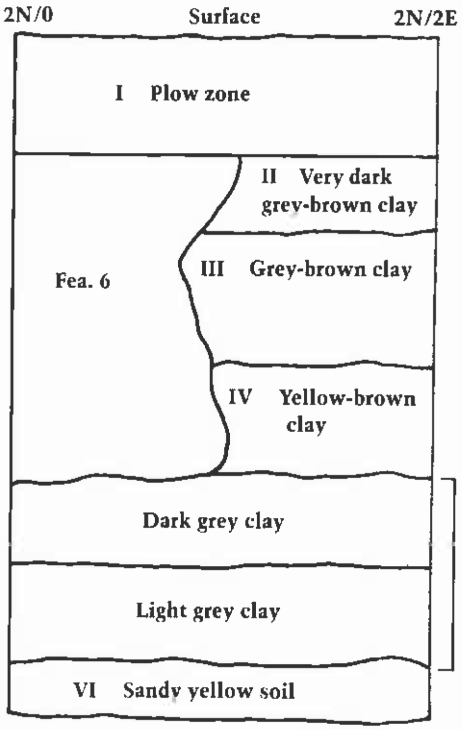

Figure B.5. SSU 5 profile: T-11, 1–2N/O–2E.

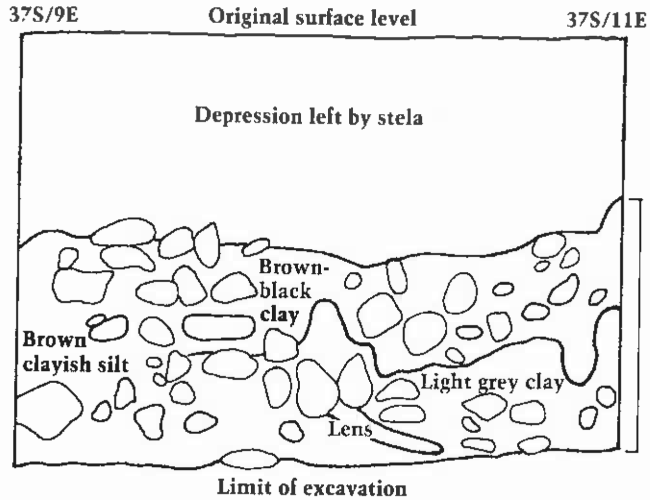

Figure B.6. SSU 6 profile: T-15W, 37–38S/9–11E.

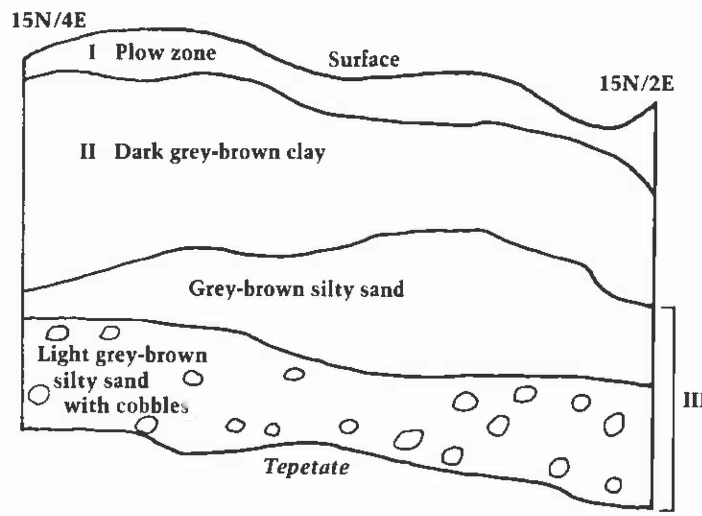

Figure B.7. SSU 7 profile: T-20, 15–16N/2–4E.

Comments: In Level II, the 50–55 cm level represents the floor level of the T-11 structure. Due to abundant intrusions on this terrace, this small area was the only undisturbed floor excavated in the interior of the structure. The level of this floor and the plow zone (Level I) materials above it were too eroded to be useful in sequence building.

Feature 6 is evident in the 2N, 0–2E profile of this unit. This feature, along with others on this terrace, was apparently intruded from the plow zone level. Annual plowing prohibits the determination of their relative age; however, minor amounts of post-Formative debris from the interior of these features indicates a later date for them.

C-14 Dates:

Level IV	N-1709	630 ± 110 BC

***SSU 6* (Fig. B.6)**

T-15W: 37–38S/9–11E.

Level:	*Subphase:*
I	LATE AMATE

Comments: The lowest level, here designated Level I, was determined to be the only stratum likely to represent primary deposition. Two superimposed structures are evident in this unit. The earliest walls rest on Level I, while the upper structure is a stone-faced platform which is associated with Monument 21 and which dates to the Cantera phase. Post-Formative ceramics were found clearly posterior to the platform, in the plow zone and outside the structure.

C-14 Dates: None.

***SSU 7* (Fig. B.7)**

T-20: 15–16N/2–4E.

Level:	*Subphase:*
I	
II	
III	LATE CANTERA

Comments: The upper two levels represent a mixture of cultural debris due to later period construction and slope wash, and thus were not included in this analysis.

C-14 Dates: None.

SSU 8

T-21: 25–27N/72–73W, Fea. 1 (see Fig. 4.29).

Level:	*Subphase:*
I	
II	
III	
IV	LATE CANTERA
V	LATE CANTERA
VI	LATE CANTERA
VII	LATE CANTERA
VIII	EARLY CANTERA
IX	MIDDLE BARRANCA

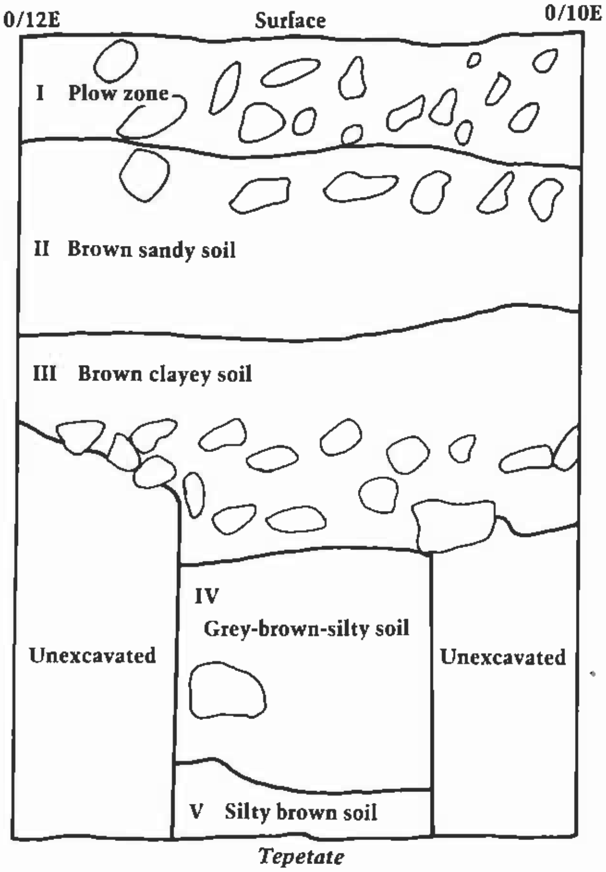

Figure B.8. SSU 11 profile: T-17, 0–1N/10–12E.

Comments: Intrusive Fea. 1 was excavated using the alignment or configurations of dumped loads of sherds as indicators of natural levels or single acts of dumping. These levels were utilized in the sequence building (except for the plow zone and the first two levels of the feature) in the hopes that the patterns of dumping in the feature would provide finer temporal control. The use span of this feature, however, was apparently short except for the lowest two levels.
C-14 Dates:

Level IV	N-1950	830 ± 85 BC

SSU 9
T-21: 25–27N/74–75W.

Level:	*Subphase:*
I	
II	
III	LATE BARRANCA

Comments: Level II of this unit is the matrix into which SSU 8 Fea. 1 was intruded. Levels I and II were not used in this study due to high frequencies of eroded materials.
C-14 Dates: None.

SSU 10
T-21: 6–7N/66–68W.

Level:	*Subphase:*
I	
II	LATE CANTERA
III	EARLY CANTERA

Comments: Level I was the plow zone and therefore not used in this study. Levels II and III were associated with parallel rock lines whose function was to retain downslope movement from the adjacent and higher T-23.
C-14 Dates: None.

SSU 11 **(Fig. B.8)**
T-17: 0–1N/10–12E.

Level:	*Subphase:*
I	
II	
III	
IV	LATE BARRANCA
V	EARLY BARRANCA

Comments: Although a *talud* wall and the remains of an earlier structure were found in the upper levels of this unit, the ceramics were deplorably eroded except in the lower two levels, IV and V, so only these two levels were utilized in this study.
C-14 Dates: None.

SSU 12–13 **(Fig. B.9)**
T-23: 7–9N/5–6E (SSU 12),
7–9N/6–7E (SSU 13).

Level (both units):	*Subphase:*
I	LATE CANTERA
II	LATE CANTERA
III	LATE CANTERA
IV	LATE CANTERA

Comments: These two adjacent units perforate two possible floors, one at Level II and the other at Level III. A possible intrusion of pottery vessels is evident in the 7–9N/6E profile, perhaps associated with nearby burials. The construction activity on T-23 was intense and apparently encompassed a relatively short time span. Areas within the structure were disturbed for the interment of individuals and for the fashioning of other specialized activity features.

Although there appears to have been no major disturbance in these two units, it is disconcerting to note that in the seriations conducted on these materials, the levels seriated upside down from the original stratigraphic order. While there are relatively few differences in the assemblages from top to bottom, and all these levels can be considered part of the Late Cantera subphase, caution must be exercised in using these levels for finer chronological divisions simply because of the possibility that they are disturbed.
C-14 Dates: None.

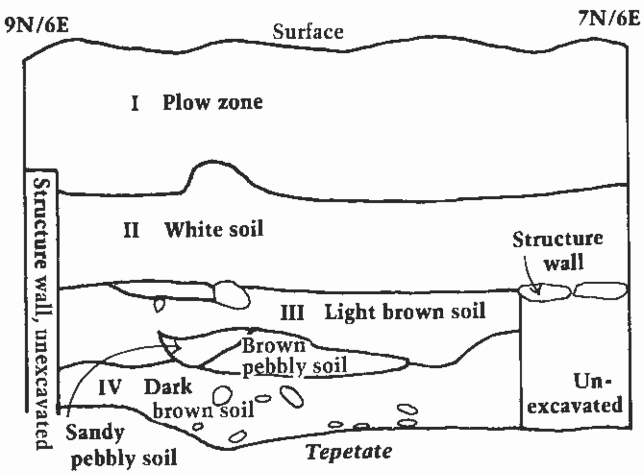

Figure B.9. SSU 12–13 profile: T-23, 7–9N/6E.

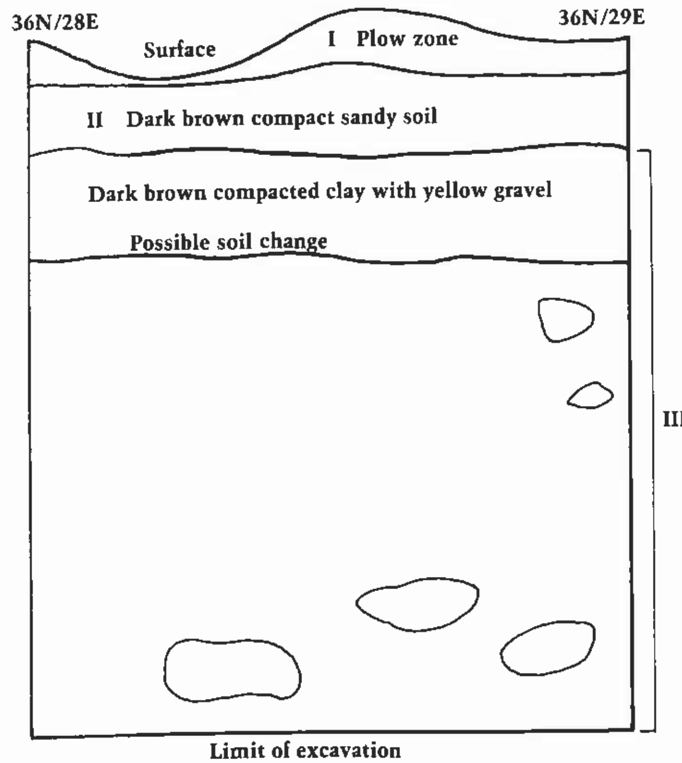

Figure **B.10.** SSU 14 profile: T-23, 35–36N/28–29E.

***SSU 14* (Fig. B.10)**
T-23: 35–36N/28–29E.

Level:	*Subphase:*
I	
II	
III	LATE BARRANCA

Comments: Levels I and II contained totally eroded materials and were not included in this study. Level III is a possible floor and is the only stratum used for sequence building.
C-14 Dates: None.

SSU 15
T-24: 20–21N/2–5E, Fea. 2.

Level:	*Subphase:*
I	
II	
III (Fea. 2)	LATE CANTERA
IV	LATE CANTERA

Comments: The plow zone and underlying stratum of slope wash (Levels I and II), which both crosscut the slope of Level IV, were not used in this study. It is unclear whether Feature 2 in Level III postdates the slope wash zone, but it certainly postdates Level IV.
C-14 Dates: None.

***SSU 16–19* (Fig. B.11)**
T-25: 0–1S/0–7W in front of the altar (SSU 16), 1S–1N/0–1W (*pozo*; SSU 17), 0–1N/0–1E (SSU 18), 1–2N/4–5W (SSU 19).

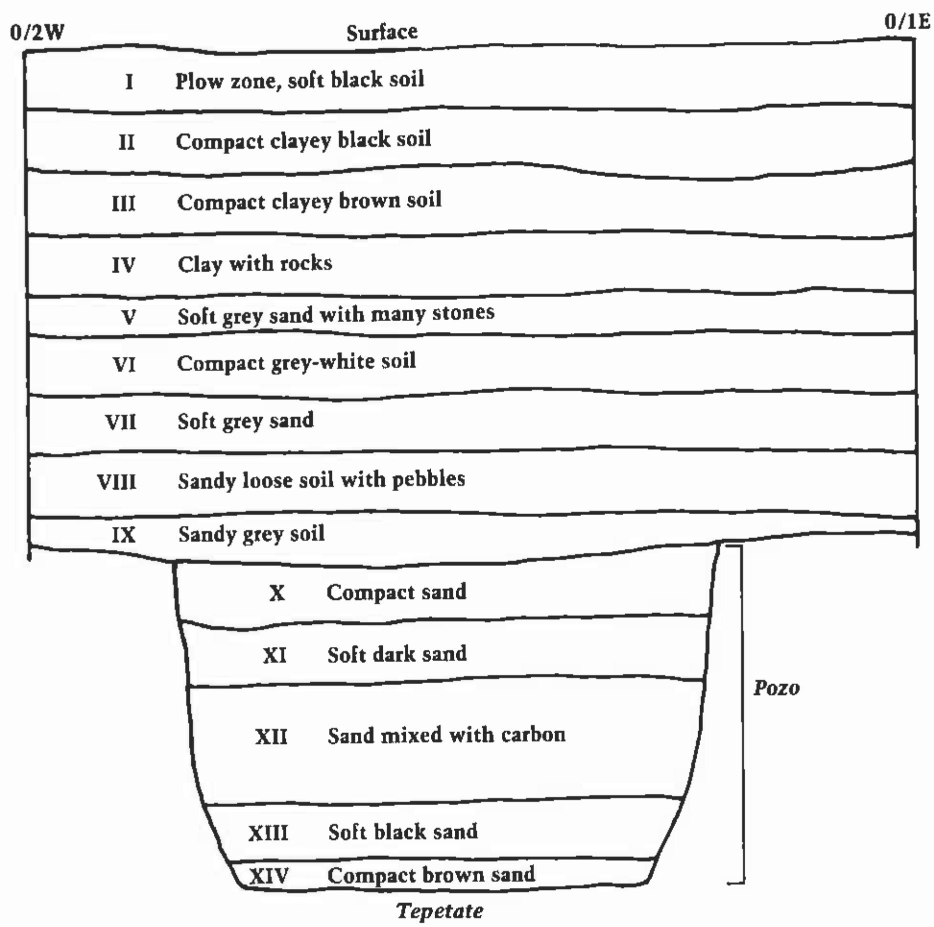

Figure B.11. SSU 16–19 profile: T-25, 0/1E–2W.

	Level:	*Subphase:*
SSU 16	I	
	III	
	IV	LATE CANTERA
	V	LATE CANTERA
	VI	LATE BARRANCA
	VII	MIDDLE BARRANCA
	VIII	MIDDLE BARRANCA
SSU 17	IX	MIDDLE BARRANCA
	X	*Pozo* MIDDLE BARRANCA
	XI	*Pozo* MIDDLE BARRANCA
	XII	*Pozo* MIDDLE BARRANCA
	XIII	*Pozo* MIDDLE BARRANCA
	XIV	*Pozo* MIDDLE BARRANCA
SSU 18	I	
	II	
	III	
	IV	LATE CANTERA
	V	LATE CANTERA
	VI	LATE BARRANCA
	VII	MIDDLE BARRANCA
	VIII	MIDDLE BARRANCA
SSU 19	II	
	III	
	IV	LATE CANTERA
	V	LATE CANTERA
	VI	LATE BARRANCA
	VII	MIDDLE BARRANCA

Comments: In these four related units, Levels I (plow zone), II, and III were not used in this study. Levels II and III were associated with the large rocks covering the face of the altar. Levels V–VIII and the *pozo* (pit; Levels X–XIV) are pre-altar occupation levels. The *pozo* feature was intruded into sterile *tepetate* from the level of *tepetate*.
C-14 Dates:

Pozo (lower levels) N-1702 670 ± 100 BC
Pozo (upper levels) N-1710 1070 ± 85 BC

SSU 20 (Fig. B.12)
T-25: 6–8S/3–4W.

Level:	*Subphase:*
I	
II	
III	
IV	EARLY CANTERA

Comments: This unit is located behind the T-25 altar. The upper levels (I–III) are zones of erosion detained by the altar construction. Level IV predates altar construction and is undoubtedly an occupation zone due to the presence of large vessel fragments and large quantities of carbon.
C-14 Dates: None.

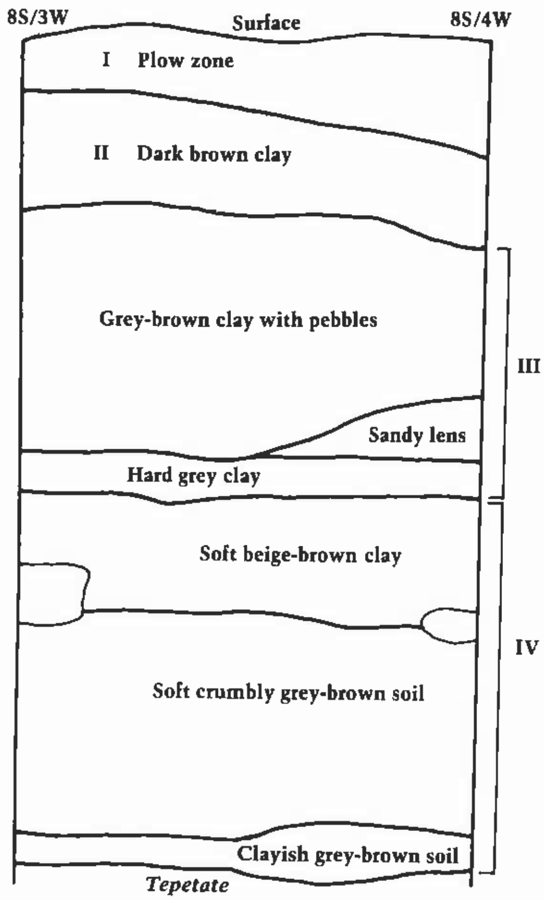

Figure **B.12**. SSU 20 profile: T-25, 6–8S/3–4W.

SSU 21 (Fig. B.13)
T-25: 2–4S/0–1E.

Level:	*Subphase:*
I	
II	
III	
IV	
V	EARLY–LATE CANTERA
VI	LATE BARRANCA

Comments: Levels I–IV were eliminated from this study due to high frequencies of eroded materials.
C-14 Dates: None.

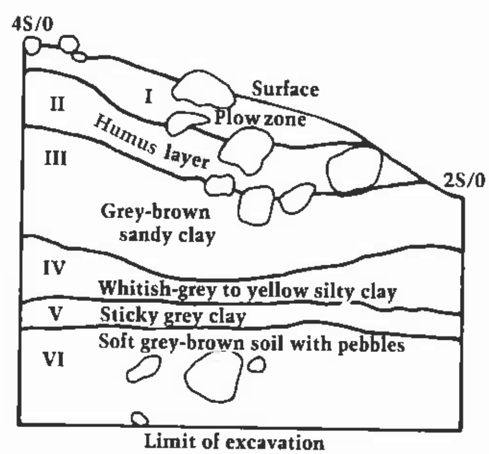

Figure B.13. SSU 21 profile: T-25, 2–4S/0–1E.

SSU 22 (Fig. B.14)
T-25: 2.2–4S/2–3W.

Level:	*Subphase:*
I	
II	
III	
IV	
V	LATE BARRANCA
VI	LATE BARRANCA
VII	MIDDLE BARRANCA

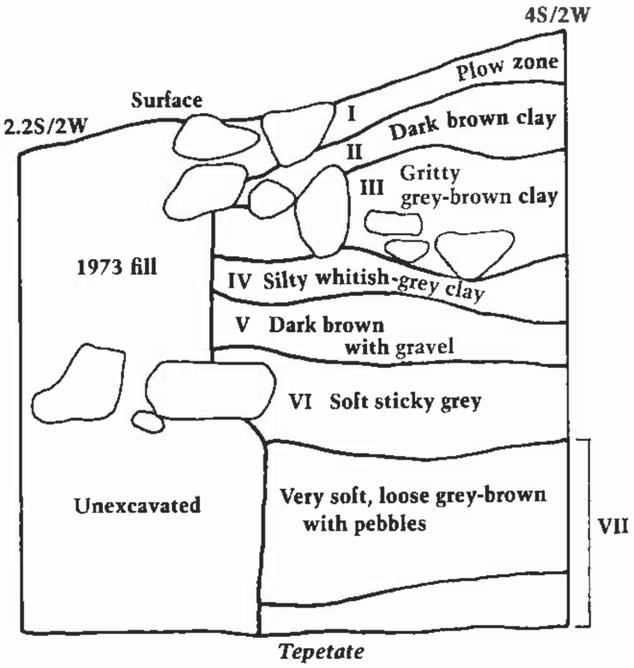

Figure B.14. SSU 22 profile: T-25, 4–2.2S/2–3W.

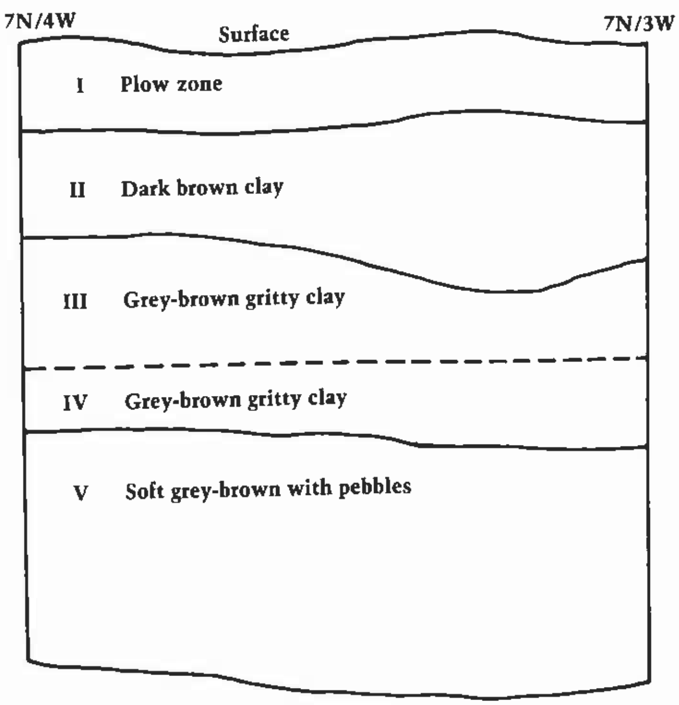

Figure B.15. SSU 24 profile: T-25, 4–7N/3–4W.

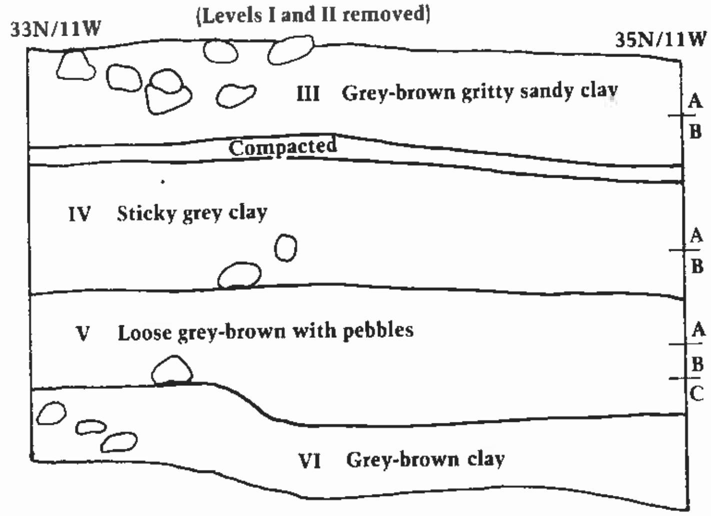

Figure B.16. SSU 25 profile: T-25, 33–35N/10–11W.

Comments: Levels I–IV contained high proportions of eroded materials and were not used in this study.
C-14 Dates: None.

SSU 23
T-25: 2–4N/6–7W.

Level:	*Subphase:*
I	
II	
III	
IV	LATE CANTERA
V	MIDDLE BARRANCA

Comments: Levels I–III contained high proportions of eroded materials and were not used in this study.
C-14 Dates: None.

***SSU 24* (Fig. B.15)**
T-25: 4–7N/3–4W.

Level:	*Subphase:*
I	
II	
III	
IV	LATE BARRANCA
V	MIDDLE–LATE BARRANCA

Comments: High percentages of eroded materials in Levels I–III resulted in their elimination from this analysis.
C-14 Dates: None.

***SSU 25* (Fig. B.16)**
T-25: 33–35N/10–11W.

Level:	*Subphase:*
I	
II	

IIIA	LATE CANTERA
IIIB	EARLY CANTERA
IVA	LATE BARRANCA–EARLY CANTERA
IVB	LATE BARRANCA
VA	MIDDLE BARRANCA
VB	MIDDLE BARRANCA
VC	EARLY BARRANCA
VI	EARLY BARRANCA

Comments: The plow zone (Level I) and Level II were not used in this study. Level II was a zone of post-Formative intrusions. Levels IIIA and IIIB were occupation levels associated with a stone-faced platform.
C-14 Dates: None.

SSU 26
T-29: 3.8–4S/13–15W.

Level:	*Subphase:*
I	
II	
III	EARLY CANTERA
IV	LATE BARRANCA

Comments: Levels I and II represent plow and slope wash zones, and were not used in this study. Both Levels III and IV were associated with stone constructions.
C-14 Dates: None.

***SSU 27* (Fig. B.17)**
S-39: 5–6N/4–5W.

Level:	*Subphase:*
I	
II	LATE CANTERA

Comments: The plow zone (Level I) was not used in the analysis.
C-14 Dates: None.

***SSU 28* (Fig. B.18)**
PC: 0–3N/0–1E.

Level:	*Subphase:*
I	
II	
III	
IV	
V	
VI	
VII	LATE AMATE

Comments: This unit perforated the platform mound (Str. 4) at the southern edge of the Plaza Central. Level VII was the only undisturbed stratum pertaining to a pre-mound construction period.
C-14 Dates:
Level VII N-1698 1660 ± 90 BC

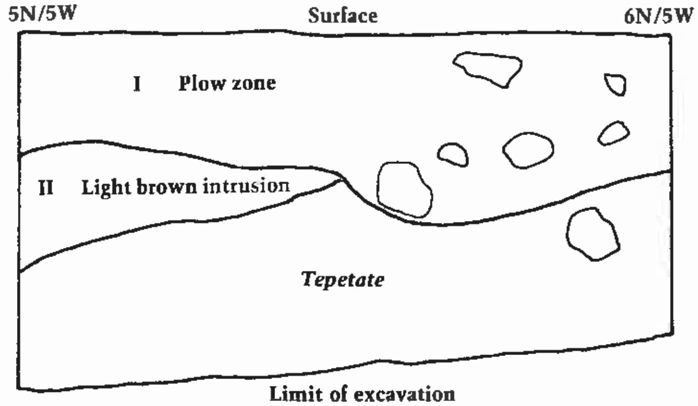

Figure B.17. SSU 27 profile: S-39, 5–6N/4–5W.

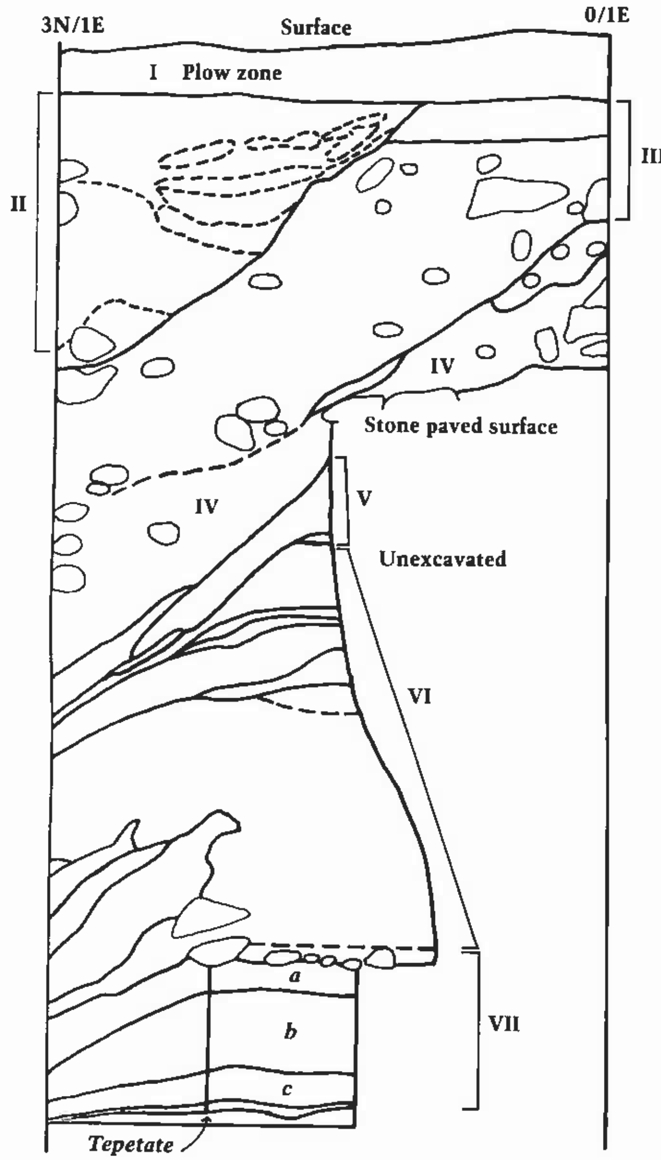

Figure B.18. SSU 28 profile: PC Structure 4, 0–3N/1E. Level II, Classic period rebuilding; III, Cantera phase rebuilding; IV, possible Cantera phase rebuilding; V–VI, Amate phase structure.

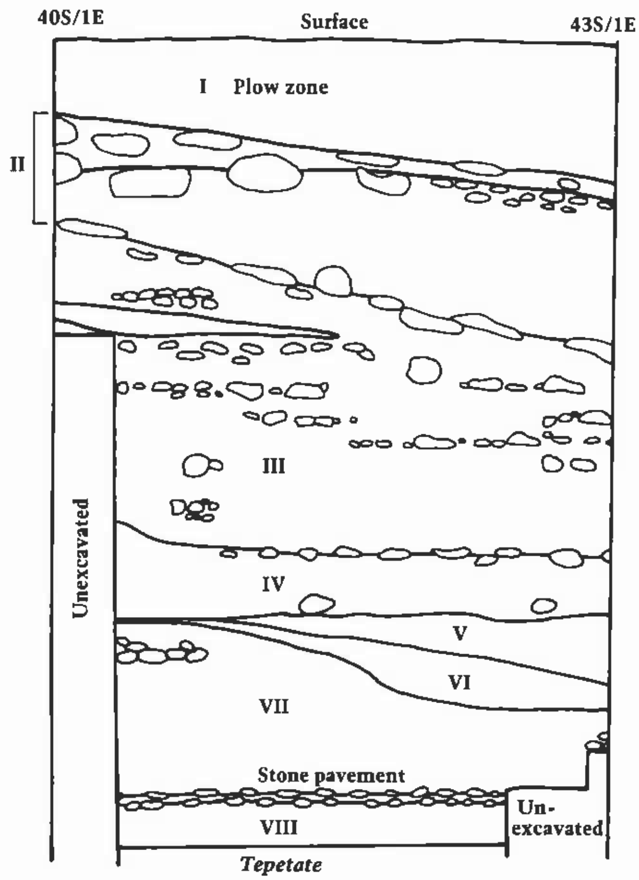

Figure B.19. SSU 29 profile: PC Structure 4, 40–43S/1E.

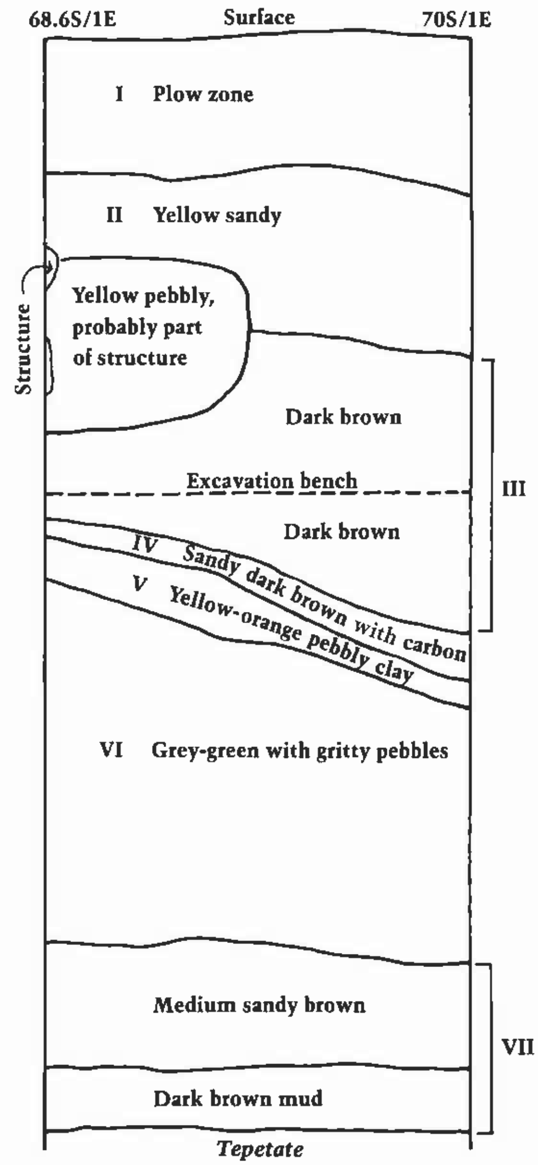

Figure B.20. SSU 30 profile: PC Trench, 68.6–70S/1E.

***SSU 29* (Fig. B.19)**
PC: 40–43S/0–1E.

Level:	*Subphase:*
I	
II	
III	
IV	
V	LATE AMATE
VI	LATE AMATE
VII	LATE AMATE
VIII	LATE AMATE

Comments: This unit also perforated PC Structure 4. The top 3 m (Levels I–IV) represent platform fill. A stone pavement sealed the pre-mound levels (V–VIII).
C-14 Dates: None.

***SSU 30* (Fig. B.20)**
PC Trench: 68.6–70S/0–1E,
71–75S/0–1E.

Level:	*Subphase:*
I	
II	
III	
IV	
V	
VI	EARLY CANTERA
VII	LATE BARRANCA–EARLY CANTERA

Comments: The upper strata of these two adjacent units (Levels I–V) represent heavy slope wash. The lower levels, VI and VII, were original ground surfaces.
C-14 Dates:
Level VII N-1409 1140 ± 100 BC

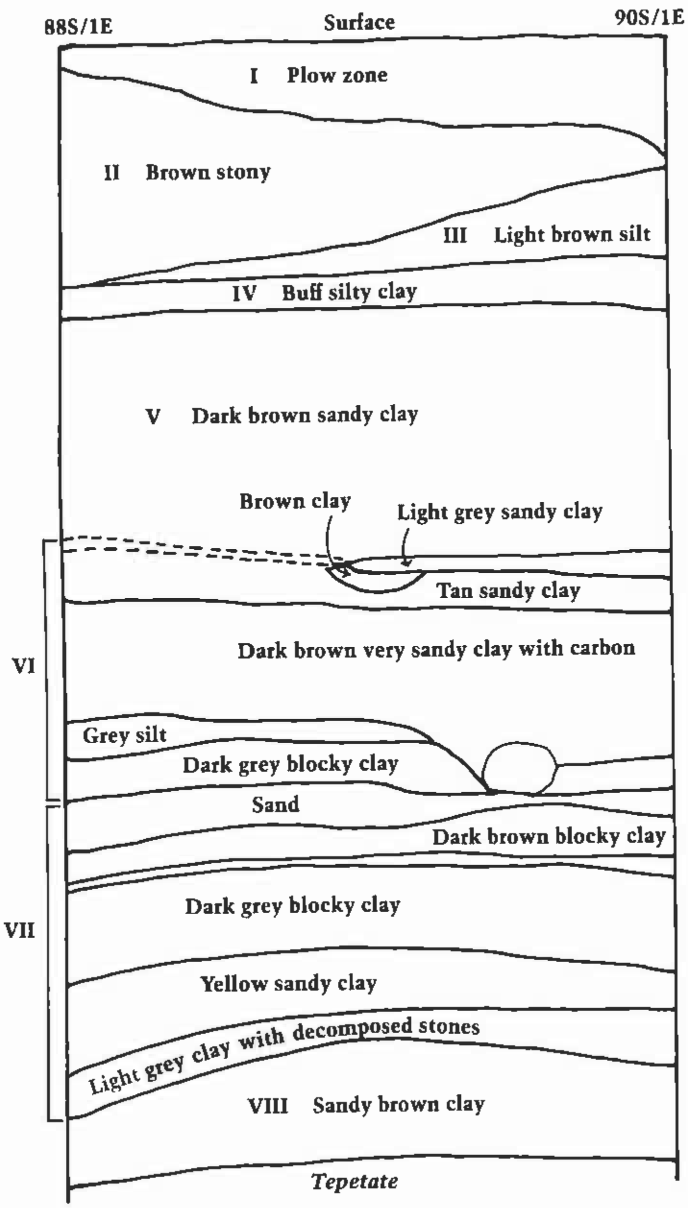

Figure B.21. SSU 31 profile: PC Trench, 88–90S/1E.

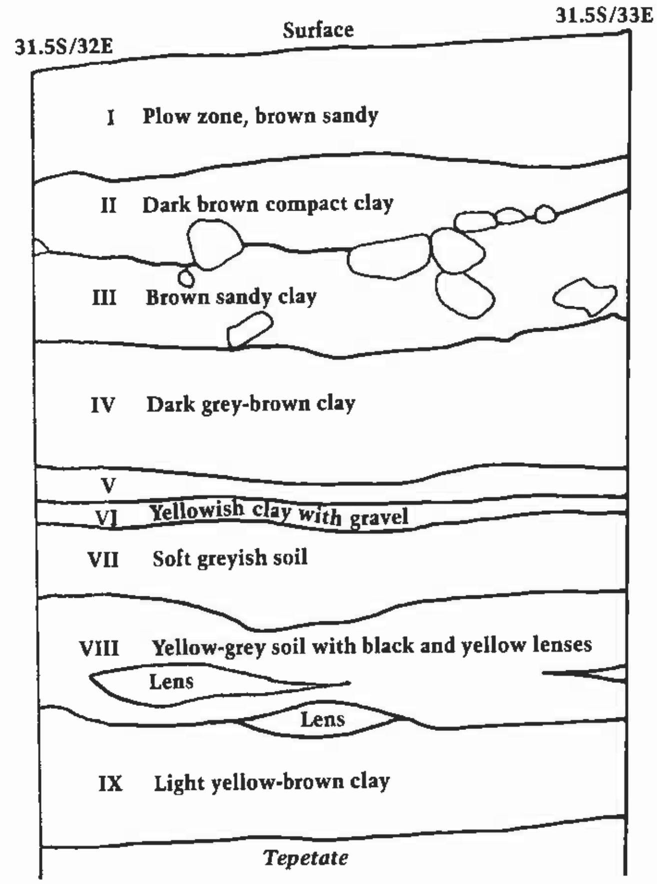

Figure B.22. SSU 32 profile: PC, 31.5S/32–33E.

***SSU 31* (Fig. B.21)**
PC Trench: 87–90S/0–1E.

Level:	*Subphase:*
I	
II	
III	
IV	
V	LATE CANTERA
VI	EARLY CANTERA
VII	LATE BARRANCA
VIII	LATE BARRANCA

Comments: Levels I–IV are part of a zone of heavy slope wash and contained high frequencies of eroded materials; thus, they were eliminated from this study.

C-14 Dates:
Level VII N-1407 1090 ± 85 BC

***SSU 32* (Fig. B.22)**
PC: 28–29S/33–34E, 31–32S/33–34E, 31–32S/35–36E, 31–32S/36–37E, 31–32S/37–38E, 31–32S/34–35E, 30–31.5S/32–33E.

Level:	*Subphase:*
I	
II	
III	
IV	
V	
VI	
VII	LATE AMATE
VIII	LATE AMATE
IX	

Comments: Levels VII and VIII were the only reliable levels with unmixed materials. The other strata were not used in this study.
C-14 Dates: None.

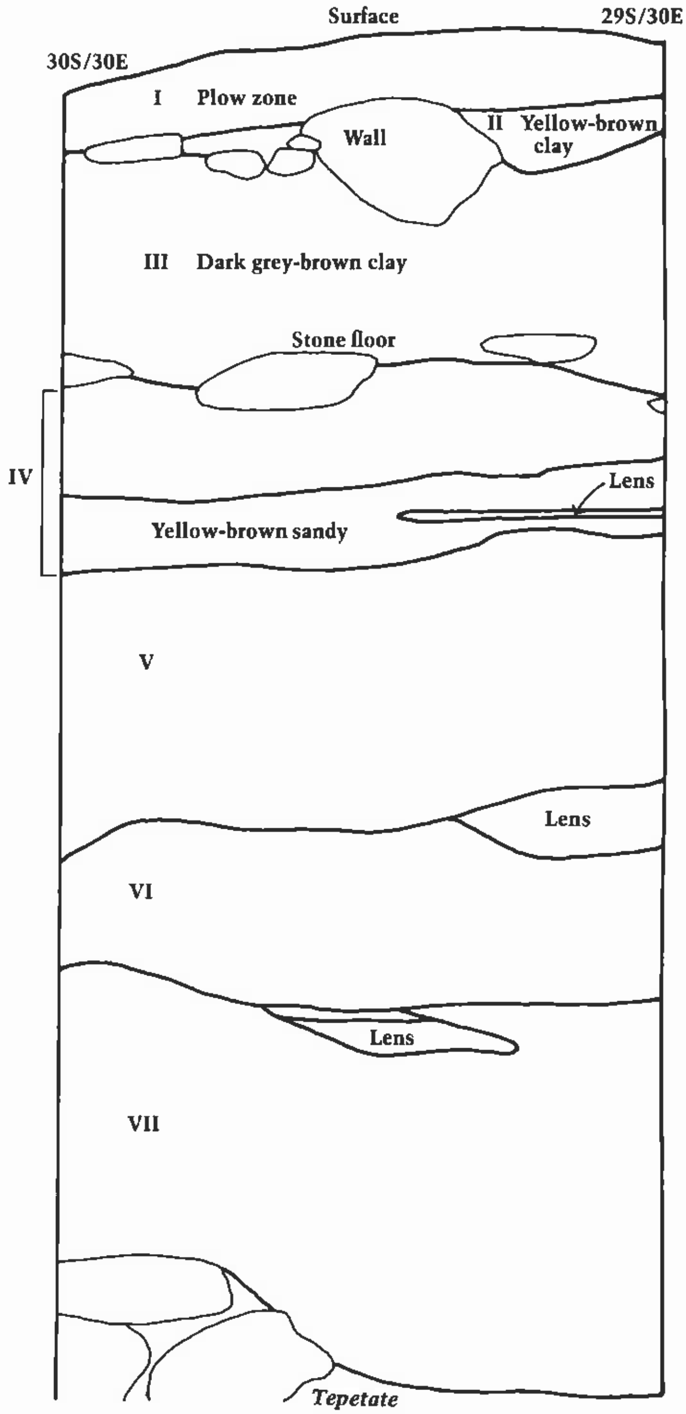

Figure B.23. SSU 33 profile: PC, 29–30S/30–31E.

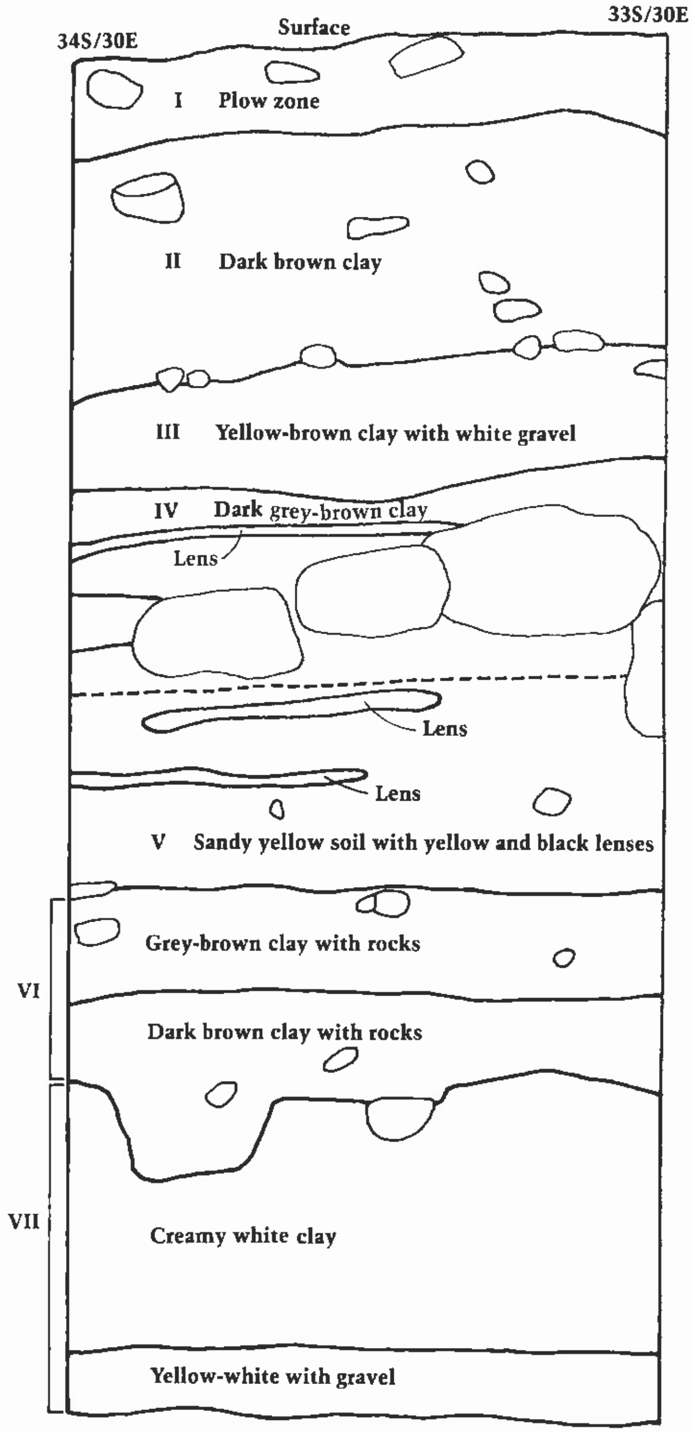

Figure B.24. SSU 34 profile: PC, 33–34S/30–31E.

SSU 33 **(Fig. B.23)**
PC: 29–30S/30–31E.

Level:	*Subphase:*
I	
II	
III	
IV	LATE AMATE
V	LATE AMATE
VI	EARLY AMATE
VII	EARLY AMATE

Comments: Levels I–III represent the plow zone and mound fill or wash zones, and were not used in this study.
C-14 Dates: None.

SSU 34 **(Fig. B.24)**
PC: 33–34S/30–31E.

Level:	*Subphase:*
I	
II	
III	
IV	
V	LATE AMATE
VI	LATE AMATE
VII	EARLY AMATE

Comments: Levels V–VII predate the stone pavement and were the only levels used from this unit. The upper levels (I–IV) are zones of mixed materials.
C-14 Dates: None.

SSU 35–36 **(Fig. B.25)**
PC Str. 1: 112–114S/0–2W (trash pit feature; SSU 35), 114–116S/0–2E (SSU 36).

Level:	*Subphase:*
I	
FEATURE (SSU 35)	LATE CANTERA
II	
III	EARLY CANTERA
IV	EARLY CANTERA
V	LATE BARRANCA
VI	LATE BARRANCA
VII	LATE BARRANCA
VIII	LATE BARRANCA
IX	MIDDLE BARRANCA
X	MIDDLE BARRANCA
XI	EARLY BARRANCA
XII	EARLY BARRANCA
XIII	EARLY BARRANCA
XIV	EARLY BARRANCA

Comments: The SSU 35 trash pit was an intrusive feature which disturbed the stone walls in Levels II and III. This feature postdates the construction activity of Level II and predates the interment of Burial 19. It contained a large amount of debris and also a small stone sculpture.

Levels I (plow zone) and II of SSU 36 were not used due to high frequencies of eroded materials. The lower levels constitute a series of floors.
C-14 Dates:

Level II	N-1404	710 ± 70 BC
Level VIII	N-1705	820 ± 100 BC
Level XIII	N-1704	220 ± 95 BC

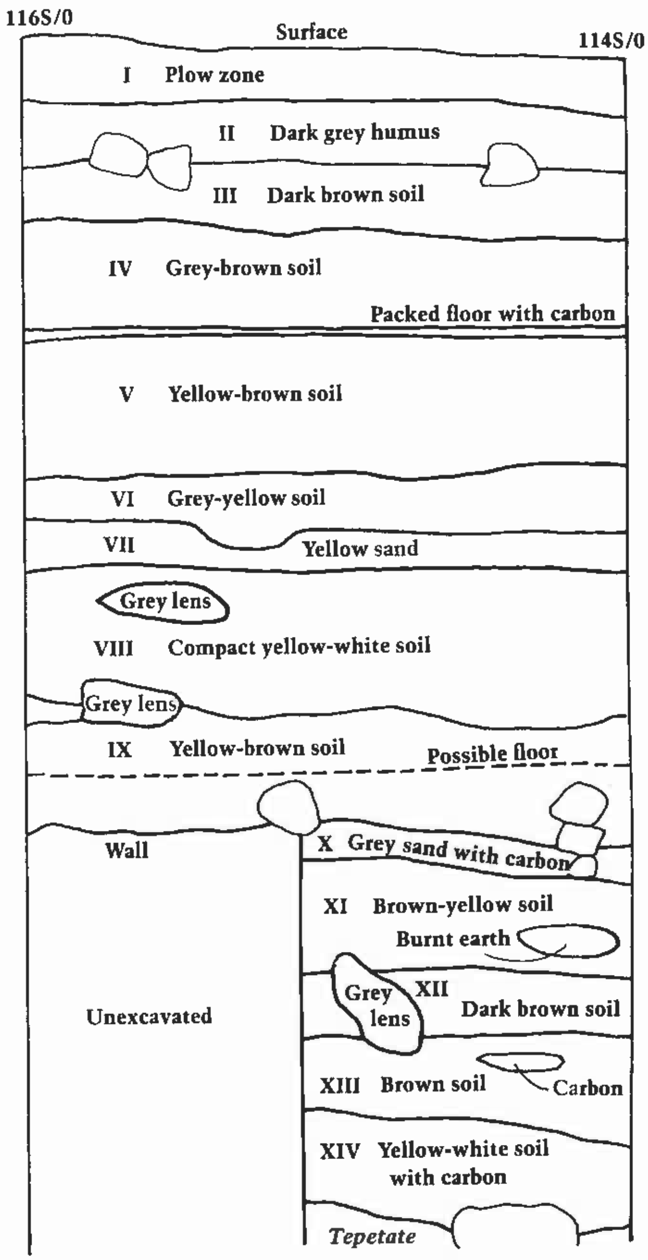

Figure B.25. SSU 35–36 profile: PC Structure 1, 114–116S/O.

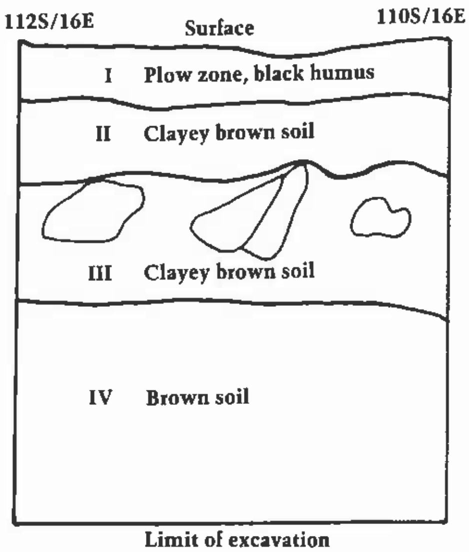

Figure B.26. SSU 37 profile: PC Structure 3, 110–112S/16–18E.

***SSU 37* (Fig. B.26)**
PC Str. 3: 110–112S/16–18E.

Level:	*Subphase:*
I	
II	
III	
IV	LATE BARRANCA

Comments: Unfortunately, due to a bag labeling error during excavations, the upper levels of this unit could not be reliably determined. The lowest level (IV) contains no construction activity; however, within this level there are indications of a possible hearth area nearby.
C-14 Dates:
Level IV N-1412 1040 ± 135 BC

***SSU 38* (Fig. B.27)**
T-6: 3–4N/9–10W, 0–3S/9–10W,
0.5–1.5S/10–12W, 0.5–1.5S/12–13W.

Level:	*Subphase:*
I	
II	
III	
IV	
V	LATE AMATE
VI	LATE AMATE
VII	LATE AMATE
VIII	LATE AMATE
IX	LATE AMATE

Comments: Levels V–IX represent undisturbed strata on T-6. A possible platform structure of Amate phase date is also present.
C-14 Dates: None.

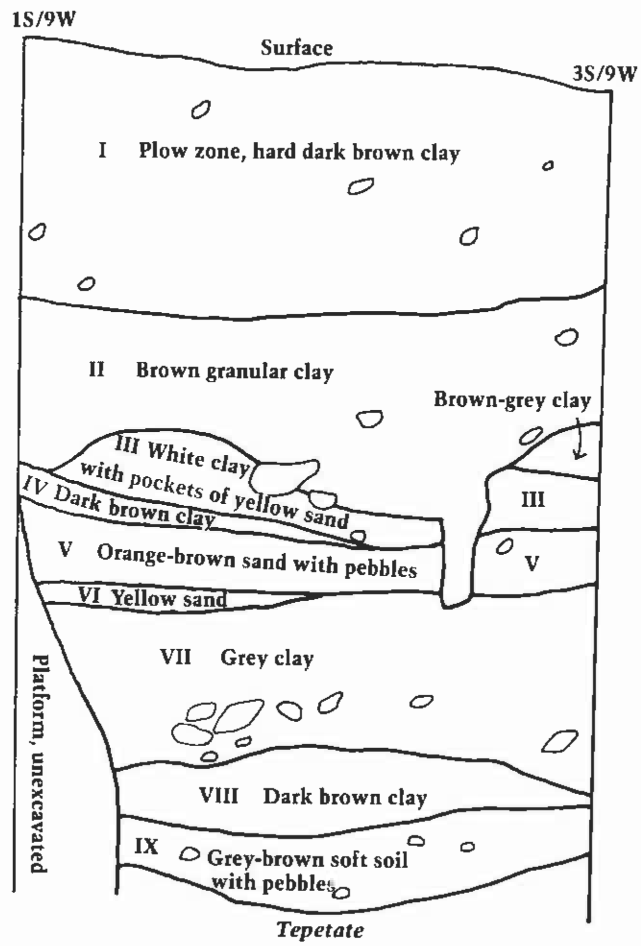

Figure B.27. SSU 38 profile: T-6, 1–3S/9–10W.

APPENDIX C
The Chalcatzingo Burials

MARCIA MERRY DE MORALES

Detailed descriptions of the 161 Chalcatzingo burials are provided in this appendix. They are ordered by terrace and, for the Plaza Central (T-1), by structure as well. The burial numbers given here and throughout the book were assigned at the end of the project; thus, they do not always agree with the field numbers which may appear in photographs. Numbers and letters used to designate the mortuary furniture correspond with those artifacts in the line drawings. Due to poor preservation, the age and sex data are frequently listed as "indeterminable." However, a few of those listings actually reflect data inadvertently undetermined or unrecorded by the excavator.

PLAZA CENTRAL STRUCTURE 1

Burial 1

Location — Unit 120–122S/2–4E; 15–20 cm below surface.
Grave — Simple, direct. Disturbed.
Age and sex — Adult, sex indeterminable.
Position — Indeterminable.
Orientation — Indeterminable.
Furniture — Ground stone:
a. Metate fragment.
Obsidian:
b. Two prismatic blade fragments.
Remarks — Only teeth and a few skull fragments remained.
Dating — Cantera phase.

Burial 2

Location — Unit 120–122S/2–4E; 30 cm below surface.
Grave — Simple, direct.
Age and sex — Adult, sex indeterminable.
Position — Extended, supine.
Orientation — East-west, head to west.
Furniture — Ceramics:
1. Amatzinac White double-loop handle censer. Height: 20 cm.
2. Carrales Coarse Grey composite bowl with thin-line geometric incising on the exterior and double-line incised on interior rim. Diameter: 18 cm.
3. Carrales Coarse Grey ovate bowl, thin-line incising on exterior and double-line incised on interior rim (Fig. 13.53*b*).
4. Carrales Coarse Grey composite bowl (Fig. 13.52*d*) with cursive thin-line incising on exterior near rim. Interior rim incised with double-line-break motif. Diameter: 21 cm.
5. Amatzinac White shallow bowl, exterior incised. Diameter: 18 cm.
6. Amatzinac White flaring bowl. Height: 10 cm. Diameter: 29 cm.
Obsidian:
a. Three prismatic blade fragments.
Remarks — Vessels 1–4 placed south (right) of torso.
Vessels 5, 6 placed north (left) of skull.
Dating — Cantera phase.

Burial 3 (Fig. 8.8)

Location — Unit 118–120S/0–2E; 20 cm below surface.
Grave — Simple, placed within a crypt, now destroyed with cover stones missing.
Age and sex — Adult, sex indeterminable.
Position — Extended, supine. Right lower leg crossed over left lower leg.
Orientation — North-south, head to north.
Furniture — Ceramics:
1. Atoyac Unslipped Polished *cantarito.* Height: 8 cm. Placed east of left leg.
2. Peralta Orange composite bowl with punctates at shoulder (Fig. 13.40*b*). Diameter (partial): 31 cm. Placed west of right leg.
Ground stone:
a. Mano, placed at foot of burial.
Other:
b. Large carved stone head (Mon. 17). Olmec style. Height: 20 cm. Width: 17.5 cm. Maximum depth: 10.5 cm. Placed at pelvic region of corpse. Partially broken, with one side of the upper face knocked off.
Remarks — Grave in plow zone, crypt damaged by plowing.
Dating — Cantera phase.

Burial 4

Location — Unit 120–122S/0–2W; 15 cm below surface.
Grave — Simple, direct.
Age and sex — Adult, female (?).
Position — Extended, supine.
Orientation — Northwest-southeast, head to northwest.
Furniture — Ceramics:
1. Amatzinac White double-loop handle censer. Height (partial): 20 cm. Placed over pelvic region.

	2. Atoyac Unslipped Polished *cantarito* with concentric arcs incised around body of vessel. Height: 13 cm.
	3. Carrales Coarse Grey bowl with slight incurved rim. Diameter: 12 cm. Placed over chest of corpse.
	4. Eroded *cantarito* (Fig. 13.49*b*). Placed near chin.
	Ground stone:
	a. Metate fragment.
	b. Two manos.
	Obsidian:
	c. Two prismatic blade fragments located near skull.
Dating	Cantera phase.

Burial 5

Location	Unit 120–122S/0–2E; 20 cm below surface.
Grave	Simple. Narrow stones placed standing around body are apparently the remains of a destroyed crypt, cover missing.
Age and sex	Juvenile, sex indeterminable.
Position	Extended, supine, with arms crossed over pelvis.
Orientation	North-south, head to north.
Furniture	Ceramics:
	1. Carrales Coarse Grey composite bowl with four lugs around rim. Placed west of skull.
Remarks	Grave lies within the plow zone and crypt was apparently destroyed by recent agricultural activities.
Dating	Cantera phase.

Burial 6

Location	Unit 118–120S/0–2E; 25 cm below surface.
Grave	Simple, direct.
Age and sex	Adult, sex indeterminable.
Position	Extended, supine.
Orientation	North-south, head to north.
Furniture	Obsidian:
	a. Four complete prismatic blades placed at mid-section.
Dating	Cantera phase.

Burial 7

Location	Unit 118–120S/0–2E; 24 cm below surface.
Grave	Simple, direct.
Age and sex	Adult, sex indeterminable.
Position	Loosely flexed, on right side.
Orientation	East-west, head to west.
Furniture	None.
Remarks	A large stone occurred near top of skull.
Dating	Cantera phase.

Burial 8

Location	Unit 118–120S/0–2W; 30 cm below surface.
Grave	Simple, direct.
Age and sex	Adult, sex indeterminable.
Position	Extended, supine (?).
Orientation	Northwest-southeast, head to northwest.
Furniture	Ceramics:
	1. Amatzinac White slightly incurved rim bowl, exterior incised. Diameter: 18 cm.
	2. Carrales Coarse Grey composite bowl with thin-line geometric incising. Diameter: 21 cm.
Remarks	Both vessels placed east of legs.
Dating	Cantera phase.

***Burial 9* (Fig. 8.10)**

Location	Unit 116–118S/0–2W; 26 cm below surface.
Grave	Simple, direct.
Age and sex	Adult, sex indeterminable.
Position	Tightly flexed, on right side. Face up.
Orientation	East-west, head to west.
Furniture	Ceramics:
	1. Amatzinac White shallow bowl. Diameter: 12 cm.
	2. Amatzinac White shallow bowl. Diameter: 13 cm.
Remarks	Vessels placed mouth to mouth at foot of skeleton.
Dating	Cantera phase.

***Burial 10* (Fig. 8.11)**

Location	Unit 122–124S/2–4E; 25 cm below surface.
Grave	Simple, direct.
Age and sex	Middle-aged adult, sex indeterminable.
Position	Extended, supine. Lower right arm bent in over pelvis. Lower portion of body was twisted slightly to the south, with knees slightly flexed.
Orientation	East-west, head to east.
Furniture	Ceramics:
	1. Atoyac Unslipped Polished (?) *cantarito* (Fig. 13.49*c*). Height: 9 cm. Placed within other vessel.
	2. Eroded shallow bowl. Diameter: 6 cm.
	Obsidian:
	a. Six prismatic blades.
	b. One flake.
	Ground stone:
	c. Metate fragment.
	d. Mano.
Remarks	Both vessels were placed slightly south of feet. The ground stone artifacts were placed at the foot of the corpse, as was the flake. The blades were scattered about the body.
Dating	Cantera phase.

Burial 11

Location	Unit 116–118S/0–2E; 30–34 cm below surface.
Grave	Simple, direct. Double interment with Burial 12.
Age and sex	Adult, possibly female.
Position	Tightly flexed, on left side.
Orientation	East-west, head to west.
Furniture	None.
Dating	Cantera phase.

Burial 12

Location	Unit 116–118S/0–2E; 30–34 cm below surface.
Grave	Simple, direct. Double interment with Burial 11.
Age and sex	Infant, sex indeterminable.
Position	Tightly flexed, on left side.
Orientation	East-west, head to west.

Furniture — Ornamental stone:
a. One tubular jade bead. Length: 1.8 cm. Diameter: 0.8 cm.
Dating — Cantera phase.

Burial 13
Location — Unit 114–116S/1W–2E; 30 cm below surface.
Grave — Simple, direct.
Age and sex — Adult, sex indeterminable.
Position — Extended, supine.
Orientation — East-west, head to east.
Furniture — Ceramics:
1. Amatzinac White shallow bowl. Diameter: 13 cm. Placed north of right femur.
2. Amatzinac White shallow bowl. Diameter: 12 cm. Placed mouth to mouth with vessel 3 at feet.
3. Amatzinac White shallow bowl. Diameter: 12 cm. Placed mouth to mouth with vessel 2 at feet.
4. Amatzinac White spouted tray. Placed upside down over shallow bowls at feet.
5. Atoyac Unslipped Polished (?) shallow bowl. Diameter: 8 cm. Stacked with vessel 6 upside down north of skull.
6. Atoyac Unslipped Polished (?) shallow bowl. Diameter: 8 cm. Stacked with vessel 5 upside down north of skull.
Obsidian:
a. One prismatic blade. Placed above right shoulder.
Remarks — Six vessels in association in clusters of one, two, and three vessels (1, 2-3-4, 5-6).
Dating — Cantera phase.

Burial 14
Location — Unit 114–116S/0–2E; 24 cm below surface.
Grave — Simple, direct.
Age and sex — Adult, sex indeterminable.
Position — Tightly flexed, on right side.
Orientation — North-south, head to north.
Furniture — Ceramics:
1. Amatzinac White shallow bowl. Diameter: 13 cm.
2. Amatzinac White shallow bowl. Diameter: 13 cm.
3. Amatzinac White shallow bowl. Diameter: 13 cm.
4. Amatzinac White shallow bowl. Diameter: 13 cm.
Obsidian:
a. One prismatic blade. Located between arms and legs.
Remarks — Vessels placed mouth to mouth in pairs. One pair located east of skull, the other pair east of feet.
Dating — Cantera phase.

Burial 15 **(Fig. 8.13)**
Location — Unit 114–116S/0–2E; 27 cm below surface.
Grave — Simple, direct.
Age and sex — Young adult, sex indeterminable.
Position — Extended, supine, with lower arms flexed across body.
Orientation — Northwest-southeast, head to northwest.
Furniture — Ceramics:
1. Amatzinac White shallow bowl. Diameter: 12 cm. Placed to northwest of skull.
2. Amatzinac White shallow bowl. Diameter: 12 cm. Placed northwest of skull.
Obsidian:
a. Four prismatic blades in association with vessels and skull.
Dating — Cantera phase.

Burial 16
Location — Unit 112–114S/2W; 31 cm below surface.
Grave — Simple, direct.
Age and sex — Adult, sex indeterminable.
Position — Extended, supine.
Orientation — Northwest-southeast, head to northwest.
Furniture — Ornamental stone:
a. One jadeite pendant (Fig. 17.4g). Diameter: 21 mm. Placed at top of cranium.
Dating — Cantera phase.

Burial 17
Location — Unit 110–112S/0–2E; 26 cm below surface.
Grave — Simple, direct.
Age and sex — Young adult, sex indeterminable.
Position — Flexed, on right side.
Orientation — East-west, head to west.
Furniture — None.
Dating — Cantera phase.

Burial 18
Location — Unit 108–110S/0–2E; 23 cm below surface.
Grave — Simple, direct.
Age and sex — Adult, sex indeterminable.
Position — Flexed, upper portion of body placed supine and lower portion turned to right side.
Orientation — North-south, head to north.
Furniture — None.
Dating — Cantera phase.

Burial 19
Location — Unit 112–114S/0–2W; 22 cm below surface.
Grave — Simple, direct.
Age and sex — Adult, sex indeterminable.
Position — Extended, prone.
Orientation — North-south, head to south.
Furniture — Ceramics:
1. Amatzinac White shallow bowl. Diameter: 12 cm.
2. Amatzinac White shallow bowl. Diameter: 12 cm.
Remarks — Vessels placed mouth to mouth east of skull.
Dating — Cantera phase.

Burial 20
Location — Unit 111S/1W; 25 cm below surface.
Grave — Simple, direct. Disturbed.
Age and sex — Young adult, sex indeterminable.
Position — Extended, supine (?).
Orientation — North-south, head to south.
Furniture — None.
Remarks — Only fragments of skull and arm bones remained.

Dating — Cantera phase.

Burial 21

Location — Unit 114–116S/4–6W; 20 cm below surface.
Grave — Simple, direct. Disturbed.
Age and sex — Adult (?), sex indeterminable.
Position — Extended.
Orientation — North-south, head to south (?).
Furniture — Ceramics:
1. Peralta Orange composite bowl with punctates (partial).
Ground stone:
a. One mano east of femur.
Remarks — Only fragmented sections of legs remained. Directly overlay Burial 31.
Dating — Cantera phase.

Burial 22

Location — Unit 112–114S/2–4E; 30 cm below surface.
Grave — Simple, direct.
Age and sex — Young adult, sex indeterminable.
Position — Flexed, on right side.
Orientation — Northeast-southwest, head to northeast.
Furniture — Ceramics:
1. Carrales Coarse Grey composite bowl, scalloping around break (Fig. 13.54). Diameter: 20 cm. Placed at foot of corpse.
2. Carrales Coarse Grey flaring-wall bowl (base missing) with fine-line incising on interior rim in a variation of the double-line break motif. Diameter: 24 cm.
Ground stone:
a. One mano to east of body.
Dating: — Cantera phase.

***Burial 23* (Fig. 8.15)**

Location — Unit 116–118S/0–2E; 80 cm below surface.
Grave — Simple, direct. Double interment with Burial 24.
Age and sex — Adult, female (?).
Position — Tightly flexed, on right side.
Orientation — North-south, head to south.
Furniture — Ceramics:
1. Atoyac Unslipped Polished II bowl. Vertical finger impressions on exterior of vessel. Diameter: 14 cm. Placed between the two individuals.
Ornamental stone:
a. Jade bead, spherical, found at mandible. Diameter: 1.35 cm.
Dating — Cantera phase.

***Burial 24* (Fig. 8.15)**

Location — Unit 116–118S/0–2E; 80 cm below surface.
Grave — Simple, direct. Double interment with Burial 23.
Age and sex — Infant, sex indeterminable.
Position — Tightly flexed, on right side.
Orientation — East-west, head to west.
Furniture — Ceramics:
See Burial 23.
Dating — Cantera phase.

Burial 25

Location — Unit 114–116S/2–4E; 60 cm below surface.
Grave — Simple, direct.
Age and sex — Adult, sex possibly female.
Position — Flexed, on right side.
Orientation — East-west, head to east.
Furniture — Ceramics:
1. Amatzinac White straight-walled bowl. Height: 14 cm. Diameter: 14 cm. Placed northeast of top of skull.
2. Carrales Coarse Grey composite bowl. Height: 11 cm. Diameter: 20 cm. Placed southeast of skull, mouth to mouth with vessel 3.
3. Carrales Coarse Grey composite bowl with fine-line incising at rim and four lugs placed evenly at break. Height: 11 cm. Diameter: 20 cm. Placed mouth to mouth with vessel 2.
4. Carrales Coarse Grey bowl. Height: 10 cm. Diameter: 18 cm. Placed south of skull.
5. Peralta Orange olla (base only). Placed under lower leg bones and feet.
Ground stone:
a. One mano placed south of lower leg bones.
b. One flat (grinding?) stone placed south of lower leg bones.
Dating — Cantera phase.

Burial 26

Location — Unit 116–118S/2–4W; 30 cm below surface.
Grave — Simple. Damaged crypt, cover lacking.
Age and sex — Juvenile, sex indeterminable.
Position — Loosely flexed, turned slightly to left side.
Orientation — Northeast-southwest, head to northeast.
Furniture — Ceramics:
1. Amatzinac White double-loop handle censer. Placed south of mid-section among crypt stones.
Remarks — Crypt lies near the surface and was probably damaged by plowing.
Dating — Cantera phase.

***Burial 27* (Fig. 8.12)**

Location — Unit 122–124S/2–4E; 60 cm below surface.
Grave — Simple, direct.
Age and sex — Middle-aged adult, sex indeterminable.
Position — Extended, supine with lower arm bones flexed across body.
Orientation — East-west, head to east.
Furniture — Ceramics:
1. Amatzinac White double-loop handle censer (Fig. 13.20). Height: 21 cm. Placed at foot of body.
2. Amatzinac White double-loop handle censer. Height: 21 cm. Placed at foot of body.
Ground stone:
a. One mano at foot south of vessels.
Obsidian:
b. Seven prismatic blades and two flakes.
Dating — Cantera phase.

Burial 28

Location — Unit 121–123S/1–2E;

	60 cm below surface.
Grave	Crypt, complete, both slab-lined and covered. Ends left open.
Age and sex	Middle-aged adult, sex indeterminable.
Position	Extended, supine, with arms outstretched and placed over body.
Orientation	North-south, head to north.
Furniture	Ceramics: 1. Amatzinac White composite bowl. Double-line incised on exterior rim. Diameter: 11 cm. Placed at open north end of crypt near skull. 2. Amatzinac White bowl with four rim lugs. Red smear (hematite) remains on interior of vessel. Diameter: 10 cm. Small hole punched in base of vessel. Placed directly beneath skull. 3. Amatzinac White double-loop handle censer. Placed among slabs on east side of crypt. 4. Amatzinac White double-loop handle censer. Placed among slabs on west side of crypt. 5. Atoyac Unslipped Polished *cantarito.* Height: 8 cm. Placed inside crypt to west of skull. 6. Peralta Orange animal effigy vessel (jaguar?). Placed beneath stones at south end of crypt at feet of corpse. Ornamental stone: *a.* Partial jade earspool, flaring and well polished (Fig. 17.9*a–d*). Spool diameter: 3.9 cm. Flaring end diameter: 5.3 cm. Two pieces, one near skull, the other on chest. *b.* Small jade bead, subspherical. Diameter: 0.6 cm. Placed between lower legs. Obsidian: *c.* Two obsidian blades, one to the west of each hand.
Dating	Cantera phase.

Burial 29

Location	Unit 118–120S/2–4E; 60 cm below surface.
Grave	Simple, direct.
Age and sex	Adult, female (?).
Position	Extended, supine, arms tightly flexed and hands placed at throat.
Orientation	East-west, head to east.
Furniture	Ceramics: 1. Atoyac Unslipped Polished small bowl. Diameter: 8.5 cm. Placed north of lower leg bones.
Remarks	Obsidian and figurine fragments occurred in the fill above the body and one whole figurine (Fig. 27.2) was found south of the body, but the association is tenuous.
Dating	Cantera phase.

***Burial 30* (Fig. 8.14)**

Location	Unit 114–116S/0–2E; 70 cm below surface.
Grave	Simple, direct.
Age and sex	Adult, sex indeterminable.
Position	Extended, supine.
Orientation	East-west, head to east.
Furniture	Ceramics: 1. Amatzinac White double-loop handle censer. Height: 20 cm. 2. Amatzinac White shallow bowl. Diameter: 13 cm. 3. Amatzinac White shallow bowl. Diameter: 13 cm.
Remarks	Vessels 2 and 3 were placed mouth to mouth.
Dating	Cantera phase.

Burial 31

Location	Unit 114–116S/4–6W; 50 cm below surface.
Grave	Simple, direct. Disturbed.
Age and sex	Adult, sex indeterminable.
Position	Extended, supine (?).
Orientation	North-south, head to south.
Furniture	Ground stone: *a.* One mano southeast of the femur fragments.
Remarks	This burial occurs directly below Burial 21. A structure to the south had destroyed the upper portion of the body.
Dating	Cantera phase.

Burial 32

Location	Unit 114–116S/0–2W; 56 cm below surface.
Grave	Simple, direct.
Age and sex	Adult, sex indeterminable.
Position	Extended, supine.
Orientation	North-south, head to south.
Furniture	Ceramics: 1. Atoyac Unslipped Polished *cantarito.* Height: 8 cm. Placed east of lower arm bones. Ornamental stone: *a.* Jade "fang" pendant (Fig. 17.4*a*). Length: 2.2 cm. Placed east of vessel. *b.* Fragment of smoothing stone. Placed east of skull. *c.* Fragment of jade awl (Fig. 17.12*b*). Placed east of skull.
Dating	Cantera phase.

***Burial 33* (Fig. 8.9)**

Location	Unit 118–120S/1W–1E; 75 cm below surface.
Grave	Crypt, complete, both slab-lined and covered.
Age and sex	Adult, sex indeterminable.
Position	Extended, supine with arms flexed across mid-section.
Orientation	East-west, head to west.
Furniture	Ceramics: 1. Amatzinac White shallow bowl. Interior rim incised with variation of double-line break motif with lugs. 2. Eroded *cantarito* (Atoyac Unslipped Polished?). Height: 12 cm. Placed inside shallow dish. Ornamental stone: *a.* Serpentine figure (Olmec were-jaguar) (Fig. 17.1). Height: 11.0 cm. Covered with hematite stain. Placed at right hand of burial.

b. Jade awl fragment (Fig. 17.12*d*). Length: 3.3 cm. Placed directly beneath skull.
Other:
c. Three groups of small smooth pebbles placed within crypt in groups of five, nine, and twelve. Also groups of ten and eleven below crypt stones at east end.
d. Small amount of red pigment (hematite?) within crypt north of pelvis.

Remarks: The two vessels were placed south of legs among stones.
Dating: Cantera phase.

Burial 34

Location: Unit 119–121S/1–4E; 60 cm below surface.
Grave: Crypt, complete, both slab-lined and covered.
Age and sex: Young adult, sex indeterminable.
Position: Extended, supine, left arm slightly flexed across body, right arm extended parallel to body.
Orientation: East-west, head to east.
Furniture: Ceramics:
1. Amatzinac White double-loop handle censer. Height: 20 cm. Placed on exterior of crypt, south side.
2. Amatzinac White double-loop handle censer. Height: 20 cm. Placed on exterior of crypt, south side.
Ornamental stone:
a. Tiny fragment of thin earspool, probably part of fill dirt.
Dating: Cantera phase.

Burial 35

Location: Unit 112–114S/2–4W; 120 cm below surface.
Grave: Stone-associated, with a stone placed over pelvis and standing stones around feet.
Age and sex: Adult, sex indeterminable.
Position: Extended, supine.
Orientation: East-west, head to west.
Furniture: None.
Dating: Cantera phase.

Burial 36

Location: Unit 122–124S/1W–1E; 60 cm below surface. Crypt, complete, covered. Stones irregular, piled over body at a slant. This crypt lacked the standing stones characteristic of other crypts.
Age and sex: Adult, sex indeterminable.
Position: Extended, supine.
Orientation: North-south, head to north.
Furniture: Ceramics:
1. Amatzinac White spouted tray. Length: 22 cm. Diameter: 11 cm.
2. Amatzinac White shallow bowl. Diameter: 16.5 cm.
3. Peralta Orange (?) *cantarito* with three lugs. Height: 9 cm.
Remarks: Vessels placed within crypt at feet.
Dating: Cantera phase.

Burial 37

Location: Unit 122–124S/2–4E; 60 cm below surface.
Grave: Crypt, complete, built around a skull burial.
Age and sex: Adult, sex indeterminable.
Position: Head interred face-up and tilted slightly to south.
Orientation: Skull lay east-west, top of skull to the east.
Furniture: None.
Dating: Cantera phase.

Burial 38

Location: Unit 122–124S/0–2E; 70 cm below surface.
Grave: Simple, direct. Disturbed.
Age and sex: Adult, sex indeterminable.
Position: Extended (?).
Orientation: North-south (?).
Furniture: Ceramics:
1. Amatzinac White shallow bowl. Diameter: 12 cm. Placed west of leg (see Remarks).
2. Amatzinac White spouted tray. Length: 20 cm. Placed east of leg.
3. Amatzinac White bowl with everted rim and double line incised around interior rim. Diameter: 25.2 cm. Placed east of leg.
4. Amatzinac White shallow bowl. Diameter: 11 cm. Placed east of leg.
5. Amatzinac White shallow bowl. Diameter: 11 cm. Placed mouth to mouth with vessel 6 and beneath vessel 3.
6. Amatzinac White shallow bowl. Diameter: 11 cm. Placed mouth to mouth with vessel 5.
7. Amatzinac White shallow bowl. Diameter: 11 cm. Placed beneath vessels 5 and 6.
8. Atoyac Unslipped Polished (?) *cantarito*. Height: 11 cm. Placed west of leg.
9. Pavón Fine Grey composite vessel (Fig. 13.45). Rim flares out slightly, interior incised with double-line break. Below exterior rim are two horizontal ridges between which are incised two cursive, zigzag lines. Exterior and shoulder of vessel are slightly ridged vertically with finger impressions. Height: 11 cm. Diameter: 11.5 cm. Placed west of leg.
Remarks: Burial was incomplete; only the long bones of one leg remained.
Dating: Cantera phase.

PLAZA CENTRAL STRUCTURE 4

Burial 39 (Fig. 8.7)

Location: Interred atop the platform mound. Unit 22–24S/1W–2E; Levels III–IV; 60 cm below surface.
Grave: Simple, with rocks covering the body to form a crude crypt.
Age and sex: Adult, 25–30 years old, sex indeterminable.
Position: Extended, supine, with arms flexed at elbows and hands placed over chest.

Orientation East-west, head to west.
Furniture Ceramics:
1. Amatzinac White *cantarito*. Height: 11 cm. Diameter: 8 cm at neck.
2. Laca shallow bowl incised on the exterior. Diameter: 24 cm.
Ornamental stone:
a. Two jadeite earspools, well polished. Diameters: ca. 24 mm. Placed on either side of head in location of earlobes.
b. A greenstone adz. Placed on chest. Length: 8.2 cm. Width: 7 cm.
c. Forty-nine small green jade beads found around neck, undoubtedly strung together in a necklace at time of burial.
d. Eight small jade beads found at pelvic region.
Other:
e. Middle Formative figurine head.
Remarks Vessel 1 was placed within vessel 2, and both were located to the north of the lower legs. The entire body had been stained with red pigment (hematite), and the remains of this mineral persisted on the bones.
Dating Cantera phase.

Burial 40 **(Fig. 8.4)**
Location Interred atop platform mound. Unit 23–25S/3–5W; Level II.
Grave Simple; a possible crypt, but with no covering stones present (see Remarks).
Position Extended, but tilted slightly to north on left side. Arms flexed at elbows with hands together near chin. Legs slightly bent at knees.
Orientation East-west, head to west.
Furniture Ceramics:
1. Amatzinac White shallow bowl, incised on exterior. Diameter: 19 cm. Placed northeast of feet.
2. Peralta Orange *cantarito* with four small lugs around body. Height: 10 cm. Diameter: 3 cm at mouth. Placed inside vessel 1.
Ornamental stone:
a. Two jade earspools near left upper arm (Fig. 17.9*m–p*). Height: 2.2 cm. Diameter: 3.2 cm. Smeared with red pigment.
b. One subspherical jade bead on top of front teeth (possibly had fallen from mouth), well polished and symmetrical. Diameter: 1.1 cm.
c. One tubular jadeite bead (Fig. 17.10*j*). Length: 7.2 cm. Diameter: 0.5 cm. Found between the two upper leg bones.
d. Sixteen subspherical jade beads found in pelvic region. They were placed in two strands of seven and nine beads each.
e. Eleven jade beads found underneath and beside the skull. All of these small jade beads were subspherical in shape, with some slightly larger than others. They had been covered with red pigment, which remained inside the drilled hole on each bead and in the irregular grooves.
Other:
f. One concave hematite mirror with holes drilled for suspension as a pendant (Fig. 16.22*a*). Found atop the mandible. The mirror had also been smeared with red pigment.
g. Fragment of another hematite mirror (Fig. 16.22*b*).
h. Ninety-four extremely tiny pieces of turquoise found in area around skull. These pieces undoubtedly formed part of a mosaic, although all were loose and unfitted when found. Also stained with hematite.
i. One piece of delicately worked shell found within one earspool (Fig. 16.23*a*). The piece has a rectangular hole in the center with undulations on the outside edges. Probably formed a decorative part to the earspool.
j. Knotted sinew thread. The eleven beads from the skull area (*e*) had apparently been strung with this. Length: over 40 cm.
Remarks Grave lies within the plow zone and was probably destroyed by plowing. A line of larger stones occurred along the north side of the body, one stone at the feet, and a group of smaller, scattered stones was found along the south side of the body. The entire body and all the grave furniture were stained with red pigment (hematite).
Dating Cantera phase.

PLAZA CENTRAL STRUCTURE 2-1

Burial 41
Location Unit 132S/44W; 160 cm below surface. Lower floor, Room 1.
Grave Simple, direct. Disturbed.
Age and sex Adult, sex indeterminable.
Position Only skull remained of the interment. Head face-up. Extended, supine (?).
Orientation Probably north-south, head to north.
Furniture Ceramics:
1. Amatzinac White double-loop handle censer. Height: 21 cm.
2. Amatzinac White bowl with slightly incurved rim. Composite form. Height: 11 cm. Diameter: 17 cm.
Remarks Disturbed by Burial 42, which was placed directly over Burial 41.

Dating: Cantera phase.

Burial 42

Location: Unit 132S/44W; 160 cm below surface. Room 1, interred through Floor 2 and resting on lower Floor 3.
Grave: Simple, direct.
Age and sex: Adult, sex indeterminable.
Position: Extended, supine with right arm flexed and hand placed at throat. Head facing up.
Orientation: North-south, head to north.
Furniture: Ceramics:
1. Amatzinac White shallow bowl. Height: 4 cm. Diameter: 12 cm. Placed east of left foot.
2. Amatzinac White ovate bowl. Height: 5 cm. Length: 15 cm. Width: 12 cm. Placed southwest of right leg.
3. Atoyac Unslipped Polished *cantarito* (stick polished) with curvilinear incising around body of vessel. Height: 13 cm. Appears to have been smeared with a reddish pigment, possibly a mineral wash of hematite.
4. Carrales Coarse Grey composite bowl with thin-line geometric incising (Fig. 13.52*a*). Height: 12 cm. Diameter: 17 cm. Placed east of left knee.
Ground stone:
a. Mano.
b. *Molcajete*.
Remarks: A smooth field stone and ground stones *a* and *b* were placed with burial.
Dating: Cantera phase.

Burial 43

Location: Unit 132S/48W; 160 cm below surface. Northwest corner of Room 1.
Grave: Simple, direct. Disturbed.
Age and sex: Adult, sex indeterminable.
Position: Extended (?).
Orientation: East-west, head to west (?).
Furniture: Ornamental stone:
a. One small, subspherical jade bead placed in mouth. Diameter: 10 mm.
Remarks: Burial disturbed and disarticulated by later trash deposit.
Dating: Cantera phase.

Burial 44

Location: Unit 132S/44–45W; 160 cm below surface. Room 1, 35 cm south of the north interior wall, below Floor 2 and resting on Floor 3.
Grave: Simple, direct.
Age and sex: Adult, sex indeterminable.
Position: Extended, supine. Lower arms destroyed, making their position indeterminable. Head face-up.
Orientation: East-west, head to east.
Furniture: Ceramics:
1. Amatzinac White shallow bowl with exterior incising. Diameter: 14 cm.
2. Amatzinac White shallow bowl. Double line incised around exterior rim. Diameter: 14 cm.
3. Carrales Coarse Grey effigy pot of a duck (partial).
Remarks: Vessels located at feet.
Dating: Cantera phase.

Burial 45

Location: Unit 132S/40W; 160 cm below surface. Room 1, 350 cm from west wall of structure and 110 cm from south wall. Interred through Floor 2, intrusive into Floor 3 (*tepetate*).
Grave: Simple, direct.
Age and sex: Juvenile, sex indeterminable.
Position: Extended, supine with arms slightly flexed and hands placed over pelvic region.
Orientation: North-south, head to north.
Furniture: Ceramics:
1. Amatzinac White double-loop handle censer (partial).
2. Atoyac Unslipped Polished *cantarito*. Height: 8 cm.
3. Carrales Coarse Grey composite bowl, curvilinear incising on upper portion with lugs at break. Double line incised on interior rim. Diameter: 12 cm.
Ground stone:
a. Mano.
Other:
b. Two whole figurines placed under vessel 3.
Remarks: All associated artifacts located at foot of corpse.
Dating: Cantera phase.

Burial 46

Location: Unit 132S/40W; 160 cm below surface. Room 1, located 120 cm south of north wall and 110 cm east of cross-wall. Intrusive through Floor 2 and resting on Floor 3 (*tepetate*).
Grave: Simple, direct.
Age and sex: Adult, sex indeterminable.
Position: Extended, prone, with arms slightly flexed and placed under pelvis. Head face-down.
Orientation: East-west, head to west.
Furniture: Ground stone:
a. Mano.
Dating: Cantera phase.

Burial 47

Location: Unit 134S/50W; 160 cm below surface. Interred atop a mud plaster floor. The floor ran to but not under a north-south wall, Room 1.
Grave: Simple, direct.
Age and sex: Adult, sex indeterminable.
Position: Extended, prone. Arms slightly flexed and placed beneath pelvic region. Head face-down.
Orientation: North-south, head to south.
Furniture: Ceramics:
1. Amatzinac White straight-sided bowl.

Height: 14 cm. Placed at foot of burial.
2. Amatzinac White double-loop handle censer. Height: 20 cm.
3. Atoyac Unslipped Polished *cantarito*, curvilinear designs around body of jug. Height: 9 cm. Placed over left knee.
4. Carrales Coarse Grey composite bowl with exterior rim incising. Diameter: 12 cm. Placed to right of pelvis.
Ground stone:
a. Mano.
Ornamental stone:
b. Partial jade bead found resting on mandible; probably originally had been placed within mouth.

Dating: Cantera phase.

Burial 48

Location: Unit 134S/44W; 160 cm below surface. Room 1, intrusive through Floor 2 and resting on Floor 3 (*tepetate*).
Grave: Simple, direct. Disturbed.
Age and sex: Adult, sex indeterminable.
Position: Extended, supine (?).
Orientation: East-west, head to east (?).
Furniture: None.
Remarks: Disturbed by the placement of Burials 41 and 42. Only leg bones were clearly visible, and they were found in fragments.
Dating: Cantera phase.

Burial 49

Location: Unit 132S/44W; 160 cm below surface. Room 1, intrusive through Floor 2 and resting on Floor 3 (*tepetate*).
Grave: Simple, direct. Disturbed.
Age and sex: Juvenile, sex indeterminable.
Position: Extended, supine (?).
Orientation: North-south, head to north.
Furniture: Ceramics:
1. Amatzinac White spouted tray.
2. Amatzinac White double-loop handle censer (whole). Height 22 cm.
3. Amatzinac White double-loop handle censer (partial).
4. Amatzinac White shallow bowl.
5. Atoyac Unslipped Polished *cantarito*. Height: 11 cm.

Remarks: Disturbed by other burials. Skull present, but rest of body nearly nonexistent. Association of ceramics and burial only probable.
Dating: Cantera phase.

Burial 50

Location: Unit 132S/42W; 160 cm below surface. Room 1, intrusive through Floor 2 and resting on Floor 3 (*tepetate*).
Grave: Simple, direct.
Age and sex: Adult, sex indeterminable.
Position: Extended, supine with arms slightly flexed and hands placed at pelvis. Head face-up.
Orientation: East-west, head to west.
Furniture: Ceramics:
1. Amatzinac White ovate bowl. Length: 15 cm.
2. Carrales Coarse Grey composite bowl with thin-line geometric incising. Diameter: 16.5 cm.
3. Carrales Coarse Grey composite bowl with punctates below break. Diameter: 24 cm.
Ground stone:
a. Mano.
b. Mano.
c. Mano.
d. Mano.
e. Metate.

Remarks: All three vessels located at pelvic region of body.
Dating: Cantera phase.

PLAZA CENTRAL—OTHER

Burial 51

Location: Unit 60.5–62.5S/41.5–42.5E; 80 cm below surface.
Grave: Simple, stone-associated.
Age and sex: Adult, sex indeterminable.
Position: Extended, supine, arms at sides and hands on pelvic area.
Orientation: North-south, head to north.
Furniture: Ground stone:
a. Mano at corpse's left shoulder.

Remarks: Stone slabs covered the corpse's head and shoulders. The top of the skull touched an east-west running stone alignment, possibly the remains of a highly destroyed structure. Burial 51 directly overlay Burial 52 perpendicularly.
Dating: Late Cantera subphase.

Burial 52

Location: Unit 61–61.5S/41–43E; 80 cm below surface.
Grave: Simple, direct. Disturbed.
Age and sex: Adult, sex indeterminable.
Position: Extended, supine.
Orientation: East-west, head to east.
Furniture: Ceramics:
1. Amatzinac White everted rim bowl, only fragment of rim. Found near left leg.
Other:
a. Figurine body near right shoulder.

Remarks: The burial is slightly disturbed. The arms are highly fragmentary and/or missing. The skull has been reversed and the mandibular area occurs at the top of the skeleton. Burial 51 directly overlay this burial perpendicularly.
Dating: Late Cantera subphase.

TERRACE 4

Burial 53

Location: Unit 132; 83–99 cm below surface. Intrusive, cutting into corner of double-walled structure (Units 141 and 132).
Grave: Slab-lined with eight

	stones surrounding burial.
Age and sex	Young adult, sex indeterminable.
Position	Flexed, on right side.
Orientation	East-west, head to east.
Furniture	Ground stone: *a.* Metate, fragmented. Placed over head.
Dating	Late Formative.

Burial 54

Location	Units 132–133; 120–150 cm below surface.
Grave	Simple, direct.
Age and sex	Adult, sex indeterminable.
Position	Extended, supine.
Orientation	North-south, head to north.
Furniture	Ceramics: 1. Amatzinac White shallow bowl. Diameter: 12 cm. Placed east of skull. 2. Amatzinac White shallow bowl. Diameter: 12 cm. Placed at midsection. 3. Tadeo Coarse olla. Height: 17 cm. Diameter: 20 cm. Placed at feet. Ground stone: *a.* Metate fragment placed near feet. *b.* Mano placed with metate near feet. Ornamental stone: *c.* Jade earspool fragment. Probable association, found near skull.
Dating	Cantera phase.

Burial 55

Location	Unit 132; 120 cm below surface.
Grave	Simple, direct.
Age and sex	Adult, sex indeterminable.
Position	Extended, on right side (?).
Orientation	Northeast-southwest, head to southwest.
Furniture	None.
Dating	Cantera phase.

Burial 56

Location	Unit 121; 125 cm below surface.
Grave	Simple, direct.
Age and sex	(?)
Position	Flexed, but disarrayed.
Orientation	East-west, head to east (?).
Furniture	Ground stone: *a.* Mano placed above burial is a tentative association.
Dating	Late Formative.

TERRACE 9A

Burial 57

Location	Unit 0–2S/0–2W; 60–80 cm below surface.
Grave	Simple, direct.
Age and sex	Adult, sex indeterminable.
Position	Indeterminable.
Orientation	North-south (?).
Furniture	None.
Remarks	Remains of the burial consisted of foot bones only.
Dating	Late Barranca or Early Cantera subphase.

Burial 58

Location	Unit 0–2S/0–2W; 69 cm below surface.
Grave	Simple, direct.
Age and sex	Infant, sex indeterminable.
Position	Extended, supine. Arms crossed, hands up by skull.
Orientation	Northwest-southeast, head to southeast.
Furniture	None.
Dating	Late Barranca or Early Cantera subphase.

Burial 59

Location	Unit 6–8S/0–2W; 20–40 cm below surface.
Grave	Simple, direct.
Age and sex	Adult (?), sex indeterminable.
Position	Flexed.
Orientation	East-west, head to west.
Furniture	None.
Dating	Probably Cantera phase.

Burial 60

Location	Unit 33–35S/8–10W; 50–66 cm below surface.
Grave	Simple, direct.
Age and sex	Adult, sex indeterminable.
Position	Extended, supine, but with head face-down.
Orientation	East-west, head to west.
Furniture	None.
Dating	Late Barranca or Early Cantera subphase.

Burial 61

Location	Unit 8–10S/0–2W; 139–144 cm below surface.
Grave	Simple, direct. Disturbed.
Age and sex	Adult (?), sex indeterminable.
Position	Indeterminable.
Orientation	North-south, head to south.
Furniture	None.
Remarks	Remaining bones consisted of a skull fragment and arm bone, with scattered fragments of other bones. A large stone was placed over the head.
Dating	Cantera phase.

Burial 62

Location	Unit 8–10S/0–2E; 30–38 cm below surface.
Grave	Simple, direct.
Age and sex	Juvenile, sex indeterminable.
Position	Extended, supine.
Orientation	East-west, head to west.
Furniture	Ceramics: 1. *Cantarito.* Placed near right femur.
Dating	Cantera phase.

TERRACE 9B

Burial 63

Location	Unit 2–3N/0–1E; 65 cm below surface.
Grave	Simple, direct. Disturbed.
Age and sex	Adult (?), sex indeterminable.
Position	Indeterminable.
Orientation	Indeterminable.
Furniture	None.
Remarks	Burial consisted of a sparse scattering of bone fragments.
Dating	Barranca phase.

Burial 64

Location	Unit 2–3N/0–1E; 82 cm below surface.
Grave	Simple, direct. Disturbed.
Age and sex	Indeterminable.
Position	Indeterminable.
Orientation	Indeterminable.
Furniture	Ceramics: 1. Amatzinac White

	shallow bowl with flaring walls and complex interior rim incising. Four rim lugs. Diameter: 24 cm.
Remarks	Only a few bone fragments were found in association with the shallow bowl.
Dating	Barranca phase.

Burial 65

Location	Unit 2–3N/5–7E; 25 cm below surface.
Grave	Stone-associated.
Age and sex	Adult, sex indeterminable.
Position	Extended, supine.
Orientation	East-west, head to east.
Furniture	Ceramics: 1. Peralta Orange small olla. Height: 14 cm. Diameter: 7 cm at mouth.
Remarks	Two stone slabs were placed on either side of legs and another over the pelvis.
Dating	Late Barranca subphase.

TERRACE 11

Burial 66

Location	Unit 0–1N/2–5E; 160 cm below surface.
Grave	Simple, direct.
Age and sex	Adult, sex indeterminable.
Position	Loosely flexed, with arms flexed across body and right leg crossed under left. Supine.
Orientation	North-south, head to north.
Furniture	Ceramics: 1. Amatzinac White pseudo-grater bottom bowl (interior base incised with elaborate design). Diameter: 24 cm. Placed at feet. 2. Amatzinac White hemispherical bowl with exterior incising (Fig. 13.25). Diameter: 18 cm. Placed west of knees. Ground stone: *a*. Mano. Placed west of lower legs.
Dating	Cantera phase.

TERRACE 20

Burial 67

Location	Unit 16–17N/2–4W; 50–60 cm below surface.
Grave	Simple, direct. Double interment with Burial 68.
Age and sex	Young adult, female (?).
Position	Flexed, supine, with knees drawn up.
Orientation	East-west, head to east.
Furniture	None.
Remarks	Burials 67 and 68 appear to be Classic intrusions into Middle Formative deposits.
Dating	Classic.

Burial 68

Location	Unit 16–17N/2–4W; 50–60 cm below surface.
Grave	Simple, direct. Double interment with Burial 67.
Age and sex	Infant, sex indeterminable.
Position	Indeterminable.
Orientation	Indeterminable.
Furniture	None.
Remarks	See Burial 67. Infant was placed south of adult.
Dating	Classic.

Burial 69

Location	Unit 19–21N/4–6W; 40 cm below surface.
Grave	Simple, direct. Interred with three other individuals (Burials 70, 71, and 72). Disturbed.
Age and sex	Juvenile, sex indeterminable.
Position	Tightly flexed.
Orientation	East-west, head to west.
Furniture	Ceramics: 1. Two vessels with Classic red slip were included in the grave associated with all four individuals.
Dating	Classic.

Burial 70

Location	Unit 19–21N/4–6W; 40 cm below surface.
Grave	Simple, direct. Interred with three other individuals (Burials 69, 71, and 72). Disturbed.
Age and sex	Juvenile, sex indeterminable.
Position	Tightly flexed.
Orientation	Could not be determined.
Furniture	See Burial 69.
Dating	Classic.

Burial 71

Location	Unit 19–21N/4–6W; 40 cm below surface.
Grave	Simple, direct. Interred with three other individuals (Burials 69, 70, and 72). Disturbed.
Age and sex	Infant, sex indeterminable.
Position	Tightly flexed.
Orientation	Could not be determined.
Furniture	See Burial 69.
Dating	Classic.

Burial 72

Location	Unit 19–21N/4–6W; 40 cm below surface.
Grave	Simple, direct. Interred with three other individuals (Burials 69, 70, and 71). Disturbed.
Age and sex	Juvenile, sex indeterminable.
Position	Tightly flexed.
Orientation	East-west, head to east.
Furniture	See Burial 69.
Dating	Classic.

Burial 73

Location	Unit 21–22N/6–8W; 30 cm below surface.
Grave	Simple, direct. Disturbed.
Age and sex	Adult, sex indeterminable.
Position	Extended, supine.
Orientation	East-west, head to east.
Furniture	Ceramics: 1. Amatzinac White shallow bowl. Diameter: 15 cm. Placed south of feet. 2. Atoyac Unslipped Polished *cantarito*. Height: 12 cm. Placed north of feet.
Remarks	Remains extremely fragmented, only legs complete.
Dating	Cantera phase.

Burial 74

Location	Unit 19–21N/4–6W; 47–55 cm below surface.
Grave	Possibly secondary

burial. Double interment with Burial 75.
Age and sex: Adult, sex indeterminable.
Position: Tightly flexed with leg bones beneath head. For this reason believed to be possible secondary burial; however, the individual may just have been tightly flexed in an upright position and not actually secondary.
Orientation: Indeterminable.
Furniture: Ornamental stone:
a. One bag-shaped jade bead found at front of neck. Diameter: 2.4 cm.
Dating: Classic.

Burial 75
Location: Unit 19–21N/4–6W; 47–55 cm below surface.
Grave: Simple, direct. Double interment with Burial 74.
Age and sex: Adult, sex indeterminable.
Position: Flexed, prone.
Orientation: East-west, head to east.
Furniture: Obsidian:
a. Large lance point placed on chest. Length: 13 cm. Width: 4 cm.
Dating: Classic.

Burial 76
Location: Unit 21–23N/4–6W.
Grave: Simple, direct.
Age and sex: Juvenile, sex indeterminable.
Position: Flexed, supine, with legs folded back up toward body.
Orientation: East-west, head to east.
Furniture: Ground stone:
a. Metate fragment found near skull.
Dating: Classic.

Burial 77
Location: Unit 15–16N/0–2E; 70–90 cm below surface.
Grave: Simple, direct.
Age and sex: Juvenile, sex indeterminable.
Position: Indeterminable.
Orientation: East-west, head to east.
Furniture: None.
Dating: Cantera phase.

TERRACE 21

Burial 78
Location: Unit 26–28N/72–73W; 65 cm below surface. Interred beneath a large refuse pile probably prior to its deposit.
Grave: Simple, stone-associated. Disturbed. May indicate a disturbed crypt or slab-lined grave.
Age and sex: Adult, sex indeterminable.
Position: Extended, supine.
Orientation: North-south, head to south.
Furniture: Ceramics:
1. Atoyac Unslipped Polished I small bowl with lip lugs (one-half of vessel). Height: 3.2 cm. Diameter: 9.5 cm.
2. Eroded shallow bowl, complete. Height: 3.3 cm. Diameter: 10.5 cm.
3. Atoyac Unslipped Polished I small bowl, complete. Height: 2.5 cm. Diameter: 8.5 cm.
4. Peralta Orange composite silhouette bowl with upper shoulder punctates, complete. Height: 11.6 cm. Diameter: 43.3 cm.
5. Atoyac Unslipped Polished I small bowl with rim punctates (three-fourths of vessel). Height: 2.5 cm. Diameter: 8 cm.
6. Atoyac Unslipped Polished I small bowl with interior hematite stains (one-half of vessel). Height: 2.2 cm. Diameter: 8.5 cm.
Remarks: Two stones placed on either side of body. Six vessels were found near the burial but not in a definite association. It is highly possible that the grave had been disturbed during the Cantera phase and its mortuary vessels displaced from their original association. The six vessels were found near the burial in an area where whole vessels would not normally be expected.
Dating: Cantera phase.

TERRACE 23

Burial 79
Location: Unit 8.4–10.1N/7.2–7.6E; 68–73 cm below surface.
Grave: Simple, stone-associated.
Age and sex: Adult, sex indeterminable.
Position: Extended, supine.
Orientation: North-south, head to north.
Furniture: Ceramics:
1. Carrales Coarse Grey composite bowl, fine-line geometric incising around exterior rim. Height: 9.5 cm. Diameter: 11 cm. Placed at left arm.
2. Carrales Coarse Grey composite bowl, fine-line incising of three parallel lines broken by zigzag line on interior rim. Height: 8 cm. Diameter: 22.5 cm. Placed over pelvis.
Remarks: Group of five stones placed around head. Associated with Structure 2 and Floor 1, 50–60 cm below surface.
Dating: Cantera phase.

Burial 80
Location: Unit 7.5–8.2N/5.9–6.6E; 120 cm below surface.
Grave: Simple, direct. Disturbed.
Age and sex: Juvenile, sex indeterminable.
Position: Indeterminable.
Orientation: Indeterminable.
Furniture: Ceramics:
1. Amatzinac White hemispherical bowl, with heavy calcium deposit. Height: 9 cm. Diameter: 20 cm. Small hole in base of vessel.
2. Peralta Orange hemispherical bowl, with slightly incurved rim. Height: 8 cm. Diameter: 17 cm.

Remarks: Burial was extremely fragmented with only one long bone still intact. Subfloor burial to Floor 2.
Dating: Cantera phase.

Burial 81

Location: Unit 11–12N/9–10E; 115 cm below surface.
Grave: Simple, direct. Disturbed. Possible burial of skull only.
Age and sex: Adult, sex indeterminable.
Position: Indeterminable.
Orientation: Indeterminable.
Furniture: Ceramics:
1. Amatzinac White shallow bowl. Diameter: 13 cm.
2. Atoyac Unslipped Polished *cantarito*. Height: 10.5 cm.
3. Atoyac Unslipped Polished bowl with fine-line incising. Diameter: 8.5 cm.
Remarks: Beneath Floor 1, but association with floor is tentative. Only skull and portion of clavicle remained of burial. Vessels placed east of skull.
Dating: Cantera phase.

Burial 82

Location: Unit 7.35–7.6N/0.5–0.7E; 100 cm below surface.
Grave: Simple, direct.
Age and sex: Juvenile, sex indeterminable.
Position: Extended (?).
Orientation: North-south (?), head to north.
Furniture: None.
Remarks: Partially intruded into wall of Structure 1.
Dating: Cantera phase.

Burial 83

Location: Unit 9.6–11.2N/9.5–9.9E; 80–85 cm below surface.
Grave: Simple, direct.
Age and sex: Young adult, sex indeterminable.
Position: Extended, supine. Legs crossed at ankles.
Furniture: Ceramics:
1. Amatzinac White double-loop handle censer. Height: 20 cm.
2. Carrales Coarse Grey composite bowl with fine-line incising on exterior rim, and double line incised on interior rim. Diameter: 14.5 cm.
3. Carrales Coarse Grey composite bowl. Diameter: 14 cm.
Remarks: Beneath Floor 1, but association with floor is tentative. Three ceramic vessels placed at head. Appears that head rested inside one vessel. Skull not preserved but fragments found inside vessel.
Dating: Cantera phase.

Burial 84

Location: Unit 12–13N/7–9E; 100–110 cm below surface.
Grave: Simple, direct. Small stones placed around and over body.
Age and sex: Adult, sex indeterminable.
Position: Extended, supine.
Orientation: East-west, head to east.
Furniture: Ceramics:
1. Amatzinac White composite bowl with flaring rim. Interior rim incised with four lip lugs. Diameter: 15.5 cm.
2. Atoyac Unslipped Polished hemispherical bowl. Fine-line incising near rim. Diameter: 14 cm.
3. Atoyac Unslipped Polished *cantarito*. Height: 8 cm.
Remarks: Beneath Floor 1, but association with floor is tentative.
Dating: Cantera phase.

Burial 85

Location: Unit 10–12N/7–9E; 80–85 cm below surface.
Grave: Simple, direct. Disturbed.
Age and sex: Indeterminable.
Position: Indeterminable.
Orientation: Indeterminable.
Furniture: None.
Remarks: Beneath Floor 1, but association with floor is tentative.
Dating: Cantera phase.

TERRACE 24

Burial 86

Location: Unit 20–21N/2–5E; 89 cm below surface; Level II.
Grave: Simple, direct. Disturbed.
Age and sex: Adult, sex indeterminable.
Position: Indeterminable.
Orientation: East-west (?), head to east.
Furniture: None.
Remarks: Burial was fragmented in refuse dump.
Dating: Cantera phase.

Burial 87

Location: Unit 22.4–24.6N/2.5E; Level II.
Grave: Simple, direct. Disturbed.
Age and sex: Indeterminable.
Position: Extended (?).
Orientation: Indeterminable.
Furniture: Ceramics:
1. Tenango Brown bowl with straight sides. Fine-line incising on exterior. Diameter: 11 cm.
2. Eroded shallow bowl. Diameter: 9 cm.
Ornamental stone:
a. Jade fragment.
Remarks: Only long bones of legs were found.
Dating: Cantera phase.

Burial 88

Location: Unit 17.8–20N/2–5E; 33 cm below surface; Level II.
Grave: Simple, direct.
Age and sex: Infant, sex indeterminable.
Position: Extended (?).
Orientation: East-west (?), head to west (?).
Furniture: None.
Dating: Cantera phase.

Burial 89

Location: Unit 22.4–24.6N/2.5E; Level III.
Grave: Simple, direct.
Age and sex: Adult, sex indeterminable.

Position — Extended, supine, with arms placed parallel to sides.
Orientation — East-west, head to west.
Furniture — Ceramics:
1. Fragmented, eroded shallow bowl. Placed at feet.
Ornamental stone:
a. Polished stone spoon pendant (Fig. 17.5*a*). Grey and brown mottled serpentine.
Dating — Cantera phase.

Burial 90
Location — Unit 21.8–22.4N/4–6E; Level II.
Grave — Simple, direct. Double interment with Burial 91.
Age and sex — Adult, sex indeterminable.
Position — Extended, supine.
Orientation — East-west, head to west.
Furniture — Ceramics:
1. Amatzinac White hemispherical bowl.
2. Amatzinac White spouted tray.
3. Mingo Fine Brown ovate bowl.
Remarks — Interred in the same grave with and overlying Burial 91. It cannot be determined whether the three ceramic vessels were associated with Burial 90, 91, or both.
Dating — Cantera phase.

Burial 91
Location — Unit 21.8–22.4N/4–6E; Level II.
Grave — Simple, direct. Double interment with Burial 90.
Age and sex — Adult, sex indeterminable.
Position — Extended, supine.
Orientation — East-west, head to east.
Furniture — Ceramics: see Burial 90.
Ornamental stone:
a. One circular flat jade disc. Diameter: 2.5 cm.
b. One serpentine fragment, smoothed and polished on one side. Length: 3 cm.
Remarks — Jade pieces found beneath the pelvis of the burial. This burial underlies Burial 90 and is oriented in the opposite direction.
Dating — Cantera phase.

Burial 92
Location — Unit 22.6–24.6N/11–13E; 120–140 cm below surface.
Grave — Simple, direct.
Age and sex — Adult, sex indeterminable.
Position — Flexed.
Orientation — East-west, head to east.
Furniture — Ceramics:
1. Classic bowl with brown slip. Diameter: 20 cm.
Ornamental stone:
a. Jade pendant, flat, bluish-green (Fig. 17.4*k*). Diameter: 10 mm.
Remarks — Ceramic vessel was placed east of skull. Jade pendant found beneath skull. Five of the incisors showed dental mutilation. Upper two front incisors had a section carved out between them. Three lower incisors each had a V notch carved in them.
Dating — Classic.

TERRACE 25 (*Fig. 7.1*)

Burial 93
Location — Unit 0–2S/0–1W; 100 cm below surface.
Grave — Simple, direct.
Age and sex — Infant, sex indeterminable.
Position — Loosely flexed, prone, with legs drawn up and crossed.
Orientation — North-south, head to south.
Furniture — None.
Remarks — Child was possibly a sacrificial victim since it is buried beside the northeast corner of the altar (Mon. 22).
Dating — Cantera phase.

Burial 94 **(Figs. 7.17, 7.18)**
Location — Unit 0–1N/2–4W; 150 cm below surface.
Grave — Crypt, well constructed and complete, with cover stones.
Age and sex — Young adult, sex indeterminable.
Position — Fully extended, supine. Arms slightly flexed with hands placed over the pelvic region.
Orientation — East-west, head to east.
Furniture — Obsidian:
a. Obsidian flake in stomach area.
Remarks — Interred directly in front of altar (Mon. 22).
Dating — Cantera phase.

Burial 95 **(Fig. 7.19)**
Location — Unit 2–3S/2–4W; 120 cm below surface.
Grave — Simple, within a crypt.
Age and sex — Young adult, sex indeterminable.
Position — Extended, supine, with a slight flex to the knees. Left arm loosely flexed with hand placed over pelvic region. Right arm tightly flexed with hand at throat.
Orientation — East-west, head to west.
Furniture — Ceramics:
1. Peralta Orange olla (Fig. 13.42) with punctates and a ridge around neck, 2 cm from rim. Height: 24.5 cm. Diameter (at neck): 10.5 cm.
2. Tenango Brown olla. Height: 15 cm. Diameter (at neck): 10 cm.
Ornamental stone:
a. Small, tubular blue-green jade bead. Length: 1.2 cm.
Remarks — Interred within interior of altar (Mon. 22). Vessels placed south of right leg.
Dating — Cantera phase.

Burial 96
Location — Unit 0–2S/0–1W; 150 cm below surface.
Grave — Simple, direct.
Age and sex — Young adult, sex indeterminable.
Position — Extended, prone, with arms flexed and hands near skull.
Orientation — North-south, head to north.

Furniture	Obsidian: *a.* Partial blade found on lower portion of rib cage on left side.
Remarks	The interment was made on the east side of the altar (Mon. 22) with the lower legs extending under the rear patio wall on the east side of the altar. The head lay over the Barranca phase trash pit area. Therefore, it predates the construction of the patio. No ceramics were found in association to assist in dating this burial.
Dating	Late Barranca or Early Cantera subphase.

Burial 97

Location	Unit 0–2N/5–6W; 110 cm below surface.
Grave	Simple, direct.
Age and sex	Adult, sex indeterminable.
Position	Extended, supine; right arm slightly flexed, with right hand placed over pelvis. Left arm extended straight along body.
Orientation	North-south, head to north.
Furniture	Ceramics: 1. Amatzinac White bowl with flaring walls (Fig. 13.22*a*). Interior rim has a complex incised design running around rim that breaks at each of the lugs on the rim of the vessel, where an incised circle and zigzag line are found. Height: 9 cm. Diameter: 23 cm. Placed upside down over right knee of corpse. 2. Carrales Coarse Grey composite bowl (Fig. 13.52*c*) with fine-line geometric incising at neck and rim. Interior rim incised with a double line. Height: 9 cm. Diameter: 13 cm. Placed above left shoulder next to skull. 3. Carrales Coarse Grey composite bowl with punctates below shoulder break. Double-line incising on interior rim. Height: 7 cm. Diameter: 9 cm. Placed directly over feet.
Dating	Cantera phase.

Burial 98 **(Fig. 7.20)**

Location	Unit 1–2S/8–9W; 100 cm below surface.
Grave	Simple, direct. Double interment with Burial 99.
Age and sex	Young juvenile, sex indeterminable.
Position	Probably extended.
Orientation	North-south, head to south.
Furniture	Ceramics: 1. Laca hemispherical bowl. Height: 10 cm. Diameter: 20 cm.
Remarks	Association of the Laca bowl with this burial is uncertain.
Dating	Cantera phase.

Burial 99 **(Fig. 7.20)**

Location	Unit 1–2S/8–9W; 100 cm below surface. Interred on west side of altar (Mon. 22).
Grave	Simple, direct. Double interment with Burial 98.
Age and sex	Young juvenile, sex indeterminable.
Position	Probably extended, but condition of bones very poor.
Orientation	North-south, head to south.
Furniture	See Burial 98.
Remarks	Both Burials 98 and 99 may represent human sacrifices, since they are approximately the same age and were buried together.
Dating	Cantera phase.

Burial 100

Location	Unit 0–2S/6–7W; 95 cm below surface.
Grave	Simple, stone-associated.
Age and sex	Juvenile, sex indeterminable.
Position	Fully extended, supine, with head propped up and chin resting on chest.
Orientation	North-south, head to north.
Furniture	Ceramics: 1. Carrales Coarse Grey bowl, highly polished, with differentially fired spots consisting of an off-white color mixed with grey. The rim is slightly incurved with fine-line incising of two straight parallel lines and a zigzag line around the exterior. Height: 7 cm. Diameter: 12.5 cm. Placed just east of left knee. 2. Carrales Coarse Grey composite bowl with out-flaring rim and four evenly spaced rim lugs. Interior rim incising is triple-line break, breaking at each of the four lugs. Height: 8 cm. Diameter: 26 cm. Placed with vessel 1. 3. Santa Clara Orange hemispherical bowl. Height: 10 cm. Diameter: 18 cm. Placed east of other vessels.
Remarks	The stones were placed around the head and upper portion of the body. May be a double burial with Burial 101.
Dating	Cantera phase.

Burial 101

Location	Unit 0–2S/7–8W; 100 cm below surface.
Grave	Simple, direct.
Age and sex	Juvenile, sex indeterminable.
Position	Extended.
Orientation	North-south, head to north.
Furniture	None.
Remarks	May be a double burial with Burial 100.
Dating	Cantera phase.

Burial 102

Location	Unit 0–1N/5–7W; 100 cm below surface.
Grave	Simple, direct.
Age and sex	Adult, sex indeterminable.
Position	Extended, supine, with arms flexed and hands placed under chin.

Orientation East-west, head to east.
Furniture None.
Dating Cantera phase.

Burial 103
Location Unit 0–1N/0–1W; 200 cm below surface.
Grave Simple, direct.
Age and sex Adult, possibly male.
Position Extended.
Orientation North-south, head to north.
Furniture None.
Remarks Overlying the burial were many small stones, placed closely together, possibly a grave covering for the burial. This is not clearly a stone-associated burial. Only lower extremities of the skeleton were found; the upper portion and skull were missing.
Dating Uncertain; Late Barranca or Early Cantera subphase.

Burial 104
Location Unit 0–1S/0–1E; 100 cm below surface.
Grave Simple, direct (?). Disturbed.
Age and sex Adult, sex indeterminable.
Position Extended (?).
Orientation East-west, head to west.
Furniture None.
Remarks Burial greatly disturbed. Only fragments of vertebral column and pelvis were found. Lower limbs may be under the wall.
Dating Cantera phase.

Burial 105 **(Figs. 7.13–7.15)**
Location Unit 1–2S/2–4W; 130 cm below surface.
Grave Crypt, complete, placed in interior of altar (Mon. 22). The crypt was both slab-lined and covered.
Age and sex Adult, sex indeterminable.
Position Extended, supine, with arms flexed across chest.
Orientation East-west, head to east.
Furniture Ceramics:

1. Amatzinac White eccentric vessel with pedestal and handle. One-half of the vessel is closed, with a linear design carved on the exterior. Height: 20 cm. Diameter: 18 cm. Placed over knees of corpse.

2. Amatzinac White vessel in similar style as vessel 1. Placed near head in rocks of crypt.

3. Amatzinac White shallow bowl. Diameter: 16.5 cm. Placed over right side of the pelvic region.

4. Atoyac Unslipped Polished simple concave shallow bowl. Diameter: ca. 12 cm.

5. Atoyac Unslipped Polished simple concave shallow bowl. Diameter: ca. 12 cm.

6. Atoyac Unslipped Polished simple concave shallow bowl. Diameter: ca. 12 cm.

7. Peralta Orange olla with punctates at neck. Height: 20 cm. Diameter: 10.5 cm. Placed over right foot of corpse.

Remarks Interred within the altar. Vessels 4–6 found stacked within vessel 1.
Dating Cantera phase.

Burial 106
Location Unit 1–2N/0–2W; 150 cm below surface.
Grave Simple, direct.
Age and sex Adult, sex indeterminable.
Position Extended, supine, with arms slightly flexed and both hands placed over region of the pelvis.
Orientation East-west, head to east.
Furniture Ceramics:

1. Amatzinac White bowl with rounded base and flaring wall. Complex interior rim design. Diameter: 18 cm.

2–5. Same as 1.

6. Carrales Coarse Grey flaring wall bowl, with complex interior rim design and a scalloped circular design in interior bottom of vessel. Diameter: 29 cm.

7. Amatzinac White double-loop handle censer.

8. Amatzinac White composite bowl fragment, exterior incised.

Remarks All vessels and vessel fragment placed along both sides of the corpse.
Dating Cantera phase.

Burial 107 **(Figs. 7.10–7.12)**
Location Unit 0–1S/0–1E; 220 cm below surface, to east side of altar (Mon. 22).
Grave Simple, direct interment in pit excavated into *tepetate*.
Age and sex Juvenile, sex indeterminable.
Position Extended, supine, arms parallel to sides of body.
Orientation North-south, head to north.
Furniture Ceramics:

1. Amatzinac White cylindrical jar. Nearly flat base; fine-line incising around exterior rim. Height: 12 cm. Diameter: 10 cm. Located near knee on east side of corpse.

Other:

a. Stingray spine.

Dating Probably Late Barranca subphase.

Burial 108
Location Unit 0–1N/4–6W; 110 cm below surface.
Grave Simple, direct. Apparently disturbed.
Age and sex Juvenile, sex indeterminable.
Position Indeterminable.
Orientation Indeterminable.
Furniture Ceramics:

1. Amatzinac White hemispherical bowl. Diameter: 17 cm.

2. Amatzinac White hemispherical bowl. Diameter: 17 cm.

3. Amatzinac White

flaring-walled bowl with rounded base and complex interior rim design. Diameter: 24 cm.

4. Amatzinac White flaring-walled bowl with rounded base and complex interior rim design. Diameter: 24 cm.

Ornamental stone:

a. Tubular greenstone bead found in mouth of skull. Length: 10 mm. Width: 7 mm.

Remarks: Skull offset ca. 15 cm from remainder of bones. Bones very fragmentary, suggesting burial had been disturbed. Skull is 50 cm south of the skull of Burial 102.

Dating: Cantera phase.

Burial 109

Location: Unit 1–2S/2–3W; level of *tepetate*, 170 cm below surface.

Grave: Simple, direct. Upper portion of body disturbed.

Age and sex: Adult, possibly male, as bones appeared to be large and heavy.

Position: Extended, supine, with left knee loosely flexed.

Orientation: East-west, head to west.

Furniture: Ornamental stone:

a. Tubular jade bead (Fig. 17.10*i*). Length: 4.3 cm. Diameter: 0.8 cm. The bead is slightly flattened along one side and tapers at one end.

Remarks: Location is within the area of the altar's interior (Mon. 22), but this burial apparently predates the erection of the altar.

Dating: Barranca phase.

Burial 110 **(Fig. 7.21)**

Location: Unit 2–4N/2–5W; 120 cm below surface.

Grave: Simple, stone-associated.

Age and sex: Adult, sex indeterminable.

Position: Extended, supine.

Orientation: East-west, head to east.

Furniture: Ceramics:

1. Amatzinac White double-loop handle censer. Height: 20 cm. Placed south of left knee of corpse.

2. Carrales Coarse Grey composite bowl. Incised with crude geometric lines on the exterior and a double-line break on the interior rim. Height: 8 cm. Diameter: 13 cm. Placed on south side of corpse at midsection.

3. Carrales Coarse Grey composite bowl with geometric fine-line incising. Height: 10 cm. Diameter: 18 cm. Placed south of left femur.

4. Carrales Coarse Grey composite bowl with thin-line incising on exterior and double-line break incised on interior rim. Height: 7.5 cm. Diameter: 25 cm. Placed north of right knee.

5. Carrales Coarse Grey composite bowl. Fine-line geometric incising on exterior. Height: 12.3 cm. Diameter: 22.5 cm. Placed north of left knee, stacked with vessels 4 and 7.

6. Carrales Coarse Grey hemispherical bowl with thin-line incising forming a band in upper portion of vessel. Height: 6.5 cm. Diameter: 12.5 cm. Placed north of waist area.

7. Carrales Coarse Grey bowl. Height: 5 cm. Diameter: 19 cm.

8. Mingo Fine Brown ovate bowl with a nearly flat base. Height: 5.6 cm. Length: 16.75 cm. Width: 11 cm. Placed south of left shoulder.

Ground stone:

a. A large, well-worn metate covered the head of the corpse, forming a portion of the stone crypt.

Remarks: Several stones had been placed alongside the body, and a large, worn metate had been placed upside down directly over the head. Four vessels were placed on each side of the individual.

Dating: Cantera phase.

Burial 111 **(Fig. 7.22)**

Location: Unit 2–3N/5–6W; 80 cm below surface.

Grave: Skull burial.

Age and sex: Adult, sex indeterminable.

Position: Skull burial, skull placed atop a circle of stones.

Orientation: Skull upright and facing north.

Furniture: Ceramics:

1. Amatzinac White bowl with outflaring walls, a rounded base, and a complex rim design. Diameter: 25.5 cm.

2. Amatzinac White bowl with slightly incurved rim. Diameter: 11.5 cm. Vessel interior was heavily stained with red pigment. Vessel 3 sat atop and partially within this bowl.

3. Atoyac Unslipped Polished I bowl, completely filled with powdered red pigment. Diameter: 13 cm.

Ornamental stone:

a. Large jadeite bead. Length: 1.8 cm. Placed within the mouth of the skull.

Remarks: Skull sat atop a small pile of stones which were part of a circle of stones. The three vessels had been placed within the circle to the north of the skull. The skull was in very poor condition.

Dating: Cantera phase.

Burial 112

Location: Unit 2–4S/0–1E; 170 cm below surface.

Grave: Simple, direct.

Age and sex: Adult, sex indeterminable.

Position: Extended, supine. (No skull was present;

probably disturbed after burial.)

Orientation	North-south, head to north.
Furniture	None.
Dating	Barranca phase.

Burial 113

Location	Unit 2–3N/6–7W; 120 cm below surface.
Grave	Simple, direct.
Age and sex	Adult, sex indeterminable.
Position	Extended, supine.
Orientation	North-south, head to north.
Furniture	None.
Remarks	The entire upper portion of the skeleton was missing; probably disturbed after burial.
Dating	Barranca phase.

Burial 114

Location	Unit 4–6N/9.5–11 W; 70 cm below surface.
Grave	Within a well-constructed crypt. All stones were carefully aligned along the sides and covering the corpse. Several were flat and appeared to be at least crudely faced. A piece of a broken metate was among the crypt stones.
Age and sex	Adult, sex indeterminable.
Position	Extended, supine.
Orientation	North-south, head to north.
Furniture	Ceramics:

1. Amatzinac White shallow bowl with complex exterior incising (a combination of thin-line incising and *raspada* design). Height: 7 cm. Diameter: 24 cm.

2. Amatzinac White shallow bowl with complex exterior incising (similar to vessel 1).

3. Amatzinac White shallow bowl with double-line incising around exterior. Height: 7 cm. Diameter: 25 cm.

4. Laca bowl with flaring walls and rounded base. Height: 8.5 cm. Diameter: 24 cm.

5. Peralta Orange olla with a complex neck design of five groups of even lines of punctates with a lug protruding at the base of each group. Height: 28 cm.

Remarks	A wall extended out from the altar with the crypt intruding into it. The burial evidently was placed sometime after the wall was built. The osseous portions of the corpse were in a very poor state of preservation, and only fragments of the long bones and four teeth remained. The vessels were placed around the lower portion of the corpse within the crypt.
Dating	Cantera phase.

Burial 115

Location	Unit 33–34N/11–13W; 15 cm below surface.
Grave	Simple, direct.
Age and sex	Juvenile (2–3 years), sex indeterminable.
Position	Flexed, seated.
Orientation	Facing somewhat to the north.
Furniture	Ornamental stone:

a. Jadeite pendant (Fig. 17.7*c*) of a light green color. Height: 3.9 cm. Incised and polished. Found on chest area.

b. Tiny jade fragment, worked and polished. Height: 10 mm. Found next to right femur.

Remarks	The burial had intruded through a Middle Formative platform floor.
Dating	Classic.

Burial 116

Location	Unit 37–38N/11–13W; 20 cm below surface.
Grave	Simple, direct.
Age and sex	Juvenile, sex indeterminable.
Position	Indeterminable. The remains appeared to have been tossed in a heap.
Orientation	Indeterminable.
Furniture	None.
Dating	Indeterminable.

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Burial 117 **(Fig. 8.16)**

Location	Unit 0–2S/0–1E; 40 cm below surface.
Grave	Stone-lined, rectangular. Double interment with Burial 118; placed south of no. 118.
Age and sex	Adult, sex indeterminable.
Position	Flexed, supine. Arms flexed across chest, legs folded up to body.
Orientation	North-south, head to south.
Furniture	Ceramics:

1. Composite bowl, polished, unslipped orange ware, with white-slip decoration on exterior. "Kill" hole in base of vessel. Height: 14 cm. Diameter: 16 cm. Placed west of skull of Burial 118.

2. Black ware olla, burnished, incised. Height: 18 cm. Diameter: 17.5 cm. Lid placed over vessel, funnel shaped, heavy, coarse paste. Height: 10.5 cm. Diameter: 13 cm. Placed south of skull in Burial 118.

3. Black ware bowl. Inside coated with carbon. Height: 7 cm. Diameter: 11.5 cm. Placed south of skull of Burial 118.

4. Black ware small bowl. Coarse and crudely fired. Height: 4.3 cm. Diameter: 7 cm.

5. Black ware hemispherical bowl. Height: 7 cm. Diameter: 12 cm. Placed near legs of Burial 117.

Ground stone:

a. One mano, blocky and large, placed on west side of grave.

Other:

b. Three identical clay figurines. Seated, hands at throat, with heads tilted back, prominent chin, long snout, large protruding eyes and small top piece. Placed between burials east of grave.

	Height: 13 cm each (Fig. 8.17).
Dating	Late Formative.

***Burial 118* (Fig. 8.16)**

Location	Unit 0–2S/0–1E; 40 cm below surface.
Grave	Stone-lined, rectangular. Double interment with Burial 117; placed north of no. 117.
Age and sex	Adult (?), sex indeterminable.
Position	Flexed, supine. Arms flexed across chest, legs folded up to body.
Orientation	North-south, head to south.
Furniture	See Burial 117.
Dating	Late Formative.

Burial 119

Location	Unit 1–2S/0–2E; 40 cm below surface.
Grave	Simple, direct.
Age and sex	Adult, sex indeterminable.
Position	Extended, on left side, with knees slightly bent.
Orientation	East-west, head to east.
Furniture	Ceramics: 1. Orange ware composite bowl with tripod support. Diameter: 20.5 cm. 2. Unslipped, polished straight-sided olla, with red and resist decoration on exterior. Height: 20 cm. Diameter: 19 cm. Other: *a.* Ceramic figurine head (C8) placed at knees.
Remarks	Two ceramic vessels placed together at top of skull.
Dating	Late Formative.

Burial 120

Location	Unit 0–1S/1–2E; 30 cm below surface.
Grave	Slab-lined, rectangular. Some of the stones surrounding the burial had been removed.
Age and sex	Adult, sex indeterminable.
Position	Flexed, supine. Arms flexed across chest, legs folded up to body.
Orientation	North-south, head to north.
Furniture	Ceramics: 1. Unslipped, polished composite bowl with large, hollow, "mammiform" tripod supports. Diameter: 12 cm. 2. Straight-sided "jar" with flaring rim. Unslipped, polished (?). Height: 14 cm. Diameter: 16 cm. 3. Reddish-brown composite bowl with pedestal base. Height: 16 cm. Diameter: 16 cm. Ornamental stone: *a.* Tubular jade bead. Length: 1.3 cm. Rounded and polished. Placed to southeast of burial. Association is not certain, but possible.
Remarks	Vessels placed east of lower portion of body.
Dating	Late Formative.

Burial 121

Location	Unit 22–23N/1–2E; 40 cm below surface.
Grave	Slab-lined, rectangular.
Age and sex	Indeterminable.
Position	Flexed, supine.
Orientation	East-west, head to west.
Furniture	Ceramics: 1. Unslipped, polished composite bowl with lugs on shoulder. Height: 7 cm. Diameter: 13 cm.
Dating	Classic.

Burial 122

Location	Unit 0–1N/2–4E; 40 cm below surface.
Grave	Simple, direct.
Age and sex	Adult, sex indeterminable.
Position	Flexed, supine.
Orientation	East-west, head to west.
Furniture	Ceramics: 1. Grey ware *cantarito*. Height: 13 cm. Placed south of upper portion of body. Ornamental stone: *a.* Small jade bead. Diameter: 6 mm.
Dating	Late Formative.

***Burial 123* (Fig. 8.18)**

Location	Unit 0–2S/1–3W; 50 cm below surface.
Grave	Slab-lined, rectangular. Double interment with Burial 124.
Age and sex	Adult, sex indeterminable.
Position	Flexed, supine. Arms flexed across chest, legs folded up to body.
Orientation	North-south, head to south.
Furniture	Ceramics: 1. Blackware composite bowl with fine-line incising on exterior. Height: 9 cm. Diameter: 12 cm. Placed over right shoulder of Burial 123. 2. Orange composite bowl, with flat base. Height: 8 cm. Diameter: 15.5 cm. Placed over left arm of Burial 123. 3. Brown composite bowl with fine-line incising around exterior rim. Height: 6 cm. Diameter: 14 cm. Placed over right arm of Burial 123. 4. Unslipped, polished orange incurved rim bowl. "Kill" hole in base. Height: 8 cm. Diameter: 11 cm. Placed beneath (2) on left arm. Other: *a.* Small, irregular iron ore fragment.
Remarks	The secondary burial (124) was placed to north of Burial 123.
Dating	Late Formative.

***Burial 124* (Fig. 8.18)**

Location	Unit 0–2S/1–3W; 50 cm below surface.
Grave	Slab-lined, rectangular. Double interment with Burial 123.
Age and sex	Adult, sex indeterminable.
Position	Appears to be a flexed bundled secondary interment.
Orientation	Indeterminable.
Furniture	See Burial 123.
Remarks	See Burial 123.
Dating	Late Formative.

Burial 125

Location	Unit 20–21N/1–2W; 40 cm below surface.
Grave	Slab-lined, rectangular. Disturbed (?).

Age and sex Undetermined.
Position Flexed, supine.
Orientation East-west, position of head indeterminable.
Furniture Ground stone:
a. Stone adz.
Dating Classic.

Burial 126
Location Unit 4.5–6S/1W–1E; 20 cm below surface.
Grave Simple, direct.
Age and sex Young adult, sex indeterminable.
Position Flexed, supine.
Orientation East-west, head to east.
Furniture None.
Dating Late Formative.

Burial 127
Location Unit 2–3S/2–3E; 70 cm below surface.
Grave Simple, direct. Double interment with Burial 128.
Age and sex Infant, sex indeterminable.
Position Extended, supine. Infant lay on top of adult in Burial 128.
Orientation East-west, head to west.
Furniture Ceramics:
1. Unslipped, polished *cantarito.* Height: 11 cm. Diameter: 5 cm.
2. Unslipped, polished *cantarito* with two handles. Height: 7 cm.
Remarks Two vessels placed at top of skull of Burial 128.
Dating Cantera phase.

Burial 128
Location Unit 2–3S/2–3E; 70 cm below surface.
Grave Simple, direct. Double interment with Burial 127.
Age and sex Young adult, sex indeterminable.
Position Extended, supine. Infant in Burial 127 lay on top of Burial 128.
Orientation East-west, head to west.
Furniture See Burial 127.
Remarks See Burial 127.
Dating Cantera phase.

Burial 129
Location Unit 3–4S/2–4W; 55 cm below surface.
Grave Simple, direct.
Age and sex Adult, sex indeterminable.
Position Flexed, supine.
Orientation East-west, head to west.
Furniture None.
Dating Late Formative.

Burial 130
Location Unit 1–2S/5–6W; 20 cm below surface.
Grave Simple, direct.
Age and sex Adult, sex indeterminable.
Position Tightly flexed, supine.
Orientation North-south, head to north.
Furniture Ceramics:
1. Unslipped, polished bowl with hollow tripod supports.
Dating Late Formative.

Burial 131
Location Unit 2–3S/5–6W; 60 cm below surface.
Grave Simple, direct.
Age and sex Infant, sex indeterminable.
Position Extended.
Orientation North-south, position of head indeterminable.
Furniture None.
Dating Late Formative.

Burial 132
Location Unit 0–2S/3–4W; 40 cm below surface.
Grave Simple, direct.
Age and sex Indeterminable.
Position Indeterminable.
Orientation Indeterminable.
Furniture None.
Remarks Only a few bone fragments remained of burial.
Dating Late Formative (?).

Burial 133
Location Unit 4–5S/0–1E; 70 cm below surface.
Grave Slab-lined, circular. Double interment with Burial 134.
Age and sex Young adult, sex indeterminable.
Position Flexed.
Orientation East-west, head to east.
Furniture Ceramics:
1. Grey composite bowl, fine-line incising. Height: 7.5 cm. Diameter: 17.5 cm.
2. Grey composite bowl on pedestal. "Cursive" incising. Height: 15 cm. Diameter: 13 cm.
3. Grey rectangular bowl, with tripod nub legs and traces of an orange-on-white fresco on exterior. Length: 20.5 cm. Height: 13 cm.
Other:
a. One complete ceramic earspool (Fig. 16.2f) placed near skull of Burial 133. Elaborate design and slipped in white. Width: 1.2 cm. Diameter: 3.4 cm.
Remarks The three vessels were placed within the grave on the east side.
Dating Late Formative.

Burial 134
Location Unit 4–5S/0–1E; 70 cm below surface.
Grave Slab-lined, circular. Double interment with Burial 133.
Age and sex Young adult, sex indeterminable.
Position Flexed, vertical in seated position.
Orientation Indeterminable.
Furniture See Burial 133.
Remarks See Burial 133.
Dating Late Formative.

Burial 135
Location Unit 12–13N/6–7E; 30 cm below surface.
Grave Small stone crypt, rectangular (almost square).
Age and sex Adult (?), sex indeterminable.
Position Indeterminable.
Orientation North-south (?), head to north (?).
Furniture Ceramics:
1. Orange hemispherical ring base bowl. Diameter: 20.8 cm.
2. Orange hemispherical ring base bowl. Diameter: 20.8 cm.
3. Orange hemispherical ring base bowl. Diameter: 22.5 cm.
4. Orange hemispherical ring base bowl. Diameter: 22.5 cm.
5. Orange hemi-

	spherical ring base bowl. Diameter: 24.6 cm. 6. Orange hemispherical ring base bowl with deep irregular punctations around outer rim. Diameter: 20.7 cm. 7. Orange hemispherical ring base bowl with black painted designs on interior base. Diameter: 25 cm. 8. Brown hemispherical ring base bowl. Diameter: 23.8 cm. 9. Orange bowl. Diameter: 14.3 cm. 10. Orange hemispherical bowl. Diameter: 17.7 cm. 11. Brown hemispherical bowl. Diameter: 17.7 cm. 12. Thin Orange cylindrical tripod bowl with stamped design around lower exterior. Tripod feet broken off and missing. Diameter: 14.3 cm. 13. Brown flat-bottom bowl with solid tripod supports. Diameter: 22 cm. Ornamental stone: *a.* Large, polished stone bead. Height: 1.5 cm. *b.* Large, polished stone bead. Height: 1.3 cm.
Remarks	The box contained only a human mandible and scattered bone fragments.
Dating	Classic.

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Burial 136

Location	Unit 6–7S/3–4W; 30–40 cm below surface.
Grave	Simple, stone-associated.
Age and sex	Adult, sex indeterminable.
Position	Extended, supine, with arms folded over chest.
Orientation	East-west, head to east.
Furniture	Ceramics: 1. Amatzinac White shallow bowl. Diameter: 16 cm. Placed upside down over right shoulder. 2. Amatzinac White shallow bowl. Diameter: 15 cm. Placed at feet. Ornamental stone: *a.* Jade earspool, in fragments near left ear. Height: 2.5 cm. Diameter of flaring end: 5.7 cm.
Remarks	Three large stones flanked the burial on the south side in area of lower back and thighs. No other stones remained.
Dating	Cantera phase.

Burial 137

Location	Unit 6–7S/20–22W; 10–30 cm below surface.
Grave	Simple, direct. Disturbed.
Age and sex	Adult, sex indeterminable.
Position	Extended, prone.
Orientation	East-west, head to east.
Furniture	Other: *a.* One large clay bead.
Remarks	Burial was disturbed and consisted only of lower legs and feet.
Dating	Cantera phase.

Burial 138

Location:	Unit 6–7S/0–1E; 30–40 cm below surface.
Grave	Simple, direct. Disturbed.
Age and sex	Indeterminable.
Position	Indeterminable.
Orientation	Indeterminable.
Furniture	None.
Remarks	Interred in obsidian concentration, with obsidian packed both above and below.
Dating	Cantera phase.

Burial 139

Location	Unit 5–6S/9–10E; 10–20 cm below surface.
Grave	Simple, direct.
Age and sex	Adult, sex indeterminable.
Position	Extended, supine, with left arm flexed and hand resting on shoulder. Right arm missing.
Orientation	East-west, head to west.
Furniture	Ceramics: 1. Amatzinac White shallow bowl. Diameter: 12 cm. Placed west of skull.
Dating	Cantera phase.

Burial 140

Location	Unit 6–7S/37–38E; 30–40 cm below surface.
Grave	Simple, direct.
Age and sex	Juvenile, sex indeterminable.
Position	Flexed.
Orientation	East-west, head to west.
Furniture	Ceramics: 1. Orange bowl. Diameter: 20.5 cm. Placed upside down over skull. Ornamental stone: *a.* Small jadeite pendant (Fig. 17.4*i*). Length: 13.5 mm. Placed under chin.
Dating	Classic.

Burial 141

Location	Unit 6.5–7.5S/2–3W; 40–50 cm below surface.
Grave	Simple, direct. Disturbed or burial of hands only.
Age and sex	Adult (?), sex indeterminable.
Position	Indeterminable.
Orientation	Indeterminable.
Furniture	None.
Remarks	Burial consisted of two well-preserved hands and nothing else.
Dating	Cantera phase.

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Burial 142

Location	Unit 6–7S/4–5W; 25–40 cm below surface.
Grave	Stone-associated.
Age and sex	Adult, sex indeterminable.
Position	Extended, supine, with lower legs crossed and arms slightly flexed.
Orientation	North-south, head to north.
Furniture	Ceramics: 1. Amatzinac White hemispherical bowl with incising on exterior near rim. Diameter: 16 cm. 2. Atoyac Unslipped Polished *cantarito*. Height: 11 cm. 3. Atoyac Unslipped Polished hemispherical bowl. Slightly pinched

in at sides. Diameter: 13.5 cm.

Remarks — Interred on top of lime deposit. Stone slabs placed around body except at top of skull. Cover stones only at feet. Groupings of small, smooth stones lay under and around burial. The three vessels were located at the feet.

Dating — Cantera phase.

Burial 143

Location — Unit 8–9N/1E–1W; 35–50 cm below surface.

Grave — Stone-associated.

Age and sex — Adult, sex indeterminable.

Position — Extended, supine, but leaning slightly to left side. Lower legs crossed.

Orientation — North-south, head to south.

Furniture — Ceramics:

1. Amatzinac White bowl with straight sides. Diameter: 11.5 cm. Placed over knees.
2. Amatzinac White shallow bowl; incising on interior rim (partial).
3. Atotonilco Black hemispherical bowl. Diameter: 18.5 cm.

Remarks — Two stones occurred along either side of body and one at head.

Dating — Cantera phase.

Burial 144

Location — Unit 1–2N/6–7W; 20 cm below surface.

Grave — Simple, direct. Disturbed.

Age and sex — Adult, sex indeterminable.

Position — Extended, supine (?).

Orientation — North-south, head to north.

Furniture — None.

Remarks — Bones in very fragmented condition.

Dating — Cantera phase.

Burial 145

Location — Unit 1–4N/7–8W; 10–20 cm below surface.

Grave — Simple, direct. Disturbed.

Age and sex — Adult, sex indeterminable.

Position — Indeterminable.

Orientation — Indeterminable.

Furniture — None.

Remarks — Only identification of this burial was a few scattered bone fragments and teeth.

Dating — Cantera phase.

Burial 146

Location — Unit 5N/3W; 57 cm below surface.

Grave — Simple, direct.

Age and sex — Infant, sex indeterminable.

Position — Extended, supine (?).

Orientation — East-west.

Furniture — Other:

a. Ceramic figurine.

Dating — Cantera phase.

Burial 147

Location — Unit 6–7N/3–5W; 26–60 cm below surface.

Grave — Simple, direct. Disturbed.

Age and sex — Adult, sex indeterminable.

Position — Indeterminable.

Orientation — Indeterminable.

Furniture — Ceramics:

1. Amatzinac White shallow bowl. Diameter: 12 cm.
2. Amatzinac White shallow bowl. Diameter: 12 cm.
3. Amatzinac White shallow bowl. Diameter: 20.5 cm.
4. Amatzinac White shallow bowl. Diameter: 24 cm.
5. Amatzinac White hemispherical bowl. Diameter: 20 cm.
6. Carrales Coarse Grey composite bowl. Diameter: 20 cm.
7. Carrales Coarse Grey composite bowl. Interior rim incising. Diameter: 24 cm.
8. Carrales Coarse Grey composite bowl, fine-line incising on exterior rim. Diameter: 21.5 cm.
9. Eroded hemispherical bowl. Diameter: 18 cm.
10. Eroded (Tadeo Coarse?) hemispherical bowl. Diameter: 20 cm.

Remarks — Burial consisted of a few scattered bone fragments surrounded by ceramic vessels.

Dating — Cantera phase.

Burial 148

Location — Unit 12–15N/5–7W; 19–25 cm below surface.

Grave — Simple, direct.

Age and sex — Adult, sex indeterminable.

Position — Extended, supine (?).

Orientation — East-west, head to west.

Furniture — Ceramics:

1. Amatzinac White shallow bowl. Diameter: 8 cm. Placed at right shoulder.
2. Amatzinac White shallow bowl. Diameter: 11 cm. Placed slightly north of feet.
3. Amatzinac White shallow bowl. Diameter: 11 cm. Placed slightly north of feet.
4. Amatzinac White shallow bowl. Diameter: 12 cm. Placed slightly north of feet.
5. Amatzinac White shallow bowl. Diameter: 12 cm. Placed slightly north of feet.
6. Amatzinac White shallow bowl. Diameter: 12 cm. Stacked with vessel 7 north of hips.
7. Amatzinac White shallow bowl. Diameter: 12 cm. Stacked with vessel 6 north of hips.
8. Amatzinac White shallow bowl. Diameter: 19 cm. Placed at waist area.
9. Amatzinac White pseudo-grater bottom shallow bowl. Interior rim incised. Diameter: 22 cm.
10. Amatzinac White straight-sided bowl. Diameter: 22 cm.

Remarks — Burial in very fragmented condition, surrounded by vessels.
Dating — Cantera phase.

FIELD N-2

Burial 149

Location	Unit 3–6N/0–1E; 120 cm below surface.
Grave	Simple, direct.
Age and sex	Adult, sex indeterminable.
Position	Extended, supine, arms slightly flexed and placed over pelvis.
Orientation	North-south, head to south.
Furniture	Ceramics: 1. Eroded *cantarito* fragments, at feet of corpse.
Remarks	The *cantarito* fragments may represent an offering.
Dating	Barranca phase.

FIELD N-5

Burial 150

Location	Unit 0.6–2.1N/1W–1E; 94 cm below surface.
Grave	Simple, direct.
Age and sex	Adult, sex indeterminable.
Position	Extended, supine.
Orientation	East-west, head to east.
Furniture	Other: *a.* Fragment of perforated iron ore disc (Fig. 16.22*d*).
Remarks	Only upper portion of burial remained (waist up).
Dating	Probably Barranca phase.

CERRO DELGADO, CAVE 1

Burial 151

Location	Unit 3–4S/3–4E; 80 cm below surface.
Grave	Simple, direct.
Age and sex	Young adult, sex indeterminable.
Position	Flexed, supine. Legs crossed and left hand placed under head.
Orientation	East-west, head to west.
Furniture	Ceramics: 1. Composite bowl, reddish paste, slipped in brown. Height: 6 cm. Diameter: 13 cm. 2. Unslipped Polished bowl with slight ridging on side. Height: 12 cm. Diameter: 13 cm. Other: *a.* Ceramic earspool found in burial fill. Width: 1.5 cm. Diameter: 3 cm. Polished with red slip.
Remarks	Vessels placed at left knee.
Dating	Late Formative.

Burial 152

Location	Unit 3–4S/0–1E; 65 cm below surface.
Grave	Simple, direct. Disturbed. Combined with Burials 153, 154, and 155. Bones scattered and disarrayed. Possibly four individuals were interred in the grave, but Burials 153, 154, and 155 may be the same individual.
Age and sex	Juvenile, sex indeterminable.
Position	Indeterminable.
Orientation	Indeterminable.
Furniture	Ceramics: 1. Amatzinac White shallow bowl. Diameter: 12 cm. 2. Atoyac Unslipped Polished (?) hemispherical bowl. Diameter: 11 cm. 3. Carrales Coarse Grey composite bowl. Diameter: 14 cm. 4. Mingo Fine Brown ovate bowl. Length: 11 cm.
Remarks	Four vessels placed in the general grave.
Dating	Cantera phase.

Burial 153

Location	Unit 3–4S/0–1E; 65 cm below surface.
Grave	Simple, direct. Disturbed. See Burial 152.
Age and sex	Juvenile, sex indeterminable.
Position	Indeterminable.
Orientation	North-south (?).
Furniture	See Burial 152.
Dating	Cantera phase.

Burial 154

Location	Unit 3–4S/0–1E; 65 cm below surface.
Grave	Simple, direct. Disturbed. See Burial 152.
Age and sex	Infant, sex indeterminable.
Position	Indeterminable.
Orientation	East-west, head to west.
Furniture	See Burial 152.
Dating	Cantera phase.

Burial 155

Location	Unit 3–4S/0–1E; 65 cm below surface.
Grave	Simple, direct. Disturbed. See Burial 152.
Age and sex	Indeterminable.
Position	Indeterminable.
Orientation	Indeterminable.
Furniture	See Burial 152.
Dating	Cantera phase.

CERRO DELGADO, CAVE 4

Burial 156

Location	Unit 3–4N/1–2W; 83–89 cm below surface.
Grave	Simple, stone-associated.
Age and sex	Adult, sex indeterminable.
Position	Extended, supine. Arms flexed and placed over stomach area.
Orientation	North-south, head to south.
Furniture	Ceramics: 1. Amatzinac White double-loop handle censer. Height: 20 cm. 2. Carrales Coarse Grey composite bowl. Diameter: 11 cm. 3. Carrales Coarse Grey composite bowl. Diameter: 11.5 cm. 4. Peralta Orange *cantarito*. Height: 10 cm. Obsidian: *a.* Obsidian needle, double-pointed, unifacially chipped. Found in the middle of pelvis. Other: *b.* Flecks of red pigment (hematite?) around skull.
Remarks	Four vessels placed east of midsection. Stones placed at either side and one on top of head.

Dating	Cantera phase.

Burial 157

Location	Unit 2–3N/0.35–1E; 112–120 cm below surface.
Grave	Stone-associated.
Age and sex	Adult, possibly female.
Position	Extended, supine. Left arm flexed with hand resting on right shoulder. Right foot under left foot.
Orientation	Northeast-southwest, head to northeast.
Furniture	Ceramics: 1. Carrales Coarse Grey composite bowl, diagonal lines of punctates above shoulder to rim. Diameter: 12.5 cm. Placed above left shoulder south of skull. Obsidian: *a.* Long, thin blade. Placed above knee of right leg. Ground stone: *b.* Two partial metates. One placed over cranium, the other over flexed elbow of right arm. *c.* Mano fragment placed on left shoulder.
Remarks	Stones placed around and over the body but lacked definite arrangement. Head of burial resting on back wall of cave.
Dating	Cantera phase.

Burial 158

Location	Unit 0–1S/1–2E; 83–129 cm below surface.
Grave	Simple, direct. Disturbed.
Age and sex	Indeterminable.
Position	Indeterminable.
Orientation	Northeast-southwest (?).
Furniture	None.
Remarks	Only a few fragments of bone were found.
Dating	Cantera phase.

TERRACE 29

Burial 159

Location	Unit 6–7S/18–20W; 135 cm below surface.
Grave	Direct.
Age and sex	Young adult, sex indeterminable.
Position	Extended, prone.
Orientation	East-west, head to east.
Furniture	None.
Remarks	One foot missing. Age based on teeth. Burial very fragmentary.
Dating	Barranca phase.

TETLA-11

Burial 160

Location	Unit 4–6S/0–2W, Feature 1.
Grave	Simple, cremation.
Age and sex	Indeterminable.
Furniture	Ceramics: 1. Graphite-Black on Red ware bowl fragment. Diameter: 16 cm. Ornamental stone: *a.* Pale green jadeite bead. Height: 1.6 cm. Obsidian: *b.* Eight obsidian blades, one flake, two cores. Utilitarian stone: *c.* Bifacial knife manufactured of chert. Length: 8.4 cm. Width: 5 cm. Other: *d.* C8 (Middle Formative) figurine head. *e.* Mold-made figurine head fragment, unclassifiable. *f.* Mold-made figurine body fragment, unclassifiable. *g.* Three spindle whorls (Fig. 25.6). *h.* Bone awl fragment. Length 4.5 cm.
Remarks	The tool kit (lithics and especially the spindle whorls) may suggest this was the burial of a female.
Dating	Middle Postclassic.

Burial 161

Location	Unit 0–3N/0–1W; 96 cm below surface.
Grave	Simple, cremation.
Age and sex	Indeterminable.
Furniture	Ceramics: 1. Black on Polished Red ware bowl. Diameter: 14 cm. 2. Polychrome Resist Red tripod dish fragment. Diameter: 21 cm. Shell: *a.* Five triangular shell necklace pieces, each ca. 3 cm long.
Remarks	The cremated remains had been placed within vessel 1, which was covered by the vessel 2 fragment.
Dating	Middle Postclassic.

APPENDIX D

Ceramic Charts and Illustrations

ANN CYPHERS GUILLÉN

This appendix supplements the ceramic data discussed in Chapter 13. It is completely illustrative and is presented here in three sections. The first section consists of illustrations of the vessel form codes used in our laboratory analyses of the Chalcatzingo ceramics. The reader will note that the illustrations are grouped form by form but that the code numbers are highly diverse within and between form groups. The form chart and code were originally made up at the beginning of the project's field and laboratory work in 1972, and the numbers and forms were then in a logical order. However, as the field work continued, new vessel forms were found which had to be added to the chart, and these additions had to receive numbers which were not part of the original sequential system. In time, too, it was seen that certain other forms could be combined (thus eliminating some code numbers). After five years of laboratory analyses, the resulting form chart has a hodgepodge appearance. Although we could have revised it and rearranged it for this book, such a revised chart would not have been an accurate representation, nor would it have correctly correlated with our thousands of lab analysis forms.

The second section of this appendix illustrates our design codes. As noted in Chapter 13, in some instances certain design motifs were important temporal markers, although this was apparently the exception rather than the rule. While the laboratory analyses recorded all designs on the lab analysis forms, these data are not analyzed in this book. Future work will deal with design distribution both through time and spatially across the site.

The final section of this appendix illustrates various ceramic types and forms from the La Venta and Tres Zapotes ceramic collections of the Smithsonian Institution in Washington, D.C. These are dealt with in Chapter 13 and serve to identify certain Gulf Coast forms which co-occur at Chalcatzingo.

Form Codes

As noted in Chapter 13, vessels were subdivided into gross categories of shape and function—bowls, ollas, and dishes or plates—with braziers being put into the bowl category. The form codes are thus designated RB, RO, and RD for these three categories, referring to the rim curvature of the vessel. Three other categories designed to account for vessel form were handles, supports, and bases. Names for all the form codes are provided in Tables D.1–D.3. Form codes are illustrated in Figures D.1–D.4.

Table D.1. **Bowl Form Codes**

Beveled rim bowls	RB-37
	RB-120
Braziers	RB-99
Braziers, annular based	RB-100
Composite silhouette bowls	RB-45
	RB-74
	RB-132
Composite silhouette bowls, direct rim	RB-31
	RB-71
	RB-127
Composite squash-like bowls	RB-80
Cylindrical bowls	RB-14
Double bowls	RB-137
Double-loop handle censers	RB-101
Everted rim bowls	RB-30
	RB-35
	RB-109
	RB-125
Everted rim bowls, heavy	RB-38
Exotic bowl forms	RB-87
	RB-88
	RB-91
Exterior ridging, bowls with	RB-134
Flanged shoulder bowls	RB-89
	RB-116
	RB-122
Flaring wall bowls	RB-26
	RB-75
Flaring wall bowls, angular	RB-102
Flower pot bowls	RB-62
Globular bowls	RB-60
	RB-78
	RB-79
	RB-117
Hemispherical bowls	RB-7
	RB-93
Highly outcurved rim bowls	RB-76
	RB-90
	RB-130
Incurved rim bowls	RB-3
	RB-6
	RB-66
	RB-123
	RB-128
	RB-133
Incurved ledged rim bowls	RB-112
Outcurving wall bowls	RB-23
	RB-25
	RB-129
Outslanting wall bowls	RB-17
	RB-18
	RB-19
	RB-65
	RB-119
Outslanting slightly curved rim bowls	RB-21
	RB-22
Outslanting, slightly everted rim bowls	RB-20
Ovate bowls	RB-16
Ridged composite bowls	RB-85
Ridged wall bowls	RB-81
Rippled wall bowls	RB-124
Shallow bowls	RB-41
	RB-121
Shallow bowls, heavy	RB-115
Shallow bowls, small	RB-67
	RB-70
Slightly everted rim bowls	RB-77
Small bowls	RB-135
Tecomates	RB-1
	RB-131

Design Codes

Design codes were separated according to ceramic type. The following types had designs included in this analysis: Amatzinac White, Laca, White-Rimmed Black, Carrales Coarse Grey, Peralta Orange, Pavón Fine Grey, and Atoyac Unslipped Polished I. Table D.4 provides the names for each of the design codes. Some design codes are illustrated in Figure D.5.

Gulf Coast Ceramics

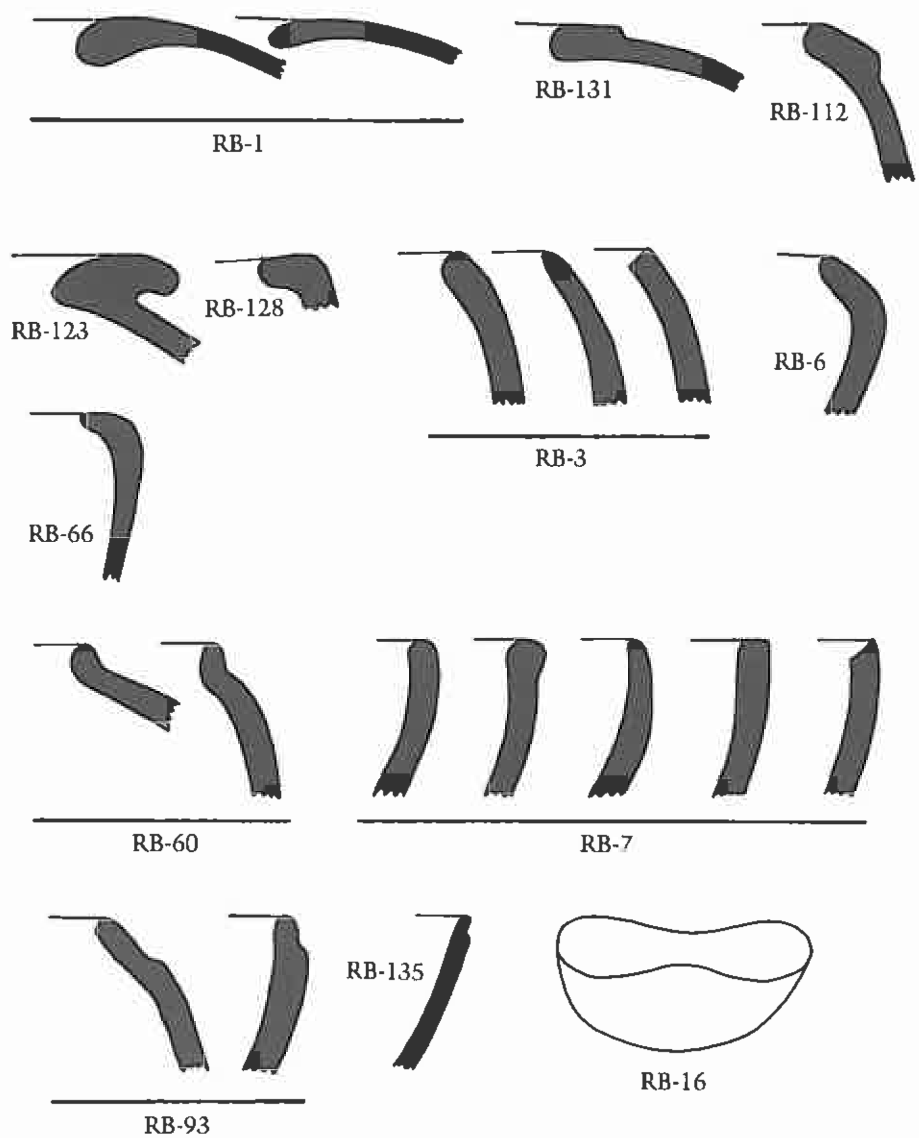
Illustrations of some of the Smithsonian's La Venta and Tres Zapotes ceramics used in the comparative analysis are given in Figure D.6.

Table D.2. **Olla Form Codes**

Beveled rim ollas	RO-8		
Botellones	RO-35		
Collared ollas	RO-1	Flaring neck ollas with drooping rims	RO-9
	RO-2	Flaring mouth ollas	RO-28
	RO-3		RO-31
	RO-26	Ridge-necked ollas	RO-25
Flaring neck ollas	RO-5	Rolled-lip ollas	RO-30
	RO-11	Rolled-lip ollas, short necked	RO-27
	RO-12		
	RO-15	Sharply outflaring ollas	RO-32
	RO-16	Short necked ollas	RO-29
	RO-23	Super flaring neck ollas	RO-17
	RO-34	Very short necked ollas	RO-33

Table D.3. **Other Form Codes**

Bases, flat	G
	H
	I
	R
Bases, round	A
	B
	C
	D
	E
	F
	J
	K
	L
	M
	O
	P
	Q
Cantaritos	C-1
	C-2
	C-3
	C-4
	C-5
	C-6
Handles, regular	H-1
Handles, twisted	H-4
Plates	RD-7
	RD-8
Plates, roughened bottom surface	RD-1
	RD-2
	RD-3
	RD-4
	RD-5
	RD-6
	RD-11
Plates, spouted tray	RD-9
	RD-10
Supports, pointed-nub	S-1
round-nub	S-2
rectangular	S-3
trapezoidal	S-4
solid round	S-5
hollow round	S-6
spider-leg	S-7



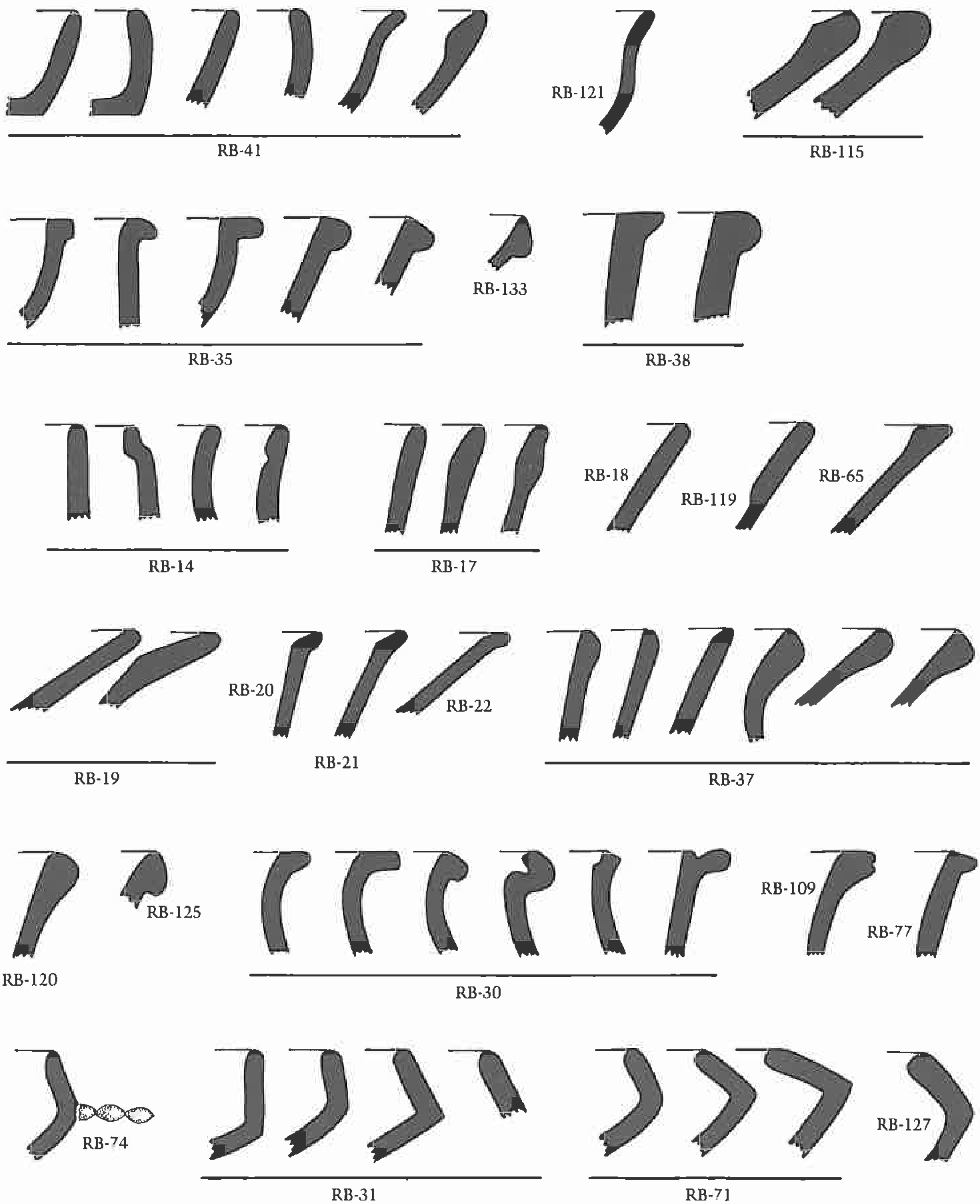
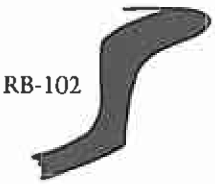


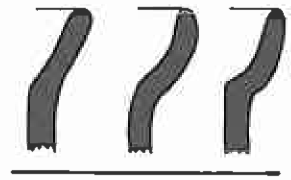
Figure D.1 Bowl form codes.

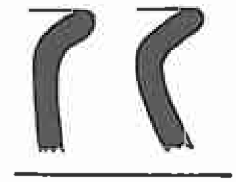
***Table D.4.* Design Codes**

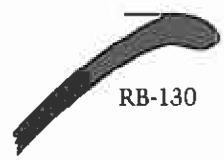
DC-1	Amatzinac White interior rim thin *raspada* incising
DC-2	Amatzinac White everted rim punctate incised
DC-3	Amatzinac White interior rim scallops
DC-4	Amatzinac White exterior shoulders incising
DC-5	Amatzinac White exterior flower
DC-6	Amatzinac White exterior raindrop
DC-7	Amatzinac White interior rim cross-hatching
DC-8	Amatzinac White interior rim pennants
DC-9	Amatzinac White exterior rainbow
DC-10	Amatzinac White exterior arcs
DC-11	Amatzinac White interior rim wide *raspada* incising
DC-12	Amatzinac White RB-30 modeled punctate
DC-13	Amatzinac White RB-7 egg
DC-14	Amatzinac White exterior cross-hatching
DC-15	Amatzinac White exterior *raspada* incising
DC-16	Amatzinac White pseudo-graters
DC-17	Laca interior rim double-line-break with slashes
DC-18	Laca rims single line, line-breaks
DC-19	Laca RB-30 modeled punctate
DC-20	Laca pseudo-graters
DC-21	White-Rimmed Black interior rim punctates
DC-22	White-Rimmed Black pseudo-graters
DC-23	Carrales Coarse Grey exterior basal break punctates
DC-24	Carrales Coarse Grey exterior body ridging
DC-25	Carrales Coarse Grey RB-16 body lugs
DC-26	Carrales Coarse Grey exterior zoned slashes
DC-27	Carrales Coarse Grey exterior zoned V's
DC-28	Carrales Coarse Grey exterior zoned stairsteps
DC-29	Carrales Coarse Grey exterior zoned X's
DC-30	Peralta Orange exterior shoulder punctates
DC-31	Peralta Orange H-1 with incising on handle
DC-32	Pavón Fine Grey exterior body ridging
DC-33	Pavón Fine Grey wide incising
DC-34	Pavón Fine Grey RB-16 body lugs
DC-35	Pavón Fine Grey pseudo-graters
DC-36	Atoyac Unslipped Polished I RB-67 stick impressions on lip
DC-37	Atoyac Unslipped Polished I RB-67 lip lugs
DC-38	Atoyac Unslipped Polished I *cantaritos* shoulder incising
DC-39	Atoyac Unslipped Polished I *cantaritos* body lugs

RB-132


RB-102


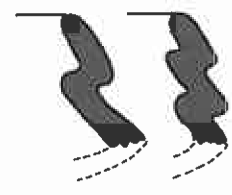

RB-62

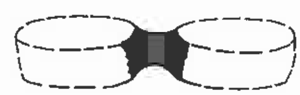

RB-26


RB-130

RB-85


RB-134



RB-81

RB-137


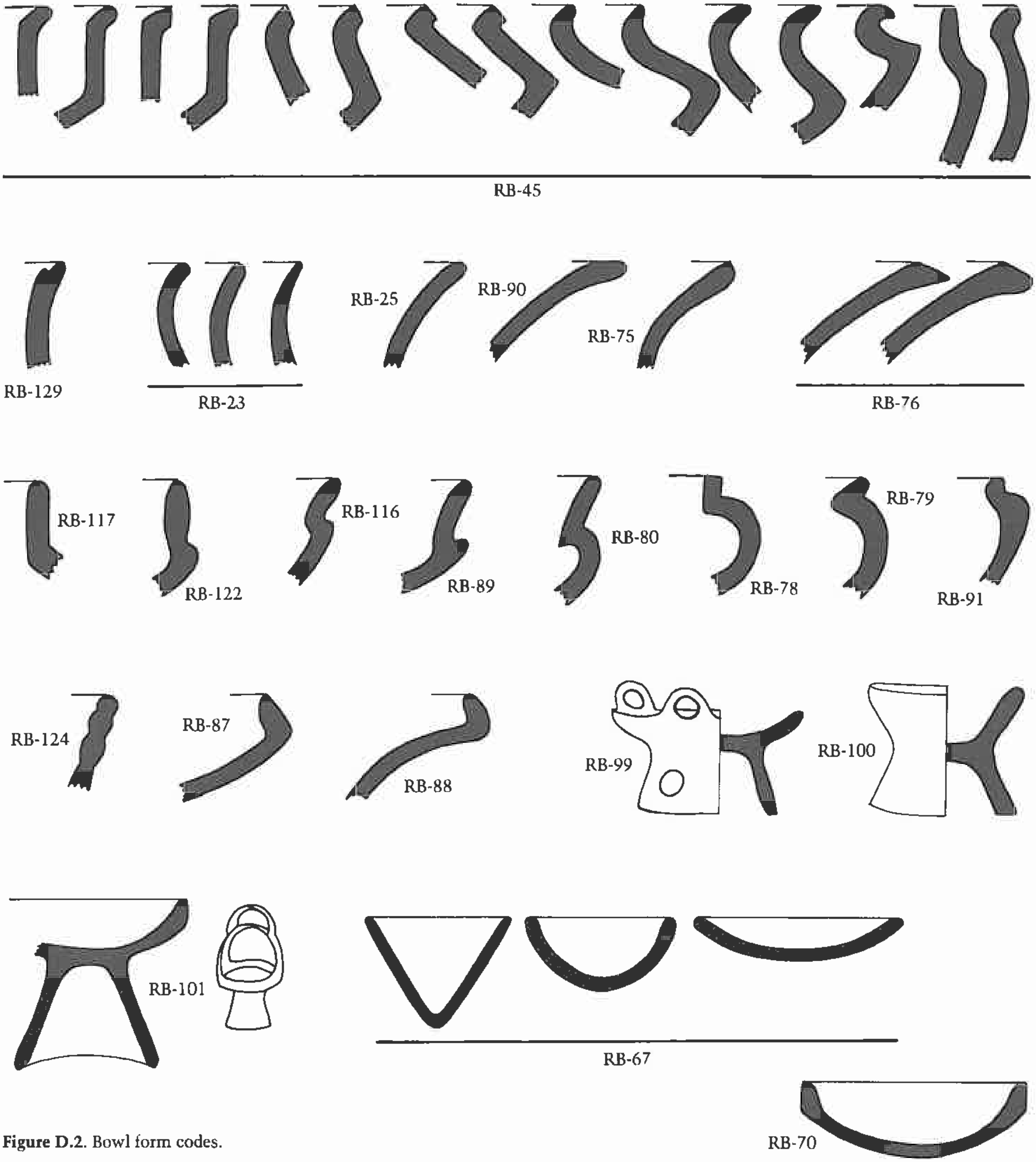


Figure D.2. Bowl form codes.

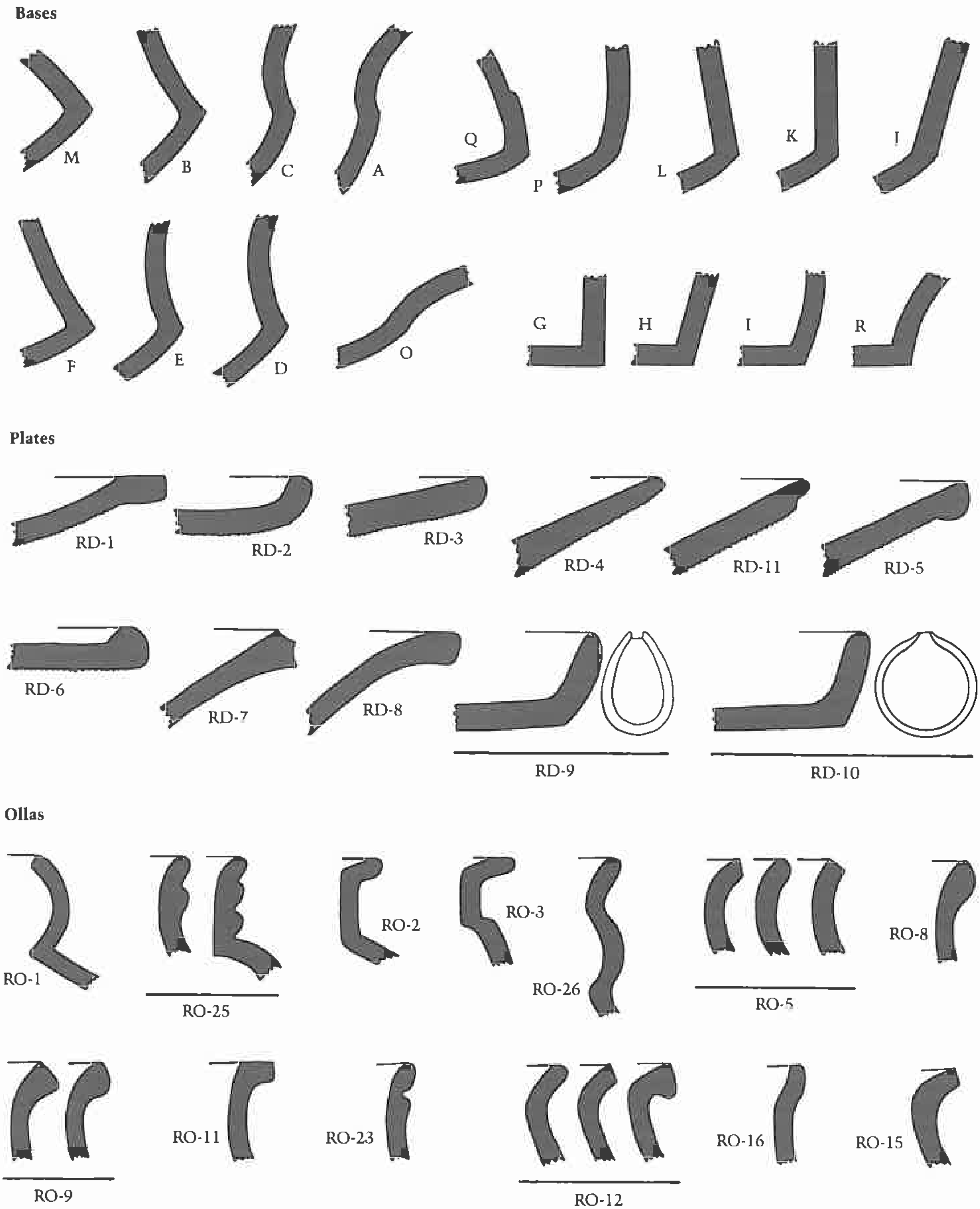
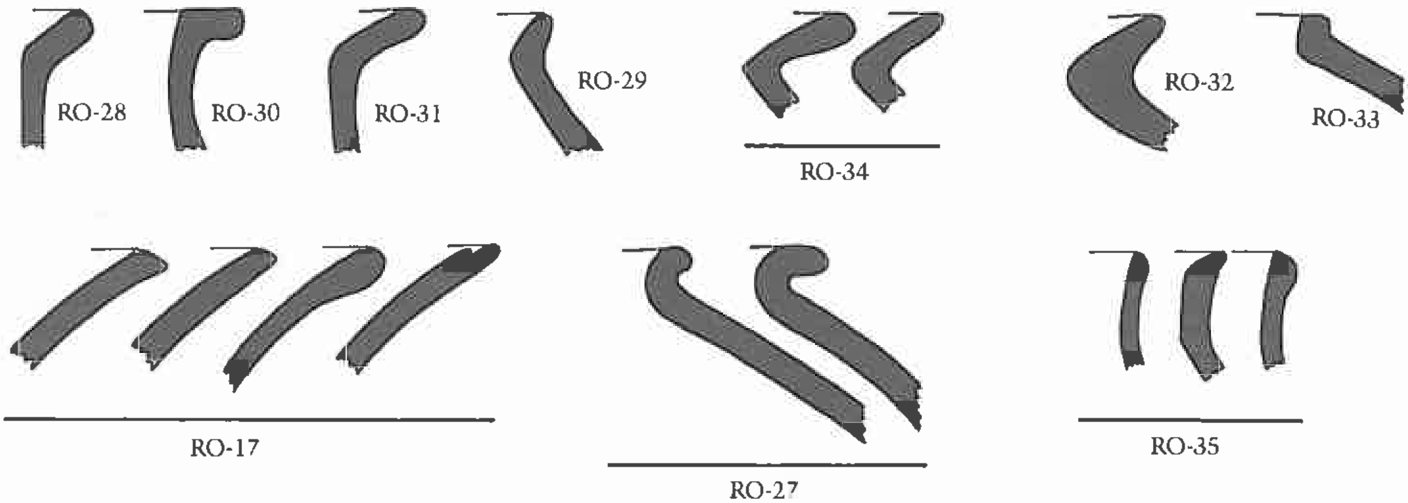
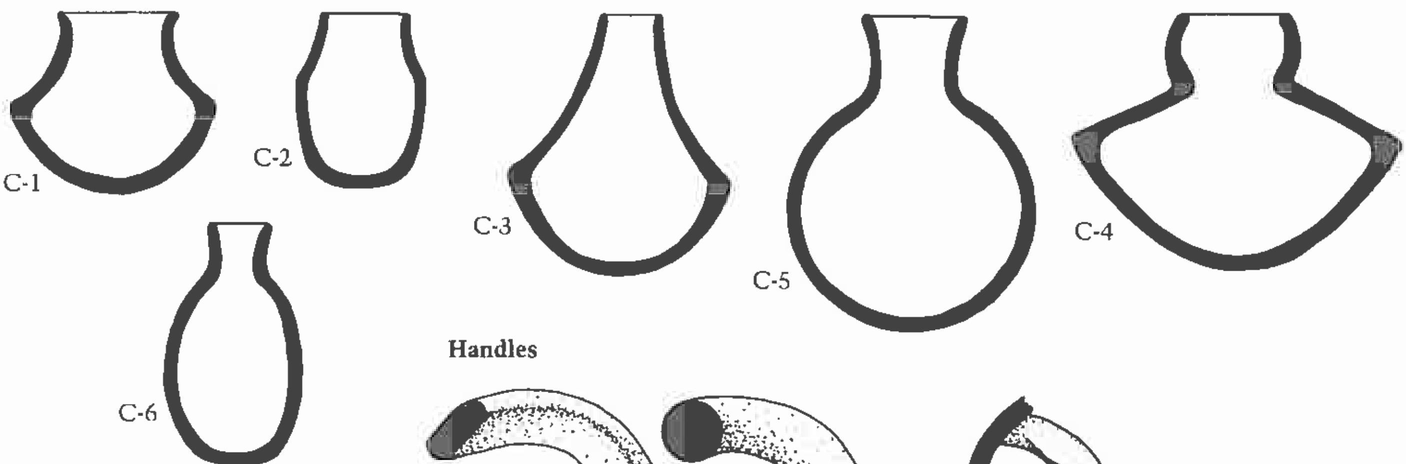


Figure D.3. Base, dish, and olla form codes.

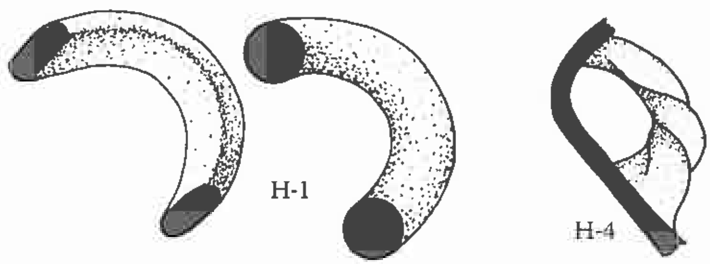
Ollas



Cantaritos



Handles



Supports

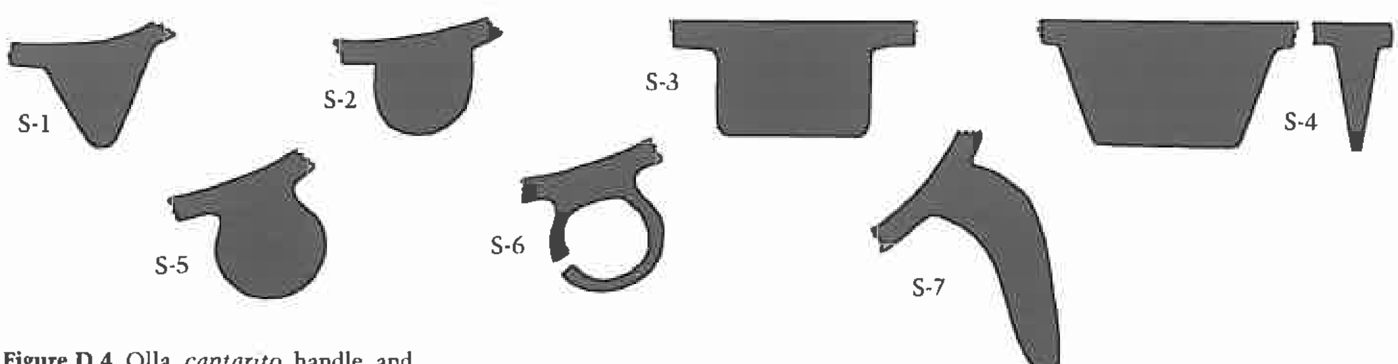


Figure D.4. Olla, *cantarito*, handle, and support form codes.

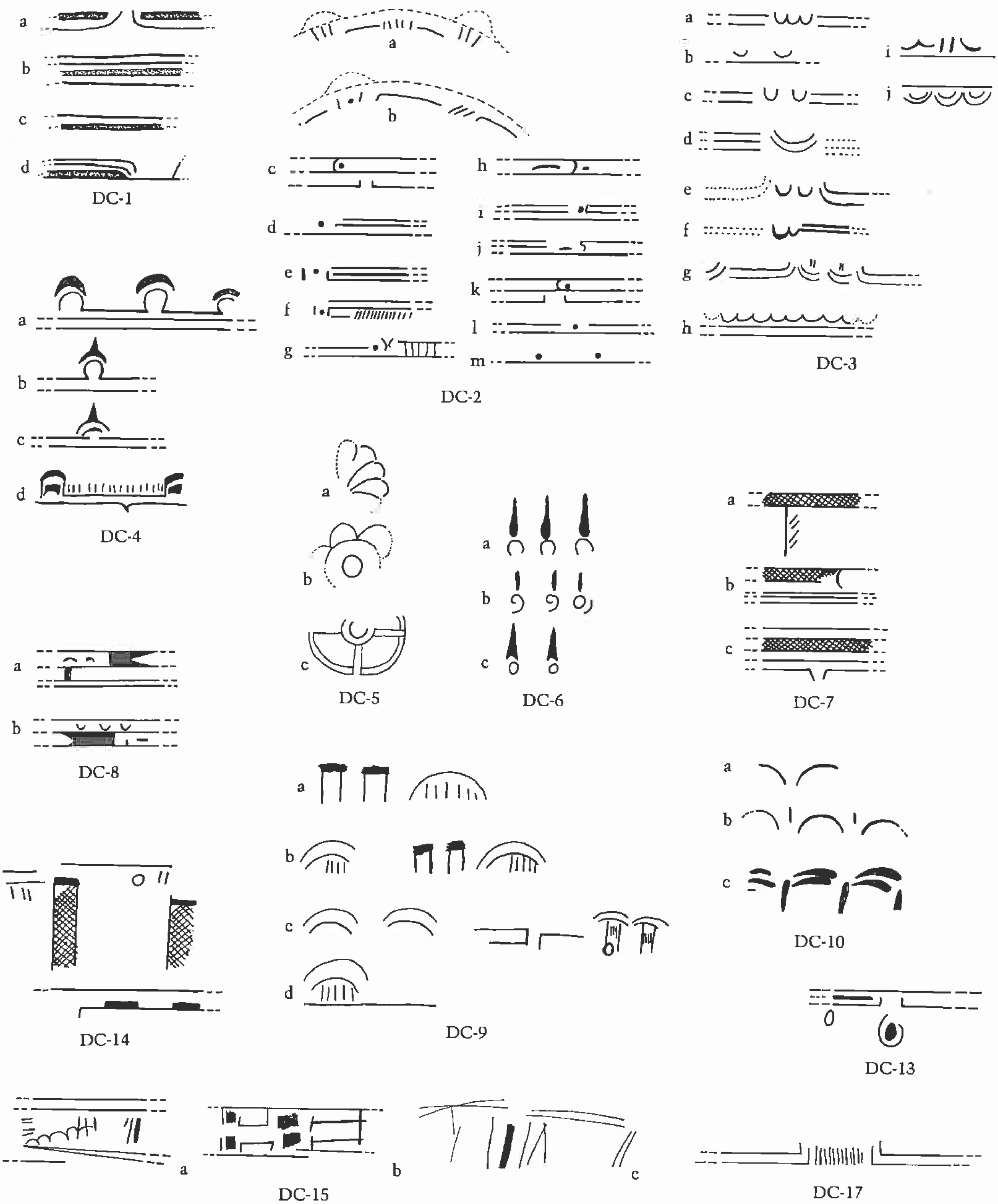


Figure D.5. Selected design codes. Note: DC-11, 12, 16, 18–39 not illustrated.

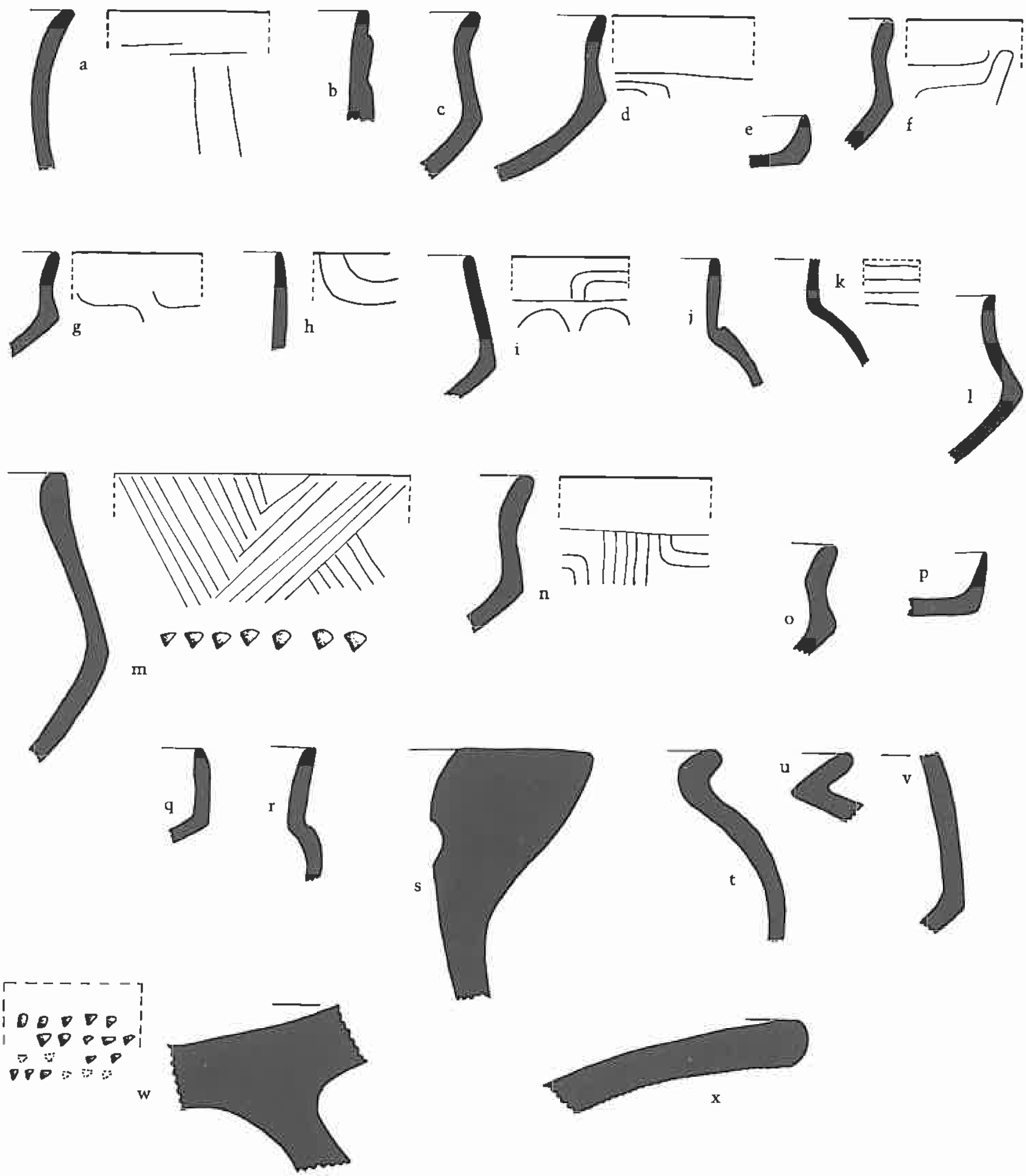
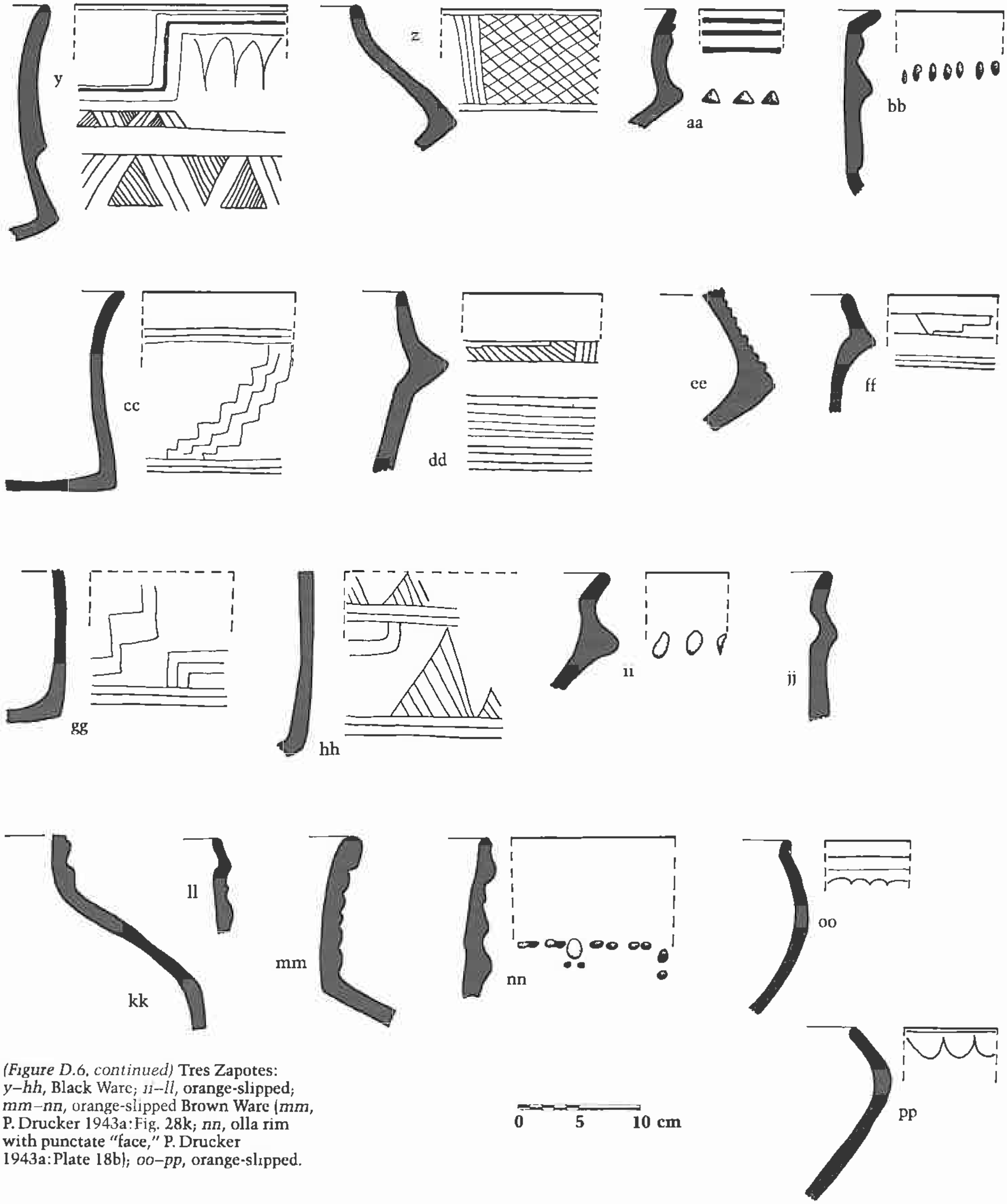


Figure D.6. La Venta and Tres Zapotes sherds. La Venta: *a–g*, Fine-Paste Black (*d*, P. Drucker 1943a:Fig. 34b); *h–i*, Coarse Black; *k–m*, Coarse Buff (*l* has traces of orange slip; *m* has traces of white slip); *n–p*, Fine-Paste Buff-Orange; *q–r*, Brown Lacquer Ware; *s–x*, Coarse Brown (*s*, heavy everted rim, shoulder with punctations; *w*, annular base; *x*, possible *comal* with roughened base). *Figure D.6 continued on next page.*



(Figure D.6, continued) Tres Zapotes: *y–hh*, Black Ware; *ii–ll*, orange-slipped; *mm–nn*, orange-slipped Brown Ware (*mm*, P. Drucker 1943a:Fig. 28k; *nn*, olla rim with punctate "face," P. Drucker 1943a:Plate 18b); *oo–pp*, orange-slipped.

APPENDIX E

Descriptions of Chalcatzingo Figurine Attributes

MARK HARLAN

This appendix presents detailed descriptions of the attributes of the Chalcatzingo figurines which were used in the attribute analysis (Chapter 14; Harlan 1979), along with illustrations of these attributes. Only the attributes used in the analysis are described. They have been arranged here in groups (eye forms, mouth forms, etc.) for easier reference.

Eye Forms

Eye Form 1 (Fig. E.1*a*): A coffee-bean shaped eye executed by gouging into the clay, leaving a well-defined ridge to form the outline.

Eye Form 2 (Fig. E.1*b*): Slit-shaped in outline, the slit incised into the face, leaving a ragged line as the outline.

Eye Form 3 (Fig. E.1*c*): Executed by incising an oval into the face and placing a punctate dot inside the oval at the point nearest the nose. The eyebrow is then depicted by incising an arc over the oval.

Eye Form 4 (Fig. E.1*d*): Consists of a very deep punctation, set off by two incised arcs, one near the nose and the other on the opposite side.

Eye Form 5 (Fig. E.1*e*): An oval formed by two separately executed arcs. A punctation is placed through the lower arc slightly nearer to the nose than the ear to represent the pupil.

Eye Form 6 (Fig. E.1*f*): A slightly arc-shaped slit incised into a raised fillet of clay.

Eye Form 7 (Fig. E.1*g*): Formed by incising around an oval area formed by pinching up clay from the face.

Eye Form 8: Not included in the analysis.

Eye Form 9 (Fig. E.1*h*): Executed by forming an oval with a raised band of clay and placing two slightly squared punctations on either side of the oval, leaving the center slightly raised.

Eye Form 10 (Fig. E.1*i*): Formed by double punctation. The two punctations are elongated and drawn slightly downward on the face to form a very obtuse angle.

Eye Form 11 (Fig. E.1*j*): Formed by gouging a roughly oval depression into the face. The oval is deep at the two ends and raised in the center. An ovate punctation is placed in the raised area.

Eye Form 12 (not illustrated): An open rectangle formed by three incised lines. The area inside the rectangle is slightly raised.

Eye Form 13 (Fig. E.1*k*): Formed by placing two deep punctations into an appliquéd crescent of clay.

Eye Form 14: Not included in the analysis.

Eye Form 15 (Fig. E.1*l*): A raised area in the form of a half-circle with a very deeply incised line running through it near the base.

Eye Form 16 (not illustrated): An open circle. The border of the circle is raised and the center is formed by a shallow, broad punctation.

Eye Form 17 (Fig. E.1*m*): The eye is closed. The depiction is made by an L-shaped incised line.

Eye Form 18 (Fig. E.1*n*): Formed by making a deep impression with a rectangular instrument. Two separate impressions are made, leaving a ridge in the middle of the indentation.

Eye Form 19 (Fig. E.1*o*): Formed by a raised ovate area, leaving a poorly defined depression as a border.

Eye Form 20 (Fig. E.1*p*): A slit-like incision made directly into the face.

Mouth Forms

Mouth Form 1 (Fig. E.1*a*): A straight-line opening lacking well-defined lips; about half open.

Mouth Form 2 (Fig. E.1*b*): A straight-line opening lacking well-formed lips; about three-fourths open.

Mouth Form 3 (Fig. E.1*e*): Turned down at the corners and lacking well-defined lips; about half open.

Mouth Form 4 (Fig. E.1*g*): Strongly down-turned at the corners with well-defined lips; closed.

Mouth Form 5 (not illustrated): A simple straight-line gash placed directly below the lower edge of the nose. The lower lip is weakly depicted and the upper lip is part of the nose.

Mouth Form 6 (Fig. E.1*r*): A simple straight-line incision. The lips are weakly depicted. Teeth are portrayed as simple punctations.

Mouth Form 7 (Fig. E.1*l*): A crescent-shaped incision placed through a raised bulb of clay. The effect is a mouth only slightly open with very strongly down-turned corners.

Mouth Form 8 (Fig. E.1*n*): A simple rectangular depression with no depiction of lips.

Mouth Form 9 (Fig. E.1*s*): Characterized by the careful modeling of the teeth.

Mouth Form 10 (Fig. E.1*t*): Closed and slightly down-turned at the corners. The corners of the mouth are punctated and the lips are raised and well defined.

Nose Forms

Nose Form 1 (Fig. E.1*u*): Narrow, straight, and raised high above the face.

Nose Form 2 (Fig. E.1*b*): Broad and slightly triangular; raised only slightly above the face.

Nose Form 3 (Fig. E.1*h*): Broad, rectangular in plan, and triangular in cross section; set off from the face by incising along both sides.

Nose Form 4 (Fig. E.1*j*): Broad, triangular in plan, and flattened in cross section. It is appliquéd rather than modeled directly on the face.

Nose Form 5 (Fig. E.1*k*): Has roughly the form of a parrot's beak. It is slightly triangular in plan and near crescent in profile.

Nose Form 6 (Fig. E.1*l*): Very broad in both plan and cross section. Its outline is slightly curved.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Nose Form 7 (Fig. E.1*m*): Characterized by the depiction of the nostrils by punctation.

Hair Forms

Hair Form 1 (Fig. E.1*a*): Long hair, parted in the center and pulled straight down each side of the head. Light incising is used to improve the depiction of the hair.

Hair Form 2 (Fig. E.1*q*): Short hair, depicted by short, deep incisions all over the head.

Hair Form 3 (Fig. E.1*g*): The head is completely smooth, devoid of either hair or a head covering.

Turban Forms

Turban Form 1 (Fig. E.1*c*): Simply a raised, hat-like object with one fillet at the base, perhaps meant to depict a cord.

Turban Form 2 (Fig. E.1*e*): Appears to be a simple cloth wrap with a division just off center.

Turban Form 3 (Fig. E.1*v*): The head cover is differentiated from the face by a raised band just above the eyes. There is a slight raising of the clay on the two lateral edges, and two incised lines in the center form a triangle.

Turban Form 4: Not included in the analysis.

Turban Form 5 (Fig. E.1*f*): Appears to be a cloth wrap swept up and brought to an apex in the center of the head, where it is fastened with a device of some kind.

Turban Form 6 (Fig. E.1*w*): A hat-like object with a cord drawn across the front and allowed to hang down the side.

Turban Form 7 (Fig. E.1*x*): A two-tiered wrap set off from the face with a band set well above the eyes.

Turban Form 8 (Fig. E.1*y*): A single wrap over the top of the head, set off from the face by a band placed slightly above the eyes.

Turban Form 9 (Fig. E.1*z*): A double wrap arranged to form a rectangle at the top and an arc over the forehead.

Turban Form 10 (Fig. E.1*aa*): A cap with a long tassle extending down to rest on the shoulder.

Turban Form 11 (Fig. E.1*bb*): A complex wrap consisting of three parts. Part one forms a peak at the top of the head. Part two forms a band across the forehead. Part three is brought down around the chin and up the other side of the face.

Turban Form 12 (Fig. E.1*cc*): A complex open wrapping brought up from the forehead at a steep angle to form a peak at the top of the head.

Turban Form 13 (Fig. E.1*dd*): A rectangle raised high above the head and set off from the face by a well-defined groove.

Turban Form 14 (Fig. E.1*ee*): Consists of two parts, a simple rectangle raised high above the head, and a broad band across the top of the forehead which has the appearance of a cloth wrap.

Turban Form 15 (not illustrated): A cap with a short tassle, sitting directly on top of the head.

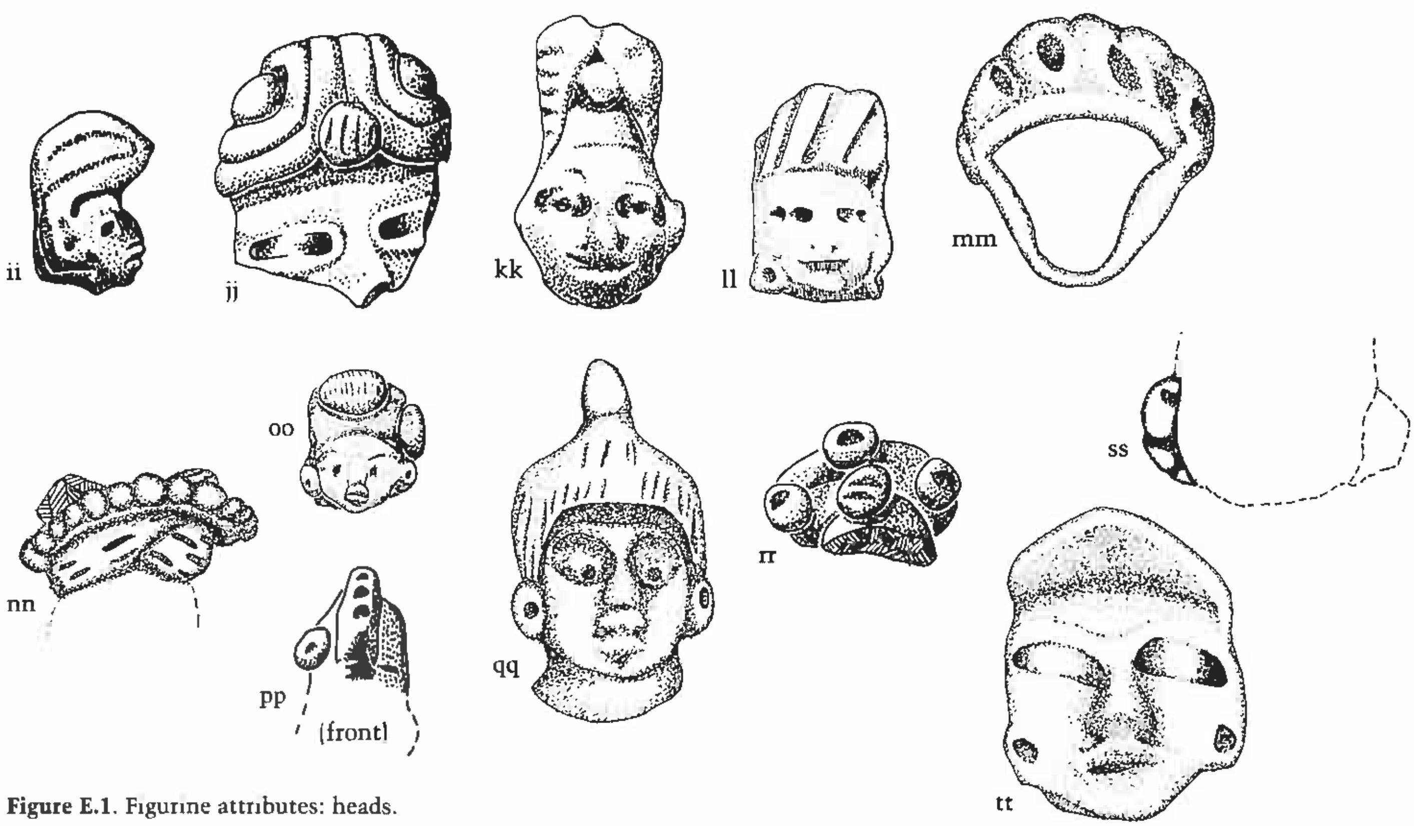


Figure E.1. Figurine attributes: heads.

Turban Form 16 (Fig. E.1*ff*): A double wrap rising at an acute angle above the head. The wrap on the specimen illustrated would have formed a double peak if one side were not broken.

Turban Form 17: Not included in the analysis.

Turban Form 18: Not included in the analysis.

Turban Form 19 (not illustrated): Consists of two parts, a close fitting cap and a divided cord drawn across the forehead and hung at an angle across the back of the head.

Turban Form 20 (Fig. E.1*gg*): A T-shaped wrap at the back of the head attached by a band across the forehead.

Turban Form 21: Not included in the analysis.

Turban Form 22: Not included in the analysis.

Turban Form 23 (Fig. E.1*hh*): A peaked cap with a broad band at its base. It is placed at an angle on the side of the head.

Turban Form 24 (Fig. E.1*ii*): A bun-shaped wrapping which projects out over the forehead. In profile, it can be seen to be placed at an angle jutting out over the head. It is set off from the forehead by a shallow incised line.

Turban Form 25: Not included in the analysis.

Turban Form 26 (Fig. E.1*jj*): Formed by a paired series of wrappings bent at a right angle so as to follow the line of the forehead and then turn up along the long axis of the head. The open area between the paired wrappings is covered by a button.

Turban Form 27 (Fig. E.1*kk*): The head covering appears to be wrapped separately over each side of the head. It is fastened in the middle, over the forehead, by a button.

Turban Embellishments

Turban Embellishment 1 (Fig. E.1*ee*): Decoration by simple incising.

Turban Embellishment 2: Not included in the analysis.

Turban Embellishment 3 (not illustrated): An appliquéd fillet with gouged incising, perhaps intended to depict a twisted cord.

Turban Embellishment 4 (Fig. E.1*ll*): A set of deeply incised grooves parallel to the long axis of the face. It may be intended to depict a headdress of standing feathers.

Turban Embellishment 5 (Fig. E.1*mm*): Drag-jab gouging.

Turban Embellishment 6 (Fig. E.1*nn*): A row of clay balls joined together, perhaps intended to depict a string of beads.

Turban Embellishment 7 (Fig. E.1*oo*): A large appliquéd oval disk.

Turban Embellishment 8 (Fig. E.1*pp*): An appliquéd fillet with a series of deep cuts along the top, giving an effect similar to a rooster's comb.

Turban Embellishment 9 (Fig. E.1*qq*): A cone appliquéd to the top of the head covering.

Turban Embellishments 10–13: Not included in the analysis.

Turban Embellishment 14 (not illustrated): A dangling wrap or fringe down the back of the head.

Turban Buttons

Turban Button 1 (Fig. E.1*rr*, upper row): A simple round button decorated with a single punctation.

Turban Button 2 (Fig. E.1*rr*, lower center): A simple round button decorated with parallel incised lines.

Turban Button 3 (Fig. E.1*cc*): A plain, round, undecorated button.

Turban Button 4 (Fig. E.1*dd*): A round button with an impression removing part of its circumference on one side.

Turban Button 5 (not illustrated): The button has a point with incised lines radiating out from it.

Ear Ornaments

Ear Ornament 1 (Fig. E.1*c*): A simple doughnut shape, presumably intended to represent an unadorned earspool.

Ear Ornament 2 (Fig. E.1*ss*): A series of incised lines which may be intended to depict a slit ear.

Ear Ornament 3 (Fig. E.1*e*): A large open spool which contrasts with Ear Ornament 1 in relative size.

Ear Ornament 4 (Fig. E.1*h*): A large open spool with a pendant attached to it.

Ear Ornament 5 (Fig. E.1*y*): A simple incision at the base of the ear.

Ear Ornament 6 (Fig. E.1*aa*): A simple pendant without a spool.

Ear Ornament 7 (Fig. E.1*tt*): A simple gouging into the side of the head.

Neck Ornaments

Neck Ornament 1 (Fig. E.2*a*): A simple fillet placed over the shoulders and above the breasts.

Neck Ornament 2: Not included in the analysis.

Neck Ornament 3 (Fig. E.2*b*): A well-defined groove incised directly below the neck.

Neck Ornament 4 (Fig. E.2*c*): A fillet hung around the neck with a disc (perhaps a mirror) suspended from the fillet.

Neck Ornament 5 (Fig. E.2*d*): A groove around the neck and a gouge between the breasts, perhaps meant to depict a pendant.

Neck Ornament 6 (Fig. E.2*e*): A series of clay balls, probably meant to depict a string of beads. In the example illustrated, the ornamentation probably originally went from the top of one shoulder to the top of the other, passing below the neck.

Arm Positions

Arm Position 1 (Fig. E.2*f*): The arm is bent downward with the hand on the abdomen below the breast.

Arm Position 2 (Fig. E.2*g*): The forearm crosses the body, with the hand on the opposite breast.

Arm Position 3 (Fig. E.2*h*, left arm): The arm is straight out to the side.

Arm Position 4 (Fig. E.2*h*, right arm): The arm is bent slightly away from the body, and then bent at the elbow to orient the forearm forward.

Arm Position 5 (Fig. E.2*i*): The arm is bent down across the torso, placing it on the inside of the thigh (on the same side).

Arm Position 6 (Fig. E.2*j*): The arm is bent over behind the back, with the hand in the area of the buttocks.

Arm Position 7 (Fig. E.2*k*): The arm is drawn across the torso with the hand on the upper part of the other arm.

Arm Position 8 (Fig. E.2*l*): The elbows are tucked into the sides and the hands placed on the chin, cradling the head.

Arm Position 9 (not illustrated): The arm is bent and reaching down to cradle the other arm in the crook of the elbow.

Arm Position 10 (Fig. E.2*m*, left arm): The arm is bent downward and in at the side to place the hand in the area of the genitals.

Arm Position 11 (not illustrated): The arm is bent upward at the elbow, placing the forearm in the area where the head would have been.

Arm Position 12: Not included in the analysis.

Arm Position 13: Not included in the analysis.

Arm Position 14 (Fig. E.2*n*): Both arms are curved behind the back, with the hands on the buttocks.

Hand Types

Hand Type 1 (Fig. E.2*o*): The fingers are depicted by a series of parallel grooves; the digits are very long.

Hand Type 2 (Fig. E.2*m*): The hand has short digits depicted by a series of parallel grooves.

Breast Forms

Breast Form 1 (Fig. E.2*p*): The breasts are elongated from top to bottom in the long axis of the body, projecting furthest from the trunk at their lowest point.

Breast Form 2 (Fig. E.2*q*): Each breast is roughly circular in plan and has its greatest projection just below the shoulder.

Breast Form 3 (Fig. E.2*r*): Both breasts are shaped like cones which have been flattened along the main axis of the figurine's body.

Breast Form 4 (Fig. E.2*s*): The breasts are depicted by a single lump of clay with a slit down the middle for the cleavage.

Breast Form 5 (Fig. E.2*a*): The breasts are cone-shaped and have been flattened perpendicular to the main axis of the body.

Breast Form 6 (Fig. E.2*t*): Each breast is a simple appliquéd button of clay.

Breast Form 7 (Fig. E.2*u*): The breasts are formed of appliquéd cones, contrasting with the other forms, which are modeled.

Navel Forms

Navel Form 1 (Fig. E.2*u*): A simple punctation straight into the abdomen.

Navel Form 2 (Fig. E.2*v*): A gouge into the abdomen with the open end of the gouge oriented toward the feet.

Navel Form 3 (Fig. E.2*w*): A gouge into the abdomen with the open end of the gouge oriented toward the head.

Pregnancy Types

Pregnancy Type 1 (Fig. E.2*x*): The abdomen is shown as a simple rounded protuberance oriented at a slight angle down from the body.

Pregnancy Type 2 (Fig. E.2*y*): The abdomen is an ovate protuberance with its long axis at a right angle to the long axis of the body. The stomach is flattened on the lower side.

Pregnancy Type 3 (not illustrated): A double protuberance. The two projections are one above the other on the abdomen.

Pregnancy Type 4 (Fig. E.2*z*): The abdomen has the shape of half a football. Its long axis points slightly downward from the long axis of the body.

Pregnancy Type 5 (Fig. E.2*g*): The abdomen projects only slightly and has the form of a smooth arc.

Leg Forms

Leg Form 1 (not illustrated): Uniformly thick from thigh to ankle, with the foot simply depicted by a slight outturning of the clay at the base of the leg.

Leg Form 2 (Fig. E.2*aa*): The leg tapers from thigh to ankle, and the foot is differentiated and turned forward at a very obtuse angle.

Leg Form 3 (Fig. E.2*bb*): Characterized by careful depiction of the calf. The foot is very small in relation to the leg.

Leg Form 4 (not illustrated): Bent at the knee to form a right angle between the calf and the thigh.

Leg Form 5 (not illustrated): Equally thick from thigh to ankle. The foot is depicted as a projection to the rear.

Leg Form 6 (not illustrated): Bent at the knee to form an acute angle between the thigh and the calf.

Leg Form 7 (Fig. E.2*cc*): The legs are crossed over one another and tucked up in the "lotus" position.

Leg Form 8 (Fig. E.2*dd*): Very thick and angular, bent at the knee at an angle of less than 90°; the knee is depicted as an angular projection.

Leg Form 9 (Fig. E.2*i*): The legs are crossed at the knees and project out straight away from the seated figure.

Leg Form 10: Not included in the analysis.

Leg Form 11 (not illustrated): Very wide at the thigh and thick in the calf, tapering at the knee and again, to a point, at the foot.

Leg Form 12 (Fig. E.2*ee*): Tapers gradually from thigh to foot and has a pointed foot oriented at right angles to the body (pointing out to the side).

Clothing Types

Clothing Type 1 (Fig. E.2*ff*): A wrist ornament constructed of a rounded fillet of clay appliquéd over the side of the wrist.

Clothing Type 2 (not illustrated): A waist band constructed of a narrow appliquéd fillet of clay.

Clothing Type 3 (Fig. E.2*j*): A waist band composed of two elements circling the waist and two flaps, one flap tucked over the front and one tucked over the back of the waist band.

Clothing Type 4 (Fig. E.2*c*): An encircling element around the waist and an oblong pubic cover.

Clothing Type 5 (Fig. E.2*gg*): A pubic cover depicted by incised lines, one around the upper part of each thigh. The lines descend to join at the pubis.

Clothing Type 6 (Fig. E.2*u*): Sandal constructed of a V-shaped appliquéd fillet on the top of the foot.

Clothing Type 7 (Fig. E.2*hh*): Sandals shown by clay discs appliquéd to the top of the feet.

Clothing Type 8 (Fig. E.2*ii*): Sandal composed of a clay pad under the foot, attached by a strap over the ankle.

Clothing Type 9 (Fig. E.2*jj*): Sandal shown by a fillet around the side of the foot and an appliquéd disc over the toe area.

Clothing Type 10 (Fig. E.2*kk*): Sandal shown by a straight fillet of clay appliquéd to the top of the foot.

Clothing Type 11 (Fig. E.2*ll*): A headdress chin strap composed of a broad band which covers the chin and mouth.

Clothing Type 12 (Fig. E.1*mm*): A narrow headdress chin strap, passing under the chin.

Clothing Type 13 (Fig. E.2*mm*): A knee pad wrapped around the knee and protruding forward.

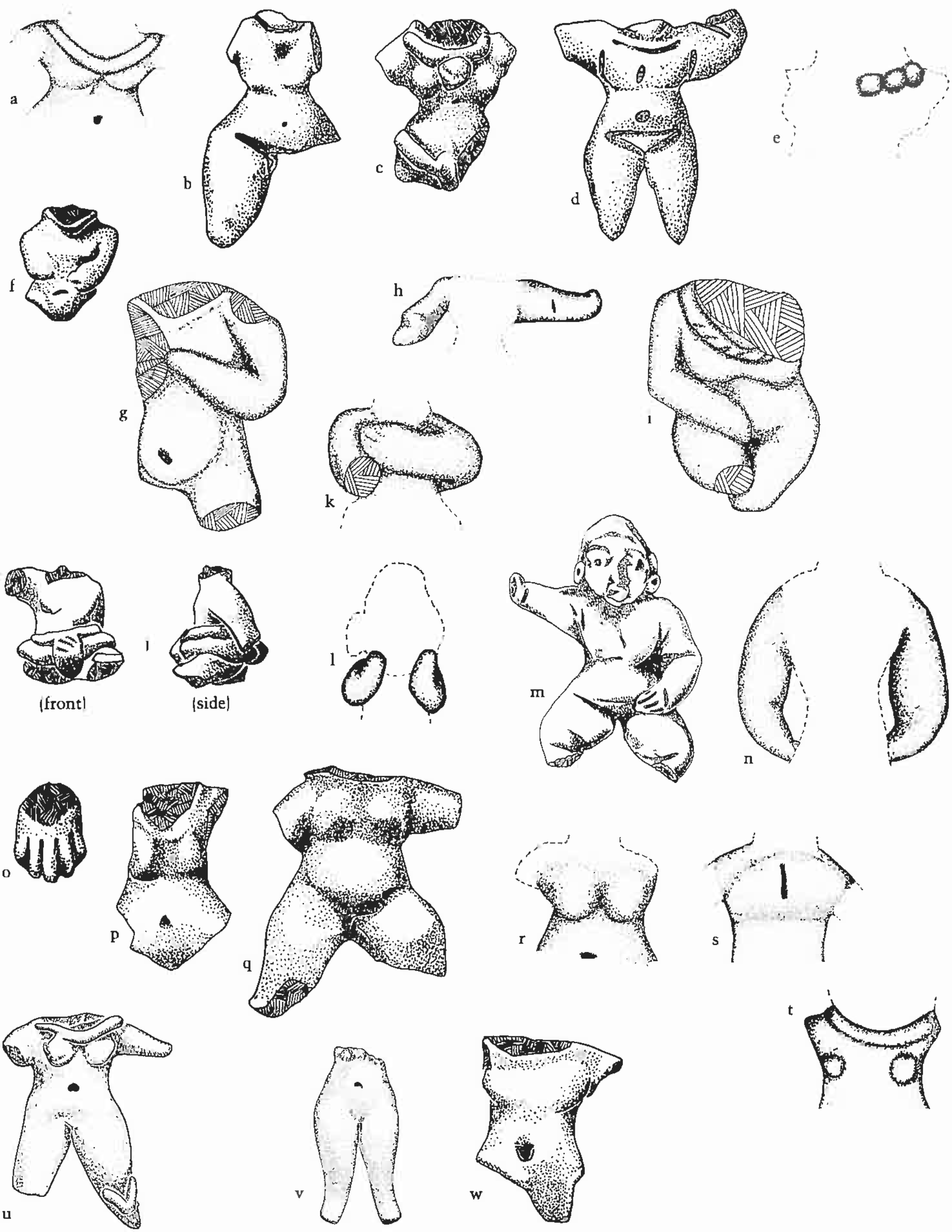
Clothing Type 14 (Fig. E.2*gg*): The body is decorated with one or more appliquéd clay balls.

Clothing Type 15 (Fig. E.1*l*): A bead of clay placed below the nose and above the upper lip.

Other

Burden (not illustrated): A pack carried high on the back with a tumpline passing around the forehead.

Chair (not illustrated): A support coming up behind the figurine's back, under the buttocks, and along one side. The figurine and the chair seem to have been modeled separately.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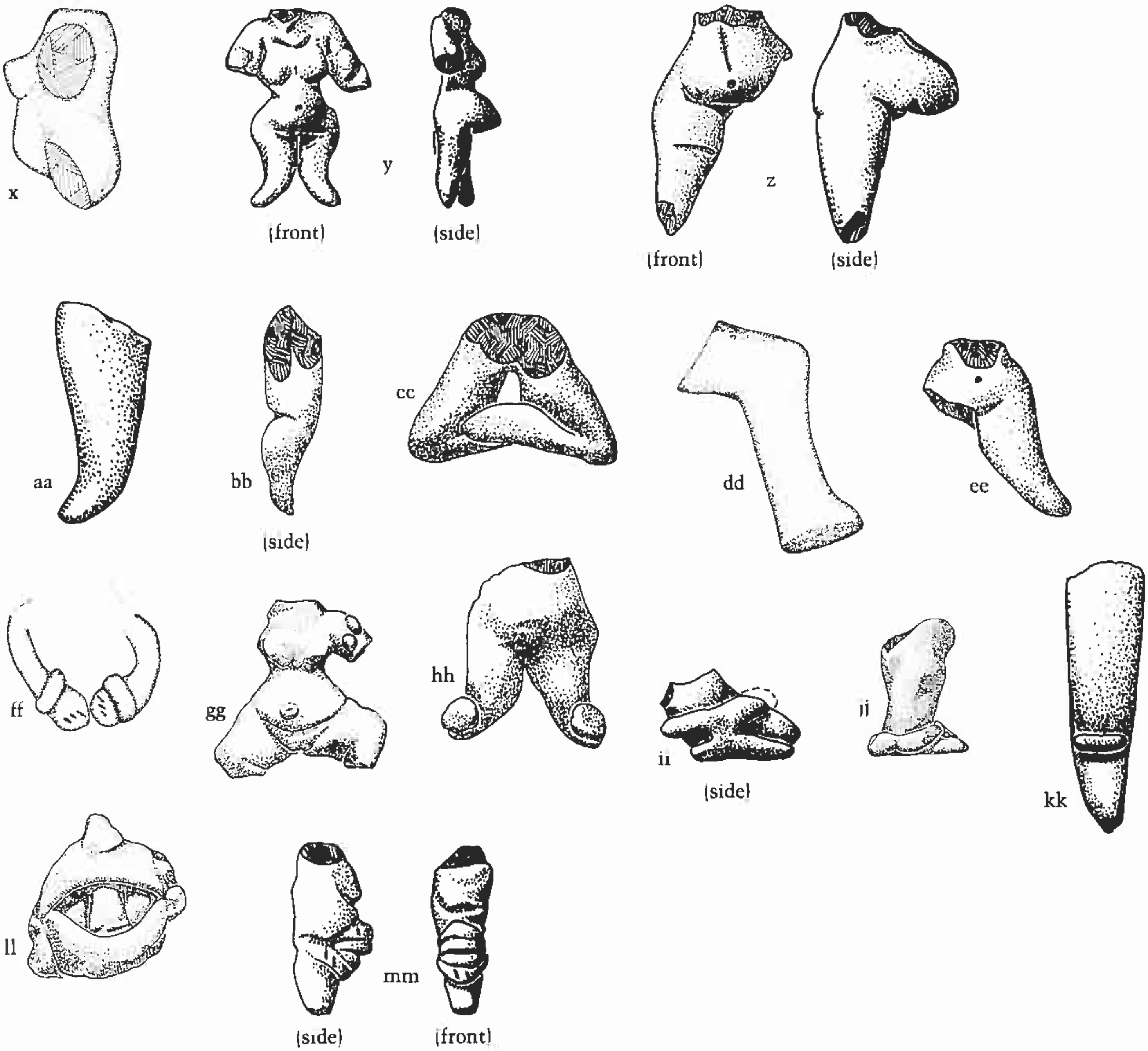

Figure E.2. Figurine attributes: bodies.

APPENDIX F

Notes on Jadeite Color

CHARLOTTE W. THOMSON

Jadeite Color

The colors of Mesoamerican jadeites vary from white and grey through a range of blue-greys and greens to brown and black. The mechanisms for pigmenting jadeite are complex and not adequately defined. Theoretically, pure jadeite should be white, without a tinge of color. It appears colorless and quite transparent in thin section. "Natural colors" in jadeite are those produced at the time of crystallization of the mineral. These are the result of the substitution of an element in the crystal structure.

Agents which give jadeite natural color are mainly compounds of iron, manganese, and chromium. Chromium is important as the source of the brilliant emerald or imperial green of the rarest Mesoamerican jadeite, a color found in small quantities at Chalcatzingo. However, jadeite also exhibits a very extensive range of solid solution relationships within the pyroxene group. Two, three, or more materials may substitute on the crystal lattice, making the mechanism of pigmentation difficult to identify.

In the lighter-colored translucent varieties of jadeite, there are diffraction colors caused by the scattering of light as it passes through the material. Colors may also be due to agencies affecting jadeite after formation, such as weathering, absorption of coloring agents, and fire.

Notation of Jadeite Color

Color names for the Mesoamerican jades have in the past been taken from Robert Ridgeway's *Color Standards and Color Nomenclature* (1912). Following a suggestion made by María Luisa Johnson (1975), the Munsell system of color notation is proposed as a more current and usable color reference system. The Munsell system (Munsell Soil Color Charts 1971) identifies color in terms of three attributes: hue, value, and chroma. The complete Munsell notation for chromatic color is expressed symbolically: *H V/C*.

The hue (*H*) notation of a color (e.g., red, green, blue, etc.) indicates its relation to an equally spaced scale of 100 hues. In fact, the colors of the Mesoamerican jadeites fall within the range of seven Munsell hue charts: 10 Green-Yellow, 2.5 Green, 5 Green, 7.5 Green, 2.5 Blue-Green, 5 Blue-Green, and 7.5 Blue-Green.

There are variations for value and chroma on the hue charts. The value (*V*) notation indicates the degree of lightness or darkness of a color in relation to a neutral grey scale extending from absolute black to absolute white. Value ranges from 0/ for absolute black to 10/ for absolute white. Thus, the darker jades have low value numbers, and the brightest, clearest colors have numbers in the 5/ to 6/ range.

The chroma (*C*) notation indicates the degree of departure of a given hue from a neutral grey of the same value. The chroma scales extend from /0 for a neutral grey to /10, /12, /14, or farther, depending on the strength or saturation of a color.

Color Terms for the Chalcatzingo Jades

Imperial green jadeite is synonymous with "emerald" green and denotes the clearest, most intense green of the Mesoamerican jades. It has a Munsell notation of 2.5G 5/10. The term *imperial* originally referred to Chinese court etiquette, which reserved the finest jade for the use of royalty and decreed the quality of jade that could be worn according to the wearer's rank. From what we know of the ethnographic literature in sixteenth-century Mexico, it appears that the same practice was followed there as well.

Apple green jadeite, a stone used by the Maya and not so far appearing in Olmec and Formative inventories, has the same hue as imperial green jadeite but less color saturation or intensity (chroma) and lighter color (value). Its notation in the Munsell system would be in the range of 2.5G 6/7 and 2.5G 6/8, with variation according to composition.

The blue jades fall on the Munsell Blue-Green hue charts, but their distinction also lies in their chroma. They are very grey for their hue, having chroma values of /1 and /2. Some of the blue jades excavated at Chalcatzingo are distinctive for the pearly luster of their polished surfaces.

Chalcatzingo mottled jadeite, which has feldspar inclusions, exhibits a wide range of color and quality variation. The jadeite matrix varies from whitish grey to grey-green (5G 6/2), and the inclusions of feldspar are brighter and/or darker green-yellow, falling on the Munsell hue chart at 10GY.

Two distinct minerals were identified for the fragments of "paper-thin" earspools. The first was a dark spruce green fuchsite (5G 3/2) which appeared translucent spinach green when held to a light source (10GY hue chart). The second was a bluish grey serpentine (10G 6/2).

Jadeite called "bright green" is intermediate in color between imperial green and apple green, having less color strength and lighter color than imperial green.

APPENDIX G
Lithics

SUSAN S. BURTON

Part 1 of this appendix provides more detailed descriptions of the cores and modified chipped stone artifacts from Chalcatzingo to supplement Chapter 18. Part 2 consists of the variable-by-variable comparisons of the sample lithic assemblages summarized in Chapter 18.

PART 1. DESCRIPTIONS OF LITHIC ARTIFACTS

CORES

Obsidian Industry

The obsidian cores from T-37ob are discussed in detail in Chapter 19. The collection from all other areas included twenty discarded cores and fragments and nineteen cores modified for or by tool use (including nine edge-modified and ten shaped tools). Of these thirty-nine cores and fragments, nine are complete. Three of the complete specimens are fully polyhedral (i.e., have blades removed from the entire circumference), while the other six have a half cylindrical shape with one flat, unworked side. In two cases this unworked side is cortex covered. Pointed distal ends are the norm for the complete specimens; however, in one case the distal end is hinged off as a result of faulty blade removal and in two other instances the distal ends are battered from use as tools. In all five cases with core platform intact, the surfaces are multifaceted. In the other four cases, an attempt has been made to rejuvenate the core by striking off the old platform with a single blow transverse to the core's longitudinal axis. Overall core dimensions are presented in Table G.1.

Chert Industry

Two types of chert flake cores were identified in the overall collection which includes T-37ob. Cores of the more common type show no preparatory shaping; they are blocky and irregular in form with flakes removed from various directions. Cores of the second type are also fairly rough and blocky, but each has a single prepared platform surface which served as the origin point for flake removal. These prepared cores tend to have a general pyramidal shape with the platform area forming the broad end of the pyramid. Recorded chert cores include thirty-four blocky cores (twenty complete, fourteen fragments), and eight prepared cores (six complete, two fragments). As a result of inconsistencies in analytical procedures, detailed information was not recorded on all complete specimens; however, available overall dimensions are summarized in Table G.2.

MODIFIED PIECES

The modified lithic artifacts at Chalcatzingo (including T-37ob) comprise two basic classes, edge-modified and shaped. These categories were used for both the obsidian and chert industries. They are described in detail below.

Obsidian Industry

Edge-Modified Pieces

The working edge characteristics which define the subcategories of edge-modified pieces are defined as follows. Utilized edges show chipping, and in some cases crushing, which appears to be entirely the result of actual use as tools. Re-

Table G.1. **Dimensions of Complete Blade Cores in the Analyzed Lithic Collection from Chalcatzingo[a] (N = 9)**

Dimension	*Range*	*Mean*	*SD*
Length (mm)	30–88	59.33	15.71
Width (mm)	12–25	20.00	3.74
Weight (gm)	5–44	22.44	10.07
Platform circumference (mm)	35–74	52.67	12.32
Number of facets around core circumference	8–13	9.44	1.89
Maximum facet width (mm)	6–9	7.78	0.92

[a]T-37 obsidian concentration not included.

Table G.2. **Dimensions of Complete Chert Cores in the Analyzed Lithic Collection from Chalcatzingo**

Core Type and Dimension	*Range*	*Mean*	*SD*
Blocky cores (*N* = 12)			
Length (mm)	43–87	67.25	11.66
Max. width (mm)	38–77	56.58	10.47
Max. thickness (mm)	32–75	48.00	12.08
Weight (gm)	72–535	208.00	113.34
Prepared cores (*N* = 5)			
Length	25–62	43.40	11.74
Max. width (mm)	20–53	33.60	11.98
Max. thickness (mm)	20–41	30.60	7.86
Weight (gm)	17–130	61.60	40.30

touched edges have been intentionally flaked in an effort to shape and/or sharpen them in preparation for tool use. Flake scars along retouched edges are overlapping and relatively even and deep. In the course of analysis, it was observed that all the specimens readily identifiable with traditional retouched artifact classes, such as scrapers, gouges, and spokeshaves, showed a maximum depth of chipping along the individual working edges of at least 5 mm and often more. As a result, a 5 mm maximum chipping depth was established as a useful dividing line between the utilized and retouched subcategories. Edges with depth of chipping from 1 to 4 mm are classified as utilized, while edges with 5 mm or greater chipping depth are classified as retouched.

Ground edges have been rounded, smoothed, and polished as a result of tool use. They may show utilization chipping or intentional retouch underlying the grinding. Edges classified as battered show battering and crushing as the exclusive evidence of tool use.

Edge-Modified Blades: This category includes 434 blades and blade fragments with a total of 741 working edges. Only 5 of these blades are complete; the remainder of the collection includes 281 midsections, 119 proximal sections, 19 distal sections, and 10 other fragments. Dimensions of the 5 complete specimens and a random sample of the blade sections are summarized in Table G.3. Data concerning maximum depth of chipping along individual working edges and edge angles are summarized in Table G.4.

Utilized blade edges. The vast majority (615) of the working edges on edge-modified blades show simple utilization chipping. Bifacial chipping is dominant on these utilized blade edges (390 specimens). Unifacial specimens are predominantly chipped on the dorsal surface (144) with only 69 ventrally chipped and 11 chipped on alternate faces. In one case the face involved cannot be identified. Most of the use chipping is irregular (538 specimens); however, a few specimens (77) show even chipping. Only a very small number of edges (7) are crushed or battered.

As might be expected, given basic blade shape, the majority of utilized edges (328) are straight. Other common edge outlines include convex (105), concave (92), concave-convex (42), and sinuous/irregular (37). Less frequent edge shapes are denticulate (10) and pointed

***Table G.3.* Dimensions of Edge-Modified Obsidian Pieces in the Analyzed Lithic Collection from Chalcatzingo**

Artifact Category and Dimension	*Range*	*Mean*	*SD*
Complete blades (N = 5)			
Length (mm)	50–58	54.50	3.14
Max. width (mm)	13–34	18.00	8.07
Max. thickness (mm)	4–6	5.00	0.63
Weight (gm)	3–8	4.60	1.85
Sample of incomplete blades[a] (N = 105)			
Length (mm)	15–58	31.50	10.21
Max. width (mm)	8–22	13.57	2.86
Max. thickness (mm)	2–7	3.32	1.04
Weight (gm)	0.5–6	1.73	1.19
Complete flakes (N = 48)			
Length (mm)	10–104	36.31	18.48
Max. width (mm)	10–58	29.23	12.20
Max. thickness (mm)	2–21	8.73	4.88
Weight (gm)	1–100	11.54	16.57
Chunks (N = 4)			
Length (mm)	25–86	42.75	25.30
Max. width (mm)	16–45	29.75	10.38
Max. thickness (mm)	9–40	19.25	12.48
Weight (gm)	3–94	32.00	36.20
Distal blade core fragments (N = 6)			
Length (mm)	23–40	31.00	6.83
Max. width (mm)	13–22	16.00	3.37
Weight (gm)	2–13	6.33	3.73

[a] A 25 percent random sample of the 419 recorded blade midsections, proximal sections, and distal sections.

***Table G.4.* Characteristics of Working Edges for Edge-Modified Obsidian Pieces in the Analyzed Lithic Collection from Chalcatzingo**

	Maximum Depth of Chipping (mm)			*Edge Angle (5° intervals)*		
Artifact Subcategory	*Range*	*Mean*	*SD*	*Range*	*Mean*	*SD*
Sample of utilized blade edges (N = 123)[a]	1–4	1.56	0.79	30–90	50.77	13.31
Retouched blade edges (N = 12)	5–10	5.50	2.18	35–85	58.33	14.48
Ground blade edges (N = 89)	1–5	1.84	0.92		NA[b]	
Utilized flake edges (N = 144)	1–4	2.36	1.13	35–105	68.54	15.24
Retouched flake edges (N = 61)	5–17	8.05	3.23	35–100	73.20	13.21
Ground flake edges (N = 17)	1–6	2.75	1.36		NA[b]	
Retouched chunk edges (N = 4)	7–17	11.00	4.24	55–75	65.00	7.07

[a] A 20 percent random sample of the 615 recorded utilized blade edges.

[b] Because of the rounding created by grinding, edge angle is not accurately measurable.

(1). Three of the utilized edges have small graver tips in addition to the general use chipping.

Retouched blade edges. Only 12 retouched blade edges occur in the analyzed collection. Seven are bifacially worked while the unifacial specimens include 4 worked on the dorsal surface and 1 worked on the ventral surface. Most chipping is irregular (10 specimens), and 2 edges show some crushing. Edge outlines are variable including convex (4), straight (3), concave (2), concave-convex (2), and denticulate (1).

Ground blade edges. This subcategory includes 114 working edges. Among these specimens 89 show utilization chipping as well as grinding while 25 show grinding alone. In 30 cases grinding occurs all along the working edge while in 84 cases only part of the edge is ground.

Among the chipped edges, 51 are bifacial and 38 unifacial (29 dorsal and 9 ventral). Again, most of the chipping is irregular (83 specimens). Edge outlines for all ground edges, both chipped and unchipped, include convex (48), straight (36), concave-convex (10), concave (9), rectangular (1), and sinuous/irregular (10).

Edge-Modified Flakes: This category includes 163 flakes and flake fragments with a total of 222 working edges. Dimensions of the 48 complete flakes included in this collection are summarized in Table G.3. Included among the unshaped modified flakes are 22 core recovery flakes and 9 platform rejuvenation flakes. Data concerning maximum depth of chipping along individual working edges and edge angles are summarized in Table G.4.

Utilized flake edges. This subcategory includes 144 edges showing simple utilization chipping. Unifacial chipping is dominant, with 63 worked on the dorsal surface, 24 on the ventral surface, 8 on alternate faces, and 3 unidentifiable. Chipping on 46 edges is bifacial. Irregular chipping again predominates (106 specimens), and crushing continues to be rare (3 specimens). Edge outlines include convex (70), concave (25), straight (25), concave-convex (10), pointed (6), denticulate (3), sinuous/irregular (5). One edge includes a small graver tip.

Retouched flake edges. There are a total of 61 retouched flake edges in the collection. Again unifacial chipping predominates with 38 worked dorsally, 9 ventrally, and 1 unidentifiable. Chipping on 13 edges is bifacial. Although still far from dominant, even chipping is more common in this subcategory (17 even specimens and 44 irregular). Crushing of the working edge is also somewhat more common (11 specimens). Edge outlines include convex (31), straight (9), concave (8), denticulate (4), concave-convex (3), pointed (3), rectangular (2), sinuous/irregular (1). Four edges include small graver tips. Although the majority of specimens in this subcategory do not fit into traditional tool types, a few specimens might be identified as scrapers, gouges, and spokeshaves.

Ground flake edges. This subcategory includes 17 ground edges. Of these 12 are chipped as well as ground while 5 show grinding alone. In 11 cases grinding occurs all along the working edge while in 6 cases only part of the edge is ground. Among the chipped edges, 7 are unifacially chipped (5 dorsal, 1 ventral, 1 alternate faces), and 5 are bifacial. Again, irregular chipping is dominant (10 specimens). Edge outlines for all specimens include convex (10), straight (3), concave-convex (2), concave (1), sinuous/irregular (1).

Edge-Modified Chunks: This small category includes 4 chunks with a total of 5 working edges. Chunks are defined as blocky bits of lithic manufacturing debris. Dimensions of the 4 specimens are summarized in Table G.3.

The single utilized working edge is bifacial, irregularly chipped, and straight in outline. Maximum depth of chipping is 4 mm and edge angle is 75°.

The 4 retouched edges are all unifacial. Irregular chipping predominates, but the retouch along one edge is even. Edge outlines include 2 denticulate specimens and 2 convex. Other edge characteristics are summarized in Table G.4.

Edge-Modified Blade Cores: This category includes 2 complete cores and 7 fragments. On all but one of these specimens tool use is indicated by battering of the distal end. No use chipping or retouch was noted on any of the battered specimens. The 2 complete cores with battered distal ends measured respectively: (1) length, 88 mm; maximum width, 23 mm; weight, 44 gm; and (2) length, 45 mm; maximum width, 25 mm; weight, 29 gm. (Note: These 2 cores are among the 9 which form the sample for Table G.1.) Dimensions of the battered distal fragments are summarized in Table G.3.

The single retouched specimen is a blade core midsection with a convex working edge. Chipping is unifacial and irregular. Maximum depth of chipping from the working edge is 11 mm, and the edge angle is 90°. This fragment is 23 mm long, 19 mm wide, 11 mm thick, and weighs 7 gm.

Shaped Modified Pieces

Projectile Points: This category includes extensively shaped, bilaterally symmetrical artifacts with a pointed tip and some sort of hafting element at the opposite end. They presumably served as dart and arrow points.

The obsidian collection includes 12 complete specimens, 12 basal end fragments, and 15 blade area fragments. In most cases (30), the original tool blank is not identifiable; however, 6 are recognizable as blades and 3 as flakes. Extensive retouch around the entire margin of these pieces is typical. While most of the specimens are bifacially worked, 2 exhibit unifacial retouch on the dorsal side, 1 on the ventral side, and 1 on alternate faces. Even retouch dominates, but the flaking on about one-third of the specimens is irregular. Two of the complete specimens have serrated blade edges, and 1 complete point shows some grinding along the stem edges. Nearly half of the points (17) are retouched across the entire face of the blank; maximum depth of chipping along the edges of the remaining pieces varies from 3 to 13 mm.

Specimens with basal area intact show a variety of stem forms; the majority (15) are contracting, 2 are expanding-contracting, 2 are expanding-parallel, and 1 is expanding. One complete specimen was stemless. The 12 complete specimens also show some variety in blade shape; 6 are excurvate or ovate, 3 are triangular or straight-sided, and 3 are incurvate. (See Table G.5 for a summary of point dimensions.)

Drill-like Pieces: This category includes 10 shaped tools which share an overall morphology suggestive of a perforating function. The majority have a roughly rectangular stem or basal section which abruptly constricts to a narrow, pointed blade section. One specimen lacks the abrupt shift from basal section to blade section and instead gradually narrows from basal edge to pointed end.

A variety of blanks were used including 2 blades, 2 core recovery flakes, and 4 other flakes; 2 blanks are unidentifiable. Retouch generally occurs along the entire length of both lateral edges and varies from even (5 specimens) to irregular (5 specimens). One specimen shows

***Table G.5.* Measured Dimensions of Shaped Obsidian Tools in the Analyzed Lithic Collection from Chalcatzingo**[a]

Artifact Category and Dimension	N	*Range*	*Mean*	*SD*
Projectile points				
Complete length (mm)	12	29–39	33.92	3.86
Stem length (mm)	11	4–14	7.91	2.91
Max. width (mm)	12	14–29	19.00	4.90
Max. thickness (mm)	12	3–9	4.67	1.49
Weight (gm)	12	1–5	2.75	1.30
Blade edge angle[b]	39	45–90	70.77	11.01
Drill-like pieces				
Basal section length (mm)	7	17–54	29.00	12.47
Max. basal sec. width (mm)	7	14–39	22.86	8.48
Max. blade width (mm)	9	7–20	10.11	5.30
Max. tool thickness (mm)	10	3–14	8.50	3.32
Blade edge angle[b]	10	65–95	86.00	8.89
Wedge-shaped pieces				
Length (mm)	12	17–50	31.92	10.82
Max. width (mm)	12	12–27	19.92	4.59
Max. thickness (mm)	12	4–20	11.17	4.34
Weight (gm)	12	1–25	9.33	7.79
Working edge angle[b]	13	50–105	81.15	14.70
Coarsely shaped pieces				
Length (mm)	31	21–104	42.90	18.29
Max. width (mm)	31	9–55	28.81	10.46
Max. thickness (mm)	31	4–22	11.55	4.37
Weight (gm)	31	1–86	16.65	16.25
Edge angle[b]	76	40–105	77.30	12.50
Finely retouched blades: bipointed				
Max. width (mm)	11	3–6	4.36	0.77
Max. thickness (mm)	11	1–3	2.09	0.67
Edge angle[b]	11	50–90	75.45	9.88
Finely retouched blades: constricted outline				
Basal section length (mm)	7	19–25	21.86	2.17
Max. basal sec. width (mm)	12	6–15	10.08	2.66
Max. blade width (mm)	7	5–9	6.71	1.28
Max. tool thickness (mm)	12	2–5	3.50	1.89
Blade edge angle[b]	12	50–85	67.50	11.46
Other shaped blades:				
Pointed specimens				
Edge angle[b]	17	40–95	64.12	14.78
Other fragments:				
Edge angle[b]	6	45–85	70.00	13.84
Unidentifiable shaped pieces:				
Fragments on flake blanks				
Edge angle[b]	7	60–90	77.14	9.95
Unidentified blank type				
Edge angle[b]	5	40–85	76.00	16.25

[a]All measurements represent aspects of complete tools. For fragmentary specimens, only the dimensions judged complete are included.
[b]Edge angle measured in 5° intervals.

some crushing of the edges and grinding on the tool face. On the blade blanks, retouch was carried out unifacially on the ventral surface only. The specimens on flakes and unidentified blanks show both bifacial (4) and unifacial (4) flaking. In 2 cases the unifacial retouch along the lateral edges occurs on opposing faces. Maximum depth of chipping along the retouched edges of individual tools ranges from 3 mm to examples where the entire face of the blank has been altered.

Only 2 complete specimens are included in this collection. The first of these, the unique specimen with gradually converging lateral edges, is 53 mm long, has a maximum width of the basal edge of 30 mm, is 10 mm thick, and weighs 10 gm. The second complete drill is a large specimen with the constricted outline typical of this category. It is 91 mm long with a 54 mm long stem or basal section and a 37 mm blade section. Maximum basal width for this second specimen is 27 mm, maximum blade width 17 mm, maximum tool thickness 11 mm, and tool weight is 20 gm. Measurable dimensions for the drill category in general are summarized in Table G.5.

Wedge-Shaped Pieces: This category involves a group of 13 rather crude, coarsely shaped tools (12 complete, 1 fragment), most of which are made on sections of blade cores. One small specimen is made on a flake, and 2 others are so extensively modified that the nature of the original blank can no longer be determined. Coarse, irregular retouch has been used to thin the tool blanks at both ends; however, in most cases more careful and extensive thinning of one end suggests that it was the actual working edge. In virtually all cases the thinning of both ends was accomplished bifacially; however, the small specimen made on a flake blank shows only unifacial retouch on the dorsal surface.

In plan view these tools are either rectangular (9) or trapezoidal (4) with the working edge the longer of the two parallel sides. In cross-section they tend to be wedge-shaped. Battering, often quite heavy, occurs on the working edges and/or distal ends of all but one specimen. One of the battered specimens also has a ground area on one face. Maximum depth of chipping along the retouched edges of individual tools ranges from only 6 mm to examples where the entire face of the blank shows retouching. These shaped pieces may be functionally similar to the edge-modified blade cores with battered distal ends.

Coarsely Shaped Pieces: This largest category of shaped tools includes a wider variety of implements than is typical of the other categories. However, the 82 specimens included here do share a number of basic traits. In each case, the tool blank (usually a flake) has been shaped by irregular and rather coarse retouch around all or nearly all of its margin. Bifacial retouch dominates, and the bulk of the coarsely shaped specimens fall within the general morphological class usually identified functionally as knives and/or preforms.

Tool blanks for the coarsely shaped pieces include 3 blades, 4 platform rejuvenation flakes, 5 core recovery flakes, 39 other flakes, and 31 unidentifiable. Bifacial retouch was used to shape the majority of the specimens (66); the unifacial examples include 8 with the ventral surface worked, 3 with the dorsal surface altered, and 5 with retouch on alternate faces. The edges of 28 specimens show some battering and/or crushing, and 1 specimen is ground along a single edge. Maximum depth of chipping along the retouched edges of individual tools ranges from 7 mm to many examples (32) where the entire face of the blank shows retouching.

Thirty-one of the items in this category appear to be whole, and these display a variety of overall outlines. Specifically, 16 are ovate, 10 are rectangular, 3 are triangular, 1 is bipointed or roughly diamond-shaped, and 1 is amorphous. Where the overall outline can be estimated, fragmentary specimens show the same variety of shapes. The single exception is a fragment of a stemmed specimen which may be a projectile point preform or possibly a crude finished point.

Finely Retouched Blades: This category includes 23 prismatic blades which have been shaped with careful, even pressure retouch along both lateral edges. Two basic shapes occur and will be treated as separate subcategories. They include (1) bipointed specimens and (2) specimens with rectangular stem or basal section which constricts abruptly to a narrow, pointed blade section. The apparent fragility of these blades and the evident care with which they were shaped has prompted the suggestion that they may have had a ceremonial rather than utilitarian function.

Bipointed. The 11 bipointed specimens are particularly slender and delicate. Four are bifacially retouched, and the remainder are unifacially flaked on the ventral surface. On the unifacial specimens, one of the dorsal ridges which was a feature of the original blank runs down the center of the unworked face. In the majority of cases, tiny pressure flake scars cover the entire retouched face; however, in 2 instances a narrow unaltered strip remains on the center of the worked face. In these latter cases, maximum depth of retouch from the worked edges is measurable as 3 mm.

Only 2 of the 11 bipointed specimens are complete. Their overall dimensions are as follows: (1) length, 57 mm; maximum width, 5 mm; maximum thickness, 3 mm; weight, 1 gm; and (2) length, 44 mm; maximum width, 4 mm; maximum thickness, 3 mm; weight, less than 1 gm. General measurable dimensions for all bipointed finely retouched blades are summarized in Table G.5.

Constricted outline. The delicacy and precision of their retouching and their smaller, lighter size separate the 12 finely retouched blades with constricted outlines from the similarly shaped pieces identified as drill-like tools. The majority of these blades (10) are retouched unifacially on the ventral surface. One specimen is unifacially worked on the dorsal surface, and 1 is bifacially shaped. Again flaking normally covers the entire worked face; the 2 exceptions have a maximum depth of chipping measurable at 3 mm and 5 mm respectively. The single complete specimen is 32 mm long with a 19 mm long stem or basal section and a 13 mm blade section. Maximum basal width is 12 mm, maximum blade width 7 mm, maximum tool thickness 3 mm, and tool weight is 1 gm. General measurable dimensions for the finely retouched blades with constricted outline are summarized in Table G.5.

Other Shaped Blades: This is a residual category of 25 shaped blades, largely tool fragments, which could not be definitely identified with any of the previously defined categories. Many are fragments which may be parts of projectile points, drill-like pieces, and/or coarsely shaped pieces. A few are unusual complete specimens. The extensive, careful pressure flaking typical of finely retouched blades does not occur in this category.

The majority of the shaped blades (17), including 2 complete examples, are bilaterally retouched to form a point. Ten of these pointed blades are bifacially retouched, while the 7 unifacial specimens include 3 worked on the ventral surface, 1 on the dorsal surface, and 3 on alternate faces. Chipping tends to be irregular, and its maximum depth along the worked edges ranges from 3 to 8 mm. Two specimens show some grinding along one edge. Dimensions of the 2 complete specimens are as follows: (1) length, 45 mm; maximum width, 13 mm; maximum thickness, 3 mm; weight, 2 gm; and (2) length, 39 mm; maximum width, 12 mm; maximum thickness, 3 mm; weight, 2 gm. (See Table G.5 for edge angle data.)

Included among the other shaped blades are 2 basal end pieces from tools with a constricted outline and 3 parallel-sided pieces, all of which may be fragments of drill-like tools. A sixth shaped blade fragment has an amorphous shape. All 6 are retouched along both lateral edges; 3 are worked bifacially, 2 unifacially on the ventral surface, and 1 unifacially on alternate faces. Chipping varies from irregular to even. In 4 instances maximum depth of chipping along the worked edges is only 3–4 mm, but in the other 2 instances the entire face of the blank shows retouching. (See Table G.5 for edge angle data.)

The 2 remaining specimens in this category are similar in size and shape but are differently worked. Both are complete and are rectangular in overall outline. The first specimen is shaped by irregular retouch around the entire margin of the piece. Retouch extends across the entire face of the tool, and the edges show some crushing. This specimen measures as follows: edge angle, 60°; length, 25 mm; maximum width, 14 mm; maximum thickness, 4 mm; weight, 1 gm.

The second rectangular specimen is not retouched at all but instead is shaped by grinding around the entire margin. It is possible that this item should be included with the edge-modified blades with ground edges; however, the overall symmetry created by the extensive grinding led to its classification as a shaped piece. The dimensions of the ground specimen are: length, 29 mm; maximum width, 18 mm; maximum thickness, 5 mm; weight, 3 gm.

Unidentifiable Shaped Pieces: This final residual category includes specimens, other than shaped blades, which could not be definitely identified. Most are fragments which may be parts of projectile points, drill-like pieces, and/or coarsely shaped pieces.

Eight of the 13 unidentifiable specimens are made on flakes. The only complete shaped flake is unifacially retouched on alternate faces and has a roughly triangular outline. The chipping is irregular and reaches a maximum depth of 12 mm along the worked edges. Overall dimensions of this specimen are: edge angle, 80°; length, 74 mm; maximum width, 38 mm; maximum thickness, 25 mm; weight, 36 gm.

The fragmentary shaped flakes include 5 with unidentifiable or amorphous outlines, 1 pointed piece, and 1 basal end section from a tool with a constricted outline. Retouch on these fragments varies from irregular to even and includes 1 bifacially worked specimen, 3 unifacially worked on the dorsal side, and 3 unifacially worked on alternate faces. Maximum depth of chipping along the retouched edges of individual pieces ranges from 4 mm to examples where the entire face of the blank is worked.

In 5 instances in this category, the type of tool blank could not be determined. All are bifacially retouched tool fragments. Chipping varies from irregular to even and has a maximum depth from the worked edges ranging from 5 mm to examples where the entire face shows retouching. Overall shapes of the original tools could not be determined. (See Table G.5 for edge angle data.)

Table G.6. Measurable Dimensions of Modified Chert Pieces in the Analyzed Lithic Collection from Chalcatzingo

Artifact Category and Dimension	*Range*	*Mean*	*SD*
Edge-modified pieces:			
Complete flakes (N = 37)			
Length (mm)	21–73	41.14	13.40
Max. width (mm)	11–117	36.22	17.77
Max. thickness (mm)	2–31	12.16	6.27
Weight (gm)	2–101	22.65	26.28
Chunks (N = 6)			
Length (mm)	24–67	49.00	14.26
Max. width (mm)	18–62	37.00	12.91
Max. thickness (mm)	16–28	20.67	5.02
Weight (gm)	9–145	45.67	45.38
Shaped pieces:			
Projectile points (N = 3)			
Blade edge angle[a]	55–80	65.00	10.80
Coarsely shaped pieces (N = 5)			
Edge angle[a]	60–110	83.75	19.80
Unidentifiable shaped pieces (N = 4)			
Edge angle[a]	75–90	82.50	7.50

[a]Edge angle measured in 5° intervals.

Table G.7. Characteristics of Working Edges for Edge-Modified Chert Pieces in the Analyzed Lithic Collection from Chalcatzingo

	Maximum Depth of Chipping (mm)			*Edge Angle (5° intervals)*		
Artifact Subcategory	*Range*	*Mean*	*SD*	*Range*	*Mean*	*SD*
Utilized flake edges (N = 45)	1–4	2.56	1.09	35–100	74.00	14.20
Retouched flake edges (N = 32)	5–22	8.03	3.75	60–105	83.82	10.44
Ground flake edges (N = 13)	1–10	3.83	2.67		NA[a]	
Retouched chunk edges (N = 5)	6–18	10.60	4.96	60–95	85.00	12.65

[a]Because of the rounding created by grinding, edge angle is not accurately measurable.

Chert Industry

Edge-Modified Pieces

Edge-Modified Flakes: This category includes 78 flakes and flake fragments with a total of 92 working edges. Dimensions of the 37 complete flakes included in this collection are presented in Table G.6, and certain working edge characteristics are summarized in Table G.7.

Utilized flake edges. This subcategory includes 45 edges showing simple utilization chipping. Unifacial chipping is dominant, with 24 worked on the dorsal surface, 7 on the ventral surface, 3 on alternate faces, and 2 unidentifiable. Chipping on 9 edges is bifacial. Irregular chipping predominates (30 edges), but one-third are evenly chipped (15 edges). Only 5 edges show any crushing. Edge outlines include convex (14), concave (11), straight (6), pointed (5), concave-convex (4), denticulate (3), and sinuous/irregular (2).

Retouched flake edges. There are a total of 34 retouched flake edges in the collection. Again unifacial chipping dominates with 30 worked dorsally, 1 ventrally, 1 on alternate faces, and 1 unidentifiable. One edge is bifacially worked. Chipping is generally irregular (28 edges) with only 6 edges exhibiting even chipping. Crushing was noted on 4 of the retouched edges. Edge outlines include convex (16), concave (5), denticulate (5), concave-convex (3), pointed (3), straight (1), and sinuous/irregular (1). One edge includes a small graver tip. As was the case with retouched obsidian flakes, a few specimens included in the subcategory might be identified as scrapers and gouges.

Ground flake edges. This subcategory includes 13 ground edges. Of these, 12 are chipped as well as ground while only 1 shows grinding alone. In 12 cases grinding occurs on only part of the working edge while in 1 instance the entire edge is ground. Among the chipped edges, 1 is bifacial and 11 are unifacial (2 dorsal, 3 ventral, 6 alternate faces). Again, irregular chipping is dominant (11 specimens). Edge outlines include convex (5), concave (4), pointed (2), concave-convex (1), and straight (1).

Edge-Modified Chunks: This category includes 6 chunks with a total of 6 working edges. Dimensions of the 6 specimens are summarized in Table G.6.

The single utilized working edge is bifacial, irregularly chipped, and convex in outline. Maximum depth of chipping is 3 mm, and edge angle is 70°.

Among the 5 retouched edges, 4 are unifacial and 1 bifacial. All exhibit irregular chipping. Edge outlines include rectangular (2), pointed (1), convex (1), and concave-convex (1). Other working edge characteristics are summarized in Table G.7. The convex and concave-convex specimens could easily be included as scrapers in a traditional classificatory system.

Shaped Modified Pieces

Only 3 of the 7 categories of shaped pieces are represented in chert: projectile points, coarsely shaped pieces, and unidentifiable shaped pieces. Edge angles for the various categories are summarized in Table G.6.

Projectile Points: This category includes 3 fragmentary specimens. The tool blank is not identifiable for any of the items. All 3 show even, bifacial retouch which extends across the entire face of the tool. The single fragment with basal area intact has a contracting stem.

Coarsely Shaped Pieces: This category includes 5 specimens, 3 fragmentary and 2 complete. All have flake blanks. Retouch, which is generally irregular, is bifacial in 2 cases, unifacial on the dorsal side in 2 cases, and unifacial on the ventral side in 1 case. One specimen shows some crushing of the edges. Maximum depth of chipping along the retouched edges of individual tools ranges from 9 mm to a single example where the entire face of the blank is altered. Both complete specimens are ovate in overall outline. Dimensions of these 2 specimens are as follows: (1) length, 37 mm; maximum width, 33 mm; maximum thickness, 10 mm; weight, 15 gm; and (2) length, 49 mm; maximum width, 31 mm; maximum thickness, 22 mm; weight, 30 gm.

Unidentifiable Shaped Pieces: This residual category includes 4 specimens, 3 complete and 1 fragmentary. All are made on flakes with both irregular and even retouch occurring. Three are worked unifacially, 1 on the ventral side, 1 on the dorsal side, and 1 on alternate faces. The fourth specimen is bifacial. Maximum depth of chipping along the retouched edges of individual pieces ranges from 4 to 17 mm. One of the complete specimens is ovate in overall outline, and the others are triangular. The ovate specimen measures 40 mm long, 38 mm in maximum width, and 17 mm in maximum thickness, and weighs 32 gm. Dimensions of the two triangular specimens are summarized as follows: (1) length, 29 mm; maximum width, 10 mm; maximum thickness, 7 mm; weight, 2 gm; and (2) length, 29 mm; maximum width, 12 mm; maximum thickness, 7 mm; weight, 2 gm.

PART 2. BASIC DATA USED IN THE VARIABLE-BY-VARIABLE COMPARISON OF SAMPLE LITHIC ASSEMBLAGES

Table G.8. **Variable 1: Raw Material**

	All Obsidian		*All Chert*		*Total*
Assemblage	N	%	N	%	N
PC Str. 1	1,478	82	319	18	1,797
T-9A	74	60	49	40	123
T-9B	109	77	33	23	142
T-11	54	50	55	50	109
T-23	383	88	54	12	437
T-24	1,805	90	211	10	2,016
T-25	346	92	32	8	378
T-37ob	28,430	100	94	0	28,524
T-37fea	45	57	34	43	79
S-39	333	69	152	31	485

Table G.9. **Variable 2: General Assemblage Composition, Obsidian**

	All Modified Pieces		*Unmodified Blades*		*Debitage and Cores*		*Total*
Assemblage	N	%	N	%	N	%	N
PC Str. 1	198	13	942	64	338	23	1,478
T-9A	29	39	30	41	15	20	74
T-9B	41	38	46	42	22	20	109
T-11	25	46	20	37	9	17	54
T-23	105	27	176	46	102	27	383
T-24	59	3	1,060	59	686	38	1,805
T-25	150	43	133	38	63	18	346
T-37ob	49	0	15,121	53	13,260	47	28,430
T-37fea	5	11	24	53	16	36	45
S-39	154	46	82	25	97	29	333

Table G.10. **Variable 3: General Assemblage Composition, Chert**

	All Modified Pieces		*Debitage and Cores*		*Total*
Assemblage	N	%	N	%	N
PC Str. 1	17	5	302	95	319
T-9A	3	6	46	94	49
T-9B	5	15	28	85	33
T-11	3	5	52	95	55
T-23	4	7	50	93	54
T-24	14	7	197	93	211
T-25	10	31	22	69	32
T-37ob	4	4	90	96	94
T-37fea	3	9	31	91	34
S-39	33	22	119	78	152

Table G.11. **Variable 4: Lithic Workshop Identifiers**

	Obsidian								*Chert*				
	Unmodified Blades		*Cores*		*General Debitage*		*Blade Workshop Identifiers*[a]		*Cores*		*Debitage*		*Total*
Assemblage	N	%	N	%	N	%	N	%	N	%	N	%	N
PC Str. 1	942	60	5	0	266	17	67	4	8	0	294	19	1,582
T-9A	30	33	1	1	12	13	2	2	0	0	46	51	91
T-9B	46	48	0	0	14	15	8	8	4	4	24	25	96
T-11	20	25	0	0	7	9	2	2	0	0	52	64	81
T-23	176	54	1	0	72	22	29	9	0	0	50	15	328
T-24	1,060	55	12	0	575	30	99	5	10	0	187	10	1,943
T-25	133	61	1	0	43	20	19	9	2	1	20	9	218
T-37ob	15,121	53	13	0	5,716	20	7,531	26	6	0	84	1	28,471
T-37fea	24	34	0	0	10	14	6	9	1	1	30	42	71
S-39	82	28	0	0	72	24	25	8	11	4	108	36	298

[a]Crested blades, core platform rejuvenation flakes, core recovery flakes.

Table G.12. **Variable 5: General Tool Classes**

	Unmodified Blades		*Edge-Modified Pieces*		*Shaped Modified Pieces*		*Total*
Assemblage	N	%	N	%	N	%	N
PC Str. 1	942	81	149	13	66	6	1,157
T-9A	30	48	30	48	2	3	62
T-9B	46	50	42	46	4	4	92
T-11	20	42	22	46	6	13	48
T-23	176	62	87	31	22	8	285
T-24	1,060	94	39	3	34	3	1,133
T-25	133	45	134	46	26	9	293
T-37ob	15,121	100	33	0	20	0	15,174
T-37fea	24	75	7	22	1	3	32
S-39	82	30	151	56	36	13	269

Table G.13. **Variable 6: Modified Tool Classes**

	Edge-Modified Blades		*Other Edge-Modified Pieces*[a]		*Shaped Modified Pieces*		*Total*
Assemblage	N	%	N	%	N	%	N
PC Str. 1	75	35	74	34	66	31	215
T-9A	27	84	3	9	2	6	32
T-9B	27	59	15	33	4	9	46
T-11	18	64	4	14	6	21	28
T-23	70	64	17	16	22	20	109
T-24	9	12	30	41	34	47	73
T-25	87	54	47	29	26	16	160
T-37ob	17	32	16	30	20	38	53
T-37fea	3	38	4	50	1	13	8
S-39	101	54	50	27	36	19	187

[a]Flakes, chunks, cores.

Table G.14. Variable 7: Shaped Tool Categories

Assemblage	Projectile Points		Drill-like Pieces		Wedge-shaped Pieces		Coarsely Shaped Pieces		Finely Retouched Blades		Other Shaped Blades		Other Unidentifiable Shaped Pieces		Total
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
PC Str. 1	21	32	2	3	5	8	19	29	4	6	10	15	5	8	66
T-9A[a]	1	—	0	—	0	—	1	—	0	—	0	—	0	—	2
T-9B[a]	2	—	0	—	0	—	2	—	0	—	0	—	0	—	4
T-11[a]	1	—	0	—	0	—	4	—	0	—	1	—	0	—	6
T-23	0	0	0	0	1	5	14	64	3	14	1	5	3	14	22
T-24	9	26	2	6	3	9	5	15	4	12	7	21	4	12	34
T-25	6	23	1	4	3	12	11	42	4	15	1	4	0	0	26
T-37ob	2	10	3	15	1	5	6	30	1	5	3	15	4	20	20
T-37fea	0	—	0	—	0	—	1	—	0	—	0	—	0	—	1
S-39	0	0	2	6	0	0	24	67	7	19	2	6	1	3	36

[a]Percentages omitted because of small sample size.

Table G.15. Variable 8: Edge-Modified Pieces, Working Edge Types

Assemblage	Edge-Modified Blades						Other Edge-Modified Pieces[a]						Total
	Utilized		Retouched		Ground		Utilized		Retouched		Ground		
	N	%	N	%	N	%	N	%	N	%	N	%	N
PC Str. 1	114	57	0	0	8	4	45	22	31	15	3	1	201
T-9A	43	91	0	0	0	0	3	6	1	2	0	0	47
T-9B	43	70	0	0	0	0	12	20	6	10	0	0	61
T-11	24	67	3	8	3	8	5	14	1	3	0	0	36
T-23	117	79	1	1	7	5	15	10	9	6	0	0	149
T-24	12	24	0	0	1	2	17	33	21	41	0	0	51
T-25	140	65	4	2	6	3	52	24	10	5	3	1	215
T-37ob	25	57	2	5	0	0	10	23	7	16	0	0	44
T-37fea	5	56	0	0	0	0	2	22	2	22	0	0	9
S-39	92	36	2	1	89	35	30	12	17	7	24	9	254

[a]Flakes, chunks, cores.

Table G.16. Variable 9: Edge-Modified Pieces, Placement of Chipping

Assemblage	Edge-Modified Blades				Other Edge-Modified Pieces				Total
	Unifacial		Bifacial		Unifacial		Bifacial		
	N	%	N	%	N	%	N	%	N
PC Str. 1	60	32	54	28	62	33	14	7	190
T-9A	15	32	28	60	1	2	3	6	47
T-9B	9	15	34	56	8	13	10	16	61
T-11	2	6	25	76	5	15	1	3	33
T-23	39	27	79	56	17	12	7	5	142
T-24	8	16	4	8	35	70	3	6	50
T-25	38	18	106	51	41	20	21	10	206
T-37ob	16	36	11	25	16	36	1	2	44
T-37fea	2	22	3	33	4	44	0	0	9
S-39	41	29	53	38	35	25	12	9	141

Table G.17. Variable 10: Edge-Modified Pieces, Working Edge Angles

	Utilized Blades				All Other Utilized and Retouched Edge-Modified Pieces						
	30–55°		60–95°		30–55°		60–80°		85–105°		Total
Assemblage	N	%	N	%	N	%	N	%	N	%	N
PC Str. 1	55	29	59	31	10	5	43	23	23	12	190
T-9A	30	64	13	28	1	2	2	4	1	2	47
T-9B	38	62	5	8	7	11	7	11	4	7	61
T-11	21	64	3	9	3	9	5	15	1	3	33
T-23	77	54	40	28	1	1	19	13	5	4	142
T-24	3	6	9	18	7	14	20	40	11	22	50
T-25	101	49	39	19	15	7	36	17	15	7	206
T-37ob	8	18	17	39	2	5	11	25	6	14	44
T-37fea	4	44	1	11	0	0	2	22	2	22	9
S-39	65	46	27	19	9	6	26	19	14	10	141

Table G.18. Variable 11: Edge-Modified Blades, Working Edge Shapes

	Straight		Convex		Concave		Other		Total
Assemblage	N	%	N	%	N	%	N	%	N
PC Str. 1	68	60	15	13	23	20	8	7	114
T-9A	27	63	10	23	4	19	2	5	43
T-9B	29	67	7	16	2	5	5	12	43
T-11	20	74	3	11	1	4	3	11	27
T-23	61	52	20	17	16	14	21	18	118
T-24	8	67	2	17	0	0	2	17	12
T-25	66	46	24	17	25	17	29	20	144
T-37ob	12	44	4	15	7	26	4	15	27
T-37fea[a]	3	—	1	—	1	—	0	—	5
S-39	37	39	23	24	15	16	19	20	94

[a]Percentages omitted because of small sample size.

Table G.19. Variable 12: Other Edge-Modified Pieces,[a] Working Edge Shapes

	Straight		Convex		Concave		Other		Total
Assemblage	N	%	N	%	N	%	N	%	N
PC Str. 1	10	13	33	43	12	16	21	28	76
T-9A[b]	0	—	2	—	0	—	2	—	4
T-9B	5	28	7	39	2	11	4	22	18
T-11[b]	1	—	2	—	2	—	1	—	6
T-23	7	29	11	46	1	4	5	21	24
T-24	9	24	20	53	5	13	4	11	38
T-25	4	6	34	55	9	15	15	24	62
T-37ob	1	6	4	24	8	47	4	24	17
T-37fea	0	—	2	—	1	—	1	—	4
S-39	5	11	21	45	9	19	12	26	47

[a]Flakes, chunks, cores.
[b]Percentages omitted because of small sample size.

APPENDIX H

Río Amatzinac Survey: Site Descriptions

KENNETH G. HIRTH

This appendix provides detailed descriptions of the Formative period sites located during the Río Amatzinac Survey (Chapter 21). The sites are presented in numerical order according to the site numbers assigned by the survey. Each description includes the following information: RAS site number, site name (where applicable), exact location using latitude and longitude, location with respect to modern towns and roads, natural setting, modern utilization, and prehispanic occupation. For the Early, Middle, and Late Formative, archaeological remains are described and a settlement classification is given for the site (Table 21.3). Post–Late Formative components are briefly mentioned. Sites located in the survey which lack any Formative occupation are not included in this appendix. Analyses of these later periods are provided elsewhere (Hirth 1974; 1980).

RAS-1 (Tetla)
Latitude: 18° 40′ 33.4″
Longitude: 98° 45′ 41.75″

Location: Southeast of the village of Chalcatzingo, on the lower slopes of the north and east sides of the Cerro Delgado, between the *cerro* and the barranca of the Río Amatzinac.

Natural setting: The site lies in the High Hills topographic zone. The vegetation zone is a mix of Pithecellobium Woodland, Barranca, and Interior Valley Cerros plant types. Due to erosion the soil on the hillslope areas of Tetla is shallow, but it increases to several meters of depth on the flat land below the slopes.

Based on evidence of occupation clustering, Tetla has been divided into three subareas: RAS-1A along the north of the hill, RAS-1B at the far south of the zone, and RAS-1C, the central area of the zone.

Modern utilization: The talus slopes are used for grazing, while the lower portion of the site is terraced and planted in maize during the rainy season. All cultivation is with teams of oxen.

Middle Formative Occupation: Archaeological remains: Middle Formative ceramics were recovered from the surface of some RAS-1A terraces, indicating that these terraces are probably contemporaneous with terracing on the main site zone of Chalcatzingo. Late Classic and Early and Middle Postclassic ceramics are found across these terraces as well. Middle Formative sherds were also recovered at the south end of Tetla, RAS-1B. At both RAS-1A and -1B the Cantera phase materials are twice as abundant as those of the Barranca phase.

Classification: Two Barranca phase Hamlets, two Cantera phase Hamlets.

Late Formative Occupation: Archaeological remains: Late Formative material is lightly distributed across a 4 ha area of RAS-1C. The site has been heavily disturbed by heavy occupation during the Postclassic, and field clearing has swept most of the fields clean of rubble from civic or residential architecture.

Classification: Hamlet.

Other Occupations: Terminal Formative Hamlet, Early Classic Small Village, Late Classic Large Village (Hirth 1980); Early Postclassic Small Village.

RAS-5
Latitude: 18° 41′ 51.77″
Longitude: 98° 46′ 8.35″

Location: Just south of the Cuautla-Izúcar highway, north-northeast of the present village of Chalcatzingo.

Natural setting: The site is 355 m east of the Río Amatzinac between the 1,350–1,400 m contour intervals. The topographical zone is Flat Plains, and the vegetation zone is Huizache Grassland. The soil appears shallow but is high in humus. An impermanent drainage lies 125 m to the east.

Modern utilization: The area was fallow when surveyed and had not been planted for several years. Nopal cacti grow on top of the mounds at the site and are collected by farmers from Jantetelco.

Middle Formative Occupation: Archaeological remains: Only a few Barranca phase sherds were located. Surface concentrations of material were extremely low, since the site had not been plowed for a number of years. Architecture at this site is from later periods, principally Postclassic.

Classification: Barranca phase Isolated Residence.

Other Occupations: Classic Isolated Residence (Hirth 1980), Early Postclassic Isolated Residence, Late Postclassic Small Village.

RAS-13
Latitude: 18° 41′ 45.09″
Longitude: 98° 45′ 3.34″

Location: Northeast of the village of Chalcatzingo and southeast of the village of Jantetelco, north of the Cuautla-Izúcar highway.

Natural setting: The site lies at the base of the Cerro Jantetelco at the 1,400 m contour interval. The topographic zone is Low Mountains, and the vegetation zones are Interior Valley Cerros and Huizache Grassland. The closest permanent water source is the Barranca de los Santos 865 m to the east. The soil is shallow and seems very poor for agriculture. Rock rubble is quite abundant.

Modern utilization: Rainfall agriculture of maize covers about 40 percent of the site area. A hacienda period irrigation system running east to west passes just south of the site.

Middle Formative Occupation: Archaeological remains: This site is a simple ceramic dispersion with some associated architectural features. A probable Middle Formative water diversion system was noted which seems to be aimed at diverting slope runoff away from the major area of habitation. Our surface collections were extremely poor, and for the Formative period only Cantera phase artifacts were recovered.

Two low mounds of a probable ball court occurred at the site. These mounds are extremely destroyed due to recent plowing. Each mound is ca. 15 × 5 × 1 m in size. Judging from the architecture, the ball court is probably Late Postclassic.

Classification: Cantera phase Isolated Residence. Although the site may have been larger, our surface collections did not allow us to determine this.

Other Occupation: Late Postclassic Hamlet.

RAS-14 (Las Pilas)

Latitude: 18° 41′ 16.7″

Longitude: 98° 47′ 56.78″

Location: Within the grounds of the swimming spa Las Pilas in the northern part of the town of Jonacatepec.

Natural setting: The site is located at a spring between the 1,350 and 1,400 m contour intervals. The topographical zone is Flat Plains, and the vegetation zone is Pithecellobium Woodland. The site is 1,485 m east of the Río Frío. An impermanent *barranquilla* runs along the eastern edge of the site, and the Río Amatzinac lies 3.6 km to the east. The soil is of variable depth in this area, ranging from 2.5 m around the spring to 1.5 m east of the site.

Modern utilization: The main site area is surrounded by a modern swimming spa. Outlying portions of the site on the north and east sides are under cultivation. The area is irrigated, and corn, beans, squash, and tomatoes are grown.

Early Formative Occupation: Archaeological remains: No Amate phase debris was found on the surface, but some was recovered in two test pits during July 1973 by excavators from the Centro Regional de Morelos y Guerrero, INAH, and the Universidad de las Américas.

Classification: Hamlet.

Middle Formative Occupation: Archaeological remains: The heaviest concentrations of material are in the area of the spring. Cantera phase diagnostics predominate. Middle Formative artifacts were found to the west, southwest, and south of the present swimming pools. The INAH excavations west of the swimming spa encountered Middle Formative material in a mixed stratigraphic content, including both Barranca and Cantera phase materials. A Cantera phase double-loop handle censer was found as an in situ offering against the base of a small platform structure. Superimposed directly over the top of this platform was a small Classic platform mound.

Classification: Barranca phase Hamlet, Cantera phase Small Village.

Late Formative Occupation: Archaeological remains: Late Formative debris was fairly light, although marked buildups were noted which looked like in situ residence areas. Late Formative materials were also recovered in one test pit from the 1973 excavations. Materials from this pit as well as from Chalcatzingo were important for the identification of key diagnostics used in phasing Late Formative settlement materials.

Classification: Small Village.

Other Occupations: Terminal Formative Small Village, Early Classic Small Village, Late Classic Large Village (Hirth 1980), Early Postclassic Hamlet, Late Postclassic Hamlet.

RAS-15

Latitude: 18° 41′ 50.1″

Longitude: 98° 47′ 51.77″

Location: Due north of Jonacatepec along the Chalcatzingo access road.

Natural setting: The site is located just below the 1,400 m contour interval in the Flat Plains topographical zone 1.8 km east of the Río Frío. The vegetation zone is Pithecellobium Woodland.

Modern utilization: Rainfall maize agriculture with oxen plowing.

Middle Formative Occupation: Archaeological remains: A simple ceramic dispersion covered 0.25 ha. The materials belong to the Cantera phase.

Classification: Cantera phase Isolated Residence.

Other Occupation: Late Postclassic Isolated Residence (Hirth 1980).

RAS-16

Latitude: 18° 41′ 6.68″

Longitude: 98° 48′ 51.77″

Location: South of the town San Gabriel Amacuitlapilco.

Natural setting: This site is in the Flat Plains topographic zone on the 1,425 m contour interval. Principal resources which would have been available would have been from the Pithecellobium Woodland. The soil is less than 1 m in thickness, and there is a high concentration of rock rubble in the fields.

Modern utilization: The area is irrigated and under constant cultivation. Field preparation is by oxen. The crops growing at the time of the survey included maize, beans, squash, peanuts, and tomatoes.

Late Formative Occupation: Archaeological remains: Late Formative materials are very lightly scattered over less than 0.5 ha mixed in with Postclassic materials. No clear indications of permanent settlement were evident other than a fairly complete range of utilitarian ceramics.

Classification: Isolated Residence.

Other Occupations: Early Postclassic Isolated Residence, Late Postclassic Isolated Residence.

RAS-18

Latitude: 18° 41′ 15.03″

Longitude: 98° 48′ 55.11″

Location: Along the 1,425 m contour interval due south of San Gabriel Amacuitlapilco.

Natural setting: The site is in the Pithecellobium Woodland vegetation zone and the Flat Plains topographic zone. The soil is very shallow, not exceeding 50 cm. The Río Frío-Tepalcingo is less than 500 m to the west.

Modern utilization: This area is cultivated during the rainy season, and the fields are prepared using oxen. Crops include maize, beans, and squash. A small section of the site was uncultivated and used for grazing at the time of the survey.

Late Formative Occupation: Archaeological remains: A light trace of Late Formative material was discovered. There was no evidence of previous architecture.

Classification: Isolated Residence.

Other Occupation: Late Postclassic Isolated Residence.

RAS-19

Latitude: 18° 42′ 0″

Longitude: 98° 48′ 23.38″

Location: In the irrigated fields northeast of San Gabriel Amacuitlapilco.

Natural setting: This site is in the Pithecellobium Woodland vegetation zone along the 1,400 m contour interval. It is in the north Flat Plains topographic zone 650 m east of the Río Frío.

Modern utilization: Principal crops include maize and peanuts. Terraces are evident but appear to be modern. Field preparation is with teams of oxen.

Late Formative Occupation: Archaeological remains: Occupation debris is scattered over 1 ha. The fields have been cleared of a substantial amount of rubble. Two low platforms can still be seen, although they appear to date from the Postclassic. A Late Formative phase occupation is indicated by marked build-ups of ceramics and chipped and ground stone artifacts.

Classification: Hamlet.

Other Occupation: Late Postclassic Hamlet.

RAS-20 (Campana de Oro)

Latitude: 18° 42′ 41.75″

Longitude: 98° 48′ 8.35″

Location: Directly north of San Gabriel Amacuitlapilco.

Natural setting: This site is on the east bank of the Río Frío, at the 1,400 m contour interval. Springs can be found in the barranca below the site. The vegetation community is the Pithecellobium Woodland directly adjacent to the Barranca zone. The topographic zone is Flat Plains.

Modern utilization: Rainfall cultivation of corn, beans, squash, and peanuts is practiced. The ground is prepared for cultivation by both oxen and tractor plowing. Terraces were noted on the west side of the Río Frío. What appear to be a hacienda period drainage system, modern dam, and reservoir are located in the adjacent barranca.

Early Formative Occupation: Archaeological remains: Amate phase material was located in two areas of the site. Several sherds and Type D figurine heads were found on the south end of the site, and a thin scatter was found on the north end. A few other sherds were collected from a looter's pit in one of the mounds.

Classification: Hamlet.

Middle Formative Occupation: Archaeological remains: For this time period there is a fairly heavy ceramic dispersion within an architectural complex. The exact nature of the Middle Formative debris is difficult to determine because of the heavy Late/Terminal Formative and Early/Middle Postclassic occupations. One or perhaps two Middle Formative platform structures existed at the site. One of these was in the process of being removed so that the field could be plowed with a tractor. The fill of the other could be sampled from a looter's pit on the northeast side. Both the fill and debris from the top of the mound were Cantera phase. It is possible that two separate communities existed, with moderate to light settlement between them. The two highest densities of Middle Formative material are on the southwest side of the site by the two mound structures, and on the far east side.

Classification: Barranca phase Small Village, Cantera phase Large Village.

Late Formative Occupation: Archaeological remains: At least five mounds date to this period based on the clustering of associated debris, but it is hard to date them on surface remains alone. The heaviest concentrations of material were not in the mound area but on the north and northeast portions of the site. Field clearing in these areas has greatly reduced the amount of clustered residential debris visible on the surface, but it was evident that the residential area covered approximately 30 ha. A wide range of activities was evident from the surface collections. One possible chipped stone workshop was located. "Kiln wasters" were found in three separate parts of the site, indicating ceramic manufacture. A large array of plain and decorated ceramic types was located, including a small number of imported decorated wares from the Valley of Mexico and the Puebla-Oaxaca area.

Classification: Regional Center.

Other Occupations: Terminal Formative Small Village, Early Classic Small Village, Late Classic Hamlet (Hirth 1980), Early Postclassic Small Village, Late Postclassic Large Village.

RAS-21

Latitude: 18° 42′ 33.4″

Longitude: 98° 48′ 31.73″

Location: West of the Río Frío north of San Gabriel Amacuitlapilco.

Natural setting: The topographic zone is Flat Plains and the vegetation zone is Pithecellobium Woodland. Site elevation is 1,400 m. The closest permanent water source is the Río Frío and its spring seepages, 175 m to the east.

Modern utilization: The area is cultivated during the rainy season, using oxen for plowing. Crops include maize and beans.

Late Formative Occupation: Archaeological remains: A light scattering of Late Formative material was found. No architectural structures were located although ground and chipped stone lithics were recovered.

Classification: Isolated Residence.

Other Occupation: Early Postclassic Isolated Residence.

RAS-22 (Amacuitlapilco)

Latitude: 18° 41′ 46.76″

Longitude: 98° 48′ 43.72″

Location: Directly in and under the modern village of San Gabriel Amacuitlapilco.

Natural setting: This site is located at the 1,400 m contour interval on the Río Frío, directly on an east-west crossing through the barranca. The topographical zone is Flat Plains, and the vegetation zone is Pithecellobium Woodland. The site is also within 200 m of both the Barranca and the Huizache Grassland zones.

Modern utilization: Rainfall maize agriculture is practiced in local house plots. Several of the fields to the south of the site are built on terraces.

Middle Formative Occupation: Archaeological remains: Middle Formative remains consist of a simple ceramic dispersion northwest of the site's Late Postclassic mounds. Most of the site is undoubtedly covered by the town and only a moderate amount of "backyard" searching was possible. It is estimated that the site extends at least 150–200 m to the east.

Classification: Cantera phase Hamlet.

Late Formative Occupation: Archaeological remains: Late Formative materials are distributed over about 5 ha, and there are clear indications of permanent settlement. Several good concentrations of material were found with fire-cracked rock, each with 4–6 ground stone artifacts. Both decorated and plain ceramics were present.

Other Occupations: Terminal Formative Hamlet, Early Classic Hamlet, Late Classic Hamlet (Hirth 1980), Early Postclassic Hamlet, Late Postclassic Large Village.

RAS-25

Latitude: 18° 42′ 30.06″

Longitude: 98° 51′ 8.35″

Location: On the slopes of a hill northwest of the town of Tlayca.

Natural setting: The topographic classification is Irregular Plains, Slight Relief, and the vegetation zone is Huizache Grassland. Site elevation is 1,400 m.

Modern utilization: The area is cultivated during the rainy season, maize and sorghum being the principal crops. Field preparation on this sloping area is performed with oxen.

Late Formative Occupation: Archaeological remains: A light scatter of domestic ceramics was identified. The area of the site is less than 0.5 ha. No structures or construction debris were associated with this material.

Classification: Isolated Residence.

Other Occupations: Classic Isolated Residence (Hirth 1980), Late Postclassic Isolated Residence.

RAS-31

Latitude: 18° 40′ 15.03″

Longitude: 98° 48′ 21.71″

Location: About 3/4 km south of Jonacatepec and 300 m west of the Jonacatepec-Tepalcingo road.

Natural setting: This site lies between the 1,300 and 1,350 m contour intervals, in the Flat Plains topographic zone and the Pithecellobium Woodland vegetation zone. It is 295 m east of a small impermanent drainage and 1 km from permanent water.

Modern utilization: Maize agriculture.

Middle Formative Occupation: Archaeological remains: The site is a simple dispersion of residential debris. No structures were found. Middle Formative diagnostics were scarce.

Classification: Cantera phase isolated Residence.

Late Formative Occupation: Archaeological remains: A variety of Late Formative material was scattered over 1 ha. One mound structure was found which appears to date to this period. Permanent residence is clearly indicated by the marked concentrations of ceramic, lithic, and construction debris.

Classification: Hamlet.

Other Occupations: Early Postclassic Hamlet, Late Postclassic Small Village.

RAS-34

Latitude: 18° 42′ 41.75″

Longitude: 98° 47′ 45.09″

Location: Directly adjacent to the east side of the Axochiapan-Zacualpan highway.

Natural setting: This site is in the Pithecellobium Woodland zone on the 1,400 m contour interval. It is in the Flat Plains topographic zone 880 m east of the Río Frío.

Modern utilization: The area is irrigated and planted year round in maize. Cultivation is with teams of oxen.

Late Formative Occupation: Archaeological remains: A light scatter of Late Formative materials was found across 0.75 ha. There are no buildups indicating remaining structures. Ceramic collections include an assortment of plain and decorated wares.

Classification: Isolated Residence.

Other Occupations: Terminal Formative Isolated Residence (Hirth 1980), Early Postclassic Hamlet, Late Postclassic Hamlet.

RAS-35

Latitude: 18° 42′ 51.77″

Longitude: 98° 47′ 22.38″

Location: Southwest of Jantetelco along the Cuautla-Izúcar highway.

Natural setting: The site lies in the Pithecellobium Woodland zone, more than 1 km from the nearest permanent water source. The topographic zone is Flat Plains, and elevation is 1,400 m.

Modern utilization: The area is cultivated during the rainy season, and chilies were growing at the time of the survey. Field preparation is with oxen.

Late Formative Occupation: Archaeological remains: Late Formative materials are mixed with Late Postclassic materials. There is a light scattering of debris over a little less than 0.5 ha, and there was no evidence of construction.

Classification: Isolated Residence.

Other Occupation: Late Postclassic Isolated Residence.

RAS-36

Latitude: 18° 42′ 59.99″

Longitude: 98° 47′ 50.1″

Location: Just south of Amayuca.

Natural setting: The vegetation zone is Pithecellobium Woodland, the topographic zone is Flat Plains, and site elevation is 1,425 m. The Río Frío is 310 m to the west.

Modern utilization: The area is farmed during the rainy season, with use of oxen to prepare the fields. Crops include maize and beans.

Late Formative Occupation: Archaeological remains: A light trace of Late Formative materials was found. There was no evidence for architectural structures. The Formative material was mixed with Late Postclassic debris.

Classification: Isolated Residence.

Other Occupation: Late Postclassic Hamlet overlaps with the materials from RAS-38.

RAS-37

Latitude: 18° 42′ 58.78″

Longitude: 98° 47′ 35.07″

Location: Just south of the intersection of the Cuautla-Izúcar and Zacualpan-Axochiapan highways.

Natural setting: Located in the Pithecellobium Woodland, the site's topographic classification is Flat Plains. Site elevation is 1,425 m. The Río Frío is the closest permanent water source and is located 685 m to the west.

Modern utilization: Rainfall agriculture is practiced, using teams of oxen to prepare the field. Crops include maize, beans, and squash.

Late Formative Occupation: Archaeological remains: A very light scattering of Late Formative material was found, and there is evidence for small habitation units. This appears to be a single-component site.

Classification: Isolated Residence.

RAS-44

Latitude: 18° 43′ 5.01″

Longitude: 98° 46′ 5.01″

Location: East of Jantetelco.

Natural setting: This site is in the Huizache Grassland vegetation zone. The inhabitants also had access to the Barranca zone, since the west side of the site was directly adjacent to the Río Amatzinac. The topographic zone is Flat Plains, and site elevation is 1,400 m.

Modern utilization: No agricultural activities occur in this area, although in adjacent areas to the east rainfall agriculture is practiced. The land slopes into the barranca at this point.

Late Formative Occupation: Archaeological remains: Only Late Formative Plain wares were recovered. There is a light scatter of material, with no clear indications of habitation structures. This appears to be a single-component site.

Classification: Isolated Residence.

RAS-45

Latitude: 18° 43′ 11.69″

Longitude: 98° 46′ 48.43″

Location: In a solitary field due west of Jantetelco's northern *barrio*.

Natural setting: This site lies in the northern Pithecellobium Woodland zone between the 1,450 and 1,400 m contour intervals. The topographic zone is Flat Plains. It is roughly 1 km from the closest permanent water source, the Río Amatzinac. Erosion is slight, as is surface rubble.

Modern utilization: Maize, beans, and squash are grown during the rainy season, with use of oxen for plowing. Irrigation canals pass within 150 m to the west.

Early Formative Occupation: Archaeological remains: Only a trace of Amate phase materials were recovered in the surface collections. There were no indications that this was a permanently occupied settlement.

Classification: Isolated Residence.

Middle Formative Occupation: Archaeological remains: During the Middle Formative the site is characterized as a simple ceramic dispersion of low density over an area of 0.45 ha. No structures were noted.

Classification: Cantera phase Isolated Residence.

Other Occupations: Early Classic Isolated Residence, Late Classic Isolated Residence (Hirth 1980), Early Postclassic Isolated Residence, Late Postclassic Isolated Residence.

RAS-46

Latitude: 18° 43′ 46.76″

Longitude: 98° 46′ 23.38″

Location: North of Jantetelco and 455 m from the Río Amatzinac.

Natural setting: The topographic zone is Flat Plains, and the vegetation zone is Pithecellobium Woodland. Elevation is 1,450 m.

Modern utilization: The area is irrigated and under cultivation, crops including maize, beans, and squash. The field is prepared with teams of oxen.

Late Formative Occupation: Archaeological remains: A trace of Late Formative materials was found. Surface remains were obscured by a heavy Postclassic occupation of the site.

Classification: Isolated Residence.

Other Occupations: Early Classic Hamlet, Late Classic Hamlet (Hirth 1980), Early Postclassic Small Village (Hirth 1977), Late Postclassic Hamlet.

RAS-48

Latitude: 18° 43′ 25.05″

Longitude: 98° 46′ 16.7″

Location: 1.5 km due north of the old road to Amilcingo. To the south is the old northern *barrio* of Jantetelco.

Natural setting: This site lies between the 1,400 and 1,450 m contour intervals, in the Pithecellobium Woodland vegetation zone. The topographic zone is Flat Plains. The site is just 80 m from the Río Amatzinac, just above the slightly rolling barranca edge. The site's inhabitants would have had easy access to the Barranca vegetation zone.

Modern utilization: Rainfall agriculture of maize, beans, squash, and peanuts is practiced on the west side of the site. The land is plowed using oxen.

Middle Formative Occupation: Archaeological remains: The site is a simple ceramic dispersion across portions of three fields west of some Late Postclassic mounds. The extent of Middle Formative materials was difficult to ascertain due to associated Late Postclassic debris, but it covered at least 3.3 ha. No architectural features were noted.

Classification: Cantera phase Hamlet.

Late Formative Occupation: Archaeological remains: Late Formative materials are scattered over approximately 9 ha. Concentrations seem light because of the heavy Postclassic occupation debris. A few marked buildups of material were found associated with fire-cracked rock and probable rock construction material. A wide range of both plain and decorated wares were recovered.

Classification: Hamlet.

Other Occupations: Terminal Formative Hamlet, Early Classic Hamlet, Late Classic Hamlet (Hirth 1980), Early Postclassic Small Village, Late Postclassic Regional Center.

RAS-49

Latitude: 18° 44′ 6.68″

Longitude: 98° 45′ 53.44″

Location: In the northern valley, southeast of the town of Huazulco.

Natural setting: The site is situated in the Huizache Grassland vegetation zone, about 45 m east of the Río Amatzinac. The topographic zone is Flat Plains, and the area is sharply dissected by deep barranca channels. Elevation is 1,450 m.

Modern utilization: The area is planted during the rainy season, maize being the only crop. The field is prepared by oxen.

Late Formative Occupation: Archaeological remains: This appears to be a single-component site. Materials from this period are dispersed over a relatively small area. There are indications of small housemounds at the site, although field clearing has begun to erase the remaining surface indications.

Classification: Isolated Residence.

RAS-50

Latitude: 18° 44′ 21.71″

Longitude: 98° 45′ 48.43″

Location: Southeast of Amilcingo.

Natural setting: This site lies just above the 1,450 m contour interval due south of RAS-53. The topographical zone is Flat Plains. The vegetation zone is Huizache Grassland with access to the Barranca zone. The site is 150 m east of the Río Amatzinac on the Barranquilla de las Tres Escaleras. It is situated between two north-south running barrancas where they merge with the Río Amatzinac. Soil is shallow, not exceeding 1 m.

Modern utilization: The land is used for grazing and rainfall maize agriculture. The field is plowed with oxen.

Middle Formative Occupation: Archaeological remains: This site is a simple ceramic dispersion. It is located adjacent to one of the few places where the deep Amatzinac barranca can be crossed. The earliest material found here dates to the Cantera phase.

Classification: Cantera phase Isolated Residence.

Late Formative Occupation: Archaeological remains: Late Formative materials are scattered over about 1 ha. Mounds at the site probably date to the subsequent Terminal Formative period.

Classification: Isolated Residence.

Other Occupations: Terminal Formative Small Village (Hirth 1980), Early Postclassic Hamlet, Late Postclassic Hamlet.

RAS-51

Latitude: 18° 44′ 46.76″

Longitude: 98° 46′ 0″

Location: East of and adjacent to the modern village of Amilcingo.

Natural setting: This site lies 200 m east of the Río Amatzinac at a point of access across the barranca. The topographical zone is Irregular Plains, Slight Relief, and the vegetation zone is Huizache Grassland. The elevation is 1,450 m.

Modern utilization: Rainfall maize agriculture is practiced.

Middle Formative Occupation: Archaeological remains: The site is a simple ceramic dispersion of Cantera phase materials. Late Postclassic debris impeded our determining a totally accurate estimate of site limits. No structures were recorded.

Classification: Cantera phase Isolated Residence.

Other Occupations: Terminal Formative Isolated Residence (Hirth 1980), Early Postclassic Isolated Residence, Late Postclassic Hamlet when combined with the materials which form a continuous distribution with RAS-52.

RAS-52

Latitude: 18° 44′ 38.41″

Longitude: 98° 45′ 48.43″

Location: East of town of Amilcingo.

Natural setting: The site is at the juncture of two barrancas west of the Barranca de las Tres Pilates, just above the 1,450 m contour interval. The topographical zone is Irregular Plains, Slight Relief, and the vegetation zone is Huizache Grassland. The site is 245 m east of the Río Amatzinac.

Modern utilization: Rainfall maize agriculture is practiced, using oxen for plowing.

Middle Formative Occupation: Archaeological remains: This site consists of a mound and associated ceramic dispersion. The mound appears to be the remains of a small residence. Rubble was moderate. The ceramic dispersion was light north of the mound and covered less than 0.25 ha.

Classification: Cantera phase Isolated Residence.

Other Occupations: Terminal Formative Isolated Residence (Hirth 1980), Late Postclassic Hamlet when combined with RAS-51.

RAS-53

Latitude: 18° 44′ 25.05″

Longitude: 98° 45′ 48.43″

Location: Southeast of RAS-52.

Natural setting: The site is located between and at the juncture of two barrancas at the 1,450 contour interval. It is 25 m from the Río Amatzinac. The topographical zone is Irregular Plains, Slight Relief, and the vegetation zone is Huizache Grassland. Erosion is moderate in this area.

Modern utilization: Rainfall maize agriculture.

Middle Formative Occupation: Archaeological remains: There was only a trace of Barranca phase material. During the Cantera phase, a simple ceramic dispersion covered over 1 ha. No structures were noted.

Classification: Barranca phase Isolated Residence, Cantera phase Isolated Residence.

Other Occupations: Terminal Formative Hamlet, Early Classic Isolated Residence.

RAS-54

Latitude: 18° 42′ 33.4″

Longitude: 98° 46′ 35.07″

Location: Due south of Jantetelco directly adjacent to and north of the Cuautla-Izúcar highway.

Natural setting: This site is 395 m west of the Río Amatzinac within the Pithecellobium Woodland zone, on the 1,400 m contour interval. The topographical zone is Flat Plains.

Modern utilization: Cultivation is restricted to the rainy season. The field is prepared using teams of oxen. Crops include maize, beans, squash, chilies, and tomatoes.

Late Formative Occupation: Archaeological remains: A wide scattering of Late Formative materials was noted. Concentrations were high enough to suggest permanent occupation of the site throughout the period. A variety of both plain and decorated wares were recovered. Because of the dense Postclassic occupation at this site, it was difficult to determine which areas date specifically to this period.

Classification: Hamlet.

Other Occupations: Terminal Formative Isolated Residence (Hirth 1980), Early Postclassic Small Village, Late Postclassic Small Village.

RAS-55

Latitude: 18° 43′ 1.67″

Longitude: 98° 47′ 35.07″

Location: Southeast of the town of Amayuca.

Natural setting: Located in the northern Pithecellobium Woodland vegetation zone. The site's topographic zone is Flat Plains. The Río Frío is 645 m to the west, and site elevation is 1,400 m.

Modern utilization: The area is planted during the rainy season. Crops include maize and beans. Field preparation is with oxen.

Late Formative Occupation: Archaeological remains: This site had a mixed Classic and Postclassic occupation, with traces of material dating to as early as the Late Formative. A good assortment of plainwares was recovered. Some of the material was associated with habitation structures.

Classification: Isolated Residence.

Other Occupations: Classic Isolated Residence (Hirth 1980), Early Postclassic Isolated Residence, Late Postclassic Hamlet combined with RAS-56.

RAS-58

Latitude: 18° 43′ 25.05″

Longitude: 98° 47′ 28.39″

Location: East of Amayuca along the Zacualpan-Axochiapan highway.

Natural setting: The site is situated in the Flat Plains topographic zone along the 1,400 m contour interval in the northern portion of the valley. The principal vegetation zone is Pithecellobium Woodland. The closest source of permanent water is 0.75 km to the west.

Modern utilization: Tomatoes and chilies were planted in this field at the time of our survey.

Early Formative Occupation: Archaeological remains: Traces of Amate phase occupation were found. A few sherds and one D2 figurine were recovered along the roadway which passes the site.

Classification: Isolated Residence.

Late Formative Occupation: Archaeological remains: Late Formative materials were thinly scattered over a 1.5 ha area. The remains consisted primarily of plain wares. Individual residence units could not be identified.

Classification: Isolated Residence.

Other Occupations: Terminal Formative Isolated Residence, Classic Isolated Residence (Hirth 1980), Early Postclassic Hamlet, Late Postclassic Hamlet.

RAS-62 (Huazulco)

Latitude: 18° 44′ 25.05″

Longitude: 98° 47′ 20.04″

Location: Due west of the town of Amilcingo and the Hueyapan-Axochiapan highway.

Natural setting: The site is in the northern Pithecellobium Woodland zone between the 1,500 and 1,450 m contour intervals. The topographic zone is Flat Plains. The closest permanent water source is the Río Frío, 595 m to the west.

Modern utilization: Maize is planted during the rainy season, with use of oxen for plowing.

Early Formative Occupation: Archaeological remains: A small amount of Amate phase ceramics was scattered over the site. One D2 figurine was recovered. No high density areas were noted.

Classification: Isolated Residence.

Middle Formative Occupation: Archaeological remains: Only a wide scattering of surface debris existed at the time of our survey. Excavations were conducted at this site by Teresita Majewski in the winter of 1974 and are reported in Chapter 22.

Classification: Barranca phase Isolated Residence, Cantera phase Hamlet.

Late Formative Occupation: Archaeological remains: A thin veneer of Late Formative materials could be found across the site although there are no clearcut concentrations of materials. This material is generally mixed with Cantera phase occupation debris.

Classification: Isolated Residence.

Other Occupations: Classic Isolated Residence (Hirth 1980), Early Postclassic Isolated Residence, Late Postclassic Isolated Residence.

RAS-65

Latitude: 18° 44′ 31.73″

Longitude: 98° 48′ 51.77″

Location: Due west of the town of Amilcingo, one field south of the intersection with the Hueyapan-Axochiapan highway.

Natural setting: This site lies between

the 1,450 and 1,500 m contour intervals due east of RAS-62 in the Pithecellobium Woodland and Flat Plains zones. It is 1,250 m west of the Río Amatzinac and 980 m east of the Río Frío.

Modern utilization: Maize agriculture is practiced during the rainy season. The surrounding fields, however, were irrigated and planted in maize, beans, squash, and peanuts.

Middle Formative Occupation: Archaeological remains: The site is defined by a simple ceramic dispersion which includes Amatzinac White ceramics. The ceramics cover 0.35 ha with Middle Formative ceramics distributed over 75 percent of that area. A destroyed mound on the site is probably Classic period, for Classic period debris predominates.

Classification: Cantera phase Isolated Residence.

Late Formative Occupation: Archaeological remains: A light scattering of Late Formative materials coincided with the distribution of Cantera phase materials.

Classification: Isolated Residence.

Other Occupations: Terminal Formative Isolated Residence, Early Classic Isolated Residence, Late Classic Isolated Residence (Hirth 1980), Late Postclassic Isolated Residence.

RAS-70

Latitude: 18° 45′ 59.2″

Longitude: 98° 46′ 8.35″

Location: At the eastern border of the Temoac-Huazulco forest, east-southeast of Temoac and due north of Huazulco.

Natural setting: This site lies south of RAS-71 between the 1,500 and 1,550 m contour intervals. The topographical zone is Flat Plains, and the vegetation zone is Pithecellobium Woodland. The site is directly adjacent to the Río Amatzinac barranca and its vegetation zone.

Modern utilization: When surveyed the field was fallow with heavy weed cover, which may have biased the measurement of sherd intensities. Corn is grown during the rainy season, and the land is prepared by using teams of oxen.

Middle Formative Occupation: Archaeological remains: The site consists of a mound and ceramic dispersion covering 0.5 ha. The mound was probably a residential structure.

Classification: Cantera phase Isolated Residence.

Other Occupation: Late Postclassic Hamlet.

RAS-71

Latitude: 18° 46′ 5.01″

Longitude: 98° 46′ 13.36″

Location: 200 m east of Temoac in the *municipio* of Zacualpan.

Natural setting: This site is in the Flat Plains topographic zone between the 1,500 and 1,550 m contour intervals. The dominant vegetation is Pithecellobium Woodland, although the site has easy access to the Río Amatzinac and its Barranca zone plant types 115 m to the east. Erosion is moderate.

Modern utilization: Maize is planted during the rainy season. The area was partially plowed by oxen at the time of the survey.

Early Formative Occupation: Archaeological remains: A good concentration of Amate phase debris was recovered. Rubble in the eastern half of the field in association with Amate phase ceramics may be from residential structures.

Classification: Hamlet.

Middle Formative Occupation: Archaeological remains: For this period there is a simple ceramic dispersion in which Cantera phase diagnostics predominate. Also present are ground and chipped stone artifacts.

Classification: Barranca phase Isolated Residence, Cantera phase Isolated Residence.

Late Formative Occupation: Archaeological remains: There is one small cluster of Late Formative debris associated with a small amount of architectural rubble which may have been a residential structure. Only plainwares were found.

Classification: Isolated Residence.

Other Occupations: Terminal Formative Isolated Residence, Early Classic Isolated Residence (Hirth 1980), Early Postclassic Isolated Residence, Late Postclassic Isolated Residence.

RAS-72

Latitude: 18° 46′ 48.43″

Longitude: 98° 46′ 1.67″

Location: At the southeast end of the town of Zacualpan.

Natural setting: This site is located in the Pithecellobium Woodland zone 70 m west of the Río Amatzinac and the Barranca vegetation zone. It is in the Flat Plains topographic zone, at the 1,575 m contour interval.

Modern utilization: The land had been uncultivated for some time and was being used for grazing at the time of the survey.

Late Formative Occupation: Archaeological remains: There was a trace of Late Formative period material. Conclusive evidence for permanent occupation was lacking.

Classification: Isolated Residence.

Other Occupations: Terminal Formative Isolated Residence (Hirth 1980), Late Postclassic Isolated Residence. The bulk of the occupation is Late Postclassic.

RAS-73

Latitude: 18° 45′ 23.38″

Longitude: 98° 46′ 30.06″

Location: Northwest of the modern town of Huazulco.

Natural setting: This site is just below the 1,500 m contour interval. The topographic zone is Flat Plains, and the vegetation zone is Pithecellobium Woodland. The site is 345 m west of the Río Amatzinac and the Barranca vegetation zone.

Modern utilization: The area is irrigated and planted in maize and squash. Some of the fields to the west were fallow at the time of our survey.

Late Formative Occupation: Archaeological remains: There was a small scatter of Late Formative material. One small mound at this site appears to date to the Late Postclassic.

Classification: Isolated Residence.

Other Occupation: Late Postclassic Isolated Residence.

RAS-74

Latitude: 18° 46′ 28.39″

Longitude: 98° 46′ 13.36″

Location: In the cultivated fields on the northeast side of the town of Temoac.

Natural setting: This site is in the Pithecellobium Woodland zone 280 m west of the Río Amatzinac. It is on the 1,550 m contour interval within the Flat Plains topographic zone.

Modern utilization: The area is irrigated and cropped year round. Maize, beans, and tomatoes were planted in the field at the time of the survey.

Late Formative Occupation: Archaeological remains: The site consists of a light scattering of Late Formative materials. No permanent architectural constructions were noted. Only plainwares were recovered in the surface collections, primarily ollas and simple bowls.

Classification: Isolated Residence.

Other Occupation: Late Postclassic Isolated Residence.

RAS-75

Latitude: 18° 46′ 30.06″

Longitude: 98° 46′ 15.03″

Location: Roughly 300 m northeast of the modern settlement of Temoac and 800 m south of Zacualpan, along a small dirt road separating the two towns.

Natural setting: This site lies above the 1,550 m contour interval, and local relief is less than 30 m. The topographical zone is Flat Plains, and the vegetation zone is Pithecellobium Woodland. The site is 260 m from the Río Amatzinac. Erosion is moderate in this area.

Modern utilization: Irrigation cultivation of tomatoes and sugar cane is practiced. More than 50 percent of the surface area was fallow at the time of our research.

Middle Formative Occupation: Archaeological remains: The site is a simple ceramic dispersion across two fields located on a terrace elevated 75 cm above the surrounding fields. Both Barranca and Cantera phase materials were recovered but in very low amounts. No architectural features were noted.

Classification: Barranca phase Isolated Residence, Cantera phase Isolated Residence.

Other Occupations: Late Classic Isolated Residence (Hirth 1980), Early Postclassic Isolated Residence, Late Postclassic Isolated Residence.

RAS-78 (San Ignacio)

Latitude: 18° 35′ 0″

Longitude: 98° 45′ 8.35″

Location: North of the old hacienda of San Ignacio.

Natural setting: This site is located at and above the 1,100 m contour interval in the Flat Plains topographic zone. The vegetation zone is Huizache Grassland, and the site lies on the Río Amatzinac, providing access to the River Bottomland zone. Soil in this area is 1–2 m deep. Erosion is slight to moderate. The position along the Río Amatzinac is optimal since the side walls are not very steep here. An impermanent drainage lies 95 m to the west.

Modern utilization: Rainfall agriculture of maize, beans, and squash is practiced, and oxen are used for plowing. The Middle Formative portion of the site is located just south of the major Late Classic mound complexes, northwest of the modern village of San Ignacio. The town covers that portion of the site which would extend to the banks of the Río Amatzinac.

Middle Formative Occupation: Archaeological remains: The site consists of mounds and a ceramic dispersion. Two mounds were dated to the Middle Formative on the basis of associated diagnostic material and isolation from other portions of the site. These appeared to be habitation structures. Large foundation stones and sandy-whitish soil were associated with the diagnostic ceramics. This area probably had a small, low platform. Middle Formative vessels and a small jade statue were in the possession of local farmers. These artifacts were reported to have been associated with skeletons found when the new school was built. Heavy debris at San Ignacio from the dense Classic occupation has obscured our view of the Middle Formative occupation. The site was probably larger than our observations indicated.

Classification: Barranca phase Hamlet, Cantera phase Hamlet.

Late Formative Occupation: Archaeological remains: Late Formative materials are scattered over approximately 30 ha. Unlike some of the other large sites for this phase, the material does not occur in dense clusters. Much of the area containing Late Formative materials was later occupied by Classic period peoples. The highest concentration of material, however, is on the east side of the site, along the Río Amatzinac. The full range of plain and decorated ceramics was recovered.

Classification: Small Village.

Other Occupations: Terminal Formative Large Village, Early Classic Regional Center, Late Classic Regional Center, Early Postclassic Small Village, Late Postclassic Large Village.

RAS-79

Latitude: 18° 35′ 45″

Longitude: 98° 45′ 51.77″

Location: In the southern portion of the valley northwest of the town of San Ignacio, about 400 m east of the San Ignacio–Tetelilla railroad station.

Natural setting: This site is situated in the Huizache Grassland vegetation zone. It is 485 m west of the Río Amatzinac within the Flat Plains topographic zone. Elevation is 1,125 m. The soil in this area is 1–2 m deep.

Modern utilization: The area is cultivated only during the rainy season. The land is prepared with a tractor, and maize is the only crop grown.

Late Formative Occupation: Archaeological remains: There was a very light occupation of this site during this time. Tractor plowing has obscured most surface indications of occupation.

Classification: Isolated Residence.

Other Occupations: Terminal Formative Isolated Residence, Early Classic Isolated Residence (Hirth 1980).

RAS-81

Latitude: 18° 34′ 6.68″

Longitude: 98° 46′ 6.68″

Location: 2.5 km east of the town of Tepalcingo.

Natural setting: This site is in the Huizache Grassland vegetation zone on the 1,025 m contour interval within the Flat Plains topographic zone. It is several kilometers west of the Río Amatzinac, the closest permanent water source.

Modern utilization: The area had not been cultivated for several years prior to the survey and was being used for occasional cattle grazing. This field is located at the lowest end of a *jagüey* (large pool) irrigation system.

Late Formative Occupation: Archaeological remains: A light scatter of Late Formative materials was found across the site. Residential architecture is suggested by the accumulation of rock debris in the area of the ceramic concentrations, whereas it is typically absent from adjacent fields. This is a single-component site.

Classification: Isolated Residence.

RAS-84

Latitude: 18° 36′ 11.69″

Longitude: 98° 48′ 33.4″

Location: 2.5 km east of the town of Tepalcingo.

Natural setting: This site is on the 1,125 m contour interval within the Flat Plains of the southern valley. The vegetation zone is Huizache Grassland. The site is located on a small impermanent drainage and is more than 1 km from the closest permanent water source. The soil is a loose, dark loam. Erosion is slight to moderate.

Modern utilization: Irrigated fields planted in corn, beans, and squash occur directly to the south and east of the site. Plowing is done by tractor.

Middle Formative Occupation: Archaeological remains: A trace of Cantera phase material was found. There is no clearcut evidence for permanent occupation at this time.

Classification: Cantera phase Isolated Residence.

Late Formative Occupation: Archaeological remains: Vegetation was very dense at the time of the survey, obscuring surface accumulations. Only a light scattering of Late Formative materials was found. Large-scale architecture at the site appears to belong to the Classic period.

Classification: Isolated Residence.

Other Occupations: Terminal Formative Small Village, Early Classic Small Village, Late Classic Hamlet (Hirth 1980).

RAS-89

Latitude: 18° 34′ 58.45″

Longitude: 98° 48′ 21.71″

Location: In the southern valley 3.5 km east of Tepalcingo.

Natural setting: The site lies in the Huizache Grassland vegetation zone and the Flat Plains topographic zone, on the 1,100 m contour interval several kilometers from the Río Tepalcingo, the closest source of permanent water.

Modern utilization: This area is cultivated only during the rainy season. Crops include maize, beans, and squash, and the fields are prepared with oxen.

Late Formative Occupation: Archaeological remains: A slight trace of Late Formative material was noted. There were no indications of permanent residential structures.

Classification: Isolated Residence.

Other Occupations: Terminal Formative Hamlet (Hirth 1980), Late Postclassic Isolated Residence.

RAS-95

Latitude: 18° 37′ 10.02″

Longitude: 98° 46′ 23.52″

Location: On a small outwash north of the town of Tetelilla.

Natural setting: The site is in the Huizache Grassland vegetation zone over 2 km from any source of permanent water. It is on the 1,200 m contour interval in the Flat Plains topographic zone. The soil is very shallow here, averaging between 50 and 75 cm in thickness. There was a surface accumulation of large and medium-sized rocks.

Modern utilization: This area has been fallow for quite some time. No old field boundaries could be located. Rainfall agriculture is practiced in fields 150 m to the east.

Late Formative Occupation: Archaeological remains: Surface collections were poor at this site because of the lack of ground disturbance. While some architecture dates to the subsequent Terminal Formative period, it appears that most of the small structures date to the Late Formative. Permanent residence is evident by accumulations of ground stone artifacts and fire-cracked rock on and about small house mounds with Late Formative materials.

Classification: Hamlet.

Other Occupations: Terminal Formative Hamlet (Hirth 1980), Early Postclassic Isolated Residence.

RAS-100

Latitude: 18° 37′ 15.03″

Longitude: 98° 46′ 3.34″

Location: Due north of the modern village of Tetelilla in the *municipio* of Jonacatepec.

Natural setting: The site is located on a level gradient next to an impermanent drainage, which passes the Cerro Tenango on its west face. The site is just below the 1,200 m contour interval 1.29 km from the Río Amatzinac. The topographic zone is Flat Plains, and the vegetation zone is Huizache Grassland. The soil is very shallow in this region, and on the average does not exceed 50 cm in thickness.

Modern utilization: The area was fallow at the time of the survey and was partially covered with *huizache*. A portion of the site, however, is planted during the rainy season in maize. The field is prepared by using oxen.

Middle Formative Occupation: Archaeological remains: A small ceramic dispersion was found, consisting primarily of plainware. The site extends over 0.7 ha. No architectural features were noted.

Classification: Cantera phase Isolated Residence.

Late Formative Occupation: Archaeological remains: A light scatter of ceramics was found distributed across approximately 0.5 ha.

Classification: Isolated Residence.

Other Occupation: Early Classic Isolated Residence (Hirth 1980).

RAS-107

Latitude: 18° 41′ 35.07″

Longitude: 98° 47′ 8.35″

Location: North of and adjacent to the ex-hacienda Santa Clara beside the road to Chalcatzingo.

Natural setting: The site is located on a slight rise in the Flat Plains topographical zone. It is between the 1,350 and 1,400 m contour intervals, in the Pithecellobium Woodland vegetation zone. The Río Amatzinac lies 1.46 km to the east.

Modern utilization: The area is used for rainfall maize cultivation, with use of oxen for plowing.

Middle Formative Occupation: Archaeological remains: This site is a simple ceramic dispersion. Traces of both Barranca and Cantera phase materials were noted. There was no clearcut evidence of permanent occupation.

Classification: Barranca phase Isolated Residence, Cantera phase Isolated Residence.

Other Occupations: Terminal Formative Isolated Residence (Hirth 1980), Early Postclassic Isolated Residence, Late Postclassic Isolated Residence.

RAS-108

Latitude: 18° 35′ 43.42″

Longitude: 98° 43′ 15.03″

Location: In the *municipio* of Jonacatepec, southeast of the *ranchería* San Antonio.

Natural setting: The site is situated on the slope of a small hill between the 1,100 and 1,150 m contour intervals. This small hill is composed primarily of red chert. The vegetation zone is Huizache Grassland, and the topographical zone is Open Low Hills. The nearest permanent water is the Río Nexapa 540 m to the east. Soil at this site is shallow and does not exceed 1 m in depth.

Modern utilization: Although the area on top of the hill is not cultivated, the surrounding fields were planted in rice at the time of the survey.

Middle Formative Occupation: Archaeological remains: This site is a simple ceramic dispersion covering 0.75 ha. There was also an unusual amount of red chert cores, worked and unworked, throughout the area, indicating that it was a quarry site. This same type of red chert is found at many sites in the valley and may be evidence of a local exploitation and redistribution system. A limited amount of residential debris was also found, although occupation need not have been year round. This is a single component site.

Classification: Cantera phase Isolated Residence.

RAS-109

Latitude: 18° 35′ 59.8″

Longitude: 98° 43′ 5.01″

Location: At the Paso de los Coches which leads to a spring-fed swimming pool in the eastern part of the state of Puebla.

Natural setting: This site is located on the eastern side of the Río Nexapa, on the 1,150 m contour interval in the slightly rolling foothills adjacent to a pass across the barranca. The topographical zone is Open Low Hills, and the vegetation corresponds to the Barranca zone. Soil depth as measured from a roadcut does not exceed 50 cm, and erosion is moderate to heavy across these slopes. The site is 150 m from permanent water.

Modern utilization: The site was not being cultivated at the time of the survey.

Middle Formative Occupation: Archaeological remains: A portion of the site was exposed in the roadcut sidewall, and several complete blackware *botellones* were procured by cleaning the sidewall. Not much site area could be identified, and site size could be estimated at roughly only 0.25 ha. It was probably located so as to take advantage of hillside slope resources. This is a single-component site.

Classification: Cantera phase Isolated Residence.

RAS-110

Latitude: 18° 36′ 10.02″

Longitude: 98° 43′ 11.69″

Location: Overlooking the Río Nexapa southeast of the town of San Antonio in the southern valley.

Natural setting: The site is situated at the interface of a number of vegetation zones, including the River Bottomland and Huizache Grassland. The topographic zone is Open Low Hills, and the site lies along the 1,125 m contour. The site slopes toward the river.

Modern utilization: The site was uncultivated at the time of the survey and had been fallow for several years. Most of the area was covered with *huizache* and was suitable only for grazing.

Late Formative Occupation: Archaeological remains: There was a trace of Late Formative materials, with no evidence for permanent habitation.

Classification: Isolated Residence.

Other Occupations: Terminal Formative Isolated Residence (Hirth 1980), Late Postclassic Isolated Residence.

RAS-111

Latitude: 18° 37′ 33.4″

Longitude: 98° 43′ 13.36″

Location: Between 2 and 3 km east of the town of Tenango near the Barranca de los Santos.

Natural setting: The site is in the Huizache Grassland vegetation zone and the Flat Plains topographic zone. The closest permanent water is the Barranca de los Santos 525 m to the east. The site lies on the 1,200 m contour interval.

Modern utilization: The area was uncultivated at the time of the survey but appeared to have been cultivated in the immediate past.

Late Formative Occupation: Archaeological remains: Surface collections were inadequate considering the importance of the site. The entire site was covered by a pavement of hard-packed earth and small rocks, which hid the artifactual debris. The large-scale architecture found here dates to later periods, particularly the Classic. Late Formative materials were found in different areas of the site, especially on the southern end. No associations between ceramics and other artifact categories could be made because of the disturbance by later peoples.

Classification: Hamlet.

Other Occupations: Terminal Formative Hamlet, Early Classic Small Village, Late Classic Small Village (Hirth 1980).

RAS-112 (El Palacio)

Latitude: 18° 32′ 33.4″

Longitude: 98° 50′ 13.36″

Location: Along the Ixtlilco el Grande–Ixtlilco el Chico mountain road in the *municipio* of Tepalcingo.

Natural setting: This site is situated on rolling hills bordering the west side of the Río Frío in the southern portion of the valley. It is on the 1,075 m contour interval in the Irregular Plains, Slight Relief, topographic zone. The vegetation is mixed River Bottomland and Huizache Grassland. A spring lies to the east of the Río Frío. Soil depth is variable, ranging from 1 to 3 m.

Modern utilization: The lower portions of the site are irrigated, and maize and beans are grown. Oxen are used for preparing the fields. The upper portions of the site are open for grazing.

Early Formative Occupation: Archaeological remains: A surface scatter of Amate phase ceramics was found on the small terraces overlooking the spring. Additional figurines and sherds were found in the area just east of the Middle Formative terrace occupation.

Classification: Hamlet.

Middle Formative Occupation: Archaeological remains: The bulk of the Middle Formative occupation is related to the upper terraced areas and the lower area in front of these terraces. A ball court situated in front of these terraces produced a large quantity of Middle Formative ceramics, and the soil of which it was constructed was of a different type and texture from the parent soil across the same area. It appears to have been constructed with loadings taken from areas of prior Middle Formative occupation. A low platform structure, largely destroyed, of probable Middle Formative date was located on the west side of the site. Some of the terraces on the west slopes definitely have Middle Formative residential debris on them and undoubtedly were constructed during this period.

Classification: Barranca phase Small Village, Cantera phase Small Village.

Late Formative Occupation: Archaeological remains: Late Formative materials are located on the west central portion of the site along the road and on the east side of the site beside the Río Frío. Architectural structures of both the Classic and Postclassic periods cover the intervening area. It is difficult to say whether any of the structures date to the Late Formative. It is likely, however, given the size of the site and the continuity of settlement from the Cantera phase through the Classic, that Late Formative mounds were part of the overall site design. Late Formative materials were found in dense concentrations.

Classification: Small Village.

Other Occupations: Terminal Formative Small Village, Early Classic Large Village, Late Classic Small Village (Hirth 1980), Early Postclassic Hamlet, Late Postclassic Small Village.

RAS-114

Latitude: 18° 31′ 31.73″

Longitude: 98° 48′ 20.04″

Location: In the southern portion of the valley due west of the town of Quebrantadero.

Natural setting: The site is situated on the 1,000 m contour interval in the Irregular Plains, Slight Relief, topographic zone. Two vegetation zones come together at the site, the Huizache Grassland and the River Bottomland. The closest permanent water source is the Río Frío 870 m to the south.

Modern utilization: The area is cultivated during the rainy season. Field preparation is with oxen.

Late Formative Occupation: Archaeological remains: A small scatter of Late Formative materials was found. No residential architecture was observed.

Classification: Isolated Residence.

Other Occupation: Early Classic Isolated Residence (Hirth 1980).

RAS-121
Latitude: 18° 32′ 38.41″
Longitude: 98° 49′ 46.76″

Location: In the southern valley along the 1,000 m contour interval alongside the Río Tepalcingo due north of Ixtlilco el Grande.

Natural setting: The vegetation zones in this area are the Huizache Grassland and the River Bottomland. The topographic zone is Flat Plains.

Modern utilization: The area is cultivated during the rainy season. Field preparation is with oxen, and the principal crops are maize and chilies.

Late Formative Occupation: Archaeological remains: A scatter of Late Formative material was found on the central portion of the site. Concentrations of rubble and several low mounds suggest destroyed residential structures.

Classification: Hamlet.

Other Occupations: Terminal Formative Isolated Residence, Early Classic Hamlet, Late Classic Isolated Residence (Hirth 1980).

RAS-127
Latitude: 18° 33′ 30.06″
Longitude: 98° 50′ 15.03″

Location: At the southeast corner of Ixtlilco el Chico in the southern valley.

Natural setting: The site lies alongside a small impermanent drainage. The topographic zone is Flat Plains, and the site shares two vegetation zones, the Huizache Grassland and the River Bottomland. The nearest permanent water source is the Río Frío 285 m to the east. The site is located on the 1,000 m contour interval.

Modern utilization: A portion of the site is terraced, going down into the barranca. The area is cultivated during the rainy season, and maize and beans are grown.

Late Formative Occupation: Archaeological remains: A very light scatter of Late Formative materials was found. There were no indications of permanent occupation.

Classification: Isolated Residence.

Other Occupation: Late Postclassic Hamlet.

RAS-128
Latitude: 18° 33′ 45.09″
Longitude: 98° 50′ 20.04″

Location: East of Ixtlilco el Chico in the southern valley.

Natural setting: The site lies along a small impermanent drainage. The topographic zone is Flat Plains, and the site has access to two vegetation zones, the Huizache Grassland and the River Bottomland. It is on the 1,025 m contour interval. The nearest permanent water source is the Río Frío 795 m to the east.

Modern utilization: The site area is cultivated in maize, beans, and squash during the rainy season. Field preparation is by oxen plowing.

Late Formative Occupation: Archaeological remains: Late Formative materials are scarce. There is a small distribution over the northern portion of the site. Indications of structures are lacking for this time period.

Classification: Isolated Residence.

Other Occupation: Late Postclassic Hamlet.

RAS-129
Latitude: 18° 33′ 26.72″
Longitude: 98° 50′ 21.71″

Location: Southeast of Ixtlilco el Chico in the *municipio* of Tepalcingo.

Natural setting: This site is located between two impermanent drainages between the 1,000 and 1,050 m contour intervals. The topographic zone is Flat Plains, and the vegetation zone is Huizache Grassland. The Río Frío is 585 m to the east. Soil depth is less than 1 m.

Modern utilization: Rainfall maize agriculture.

Middle Formative Occupation: Archaeological remains: A simple ceramic dispersion covers 0.9 ha. There is a moderate amount of residential debris in the form of ground stone artifacts and house construction debris.

Classification: Cantera phase Isolated Residence.

Other Occupations: Early Postclassic Isolated Residence, Late Postclassic Isolated Residence.

RAS-144 (Telixtac)
Latitude: 18° 33′ 41.75″
Longitude: 98° 45′ 1.67″

Location: Lies along and is cut by the Axochiapan railroad southwest of San Ignacio.

Natural setting: The site is between the 1,050 and 1,100 m contour intervals in the Flat Plains topographic zone. The vegetation zone is principally Huizache Grassland, mixed with some River Bottomland. Impermanent drainages pass the site on both the north and south, while the nearest permanent water lies 1.35 km to the east.

Modern utilization: The site was fallow at the time of the survey and lacked evidence of recent agricultural activity.

Middle Formative Occupation: Archaeological remains: The site consists of two small platform mounds and a ceramic dispersion covering an area of 2.1 ha. The larger mound has been cut by the railway, and the other is also greatly destroyed. There is evidence for residence, but from surface indications it appears to have been relatively light. The major occupation occurred during the Cantera phase. Irrigation soil markings appearing on aerial photos to the south of this site may be Classic. Excavations were carried out here, and the results are reported in Chapter 22.

Classification: Barranca phase Isolated Residence, Cantera phase Hamlet.

RAS-156
Latitude: 18° 32′ 18.37″
Longitude: 98° 47′ 25.05″

Location: Due north of Quebrantadero in the *municipio* of Axochiapan.

Natural setting: This site is located adjacent to the conjunction of two impermanent drainages just below the 1,050 m contour interval. The topographic zone is Flat Plains, and the vegetation zone is Huizache Grassland. The site is 3.03 km from the Río Frío. The soil is less than 1 m in depth.

Modern utilization: Rainfall maize cultivation is practiced using tractor plowing.

Middle Formative Occupation: Archaeological remains: The site extends over 0.51 ha with trace concentrations of Middle Formative material.

Classification: Cantera phase Isolated Residence.

Other Occupations: Combined with RAS-152, Early Classic Hamlet, Late Classic Hamlet (Hirth 1980).

RAS-164
Latitude: 18° 31′ 25.05″
Longitude: 98° 46′ 48.43″

Location: East of Quebrantadero just north of the first bridge crossing along the highway to Axochiapan.

Natural setting: This site is located at the 1,000 m contour interval along an impermanent drainage. It is 50 m south of a spring, and the Río Frío lies 2.21 km to the southwest. The topographic zone is Flat Plains, and the vegetation zone is Huizache Grassland. The soil depth is between 1 and 2 m.

Modern utilization: Rainfall cultivation of maize is practiced using oxen for plowing.

Middle Formative Occupation: Archaeological remains: At least one mound at this site dates to the Middle Formative occupation. Permanent residence is clearly indicated. The extent of the Cantera phase occupation appears slightly more than double that of the Barranca phase.

Classification: Barranca phase Hamlet, Cantera phase Small Village.

Late Formative Occupation: Archaeological remains: This site is a good example of Small Village communities during the Late Formative. Fortunately, later occupations were not extensive enough to completely obscure the nature of settlement. A little more than 9 ha were occupied during this phase. Ceramic and other artifact categories are tightly clustered in and around the mounds, three of which date to the Late Formative. Clear evidence for residential structures was found around and away from these mounds.

Classification: Small Village.

RAS-166

Latitude: 18° 31′ 30.06″

Longitude: 98° 43′ 46.76″

Location: In the southern valley about 4 km northeast of Axochiapan.

Natural setting: The site is situated in the Huizache Grassland vegetation zone just under 2 km from the nearest source of permanent water, the Río Amatzinac. The topographic zone is Flat Plains, and the site is on the 1,025 m contour interval.

Modern utilization: The area is cultivated using teams of oxen during the rainy season. The principal crop is maize.

Late Formative Occupation: Archaeological remains: A light distribution of Late Formative plainwares without marked buildups of construction debris was noted during the survey.

Classification: Isolated Residence.

Other Occupations: Early Classic Isolated Residence (Hirth 1980), Late Postclassic Isolated Residence.

RAS-168

Latitude: 18° 30′ 25.05″

Longitude: 98° 43′ 35.07″

Location: Due northeast of the Axochiapan railroad station.

Natural setting: This site is on the 1,025 m contour interval next to a large impermanent drainage and is more than a mile from the Río Amatzinac. It has access to the Huizache Grassland vegetation zone and is in the Irregular Plains, Slight Relief, topographic category.

Modern utilization: Rainfall agriculture of maize, squash, and beans is practiced using oxen for plowing.

Middle Formative Occupation: Archaeological remains: A light scatter of Cantera phase materials was located about 75 m west of the impermanent barranca. A small amount of residential debris could be detected, although it was difficult to distinguish the Formative residence areas from the heavy Classic debris at the site.

Classification: Cantera phase Isolated Residence.

Late Formative Occupation: Archaeological remains: Late Formative materials are scattered over a wide area of the site. Unfortunately, the heavy Classic period occupation has obscured the nature and distribution of Late Formative Materials. Only plainwares were recovered from the surface.

Classification: Isolated Residence.

Other Occupations: Terminal Formative Isolated Residence, Early Classic Small Village, Late Classic Small Village. Classic occupations describe the site RAS-168/220 (Hirth 1980).

RAS-169

Latitude: 18° 32′ 30.06″

Longitude: 98° 44′ 55.08″

Location: Due west of Atlacahualoya several hundred meters from the edge of town out onto the surrounding agricultural fields.

Natural setting: This area is in the Flat Plains topographic zone and the Huizache Grassland vegetation zone. The nearest permanent water source is the Río Amatzinac 500 m to the east. Elevation is 1,050 m.

Modern utilization: The area is irrigated and oxen-plowed. Crops planted at the time of the survey included maize, beans, and squash.

Late Formative Occupation: Archaeological remains: Late Formative materials were mixed with colonial and Late Postclassic artifacts. The percentage of materials from this period was very low.

Classification: Isolated Residence.

Other Occupations: Late Postclassic Hamlet, colonial activity.

RAS-176

Latitude: 18° 31′ 48.43″

Longitude: 98° 42′ 21.71″

Location: On the west side of the Río Nexapa west of the town of Tzompahuacan, Puebla.

Natural setting: The site has access to two vegetation zones, the Huizache Grassland and the River Bottomland. The topographic zone is Flat Plains, and elevation is 1,025 m. The site is only 70 m from the Río Nexapa.

Modern utilization: The area is cultivated during the rainy season, and maize is grown. Field preparation is with oxen.

Late Formative Occupation: Archaeological remains: Late Formative materials were lightly distributed over 0.25 ha. Concentrations of material were low. There was no evidence of permanent structures.

Classification: Isolated Residence.

Other Occupation: Classic Isolated Residence (Hirth 1980).

RAS-182

Latitude: 18° 31′ 1.67″

Longitude: 98° 48′ 1.67″

Location: West of the town of Quebrantadero and due east of the town of Contla.

Natural setting: The site is located in the Huizache Grassland 490 m east of the Río Frío in the southern portion of the valley. The topographic zone is Irregular Plains, Slight Relief. Elevation is 1,000 m. Erosion is moderate, and the soil is shallow.

Modern utilization: Mainly used for grazing cattle.

Early Formative Occupation: Archaeological remains: A small scatter of Amate phase materials is present at this site. There are no large buildups, however, to suggest a long occupation.

Classification: Isolated Residence.

Middle Formative Occupation: Archaeological remains: The site covers 0.38 ha with only a trace of occupation. No other features were noted.

Other Occupation: Early Classic Isolated Residence (Hirth 1980).

RAS-189

Latitude: 18° 30′ 50.10″

Longitude: 98° 47′ 18.37″

Location: South-southeast of Quebrantadero in an area highly dissected by impermanent barrancas.

Natural setting: This site is located at the 1,000 m contour interval on a rolling hillslope overlooking a winding impermanent barranca. The topographic zone is Irregular Plains, and the vegetation zone is Huizache Grassland with River Bottomland. The soil is very shallow here and erosion is slight to moderate.

Modern utilization: The area is fallow and used only for occasional grazing.

Middle Formative Occupation: Archaeological remains: The site is best characterized as a mound with ceramic dispersions. Two small house mounds were identified.

Classification: Barranca phase Isolated Residence, Cantera phase Hamlet.

Other Occupation: Possible Late Postclassic Isolated Residence.

RAS-200

Latitude: 18° 32′ 58.9″

Longitude: 98° 42′ 23.38″

Location: South of the modern village of Coayuca in the state of Puebla.

Natural setting: The site is located on the floodwater plain adjacent to the Río Nexapa just below the 1,050 m contour interval. The topographic zone is Irregular Plains, Slight Relief. The vegetation zone is mixed, comprised of Huizache Grassland, River Bottomland, and Tetleras zones. The soil is about 1.5 m deep.

Modern utilization: Irrigation agriculture of corn and tomatoes is practiced, and both oxen and tractor plowing are employed.

Middle Formative Occupation: Archaeological remains: The site extends over 0.75 ha with light Cantera phase ceramic distributions. It was an ideal location for agriculture because of the low barranca sidewalls and the potential for floodwater irrigation. The site has been damaged by occasional inundation of the Río Nexapa. Residential debris is still clearly visible.

Classification: Cantera phase Isolated Residence.

Late Formative Occupation: Archaeological remains: Classic and Late Postclassic components have obscured the distribution of materials from this period. There is clear evidence for utilization during the Late Formative along the eastern edge of the site.

Classification: Isolated Residence.

Other Occupations: Terminal Formative Isolated Residence, Early Classic Hamlet, Late Classic Small Village (Hirth 1980), Early Postclassic Hamlet, Late Postclassic Small Village.

RAS-201

Latitude: 18° 31′ 58.45″

Longitude: 98° 42′ 8.35″

Location: Northwest of the Puebla village of Tzompahuacan.

Natural setting: The site is on a small natural terrace on the northeast side of the Río Nexapa, just below the 1,050 m contour interval in the irregular Plains, Slight Relief, topographic zone. No rubble or erosion other than possible Nexapa flooding was observed. The principal vegetation zones are Huizache Grassland and River Bottomland.

Modern utilization: The area is fallow and used for cattle grazing.

Middle Formative Occupation: Archaeological remains: There was a light dispersion of residential debris over the site without any notable structural features. The site is 0.33 ha in size and lies just above the edge of the normal Nexapa floodplain.

Other Occupations: Terminal Formative Isolated Residence, Early Classic Hamlet, Late Classic Hamlet (Hirth 1980), Late Postclassic Hamlet.

RAS-209

Latitude: 18° 32′ 38.41″

Longitude: 98° 43′ 41.75″

Location: Northeast of Atlacahualoya.

Natural setting: The site is located along the Río Amatzinac just above the 1,050 m contour interval. The topographic zone is Irregular Plains, Slight Relief, and the vegetation zones are Huizache Grassland and River Bottomland. An impermanent drainage lies 450 m to the east.

Modern utilization: Rainfall cultivation of maize, beans, and squash is practiced. The area is plowed by tractor.

Middle Formative Occupation: Archaeological remains: The site extends over 1.95 ha with light Middle Formative debris spread over the entire area.

Classification: Cantera phase Hamlet.

Other Occupations: Early Postclassic Isolated Residence, Late Postclassic Small Village.

RAS-210

Latitude: 18° 30′ 0″

Longitude: 98° 43′ 51.77″

Location: Just to the south of the Axochiapan railroad station. The site was disturbed when the railroad was built, which helped make it easier to locate.

Natural setting: The site is between the 1,000 and 1,050 m contour intervals north of an impermanent drainage. The topographic zone is Flat Plains, and the vegetation zone is Huizache Grassland. The nearest permanent water source is the Río Amatzinac 2.09 km to the east.

Modern utilization: The area today is moderately wooded.

Middle Formative Occupation: Archaeological remains: The site is a thin ceramic scatter which extends over an area of 0.32 ha. No structures were noted.

Classification: Cantera phase Isolated Residence.

Other Occupation: Late Classic Isolated Residence (Hirth 1980).

RAS-221

Latitude: 18° 30′ 56.78″

Longitude: 98° 43′ 25.05″

Location: In the southern valley about 3 km northwest of Atzitzica.

Natural setting: This site is located in the southern Huizache Grassland vegetation zone. The topographic zone is Flat Plains, and elevation is 1,025 m. The closest permanent water source is the Río Amatzinac 1.25 km to the east. The site is directly adjacent to a large impermanent barranca.

Modern utilization: The area had not been cultivated for several years. Old field boundaries could be found, and it is possible that the field was on a long crop rotation cycle at the time of the survey.

Late Formative Occupation: Archaeological remains: A scatter of Late Formative ceramics was located and collected. Both plain and decorated wares were found. However, the greatest concentration of materials was obscured by a heavy Classic occupation.

Classification: Isolated Residence.

Other Occupation: Early Classic Isolated Residence (Hirth 1980).

RAS-225

Latitude: 18° 29′ 36.50″

Longitude: 98° 42′ 10.00″

Location: Adjacent to the floodplain of the Río Nexapa north of the town of Chimalcatlan.

Natural setting: The site lies within a meander loop of the Río Nexapa which borders the site on its north, east, and south sides. The vegetation zones available are River Bottomland and Huizache Grassland on the bluffs to the west. The topographic zone is Flat Plains. Elevation is 1,000 m.

Modern utilization: The area is terraced and irrigated by water drawn from the Río Nexapa. Tractors are used for plowing. Crops include tomatoes, sugarcane, maize, beans, and squash. Some site destruction has taken place because of the preparation of the irrigation system and the modification of terraces which put each individual field at a different level.

Middle Formative Occupation: Archaeological remains: The site is a simple ceramic dispersion over 3.80 ha. Mounds associated with the site are Late Postclassic in date, as in the bulk of the site area. The site lies in a favorable microenvironment for agriculture. The terraces here are clearly prehispanic, since they support a number of the large mounds.

Classification: Cantera phase Hamlet.

Late Formative Occupation: Archaeological remains: Late Formative materials were collected from all portions of the site, an extent of approximately 4.5 ha. Heavy plowing has disturbed all previous structures except the ceremonial mounds on the terraces. A wide selection of ceramic types was collected.

Classification: Small Village.

Other Occupations: Terminal Formative Hamlet, Early Classic Small Village, Late Classic Small Village (Hirth 1980), Early Postclassic Hamlet, Late Postclassic Large Village.

RAS-229

Latitude: 18° 29′ 33.00″

Longitude: 98° 42′ 0″

Location: Due west of Chimalcatlan.

Natural setting: The site is located near an impermanent barranca 570 m west of the Río Nexapa at the 1,000 m contour interval. The topographic zone is Open Low Hills, and the site has access to both the Huizache Grassland and River Bottomland vegetation zones.

Modern utilization: Maize is cultivated during the rainy season.

Middle Formative Occupation: Archaeological remains: This is a single-component site which consists of a simple ceramic dispersion. It extends over an area of 0.27 ha. Noticeable architectural features were lacking.

Classification: Cantera phase Isolated Residence.

RAS-231

Latitude: 18° 29′ 43.00″

Longitude: 98° 42′ 10.00″

Location: Due west of Chimalcatlan and RAS-229.

Natural setting: The site lies along an impermanent barranca at the 1,000 m contour interval. The closest permanent water source is the Río Nexapa 1.02 km to the east. The topographic zone is Open Low Hills, and the site has access to both the River Bottomland and Huizache Grassland vegetation zones. The soil is very shallow throughout the whole area.

Modern utilization: The site is fallow and used only for occasional grazing.

Middle Formative Occupation: Archaeological remains: The site is a small ceramic scatter lacking features. It extends over an area less than 0.50 ha.

Classification: Cantera phase Isolated Residence.

Other Occupation: Early Postclassic Isolated Residence.

RAS-232

Latitude: 18° 37′ 38.41″

Longitude: 98° 49′ 36.74″

Location: East of the Tepalcingo road, 1 km south of the railroad crossing.

Natural setting: The site is located on a low plain adjacent to the Río Frío between the 1,150 and 1,200 m contour intervals. The topographic zone is Flat Plains, and the site has access to both the Huizache Grassland and River Bottomland vegetation zones. The nearest impermanent drainage is 1.68 km to the east. Soil appears shallow and does not exceed 1 m in depth.

Modern utilization: Rainfall cultivation of corn, beans, and squash is practiced. Soil preparation is with oxen.

Middle Formative Occupation: Archaeological remains: The site consists of a mound and ceramic scatter. The mound, which appears to be residential, cannot definitely be assigned a temporal association because both Classic and Middle Formative debris were found on and around it. Middle Formative debris is scattered over less than 0.5 ha.

Classification: Barranca phase Isolated Residence, Cantera phase Isolated Residence.

Other Occupation: Classic Isolated Residence (Hirth 1980).

RAS-243

Latitude: 18° 38′ 33.4″

Longitude: 98° 45′ 15.03″

Location: At the southeast corner of the Cerro Tenango alongside the Río Amatzinac.

Natural setting: The site lies in a natural pocket formed by the eastern slopes of the Cerro Tenango and the Río Amatzinac. It has access to the Pithecellobium Woodland, Barranca, Huizache Grassland, and Interior Valley Cerros vegetation zones. The topographic zone is Low Mountains. Elevation is 1,250 m.

Modern utilization: The area had not been cultivated the year before the survey, although old field boundaries were clearly visible. Agriculture in this area depends on seasonal rainfall.

Middle Formative Occupation: Archaeological remains: The Middle Formative material lies around one fairly substantial mound and seven small clusters of rock identified as possible house formations. This material is scattered over 2.50 ha. To the south of the Middle Formative component is a large Classic and Late Postclassic occupation both on the fan in front of the Cerro slopes and on the terraces which extend up onto it. Only a few Middle Formative sherds were reported from these terraces, and they may not have been in situ material.

Classification: Barranca phase Isolated Residence, Cantera phase Hamlet.

Late Formative Occupation: Archaeological remains: Late Formative material is scattered over 9 ha. It is a light distribution, however, and there are no clear-cut marked buildups as might be expected around former residence structures. The heaviest concentrations are on the lower terraced slopes on the northeast side of the site. Unfortunately the later occupations at this site have disturbed materials from this occupation period. Only plainwares were recovered.

Classification: Hamlet.

Other Occupations: Terminal Formative Small Village, Early Classic Small Village, Late Classic Small Village (Hirth 1980), Early Postclassic Small Village, Late Postclassic Large Village.

RAS-257

Latitude: 18° 38′ 45.09″

Longitude: 98° 46′ 36.74″

Location: Near the town of Jonacatepec.

Natural setting: Between the 1,250 and 1,300 m contour intervals in the Low Mountains topographical zone. The vegetation zone is Interior Valley Cerros. Erosion is severe, and the soil is less than 60 cm deep. The Río Amatzinac is the closest permanent water source, lying 2.94 km to the east. An impermanent water source is 90 m to the west.

Modern utilization: The area is uncultivated *huizache* grassland.

Middle Formative Occupation: Archaeological remains: There is a trace of Cantera phase debris. No ground stone artifacts or evidence of permanent structures were found. This is a single-component site.

Classification: Cantera phase Isolated Residence.

RAS-258
Latitude: 18° 40′ 0″
Longitude: 98° 48′ 41.75″

Location: West-northwest of Las Lomas Chicas just off the southern road to Axochiapan in the *municipio* of Jonacatepec.

Natural setting: The site is located at the southern edge of the Pithecellobium Woodland vegetation zone. The topographic zone is Flat Plains. The site is 45 m east of an impermanent drainage, and 780 m east of the Río Frío. Elevation is 1,300 m. Erosion is slight, and the soil is less than 1 m deep.

Modern utilization: Maize is cultivated during the rainy season, and the field is prepared with teams of oxen.

Middle Formative Occupation: Archaeological remains: A light ceramic scatter covered 0.43 ha. Rubble was moderate. One small house mound was located, but it is in poor condition due to plowing. Artifacts collected included domestic ceramics, manos, and metates.

Classification: Cantera phase Isolated Residence.

Late Formative Occupation: Archaeological remains: A light scatter of Late Formative material was associated with the Cantera phase occupation areas. The association of Cantera and Late Formative material suggests continuity in the site's occupation.

Classification: Isolated Residence.

RAS-264
Latitude: 18° 39′ 31.73″
Longitude: 98° 48′ 41.75″

Location: Southwest of Las Lomas and east of Atotonilco, directly alongside the Zacualpan-Axochiapan highway.

Natural setting: The site's topographic zone is Flat Plains, and the vegetation zone is Huizache Grassland. Elevation is 1,300 m. The site is on an impermanent drainage, 540 m east of the closest permanent water source, the Río Frío.

Modern utilization: Maize and bean agriculture is practiced during the rainy season, the fields being prepared with oxen.

Late Formative Occupation: Archaeological remains: This is largely a Late Formative occupation site. Material is scattered across 1.25 ha in fairly high densities. Clusters of ceramics, chipped and ground stone artifacts, fire-cracked rock, and stone construction material were found associated in the central portion of the site. Both plain and decorated ceramics were recovered. Six platform mounds were located and mapped. The site may be larger than our site classification indicates.

Classification: Hamlet.

Other Occupations: Terminal Formative Isolated Residence (Hirth 1980), Late Postclassic Isolated Residence.

RAS-266 (Atotonilco)
Latitude: 18° 39′ 6.68″
Longitude: 98° 49′ 43.42″

Location: In the modern village of Atotonilco.

Natural setting: This site lies on the lower slopes of a hillside overlooking a spring at the 1,300 m contour interval. The vegetation zone is Huizache Grassland and the topographic zone is Hills. The Río Frío lies 1.2 km to the east.

Modern utilization: The upper slopes and terraces are fallow and overlook the modern village. The lower portion of the site, around the spring, is now covered by a swimming pool complex and its facilities.

Early Formative Occupation: Archaeological remains: A few Amate phase sherds were found at the spring by Grove (personal communication). Two figurine heads were located on the slopes above the resort.

Classification: Isolated Residence.

Middle Formative Occupation: Archaeological remains: Estimation of site boundaries was impeded by the spread of the *balneario* facilities and was accomplished only insofar as there were field observations and reports to warrant them. The upper hillside boundaries could be found, and the lower boundaries were set directly to the south of the *balneario* springs. Middle Formative, Classic, and Tlahuica (Postclassic) materials are recorded from the installation excavations carried out when the facility was built (Grove 1968b:278). The obtained figure for site extent is 6 ha, which is probably too small.

Classification: Barranca phase Hamlet, Cantera phase Hamlet.

Other Occupations: Classic Isolated Residence (Hirth 1980), Late Postclassic Regional Center.

RAS-271
Latitude: 18° 37′ 40.08″
Longitude: 98° 50′ 1.67″

Location: North of Tepalcingo, 100 m west of the Atotonilco-Tepalcingo highway.

Natural setting: This site is located between the 1,150 and 1,200 m contour intervals. The vegetation zone is Huizache Grassland, and the topographic zone is Flat Plains. The site is 990 m west of the Río Frío and 665 m east of an impermanent drainage. The soil varies in depth from 0.75 to 1 m.

Modern utilization: The site is located within a modern irrigation system. At the time of the survey it was planted in tomatoes, and slightly to the south cotton was growing. The soil is prepared by tractor plowing.

Middle Formative Occupation: Archaeological remains: Only a trace of Middle Formative material was found. There were no heavy buildups of surface rubble to suggest large-scale permanent residence. This is a single-component site.

Classification: Cantera phase Isolated Residence.

RAS-292
Latitude: 18° 45′ 6.68″
Longitude: 98° 47′ 6.68″

Location: In irrigated plots near the town of Huazulco.

Natural setting: This site is located in the northern Pithecellobium Woodland vegetation zone and the Flat Plains topographic zone. Site elevation is 1,475 m. The closest source of permanent water is the Río Amatzinac, more than 1 km away.

Modern utilization: The area is completely irrigated and planted in peanuts. Field preparation is with oxen.

Late Formative Occupation: Archaeological remains: A light trace of Late Formative material was found. There was no indication of any permanent architecture. This is a single-component site.

Classification: Isolated Residence.

RAS-295
Latitude: 18° 45′ 38.41″
Longitude: 98° 47′ 0″

Location: Northwest of the town of Huazulco.

Natural setting: This site is in the northern Pithecellobium Woodland zone. It is 150 m from an impermanent drainage and over 600 m from the nearest source of permanent water. Site elevation is 1,500 m. The topographic zone is Flat Plains.

Modern utilization: The whole site area is irrigated, and peanuts were growing at the time of the survey. Field preparation is with oxen.

Late Formative Occupation: Archaeological remains: A light scatter of material was encountered. There were no indications of residential structures.

Classification: Isolated Residence.
Other Occupations: Terminal Formative Isolated Residence, Classic Isolated Residence (Hirth 1980), Late Postclassic Isolated Residence.

RAS-318
Latitude: 18° 40′ 35.07″
Longitude: 98° 47′ 18.37″

Location: Due south of the ex-hacienda Santa Clara east-southeast of Jonacatepec.

Natural setting: This site is located directly below the 1,350 m contour interval at the base of two flanking hills, a situation which could be termed a pocket valley. The topographical zone is Irregular Plains, Slight Relief, and the site has access to the Pithecellobium Woodland, River Bottomland, and Interior Valley Cerros vegetation zones. It is 2.20 km west of the Río Amatzinac and 475 m from an impermanent drainage.

Modern utilization: Half of the site is permanently fallow, while the other half is a rainfall-watered maize field.
Middle Formative Occupation: Archaeological remains: There is a slight scatter of Cantera phase materials over the site. Rubble from residential architecture and a good selection of ground and chipped stone artifacts were noted. Two areas of unusually dense debris may represent former residences.

Classification: Cantera phase Isolated Residence.
Other Occupations: Early Postclassic Isolated Residence, Late Postclassic Hamlet.

RAS-326
Latitude: 18° 41′ 16.7″
Longitude: 98° 46′ 23.38″

Location: In house plots in the northeastern part of the modern village of Chalcatzingo.

Natural setting: The site is located 300 m east of the Río Amatzinac, in the Flat Plains topographic zone between the 1,350 and 1,400 m contour intervals. It is in the Pithecellobium Woodland vegetation zone and borders on the Barranca zone.

Modern utilization: Part of the area is fallow; the rest consists of house and garden plots cultivated using oxen.
Middle Formative Occupation: Archaeological remains: The site consists of a simple ceramic dispersion across the house plots on the northeast part of the village of Chalcatzingo. An area of 3.5 ha was calculated for site extent, although this might be underestimated. Collections were made in the house plots, and well digging has turned up a good selection of Barranca and Cantera phase material. Several small jade beads and ground stone artifacts were also found.

Classification: Barranca phase Hamlet, Cantera phase Hamlet.
Other Occupation: Late Postclassic Hamlet (Hirth 1980).

RAS-328
Latitude: 18° 41′ 5.01″
Longitude: 98° 46′ 16.7″

Location: Southeast of the modern village of Chalcatzingo.

Natural setting: The site is located in the Pithecellobium Woodland zone, and the topographic zone is Flat Plains. Elevation is 1,375 m. Easy access to the barranca zone resources is found along the Río Amatzinac 200 m to the east. The soil is sandy, and erosion is slight.

Modern utilization: Rainfall cultivation of maize, beans, squash, and peanuts is practiced. The field is plowed using oxen. This site was used to test the effects of seasonal rainfall and field preparation on the amount of recordable surface debris (Hirth 1978c).
Middle Formative Occupation: Archaeological remains: A thin Middle Formative ceramic scatter was found over 2.50 ha. The fields had been cleaned of most stone rubble.

Classification: Barranca phase Isolated Residence, Cantera phase Hamlet.
Late Formative Occupation: Archaeological remains: A light scatter of Late Formative ceramics was found across a little over 1 ha. No architectural structures were associated.

Classification: Isolated Residence.
Other Occupations: Early Classic Hamlet (Hirth 1978c; 1980), Late Postclassic Isolated Residence.

RAS-330 (Chalcatzingo)
Latitude: 18° 40′ 41.75″
Longitude: 98° 46′ 10.02″

Location and natural setting: See Chapter 2.

Modern utilization: See Chapter 26.

Archaeological remains: See Chapters 4–20, 24.

Classification: Amate phase Small Village, Barranca phase Small Village, Cantera phase Regional Center, Late Formative Small Village, Terminal Formative Small Village, Early Classic Small Village, Late Classic Small Village (Hirth 1980), Postclassic shrine.

APPENDIX I

Postclassic Artifacts from Tetla

LYNETTE NORR

Many of the artifacts recovered from the Tetla excavations and survey are described and illustrated here. Categories of artifacts include ceramic vessels, spindle whorls, miscellaneous ceramic objects, and lithics. Because the latest occupation at Tetla is early Aztec, or Second Intermediate Phase Three, illustration of these materials may prove helpful in identifying early Aztec components in a mixed context.

CERAMICS

Table I.1 lists the ceramic wares which comprise part of the Middle Postclassic early Aztec assemblage at Tetla. The sherd counts and percentages are derived from the house excavation data, while illustrations also include sherds gathered during reconnaissance of the area. The table includes a breakdown of the ceramic wares by gross form (olla, bowl, comal).

***Black on Orange Ware* (79 sherds/ 45 rims; Figs. I.1–I.3)**

The Black on Orange ware from Tetla is very similar in both form and decoration to the Culhuacan Negro sobre Anaranjado type described by James Griffin and Antoinetta Espejo (1947; 1950) and Azteca I described by Laurette Séjourné (1970), while only a few similarities can be found with contemporary ceramics presented by Eduardo Noguera (1954) from Cholula. Black on Orange ware types II, III, and IV (Griffin and Espejo's Tenayuca, Tenochtitlan, and Tlatelolco types) are absent from the Tetla ceramic assemblage. Although Black on Orange ware is not the predominant decorated ceramic ware at Tetla, it was the most useful decorated ware for establishing the ceramic phasing of the Postclassic occupation at the site.

Definition

A black (5YR2/1–2) to dusky red (10R3/3; 2.5YR2–3/2; 5YR3/1–3) decoration is painted on the natural burnished orange-brown clay surface (2.5YR3/4, 5/8; 5YR4–6/8, 6/3; 7.5YR7/4–6) or on a thinly slipped and burnished orange surface (2.5YR4–5/6–8; 5YR5–6/6–8, 5/4; 7.5YR5/6). The ware is characterized by a wide black band along the interior or exterior rim. Most of the examples have 2–7 mm horizontal straight and/or wavy line decoration, either by itself or combined with other designs such as the common quadrangular scroll and stepped fret, the horizontal S motif, concentric half circles or the "*ojo estelar*," the *xicalcoliuhqui* motif (e.g., Fig. I.1*h*) and bound vertical and oblique crossed lines. The paste is fine to medium in texture with a fine sand temper and small, occasional lenticular spaces. Sherd fractures are sharp to slightly crumbly. Vessel wall thickness ranges from 3 to 11 mm with a bimodal distribution around 6 mm and 9 mm. The thicker-walled sherds tend to have wider line decorations and are discussed separately as a typological variant.

The vertical to incurving wall, recurved rim bowl is the predominant vessel form (Fig. I.1). These bowls are generally small, with mouth diameters of 8–12 cm, or a slightly larger group, 16–18 cm. The exterior painted black decoration consists of various combinations of straight and wavy lines, concentric half circles, and variations of the quadrangular scroll and stepped fret motif in a horizontal band under the rim and along the shoulder of the vessel.

Vertical to flaring wall, recurved bowls are shallower, slightly larger, and often supported, and are decorated on the interior of the vessel (Figs. I.2, I.3*a–k*). These interior vessel designs consist of straight and wavy lines and concentric half circles with the addition of the horizontal S motif, irregular dots, or simply bound vertical and oblique crossed lines on the vessel wall. The vessel supports are either zoomorphic, hollow truncated conical to cylindrical, or solid conical forms. The supported vessels also have either a painted design, or a stamped design on the interior base or *fondo* of the vessel. Cross-hatched incised grater bottom vessels common in later Black on Orange types are totally absent from the Tetla ceramic assemblage.

There are only a few examples of vessels with an evenly curving direct rim form. These vessel forms range from an incurving to hemispherical bowl form to a shallow supported bowl form. The decoration is very similar to what has already been described and can be found on the interior or exterior of the vessel wall (Fig. I.3*n–s*).

A single everted rim form was found in the subfloor platform fill of the house (Fig. I.3*l*) and a single olla sherd from the house fill (Fig. I.3*m*).

Thick-Walled Variant

Several of the Black on Orange ware Aztec I sherds, the majority of which were from the Tetla survey rather than the house excavations, were thicker than most and had painted black designs which were thicker-lined, more linear in design, and generally less "busy" than those which have just been described (Fig. I.3*t–kk*). Design motifs such as concentric half circles, the horizontal S motif, and the scroll and stepped fret are absent in these ceramics. Designs which are common are straight horizontal black lines with the addition of a single wavy line, irregular dots or splotches in a horizontal row under the rim, and bound vertical and oblique crossed lines. Many of these designs are reminiscent of some of the Coyotlatelco ceramic designs (Rattray 1966). All of the decoration occurs on the interior of the vessels, which are vertical to flaring wall recurved rim or direct rim vessels. A few sherds have worn areas on the interior walls which

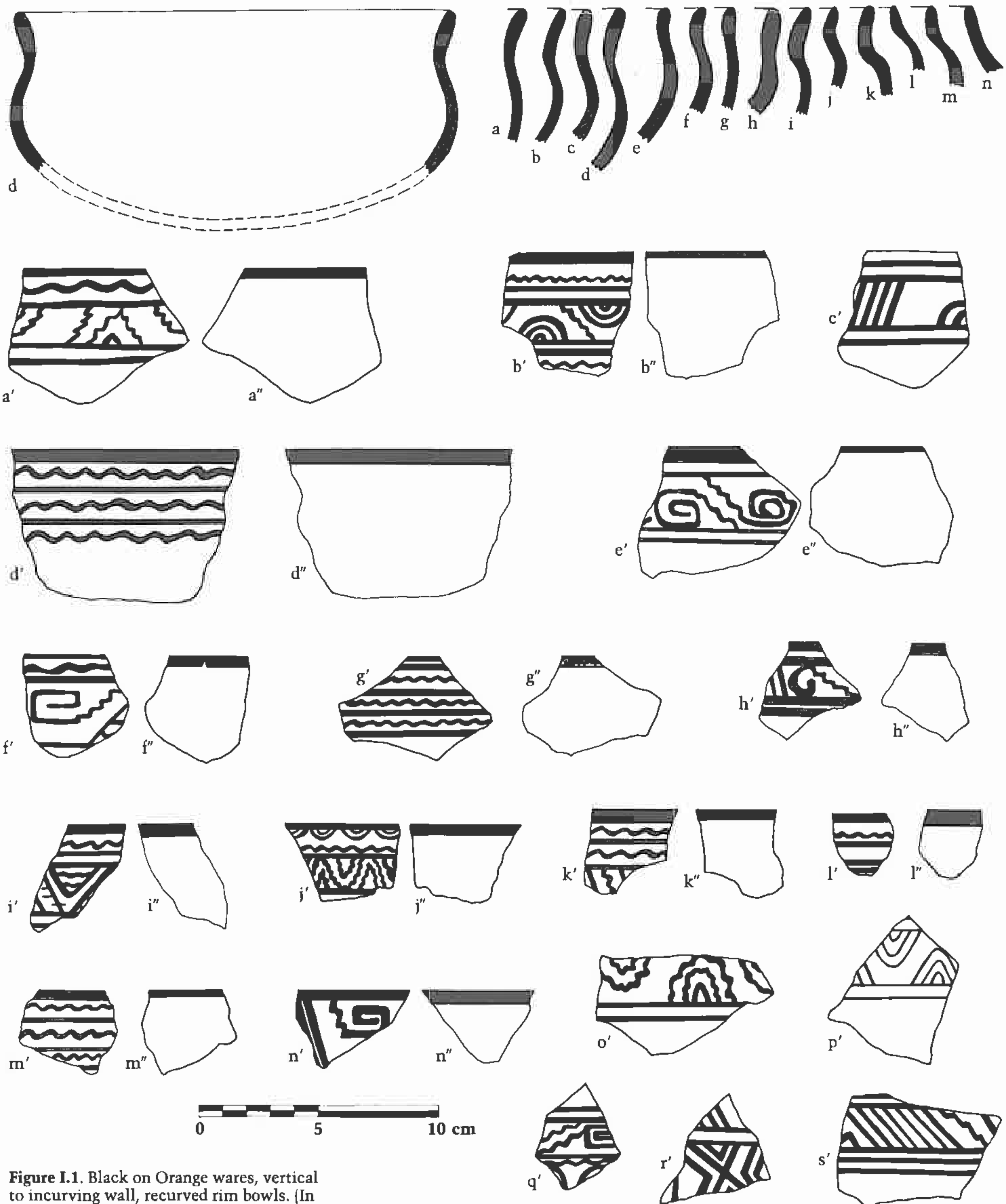

Figure I.1. Black on Orange wares, vertical to incurving wall, recurved rim bowls. (In Figures I.1–I.16, the rim profile of each sherd is identified by a letter, such as *a*; the exterior view of sherd *a* is labeled *a′* and the interior view, *a″*.)

Table I.1. **Sherd and Rim Totals from Tetla-11 House Area Excavations**

Ceramic Ware	Sherd/Rim Quantities by Vessel Form			
	Olla	Bowl	Comal	Totals
Black on Orange	1/0	78/45		79/45
Polished Red				
Plain Polished Red		238/118		238/118
Black on Red		88/58		88/58
Graphite-Black on Red		57/30		57/30
Black and White on Red		18/9		18/9
Graphite-Black and White on Red		0/0		0/0
White on Red		4/1		4/1
Black and White and Orange on Red		1/1		1/1
White-Slipped Orange Ware Polychromes		25/18		25/18
Red on Burnished Buff	5/0	62/26		67/26
Black on White	10/2	1/1		11/3
Brown-Banded Orange-Slipped		12/6		12/6
Brown or Orange-Slipped Utilitarian	4,708/153	1,238/230	624/97	6,570/480
Unslipped Burnished	766/6	631/112	4/4	1,401/122
Tetla Coarse	No data	No data	No data	2,654/131
Mica Tempered Coarse	7/0	8/0		15/0
Eroded, unidentifiable	No data	No data	No data	4,972/211

Note: Sherd totals shown include rims, which are also tabulated separately.

may indicate that they were once grater bowls. This variant may have a different temporal or spatial significance from the majority of the Black on Orange ware sherds at Tetla.

***Polished Red Ware* (406 sherds/ 217 rims; Fig. I.4)**

It is well accepted that Polished Red ware, with its defined types of Black and/or White on Red, is a significant ware in the Aztec ceramic assemblage. At the same time, very little is known about its temporal depth or geographical and cultural origins.

Tetla Polished Red ware is most similar to the Red ware described by Jeffrey Parsons from the Oxtoticpac excavations in the Teotihuacan Valley. Oxtoticpac Red ware is characterized by "thick walled bowls, often with somewhat recurved rims, with a high proportion of polished black interiors" (Parsons 1966: 277). Parsons considers this material to be predominantly Hueoxtoc phase, which corresponds temporally to Griffin and Espejo's Culhuacan phase (1947; 1950) and José Luis Franco's I and I–II phases (1949). It is emphasized that the Tetla Polished Red ware discussed here was found in clear association with unmixed Aztec I phase Black on Orange ware, just described, and I believe it serves as a valid definition of Red ware during the early phase of the Aztec ceramic sequence southeast of the Basin of Mexico. Polished Red ware comprises 68.2 percent of the decorated ceramics at Tetla, but only 2.5 percent of the total ceramic assemblage.

Definition

In most cases a thick, highly polished dark red slip (7.5R4/8, 3/4–8; 10R3–4/6) has been applied to both interior and exterior vessel surfaces. Occasionally, the lower portion of the vessel exterior is unslipped and burnished, with burnishing streaks still visible. The dark red slip fired to a reddish brown color (10R3–4/3–4; 2.5YR3–4/2–6) in 8 percent of the Tetla sample. Decoration consists of black and/or white painted geometric or curvilinear designs on the red slip, with an occasional addition of an orange to yellow (2.5YR6/6; 5YR6/6) paint. An engraved decoration is sometimes found to accompany a painted black decoration, but independent of, not outlining, the painted design. The clay fires to a grey or light brown (5YR5/3; 7.5YR6/4) or reddish brown (2.5YR4–6/4–6; 5YR5/4), often leaving a grey-black central core. The paste is fine-textured with sparse fine-grained sand temper. Small air pockets visible in clay suggest that a fibrous temper may also have been used.

Polished Red ware vessels are most often flat-based and round-sided bowls with a curving wall-base juncture. These simple bowl bases are often dimpled, with a circular raised area in the center of the interior base. Both direct and recurved rim forms are common. The rim is often slightly thickened, then tapered up to the lip. Total vessel height, as seen from the few partial vessels, is from 5 to 9 cm. Flat-based vessels with either direct or recurved rim forms are usually tripod support vessels. Both the solid zoomorphic support and the hollow globular support are common at Tetla. Mouth diameter ranges from 12 to 28 cm with the most common vessel size between 20–24 cm. Vessel wall thickness ranges from 4 to 9 mm with a modal thickness of 6–7 mm.

Tetla Polished Red ware was typed according to painted decoration. Two types of black paint occur, a plain matte black and a greyish, graphitic (specular) black. White and orange painted decorations are also found, but not in great quantity.

Plain Polished Red Type *(238 sherds/118 rims; Fig. I.4a–p)*

The first type is the basic, undecorated Polished Red ware described above. Some of the sherds included in this type are surely fragments of the decorated vessels which had no decoration on the part of the vessel from which these sherds came. A nearly complete vessel with a dimpled and raised base and other large undecorated rim sherds support Plain Polished Red as a valid type. Rim forms are mostly direct, but recurved rims

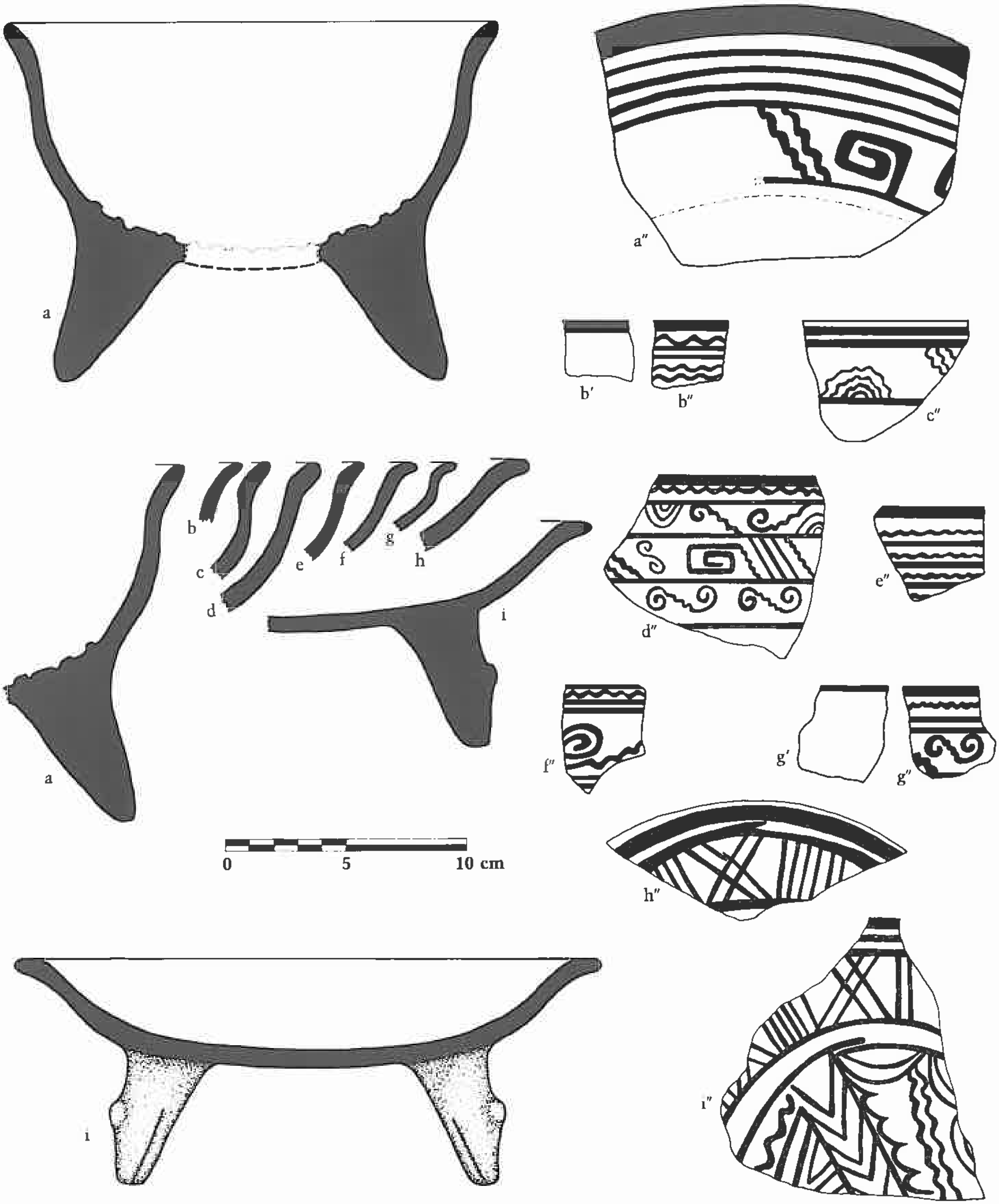

Figure I.2. **Black on** Orange **wares, vertical to** flaring **wall, recurved** rim **bowls.**

Figure I.3. Black on Orange wares: *a–k*, interior designs; *i–k*, stamped interior bases; *l*, everted rim; *m*, olla sherd; *n–o*, evenly curving direct rim bowls; *s*, stamped interior base; *t–kk*, thick variants recovered in survey.

comprise more than one-third of the sample. Included in this type are several support forms: solid zoomorphic, hollow globular, mammiform, and conical.

Seven Plain Polished Red sherds have exterior engraved designs. Although classified as Plain Polished Red, all are actually considered to be portions of decorated Black or Graphite-black on Red vessels. These engraved sherds are very small, and none are rims or bases, where the black painted decoration generally occurs.

Black on Red Type *(88 sherds/58 rims; Fig. I.4q–ee)*

The Black on Red type is defined by a painted black decoration (10R2/1; 2.5YR2/0–2; 5YR2/1; 7.5YR2/0) on the red-slipped surface. This black decoration is painted in 8–20 mm wide horizontal bands along the rim, the basal break, or the raised interior of a dimpled base. Or, as in the case with the Oxtoticpac sample, the entire interior surface may be painted black. This simple decoration is sometimes accompanied by painted geometric or curvilinear designs, or simple engravings such as a repeating vertical hook or parallel horizontal wavy lines. Vessel forms are shallow to hemispherical bowls with an occasional dimpled base. Rims are generally direct with some slightly thickened, then tapered lips. Recurved rim forms are present, but scarce. No supports are known to belong to this type.

Graphite-Black on Red Type *(57 sherds/30 rims; Figs. I.5–I.7)*

According to an analysis by the Illinois State Geological Survey, the black-painted decoration of this type is graphite. The color of this paint is a lustrous dark steel grey (7.5YR3–4/0) and looks like heavy pencil shading. The painted decoration of this type is much the same as that of the Tetla Black on Red type, simple parallel banding and curvilinear designs. Vessel form is much the same, with the addition of plate forms with zoomorphic, slab, and hollow supports and a slightly higher frequency of recurved rims (Fig. I.6). Engraving is most common on the Graphite-Black on Red type and is often the repeating vertical hook design on the wall of the vessel exterior (Fig. I.7).

Black and White on Red Type *(18 sherds/9 rims; Fig. I.8a–o)*

A black and white decoration, sometimes complex geometric and curvilinear designs, was applied most often to the exterior of shallow or hemispherical bowl forms. The interior of these vessels was sometimes left unslipped and burnished, a natural clay color of light brown (7.5YR5–6/4, 2.5YR6/4), or sometimes slipped black (2.5YR2/0). A single rim form from the house excavations is recurved, while the remaining rims are direct. The additional rims from Tetla are consistent with this latter form.

Graphite-Black and White on Red Type *(no sherds from excavations; Fig. I.8p–q)*

Two sherds from the surface survey near the ball court have exterior painted decorations of complex linear and geometric graphite-black and white designs. The only rim form (Fig. I.8*p*) is from a vertical wall recurved rim vessel with a mouth diameter of 18 cm. The interior of this vessel is plain, polished red, while the interior of the body sherd (Fig. I.8*q*) shows a portion of a large, thin-lined quadrangular scroll motif painted in specular black paint on red.

White on Red Type *(4 sherds/1 rim; Fig. I.8r)*

The single rim form is a shallow bowl with a direct rim which is slightly bolstered, then tapered to the lip. The decoration occurs on the vessel exterior.

Black and White and Orange on Red Type *(1 sherd/1 rim; Fig. I.8s–z)*

One shallow bowl rim from the house excavations has painted orange and black decoration over the red slip (Fig. I.8*s*). A resist technique was used to leave the red background showing as if it were the actual painted design on an orange surface. The rim form is direct, with a bolstered, then tapered rim. There are two rims from near the ball court which have an orange painted decoration incorporated within the black and white design on the vessel exterior (Fig. I.8*t*, *u*). One rim, a shallow direct rim bowl, has an undecorated dark reddish brown interior (2.5 YR 3/4) and a paneled horizontal S motif in rows of alternate white and pinkish orange (2.5YR6/6) designs (Fig. I.8*x*). The other rim also has an undecorated, but unslipped interior (7.5YR5/4). The exterior design uses the orange (5YR6/6) to shade a portion of a stepped fret design. This second rim form is also direct and is from a hemispherical bowl form (Fig. I.8*v*).

Other *(2 partial vessels; Fig. I.9)*

Tetla strata pit excavations several meters to the southwest of the house uncovered the remains of a cremation burial in a small shallow bowl with a black painted interior and an undecorated polished red exterior. Covering the cremation vessel was one-half of a mammiform-supported Polished Red plate with a resist feathered-serpent motif on the interior base and rim.

***White Slipped Orange Ware Polychromes* (25 sherds/18 rims; Fig. I.10)**

Only a few examples of White-Slipped Orange ware polychromes were found at Tetla. Some show close similarities in both form and decoration to Noguera's Cholula *policroma firme* (1954:122–136, Pls. 122, 126, no. 3, 129, no. 1) and, to a lesser degree, to George C. O'Neill's Chalco polychrome and Orange Rubbed ceramics (1962:64–81), while others show few similarities to either. There are also no clear-cut paste or temper distinctions within this group of Tetla polychromes.

Definition

A white slip was applied over a smoothed or burnished orange clay surface. A polychrome design of orange, red, maroon, and brown and/or black was painted on the white slip and covered with a thin yellow *laca*-like finish. Vessel forms are shallow to hemispherical bowls and supported plates. The paste is fine and hard with sparse temper to slightly crumbly with moderate amounts of sand temper.

The examples which resemble the Cholula and Chalco polychromes are primarily open bowls, one with a raised area in the interior base, or supported plates. The white slip covers most of the vessel, and the painted decoration geometric or banded vertical lines on the interior vessel walls and curvilinear on the interior base (Fig. I.10*a–f*). Two hemispherical bowls with maroon-painted rim bands and another hemispherical bowl resemble the surface treatment described by O'Neill for his Orange Rubbed ceramics where the white slip appears to be rubbed into the self-slipped orange paste of the vessel, giving a streaky appearance to the surface (Fig. I.10*g–i*).

Examples illustrated in Figure I.10*j–u* do not particularly resemble any polychromes described by either O'Neill or Noguera. These vessels are primarily hemispherical bowls, and all examples but one have their only decoration just under the rim on the vessel exterior. The vessels are predominantly the burnished orange color of the clay, and vessel interiors are often streaky black or streaky cream-colored. Las Pilas collections contain similar ceramics (Michael E. Smith,

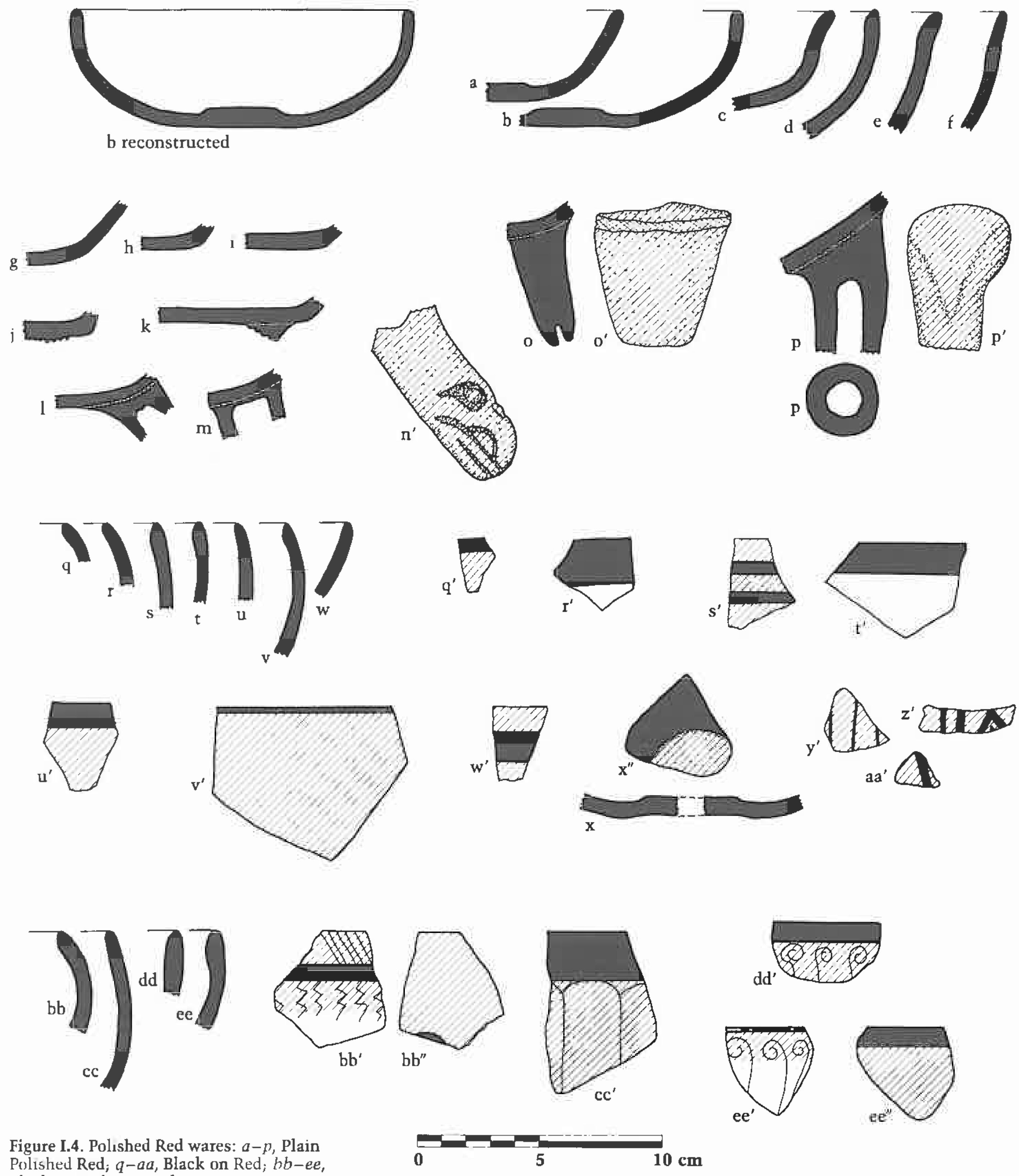

Figure I.4. Polished Red wares: *a–p*, Plain Polished Red; *q–aa*, Black on Red; *bb–ee*, Black on Red engraved.

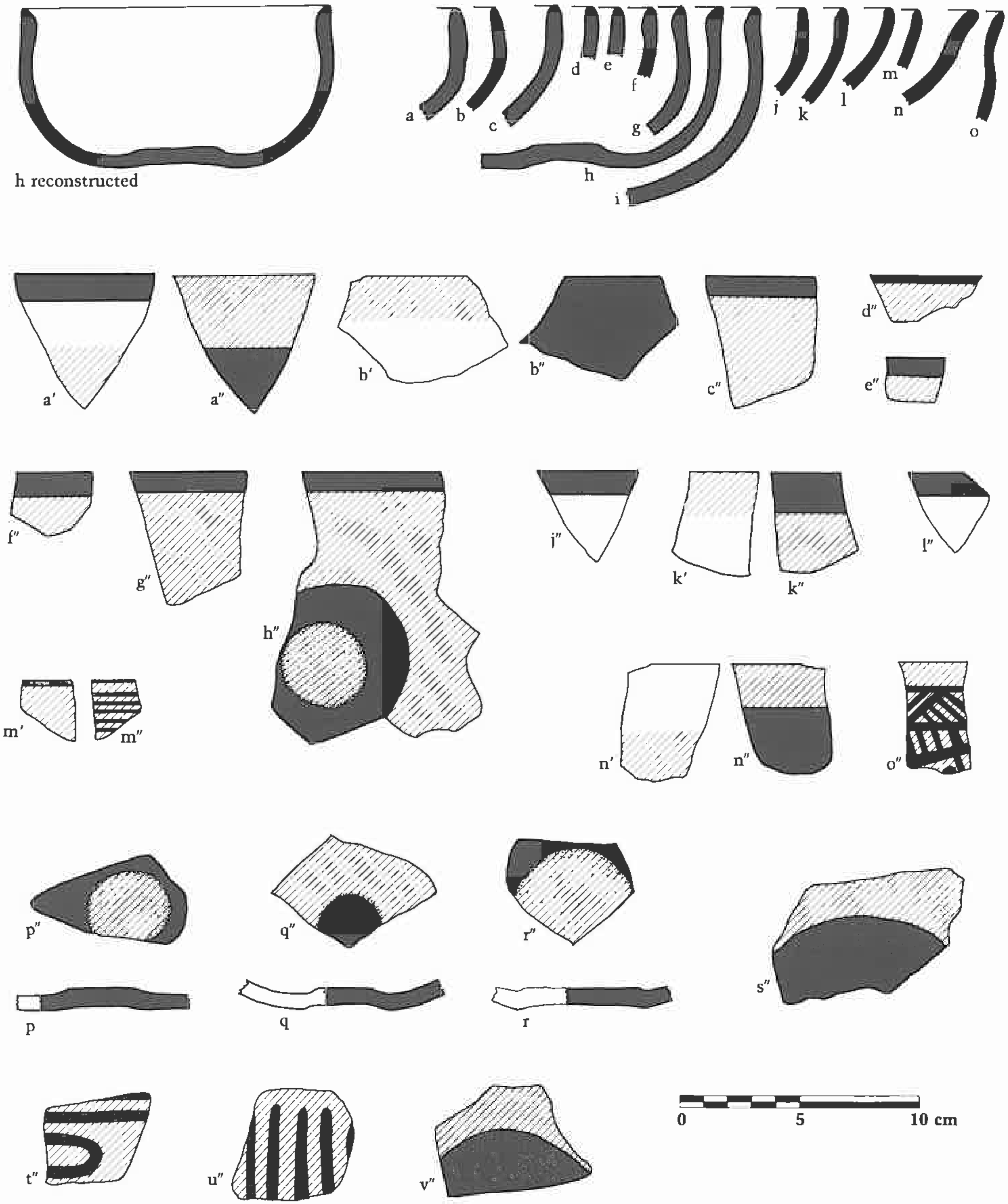

Figure I.5. Polished Red wares: Graphite-Black on Red bowls.

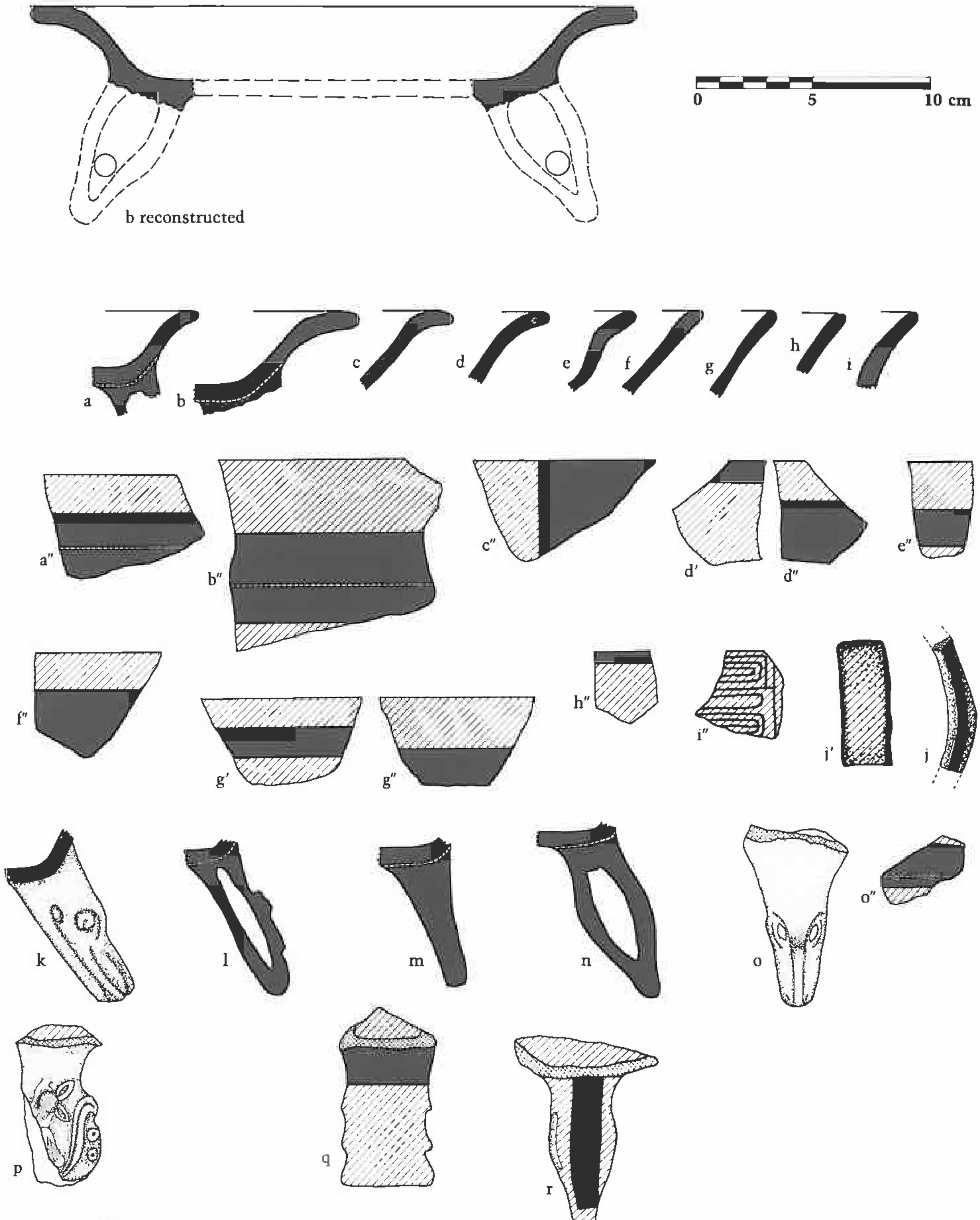

Figure I.6. Polished Red wares: Graphite-Black on Red plate forms.

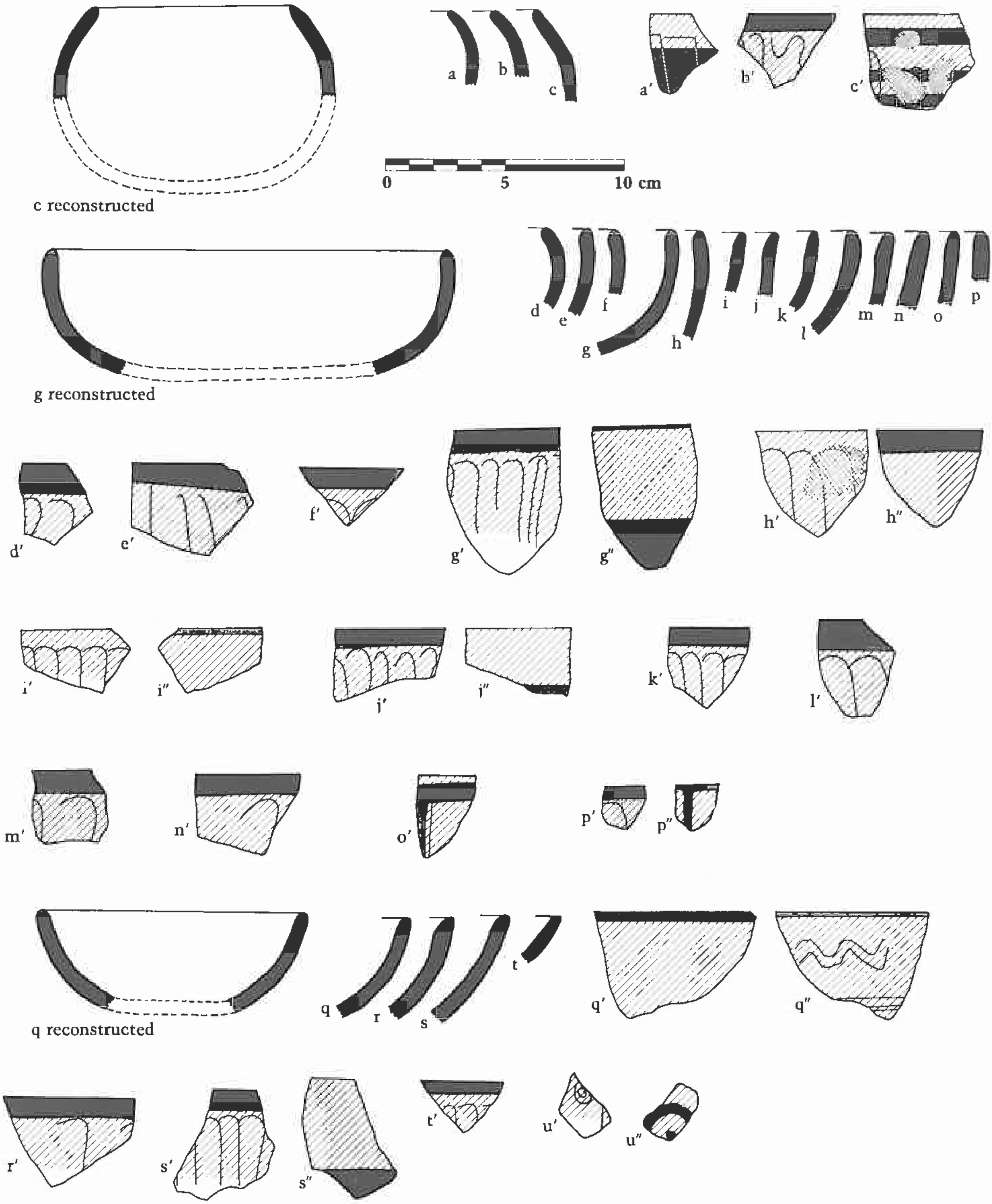

Figure I.7. Polished Red wares: Graphite-Black on Red engraved bowls.

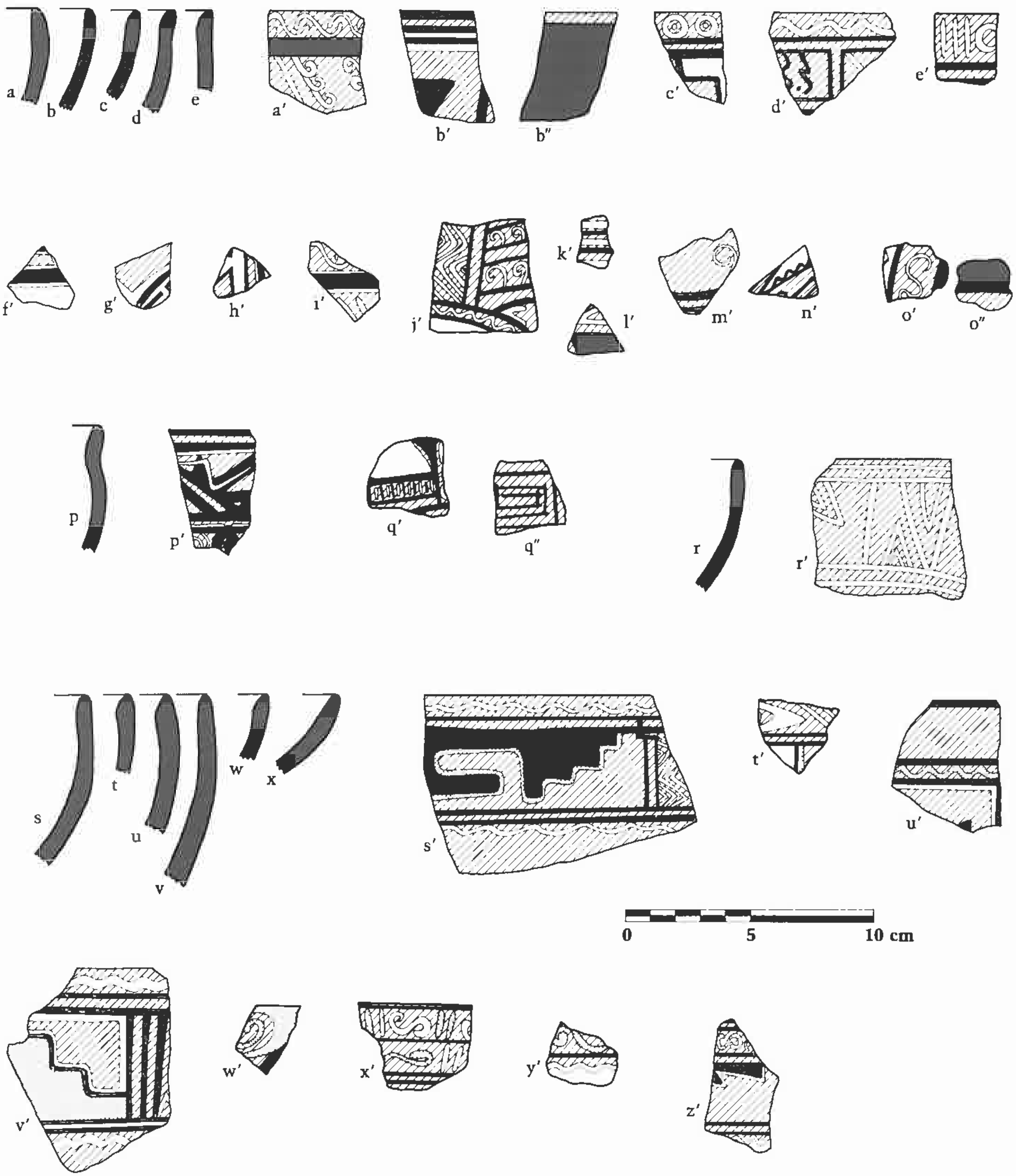

Figure I.8. Polished Red wares: *a–o*, **Black and White on Red;** *p–q*, Graphite-Black **and White on Red;** ***r***, White-on-Red; *s–z*, **Black and White and Orange on Red.**

personal communication), and these polychromes may be related to the Tlalhuica ceramics of western Morelos, although their association at this time is anything but clear.

Red on Burnished Buff Ware **(67 sherds/26 rims; Fig. I.11)**

Red on Burnished Buff ware comprises the third most frequently occurring decorated ware at Tetla, 10.4 percent of the decorated ceramics. These ceramics at Tetla are nearly identical to those found at Culhuacan by Séjourné (1970:35, Figs. 27, 27A) in Aztec I and II contexts. By all indications, at Tetla these ceramics are also a genuine component of the early Aztec ceramic complex and not simply a result of mixing with earlier levels.

Definition

A Red (7.5R3–4/6, 3/8; 10R4/6) slip or painted decoration was applied over a light brown (5YR6/3; 7.5YR6/2–4) unslipped burnished surface. The painted decoration is generally in horizontal straight or wavy lines on the interior wall and base and nearly always found on the interior and exterior lip of the vessel. The zoned incised examples (Fig. I.11 *a–p*) have geometric areas delimited by incisions and filled in with red on the unslipped burnished surface of the exterior of the vessels. The interiors of these zoned incised sherds are consistently solid red.

The bowl vessel forms for both types are predominantly vertical to flaring straight and slightly curved wall bowls with flat to nearly flat bases. Hollow supports and solid anthropomorphic supports (Fig. I.11*q–t*; MacNeish, Peterson, and Flannery 1970:Fig. 111) are present. A sherd with a fragment of a raised bottom was also found.

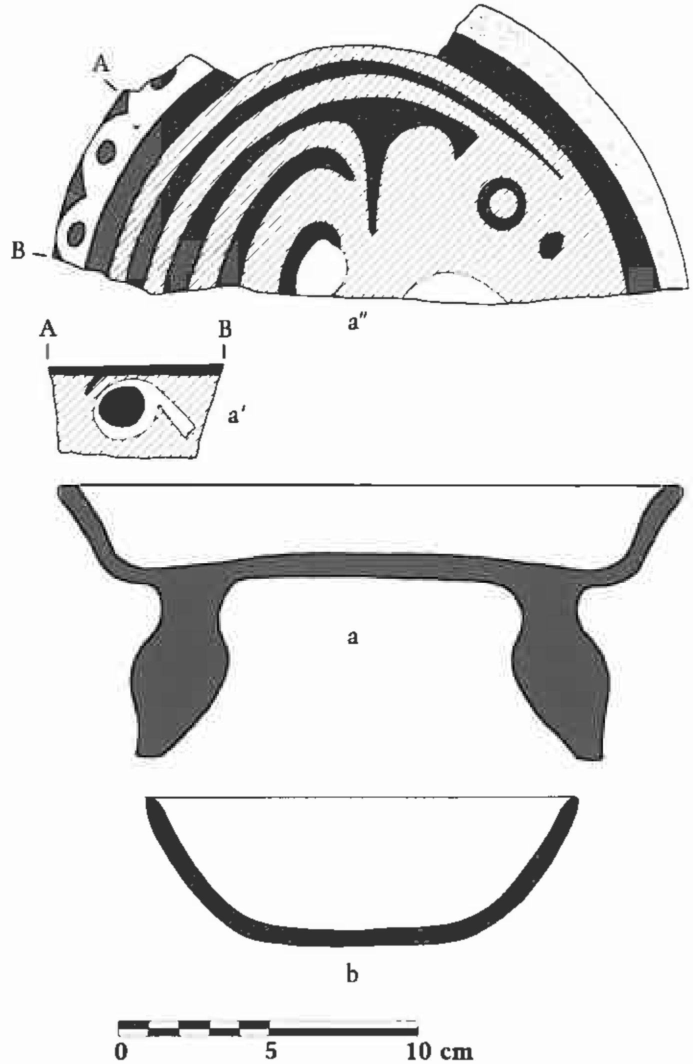

Figure I.9. Vessels associated with a burial: *a*, Polished Red plate; *b*, Black on Red bowl.

Black on White Slipped Ware **(11 sherds/3 rims; Fig. I.12)**

Definition

A dark reddish brown to black (2.5YR 4/4; 5YR2–3/1–2) design of linear, curvilinear, and geometric motifs is painted on a poorly smoothed and unevenly slipped creamy white surface (10YR8/3, 7/4; 7.5YR8/2, 7/2–4; 5YR6/4). The sherds are mostly olla fragments. Decoration occurs on both the interior and exterior of the olla rims and only in the interior of the shallow dish rim form. A bowl basal fragment from the ball court area may be a portion of a grater bowl. The paste is light brown to light red (7.5 YR6–7/4; 10YR7/3; or 2.5YR6/8) and sometimes has a dark grey core. The vessel walls are from 5 to 8 mm thick, and the clay is heavily tempered with predominantly black sand, giving the sherds a coarse, crumbly texture.

This ware is not at all like the fine-paste Black on White Huasteca ceramics described by Parsons (1966:276–277) which occur in the Teotihuacan Valley Aztec ceramic sequence. No other discussion of a Black on White ware in an Aztec context could be found in the literature. A relationship to the Tlalhuica Black and Red on White and Orange is possible, but seems unlikely when one compares the differences in vessel form, pastes, and quality of manufacture. The Las Pilas collections in the Palacio de Cortez, Cuernavaca, have examples of a Black on White slipped ware which seem to be the same ceramic ware as the Tetla samples. Xochipala, Guerrero, surveys have also produced a fair amount of a similar ware (Paul Schmidt, personal communication).

Brown-Rimmed Orange-Slipped Ware **(12 sherds/6 rims; Fig. I.13)**

A minor decorated ceramic ware at Tetla, only 2 percent of the decorated ceramics, the Brown-Rimmed Orange-Slipped ware may actually be only a variant of the Brown- or Range-Slipped Utilitarian ware, whose description follows this one. The paste of the small sample of Brown-Rimmed Orange-Slipped ceramics appears distinctly finer in texture and

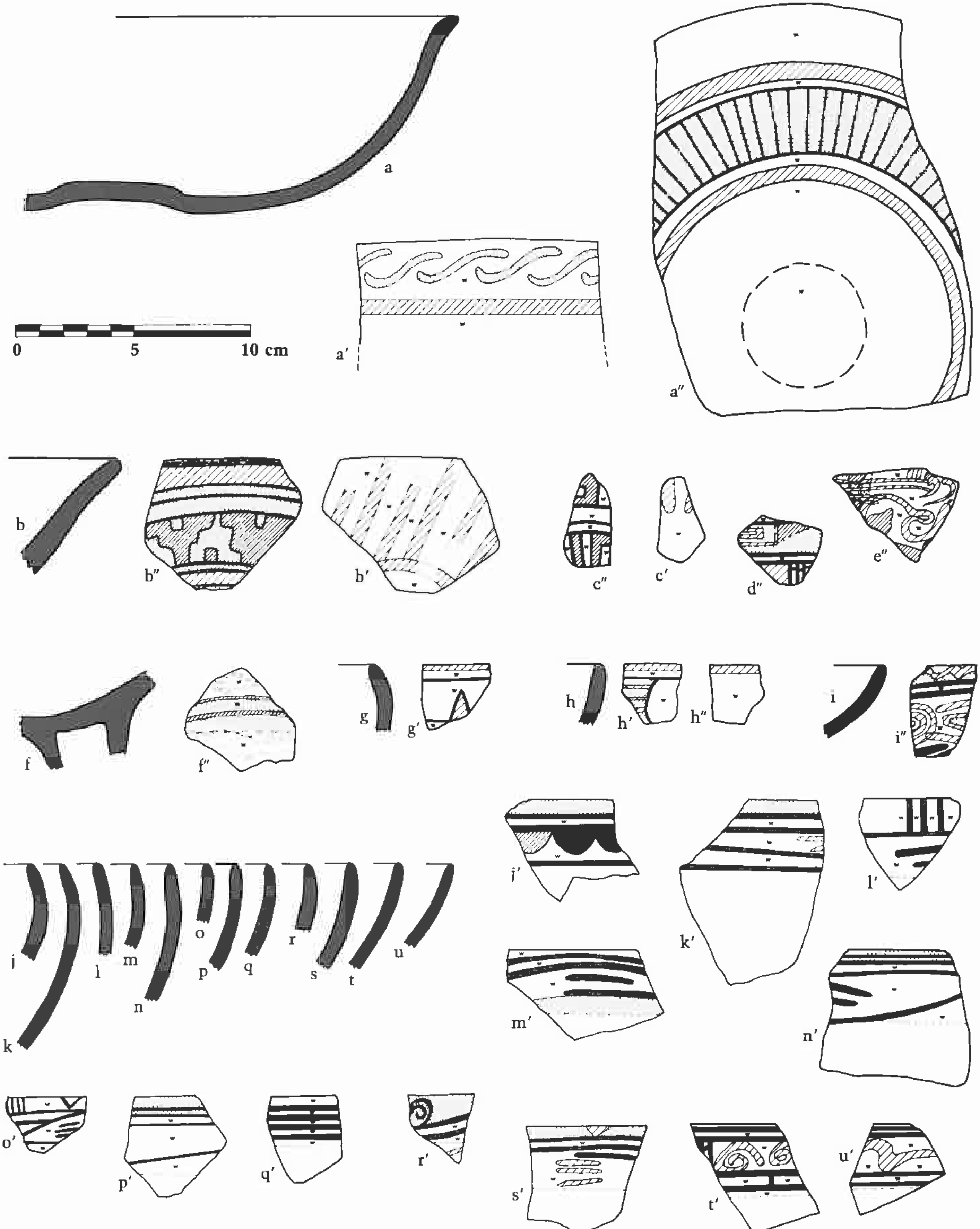

Figure I.10. White-Slipped Orange ware polychrome bowls.

lighter in color, and the slip is consistently at the lighter and brighter orange end of the color scale of the Brown- or Orange-Slipped Utilitarian ware.

Definition

A thinly applied orange slip or wash (5 YR5–6/8) and brown (5YR4–5/4) rim band, as well as a fine and porous yellow (10YR8/6 and 7.5YR8/6) paste, are characteristic of the few examples which have been identified at Tetla. Small bowls with a rim diameter of around 10–12 cm and a curving basal break are the only known form.

***Brown- or Orange-Slipped Utilitarian Ware* (6,570 sherds/480 rims, 1 whole vessel; Fig. I.14)**

A brown- or orange-slipped ware comprised of mostly utilitarian vessels is the predominant ceramic ware at Tetla, making up 40.5 percent of the total Aztec I phase ceramic assemblage.

Definition

A reddish brown (2.5YR2–4/2–4, 3/6; 5YR2–4/2–8) or an orange (5YR5–6/6–8; 7.5YR5–6/6–8) slip was applied to nearly all smoothly finished vessel surfaces. The slip, in some cases, is sufficiently burnished to give the surface a slight luster. The paste is light yellowish brown (7.5YR7/6), porous, sandy, and sometimes crumbly. Vessel wall thickness ranges from 4 to 13 mm with most of the vessels falling between 6 and 9 mm.

Ollas (*4,708 sherds/153 rims, 11 handles; Fig. I.14*a–v)

The Tetla ollas are necked jars with a globular to slightly shouldered body form and one of two basic neck configurations: upright or flaring. Flaring-neck ollas are defined by a sharp break between the body of the olla and the flaring neck. Approximately one-fourth of all Tetla ollas are of this form (Fig. I.14*a–h*). The angle of the flaring neck varies only slightly and is generally greatly flaring at an angle of 70 to 90° from the olla body. Vessel wall thickness is greatest at the neck-body juncture and ranges from 9 to 16 mm. Vessel body thickness ranges from 5 to 8 mm. The interior neck surface is slipped and burnished to or just below the neck-body juncture. The remaining interior surface is unfinished, as is typical of Mexican ollas. Mouth diameter ranges from 16 to 24 cm.

The upright-neck ollas (Fig. I.14*i–r*) have either a direct, everted, or beveled rim form and an evenly curving neck-body juncture. The direct rim is by far the most common. Upright-neck ollas

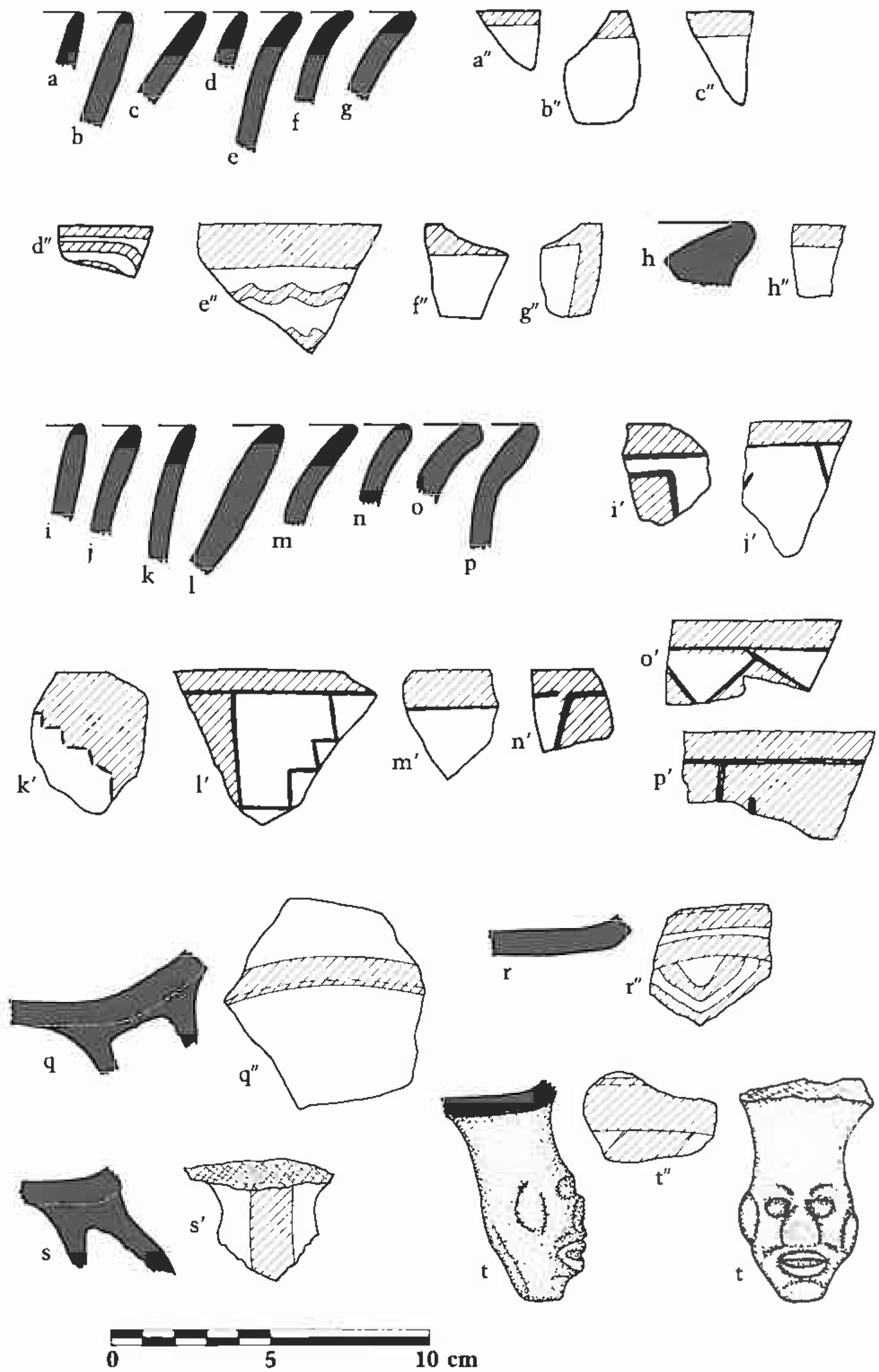

Figure I.11. Red on Burnished Buff wares.

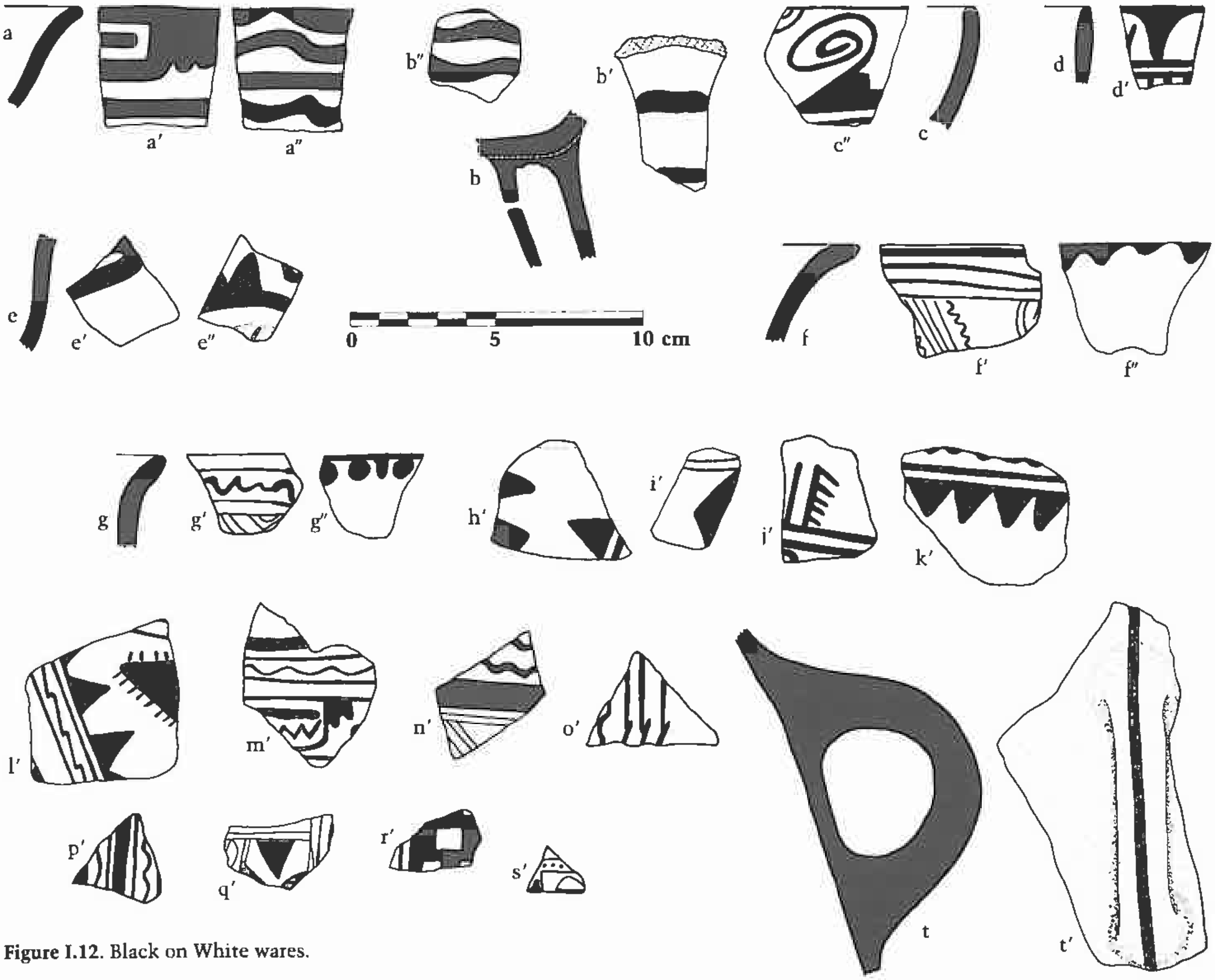

Figure I.12. Black on White wares.

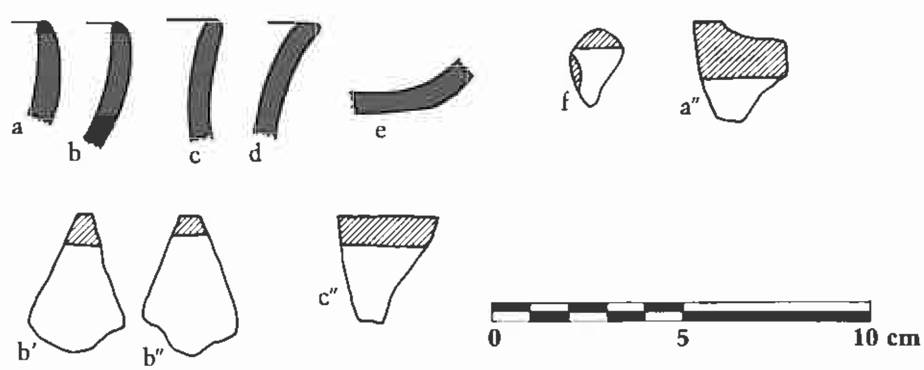

Figure I.13. Brown-Banded Orange-Slipped wares.


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are heavy-walled with a modal wall thickness of 8–11 mm. Mouth diameters are equal to or much larger than those of the flaring neck ollas, and range from 12 cm up to 44 cm. Interior neck surfaces are slipped and burnished, as in the exterior, while the body interior is left unfinished.

Only eleven handles or handle fragments were uncovered. Olla handles were not found to be attached vertically to the rim, as is the case in the collections from the Teotihuacan Valley (J. Parsons 1966: Figs. 65, 66). Strap handles which were found in the Tetla collection (Fig. I.14*s–u*) appear to have been placed vertically on the olla body near the neck-body juncture of upright-neck ollas. A double-nubbin form of lug (Fig. I.14*v*) is attached to one olla body sherd and may be a basal vessel support or a shoulder lug handle.

Comales (*624 sherds/97 rims; Fig. I.14*w–jj)

The entire *comal* interior and the upper exterior rim surfaces are slipped and burnished. The lower exterior surface is rough and unfinished. It is difficult to get an accurate measurement of a *comal* rim diameter when the sherd is small and the diameter is large. From a small measureable sample, the *comal* diameters at Tetla range from 28 to 44 cm. Rim forms are simple, either straight, direct, or flaring. Two unusual rim forms are also illustrated (Fig. I.14*ii, jj*).

Bowls (*1,238 sherds/230 rims; Fig. I.14*kk–jjj)

With the exception of one direct rim hemispherical bowl fragment (Fig. I.14*tt*), bowl rims of this ware were broken fairly close to the rim so that vessel form was difficult to determine. Rim forms are both direct and recurved with vessel mouth diameters ranging from 12 to 24 cm. Some of the direct rim fragments appear to be straight-walled and flaring, and may be plate fragments. The bowl basal fragments are all flat with straight walls. No complete rim-base profiles were found intact. Recurved rims are either flaring or vertical, and these vessel forms, as well as plate forms, may have been supported. As is the case with the Black on Orange Ware, unslipped burnished supports which may have been attached to a slipped or decorated vessel have all been included with the plain, Unslipped Burnished ware. There is one example of a *molcajete fondo sellado* (stamped grater bottom; Fig. I.14*jjj*) with a portion of a hollow support still attached which by definition of paste and surface treatment does not seem to be simply an undecorated Black on Orange ware sherd.

Colanders or Incensarios (*8 sherds; Fig. I.14*kkk–lll)

Several small perforated sherds, either colander or *incensario* sherds, were found. These Tetla examples have either triangular or round perforations.

Shoe-Pot (*1 complete vessel; Fig. I.14*mmm*; Fig. 25.5*)

A small ceremonial shoe-pot was found under the stucco floor near the domestic shrine portion of Room C. The mouth diameter of this vessel is 10 cm, and it is 16 cm long from under the single handle to the toe of the extended body. The handle is attached directly from the shoulder of the vessel to the lip of the rim. The toe of the pot is heavily fire clouded from use in a fire.

***Unslipped Burnished Ware* (1,401 sherds/122 rims; Fig. I.15)**

The Unslipped Burnished category, based on surface treatment, is inevitably to some degree a catch-all category and surely includes unslipped, undecorated portions of decorated vessels or Classic period wares. However, only nine rims could be considered from rim form to probably be Late Classic and not part of the early Aztec Tetla ceramic assemblage. This ware has considerably more bowl rim forms (by a factor of eleven) than olla or *comal* rim forms (Table I.1), compared to a one-to-one occurrence for the other common utilitarian ware, Brown- or Orange-Slipped Utilitarian, indicating that the common utilitarian bowl form was generally given an unslipped burnished surface treatment while the ollas and *comales* were predominantly brown- or orange-slipped.

Definition

Surfaces range from smoothed to moderately burnished. The waxy surface luster of the unslipped burnished ceramics from the Late Classic is generally not found on early Aztec ceramics. Surface and paste color is varied and ranges from grey (10YR5/1) to light brown (7.5YR 5–6/4 and 5YR6/4) and reddish brown (5YR5/3 and 2.5YR5/4–6).

Bowls are predominantly outcurving wall and hemispherical forms, although many other varied forms also occur. Unslipped burnished vessel supports are either hollow globular or solid effigy forms, and, as mentioned earlier, some may be portions of decorated vessels.

Figure I.14. Brown- or Orange-Slipped Utilitarian wares: *a–h*, flaring-neck ollas; *i–r*, upright-neck ollas; *s–v*, handles and lugs; *w–jj*, *comales*; *kk–jjj*, bowls; *kkk–lll*, colander or *incensario* sherds; *mmm*, shoe-pot.

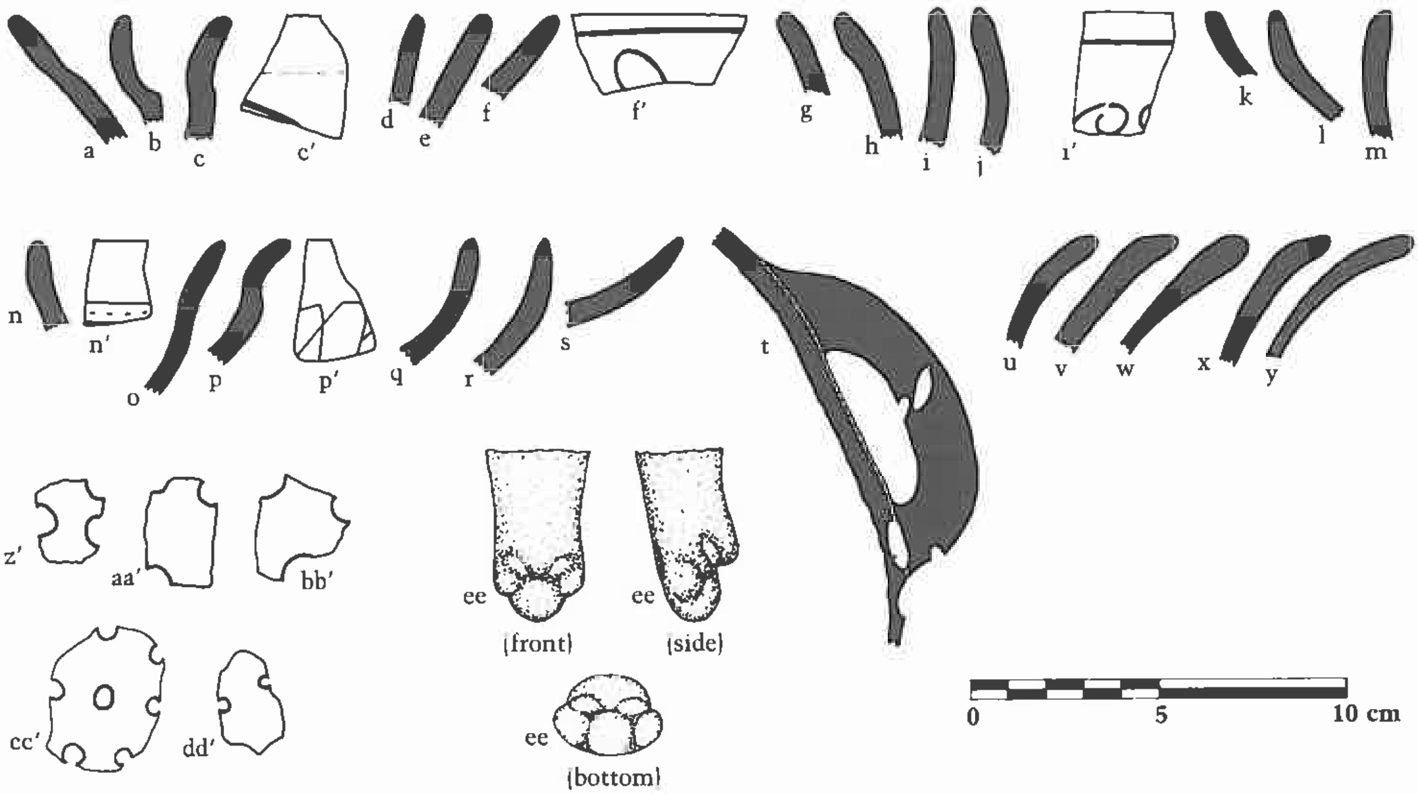

Figure I.15. Unslipped Burnished wares.

Olla rims are vertical, slightly outcurving forms. Colander or *incensario* fragments (five) with small round holes also occur within this ware. Incising is the only form of decoration and is rare.

Tetla Coarse Ware **(2,654 sherds/131 rims; Fig. I.16)**

Definition

Tetla Coarse ware has been defined by the lack of surface finish, beyond rough smoothing, and a dense, coarse sandy paste. Because of the coarse, unfinished nature of the ceramics, it was difficult to define vessel forms from body sherds (olla vs. bowl vs. *comal*). Many of the recognizable forms were heavy brazier fragments with appliqué, deep punctates, or incised lines (Fig. I.16).

Several of the brazier forms at Tetla are similar to those illustrated by MacNeish, Peterson, and Flannery (1970: Fig. 128) for their Late Venta Salada phase in the Tehuacan Valley.

Mica Tempered Coarse Ware **(15 sherds/no rims)**

Mica Tempered Coarse is obviously a minor coarse ware but significant in that the mica (or other foliated metamorphic rock) temper is not found in the vicinity of Chalcatzingo. This is thus probably a non-local ware.

Definition

A thinly applied brown or orange slip covers the exterior olla and both interior and exterior bowl surfaces. Pieces of a foliated metamorphic rock, such as a mica or a talc schist, have been added to the dense paste as temper. Both olla and bowl body sherds were found. One olla body sherd had a single line of exterior incising or grooving.

Eroded **(4,972 sherds/211 rims)**

Sherds were put into the Eroded category when the distinguishing characteristics of surface treatment and paste texture had been sufficiently destroyed to prohibit their classification. A total of 30.6 percent of the Tetla Aztec I ceramic assemblage was so classified.

SPINDLE WHORLS

Tetla Type A Spindle Whorl **(63 specimens)**

The Type A whorl is small and lightweight, comparable to the Type III whorls from the Teotihuacan Valley and the Texcoco region. The Tetla whorls are varied in form: conical and truncated conical, semispherical, cylindrical, and composite silhouette. The maximum whorl diameter ranges from 18 to 42 mm and the weight from 3 to 28 gm. Whorl surface treatment is nearly as varied as form. The clay was either smoothed, polished, or slipped to give the whorl a finished surface. The Type A whorls include decorations which are incised or mold-made, or they are undecorated.

Type A Incised ***(24 specimens; Fig. I.17, nos. 1–24)***

All incised decoration is on the sides and lower surface of the whorl. The flat upper surface is left undecorated, but the surface is often finished in the same manner as the decorated portion of the whorl. The design is most often rotationally symmetrical and is frequently divided into quadrants. Other decoration includes small punctates or a white or polished red slip.

Type A Mold-Made ***(21 specimens; Fig. I.17, nos. 25–45)***
Whorls with a mold-made design tend to be larger in diameter and slightly heavier than the incised whorls. Mold-made decoration is again only on the bottom and sides of the whorl. There is a strong trend to use design elements such as the quadrangular scroll, concentric half circles, and feather motifs. Other design elements include a kneeling human figure (no. 36) and three or four running animal figures, possibly dogs or rabbits (nos. 30, 35, 42).

Type A Undecorated ***(18 specimens; Fig. I.17, nos. 46–63)***
Most of the undecorated whorls are very small, 18–28 mm in diameter with the largest at 38, and range in weight from 3 to 16 gm. Forms are composite silhouette, conical, and truncated conical. All have polished and unslipped clay surfaces, light brown to light orange in color.

Tetla Type B Spindle Whorl **(5 specimens)**
The Type B whorl is relatively large and is probably functionally equivalent to Mary Parsons' Type I and II whorls from the Teotihuacan Valley and the Texcoco region. Whorl diameters range from 45 to 54 mm, and weights range from 38 to 52 gm. Whorl designs are either mold-made or incised, and surfaces are smoothed, polished, or slipped.

Type B Incised ***(3 specimens; Fig. I.17, nos. 64–66)***
One example, a truncated conical form, has been thinly slipped dark reddish-brown and polished after the grooved design was made. The design is simple, widely spaced vertical grooves bound by horizontal lines top and bottom (no. 64). The upper surface of the whorl is slipped but undecorated. The second grooved whorl is unslipped and unpolished and has a grooved design of concentric circles on the lower surface and a quadrangular scroll motif bound by vertical lines and concentric circles on the upper surface (no. 65). The third whorl is light tan and has a rectilinear design on the flattened top and no design on the convex lower surface (no. 66).

Type B Mold-Made ***(2 specimens; Fig. I.17, nos. 67–68)***
Mold-made designs occur on the top, bottom, and sides of both whorls in this category. Design motifs consist of the quadrangular scroll, concentric half-circles, and feathers. Whorl surfaces are unslipped, and one whorl appears to have been polished after molding. The whorls are cylindrical and truncated conical in form.

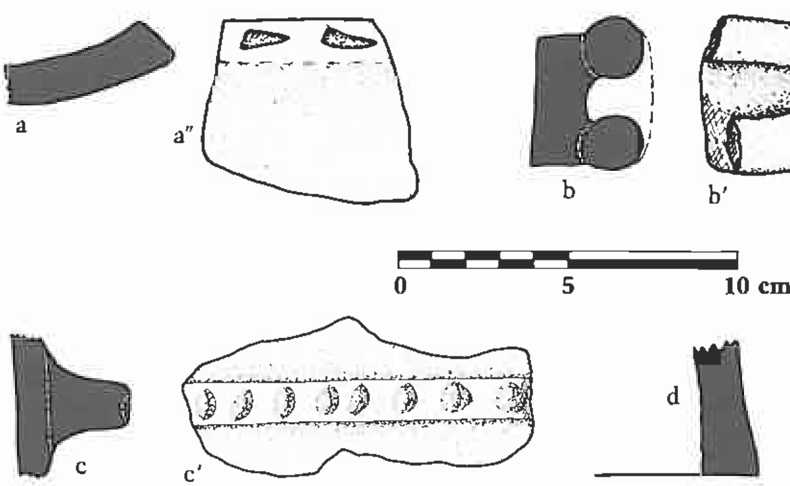

Figure I.16. Tetla Coarse wares.

LITHICS

No formal lithic analysis has been performed on the Tetla lithic artifacts, and only descriptive information can be presented here. Obsidian comprised only 55 percent of the lithic material recovered, in contrast to Paul Tolstoy's (1971b) figures of 80–95 percent for the Valley of Mexico. The remaining 45 percent is predominantly white chert. Green and grey-black obsidian were found to occur in nearly equal quantities, a 6:5 ratio, with little preference to tool type. Unretouched blades, flakes, and cores make up 96 percent of the total lithic collection. The remaining 4 percent includes projectile points, bifaces, scrapers, eccentrics, and worked blades (Table I.2).

Projectile Points

Most of the Tetla projectile points are made of either grey-black obsidian or white chert; two examples are of green obsidian. Three distinct forms and four types are definable from the whole or nearly whole points. As did Tolstoy (1971b), whenever possible, I have followed the Suhn and Krieger typology of Texas. Eight points are side-notched, one is broad-stemmed, and another is contracting-stemmed.

Side-Notched Points
One small grey-black obsidian point is of the Harrell side-notched type. It is chipped out of a flake or large blade and formed to give the point an ovoid cross-section. The point is an estimated 33 mm in length. One chert basal fragment with an estimated total length of 35–40 mm may be a Harrell point in its largest form. The sides of these points are slightly convex, the bases are slightly concave, and the small side notches are placed approximately one-third of the total distance along the side from the proximal end.

Five small greyish-black obsidian points are tentatively typed as Texcoco


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points. Tolstoy (1971b) says the Texcoco points "vary from 4 to 7.5 cms. in length, and often retain both the curvature and parts of the surface of the blades on which they are made." The Tetla examples fit this description with the exception of their small size, 27–41 mm. The small notches are placed approximately one-fourth the total length from the proximal end. I have chosen to call these five points "Texcoco" because of the technique of manufacture rather than "Harrell" because of size. There can be no doubt of the early Aztec date for these points. The largest came from the living floor surface of Room C, and two smaller ones came from a subfloor stratum of unmixed Aztec I phase materials. The remaining are from the house fill. A similar unnotched proximal fragment may have been discarded as a broken or unfinished Texcoco point.

One side-notched white chert point remains untyped. This point is bifacially flaked but is larger than the Harrell points. The sides of this point are also more convex and the base more concave than those of Harrell points. The notches are placed exactly one-third of the total distance from the proximal end.

Broad-Stemmed Point

One clear chert proximal fragment of a broad-stemmed point came from the living floor surface of Room C. This point is essentially identical to the Tula Type A broad-stemmed point described by Margaret Mandeville (1974: Fig. 27*h*). From her analysis of Tula chipped stone artifacts, she found the broad-stemmed point to comprise 62.5 percent of all types found at Tula during the University of Missouri project. The estimated complete length of the Tetla point is 40–45 mm. The sides are straight, the stem sides are parallel and at nearly right angles to both the base and shoulders. The cross-section is thin, approximately 3 mm.

Contracting Stem Point

A small, 29 mm grey-black obsidian point of the contracting-stem variety was found in the fill of the courtyard area to the north of the house. Tolstoy (1971b) describes a similar stemmed point with diminutive barbs recovered by George C. Vaillant from Teotihuacan. These points

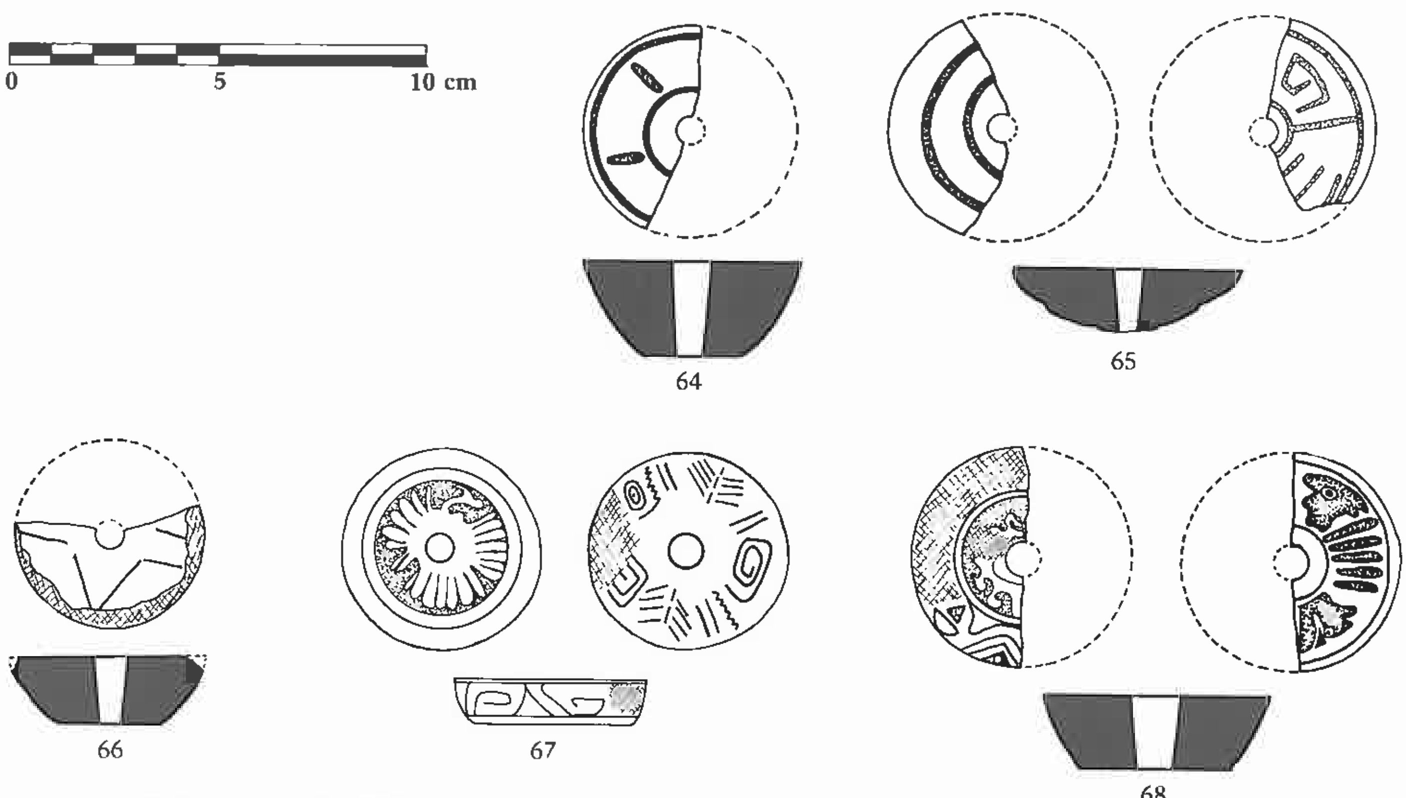

Figure I.17. Spindle whorls: 1–24, Type A incised; 25–45, Type A mold-made; 46–63, Type A undecorated; 64–66, Type B incised; 67–68, Type B mold-made.

***Table I.2.* Tetla Lithic Artifacts**

	Material						
	Obsidian		Chert				
	Grey-black	Green	White	Other	Artifact Type	Total	%
	34	65	39	0	Triangular cross-section blade	138	15
	112	154	8	0	Trapezoidal cross-section blade	274	29
	66	50	338	0	Waste flake	454	49
	2	1	18	0	Flake with cortex	21	2
	3	2	1	0	Core	6	1
	5	3	0	0	Worked blade	8	1
	0	1	3	0	Scraper	3	0
	0	0	6	1	Knife (biface)	7	1
	10	2	5	1	Projectile point	18	2
	1	1	0	0	Eccentric	2	0
Total	233	279	417	2		931	100
Percentage	25	30	45	0			

are similar to the Hayes and Bonham types of Texas and are thought to be late in the Teotihuacan sequence and to have been used as arrow points. These points differ from the Gary Small type by the presence of small barbs.

Bifaces

One complete bipointed, bifacially flaked knife was found in association with the Room B-C subfloor cremation burial. It measures 106 mm in length and 48 mm in width, with a thin, 10 mm cross section. It was the only example of a light pink-brown and white mottled chert. Two bifacially flaked white chert pieces were found in the Room A work area and four other fragments in the house and courtyard area fill. Most fragments are distal or mid-sections. A single proximal end fragment has a flat base and unnotched sides at a near 90° angle to the base.

Scrapers

Three chert scrapers were found, one from the courtyard area, one from Room C, and the last from just outside the doorway of Room A. The scrapers from Rooms A and C are ovate in form and are primary flakes with cortex and a small amount of unifacial retouching at one end. The small scraper from the courtyard is also unifacially flaked with retouch flaking along the sides and one end. A single green obsidian scraper was made from a core which was broken longitudinally. Unifacial retouching occurs along both sides and one end of the scraper.

Eccentrics

Two obsidian blades were worked into eccentrics, one crescent and one trilobal, and these are discussed in Chapter 25.

Worked Blades

Tetla worked blades were simply retouched along one or both of the edges, sometimes narrowing the blade considerably at the distal end. Worked blades were made on both green and grey-black obsidian.

Ornamental Stone

Three greenstone beads were found in the house fill, and one was found associated with the Room B-C cremation. An engraved greenstone fragment came out of the fill in Room B, and a polished hollow earspool fragment was found on the surface just east of the large boulder which overhangs the house. A white stone drill core was found in the doorway to Room A.

APPENDIX J

Faunal Analysis

DAVID C. GROVE

The faunal sample recovered by the Chalcatzingo excavations is relatively small. This is due primarily to the poor preservation of both animal and human osseous remains at the site (see also Chapter 8). Because of the sample size, we cannot deal as critically with the data as could be wished. Comparisons of faunal quantities between house areas or calculations to estimate live weight, biomass, meat yield, etc., would yield statistically insignificant or misleading results.

The faunal remains in the assemblage were recovered by screening during the excavations. Much of this material consists of small, unidentifiable fragments. A few whole or partial skeletons, apparently the result of intentional burial, were also encountered. The major portion of the faunal remains was identified by Ticul Alvarez, while I identified a few later additions.

Several vegetation zones around Chalcatzingo are represented by the faunal remains. Among the more important species, deer and fox probably inhabited the Pithecellobium Woodland zone (see Chapter 3 for an explanation of these zones). Rabbits were exploited in the Huizache Grasslands, and both they and foxes are also found today on the site itself (Interior Valley Cerros zone). Dogs, of course, were domesticated and thus not restricted to particular ecological zones.

The faunal data are presented in tabular form and briefly discussed. Table J.1 shows the distribution of identified faunal remains by genus, and Table J.2 presents these data by phase. The counts in these two tables refer to the total number of fragments, not minimum number of individuals or weight. The few skeletons encountered are indicated separately and are not included in the counts. These counts are given only to provide a general estimate of the relative importance of the different species at Chalcatzingo.

Amate Phase

Few Amate phase (Early Formative) areas were excavated during the project, and therefore the faunal sample from this phase is quite small. The best remains come from Amate phase features underlying the PC Structure 6 Cantera phase walls and floor. Here in addition to deer (3 fragments), dog (4), and rabbit (2), excavations recovered a parrot tibia, a turkey humerus, a fragment of a turtle carapace, and two complete bird skeletons. One of these skeletons, of a *calandria* (oriole), was found in association with an Early Formative lobed bottle. A crow skeleton found in the same area had no associated artifacts. Both bird skeletons were in close association with an Early Formative wall.

Barranca Phase

Only two Barranca phase house structures (on T-9B and N-2) were found during the excavations. In addition, a trash pit from a destroyed Barranca phase house was found near the T-25 altar (see Chapter 7), and faunal remains were recovered from strata of this phase in four other areas. Within the sample, deer are relatively rare, particularly in comparison to their presence in the Amate and

Table J.1. **Distribution of Faunal Remains by Genus**

		Number of Specimens	
Class and Genus	*Common Name*	*Class*	*Genus*
Reptilia		3	
Kinosternon	Turtle		3
Aves		4 (+ 2 skeletons)	
Accipitridae	Hawk		1
Anatidae	Goose, duck		1
Amazona	Parrot		1
Meleagris	Turkey		1
Icteridae	Oriole		(1 skeleton)
Corvidae	Crow		(1 skeleton)
Mammalia		255 (+ 5 skeletons)	
Didelphis	Opossum		1
Sylvilagus	Rabbit		69
Orthogeomys	Gopher		2
Canis	Dog		134 (+ 3 skeletons)
Urocyon	Fox		5
Procyon	Raccoon		1
Nasua	Coatimundi		1
Mephitis	Skunk		1
Felis	Puma		1
Dicotyles	Peccary		(2 skeletons)
Odocoileus	Deer		40

***Table J.2.* Distribution of Faunal Remains by Phase**

	Phase or Period				
Class and Genus	*Amate*	*Barranca*	*Cantera*	*Classic*	*Undated*
Reptilia					
Kinosternon	1	1	1		
Aves					
Accipitridae					1
Anatidae		1			
Amazona	1				
Meleagris	1				
Icteridae	(1 skeleton)				
Corvidae	(1 skeleton)				
Mammalia					
Didelphis		1			
Sylvilagus	2	21	36	8	2
Orthogeomys				1	1
Canis	6	30 (+ 1 skeleton)	78 (+ 2 skeletons)	14	6
Urocyon		2	3		
Procyon	1				
Nasua		1			
Mephitis			1		
Felis			1		
Dicotyles			(2 skeletons)		
Odocoileus	4	2	30	2	2

Cantera phase samples.

In addition to dog and rabbit bone from the T-9B and N-2 house areas, a fragment of a turtle carapace fragment was found in T-9B, and each house excavation yielded a fox limb bone. The house trash pit from T-25 had surprisingly few faunal remains, yielding only an opossum mandible, some small unidentifiable bone fragments, and the skeleton of a young dog. A goose or duck tibia fragment was recovered from Barranca phase levels of the T-29 excavations.

Cantera Phase

Because 70 percent of the total volume of excavations pertained to the Cantera phase, it not surprisingly yielded the largest quantity of faunal remains. Of the six house areas providing data, it is unfortunate that only one (T-23) was not highly destroyed by plowing or erosion. The remains from the other excavations are from Cantera phase materials underlying the house floor zones and/or from disturbed house floor areas within the plow zone.

The T-23 household cluster includes a trash dump on T-21. Deer and dog remains were found within this trash deposit, while excavations of the house revealed deer, dog, and rabbit bone, as well as a single fox vertebra. Faunal remains from the T-9A house area included a fragment of a turtle carapace and skeletons of two small collared peccaries. Faunal remains other than dog, deer, and rabbit also included examples of fox (PC Str. 1, T-25 Str. 2) and single examples of skunk (T-25 Str. 2) and puma (T-11 Str. 1).

Classic Period

The fauna exploited during the Classic period were not significantly different from those of the Formative period except that deer are only slightly represented in the remains derived from refuse. Fauna recovered from the T-20 house structure, the T-11 intrusive pits, and general Classic period levels on T-17 are almost exclusively dog and rabbit. Whether the absence of deer is due to sampling or represents an actual absence cannot be determined from our data.

Discussion

Of the identifiable fauna recovered at Chalcatzingo, dog remains are the most abundant. Deer and rabbit are the only other important animals, and most other species are represented by a single fragment. Thus, as far as we can tell, there was little interest in exploiting a wide variety of animal resources.

Most of the dog remains recovered are skull and teeth fragments. Only a few of the long bones show signs that they were used for food, but we surmise that the majority of them were broken up to extract the marrow, thus accounting for the poor representation of dog long bones among the identifiable remains. In fact, the presence of dog remains in quantities essentially equal to or greater than deer or rabbit suggests they were a common, domesticated food source at Chalcatzingo.

Ticul Alvarez (personal communication) notes that of all the sites whose fauna he has analyzed up to this time, this site is the first in which dog remains predominate over deer and rabbit. The quantity of dog remains is so great that it raises the possibility that the local supply of dogs or dog meat may have been supplemented from elsewhere as tribute or exchange. On the other hand, while the quantity of dog remains may be unusual for central Mexico, Elizabeth Wing's (1978) analysis of four Formative period Gulf Coast sites indicates that dogs were the most abundant terrestrial animal recovered there and had been utilized as food (ibid.:38–39).

That dogs apparently had ritual as well as nutritional importance is suggested by the presence of two dog burials, one within a Barranca phase trash pit on T-25 and the other the sole animal among the human burials in the patio area of the T-25 altar. A third dog burial was uncovered in association with the house structures on T-9A. Other animals of apparent ritual importance are represented by the Amate phase bird burials (bird and dog burials were also recovered from Early Formative contexts at Nexpa, Morelos; Grove 1974b:42), and two small collared peccary burials on T-9A. Our turtle carapaces are small and fragmentary, and it is possible to ascertain whether they were used ritually or whether their original inhabitants were exploited for their meat, or both.

Strontium analysis of the human burials at the site (Schoeninger 1979a; 1979b) indicates the possibility that the persons buried in specific elite areas of the site (particularly the Plaza Central) had had greater access to meat resources during their lifetimes than the site's non-elite inhabitants. Since the majority of the burials studied for strontium content came from subfloor areas of various structures, we can compare those results with our faunal data.

Figures J.1 and J.2 show the relative quantities of the economically important deer, dog, and rabbit bone by structure for the Barranca and Cantera phases. These data reveal that every house structure yielded faunal remains, suggesting that everyone had access to meat. Some non-elite structures have much more faunal material than the elite structures. These findings do not agree with the results of the strontium analysis. However, the validity of these data are questioned, since the sample from each house unit and from the site as a whole is extremely small.

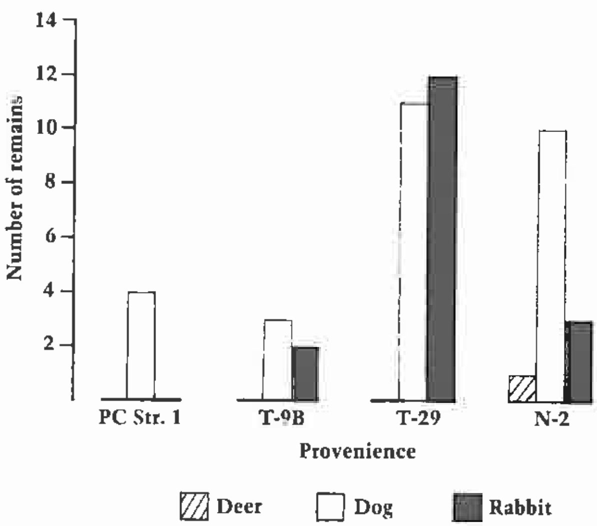

Figure J.1. Distribution of faunal remains for the Barranca phase.

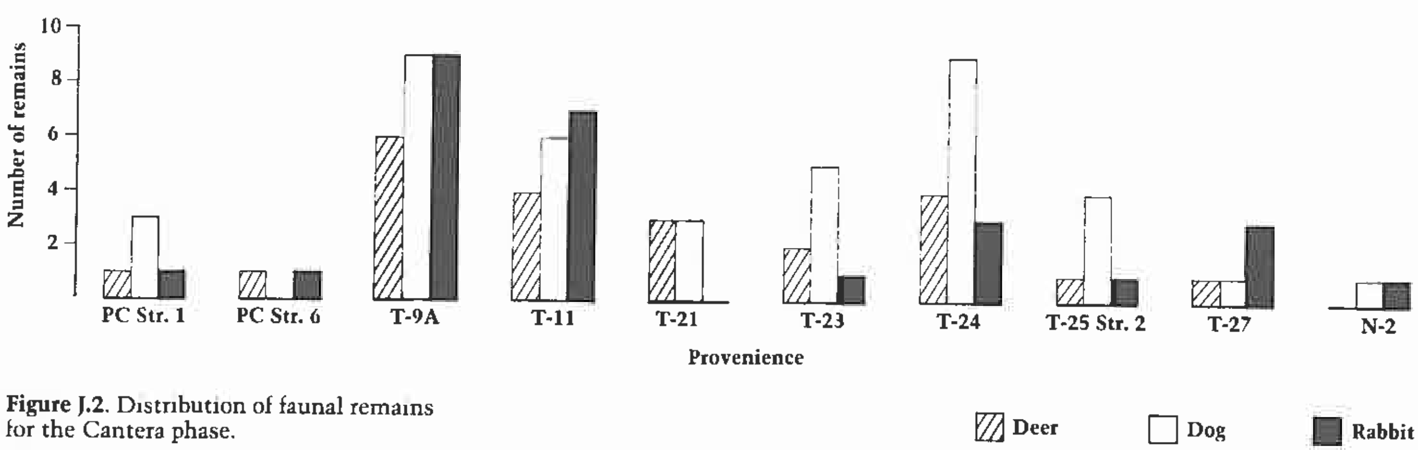

Figure J.2. Distribution of faunal remains for the Cantera phase.

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