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 "*ídolo*" (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 Val-

ley 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

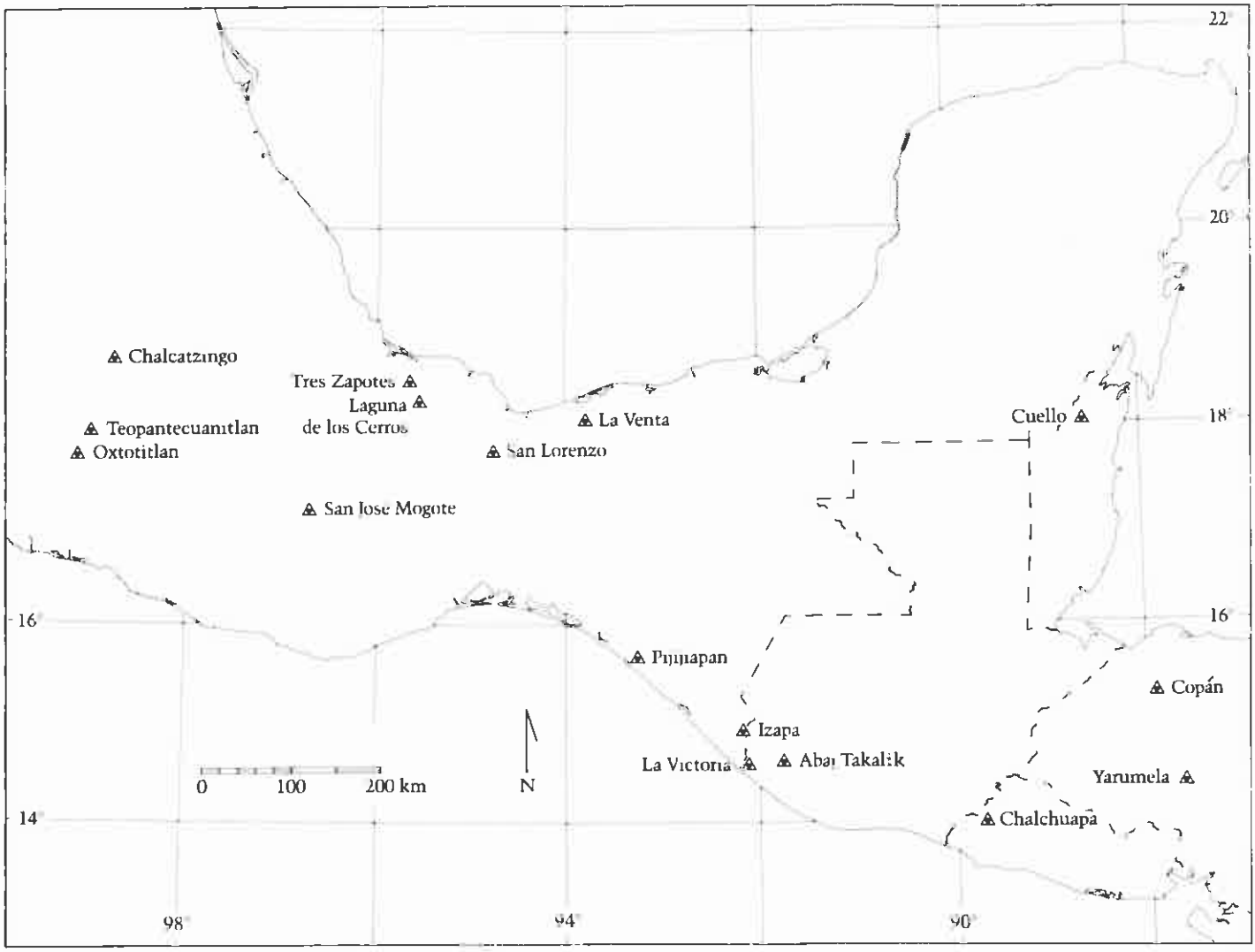


Figure 1.1. Mesoamerica, showing sites mentioned in the book.

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.

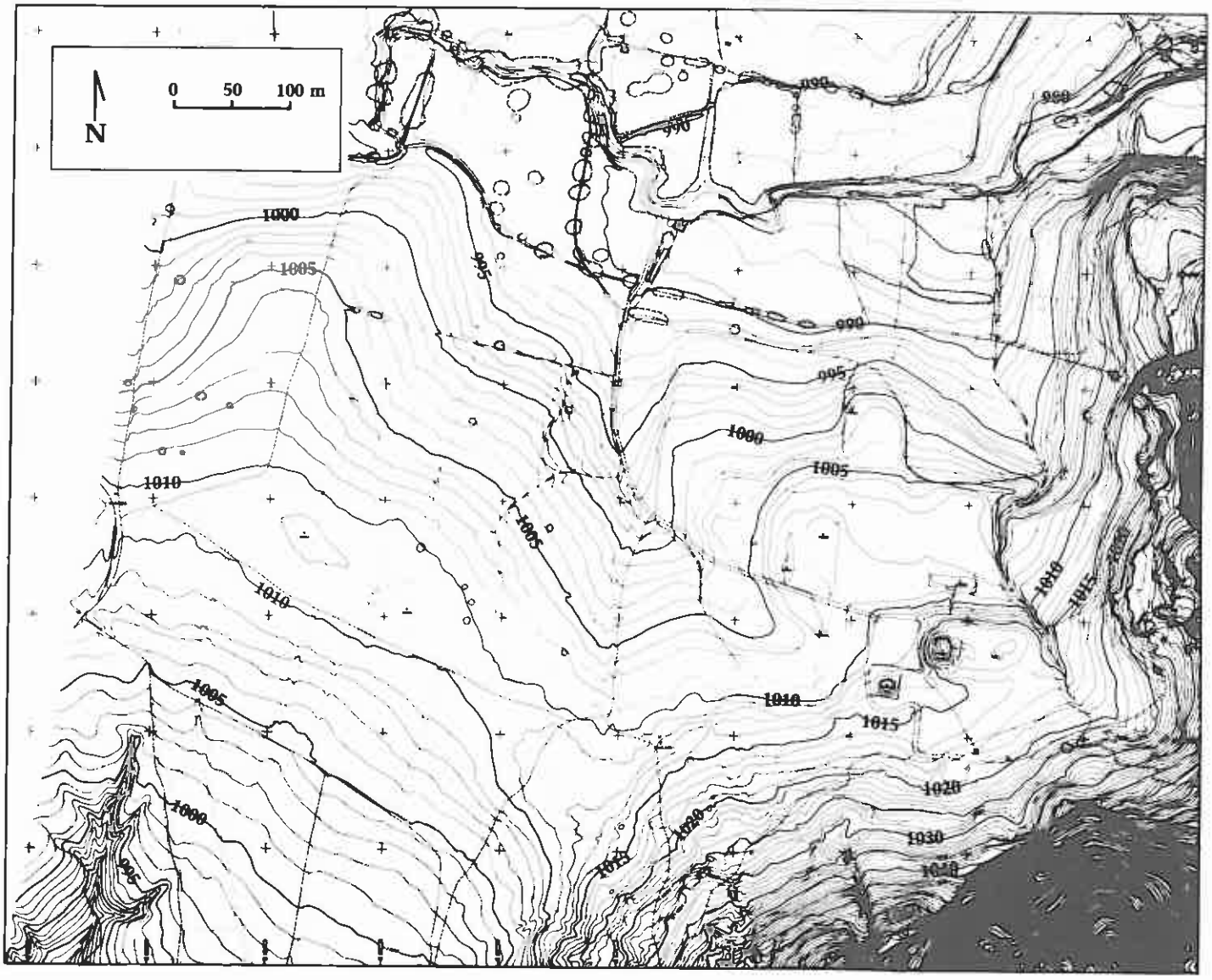


Figure 1.2. Topographic map of Chalcatzingo's Formative period site area. Contour interval 1 m.

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.

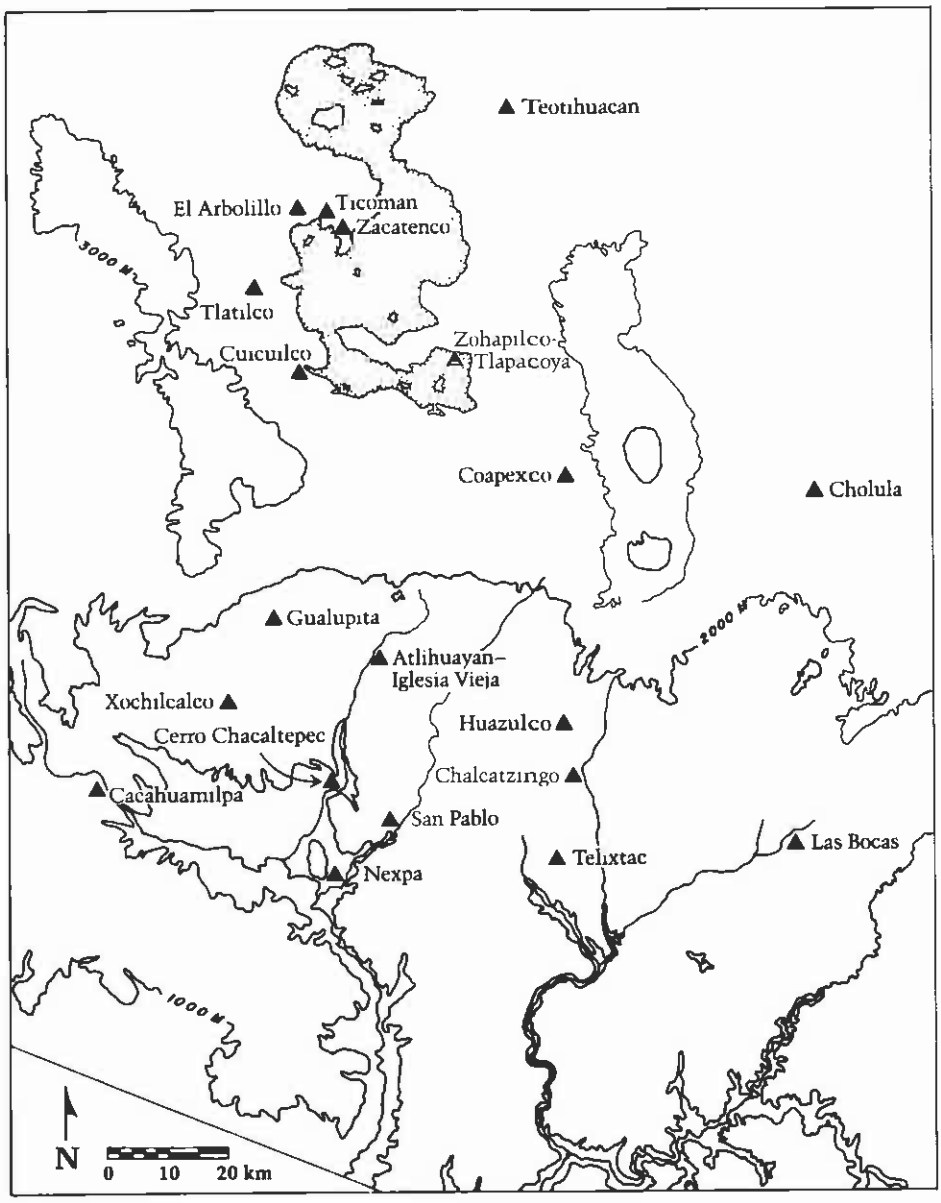


Figure 1.3. Central Mexico, showing archaeological sites mentioned in the book.

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.

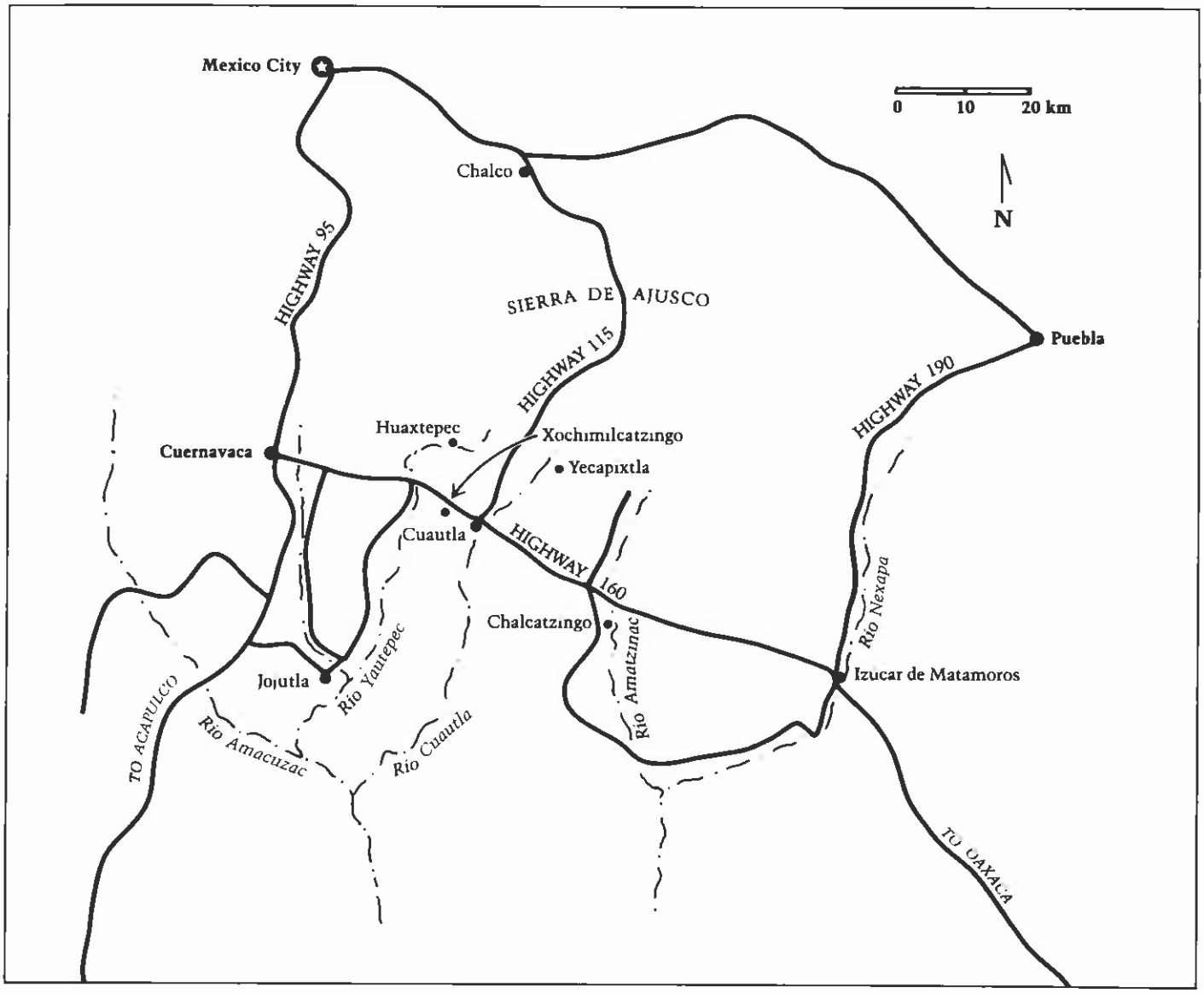


Figure 2.1. Morelos and western Puebla, showing major cities and roads and the location of Chalcatzingo.

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

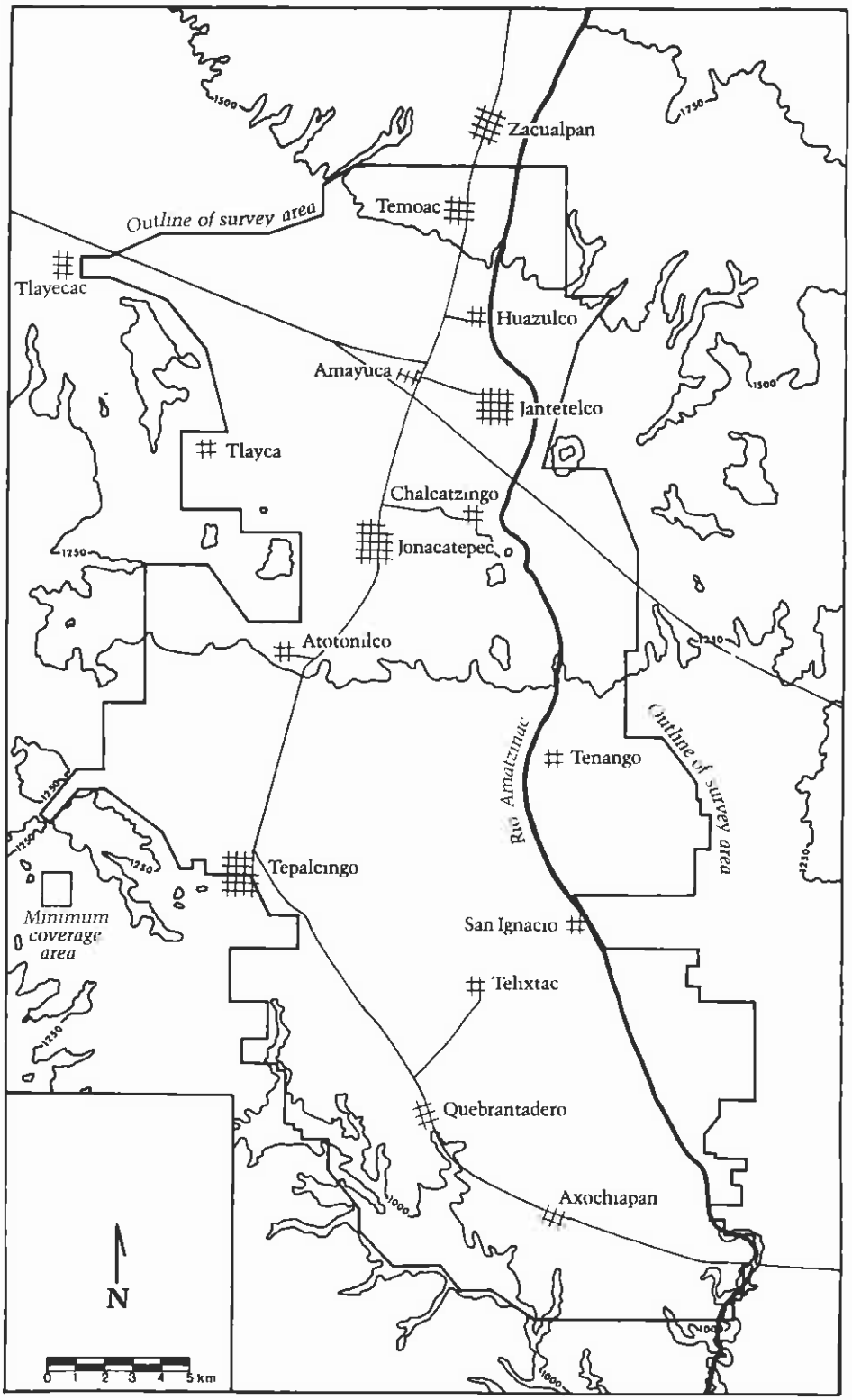


Figure 2.2. The Amatzinac Valley, showing modern roads and major towns.

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 "*ídolos*." 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 leav-

ing 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.

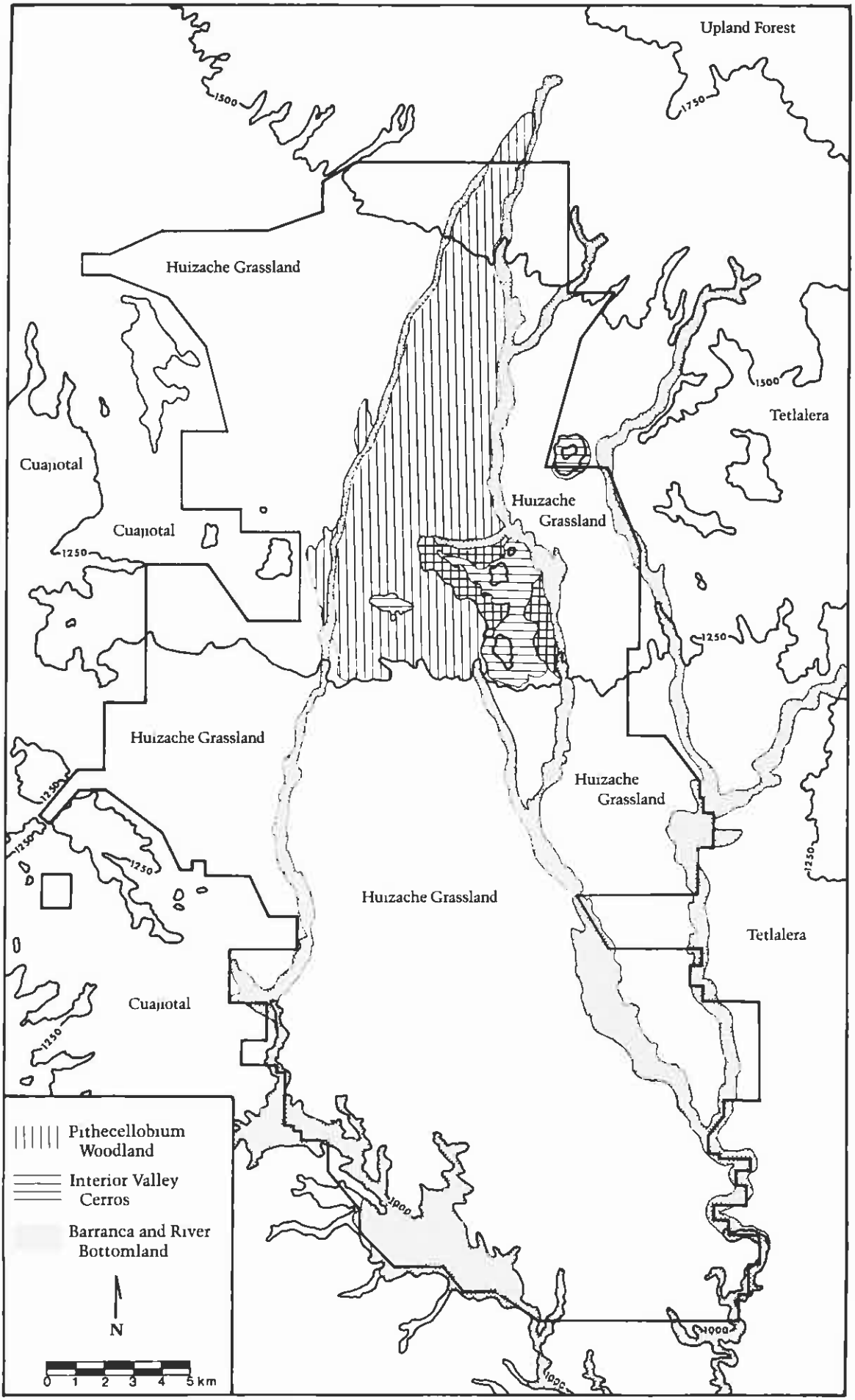
Copal trees are common in this zone, particularly at Chalcatzingo, where even today the resin is collected for use as incense. *Cuajiote amarillo* (*Bursera odorata*), *cuajiote colorado* (*B. morelense*?), and *cuajiote blanco* (*Pseudosmodingium perniciosum*) occur, along with the yellow *amate* (*Ficus 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
Tetlalera
Cuajiotal
Huizache Grassland
Cuajiotal
1250
Huizache Grassland
Huizache Grassland
Huizache Grassland
Tetlalera
Cuajiotal
1000
Pithecellobium Woodland
Interior Valley Cerros
Barranca and River Bottomland
N
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 (Graminae) 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 is present but is not well represented in pollen spectra since other plants produce more pollen.

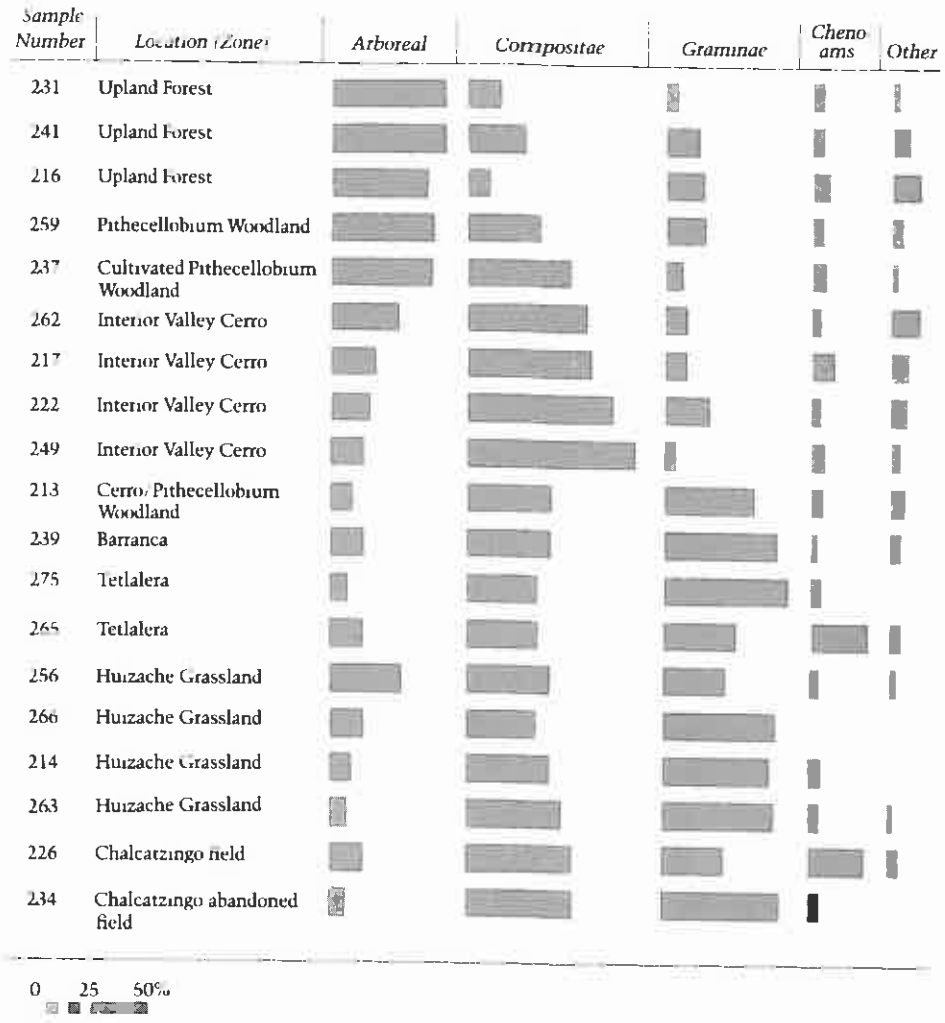


Figure 3.2. Surface pollen spectra from various locations in the Amatzinac Valley.

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, Graminae, 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

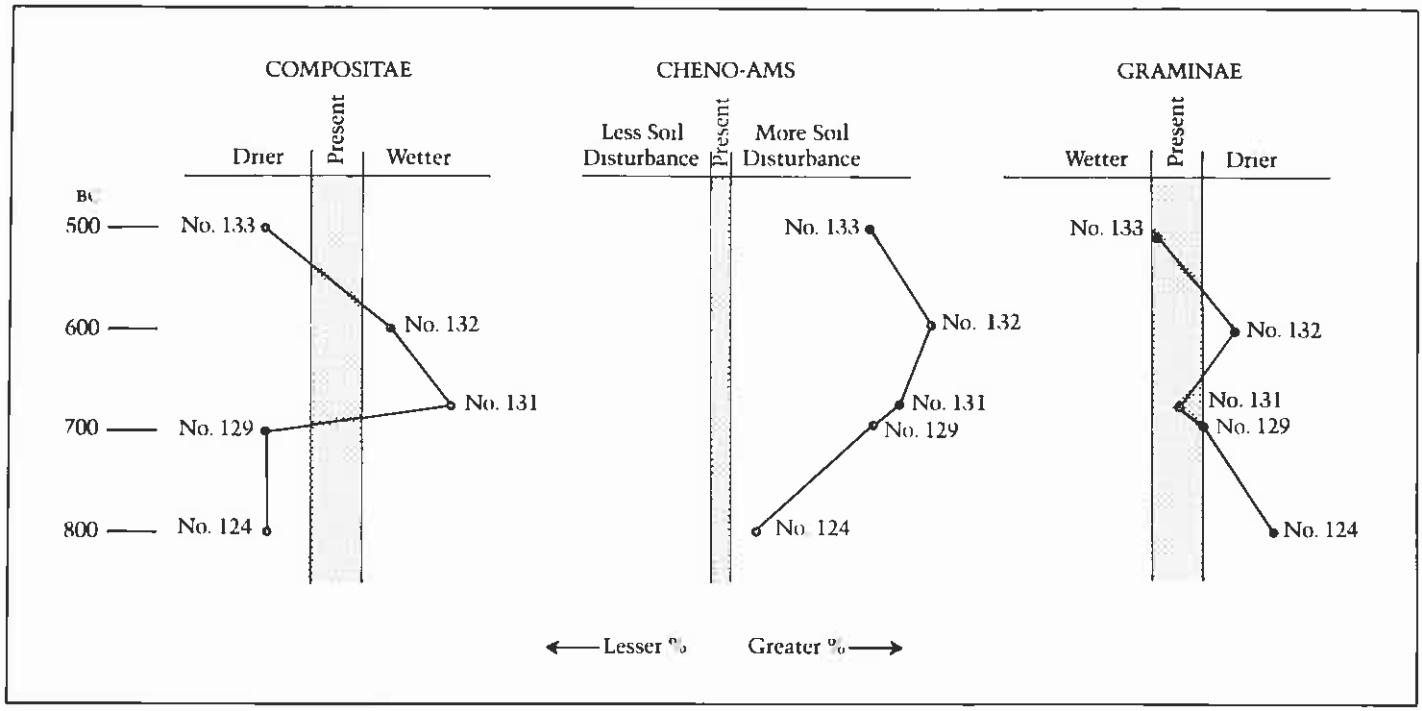


Figure 3.3. Pollen spectra from the Plaza Central transect trench.

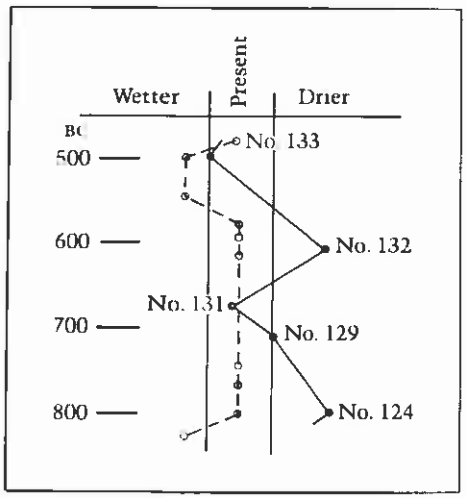


Figure 3.4. Comparison of moisture fluctuations, Oaxaca (*dashed line*) versus Chalcatzingo (*solid line*).

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, in-

dicate 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 acceso 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 km² 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 ex-

cavations 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.

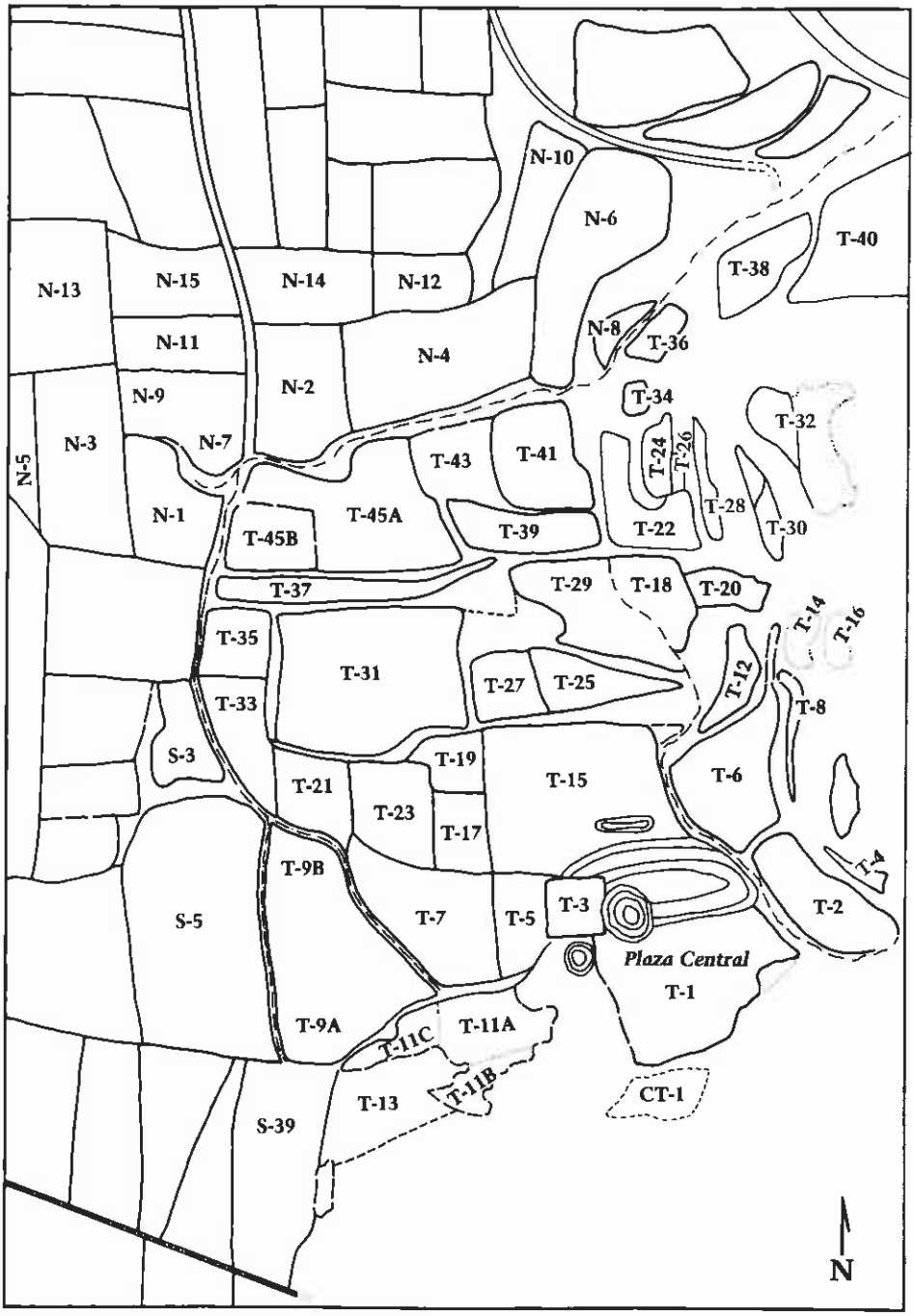


Figure 4.1. The project numbering system for Chalcatzingo's terraces and fields. Not all areas were excavated.

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-

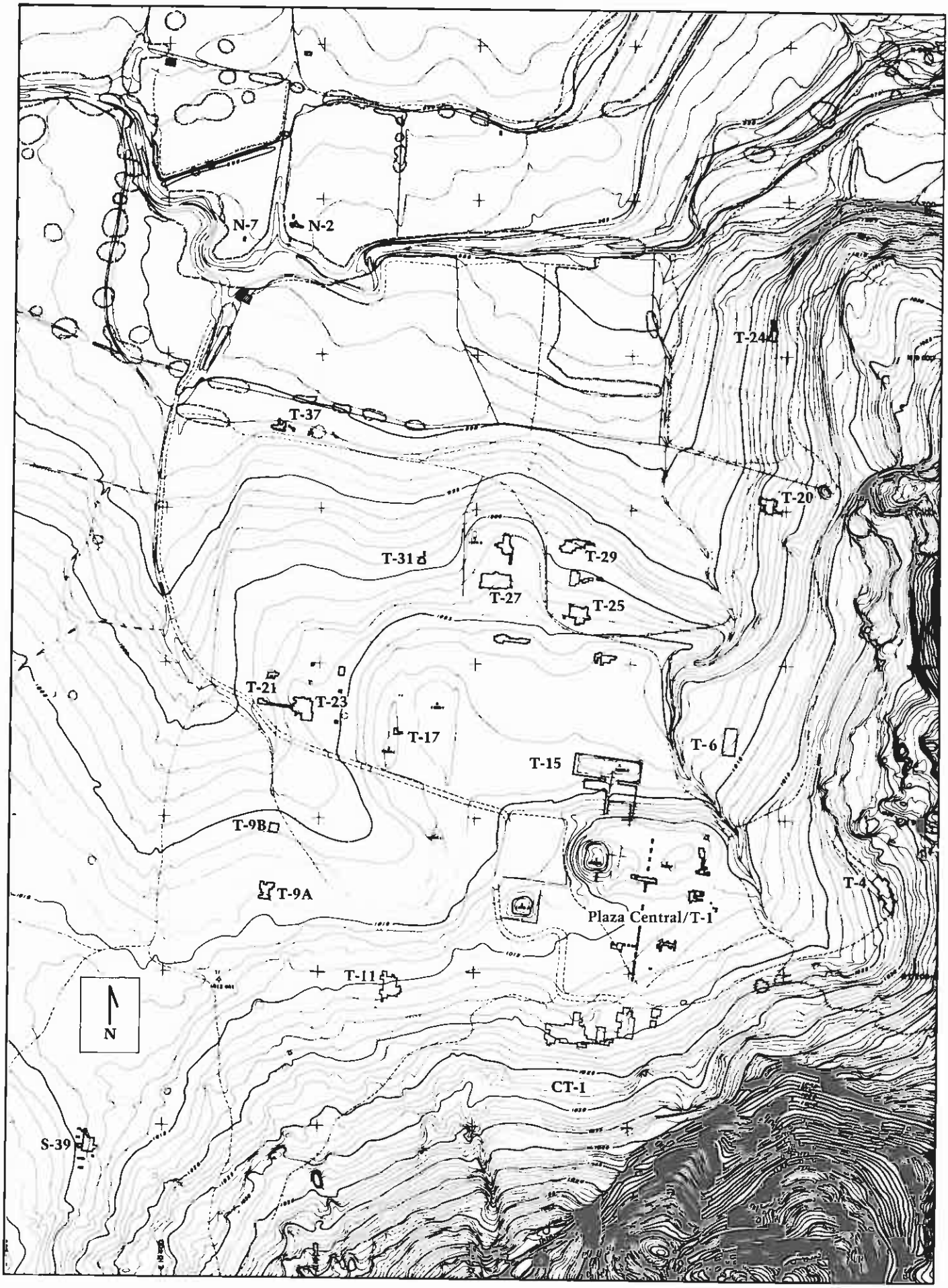

N-7
N-2
T-24
T-37
T-20
T-31
T-29
T-27
T-25
T-21
T-23
T-17
T-6
T-15
T-9B
T-9A
T-4
Plaza Central/T-1
T-11
N
CT-1
S-39

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

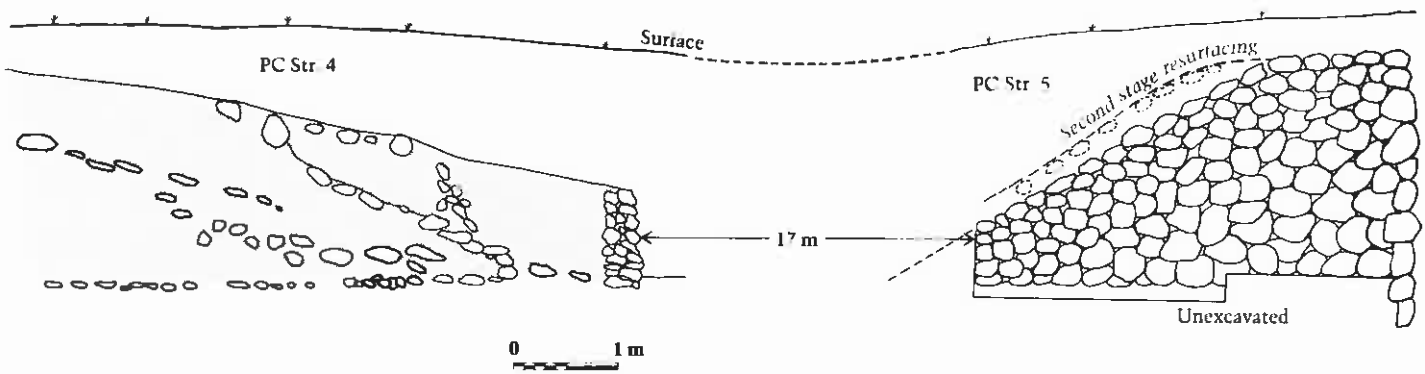


Figure 4.4. Profile of PC Structures 4 and 5.

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.

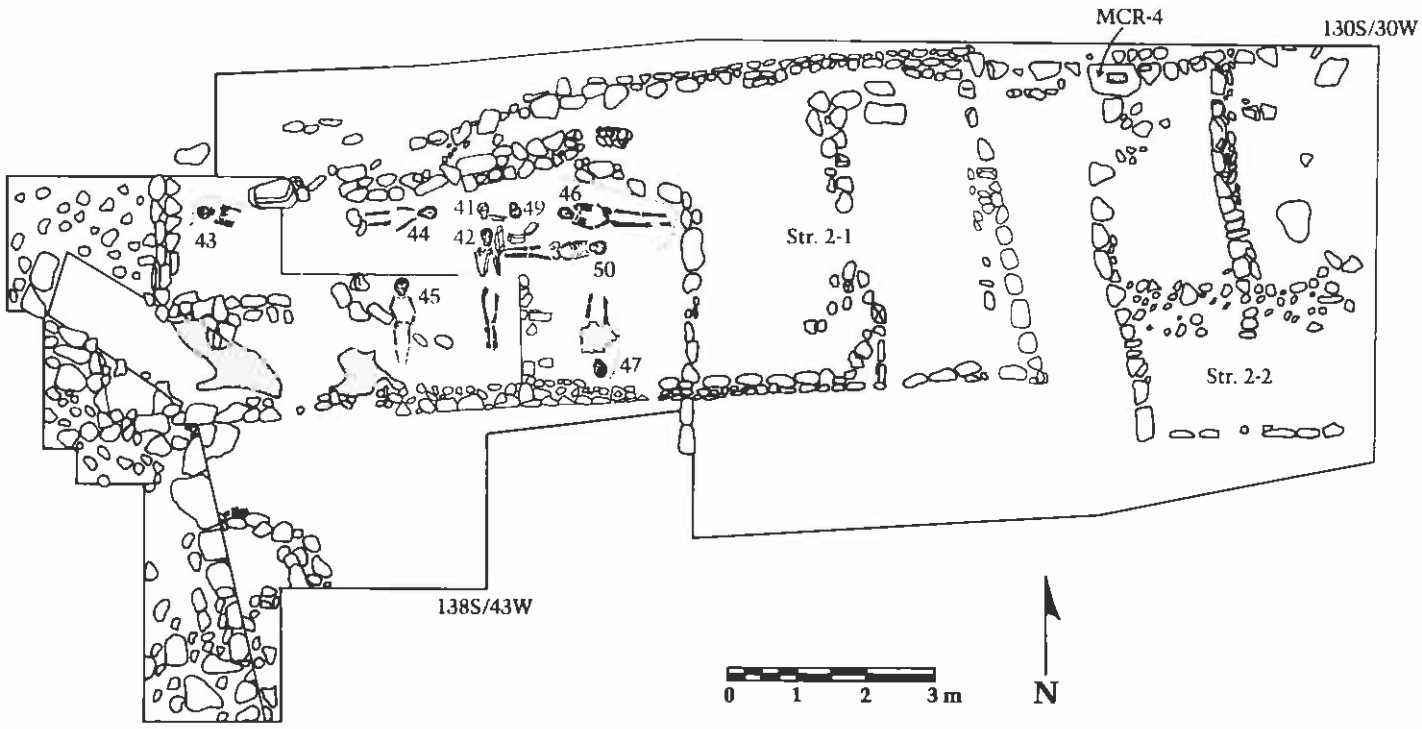


Figure 4.7. Plan map of PC Structure 2, showing Burials 41–50. Burial 48 (fragmentary) not marked.

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-

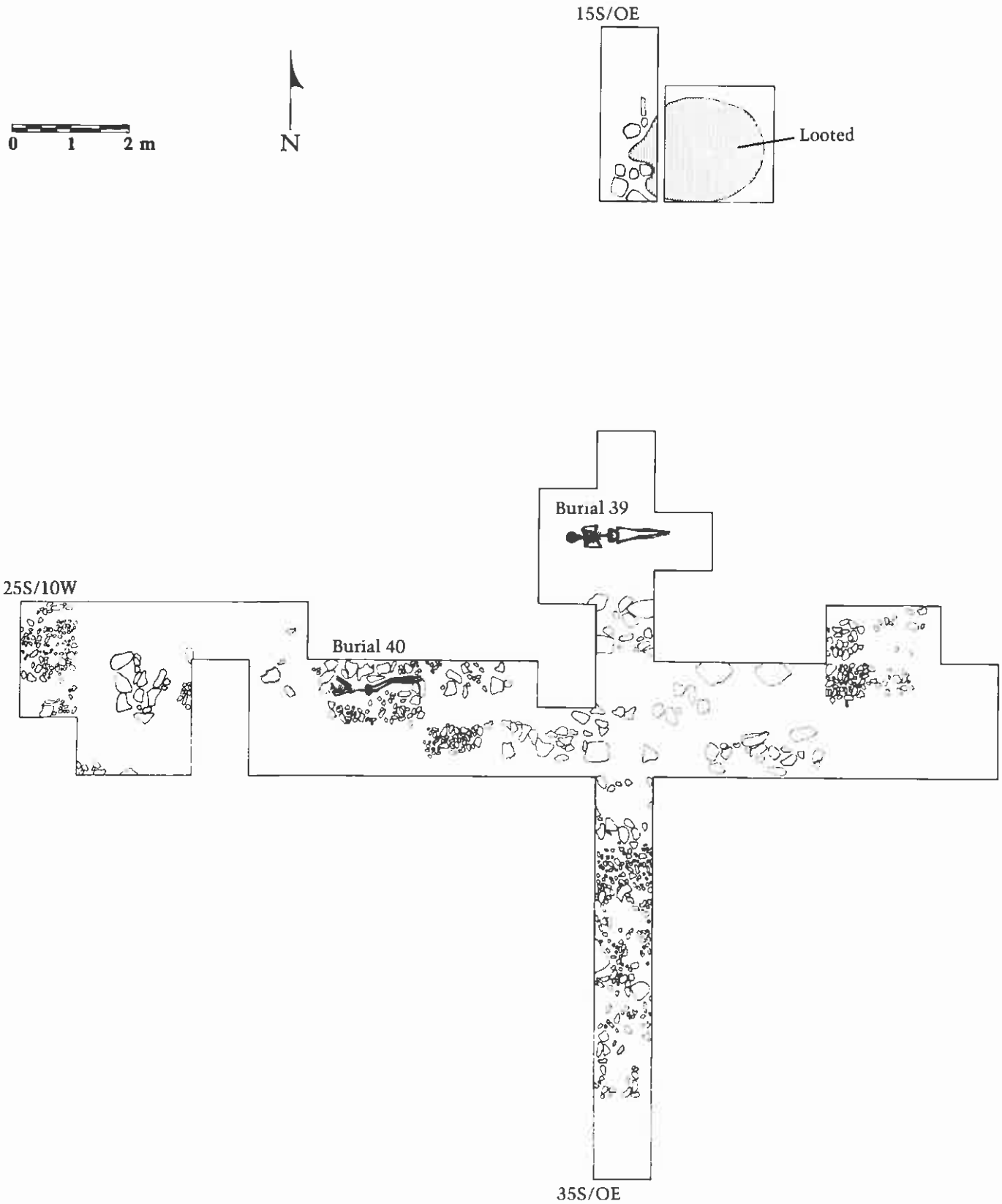


Figure 4.9. Plan map of PC Structure 4 excavations.

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.

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

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.

***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).

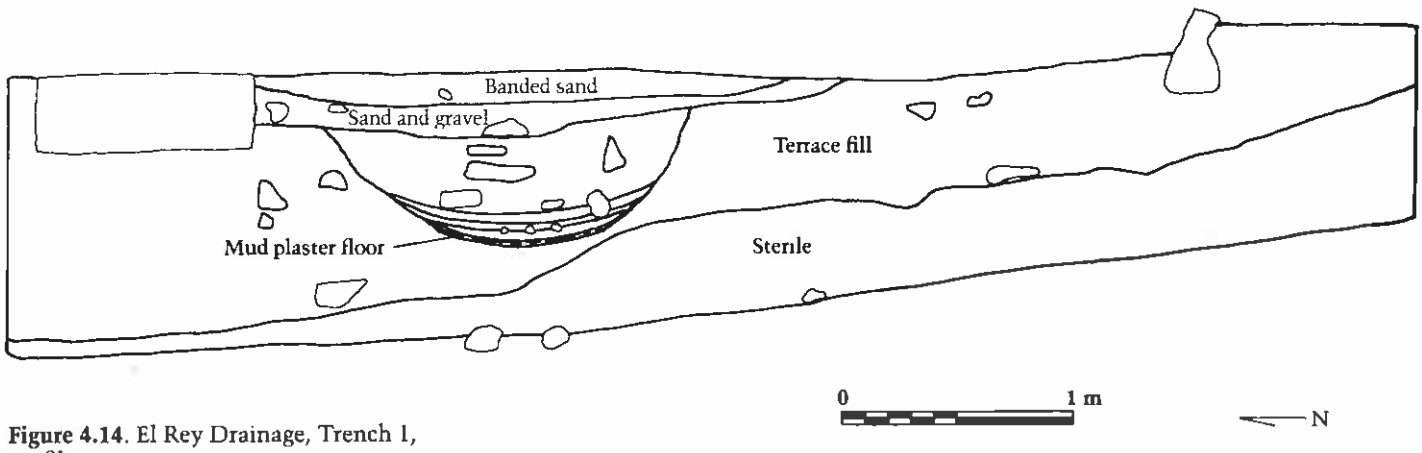


Figure 4.14. El Rey Drainage, Trench 1, profile.

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

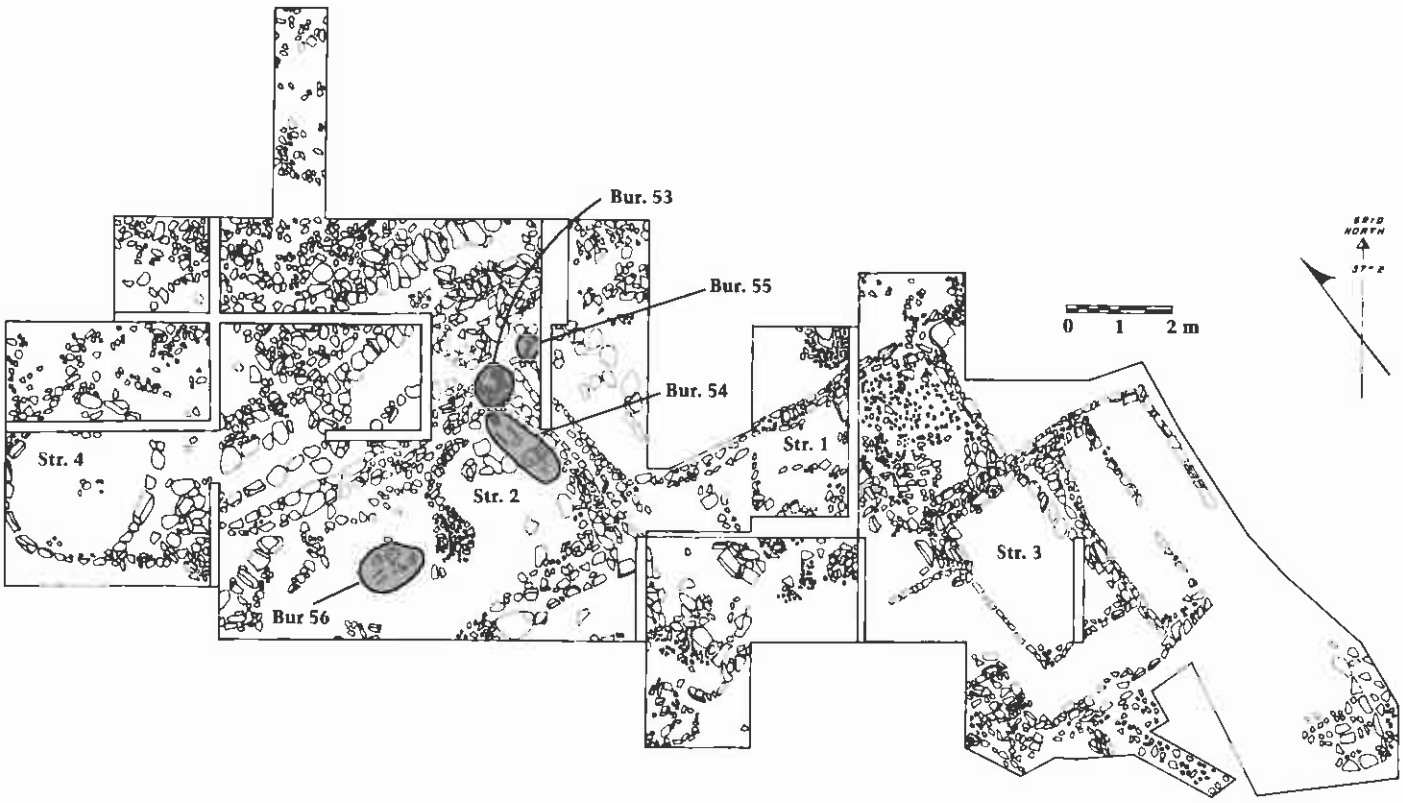


Figure 4.15. Plan map of T-4 excavations.

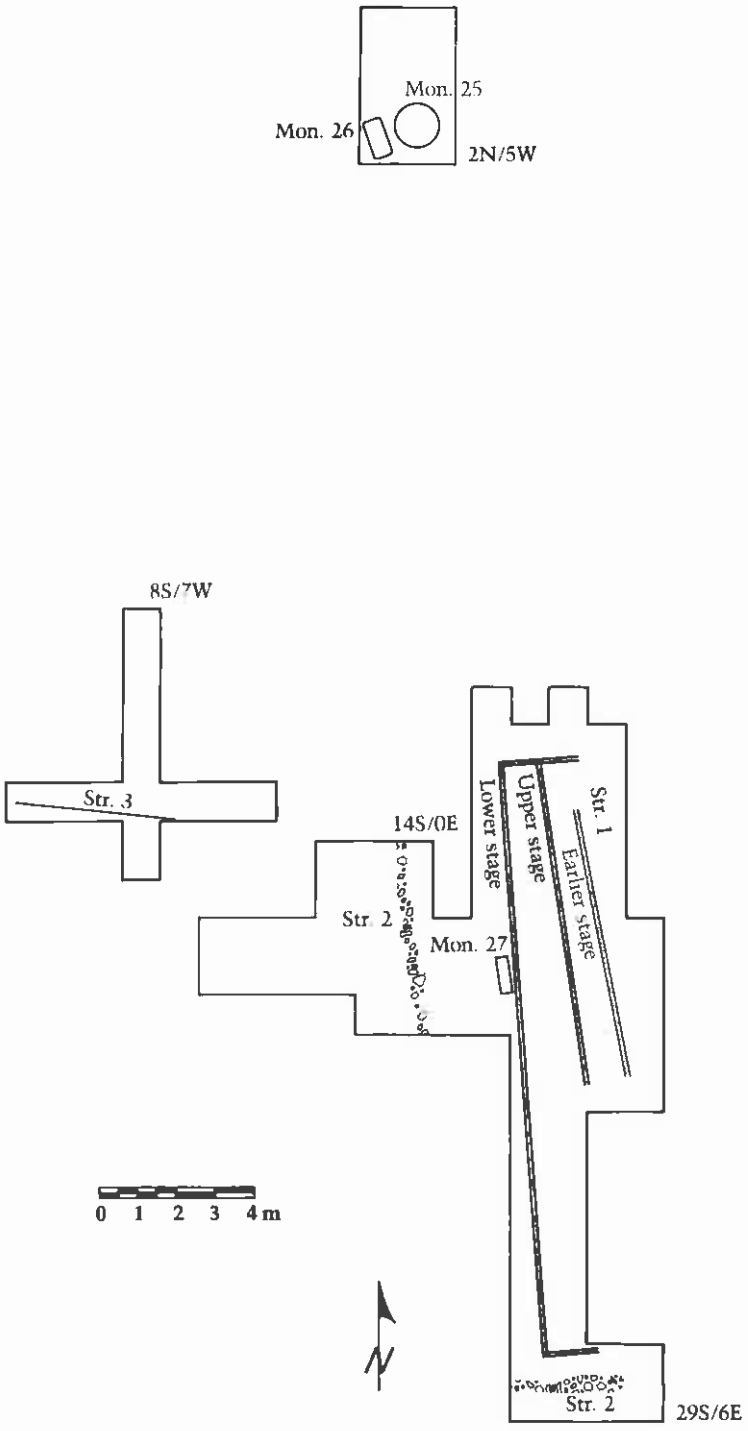


Figure 4.16. Plan map of T-6 excavations.

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.

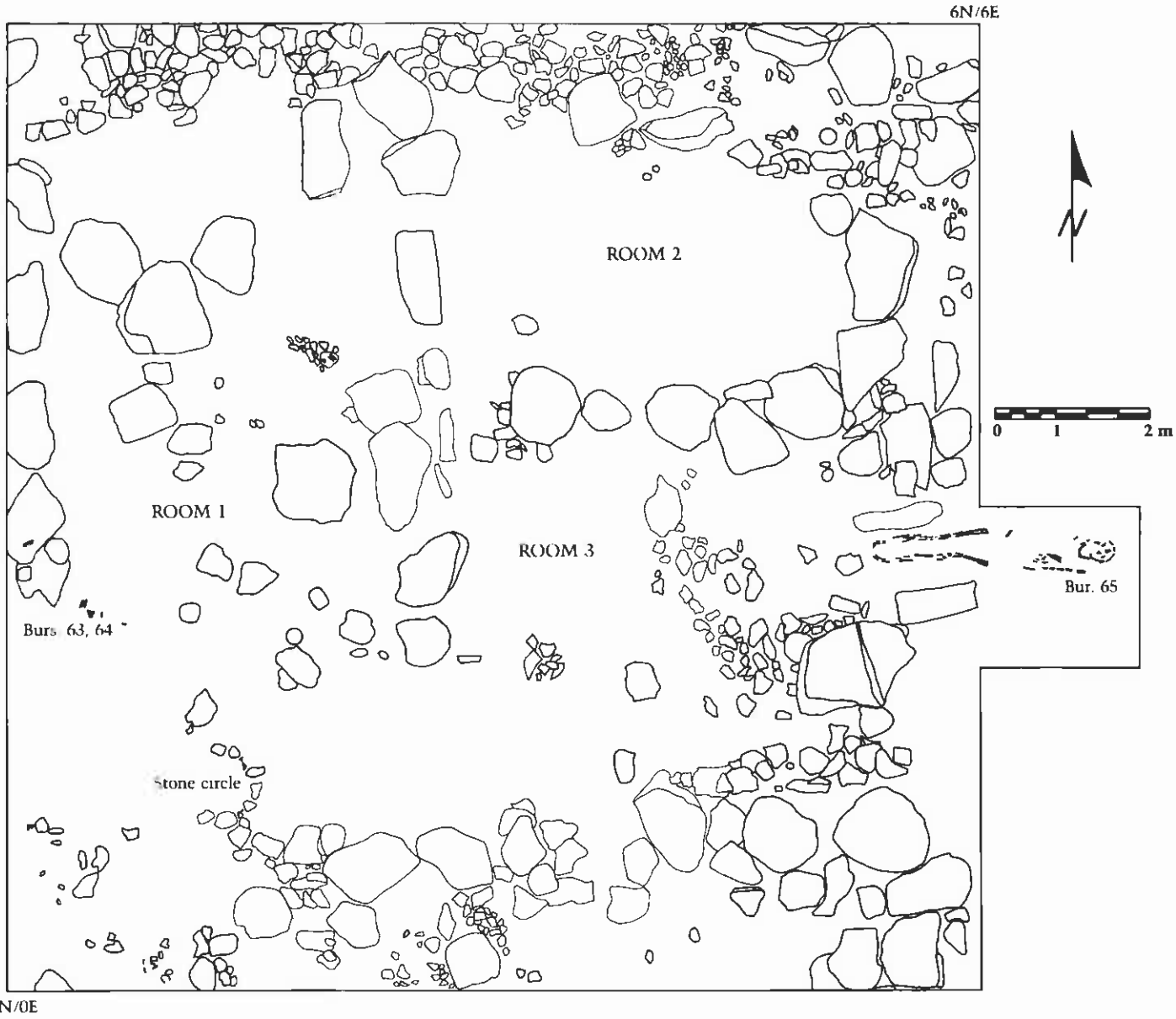


Figure 4.20. Plan map of T-9B excavations.

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-

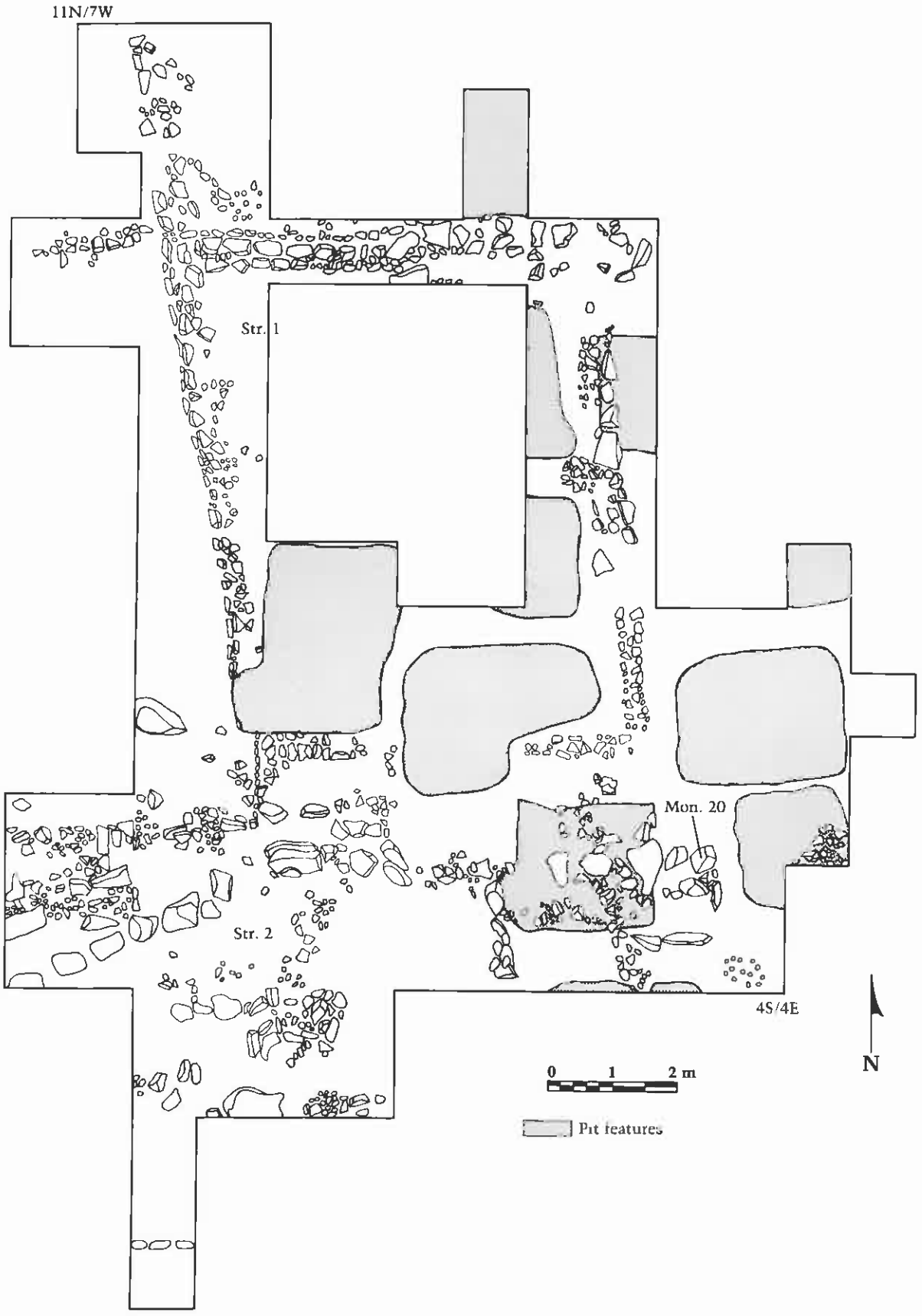


Figure 4.21. Plan map of T-11 excavations; shaded areas represent intrusive pit features.

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.

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

Figure 4.25. T-15 Structure 3 wall line.

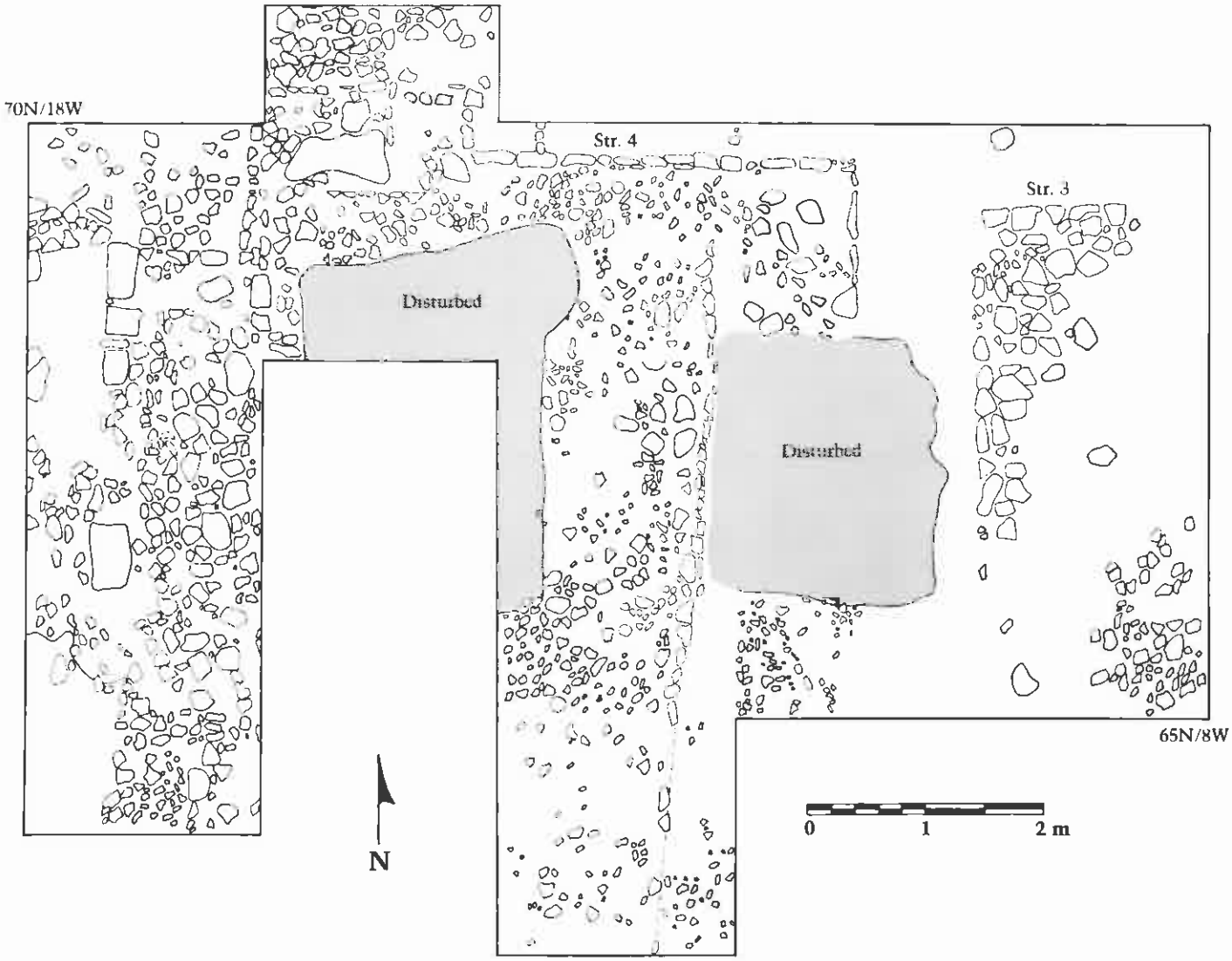


Figure 4.26. Plan map of T-15 Structure 3 and 4 excavations.

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.

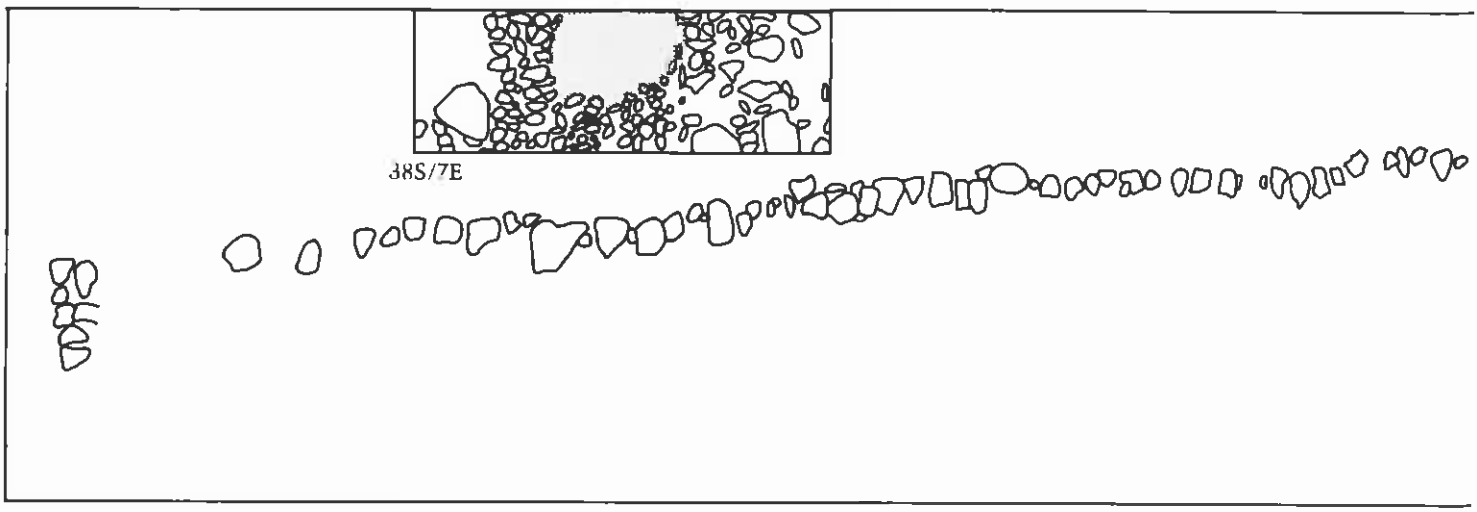
Structure 4

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

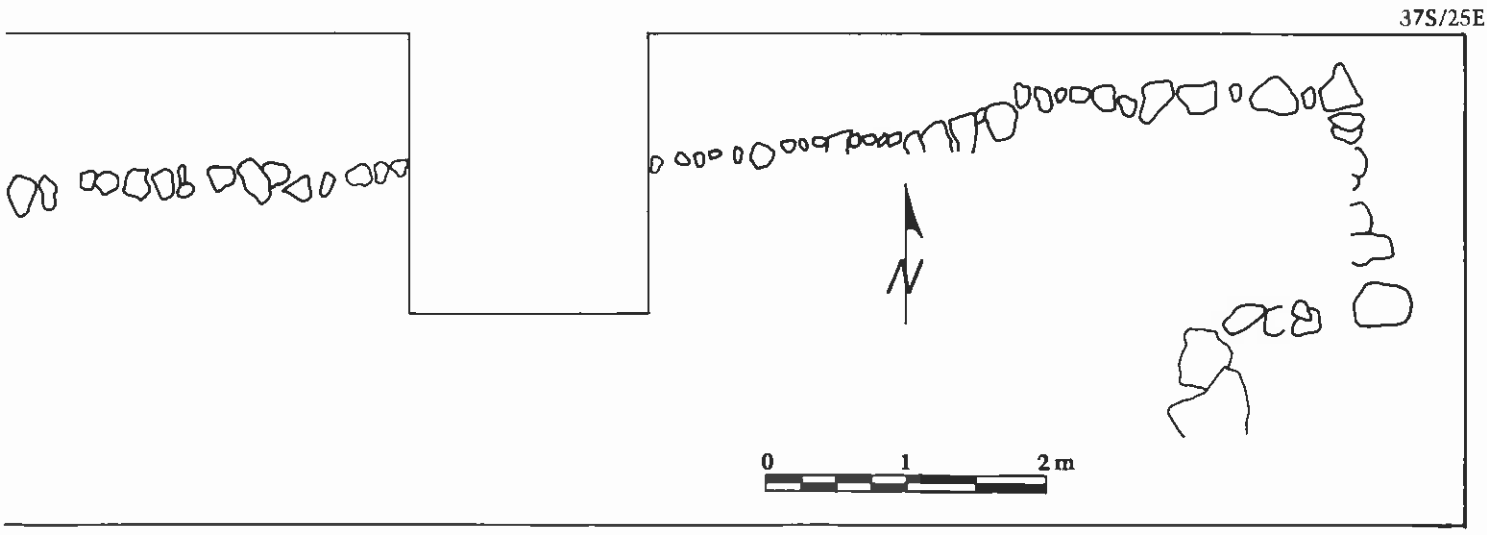


Figure 4.27. T-15 Structure 5; shaded area shows original location of Monument 21.

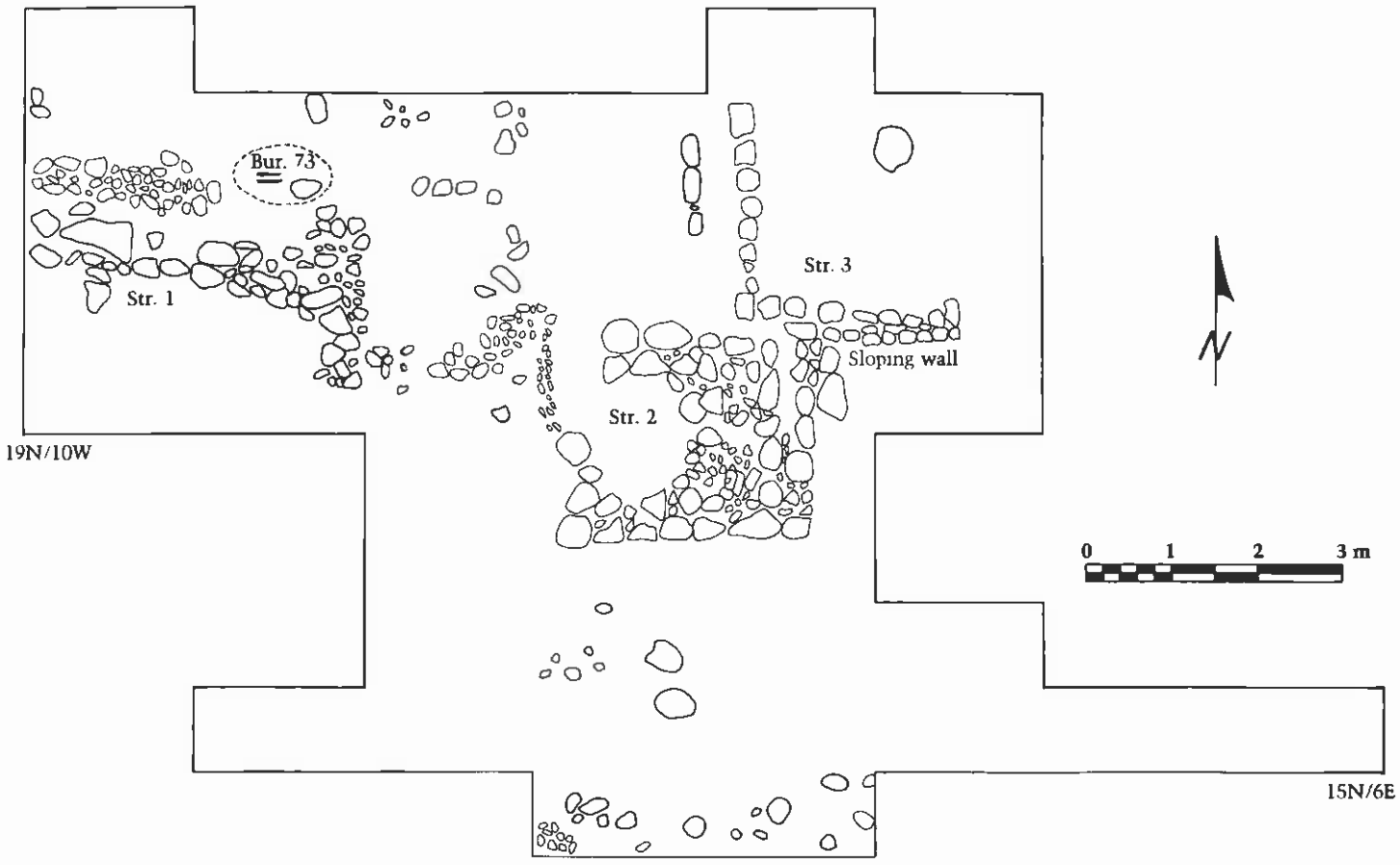


Figure 4.28. Plan map of Classic period structures on T-20.

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.

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.

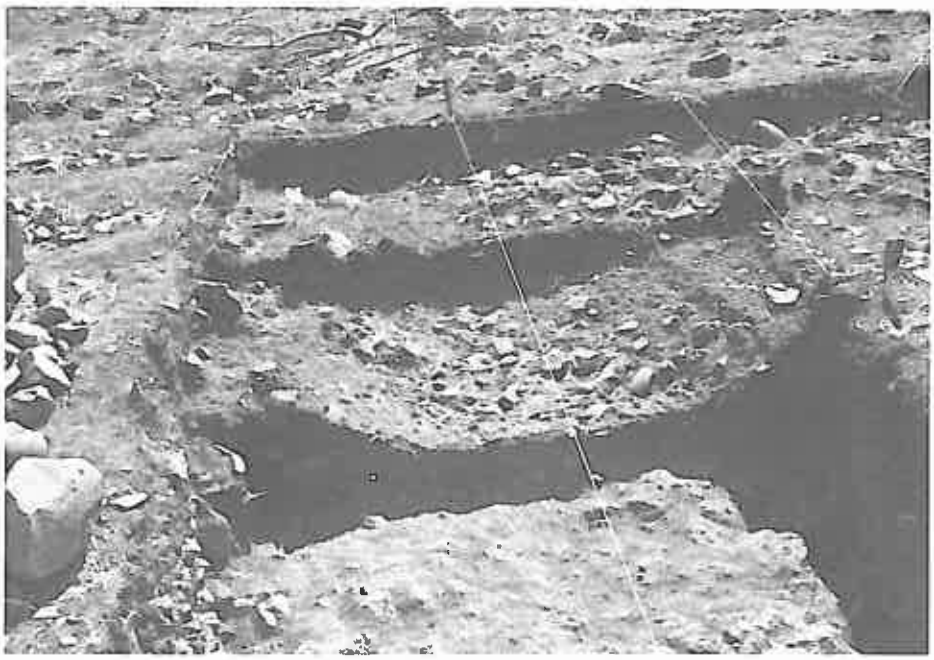


Figure 4.29. T-21 Middle Formative trash pit excavations.

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–

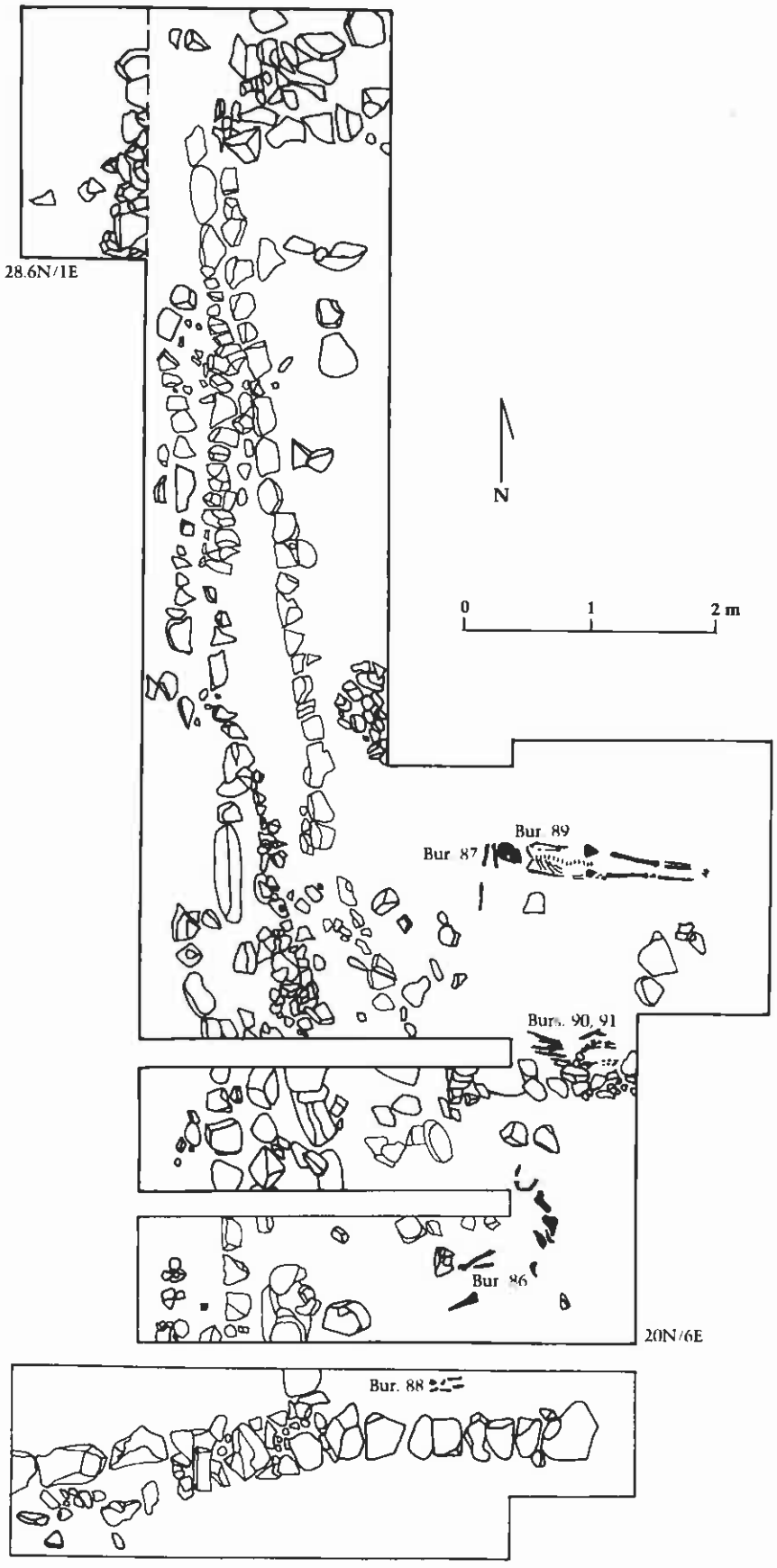


Figure 4.32. Plan map of T-24 excavations. Burial 92 not shown.

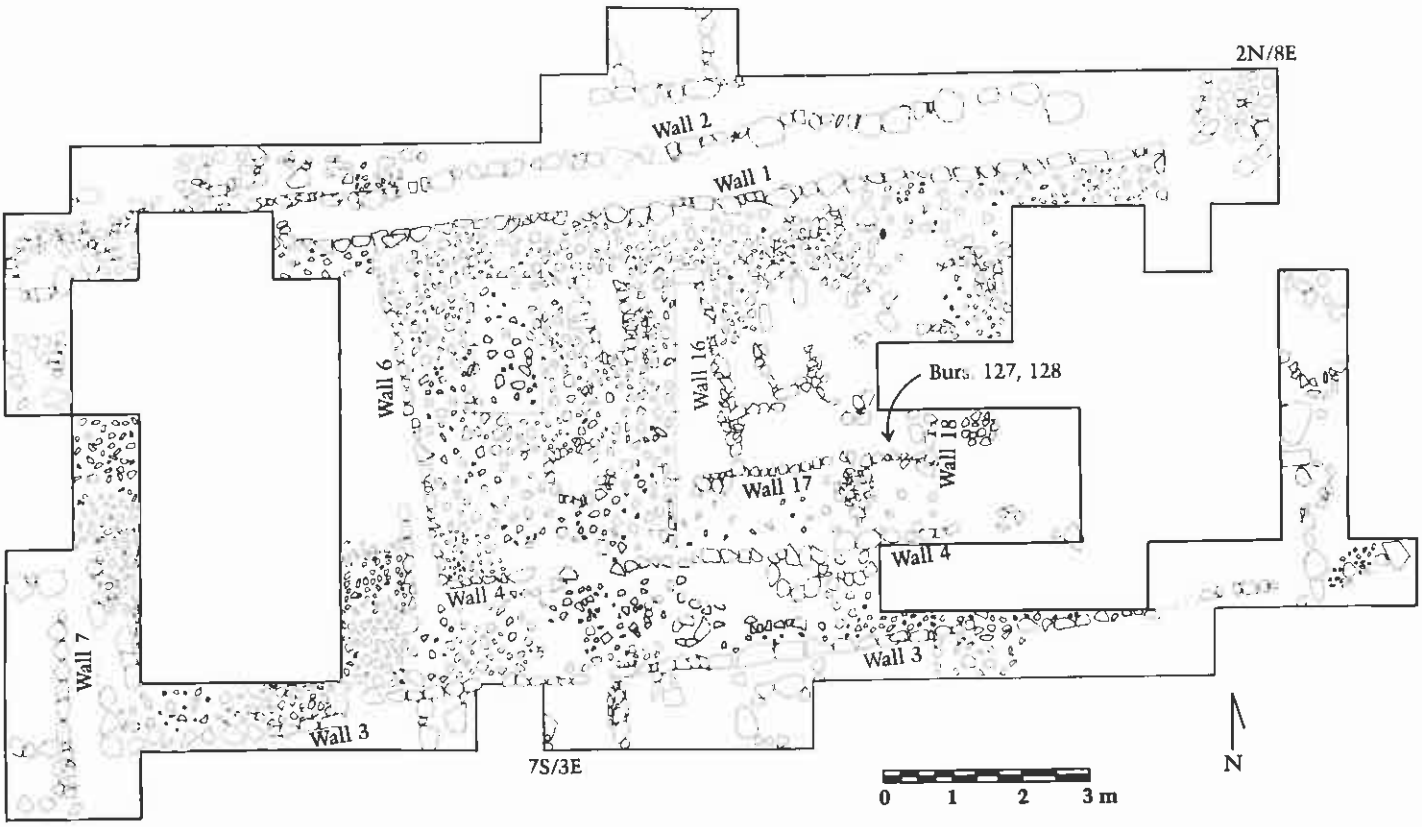


Figure 4.33. Plan map of T-27 Structure 1 excavations.

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

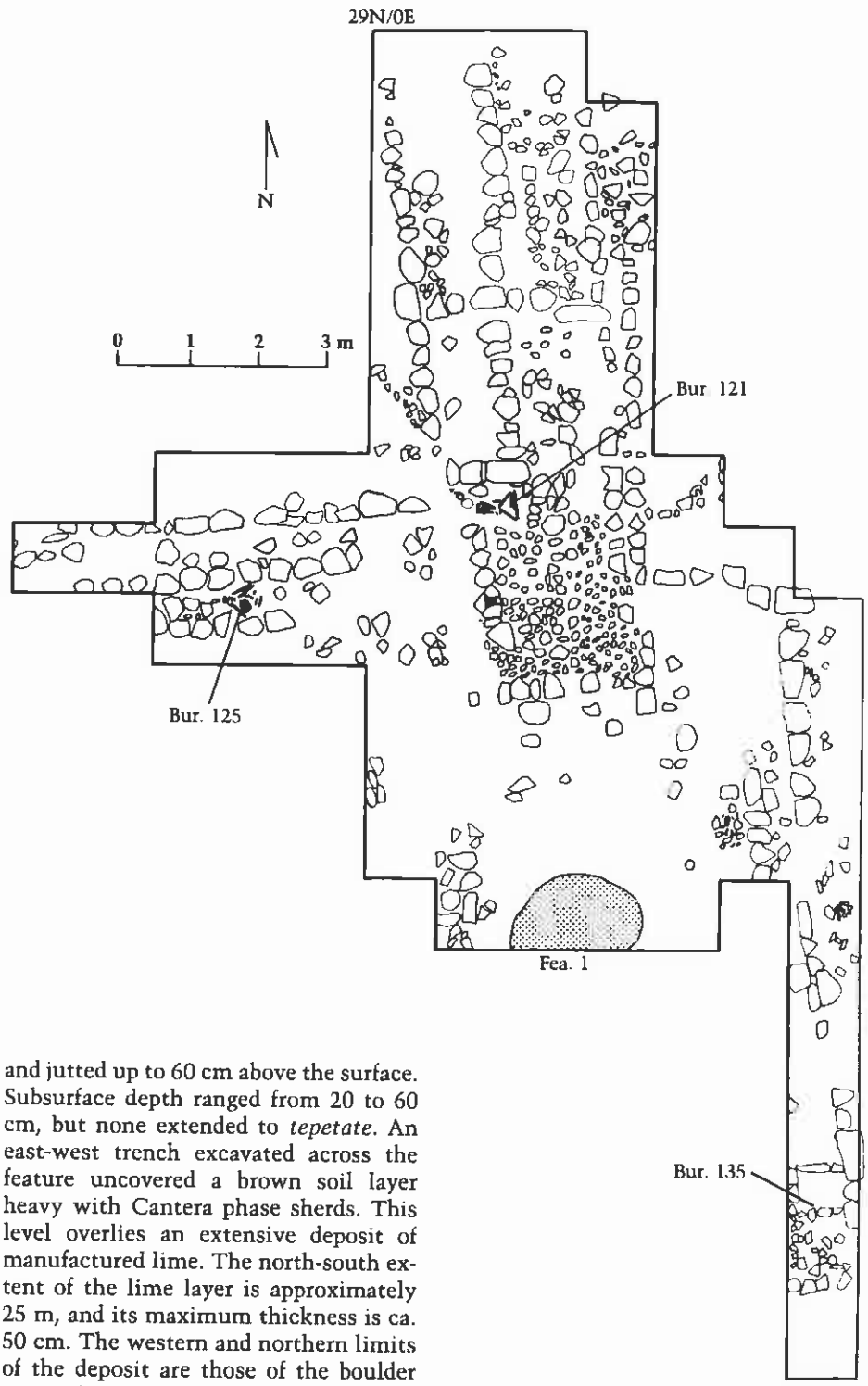


Figure 4.34. Plan map of T-27 Structure 2 excavations.

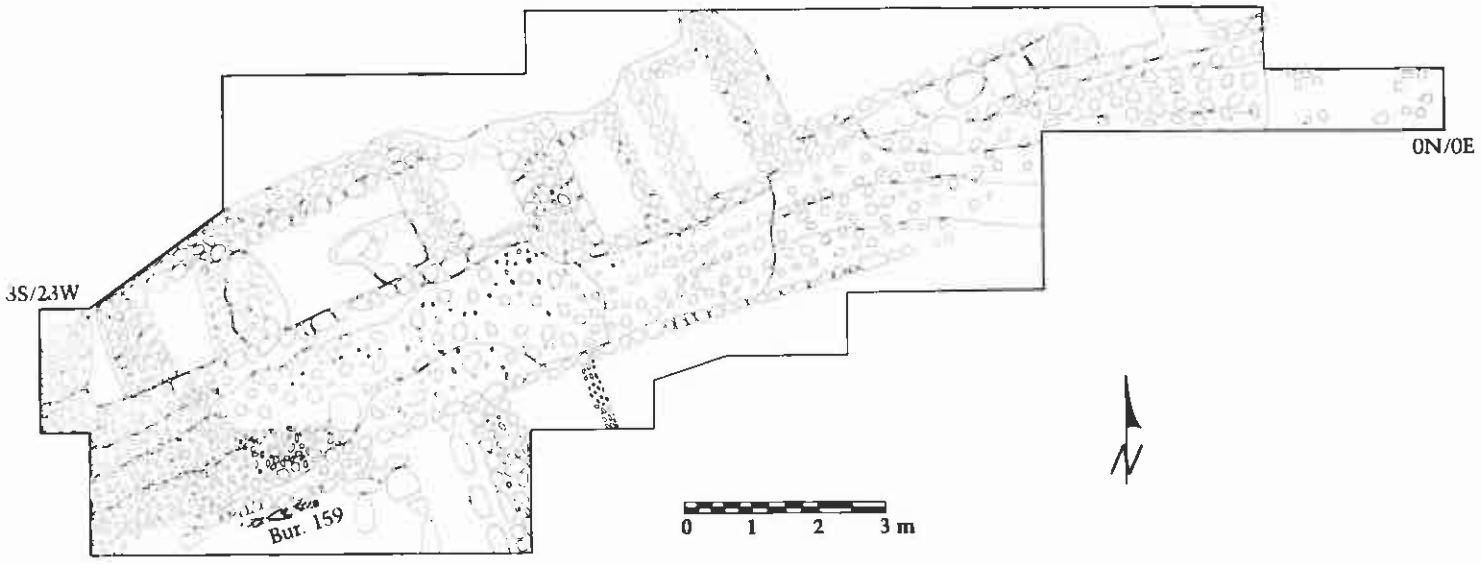


Figure 4.35. Plan map of T-29 excavations.

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.

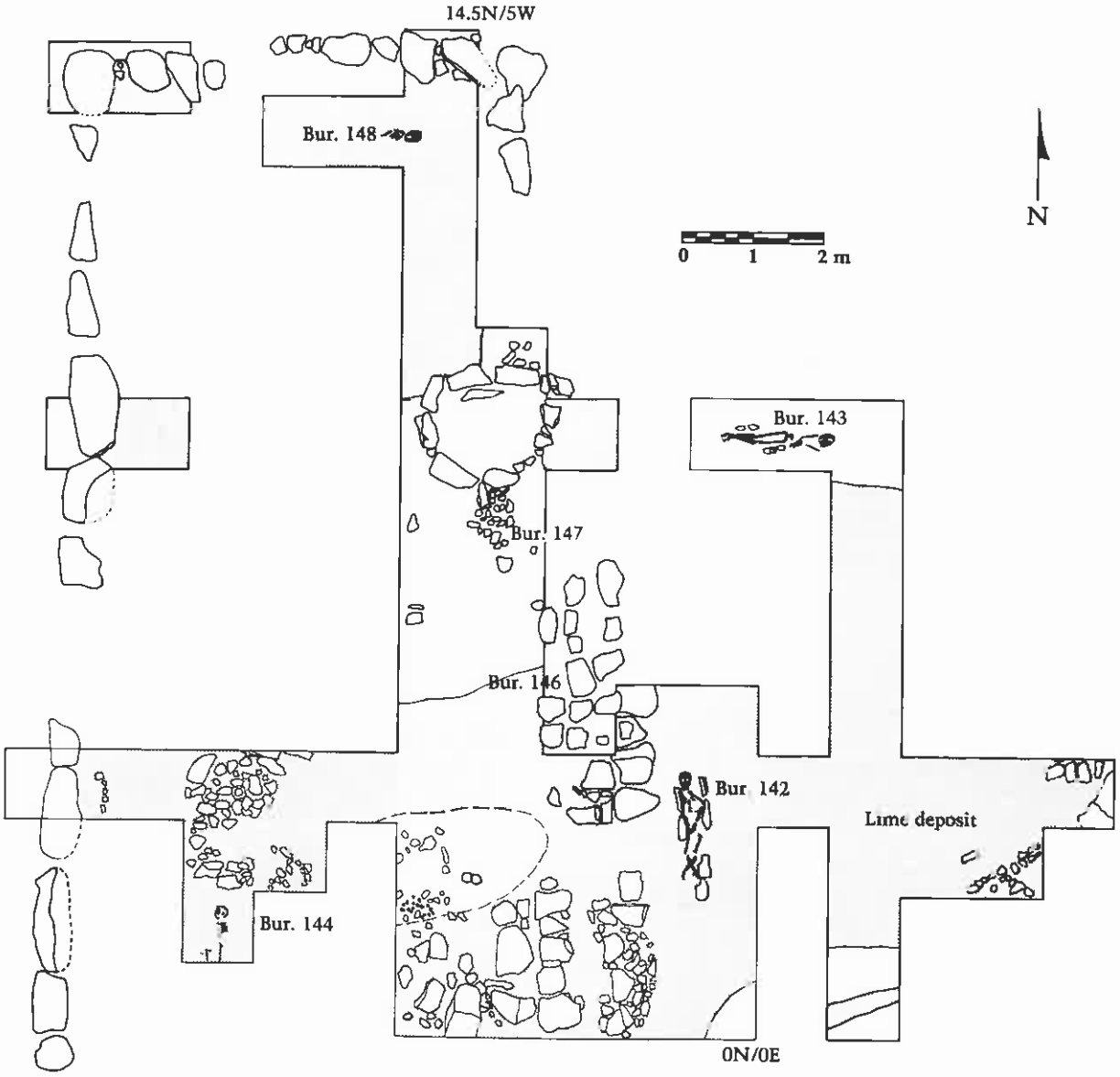


Figure 4.36. Plan map of S-39 excavations; shaded area indicates lime deposits. Burial 145 not shown.

***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

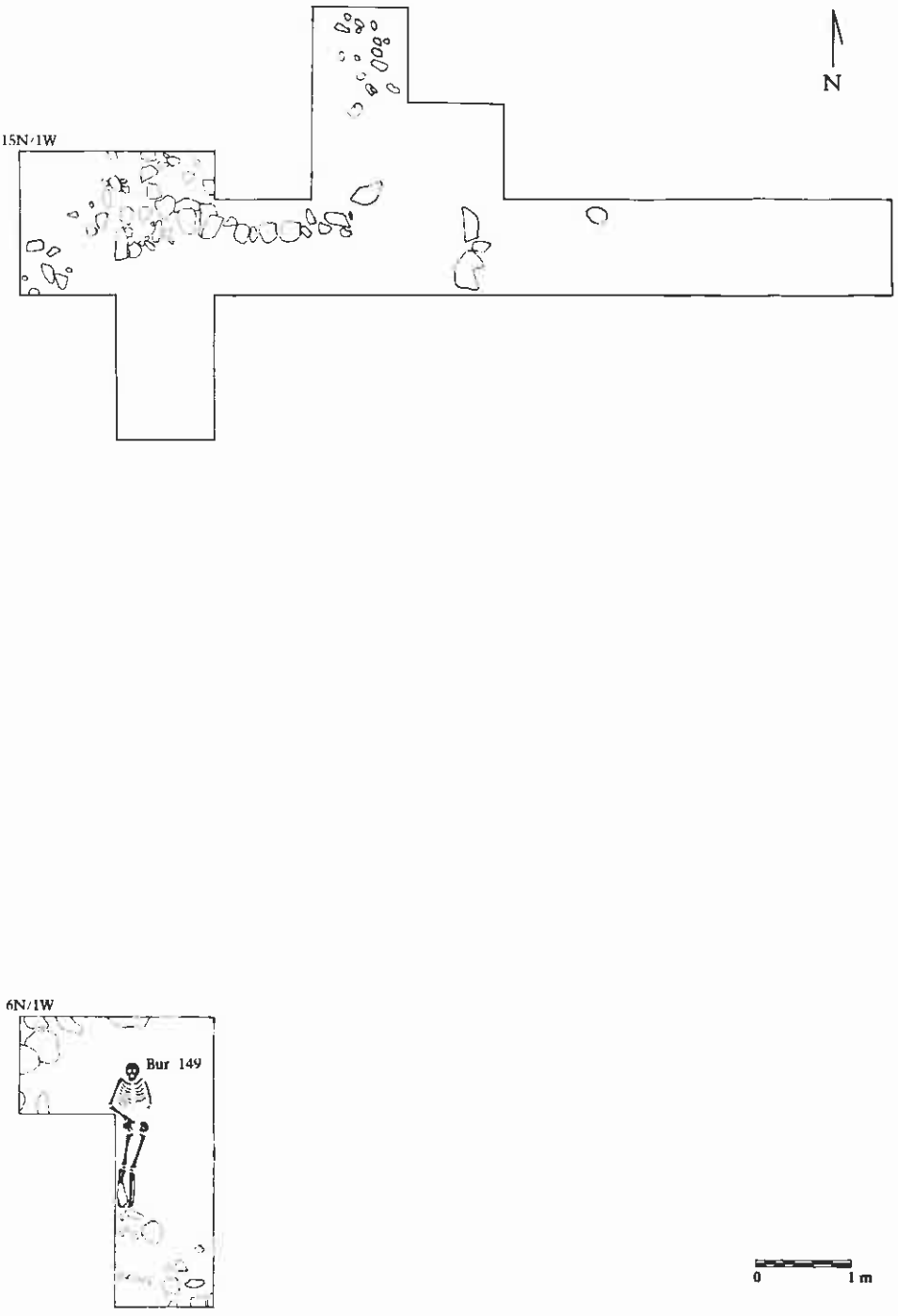


Figure 4.37. Plan map of N-2 excavations.

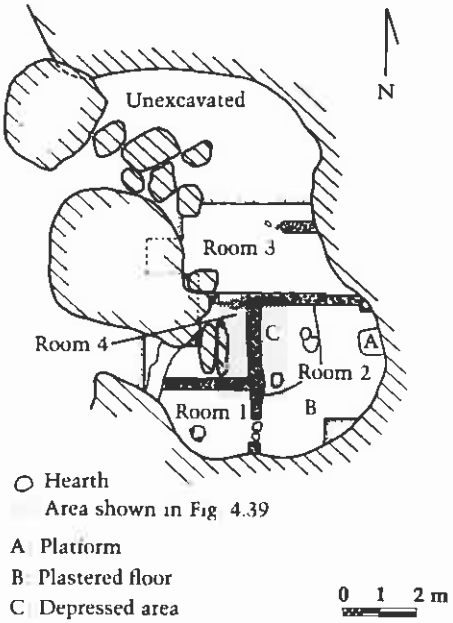


Figure 4.38. Plan view of Cave 4, Postclassic.

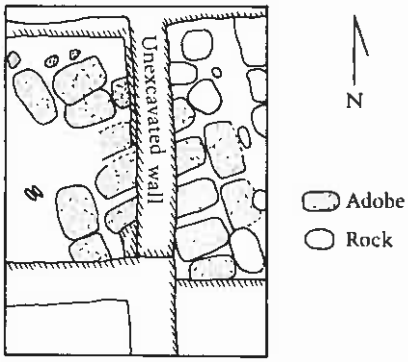


Figure 4.39. Plan view of Cantera phase adobe brick floor, Cave 4.

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 acompañó 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.