FAMSI © 2005: William M. Ringle

The 2001 Field Season of the Labná-Kiuic Archaeological Project

With contributions by: Tomás Gallareta Negrón (INAH-Centro Yucatán) and George J. Bey III (Millsaps College)

Research Year: 2001
Culture: Maya
Chronology: Pre-Classic to Late Classic
Location: Puuc Region, Yucatán, México
Site: Kiuic and Labná

Table of Contents

Introduction
- The Proyecto Labná-Kiuic

The 2001 Settlement Survey (William Ringle and Julieta Ramos Pacheco)
- Kiuic Urban Survey Results
- Perishable Structures
- Miscellaneous Structures
- Organizational Patterns at Kiuic
- Architectural Styles at Kiuic
- Civic Architecture at Kiuic
- Abandonment

Excavations at Kiuic during 2001 (George J. Bey, III and Rossana May Ciau)
- Conclusions

The Labná-Kiuic Intersite Survey (Tomás Gallareta Negrón and Ramón Carrillo Sánchez)
- Sample 1: El cerro residencial "Escalera al Cielo"
- Sample 2: Huntichmul

Sample 3: El Paso del Macho
Conclusions: Relief, Water, and Social Status
Final Comments
Acknowledgements
List of Figures
Sources Cited

Introduction

It has been obvious since the pioneering expeditions of John Lloyd Stephens in 1839-41 and again in 1842 (Stephens 1969, 1962), and those of Teobert Maler between 1886-1893 (Maler 1895, 1997), that the architecture of the Puuc region constitutes a distinct subdivision of ancient Maya artistic expression. Later reconnaissance, particularly by the Carnegie Institution during the 1930s and '40s (Pollock 1980) and the *Atlas Arqueológica de Yucatán* (Garza T. and Kurjack 1980) during the 1970s and '80s, demonstrated that this regional character is also reflected in its settlement patterns, perhaps not surprisingly given the distinctive terrain of the region. One of the most noticeable differences is the absence of large Rank 1 and 2 sites and conversely, the dense packing of smaller Rank 3 sites, of which Labná and Kiuic are fairly typical representatives.

This is in reality an oversimplification of both the landscape and the settlement patterns of the Puuc (Figure 1). The edge of the Puuc is delimited by a fault line, behind which rises the narrow escarpment called the Sierrita de Ticul (Duch Gary 1988). At the eastern extreme of the Puuc is the Valle de Santa Elena, a wedge-shaped area of generally low relief and deep soils. Today this is a region of high agricultural productivity, and it is thus not surprising that the largest sites of the Puuc – Uxmal, Nohpat, Kabáh, etc. – fall within or along the borders of this feature. As in the northern plains, these large sites seem to have dictated a fairly dispersed distribution of smaller sites.

In contrast, in the Bolonchén District to the east and south, cone karst hills predominate and Rank 3 site density is high (Figure 2). Between these hills are "flats" of relatively deep soils (Figure 3), but of limited extension, no doubt accounting in part for the scarcity of larger sites. Dunning (1992) has demonstrated how soil formation in this region is a direct result of topography, ranging from the thin tzekel soils on the upper slopes of cone karst hills to deeper clayey *kancabal* soils in the flats. In areas of intermediate slope, a variety of soils may develop, often within close proximity to one another.

This combination of microenvironments, coupled with larger expanses of kancabal soils, offered a variety of opportunities for ancient agriculturalists, leading some modern commentators to characterize the Puuc as the "breadbasket of Yucatán" (e.g., Barrera R. 1979). Yet was this true for the Bolonchén District? GIS modeling of the terrain using digital elevation data from I.N.E.G.I. casts some doubt on this reconstruction. If land is classified by slope as a proxy for soil types, and if Thiessen polygons are used as a first

approximation of the territory of Rank 2 and 3 sites, it can be seen that the acreage of prime flats varies considerably (Figure 4, Figure 5, Figure 6, and Figure 7, Gallareta N. and Ringle 2002), yet in no case would seem to provide a significant surplus above that necessary for the estimated populations of Dunning (1992). Despite this, these sites show an elevated level of prosperity as reflected by investment in vaulted architecture. We must at least therefore entertain the idea that some of this wealth derived from resources other than the export of foodstuffs.

During the 1980s, research centered around Sayil (Sabloff and Tourtellot 1991), in conjunction with the related trail survey of Nicholas Dunning (1992), considerably advanced our understanding of Bolonchén archaeology. This was the first extensive settlement study of any site in the Bolonchén District, eventually covering an estimated 55% of the entire site. Dunning's work provided a regional context within which to situate Sayil. In addition to the soil studies mentioned above, he briefly visited over 100 sites, recording the location and setting of each and range of architectural features. Since the work at Sayil, projects have been initiated at nearby Chac (e.g., Smyth *et al*. 1998, 2003), and Labná (Gallareta 2003), as well as a number of other INAH salvage and consolidation projects.[1] Mention should also be made of earlier work at Xkukican (DeJarnette *et al*. 1966) which was, however, only published in report form, and the extensive architectural survey made by George F. Andrews (1986, 1995), which provided a valuable supplement to Pollock's earlier work.

Submitted 08/17/2001 by:
William M. Ringle
Davidson College
biringle@davidson.edu

[1] In the western Puuc, recent projects include those at Xkipche (Reindel 1997), Xculoc-Xcochkax-Chunhuhub (Michelet *et al*. 2000; Becquelin 1994), Uxmal (Barrera R. *et al*. 1989, Huchim and Toscano 1999), and Oxkintok (Rivera Dorado 1991).

Figure 1. Composite satellite image of the Puuc using Landsat coverage and elevation data from a NASA shuttle mission.

Figure 2. Map of the eastern Bolonchén District.

Figure 3. Typical landscape of the Bolonchén District, showing agricultural flats and cerros.

Figure 4. GIS image of relief in the Bolonchén district (I.N.E.G.I. sheet F16C82 only). Solid green areas indicate areas of little or no relief.

Figure 5. Thiessen polygons made about Rank 2 and 3 sites.

Figure 6. Combination of Figures 4 and 5, showing "flats" available to each Rank 2 or 3 site.

Figure 7. Graph of comparative areas of "Flats" available to Bolonchén sites (I.N.E.G.I. sheet F16C82 only).

The Proyecto Labná-Kiuic

We initiated the Proyecto Labná-Kiuic in 2000 to address issues we felt had not received sufficient attention, despite recent advances in methods and results. First, we still had a poor understanding of Puuc chronology and ceramics. A common assumption was, and continues to be, that regional settlement was almost wholly a Late-Terminal Classic phenomenon. The Sayil Project, for instance, made the explicit assumption that Sayil was a single component site (Sabloff and Tourtellot 1991: 4), an assumption that has only recently been called into question by Smyth's work at Chac. Very few detailed studies of Puuc ceramic sequences were available as recently as 2000, the major exception being Varela's (1992, 1998) work at Oxkintok.[2] The location of that site just beyond the tip of the Puuc, however, made it a questionable representative of the Bolonchén sites. It was not only the initial occupation of the Puuc that was unclear, but also the nature of its abandonment. How rapid had it been, and how complete was the absence of Postclassic settlement?

Another issue was that despite the excellent regional work done by the Atlas project and by Dunning, and despite the detailed settlement survey of Sayil, we felt that settlement dynamics could only be understood by a more detailed understanding of the contexts within which these centers arose. If these sites were major nodes in networks of information, energy, and material exchange, it was necessary to understand the hinterlands as well. Dunning's work was necessarily limited by the vast area he covered and the limited resources at his disposal. We envisioned instead a more focused landscape study encompassing just a few sites, together with the intervening hinterlands.

Additionally, we felt that the excellent beginning made by Dunning and other members of the Sayil project in the study of Puuc cultural ecology could fruitfully be expanded and tested within a focused regional study. If soils were distributed as Dunning suggested, how was the population distributed so as to maximize their utilization? Were houses concentrated in the known centers, in which case regional population estimates would

---

[2] Brainerd (1958) had Carnegie collections from Uxmal, Sayil, Kabáh, Labná, and Xcalumkin available to him, but the Labná collection had in large part disappeared by the time of his analysis. He recognized the great homogeneity of the Puuc collections, but mentions nothing apart from the Florescent (Terminal Classic) types and wares (but see his Chart 1). The reporting of the details of ceramic stratigraphy is poor in relation to some of the other sites he examined, and few quantitative measures are provided for the Puuc. Smith (1971; Chap. XIII) dug several units at Uxmal and Kabáh with results much like those of Brainerd; an overwhelming presence of Cehpech ceramics with minuscule amounts from other periods. He does provide aggregate type frequencies by sites, but these are not broken down by location or stratigraphic unit. More recent studies include those of Smyth (1998) at Chac, an unpublished study of the Sayil ceramics kindly supplied to us by the author (Boucher 1984), and Vallo's dissertation on the Xkipché ceramics (2000, also 2003). This last is the most thorough study, but again is from the western Puuc and may not be representative of the ceramic production and distribution network of the eastern Bolonchén. His study also has a number of provocative ideas concerning the duration of ceramic phases that will need to be addressed by future analyses.

simply be the sum of site populations, or was there also a dispersed agricultural settlement, in which case population estimates might be considerably higher. And if the latter case was true, was housing located within fields or placed on the peripheries of *kancabal* expanses, suggesting a more intensive and managed system of cultivation? Here again we felt the need for more detailed work, for there has been no systematic survey of the hills themselves, the most prominent feature of the landscape. The Xculoc regional project (Michelet *et al*. 2000) had surveyed a 100-m-wide transect between Chunhuhub, Xcochkax, and Xculoc, a total distance of about 5 km, but found relatively little within this transect, suggesting the first position above might be valid.

A final issue is that of political organization. Despite the proximity of Puuc centers to each other, very little evidence of defensive works has been discovered over the years, with the possible exception of the wall around Uxmal. Militaristic iconography is fairly common, but the overall prosperity of the region bespeaks some ability to resolve conflicts besides outright warfare. Were each of the centers of the Puuc independent polities, miniature "city states," as Kurjack (1994:314) argues, or were some or all beholden to one or more of the larger sites? Dunning and Kowalski (1994, see also Kowalski 1994) provide the most recent brief arguing for Uxmal as a regional capital, but what sorts of archaeological evidence from putative subject sites might be marshaled to support or refute such assertions?

We chose to address these issues through study of a region whose two extremes were the well-known site of Labná and the less familiar Kiuic (Figure 8). During the nineteenth century, both sites had been visited by Stephens and Catherwood (Stephens 1962:2:29-52, Figure 9, Figure 10 and Figure 11) and by Maler (1997), and Labná had been partially mapped and "excavated" by Edward Thompson. More recently, Gallareta has carried out settlement survey of the site core and several outlying centers since the early 1990s. Excavations included both domestic and public architecture, and so overall provided a ready comparison with data we could hope to recover. Kiuic, however, had never been properly mapped and, apart from some consolidation of buildings on the point of collapse, had never been excavated. In addition, another site, Huntichmul, lay roughly between them, only 8 km from each. Thus, issues of community and regional complexity could in effect be studied in three dimensions, rather than the single one.

Figure 8. The sample Labná-Kiuic universe, showing major sites and intersite road survey.

Figure 9. Catherwood drawing of Str. N0970E0850 (Diamantes building).

Figure 10. The "Casa Real" where Stephens and Catherwood stayed while at Kiuic.

Figure 11. The probable "Casa Real" today.

The questions raised above are being addressed at three levels of analysis. Our regional study is being directed by Gallareta. As a prelude, during 2000, project archaeologist Ramón Carrillo S. surveyed a 100-m-wide, 10-km-long transect along a dirt road between Labná and Kiuic. In contrast to the Xculoc project, he found abundant evidence of intersite settlement and also suggestive evidence for the rather close management of housing placement. The second subphase of the project, directed by Ringle, is concerned with the internal organization of the other two major centers, Kiuic and Huntichmul. Here the concerns are the traditional ones of settlement pattern studies: determine site limits and the internal distribution of the population, distinguish possible functional areas or structures with the urban limits, and if possible determine the evolution of community size and organization. In the Puuc, this is facilitated by the visibility of surface remains and by changes in architectural styles sometimes not visible in the associated pottery. Finally, we also wish to address issues at the level of individual households or structures. Bey, who directs this third subphase, has elected to concentrate work on the Grupo Yaxché for the first few seasons. This group was selected for several reasons. It appears to include structures that were both domestic and public. It was also apparent from surface remains that certain of the structures were

among the earliest masonry structures exposed to view, and was characterized by the use of slab vaults. Therefore, there was the promise that even earlier remains might be located beneath the final construction stages.

Since FAMSI funds were directed toward support of the Kiuic settlement survey, the majority of the remainder of this report will concern that aspect of the project. However, brief summaries of the other two subphases are included for the interested reader.

The 2001 Settlement Survey
(William Ringle and Julieta Ramos Pacheco)

During the first year of our project (2000), mapping had concentrated on the known ceremonial core of the site. It quickly became apparent that the quality of surface remains offered an unparalleled opportunity to create a detailed map of the ancient community of Kiuic. In the great majority of cases, it was possible to determine floor plans and the dimensions of individual rooms. For vaulted structures, the pattern of collapse was often clear, as were details of construction such as the type of doorways, architectural decoration, etc. A number of rooms were in fact still standing; others had collapsed since Maler visited the site, but fortunately had been photographed beforehand (Figure 12).

For these reasons, we have been mapping surface features and topography in high resolution. Mapping was carried out by means of two total stations. A fairly high number of points were necessary to record surface features and to achieve the necessary topographic definition we wanted. To provide an even greater level of detail, and to indicate the surface remains supporting our reconstruction of architectural features, 1:100 scale field drawings were made of every structure. First point plots of our total station data were computer generated, and then these sheets were used to draw in visible features. We made no attempt to record every stone, an impossible task for so large a site, but instead concentrated on those that were *in situ* or nearly so, as well as major architectural stones such as jambs and lintels, whether *in situ* or not. With perishable structures, an attempt was made to convey the density of rubble, since *in situ* stones were often difficult to identify.

The final map consists of computer-generated contours, manually modified where necessary, CAD-drawn structure plans, and symbols for metates, chultuns, and other smaller features. Field drawings were then scanned in and cleaned up electronically (we use a program called Canvas, which allows the combination of vector and raster data). Because of the smaller scale of the final map, scanning the cleaned-up pencil drawings proved adequate and we found it unnecessary to ink them beforehand. Each scanned pencil drawing was then scaled and oriented within the master AutoCAD map. Once the AutoCAD map was completed, it could then be imported into GIS programs. The Labná-Kiuic GIS database is built around the ArcView interface, although we have now migrated to ArcGIS as well. We still recommend ArcView for the wide number of free specialty scripts that are available, a number of which were employed in our analyses.

Figure 12. Maler photograph of Kiuic Str. 0890E765, now collapsed (from Maler 1997).

The principal goal of the 2001 season was to complete mapping and registration of the architectural core of the site, both its public buildings and their associated domestic and service structures. Our secondary intention was to proceed as far as possible in mapping the area defined by the INAH site boundary markers (*mojoneras*), an area approximately 500×500 m. Although we completed our first objective, the number of buildings and their high level of preservation prevented us from finishing the second. Nevertheless, much of the northern half of the central 500x500-m-square quadrangle

was mapped, giving us a preliminary glimpse of settlement beyond the core. Several additional structures were located and cleared, and awaited mapping during 2002.F[3]F

Kiuic Urban Survey Results

A total of 123 structures were mapped during our first two field seasons, 76 of them during 2001 (Table 1, Figure 13 and Figure 14). Of these 123, 101 possessed rooms, the remainder being platforms without superstructures, chich mounds, and the enigmatic ring structures found at many Puuc sites. Interestingly, 54.5% of the structures with rooms were vaulted and three others had walls of masonry (presumably either with a pole-and-thatch roof or under construction). This index of architectural investment rises to 65.6% when the number of rooms is considered (162 of the total of 247 rooms were vaulted). An even higher 72.2% of the rooms were in either vaulted or masonry structures.

[3] Mapping of the quadrant was completed during 2002. During 2003, two 1-km-long transects were mapped to the north and east of the quadrant in an effort to determine the limits of the site.

Figure 13. Area mapped at Kiuic, 2000-2001.

Table 1. Analysis of structures mapped during the 2000 and 2001 seasons		
Type	**Number of Structures**	**Number of Rooms**
Vaulted Buildings (total)	***55***	***162***
w/ one room	21	21
w/ two rooms	8	16
w/ three rooms	12	36
w/ four rooms	5	20
w/ five rooms	2	10
w/ six rooms	2	12
w/ seven or more rooms	5	47+

Unvaulted Masonry Buildings (total)	***3***	***16***
w/ two rooms	1	2
w/ three rooms	1	3
w/ eleven rooms	1	11
Foundation Braces (total)	***43***	***69***
w/ one room	21	21
w/ two rooms	13	26
w/ three rooms	1	3
w/ four rooms	1	4
"C"-shaped	3	3+
"eyeglass" or open-front	4	12
Others (total)	***22***	***0***
Chultun platforms	4	
Rectangular platforms	12	
Ring structures	1	
Chich mounds	2	
Round altars	2	
Rectangular altars	1	
Total	**123**	**247**

Figure 14. Three-dimension view of the central Kiuic quadrant (including post-2001 additions).

Since our sample covers the central section of Kiuic, our sample undoubtedly reflects the greater investment in public architecture as well as the probably higher presence of elite households. When only those structures are considered which fall beyond the immediate site center, 8 were vaulted and 17 perishable foundation braces, so the overall total of vaulted buildings fell to 32%. Nevertheless, vaulted buildings continued to be found at the north, east, and western limits of our survey (the area to the south was not explored this season).

Furthermore, it is significant that structure density appears to be higher than any of the quadrants of Sayil, a larger Rank 2 site. Our sample is still too small to hazard any population estimates, but clearly a number of the structures probably were not domestic habitations. A number of buildings or platforms lacked chultuns and/or metates. Examples are the Grupo Nicté, Str. N1100E0920 *et al*., Str. N1255E1000 *et al*., and Str. N1090E1220 *et al*. Despite the large number of rooms in the "palace" groups Chulul and Kuché, these were served by only two or three chultuns. Excavations will ultimately be necessary to formulate more specific hypotheses as to their past use.

The majority of vaulted structures mapped to date is either single-room or range structures (that is, structures with only a single row of rooms). Only five possess a "tandem" plan, that is, with multiple rows of rooms, while two others have more complex floor plans (Strs. N1065E1025 and N0920E1040). The popularity of single-room vaulted buildings (38% of vaulted structures) is something of a surprise, since Pollock (1980: 567) argues that this is relatively rare among Puuc sites. Inspection of their distribution

shows that the majority are concentrated around the Grupo Yaxché. Since the architecture of this group is early, the preference for single-room structures may be a chronological trend. It is interesting in this respect that several examples having later stonework were clearly built to allow additional rooms to be added at a later date (e.g., N1075E1045); in other words, they were range structures under construction.

A special case is the elongated one-room hall. Examples occur at KiuicF[4]F (N1015E1015) (Figure 15), at Huntichmul, at Labná, and other sites such as Chac. These structures are almost certainly early, since they have slab vaults and simple façades. They are also usually fronted by elaborate staircases, and most have several doors separated by piers (excavation of N1015E1015 indicated several had been walled up at some later point). One-room halls appear to have been a focus of community life, rather than residences, given their scarcity and placement in formal architectural groups we refer to as the Early Puuc Civic Complex.

As can be seen from Table 1, range structures with 3 (21.8%) and 2 (14.5%) rooms are the next most popular floor plans at Kiuic. Rarely do vaulted structures occur in isolation. Only one platform has just a single vaulted structure (N1065E1120) on it. Four others are accompanied by perishable foundation braces, and the remainder are paired with at least one other vaulted building, plus accompanying perishable structures.

[4] Str. N0920E1040 seems to be an exception to this pattern in that the hall at the front does have a vault. It is however clearly an early structure that was enlarged several times, the hall probably being the original core of the building. It also is unlikely to have been a residence, at least originally.

Figure 15. Str. N1015E1015, an Early Puuc single-room hall.

Perishable Structures

Our sample of foundation braces to date is dominated by one- or two-room buildings (34/43 or 79%). All are rectangular in plan; to date no apsidal structures have been identified. This was also the pattern at Sayil and overwhelmingly our experience at Ek Balam, though a few apsidal structures were encountered there.[5] The presence or absence of 1 or 2 room perishable structures on a platform with vaulted architecture seems in general to distinguish residential groups from public buildings, although there are exceptions. The absence of perishable foundations should be noted for the Grupos Chulul and Kuché, both "palace" groups, as well as the Grupo Yaxché.[6]

Of the remainder, four are of a type we have dubbed "eyeglass" or open-fronted structures. We first identified this form at several sites in the Ek Balam region. In these, two small rooms are connected by a longer rear wall. The whole was presumably covered by thatch, but since no trace of a front connecting wall brace is present, they are assumed to have been open. The C-shaped structures are familiar from the literature (e.g., Bey *et al*. 1998). The argument of the latter paper is that such structures often date to the post-monumental Terminal Classic in northern Yucatán. Excavations will be necessary to determine this for Kiuic, since two examples occur on service platforms of the Grupo Yaxché, suggesting their contemporaneity (N1060E0965, N1100E1040). However, C-shaped Str. N1085E0805 may be a later addition to the Grupo Nicté, since some of its cut stones appear to have been reutilized, perhaps when some of its vaulted buildings were modified.

Miscellaneous Structures

Twenty-two structures bore no evidence of room foundations. One type is the isolated chultun platform (e.g., N1035E0735). Such platforms were evidently constructed to provide a catchment area for rainwater. *Plataformas chultuneras* may have served more than one neighboring platform, though additional mapping will be necessary to understand their spatial context. This is not a wholly satisfactory answer, however, since we also found catchment basins constructed virtually at ground level (e.g., N1100E1160) while some of our *plataformas chultuneras* (e.g., N1255E1165) were very large and the chultun seems to have been added almost as an afterthought. A distinct

---

[5] Interestingly, a Middle Preclassic apsidal foundation was excavated by Peraza L. (2002) at Tipikal, not far distant from the base of the Sierrita de Ticul, but during the Classic period seem to be prevalent principally in the northwest corner of the peninsula.

[6] Perishable structures are associated with the service platforms attached to the Grupo Yaxché. A small group of vaulted structures and two perishable buildings are located in front of the Grupo Kuché, but there are reasons for believing them to be later constructions.

possibility is that the larger *plataformas chultuneras* were in fact domestic platforms abandoned while under construction. As noted below, this would be in keeping with other evidence for a swift abandonment of the site. The relative isolation of N1255E1165 from other platforms would also support this position.

Other miscellaneous structures include several "altars," for lack of a better word, chich (gravel) mounds, and as of 2001, a single annular structure. Annular structures have been reported from several Puuc sites, but their function is still poorly understood (c.f. Sabloff and Tourtellot 1991: 16, Dunning 1991: 24-25). Frequently the stones of the interior betray evidence of burning, suggesting these may have been production ovens of some sort. Ceramic kilns might be one possibility, given the absence of any other evidence for such structures in the north, but we detected no sherd concentrations or "wasters" within or around our example. Other possibilities are charcoal or limestone production, though why this would be done on the service patio of one of the main groups of Kiuic is puzzling. Again, future excavations are called for.

Organizational Patterns at Kiuic

With the site center now mapped, Kiuic seems a good deal less chaotic than it seemed to some of its earlier visitors. Many of the buildings share a common orientation, about 16-17ºE of true north, within the span of Puuc orientation pattern identified by Aveni and Hartung (1986). The general orientation of Kiuic architecture also exhibits another pattern noted by Pollock: "A strong tendency in the orientation of Puuc architecture is that the buildings in a group of structures face inward toward the center of the group, and that single structures and larger architectural complexes face toward the ceremonial or civic center of the site" (Pollock 1980: 562). At Kiuic, the Grupo Yaxché provides that focus. Although not all structures face toward it (Grupo Nicté; Str. N1255E1000), even the larger and more elaborate Grupo Kuché seems to look toward this group, a link made explicit by Sacbé 1.

Another feature sometimes seen at other Puuc sites is that a large open area exists in the very heart of the site, south of the Grupo Yaxché as far as the foot of the cerro south of it, and from the present-day parking area west to the Grupo Chulul. Although possibly used for public assemblies or ceremonies, a close check of this area detected no cultural remains. Instead, Gallareta has suggested that it may have served as an infield garden or orchard, perhaps for elite use. He notes that similar open spaces occur near the Labná Palace. Such an interpretation supports the contention by members of the Sayil project that Puuc cities can often be conceptualized as "garden cities" because of the large tracts of presumably cultivated flats within urban boundaries (Killion *et al*. 1989; Dunning 1992:119).

Architectural Styles at Kiuic

Classification of Puuc architectural styles stems from Pollock's *magnum opus*, in which he distinguished the Early Oxkintok, Proto-Puuc, Early Puuc, and Late Puuc styles

(Pollock 1980: 584-587). The major contribution in recent years has been that of George Andrews (1986, 1995), who identified Proto-Puuc and Early Puuc stages, and subdivided Pollock's Late Puuc style into the Colonnette, Mosaic, and Late Uxmal styles. A number of questions remain unresolved, however. One is the degree of overlap of these styles. According to Andrews, his last three styles generally follow one another, although he recognized that the Colonnette style persisted alongside the Mosaic style for some unknown duration, and that the Late Uxmal seems to have been highly localized.

Figure 16. Reconstruction of Str. N1015E1015.

Figure 17. Stepped vault in Room 1, Str. N1000E0865, Grupo Chulul.

We are fortunate in having a range of architectural styles at all three major sites in our survey area which should allow us to test many of these questions. The earliest masonry structures are all largely collapsed, but probably possessed unadorned vertical façades with a simple vertically faced medial molding or perhaps on occasion with a "broken" medial molding.[7] Most importantly, they were roofed with slab vaults, suggesting they preceded Pollock's Early Puuc style. A good example is N1015E1015 (Figure 16), discussed below, but others exist at both Labná and Huntichmul. One other structure, Room 1 of N1000E0865 of the Grupo Chulul (Figure 17), has a stepped vault and a vertical medial molding, but the remainder of the façade is buried by collapse. This room is adjacent, and at right angles, to three rooms, all with veneer vaults and whose façade in Early Puuc IIb. No seam could be detected in the masonry hearting between Rooms 1 and 2, however, so the antiquity of this example is uncertain.

At least two other variants fall within the Early Puuc style. Both have vaults faced with wedge-shaped veneer stones with beveled faces (*tacones*). Early Puuc IIa (EP IIa) predominates in the Grupo Yaxché (Figure 18), although fallen examples may form part of the Grupos Balche and Nicté. These buildings have sloping upper wall zones (sometimes with multiple aprons), columns or square door piers, and on occasion, 3-part upper moldings and/or roof combs. In some cases, such as N1045E1005, the vault stones are quite crude and interior spaces are often limited (many have just a single room). On the other hand, the west wing of N1065E1025 (Figure 19) demonstrates that mosaic stonework was already in use, although not as yet in mask form. This wing is also interesting because a section of its rear wall is exposed and is clad with veneer, suggesting this "wing" and a similar range along the east side, were originally free standing structures.

[7] Gallareta N. (personal communication) found that the length of molding stones associated with an early single-room hall at Labná (Str. 7) exceeded the periphery of the building and suggested the difference could be accounted for by a broken molding.

Figure 18. An example of Early Puuc IIa, Str. N1045E1005, Grupo Yaxché.

Figure 19. Mosaic upper wall zone of Str. N1065E1025, Grupo Yaxché.

Figure 20. An Early Puuc IIb building with a "broken" medial molding, Str. N1000E0865.

The other style, EP IIb, frequently has smooth vertical upper wall zones and simple vertical medial moldings, again "broken" in some examples (N1000E0865, Figure 20). Doorways are most frequently simple rectangular or slightly trapezoidal openings, although sometimes columns are used. The area within the broken medial molding may be decorated with simple mosaic designs on occasion (e.g., N1025E1160 of the Grupo Balche (Figure 21), South wing of the Labná Palace). Vaults tend to be better fashioned, and rooms somewhat more ample than EP IIa, although there seems to be a definite trend towards limiting the openness of façades.

The chronological relation between EP IIa and IIb is unclear. In general, IIa structures appear to be more lightly built than IIb buildings. On the one hand, EP IIa looks forward to the succeeding Colonnette style in having 3-part moldings and mosaic decoration, but EP IIb has the vertical upper wall zone, simple doors, and more elaborate vaulting characteristic of later architecture. One indication that the latter postdates IIa is that what might have been an EP IIa structure (N1030E1150), built at ground level with square piers, appears to have been incorporated into a platform on which a EP IIb building rests, suggesting IIb may be later. One intriguing question is why so many Early Puuc structures were left standing and apparently in use. Did their functions change, and did they form part of a commemorative landscape?

Figure 21. Mosaic decoration on an Early Puuc IIb building, Str. N1025E1160.

The bulk of the vaulted buildings were in the Colonnette style (Figure 22). The Colonnette style at Kiuic is extremely restrained, with only variations in the arrangements of the colonnettes. Often the upper wall zone is a continuous frieze of colonnettes, in other cases sets of colonnettes are placed in recessed panels. Miniature colonnettes or drums (*tamborcillos*) are also found supporting the basal plinth and set into the medial and upper moldings on occasion. Only rarely do colonnettes decorate the lower wall zone, and then only at the corners of buildings. Doorways tend to be simple, with jambs usually spanning the entire width of the doorway (though two or three sections may be stacked to form a complete jamb.) Interestingly, at Kiuic we as yet have no good evidence of columns being used after the Early Puuc period, although this clearly was not the case elsewhere. For reasons discussed below, this phase is called the Colonnette I style.

Figure 22. The Colonnette I style Str. N1025E0830, Grupo Kuché.

Only a very few structures at Kiuic have evidence of mosaic masks, although more are known from Huntichmul and Labná (Figure 23). All are associated with civic/public structures in the Grupo Kuché (Strs. N1050E0815 and N1100E0850). Another structure of the Grupo Kuché, Str. N1095E0830, had a façade decorated not only with colonnettes, but also with small, square mosaic diamonds arranged in a checkerboard pattern. This recalls the façades of the Labná Palace wings (Pollock 1980: Figures 17 and 47), Str. 5 of Sabacché (Pollock 1980: 142), and Str. 1A2 of Kabáh (Pollock 1980: Figure 299). These structures are also decorated with mosaic grecas, suggesting their relatively late date. The relative lack of such decoration at Kiuic does not reflect its earlier abandonment or conquest, however, since structures in the Grupo Chulul appear to postdate the Grupo Kuché, and indeed it is the Grupo Chulul, rather than the Grupo Kuché, which appears to have been abandoned while under construction.

Figure 23. Evidence of a mosaic mask façade from the Grupo Kuché.

The main representative of what we refer to as the Colonnette II style at Kiuic is the famous Diamantes building (N0970E0850, Figure 24), drawn by Catherwood, photographed by Maler, and now in serious danger of collapse. These Colonnette II-style buildings can be distinguished by their much larger (and better cut) veneer stones, by the height of their vaults, and often by the presence of boot stones and elaborately banded colonnettes and other forms of mosaic decoration in the lower wall zone. Figure 25, shows some examples from Huntichmul. Some of these structures were apparently roofed with perishable materials, and their only distinguishing traits are the size of the veneer stones and most notably, the great size of the door jambs and the increased width of the (lintel-less) doorways. A good example is N0875E0880 on the second tier of the Chulul palace.

Figure 24. The Colonnette II style Str. N0970E0850 (Diamantes building).

Figure 25. Another Colonnette II style structure from Huntichmul.

The dimensions of vaulted rooms do not vary appreciably, except for a general chronological trend for wider and taller rooms. Thus, if the central structures such as the Grupo Chulul were palaces, they did not enjoy larger interior spaces, as Kurjack has noted. Kurjack also argued that vaulted rooms may each be identified with individual nuclear families because in general, rooms do not interconnect. However, we see at both Kiuic and Labná a strong preference for two- or three-room structures following the Early Puuc period.[8] If rooms did belong to related nuclear families, one would expect to see a greater variety in room number. Evidence suggests instead that 2 or 3 room buildings were in general occupied by a single family; this tends to be supported by the association of a single set of food preparation facilities with each vaulted building. Furthermore, there is a fairly close correlation between the number of perishable and vaulted structures on a platform. In Kurjack's scenario, if the former were the houses of support personnel, one would therefore have to assume that they too were co-

[8] Most vaulted structures with four rooms or more belong to either the Grupo Chulul or Kuché, or to a platform group close to the site center.

residential nuclear families, each room serving a room of the vaulted rooms, instead of what seems more likely, another single extended family serving a single family in the vaulted structure.

One other piece of evidence is that the upper wall zones of the sides of several masonry buildings were not clad with veneer (i.e., the masonry hearting was left exposed). It seems that commonly a single-room vaulted structure was first constructed and then added onto when the need arose or resources permitted. It should be noted that our only examples of this technique involve single room buildings: the ends of two and three room buildings were always finished, as if that were the intended limits of expansion.

Civic Architecture at Kiuic

As discussed elsewhere in this report, the earliest group of civic architecture at Kiuic apparently is the Grupo Yaxché. This group possesses the largest "pyramid,"[9] as well as two other smaller stepped platforms in the Plaza Icim – smaller, yet larger than any other outside of the group (as of 2001). The presence of this mound, together with the long hall N1015E1015, ramps, and other vaulted buildings arranged around a rectangular or frequently subrectangular plaza identifies it as an architectural grouping we call the Early Puuc Civic Complex (EPCC). Such groups can be found at several sites of the region, including Labná, Huntichmul, Chac, and Xcanacruz. All appear to be relatively early in date, although often with later additions. Sometimes more than one are present at sites, such as at Chac and Huntichmul. They would therefore seem to be associated with prominent segments of a site rather than site-wide points of administration and/or worship.

At Kiuic, however, there is just one, and its importance is underscored by its being the visual focal point of the center, as noted above. Excavations in that group have now demonstrated that occupation and perhaps civic activities may have had a much longer history than we have realized (see below). The fact that the Grupo Yaxché is connected by a short *sacbé* to the Grupo Kuché, surveyed in 2001, suggests it remained a point of social memory for some time afterward, largely unmodified.

The Grupo Kuché was surveyed in 2001. Some elements of its architecture are discussed in the preceding section and it is clearly later than the Grupo Yaxché. It and its "palace," Str. N1050E0815, also bear a strong resemblance to architectural groups elsewhere in the region, such as the "palaces" of Xcauil (Pollock 1980: Figura 280) and Xkichmook (Thompson 1898). This may indicate a contemporaneity of construction

[9] The "pyramid" N1065E1025 in reality had rows of rooms along its sides and probably its rear as well as a structure on top, so originally bore little resemblance to a pyramid.

and/or a similarity of political rank. The Xkichmook arrangement is particularly striking in having a long range structure at right angles to the "Palace," as well as other vaulted rooms across from it. The L-shaped arrangement of palace and range structure recalls the "temple assemblage" we have drawn attention to elsewhere in Yucatán as a basic building block of many site centers.

Figure 26. Comparative areas of palaces at Sayil, Kiuic, and Labná.

Finally, the Grupo Chulul is a much more ambitious civic complex. Reasons have been given above for suggesting it was the final complex, but the variety of architectural styles employed suggest it was built in several stages over a lengthy time period. One interesting aspect of this palace is that its "footprint" is larger than the Sayil or Labná palaces, although it had fewer rooms (Figure 26). These differences seem at base related to the different functions of these "palaces," for clearly the large central plaza of the Grupo Chulul seems much more oriented to public assembly and spectacle than is the north palace of Sayil.

Abandonment

As mentioned above, several lines of evidence suggest Kiuic was rapidly abandoned in the full flower of its occupation. The partially constructed houses and house platforms mentioned above are partial evidence. The Grupo Chulul is another. Here a broad raised platform had apparently been raised behind the Early Puuc structures around the Plaza Mucuy. Much of the surface of the upper Plaza Colomté consisted of heavy rubble fill, in contrast to the soil and gravel covering of most plazas. The upper wall zone of N0970E0850 (the Diamantes building) lacked any sort of decoration or veneer finish, suggesting it too was unfinished. Finally, the focus of the Grupo Chulul, the complex of rooms at its south end, had apparently undergone several elaborations, including a lower Colonnette I range and a Colonnette II range of perishable-roof rooms on the second story. A third stage was evidently planned, but only a large mound with rough retaining walls was ever built. The top also was surfaced with heavy rubble, and no traces of foundations could be observed. Finally, Gallareta has observed similar indications of interrupted construction in his intersite survey. In some cases, metates seem to have been partially overturned to protect them, evidently with the expectation of return. Our ceramic sample to date suggests this never happened, since less than .2% of our collection belongs to Postclassic groups or wares, and most of these could have come from a single pot or two.

Excavations at Kiuic during 2001

(George J. Bey, III and Rossana May Ciau)

Over the past two field seasons, we have carried out excavations primarily in and around the Grupo Yaxché. The Grupo Yaxché consists of three plazas (Icim, Dzunun, and Ulum), two patio areas (A, B), and 24 structures (Figure 27 and Figure 28). Several impressive structures delimit these plazas, but are for the most part in ruinous condition today. Both subsurface and surface remains suggest this may be one of the oldest areas of Kiuic, perhaps its public focus for at least part of its florescence. Architecturally, the Plaza Dzunun is the most impressive of the three plazas, in large part because the tallest pyramid at the site, N1065E1025, forms its northern boundary. The Grupo Yaxché and Plaza Dzunun in particular were chosen for the initial excavations at Kiuic because in addition to being one of the major architectural complexes of the site, its plazas being expansive and debris-free, offered optimal conditions for excavations.

In 2001, a sequence of six floors was defined in the plaza, providing a history of occupation that begins in the Middle Preclassic and extends to the Late Classic (Figure 29 and Figure 30). The first plaza floor (Floor 6), built on the red soil horizon, suggests that the initial construction phase of the plaza was a 0.75 meter high platform. Based on the ceramics, this initial platform has been assigned a Middle Preclassic date (700-450 B.C.). This first platform had a minimum dimension of 14×14 meters, and is by far the earliest known example of architecture from the Puuc region.

The second floor (Floor 5) was laid directly over the initial floor and is also dated to the Middle Preclassic. The platform appears to have been extended to the east when the

second floor was constructed, indicating a minimum size of 22 m EW × 20 m NS for the second phase of this Middle Formative platform. The second floor is also associated with the remains of a substructure. Presently, we have exposed 6.8 meters of the substructure (N1025E1030). It consists of a building foundation composed of a single line of roughly shaped stones, one to two courses high, running north-south along the eastern side of the Plaza.

Figure 27. Plan of the Grupo Yaxché.

Figure 28. Excavation Units in the Plaza Dzunun, 2000-2001.

Figure 29. Profile, floor sequence discovered in the Plaza Dzunun of the Grupo Yaxché.

Figure 30. Excavated floor sequence, Pit M10, Plaza Dzunun.

The next construction phase (Floor 4) of the Plaza Dzunun was also laid down during the Preclassic, and initial analysis suggests that this is a Late Preclassic modification. Floor 4 abuts the lower riser of the substructure (N1025E1030) about half way up its face.

The next renewal of the plaza floor (Floor 3) is the first associated with Cehpech-sphere ceramics. Floor 3 covers the top of N1025E1030, and it is likely that this building was razed to make way for the renewal of the plaza during the Late Classic period. Beneath Floor 3, in Square F19, the construction fill rested on bedrock. This was part of a Classic-period expansion of the plaza to the east and west, covering over the earlier Preclassic building N1025E1030 and necessitating the construction of a new platform addition revealed in unit F19. It appears then that the Plaza Dzunun assumed its present size only in the Late Classic. This phase of renewal is undoubtedly connected with a new set of buildings whose remains are beneath the visible final constructions, and are examples of very early Puuc or pre-Puuc architecture associated with Cehpech-sphere ceramics. Although the ceramics suggest a significant amount of time between the construction of Floors 3 and 4, there was no evidence of abandonment between

them. The sub-floor of Floor 3 rests directly on Floor 4 with no soil lens separating them. If there was a period of abandonment, the plaza was carefully cleaned before Floor 3 was constructed.

Floor 3 is associated with the southern platform supporting the structure N1015E1015. It appears that the N1015E1015 superstructure also dates to the time of the platform's construction, or to the beginning of the Late Classic time period. The building did undergo subsequent modification during the Late Classic, however.

Excavation of N1015E1015 in 2001 consisted of shallow soundings as well as the clearing of soil from the final construction phase to determine the extent and nature of wall fall (see full report of the 2001 field season for descriptions of each excavation unit). These efforts were designed to define the basic size and shape of the structure as well as its degree of preservation, in order to provide the information preparatory to its complete excavation and consolidation in 2002.

The final construction phase of N1015E1015 consists of a rectangular hall structure measuring 3.4 m NS by 16.4 m EW. The building supported a slab vault and the building style suggests that it dates to the Early Puuc I style, placing it stylistically among the earliest visible architecture in the Grupo Yaxché. At this point, surface indications suggest that N1015E1015 consists of a single long, narrow room 2.5 m wide with multiple doorways (at least four) along the north side facing the Plaza Dzunun. Our preliminary excavations indicate the building itself is poorly preserved with standing walls of less than 1 m in height. Mapping of wall fall visible at or near the surface indicates that most of the collapsed building fell to the south and down the backside of the platform. There is very little wall collapse on the stairway in front of the building. Each stone from the collapsed building that was encountered was mapped, numbered and photographed *in situ*. At this time all stones remain in their original location in preparation for the complete excavation of N1015E1015 in 2002.

The building rests on a platform approximately 2.5 m high on the plaza side and is reached by a 13.2 m long staircase. The south side of the platform is 3.5 m high, and serves as the base and south side of the Plaza Dzunun. As mentioned above, this platform was constructed at the same time as Floor 3, the first floor associated exclusively with Cehpech-sphere pottery. The staircase consists of four risers, each roughly 1.3 m wide. Excavations along the east and west ends of the final stairway of N1015E1015 and the area where the stairway joined the main platform of the building, uncovered no accumulations of debris nor special deposits. The area was very well maintained right up until the point it was abandoned, and no types of "termination" deposits were laid at its base at the time of abandonment.

N1015E1015 is one of three structures that form the southern side of the Plaza Dzunun. The preliminary excavations indicate that the unnamed structure located on the east side of N1015E1015, consists of a non-vaulted building constructed on an extension of the same platform that supports N1015E1015. Adjacent to the west side is a vaulted structure N1020E1005 that was either built on a separate platform or stood directly on the floor of the Plaza Dzunun. At some point after its construction, the platform

supporting N1015E1015 was built with its west edge abutting the east side of N1020E1005. With the construction of N1015E1015, an alley or passageway was formed between the two vaulted structures.

A series of 2×2 meter pits (K9-K1) were extended north-south from the plaza level down to the point at which the south side of platform makes contact with the main plaza area of Kiuic. In 2000, pit K10, located in front of the stairway was excavated, revealing the sequence of six floors associated with the Plaza Dzunun. By extending this line of units, it is possible to connect the building history of N1015E1015 with an already established construction history for the Plaza Dzunun. These 2001 units were not fully excavated, but were employed to determine some basic characteristics of N1015E1015, such as the exact width of the building, size and quality of the preserved front and back wall of the building, points of articulation with the building and the platform. In addition, some basic features about the back platform and the stairways were also determined in this fashion. Units K4-K1 extended down the south side of the platform and were designed to determine the nature of the architecture of the platform on this side. Unfortunately, the final construction phase of the platform was badly destroyed and little was learned. Since the only excavation undertaken was removing the first layer of uncut stones and clearing off loose soil in preparation for complete excavation in 2002, it is possible that better-preserved remnants of the south side of the platform will be encountered in the upcoming field season.

Units K6-K9 ran down the stairway from the front of N1015E1015 to the Plaza Dzunun level. These units were successful in determining the exact position of the first two risers and the probable position of the third and fourth riser. In addition, these units encountered the remains of several earlier floors and one earlier possible stairway associated with N1015E1015. This stairway is associated with Floor 2. The section of the possible earlier stairway associated with Floor 2 was uncovered in unit K9. It appears to continue beneath the entire later stairway, emerging out of its west side. It is possible that this feature is in fact part of an earlier building platform, and not actually a staircase.

Directly to the north of N1020E1005, on the west side of the Plaza Dzunun, a ramp was defined. Excavations of the ramp in the southwest corner of the plaza done in 2000 defined two construction phases. The base of the earlier of the two, composed of finer stone work than the subsequent ramp, was built into Floor 2. This is interesting since the earlier possible stairway defined for N1015E1015 is also constructed of finer masonry than the final stairway associated with Floor 1.

Finally, it should be noted that Floor 1, the last floor built in the Plaza Dzunun, was badly destroyed and only fragments of it were encountered in the excavations. Based on these fragments, however, it is clear that the final floor is contemporaneous with the majority of the visible construction in the Plaza, including the final construction phase of N1015E1015.

Figure 31. Modeled polychrome stucco from the Plaza Icim.

Located around several edges of the Grupo Yaxché are middens of various sizes. One of the largest and deepest is located on the east edge of the Grupo Yaxché. It extends at least from the Ulum Plaza to the southeast edge of the Grupo Yaxché. Three units excavated near the northern limits of this midden provide evidence of the nature of this extensive midden accumulation. The stratigraphy and ceramics support an initial occupation during the Middle Preclassic, with the vast majority of the accumulated deposit and artifacts dating to the time associated with the use of Cehpech-sphere ceramics. These deposits are also associated with the discarding of large amounts of modeled and painted stucco. The hundreds of pieces of modeled stucco include the body parts of humans (Figure 31) and animals, as well as a large number of decorative motifs and stucco armatures. This stucco indicates the use of elaborate and highly sophisticated stucco façades were a characteristic of the Yaxché buildings at some point during the Late Classic. The stucco was deposited while the colors were still bright. It is likely they represent the removal and dumping of stucco debris as a result of the razing of buildings associated with Floors 2 and 3 in the Plaza Dzunun.

The third area within the Grupo Yaxché where excavations have been conducted is Patio B, located on the north side of the main pyramid (Figure 32). Patio B is best described as a platform supporting a number of buildings attached to the more elaborate main Group. There is a long multi-roomed open-faced structure on the north side (N1100E1040), two small non-vaulted buildings on the east side and a single

vaulted room building near the southeast corner. This building faced onto the patio, and based on the nature of the stone work, was eventually going to be expanded to the east with at least one more vaulted room. In the center of the patio is a chultun.

Figure 32. Patio B of the Grupo Yaxché.

Based on the excavation of unit F-7, it was determined that Patio B was constructed in a single episode. Although there is Middle Formative debris at the base of the patio and evidence of a Middle Formative perishable structure located beneath the midden on its northwest corner (B6-A6) (Figure 33), there were no early construction episodes associated with the patio itself. It is not certain if Patio B was built around the time of Floor 3, 2 or 1, but it represents a single Late Classic addition to the northern edge of the Grupo Yaxché. The lack of multiple flooring associated with Patio B raises several possibilities. It may have been a late addition, associated with the final plaza floor and its associated constructions in the Grupo Yaxché. Or, it may have been added at an earlier time in the Late Classic, more closely associated with Floor 3 or 2, but that once constructed it never, for whatever reason, warranted resurfacing.

Excavation and surface mapping of N1100E1040 (D5-D6, E5-E6, F7-F5, G6-G5) revealed a structure with low stone walls that supported perishable upper walls and roof (Figure 34). Along the back and side walls of the building, ran a low narrow bench. The front of the building was defined by a single line of cut stones forming a step up into the structure. It was originally thought that this was a single-roomed structure that rested on a long low platform along with another longer, basically similar structure to the east of it. Excavations however, suggest that they may in fact actually be two rooms of a three-room structure. The excavated area was consolidated and the adjacent rooms were gridded and surface collected in preparation for excavation in 2002. If it turns out to be a single building, it will be quite similar to the common Terminal Classic C-shaped structure, although divided into three rooms.

Figure 33. Possible Middle Formative structure along the edge of Patio B.

Figure 34. Str. N1100E1040 frame brace.

A midden was identified along the west and north sides of the Patio and confirmed by excavation (A6-C6 & F3-F4). The deposits provided a large sample of Late Classic ceramics and significant amounts of chert lithics and lithic debris, a number of obsidian prismatic blade fragments, several pieces of shell and shell beads. However, there were virtually no bones in the refuse deposits.

Finally, test excavations (Pozos 1 and 2) were made in a huge midden located off of the north side of the main patio of the Grupo Chulul called the Colomté Plaza (Figure 35). These deep middens (Pozo 2 was 2.4 m of pure midden deposit and Pozo 1 was 1.4 m in depth) revealed a complex stratigraphy and the ceramics exhibit some temporal change, however, the deposits are all Classic. There was no evidence of Formative occupation in this area.

Figure 35. The Colomté plaza.

Midden excavations were carried out both for chronological purposes and also to provide the beginning of a set of refuse contexts that can be used for comparative purposes. Assuming the garbage represents deposits from adjacent areas, it will prove useful in determining functions of these areas. Deposits from various areas reflect different activities. The Ulum midden deposits, collected from the elaborate Ulum and Dzunun Plazas are different than the garbage associated with the perishable structure defined on the backside of Patio B. At a more macro level, the Colomté deposits should provide comparative data allowing us to consider temporal and functional differences between the smaller Grupo Yaxché and the Grupo Chulul.

Conclusions

Our 2001 efforts with N1015E1015 provided us with much of the basic information we need in order to successfully excavate and consolidate the entire structure in 2002. As regards the building, we determined the size and shape of the building, areas of wall fall, and the degree of preservation of the structure. In addition, we learned the relationship of N1015E1015 to the adjacent structures on the south side of the Plaza

Dzunun, a fact that will be useful in fully excavating the building in 2002. We also determined that we need to be sensitive to the complex construction history of the building, which has greater time depth than is traditionally associated with monumental construction in the Puuc area. We learned that the platform itself was constructed at the time of the first Cehpech plaza floor (Floor 3) and that there were two subsequent modifications associated with Floors 2 and 1. The earlier being perhaps an early stairway, and the second, the final stairway. The fact that neither of these modifications are associated with Floor 3 and the initial construction of the platform, alerts us to the fact that it is likely there is yet an earlier stairway, not yet identified.

Additionally, we are now aware of the size and complexity of the Plaza Dzunun during the Middle and Late Formative periods. The excavations in 2001 bore out our expectations that the Formative structure located on the east side of the plaza was almost totally destroyed by subsequent Classic modifications. In fact, only the stone foundation of the structure was still in place. It is likely however, given the size of the Formative plaza, that better-preserved early structures will be found beneath the Late Classic structure, that form the sides of the Plaza Dzunun. This is important information that will guide our program of excavations in the 2002 and future field seasons.

As with N1015E1015, the research carried out in patio B, specifically as regards N1100E1040, has provided important basic information on the occupation history of this area, as well as the primary types of information to excavate and consolidate what may be a multi-roomed structure in 2002. In 2001, we determined the size and shape of the building, areas of wall fall, and the degree of preservation of the structure. In addition, we learned the relationship of N1100E1040 to the adjacent structure on the north side of Patio B. We also determined that we need to be sensitive to fact that the Middle and Late Formative occupation of the area extends beneath and beyond Patio B, and that there appear to be remains of simple apsidal perishable structures in this area. The one that was encountered in the midden excavations to the west of Patio B will be fully excavated in 2002.

Finally, midden excavations at Kiuic are providing some of the most important stratigraphic information ever recovered from the Puuc. Deep complex stratigraphy extending from the Late Classic back into the Formative has been encountered in midden deposits excavated around the edges of the Plaza Dzunun. Just as significant is the deep stratigraphy of the Colomté midden. This huge midden will allow us to complete a detailed analysis of the ceramic changes associated with the Cehpech sphere in the Puuc. Despite the long history of work in the area, there is yet only the vaguest outline of the evolution of the ceramics, during a period that is now recognized to be as long as 500 years.

The Labná-Kiuic Intersite Survey
(Tomás Gallareta Negrón and Ramón Carrillo Sánchez)

The third phase of the 2001 season consisted of the mapping of three intersite samples, covering a total of just over 13 ha, and including six architectural groups in three different types of terrain characteristic of the region (Figure 36). The choice of these samples derived from the results of our trail survey of the dirt road connecting Kiuic and Labná in 2000. The samples were intended to provide us with a more ample picture of settlement so as to better judge the relationship between terrain and its pre-hispanic utilization.

Sample 1 covered the better part of a large hill and includes most of what we refer to as a "*cerro residencial*," or "residential hill," a form of settlement characteristic of the peripheries of urban zones such as Sayil, Labná, Kiuic, etc. Sample 2 extends across an undulating zone "flats" interspersed with low bedrock outcrops, 5-6 m in height (*altillos*). Our final sample (the "Paso del Macho") mostly encompasses a zone of flats, but here bordered by steep hill slopes. Each sample will be briefly described, followed by our general conclusions.

Sample 1: El cerro residencial "Escalera al Cielo"

During 2000, we identified a substantial group of vaulted buildings on top of a hill we dubbed the "Escalera al Cielo." The discovery in 2001 of another group of vaulted architecture on a neighboring crest of that same hill (Figure 37), suggests a strong relationship between the altitude of a group and the social position of its occupants. The existence of two groups with a high investment in architecture with respect to platforms further downslope, shows that this gradation of status operates even within *cerros residenciales*. Similarly, a seasonal drainage runs from Group 1 at the summit to a *haltún* (a small, semi-permanent rock pool) at the base of the hill (Figure 38), suggesting the occupants of the largest group had preferential access to this source of water.

Figure 36. The three intersite settlement samples.

Figure 37. The Escalera al Cielo group.

Figure 38. The Sample 1 haltún.

The presence of several smaller platforms and frame braces, of minimal energy investment, on the hill slopes and lower spurs of the hill, are of particular interest in

being possible production loci, since they are also associated with what may have been quarries and storage areas. It should be noted here we encountered no evidence of terracing or other sort of agricultural investment in our reconnoitering of the hill.

Finally, the presence of two groups with formal (vaulted) architecture, one a palace-like complex, and the other more domestic in appearance, suggests a division of function between these two close neighbors. The first may have had an administrative or political function, given the formal restricted access to its interior, while the other seems to have been primarily residential, as reflected in the presence of numerous chultuns, metates, and perishable outbuildings.

Sample 2: Huntichmul

In this area of detailed mapping, contour mapping and 3-D modeling of the terrain proved very illuminating. Figure 39 clearly shows that the "flats" which surround the principal architectonic group and the urban zone in general are completely free of habitation. The nearest structures or platform groups are located on *altillos* of roughly 5-6 m in height and are of masonry, indicative of the relatively high status its occupants must have enjoyed. This zone consists of an intermediate area of flats, without structures, between the architectonic nucleus and the high status residences on the *altillos* which border it, suggesting that the intermediate area of flats must have served agricultural ends. The proximity of the chief buildings suggests that these spaces must have been under the control of the ruling elite; in other words, they give the impression of having been fields whose production was directed toward support of the local elites.

Sample 3: El Paso del Macho

Although we at first thought that the mounds comprising the main group of Sample 3 (Figure 40) must have been the locus of some sort of production, detailed mapping, supplemented with surface collections consisting almost wholly of Preclassic types and lacking in common Late Classic types such as slatewares, unexpectedly demonstrated an occupation much earlier than the commonly supposed onset of settlement in the Puuc. This sample unequivocally shows the existence of substantial permanent architecture from the Middle or Late Preclassic onward, and interestingly in the flats, which later seem to have been dedicated solely to agriculture.

The additional presence of a possible ballcourt, similar in form, location, and size to those reported by the Costa Maya Project in the NW corner of Yucatán, suggests that pre-hispanic occupation of the peninsula during this period was much more extensive than has heretofore been supposed, and that this occupation was fairly homogenous, at least with regard to ceramics, architecture, and probably socio-political organization (as reflected in the presence of ballcourts). These data force us to reconsider our current opinions concerning the colonization and development of the northern lowlands. We can also conclude that the surveys conducted by Robles and Andrews (2000) in the southwest portion of the state of Yucatán, and our own work in the Bolonchén District,

which place particular emphasis on the registry of minor sites without evidence of formal or monumental architecture, is a research strategy with much to offer regarding the understanding of ancient Maya settlement.

Figure 39. Settlement Sample 2.

Conclusions: Relief, Water, and Social Status

The three samples provide concrete evidence of the close relationship between these variables, particularly in the case of the "Escalera al Cielo" residential hill. All of the masonry buildings are built on the highest elevations available in each sample, that is, on *altillos* or on hill summits. At the other end of the spectrum, lesser structures tend to be built at lower elevations, or are clearly outbuildings or support staff of masonry structures.

Although the three samples include only a single natural source of water, the haltún at the base of the Sample 1 cerro associated with a high-status architectural complex, the argument that status and water were also related is supported by the higher incidence of artificially constructed chultuns on platforms with masonry or vaulted architecture. The only chultun platform found in our sample was found just a short distance from the most elaborate platform of Sample 2. A brief reconnaissance of the aguada discovered in 2000 failed to locate neighboring structures, however. It should also be mentioned that no water sources of any kind were identified at the Preclassic site of Paso del Macho (Sample 3). The manner in which this early population obtained water remains a mystery yet to be solved.

Figure 40. Settlement Sample 3, Paso del Macho.

With regard to the relationship between social stratification and distance to principal occupation centers, during the 2000 season we identified only five groups with masonry construction, which we argue is a useful indicator of relatively high social status. The three samples surveyed during 2001 added to the number of these groups, although in part this was due to our choice of sample zones already having masonry structures within them. The presence of more habitational groups with vaults in the vicinity of Kiuic and Huntichmul reinforces our conclusions in respect to the strong positive relationship between population density and architectural elaboration.

The general absence of habitation in the flats of our intersite survey has supplied further evidence in support of our hypothesis that these must have served as areas of extensive cultivation. Those open areas close to urban cores or even within them, gardens and fruit trees were probably the primary forms of cultivation, while further afield, near zones in which household groups were placed on hilltops, more extensive forms of cultivation may have been practiced.

Nevertheless, substantial evidence for intersite occupation was found. On the basis of the Labná-Kiuic road survey settlement density, and using a figure of 4.5 inhabitants per nuclear family, we estimated intersite population to have been on the order of 250 people per km^2. The enlarged settlement sample from this year, using the same conventions, yields the following results: Sample 1 has a density of 4 residential nuclei,

although one of these was a composite group with three patios. Considering that the area mapped was approximately 5 ha, the minimum density must therefore have been about 360 per km^2, although considering that this sample included a large number of rooms besides the patios, this figure may have reached as high as 540 per km^2. Sample 2 contains four settlement nuclei in an area of 4 ha. These result in an estimated 450 per km^2. The third sample is more difficult, since it does not contain the same types of structures (no house foundations were noted, for instance). If we are looking at a former center of some sort, the majority, if not all, of the structures may have had other than a residential function. Because of this, we refrain from making an estimate for this unit.

In the two analyzed cases, the density is significantly higher than the estimate based on the total number of settlement units registered last season. Two comments are necessary. First, Sample 1 was chosen because of the architectural group found within it, and so had an increased likelihood of more structures. Second, both localities (Samples 1 and 2) are located near important urban centers (Kiuic and Huntichmul respectively) which reinforces our contention that areas relatively near population centers have a higher population density, and that population decreases with increasing distance from urban centers. They may therefore be expected to yield a higher-than-average settlement density.

Final Comments

We are as yet in the preliminary stages of our project and hesitate to offer any firm conclusions on the basis of our work to date. Nevertheless, our preliminary results suggest that pursuit of our original research strategy will provide continued insights into the settlement of the Puuc Hills. One of the stimulating results is the demonstration that occupation of the Puuc Hills was both far earlier and more complex than hitherto supposed. Excavations in the Plaza Dzunun, and mapping and surface collections from the rural site of Paso del Macho, indicate the construction of permanent stone architecture from the late Middle Preclassic onward, if not earlier. The ballcourt from Paso del Macho, and the formal stucco plaza floors from Kiuic, suggest these early occupants were more than simple subsistence farmers, but were in touch with the larger currents of the peninsula.

Mapping and excavations also demonstrate that Kiuic had a complex settlement history later during the Middle-to-Late Classic period. Several types of architecture have been identified, as have changes in ceramic production and usage. The connections between these are as yet tentative, as are the details of chronology, but clearly growth occurred over a considerable period of time. On one point, we concur with earlier studies: abandonment was precipitous and virtually complete, at least during the pre-hispanic period. Postclassic ceramics are extremely scarce and structures from the period are altogether absent in our current sample.

We can say relatively little positive with respect to political organization. We have no iconographic evidence for domination by another site, although images of warriors from

Labná suggest all was not peaceful. Nevertheless, the population seems to be widely distributed across the landscape with little regard for defensibility. Abandonment may have been due to conflict, but careful directed excavations will be necessary to establish this cause.

We do see hilltops being used for residential purpose, but all indications are that these were preferred loci for elite occupations rather than defensible heights. This is not to say that they did not serve as lookouts, but they may have been observing agricultural workers as much as they were looking for potential invaders. The Escalera al Cielo structures show that on occasion these hilltop complexes served as more than just residences, and might almost be considered individual sites in themselves. We need to more fully expand survey around this group, as well as secure information on other hills, to know exactly how they relate to the surrounding countryside and to neighboring households of lesser status. One final comment is that hilltop occupation cannot be said to be a final response to an increasingly crowded landscape, since Str. N0920E1040 within Kiuic is an example of an Early Puuc hilltop group.

Settlement survey has also demonstrated that the population density of the Bolonchén District, at least within our bailiwick, was high. As Gallareta notes, rural site density was probably several hundred per km^2. An elevated overall density was probably also responsible for the suggestions of careful land management and restrictions on settlement his group observed between Kiuic and Labná. Settlement density is also high in Kiuic, although we do not as yet know the extent of the site. The fact that the Kiuic palace rivaled its neighbors in size and number of rooms, and the overall high percentage of vaulted architecture, suggests that overall economic conditions were favorable and elites had considerable freedom in constructing what were, after all, symbols of power.

Completion of our work will clearly require many years. We look forward to doing the kind of detail excavations we are now doing in the Grupo Yaxché at other, later groups. A great deal remains to be mapped and excavated in the intersite areas, a daunting task because of the heavy overgrowth and very limited access, but an effort that will clearly reward us with information as yet unparalleled in the Puuc Hills. Urban survey too has much yet to do. In addition to determining the extent of Kiuic and its relationship to the surrounding hills, Huntichmul is as yet totally virgin territory. A brief visit in 2000 was particularly exciting because of the differences in architecture and settlement patterns we observed. Finally, tracing out the external connections of these sites is a process which may only be possible with future fieldwork at other sites in the Puuc Hills and beyond. Clearly, however, the results will be important to the archaeology not only of northern Yucatán, but of the Maya area and Mesoamerica as a whole.

Acknowledgements

We wish first of all to thank the Instituto Nacional de Antropología e Historia, to the Consejo de Arqueología, then headed by Arqlgo. Joaquín García-Bárcena, and to Dr. Alejandro Martínez Muriel, Coordinador Nacional de Arqueología for granting us

permission to conduct research at Kiuic and environs. We also thank Arqlgos. Luis Millet Cámara, Director of the Centro INAH Yucatán, and Rubén Maldonado Cárdenas, to Drs. Fernando Robles Castellanos and Anthony P. Andrews, and to Sra. Joann Andrews for their counsel, friendship and continued interest in our project. Arqlgo. Alfredo Barrera Rubio, ex-director of the Centro INAH Yucatán also helped us with logistics and moral support. We also thank Arqlgo. Carlos Peraza L. and Arqlga. Sylviane Boucher for their help regarding ceramic identification and for facilitating access to comparative collections.

We further wish to express our profound gratitude to Bob and Dee Legget, Maurice Hall, and to Helen and Ed Moyers for their generous financial support that was indispensable to carrying out the research presented above. We also wish to thank Dr. George Harmon, retired President of Millsaps College, for his continual efforts in support of our work. And of course, the generous support of FAMSI was critical to support of the urban settlement study. The patience of the staff in waiting for this report is also very much appreciated.

We also wish to express our gratitude to the several students who have worked so hard during our first two field seasons. For 2001, our thanks go to Chris Gunn, project ceramicist, Millsaps students Rebecca Hill and Adam Lambert, and Davidson students Jeremy Campbell, Corey Brown, Zoe McCoy, and Jeff Fox.

Our final debt and greatest debt is to the men of Yaxachén, Sta. Elena and Oxkutzcab, who over the past two years have formed our workforce. Not only have they cheerfully and efficiently carried out our sometimes cryptic and ill-expressed directives, but have quickly become old friends who have taught us much about life in the Puuc Hills.

List of Figures

Figure 1. Composite satellite image of the Puuc using Landsat coverage and elevation data from a NASA shuttle mission.

Figure 2. Map of the eastern Bolonchén District.

Figure 3. Typical landscape of the Bolonchén District, showing agricultural flats and cerros.

Figure 4. GIS image of relief in the Bolonchén district (I.N.E.G.I. sheet F16C82 only). Solid green areas indicate areas of little or no relief.

Figure 5. Thiessen polygons made about Rank 2 and 3 sites.

Figure 6. Combination of Figures 4 and 5, showing "flats" available to each Rank 2 or 3 site.

Figure 7. Graph of comparative areas of "Flats" available to Bolonchén sites (I.N.E.G.I. sheet F16C82 only).

Figure 8. The sample Labná-Kiuic universe, showing major sites and intersite road survey.

Figure 9. Catherwood drawing of Str. N0970E0850 (Diamantes building).

Figure 10. The "Casa Real" where Stephens and Catherwood stayed while at Kiuic.

Figure 11. The probable "Casa Real" today.

Figure 12. Maler photograph of Kiuic Str. 0890E765, now collapsed (from Maler 1997).

Figure 13. Area mapped at Kiuic, 2000-2001.

Figure 14. Three-dimension view of the central Kiuic quadrant (including post-2001 additions).

Figure 15. Str. N1015E1015, an Early Puuc single-room hall.

Figure 16. Reconstruction of Str. N1015E1015.

Figure 17. Stepped vault in Room 1, Str. N1000E0865, Grupo Chulul.

Figure 18. An example of Early Puuc IIa, Str. N1045E1005, Grupo Yaxché.

Figure 19. Mosaic upper wall zone of Str. N1065E1025, Grupo Yaxché.

Figure 20. An Early Puuc IIb building with a "broken" medial molding, Str. N1000E0865.

Figure 21. Mosaic decoration on an Early Puuc IIb building, Str. N1025E1160.

Figure 22. The Colonnette I style Str. N1025E0830, Grupo Kuché.

Figure 23. Evidence of a mosaic mask façade from the Grupo Kuché.

Figure 24. The Colonnette II style Str. N0970E0850 (Diamantes building).

Figure 25. Another Colonnette II style structure from Huntichmul.

Figure 26. Comparative areas of palaces at Sayil, Kiuic, and Labná.

Figure 27. Plan of the Grupo Yaxché.

Figure 28. Excavation Units in the Plaza Dzunun, 2000-2001.

Figure 29. Profile, floor sequence discovered in the Plaza Dzunun of the Grupo Yaxché.

Figure 30. Excavated floor sequence, Pit M10, Plaza Dzunun.

Figure 31. Modeled polychrome stucco from the Plaza Icim.

Figure 32. Patio B of the Grupo Yaxché.

Figure 33. Possible Middle Formative structure along the edge of Patio B.

Figure 34. Str. N1100E1040 frame brace.

Figure 35. The Colomté plaza.

Figure 36. The three intersite settlement samples.

Figure 37. The Escalera al Cielo group.

Figure 38. The Sample 1 *haltún*.

Figure 39. Settlement Sample 2.

Figure 40. Settlement Sample 3, Paso del Macho.

Sources Cited

Andrews, George F.

1986 *Los estilos arquitectónicos del Puuc; una nueva apreciación.* Colección Científica, 131. Instituto Nacional de Antropología e Historia, México, D.F.

1995 Pyramids and Palaces, Monsters and Masks: the Golden Age of Maya Architecture. Vol. 1: Architecture of the Puuc Region and the Northern Plains. Labyrinthos, Lancaster, Calif.

Aveni, Anthony F., and Horst Hartung

1986 "Maya City Planning and the Calendar." In *Transactions of the American Philosophical Society,* Vol. 76, Pt. 7, Philadelphia.

Barrera Rubio, Alfredo

1981 "Patrón de asentamiento en el área de Uxmal, Yucatán." In *Memoria del Congreso Interno 1979,* edited by Pedro J. Schmidt and C. Benavides, pp. 71-82 México, D.F., México.

1987 "Tierra y Productividad Agrícola en la Región Puuc." In *Anales de Antropología* XXIV: 127-142.

Becquelin, Pierre
1994 "La Civilización Puuc vista desde la Región de Xculoc." In *Hidden among the Hills,* edited by Hanns J. Prem, pp. 59-70. Acta Mesoamericana, Vol. 7. Verlag Von Flemming, Möckmühl.

Bey, George J., III, Craig A. Hanson, and William M. Ringle
1997 "Classic to Postclassic at Ek Balam, Yucatán: Architectural and Ceramic Evidence for Defining the Transition." In *Latin American Antiquity* 8: 237-254.

Bey, George J., III, Tara M. Bond, William M. Ringle, Craig A. Hanson, Charles W. Houck, and Carlos Peraza Lope
1998 "The Ceramic Chronology of Ek Balam, Yucatán, México." In *Ancient Mesoamerica* 9: 101-120.

Boucher, Sylviane
1984 "Análisis del Material Cerámico del Proyecto Sayil, Yucatán, Temporada 1984." Unpublished report in the possession of the author.

Brainerd, George W.
1958 *The Archaeological Ceramics of Yucatán.* Anthropological Records, Vol. 19. University of California Press, Berkeley.

Carmean, Kelli, and Jeremy A. Sabloff
1996 "Political Decentralization in the Puuc Region, Yucatán, México." In *Journal of Anthropological Research* 52: 317-330.

Carmean, Kelli
1998 "Leadership at Sayil: A Study of Political and Religious Decentralization." In *Ancient Mesoamerica* 9: 259-270.

Duch Gary, Jorge
1988 *La conformación territorial del estado de Yucatán.* Universidad Autónoma Chapingo, Centro Regional de la Península de Yucatán, Mérida.

Dunning, Nicholas P.
1992 Lords of the Hills: Ancient Maya Settlement in the Puuc Region, Yucatán, México. Prehistory Press, Madison.

Dunning, Nicholas P., and Jeff Karl Kowalski
1994 "Lords of the Hills: Classic Maya Settlement Patterns and Political Iconography in the Puuc Region, México." In *Ancient Mesoamerica* 5: 63-95.

Gallareta Negrón, Tomás, José Huchim Herrera, Carlos Peraza Lope, Carlos Pérez Alvarez, and Lourdes Toscano Hernández
1992 Planteamientos y resumen de los trabajos de campo del Proyecto arqueológico Labná, temporada 1991. Report on file, Centro INAH Yucatán.

Gallareta Negrón, Tomás, Lourdes Toscano Hernández, Carlos Pérez Alvarez, and Carlos Peraza Lope
1993 Restauración e investigaciones arqueológicas en Labná: la temporada de campo de 1992. Report on file, Centro INAH Yucatán.

Gallareta Negrón, Tomás, Lourdes Toscano Hernández, Carlos Pérez Alvarez, Carlos Peraza Lope, and R. Cervera
1997 Restauración e investigaciones arqueológicas en Labná: la temporada de campo de 1996. Report on file, Centro INAH Yucatán.

Gallareta Negrón, Tomás and William M. Ringle
2002 "Sociedad, agua y tierra en el norte de Yucatán: Ek Balam, Labná, Kiuic y Komchén, del Preclásico al Clásico." Ponencia invitada, *Naturaleza y Sociedad en el Área Maya.*CICY/ Academia Mexicana de Ciencias, Mérida, Yucatán, México.

Garza Tarazona de Gonzalez, Silvia, and Edward B. Kurjack
1980 *Atlas Arqueológico del Estado de Yucatán.* Instituto Nacional de Antropología e Historia, México, D.F.

Gendrop, Paul
1983 Los estilos Río bec, Chenes, y Puuc en la arquitectura maya. Universidad Nacional Autónoma de México, México, D.F.

Killion, Thomas W., Jeremy A. Sabloff, Gair Tourtellot, and Nicholas P. Dunning
1989 "Intensive Surface Collection of Residential Clusters at Terminal Classic Sayil, Yucatán, México." In *Journal of Field Archaeology* 16: 273-294.

Kowalski, Jeff Karl
1994 "The Puuc as Seen from Uxmal." In *Hidden among the Hills,* edited by Hanns J. Prem, pp. 93-120. Acta Mesoamericana, Vol. 7. Verlag Von Flemming, Möckmühl.

Kurjack, Edward B.
1994 "Political Geography of the Yucatecan Hill Country." In *Hidden among the Hills,* edited by Hanns J. Prem, pp. 308-315. Acta Mesoamericana, Vol. 7. Verlag Von Flemming, Möckmühl.

Maler, Teobert
1997 *Península Yucatán,* edited by Hanns J. Prem. Gebr. Mann Verlag, Berlin.

Michelet, Dominique, Pierre Becquelin, and Marie-Charlotte Arnauld
2000 *Mayas del Puuc: Arqueología de la región de Xculoc, Campeche.* Gobierno del Estado de Campeche/Centre Français d'Études Centroaméricaines, México, D.F.

Peraza Lope, Carlos, Pedro Delgado Ku, and Barbara Escamilla Ojeda
2002 "Intervenciones en un edificio del preclasico medio en Tipikal, Yucatán." In *Los investigadores de la cultura maya* 10:262-277. UAC, Campeche.

Pollock, H.E.D.
1980 *The Puuc.* Memoirs of the Peabody Museum, Vol. 19, Peabody Museum of Archaeology and Ethnology, Harvard University, Cambridge.

Ringle, William M.
1998 "An Application of GIS Modeling to Maya Settlement Pattern Studies." In *NASA/ASEE Summer Faculty Fellowship Program Final Administrative Report,* edited by James E. Miller, Armond Joyce, and Eddie Hildreth, pp. 108-119. Stennis Space Center and The University of Southern Mississippi, Bay St. Louis, MS.

Rivera Dorado, Miguel (editor and organizer)
1991 *Oxkintok, Una Ciudad Maya de Yucatán,* pp. 10-53. Ministerio de Cultura, Madrid.

Sabloff, Jeremy A., and Gair Tourtellot
1989 "Análisis del patrón de asentamiento en Sayil, Yucatán, México." In *Arqueología* 3: 179-191.

1991 The Ancient Maya City of Sayil: The Mapping of a Puuc Region Center. Middle American Research Institute, Pub. 60, New Orleans.

Smith, Robert E.
1971 *The Pottery of Mayapan, Including Studies of Ceramic Material from Uxmal, Kabáh and Chichén Itzá.* Papers of the Peabody Museum, vol. 66. Peabody Museum of Archaeology and Ethnology, Harvard University, Cambridge.

Smyth, Michael P.
1998 "Before the Florescence: Chronological Reconstructions at Chac II, Yucatán, México." In *Ancient Mesoamerica* 9: 137-150.

Smyth, Michael P., Christopher D. Dore, Hector Neff, and Michael D. Glascock
1995 "The Origin of Puuc Slate Ware: New Data From Sayil, Yucatán, México." In *Ancient Mesoamerica* 6: 119-134.

Smyth, Michael P., Jose Ligorred Perramon, David Ortegón Zapata, and Pat Farrell
1998 "An Early Classic Center in the Puuc Region: New Data from Chac II, Yucatán, México." In *Ancient Mesoamerica* 9: 233-258.

Stephens, John L.
1963 Incidents of Travel in Yucatán. Dover Press, New York.

1969 Incidents of Travel in Central America, Chiapas and Yucatán. 2 vols. Dover, New York.

Thompson, Edward H.
1892 "Ancient Structures of Yucatán Not Communal Dwellings." In *Proceedings of the American Antiquarian Society* 8: 2: 262-269.

1897 *The Chultunes of Labná, Yucatán.* Memoirs of the Peabody Museum of American Archaeology and Ethnology, Vol. 1, No. 3. Harvard University, Cambridge.

Thompson, Edward H., and George A. Dorsey
1898 *Ruins of Xkichmook, Yucatán.* Anthropological Series, Vol. 2, No. 3. Field Columbian Museum, Pub. 28, Chicago.

Tourtellot, Gair, and Jeremy A. Sabloff
1988 "Mapping Community Patterns at Sayil, Yucatán, México: The 1985 Season." In *Journal of New World Archaeology* VII: 2/3: 1-24.

1994 "Community Structure at Sayil: A Case Study of Puuc Settlement." In *Hidden among the Hills,* edited by Hanns J. Prem, pp. 71-92. Acta Mesoamericana, Vol. 7. Verlag Von Flemming, Möckmühl.

Vallo, Michael
2000 *Die Keramik von Xkipché.* Inaugural-Dissertation zur Erlangung der Doktorwürde, Philosophischen Fakultät der Rheinischen Friedrich-Wilhelms-Universität, Bonn.

Varela Torrecilla, Carmen
1991 "La Cerámica de Oxkintok: El Misterio de la Vida y del la Muerte." In *Oxkintok, Una Ciudad Maya de Yucatán,* pp. 206-141. Ministerio de Cultura, Madrid.

1998 El Clásico Medio en el noroccidente de Yucatán: La fase Oxkintok regional en Oxkintok (Yucatán) como paradigma. British Archaeological Reports, International Series, 739. Oxford, England.