

THE PETEXBATUN INTERSITE SETTLEMENT PATTERN SURVEY:  
SHIFTING SETTLEMENT STRATEGIES IN  
THE ANCIENT MAYA WORLD

By

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To my parents

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## CHAPTER I

### INTRODUCTION

*History, although sometimes made up of the few acts of the great, is more often shaped by the many acts of the small.*

-Mark Yost

Much of the history of archaeology is the story of spectacular discoveries:

Howard Carter and the tomb of the pharaoh Tutankhamen; Hiram Bingham and the elite Inca city of Machu Picchu; the burial complex of Emperor Qin Shihuangdi and his terra cotta army at Xian; the Lord of Sipán. Many such discoveries were fueled by museums and wealthy sponsors who were sometimes themselves the "archaeologists." These finds fed the public imagination and inspired books and, more recently, films and documentaries. Yet such spectacular finds told the stories only of the powerful and wealthy, of past kings and nobles. Their names or identities and the names of similarly powerful individuals come down to us through history: Ramses the Great, Darius I of Persia, Attila the Hun, Alexander the Great, Hammurabi of Babylon.

Yet these figures and others like them are the vast minority. For every great king or ruler there were tens of thousands of farmers, craftspeople, and merchants. It is such individuals – the people who generally constitute more than 99% of any given society – whose lives must be understood in order to fully comprehend past cultures and the ways they changed over time. While we may never know their names as we do the names of their rulers, the study of their houses, possessions, and burials will tell as much or more

about their society than will the palaces and tombs of their kings. While the excavation of such royal edifices was long the focus of archaeological research – something perhaps more aptly labeled “treasure hunting” – there were always some individuals, such as William Henry Holmes and Nels Nelson, who were interested in less spectacular, yet fundamentally important, work.

The realization that archaeological research as once generally practiced ignored the vast majority of any given population led to important shifts in the focus of research beginning around the turn of the twentieth century. One place where this shift occurred was in Central America where scholars like Edward Thompson and Edgar Hewett began investigating the small house mounds of the past peasant population, at least on a limited scale. Such research led to the advent of household archaeology and settlement pattern research – what Gordon Willey (1953: 1) defined as "the way in which man disposed himself over the landscape on which he lived" – by the middle of the century. While spectacular discoveries, such as the hidden tomb of K'inich Janab' Pakal I at Palenque and the Bonampak Murals, still captured the public's imagination, archaeological projects became more holistic in their focus and multidisciplinary. Thanks in part to this change, along with other crucial breakthroughs such as the decipherment of most of the Maya script, our knowledge of the ancient Maya has increased exponentially in the last half century.

### **The Petexbatun Regional Archaeological Project and The Intersite Settlement Pattern Subproject**

The research presented here is a settlement pattern study carried out in the Petexbatun region of Guatemala (Figure 1.1) as one of many semiautonomous



subprojects of Vanderbilt University's Petexbatun Regional Archaeological Project under the general direction of Arthur Demarest and Juan Antonio Valdes. Fieldwork was conducted over the course of seven seasons from 1989 through 1996 (no fieldwork was conducted in 1995). The Petexbatun project was a large scale, multidisciplinary project that intensively studied the "Classic Maya collapse" from a regional perspective. Within the Petexbatun region there are five significant archaeological sites with monumental architecture and artwork – Dos Pilas, Aguateca, Punta de Chimino, Arroyo de Piedra, and Punta de Chimino (Figure 1.2). The Petexbatun was selected for investigations into the collapse based on previous reports of fortifications at some sites and epigraphic decipherments that indicated that the region experienced warfare and was largely abandoned beginning in the 8<sup>th</sup> century AD. As such, it was the first zone to collapse in the Late Classic period and, therefore, held great potential in aiding our understanding of Late and Terminal Classic changes in lowland Maya civilization.

The Petexbatun project was designed to investigate warfare from all perspectives involved in the conflict and to study the relationship between warfare and all other aspects of Late Classic Maya society, including the local environment, economic systems, and agricultural production. In order to achieve such goals a regional settlement pattern study that focused on zones outside of and between the major sites was initiated. This work, which began in 1991 under the direction of Tom Killion, became the Petexbatun Intersite Settlement Pattern subproject. In 1992 and 1993 Dirk Van Tuerenhout of Tulane University led the investigations and the fieldwork was completed in 1994 and 1996 under my supervision.

Because the overall zone of study covered approximately 30 square kilometers and the setting was largely heavy jungle cover or dense secondary growth (Figure 1.3), full coverage survey was impossible. Instead, the research design employed sampling survey utilizing transect mapping and test pit excavations. Four 200 meter wide transects were mapped and 75 test pits of various sizes were excavated (Figure 1.4). The transects ranged in length from 1.2 to 2.65 kilometers and resulted in a total mapped area of 1.484 square kilometers, or 4.95% of the 30 square kilometer research zone. Additionally, informal reconnaissance and exploration was conducted in vast areas.

The first transect mapped, Transect 1, included significant defensive features, including walls and a baffled gate, associated with a small village. This finding added to the growing corpus of data on warfare from the Petexbatun region. Similar, although less extensive, wall systems were discovered within Transect 2. No defensive features of any kind were encountered in Transect 3 and this unusual lack of fortifications was initially puzzling. However, excavations in a Transect 3 village determined that occupation in that area dated to the Middle and Late Preclassic period, or approximately a millennium before Late Classic warfare swept the region. Transect 4, which was placed in an inhospitable area of thin soils and exposed bedrock outcrops, encountered a series of small, Late Classic, fortified hilltop villages. These villages offer a glimpse into the desperate times at the end of the 8th century and beginning of the 9th century in the Petexbatun region. While the findings from Transects 1, 2, and 4 corresponded well with findings elsewhere by the Petexbatun Regional Archaeological Project, it was the early habitation of Transect 3, in conjunction with traces of Preclassic occupation at some of

the larger sites in the region and the results of lake core analyses by the Ecology subproject, that caused us to broaden our temporal perspective of the region.

The results of this research are presented in this dissertation as the settlement history of the Petexbatun region is explored. While the major sites and the powerful Late Classic kings of Dos Pilas are discussed, the focus here is on the non-elite, rural population that comprised most of the region. Their story is a 2500 year tale of initial colonization, followed by growing population and a series of shifts in settlement strategies over time. While we will never know the names of these simple farmers, the history of the Petexbatun region cannot be understood fully without them. At the same time, though, we cannot tell their story without including the large centers in the region since they are intertwined. Still, this dissertation allows the collective voice of the non-elites to be heard.

### **Outline of the Dissertation**

This dissertation can be conceived of as comprising three sections. The first, chapters 2 and 3, presents the background to the research. Chapter 2 broadly defines and discusses settlement patterns before outlining the history of settlement pattern research in the Maya area. Chapter 3 discusses the setting and history of exploration of the Petexbatun region. Chapters 4 and 5, which comprise the second section of the thesis, discuss the fieldwork carried out by the Petexbatun Intersite Settlement Pattern subproject. The history and methodology of the subproject and problems encountered along the way is presented in Chapter 4 while Chapter 5 discusses the specific fieldwork carried out, including descriptions of each transect and excavation unit. The

interpretations of and implications for this research are discussed in the third section, chapters 6, 7, and 8. Based on the results of our excavations, the history of settlement in the Petexbatun region – with a focus on intersite zones – is reconstructed in Chapter 6. Chapter 7 examines the settlement history of other sites in the greater Pasión region so that the developmental trajectory of the Petexbatun can be placed in a proper regional perspective. The primary theoretical and culture-historical focus of the general Petexbatun project, the collapse of Classic period Maya civilization, is addressed in Chapter 8. Popular theories of the "Classic Maya Collapse" are discussed and analyzed in light of the Petexbatun data. The final chapter of this dissertation, Chapter 9, summarizes the key findings of our research and addresses limitations and potential avenues for future research.

Overall, this dissertation does not necessarily answer the question of what caused the collapse or, more appropriately, the changes that occurred within Maya society during the Late and Terminal Classic periods. This should not be seen as a failing, however, as no project, no matter how extensive, can fully solve this mystery by itself. Instead, the Petexbatun Intersite Settlement Pattern subproject adds crucial information to our corpus of data from across the Maya world. It is through the contribution of such research that we are able to better understand the ways in which ancient Maya civilization developed and changed over time.

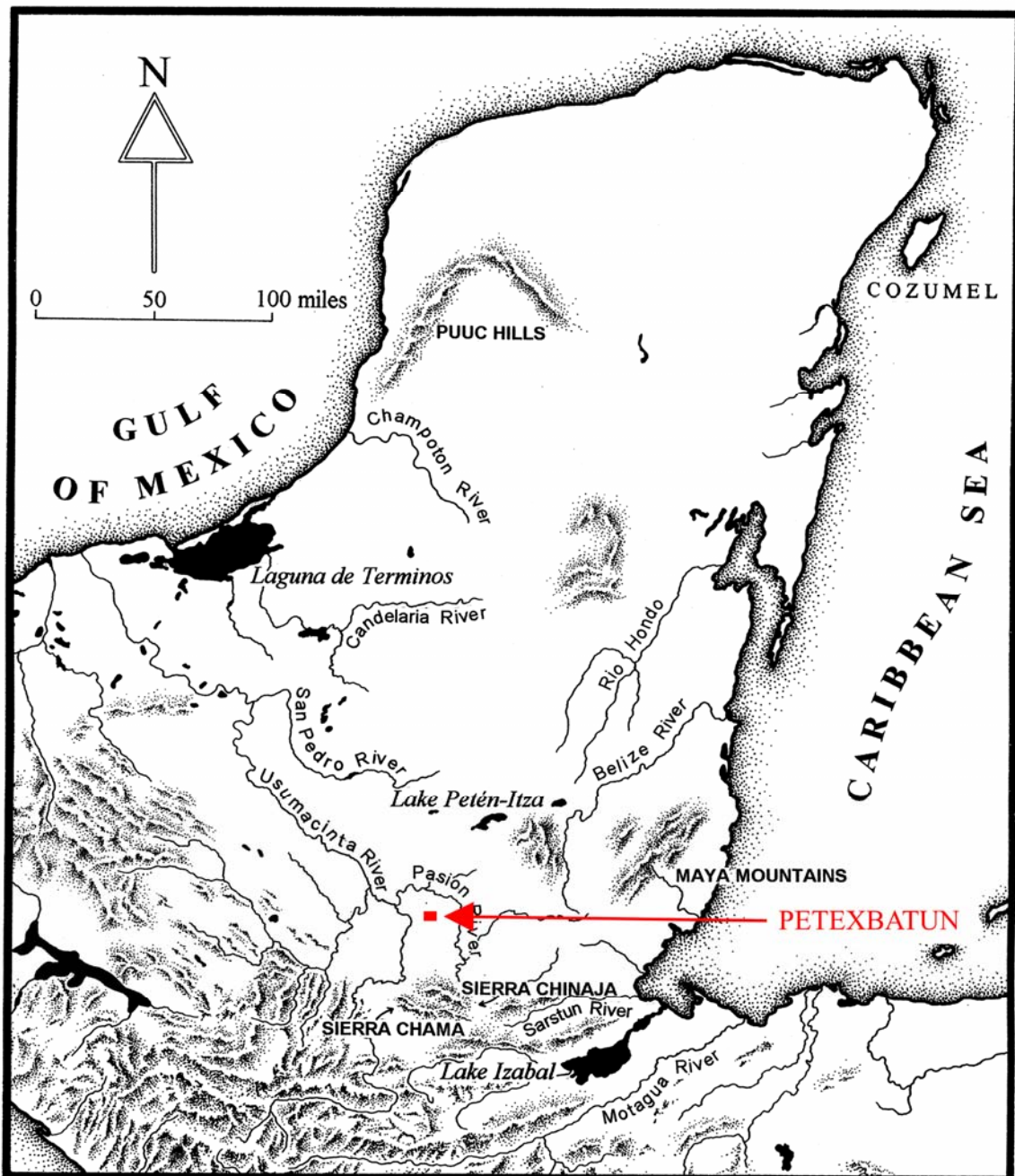


Figure 1.1. Map of the Maya area showing the location of the Petexbatun region (drawing by Luis Fernando Luin).

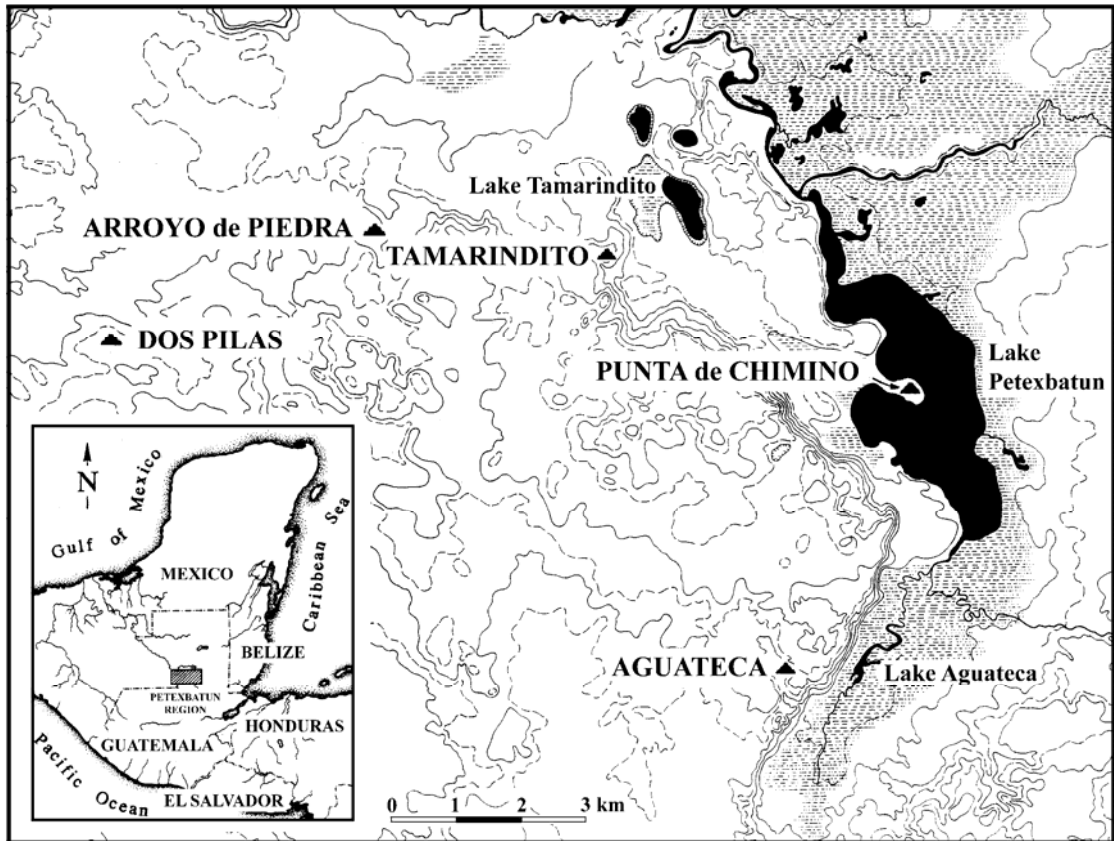


Figure 1.2. Map of the Petexbatun region showing major archaeological sites (from Demarest 2004b: Fig. 10.4, p. 250).



Figure 1.3. Dense jungle in the Petexbatun region (from Demarest 2006: Fig. 2.4, p. 20).

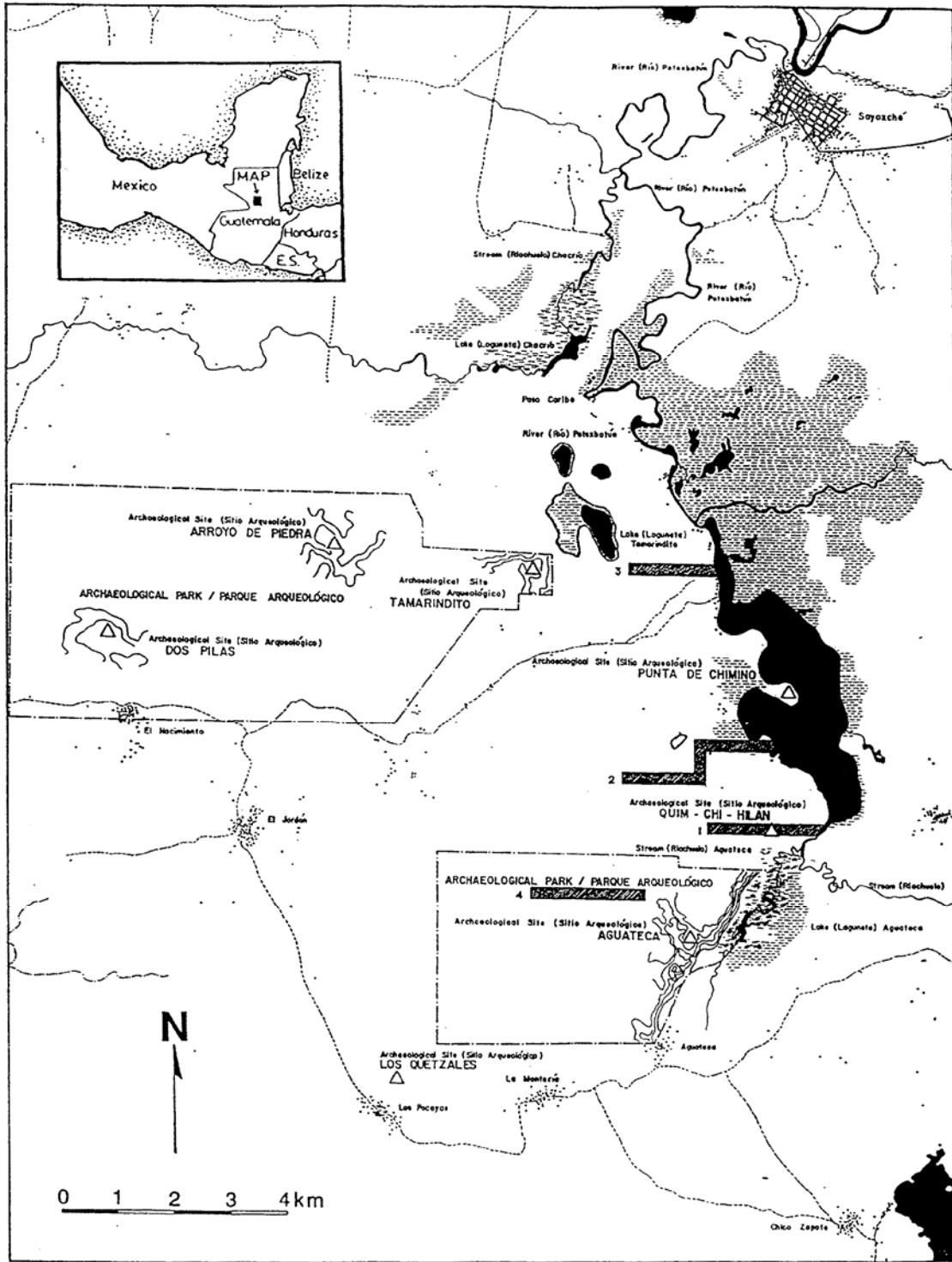


Figure 1.4. Map of the Petexbatun region showing the four transects mapped and tested by the Intersite Settlement Pattern subproject (from Demarest 2004a: Fig. 6.1, p. 103).

## CHAPTER II

### SETTLEMENT PATTERN STUDIES AND THE HISTORY OF SETTLEMENT RESEARCH IN MESOAMERICA

Settlement pattern survey is today an integral and crucial part of archaeological investigation. The study of settlement patterns examines all of the factors that determine aspects of a settlement system and the total dispersion of remains over the landscape (Sanders 1981). This includes structural remains (residential structures, defensive earthworks, terrace walls, etc.), artifact scatters, and all other evidence of human occupation, manipulation, or impact (Hammond 1990). Settlement pattern studies yield information on a whole suite of features regarding the area under investigation and are directed toward two related classes of problems: “(1) *those concerning people in their relationships to their natural ambiance (ecological); and (2) those concerning people in their relationships to other people (social and political)*” (Ashmore and Willey 1981:4).

#### **Definitional and Theoretical Issues in Maya Settlement Pattern Research**

In discussing the nature of ancient Maya settlement patterns, it is essential to define the terms and issues involved. What is meant by "settlement?" What constitutes an area of settlement – a house? A village? A city? What are the boundaries of settlement? Where does one end and the next begin? From these fundamental questions researchers can then move to broader theoretical issues: What factors determined settlement patterns? What is the relationship between settlement, food production, and the environment? How do settlement patterns reflect social, political, and economic



relationships?

In 1977 the School of American Research hosted a seminar that focused on lowland Maya settlement patterns. Participants in the seminar included many of the foremost scholars in the area, including Richard Adams, Wendy Ashmore, David Freidel, Norman Hammond, Peter Harrison, William Haviland, Edward Kurjack, Richard Leventhal, Dennis Puleston, William Sanders, and Gordon Willey. The papers presented at the seminar were revised for publication in an important synthetic volume edited by Wendy Ashmore (1981a) that explores the underlying issues of settlement pattern studies in the Maya lowlands before turning to regional syntheses of settlement data and, finally, offering several comparative models.

Settlement pattern research examines all aspects of settlement, including but not limited to houses and other structures, walls, causeways, agricultural fields, and reservoirs. While techniques exist to determine the presence of these various elements – from the visibly obvious platform mounds of ancient houses to more complex soil tests to determine if areas were used for agriculture – determining the implications of these elements for questions of social, political, and economic organization is much more difficult. Researchers may examine artifacts discovered in the remains of a structure to determine if it was used for residential or ritual purposes. However, concluding that a structure was a house reveals little of what comprised a household.

In differentiating between the physical structure of a residential building and the social composition of a household, Ashmore and Wilk (1988:6) state:

*A household is a social unit, specifically the group of people that shares a maximum definable number of activities, including one or more of the following: production, consumption, pooling of resources, reproduction, coresidence, and shared ownership. The*

*unit may or may not be recognized by the people themselves. It may live in one locale or it may be spatially dispersed. Individuals can be members of more than one household....The household is an analytical unit that can be defined empirically in archaeological samples only after protracted study.*

While a household is thus defined as a social unit that shares activities, a coresidential group consists "of the group of people who regularly share living quarters. This group need not be equivalent to a household..." (ibid.). Therefore, to define the function of structures – residential, ritual, work area, storage, etc., or a combination of functions – is not the same as defining household units. Only through sufficiently large samples and multidisciplinary projects that combine settlement pattern, ecological, epigraphic, osteological, and other studies can researchers make the leap from archaeological remains to social processes.

Returning to more specific issues of settlement pattern studies, most considerations examine three levels of analysis: individual structures, community layout, and intercommunity patterns (e.g. Clarke 1977; Trigger 1968). As Ashmore (1981b:39) points out, however, the individual structure is inadequate as the smallest research element since many activities took place outdoors and many structures housed multiple activities. She therefore suggests that:

*the most elementary physical unit in settlement research is the cultural feature. Feature...can be defined as referring to bounded and qualitatively isolated units that exhibit a structural association between [one] or more [artifacts] and [/or] types of nonrecoverable or composite matrices. (ibid.)*

## The History of Settlement Research in the Maya Area

### Background: 19<sup>th</sup> – early 20<sup>th</sup> Century Discussions and Debates

Like the roots of the field of archaeology as a whole, the earliest investigations of the ancient Maya concentrated on the “goodies” – the palaces, temples, sculpture, and tombs – that captured the public’s imagination and drove museum acquisition programs. The first interest in overall settlement patterns and the related necessity of examinations of non-elite populations arose late in the nineteenth century but it was another half century before such areas of investigation appeared explicitly in research designs.

The first dialogues regarding settlement patterns of the Maya may have been sparked by John Lloyd Stephens’ *Incidents of Travel in Central America, Chiapas, and Yucatan* (1841). In this best selling travelogue, Stephens wrote dramatic descriptions of ruined Maya *cities*, for to him there was no question that that was what the ancient buildings and monuments were. In the early 1880s Lewis Henry Morgan (1880) objected to Stephens’ categorization of Maya sites as ‘cities.’ Morgan believed that the true city – which included both an urban zone and ceremonial precincts – was unknown in the Prehispanic New World. At the same time, Edward Thompson was working at several sites in Yucatan (Figure 2.1), including Labna (Thompson 1886, 1892). He excavated a number of small mound groups around these centers and noted their abundance. Furthermore, he noted the similarities between these small platforms and those on which modern Maya living in the area constructed their dwellings (Figure 2.2). He also found that artifacts recovered from excavations in these small mounds were domestic in nature. Ashmore and Willey call Edward Thompson a pioneer in Maya settlement pattern

studies: “*For the first time attention had been directed to the domestic component of Maya occupation and, at least in a general way, to the relationships of these smaller buildings to those of the main centers*” (Ashmore and Willey 1981:6). Yet, despite Thompson’s work, little consideration was given to residential settlement until the 1930s. In the interim, the few studies that were conducted beyond site centers rarely were reported outside of field notes. Notable exceptions include the work of Edgar Hewett (1912), who excavated a few small mounds at Quirigua and noted their similarity to modern house platforms, and Alfred Tozzer (1913) who noted the presence of house mounds all along jungle trails between major site centers, such as Tikal and Yaxha. Furthermore, he recorded the numbers, density, and distribution of such mounds.

Settlement pattern studies began to become an important part of archaeological research in the Maya area in the 1920s and 1930s, largely through the work of Carnegie Institution archaeologists and J. Eric S. Thompson, who later joined the Carnegie group. Thompson’s work in the 1930s in the Cayo district of Belize was the first to combine the study of both residential and elite precincts and their relationship to one another in a single report (Willey and Bullard 1965). Thompson examined two ceremonial centers, Hatzap Ceel and Cahal Pichik, and two residential clusters of settlement in a 3.5 by 5.5 kilometer area. He concluded that by at least the Late Classic the community as a whole had functioned as a single unit that contained both *residential and ceremonial precincts* (Thompson 1931).

## *Uaxactun*

The earliest project to systematically survey residential zones in addition to a site center in the Maya Lowlands was conducted at Uaxactun by the Carnegie Institution under the direction of Oliver Ricketson in the 1930s (Ricketson 1933; Ricketson and Ricketson 1937). Ricketson set out to estimate the number of house mounds – and from those, the population – that had existed within the limits of Uaxactun. He also used his data to make statements about agricultural production in the area. Towards those ends, Ricketson's survey took the pattern of a cruciform, with the four arms radiating out from the Uaxactun ceremonial center. Each arm measured 1600 meters long by 365 meters wide for a total coverage of more than 2 km<sup>2</sup> (Ricketson and Ricketson 1937). Within this area, 1 km<sup>2</sup> was deemed habitable terrain and a total of 78 house mounds were discovered. Using an estimate of five individuals per household, Oliver Ricketson arrived at a figure of 390 people per square kilometer at Uaxactun. By conservatively factoring in an estimate of only 25% of houses occupied simultaneously, the figure reduces to 97 people per square kilometer at any given time. Ricketson then projected his estimates to a larger geographic zone around Uaxactun, arriving at a population figure of 50,000 in the site's sustaining area at any one time. He further extended the settlement pattern of Uaxactun and estimated a total population of 13.3 to 53.3 million people for the Yucatan Peninsula during the Classic period (*ibid.*).

While the Uaxactun survey was the first serious attempt to examine residential settlement, Ricketson did not move beyond the dense nucleus of settlement usually associated with major centers. For this reason, the research is of limited value for the examination of regional densities (Tourtellot 1988). Additionally, when Dennis Puleston

re-mapped a portion of the west arm of the Uaxactun survey in 1966, he found that Ricketson's team had failed to map a number of platforms and structures, some as high as two meters (Puleston 1973).

### **Gordon Willey and the Virú Valley, Peru**

While the projects discussed above form the roots of Maya settlement pattern research, the first large scale settlement pattern study in the New World was conducted far south of the Maya area. In 1945 a group of archaeologists decided that a fruitful approach to advancing Peruvian archaeology would be to assemble a large, multidisciplinary, multi-institutional team to focus on the study of a single valley. The Virú Valley was chosen as a viable candidate based on earlier surveys (e.g., Bennett 1939; Kroeber 1930). The research design was created by the Virú Committee of the Institute of Andean Research, which was comprised of Wendell C. Bennett, William Duncan Strong, Julian Steward, and Gordon Willey. Other prominent researchers involved in the project included Clifford Evans and James Ford. Fieldwork began the next year on a project that studied the archaeology, cultural geography, and social anthropology of past and present inhabitants of the valley (Willey 1953, 1974b, 1999).

While most of the archaeologists worked to establish a ceramic sequence and the chronology of the valley, Steward convinced Willey to conduct what he called a “settlement pattern” study that would focus on habitation and settlement types in the valley (Willey 1953: xviii). The goals of this pioneering work were:

*First, to describe a series of prehistoric sites with reference to geographic and chronological position; second, to outline a developmental reconstruction of these prehistoric settlements with relation to function as well as sequence; third, to reconstruct*

*cultural institutions insofar as these may be reflected in settlement configurations; and, fourth, to compare the settlement story of Virú with other regions of Perú.* (ibid.: 1)

The Virú Valley is one of a number of river valleys separated by sandy coastal plains along the Pacific Coastal desert of Northern Peru (Figure 2.3). The valley extends 22.5 kilometers inland from the coast to the convergence of the Upper Virú and Huacapongo rivers. The width of the valley ranges from approximately 3 kilometers near the delta to 7 kilometers in the center of the valley to 1 kilometer and less toward its inland limit (Ford and Willey 1949; Willey 1953).

Faced with such a large territory and a limited amount of time – the survey work was completed in just four months – Willey and his colleagues developed a novel research strategy. The researchers purchased aerial photographs of the valley at a 1:10,000 scale from the Peruvian Air Force. Each of these maps was then projected onto a screen and traced to create larger maps at a scale of approximately 1:700. Archaeological sites visible on the photos were noted and features including mounds, roads, and canals were drawn in. A total of 315 sites were identified (Willey 1953: 2-6). These sites were then checked on the ground over the course of the survey and sites were mapped when "there was something worthy of mapping" (ibid.: 5). In order to begin to offer a "functional interpretation of settlement data" (ibid.: 6), sites were dated based on associated pottery, some were excavated, and all were placed into one of four categories of settlement, (1) living sites, (2) community or ceremonial structures, (3) fortified strongholds or places of refuge, and (4) cemeteries (ibid.: 6-7).

Based on his findings and those of the other members of the Virú Project, Willey reconstructed the settlement history of the entire valley. He noted shifts in settlement

strategy over time and offered general statements on population size. He also tied settlement to food production and environment and offered hypotheses on sociopolitical organization in the valley (ibid.: 390-421).

One notable shortcoming of the Virú Valley survey was its heavy reliance on aerial photographs. While many of the sites discovered were previously unknown, many others were certainly missed. In fact, based on his observations while ground checking the sites that were visible in the photos, Willey estimated that those 315 sites represent only one quarter of all sites in the valley (ibid.: 6). Furthermore, because sites under heavy growth are much less likely to be visible from the air than are those in clear areas, the sample is skewed towards certain environmental zones. Similar problems of convenience sampling occurred in Willey's subsequent research in Belize (Willey et al. 1965). Still, the Virú Valley Project was groundbreaking in terms of land area covered and, more importantly, research goals and it set the stage for similar settlement pattern studies in the same area (e.g., Wilson 1988). When Gordon Willey began research in Central America a few years after Virú, he helped set the course of research on the ancient Maya for the next half century and beyond.

### **Settlement Studies in the Maya area, 1950 – 1960**

In the mid-1940s, New World archaeology was increasingly criticized as being a-theoretical, interested only in cultural-historical information (e.g., Kluckhohn 1940). What was needed was concern with issues of function and process. Julian Steward (1955) argued that such issues, along with a whole suite of topics including subsistence



and social organization, could be addressed through the study of settlement patterns.

Inspired by Steward, Gordon Willey (1956:114) wrote:

*Until we have more real knowledge of Maya settlement, the archaeologist will be in no position to attack the problems of demography or of prehistoric agricultural techniques and productiveness. Arguments of milpas versus intensive farming...will remain insoluble until we can pin down the facts of habitation.*

### *The Belize Valley*

In 1954, Gordon Willey brought the survey techniques he had developed in the Virú Valley to the Maya area, beginning the first deliberate study of a non-ceremonial Maya site, Barton Ramie in the upper Belize Valley (Willey et al. 1965). Willey's team mapped an area of 2.5 km<sup>2</sup>, recording a total of 265 structures. More than one-fourth of these were tested in order to obtain information about changes in settlement over time. The survey area included three centers, Benque Viejo, Cahal Pech, and Baking Pot, and numerous smaller sites, along with house mounds scattered throughout the valley (Ford and Fedick 1992; Willey et al. 1965).

Willey and his colleagues used the data from their survey and excavations to reconstruct the settlement history of the valley. The area was first settled in the Middle Preclassic period. Population increased significantly in the Protoclassic and continued to grow to a Late Classic peak before dropping off in the Postclassic. Because there were no clear boundaries in Late Classic household settlement patterns and most of the mounds tested included artifacts from that period, it was assumed that the entire area was integrated into some common social and political pattern. With regard to settlement and agriculture, the researchers concluded that the preferred location in which to live was

along alluvial bottoms with the surrounding hill-slopes being used for the primary subsistence activity – maize-based swidden agriculture (Willey and Bullard 1965).

There were two significant methodological problems in the execution of the Belize River survey. First, it focused on fields that had already been cleared for planting. Only within such fields were all visible structures recorded (Tourtellot 1988). Second, the survey concentrated on only a single ecozone – the fertile alluvial bottoms. The limited scope of information provided by such a methodology skewed interpretations. Both of these problems were later redressed by the Belize River Archaeological Settlement Survey (BRASS) project, which reached some very different conclusions. Although the pioneering work in the Belize Valley had some methodological shortcomings, Willey's research sparked a boom in settlement pattern archaeology in the Maya area.

#### *The Northeast Petén Survey*

While Willey's team worked in the Belize River Valley, other researchers were also conducting projects that departed from the center-biased approach of most previous archaeological fieldwork in the Maya area. Among these researchers was William Bullard whose Northeast Petén survey in the 1950s covered a vast territory that spanned from Benque Viejo and the Belize border in the east to an area near Tikal and Uaxactun in the west (Bullard 1960). This survey covered more than 400 km<sup>2</sup> and noted the presence of settlement ranging from large sites to small residential groups all along the trails Bullard followed (Willey and Bullard 1965).

Bullard used his data to make hypotheses about Maya settlement hierarchy. He proposed a three tiered system comprised of “clusters”, “zones”, and “districts.” Clusters

(Figure 2.4) are defined as small groups comprising 5 to 12 houses within a 200 to 300 m<sup>2</sup> area. Zones consist of several clusters for a total of 50 to 100 houses within approximately a 1 km<sup>2</sup> area. Districts, the sustaining areas for major centers, are comprised of a number of zones and may cover an area of 100 km<sup>2</sup> (Bullard 1960).

Despite the impressive scale of Bullard's work – or perhaps because of it – the Northeast Petén survey is not without problems. The most significant problem is that it is what Tourtellot (1988:9) calls a “*convenience sample*.” Rather than undertake a systematic survey, Bullard followed pre-existing trails through the jungle, recording structures along said trails while ignoring large tracts of land not easily reached. For this reason, Bullard was unable to discuss regional population density and issues such as carrying capacities (Puleston 1973). Still, it was an important early step in regional, non-site focused settlement pattern research.

### *Mayapan*

Under the direction of Harry Pollock, the Carnegie-funded Mayapan project was conducted from 1951 through 1955. The settlement survey of the site was more straightforward than those surveys undertaken at other sites since Mayapan, like many Postclassic settlements, was enclosed by a defensive wall. Among the more than 4000 structures mapped by Morris Jones (1952) in the 4.3 km<sup>2</sup> zone within the wall, Ledyard Smith estimated that some 2100 were dwelling units or households. From this structure count and using a figure of 5.6 people per household, Smith (1962) estimated a population of 11,000 to 12,000 for Postclassic Mayapan. The density of population was considerably greater than those estimated for other, earlier areas surveyed, such as the northeast Petén and the Belize River Valley.

The Mayapan survey was able to avoid many of the difficulties encountered by other early projects. This was due largely to the fact that the site was circumscribed by a defensive wall. It was therefore relatively easy to determine the size of the site and to map all structures present. The Mayapan project is significant in part because it encountered a settlement pattern in the Postclassic that was drastically different from settlement patterns at other sites and regions in previous periods. This new pattern reflects significant changes in Maya socio-political organization.

### *Dzibilchaltun*

In the Late 1950s and early 1960s Tulane University's Middle American Research Institute, under the direction of E. Wyllys Andrews IV, conducted a major research program at Dzibilchaltun. The primary goals of the project included

*...the definition of a long, continuous archaeological sequence for the northern lowlands; identification of the earliest occupation in the area and its external affiliations; and clarification of the chronological placement and developmental relationship of block-wall, slab-vault (Early period) architecture and concrete-and-veneer Puuc (Florescent) construction (Taschek 1994:1).*

In order to achieve these lofty goals, the Dzibilchaltun project employed a strategy of extensive and intensive mapping and test-pitting, in addition to area excavations. The goals of the survey were to determine the size of the site, locate all ruins, test and date a significant sample of structures, and gather as much architectural information as possible. To locate ruins, a grid system was first established over the site and transects were cut at 100 meter intervals. Where ruins were detected, workers spaced 10 to 20 meters apart searched for additional structures within that area (Kurjack 1974).

Initially, Andrews estimated that Dzibilchaltun covered an area of 50 km<sup>2</sup>. Based on the high density of structures recorded within the central 6.9 km<sup>2</sup> area mapped during

the first years of the project, he suggested a total of 50,000 structures for the whole zone (Andrews IV 1960). Because test pits indicated that most of Dzibilchaltun was inhabited during the Late Classic, Andrews' population estimates ran into the hundreds of thousands. However, all of these figures were reduced by the time the site survey was completed. Edward Kurjack (1974) reports a total of 8398 structures mapped within Dzibilchaltun's 19 km<sup>2</sup> (rather than 50 km<sup>2</sup>) area. Test pits were excavated in 426 of these structures.

Overall, the Dzibilchaltun project was a model for near-total coverage, single-site survey. However, there were some problems with the project. First, the absence of walls or any other apparent boundaries led Andrews to significantly overestimate the size of the site. Combined with his premature consideration of density of structures, this led to greatly inflated estimates of structure count and population. A second problem is methodological. The strategy of walking only those inter-transect areas in which structures were already visible inevitably resulted in missed mounds. Kurjack, who directed the survey after George Stuart left the project in 1960, admits that *many* structures were missed due to the dense vegetation around much of the site (Kurjack 1974: 36). Additionally, no excavations were undertaken in order to discover hidden structures, possibly further skewing population figures, along with interpretations and hypotheses drawn from these estimates.

### **Contemporary Maya Settlement Pattern Studies: 1960 – present**

Thanks in large part to the projects discussed above, settlement pattern survey was largely accepted as an integral part of archaeological research in the Maya area by

the 1960s. Despite the flaws of survey projects up to that point, the accumulation of data provided cast new light on fundamental arguments, such as empty ceremonial centers versus cities and swidden versus intensive agriculture. Most subsequent archaeological projects included some sort of residential settlement pattern survey. Those that failed to, or that mapped only a small area, such as the Altar de Sacrificios (Willey and Smith 1969) project, may be criticized for the shortcomings of some of their interpretations based on a lack of settlement data (see Chapter 6). Successful projects include settlement surveys that extend some distance beyond the site center. Perhaps the seminal case of such a survey is Dennis Puleston's work at Tikal.

### *Tikal*

*The basic problem with eastern lowland settlement pattern studies, and with research in the eastern lowlands as a whole, has been that for the most part studies are "site centered." Archaeologists mapped sites already known to them or their local informants, or they did unsystematic reconnaissance, mapping "sites" as they chanced to run (literally, at times) into them. The drawback with this method is that it results in a sample that is neither complete nor representative. So far the best resolution of this problem has been provided by Dennis E. Puleston, who began systematically covering whole blocks of **area**.*

-Richard E. Blanton et al. 1981:7 (emphasis in original)

The mapping program at Tikal was initiated in 1957 by Morris R. Jones of the U.S. Geological Survey. This map was centered only on the core area of the site and the area immediately surrounding it (Figure 2.5). Based on this initial survey, small residential structures were excavated beginning in 1959 (Puleston 1973). Despite the center-focus of Jones' work, Dennis Puleston called the map of the central 16 km<sup>2</sup> of Tikal it produced (published as Tikal Report No.11 [Carr and Hazard 1961]) "*one of the finest achievements of the Tikal Project...*" (Puleston 1973:1viii).

When financial support was offered to the Tikal project by the Guatemalan government in 1964, Puleston began the Tikal Sustaining Area Project, a project proposed by William Haviland, that ran from 1965 to 1968 and for which Puleston credits Linton Satterthwaite (1951) as inspiration (Puleston 1973:1xi). The general goal of the project was to take “*a more careful look at the settlement matrix of Tikal*” (ibid.:1x). In order to achieve this, the intention of the project was to map as many square kilometers of terrain beyond the site center as possible (Puleston 1983). Major issues to be addressed included where the ‘city limits’ of the site were located and whether the dense scatter of housemound groups around Tikal, as revealed in the Tikal Report No.11 site map, was fairly typical for the whole of the northeast Petén. Additionally, Puleston hoped to test the “Sustaining Area Hypothesis;” that is, that somewhere beyond the relatively dense settlement around large sites there was an agricultural sustaining area where the bulk of food production was undertaken (Puleston 1973).

Like Ricketson at nearby Uaxactun three decades earlier, the Tikal Sustaining Area Project used a cruciform-shaped survey with four transects radiating out in the cardinal directions from the site center (Figure 2.6). This aspect of the survey was greatly facilitated – and inspired – by the delimitation of the Tikal National Park by *La Empresa Nacional de Fomento y Desarrollo Economico de El Petén* (FYDEP) in 1963 and 1964. FYDEP had made four 12 kilometer long transit-controlled transects extending north, south, east, and west from the site center, in addition to a transect around the perimeter of the 576 km<sup>2</sup> park (Puleston 1983).

Once the central transects were established, trial-and-error determined the most efficient and accurate way to expand each into a 500 meter wide transect, within the bounds of which all features were located and mapped. The mapping team, consisting of five individuals, would line up along the central transect at 25 meter intervals and face into the square to be mapped. The archaeologist in the center of the line would carry a Brunton compass, a clipboard, graph paper, and a pencil. The team would then set off into the virgin square, maintaining their spacing and walking a distance of 250 meters (Puleston 1983). The center man would plot rough contour lines as the team progressed. These were later tied into transit and altimeter readings taken from the main transect (Puleston 1973).

When a mound or chultun was discovered, the center man would mark his position on the map, mark a tree, and head off at a 90° course from his current location until he reached the feature. He would then pace off the feature and plot it on his graph paper. While he did this, the discoverer would search the perimeter of the area for other structures, chultuns, walls, or other signs of the ancient Maya. The other team members would hold their positions. Once the group was plotted, the center man would return to his position and the team would set off again. This procedure was followed until 250 meters, measured by pacing, had been covered. The team would then shift 125 meters along the transect and repeat the mapping procedure until they returned to the central transect (ibid.). Following this survey procedure, a single team could map up to 375,000 m<sup>2</sup> in a single day. Puleston estimated that, other than mounds less than 15 cm high, approximately 95% of structures within the transects were found and mapped (ibid.:75).



Based on the assertion of Gordon Willey and Phillip Phillips that “*about the only requirement ordinarily demanded of the site is that it be fairly continuously covered by remains of former occupation*” (Willey and Phillips 1958:18), the Sustaining Area Project determined that Tikal covered an area of approximately 120 km<sup>2</sup>. This is based on a structure density that drops some 300% beyond this limit and correlates quite well with the area delimited by the north and south earthworks at the site and the bajos to the east and west (Puleston 1983).

Puleston recognized three different settlement zones, the first of which is the epicenter or ceremonial nucleus, the second the central zone, and the third the peripheral zone. The epicenter covers an area of 1.4 by 1.25 km and corresponds roughly with the main public architecture of Tikal. The central zone encompasses the epicenter and spreads across a 2.5 by 1.5 km area. Within this zone there is a density of one structure per 0.16 to 0.20 hectares. The peripheral zone measures approximately 11.5 by 11.5 km and structure density drops to one per 0.5 to 1.5 hectares (Potter 1985).

Thanks to an extensive test pitting operation, the Sustaining Area Project was able to discern a general pattern of population growth at Tikal, beginning by the Middle Preclassic period. Significant changes occurred between the Late Preclassic and Early Classic and between the Early and Late Classic periods. Social stratification increased in the Early Classic while population grew and spread farther from the epicenter. By the Late Classic, population levels had dropped in the intermediate area between Tikal and its satellites. At the same time, many satellite centers, which were quite common during the Early Classic, began to be abandoned (Puleston 1973). Additionally, the researchers found that there was a clear association between terrain and settlement – the ancient

Maya preferred well-drained uplands on which to build their residences. Only as population grew at Tikal did people move into lower-lying zones and even then structure and chultun density remained considerably lower than in upland areas (Puleston 1983).

Among the more significant findings of the Sustaining Area Project is the refutation of the Sustaining Area Hypothesis. Puleston estimated a population of 80,000 at Late Classic Tikal and found no evidence of the sparsely populated sustaining area proposed by that hypothesis. In his dissertation, Puleston includes an astute discussion of alternative sustaining models (Puleston 1973:288-304), including a lengthy consideration of dooryard or kitchen gardens. Unfortunately, he concludes that the ramon nut was a key component in Maya subsistence. This idea has since been refuted (Lambert and Arnason 1982; Peters 1983). Despite this interpretive flaw, the Tikal Sustaining Area Project is a landmark in Maya settlement pattern studies. For the first time we have total coverage of *areas*, regardless of environment or ‘convenience,’ in conjunction with an extensive test pitting program. Such an approach works well in bridging the gap between a sampling survey, as necessitated in a jungle environment, with the desirability of total coverage survey. Additionally, Puleston systematically mapped transects averaging approximately 10 kilometers in length that radiated out from the site center. This approach allowed the Tikal archaeologists to draw broad conclusions about such topics as settlement, population, and agriculture with a degree of confidence heretofore unseen in the Maya area.

### *Seibal*

While Puleston was leading the Tikal Sustaining Area Project, Gair Tourtellot began a settlement pattern study at Seibal (Tourtellot 1988). Discontent with previous

settlement mapping projects in the Maya area, Tourtellot designed a methodology that systematically investigated the area surrounding the site center. This extensive perimeter survey, which was conducted from 1965 through 1968, expanded on the central 2 km<sup>2</sup> intensive mapping project led by Ian Graham in 1964 and 1965 (Figure 2.7). The survey was intended to “*collect data representative of the remains in the peripheries and their locations, groupings, and distributions*” (ibid.: 9-10).

The periphery survey work began by cutting a series of transects over a 25 km<sup>2</sup> area, establishing a grid (Figure 2.8). The transects were spaced at 600 meter intervals and each was 40 meters wide, resulting in a total mapped area of 24,000 m<sup>2</sup>. Within this area, all features were mapped. In conjunction with the peripheral survey, an excavation program was executed in order to “*supply direct and controlled information on contexts and temporal sequences*” (ibid.: 34). However, the area sampled was a densely populated zone immediately adjacent to the ceremonial center. To compensate for this center bias, the peripheral survey collected *some* cultural items through unsystematic grab samples (ibid.: 26). Because few excavations were carried out in the peripheral area, these grab samples are virtually the only source of information on the spatial distribution of settlement in different periods.

Tourtellot’s approach to settlement survey at Seibal attempted to discover the best compromise between full coverage survey and earlier convenience surveys in the southern Maya lowlands. Unlike the survey being conducted at the same time by Puleston at Tikal in which wide strips of land were mapped, the Seibal periphery survey attempted to systematically investigate the entire periphery of the site. The chief shortcoming of this survey work was the inadequacy of the excavation program. Because

of this, Tourtellot's monograph (1988) includes numerous hypotheses regarding the history of settlement at Seibal. Further excavation of the site's periphery would have answered many of his questions.

*The Belize River Archaeological Settlement Survey (BRASS)*

While the pioneering Tikal and Seibal surveys systematically investigated settlement beyond their respective site centers, they nonetheless focused on major sites. The Belize River survey studied more rural settlement that was not obviously affiliated with a major Maya center. Begun in 1983 and led by Anabel Ford with field direction by Scott Fedick, the survey was specifically designed to gather settlement and resource data within the Belize River Valley and in the inland area to the north. Ford hoped to not only reconstruct the evolution of local settlement, but to compare this data with those emerging from settlement surveys elsewhere in the southern lowlands (Ford 1990). Additionally, the archaeologists set out to investigate the relationships between sites and the natural environment (Ford and Fedick 1992).

The BRASS project plotted three main transects that traversed all environmental zones in the area while also passing through four known centers with monumental architecture, Bacab Na, Yaxax, Alta Vista, and El Pilar (Figure 2.9). The survey began by mapping these four sites, then establishing three transects – two 5 kilometers long, the third 10 kilometers long. A 125 meter wide area was then surveyed along both sides of each central line, resulting in 250 meter wide transects. Within each transect all cultural remains, including residential structures, terraces, midden scatters, aguadas, and chultuns, were mapped. Test pits were then excavated in the middens of a 12.5% stratified sample

of residential units. Stratification of the sample was based on distance from the river (Ford 1990).

While the BRASS archaeologists were able to make statements about settlement change over time in the Belize River Valley area, perhaps their most significant conclusions regard the locale of settlement and its relationship to agricultural potential.

*The residential settlement pattern of the upper Belize River area corresponds closely with the inherent agricultural potential of local land resources, as observed through the BRASS systematic surveys. The extensive reconnaissance survey undertaken in 1987 strongly supports the applicability of this settlement pattern to the entire study area....Although the pattern of settlement shifts somewhat through time in response to demographic change and the influence of administrative centers, the location of residential sites was for the most part consistently in accordance with a farmer's perspective on the spatial economics of efficient agricultural production....This pattern of settlement and land use is certainly a reflection of a well administered and managed agricultural system that sustained productivity under conditions of high population levels over a very long period of time. (Ford and Fedick 1992:44)*

Additionally, as mentioned in the discussion of Willey's work in the area, the BRASS team not only found that settlement was *not* restricted to the alluvial lowlands, but that the highest settlement densities were in the valleys of the western uplands and that population decreased as one moved east toward the river (Ford 1990).

The most significant contribution made by the BRASS study to Maya settlement pattern research was its focus on a more rural area that was some distance from a major center. This non-elite orientation provided important data that can be used to make sound hypotheses about Maya social, political, and economic organization.

## **New Approaches and New Technologies in Settlement Pattern Research**

Archaeologists are constantly developing new theoretical approaches to understand past cultures. These approaches are often facilitated by developments in technology. One such theoretical advance that is not necessarily new but has received increasing attention since the 1970s is landscape archaeology (e.g., Dunnell and Dancey 1983). Human society is not comprised merely of people, their houses, their possessions, and their remains. Rather, we interact with and are connected to the landscape. Landscape archaeology analyzes this interaction. While traditional site-based archaeology focuses on the study of archaeological data, including cultural landscapes, landscape archaeology adopts a more holistic approach that explicitly examines the relationship between cultural and natural landscapes.

The practice of landscape archaeology and settlement research in general has been greatly enhanced by advances in geophysical technologies and other remote sensing techniques. Such analyses allow researchers to study the past on a regional scale, to analyze the spatial distribution of settlement and its relationship to the natural landscape, and to examine subsurface deposits without or prior to excavation. These are not necessarily new concepts; aerial photography was first utilized in archaeology more than a century ago (Reeves 1936) and the first attempts at ground penetrating radar were undertaken in Austria in the 1920s (Conyers 2004). However, methodological and technological advances have significantly advanced such approaches. These include the study of satellite imagery in the discovery and analysis of archaeological sites and regions (e.g., Cox 1992; Kouchoukos 2001; Sever and Irwin 2003), a variety of techniques for remotely examining subsurface remains (e.g., Conyers and Goodman

1997; Kvamme 2003; Mussett and Khan 2000; O’Neal et al. 2005), and the application of computer hardware and software, including Geographic Information Systems (GIS) and free online resources like Google Maps, to the analysis of spatial data (e.g., Gillings 2000; Wescott and Brandon 2000). All such developments in technology, methodology, and theoretical approaches bode well for our ability to understand past societies.

### **Methodological Issues of Survey in the Maya Lowlands**

The discussion of the history of settlement pattern research in the Maya area hints at one of the key challenges to such research, particularly in the southern Maya lowlands. As Dennis Puleston noted, “*A factor which has vitiated the collection of settlement data in intersite areas in the Maya Lowlands is the frustrating density of the vegetation*” (Puleston 1973:37). Additionally, with cultural deposits often several meters thick, surface collections may not be representative of buried remains (see Michels 1979). In this setting, sampling surveys that employ transect mapping – the complete recording of selected tracts of area – are the most commonly utilized and most efficient survey strategy. While full coverage survey is an enviable goal, for the Maya area it is generally not possible either fiscally or temporally – the inherent limits of jungle survey would necessitate a project of unprecedented scale in budget and personnel in order to study an area comparable to those covered elsewhere, such as in the Valley of Mexico and Oaxaca Valley surveys. In fact, while the full coverage surveys in the Oaxaca and Central Mexico areas provide an unprecedented areal scope of information, such an approach is not feasible in much of the Maya area where dense jungle growth severely limits visibility. Specific methodologies employed in transect surveys in the Maya area are

further examined in Chapter 6, wherein individual projects in the Pasión River region are discussed.

### **Alternate Approaches: Full Coverage Survey in the Oaxaca Valley and the Valley of Mexico**

The most extensive settlement pattern surveys conducted in the New World are the full-coverage regional surveys in the Valley of Mexico (Sanders et al. 1970) and the Oaxaca Valley (Blanton et al. 1982; Parsons 1990). In fact, Conrad and Demarest (1984:193) call the Valley of Mexico Project “*one of the most impressive and ambitious archaeological projects ever undertaken.*” Full-coverage survey is defined succinctly by Parsons (1990:11) as “*walking every accessible open area at thirty to fifty or more meter intervals.*” A brief examination of the techniques employed in these projects will help illuminate the development of survey methodologies adopted in the Maya area, especially the jungles of the Southern Lowlands.

Regional surveys such as the Valley of Mexico and Oaxaca projects address a broad scope of issues, including interactions between sets of communities of all sizes, and they can detect what Parsons (1990:17) calls “*counterintuitive settlement patterns.*” These studies “*investigate hierarchically nested, semibound systems at increasingly larger regional scales to the less tractable world system scale*” (Kowalewski 1990:33). Such full-coverage surveys have yielded massive quantities of data that have been used to design focused researches.

In both the Oaxaca and Central Mexico cases, the combination of gently sloping terrain, frequent shallow plowing, and a highly visible archaeological record made full-coverage survey feasible (Parsons 1990). In the Valley of Oaxaca (Figure 2.10), where



the goal was to maximize the areal extent of study, crews of three to four walked over all terrain at a spacing of 25 to 50 meters. They visually scanned the areas between crew members, searching for archaeological material. When such material was located the crew convened for a closer combing of the area, surface collections were taken, and sites and terraces were mapped (Kowalewski 1990). By applying this methodology, the Valley of Oaxaca Settlement Pattern Project was able to record a total of 6353 sites in an area of 2150 km<sup>2</sup>. A similar approach in the Valley of Mexico resulted in the mapping of 3500 km<sup>2</sup>, the largest contiguous mapped area in Mesoamerica (Blanton et al. 1981).

### **Estimating Ancient Populations from Archaeological Remains: The Problem of Demographic Estimates**

One crucial goal of settlement pattern research is the reconstruction of population sizes for any given site or region. Population size and density has important implications for numerous key aspects of past societies, including social, political, and economic organization. For example, some models of Classic period Maya civilization focused on swidden agriculture as the key economic system. However, subsequent demographic estimates based on settlement pattern research proved that the Maya must have employed other, more productive, agriculture systems (Puleston 1983). Because demographic estimates can provide information that is so fundamental to archaeological research it is not surprising that numerous researchers have attempted population reconstructions for various past cultures around the world (e.g., Cook and Heizer 1968; Cook and Treganza 1950; Culbert and Rice eds. 1990; DeRoche 1983; Hassan 1981; Haviland 1965, 1969; Howells 1960; Kardulias 1992; Kolb 1985; Paine et al. 1996; Sanders 1984; Schacht 1981; Sumner 1989; Welinder 1979; Wiessner 1974; Zubrow 1976). Yet despite the

importance of estimates of past population sizes, there is considerable disagreement regarding how such figures are most accurately calculated.

A number of variable are employed in reconstructing past populations but most researchers focus on one of two key factors when making their calculations: the number of individuals in a household of the amount of built space – usually floor or roof area – occupied by each person. Archaeologists and other social scientists have attempted to discern universal patterns regarding these factors that can be applied cross culturally. For floor area, the seminal cross cultural study was conducted by Raoul Naroll (1962) who analyzed 18 preindustrial societies on four continents and noted a logarithmic correlation between population size and floor area. He concluded that "the population of a prehistoric settlement can be very roughly estimated...as of the order of one-tenth of the floor area in square meters occupied by its dwelling" (ibid.: 588) or approximately 10 square meters per person.

So, while specific methodologies for estimating past populations vary both between and within cultures, most such estimates from the Maya area follow a general formula of:

$$\text{Population} = \text{structure count} \times A \times B \times C \times D$$

where A is the proportion of the total number of structures including so-called "hidden structures" to mapped or counted structures, B is the proportion of contemporaneously occupied structures, C is the proportion of residential to non-residential structures, and D is the number of individuals who resided in a residential structure (Rice and Culbert 1990).

Estimates of the average number of individuals per structure have been almost entirely based on ethnographic or ethnohistorical analogy. The most commonly used figure is 5.6 people per house, which derives from the ethnographic survey of the Maya village of Chan Kom in Yucatan (Redfield and Villa Rojas 1934). However, other scholars have suggested figures that range from as little as 4.0 individuals per house (Sanders 1962, 1963; Sanders and Price 1968) to as much as anywhere from 6.07 to 25 people per house (Hellmuth 1977; Puleston 1973; Ringle and Andrews 1990; Thompson 1951).

This wide range of figures derived from ethnographic and ethnohistorical data poses a serious problem for archaeologists attempting to apply one of them to prehistoric contexts. In fact, since so many elements of ancient Maya civilization, such as architectural style and degree of state control in infrastructure, varied from region to region, it cannot be assumed that the number of residents per structure or household was uniform across the Maya world. However, within a region, any single figure may be adopted for comparative purposes. In a 1996 paper, I referred to this method as “relative population estimates” as opposed to absolute estimates after relative and absolute dating (O’Mansky 1996). As long as the same estimate of people per unit is employed in all calculations, the archaeologist can examine relative differences in demography and changes in population over time. However, even this approach must be employed with caution as it assumes continuity over time. Since settlement strategies often shifted over time within a region it would be surprising if household composition did not similarly change. Additionally, this approach does not aid the archaeologist in interregional

comparisons. Nonetheless, talking in relative population figures may allow intra-region comparisons.

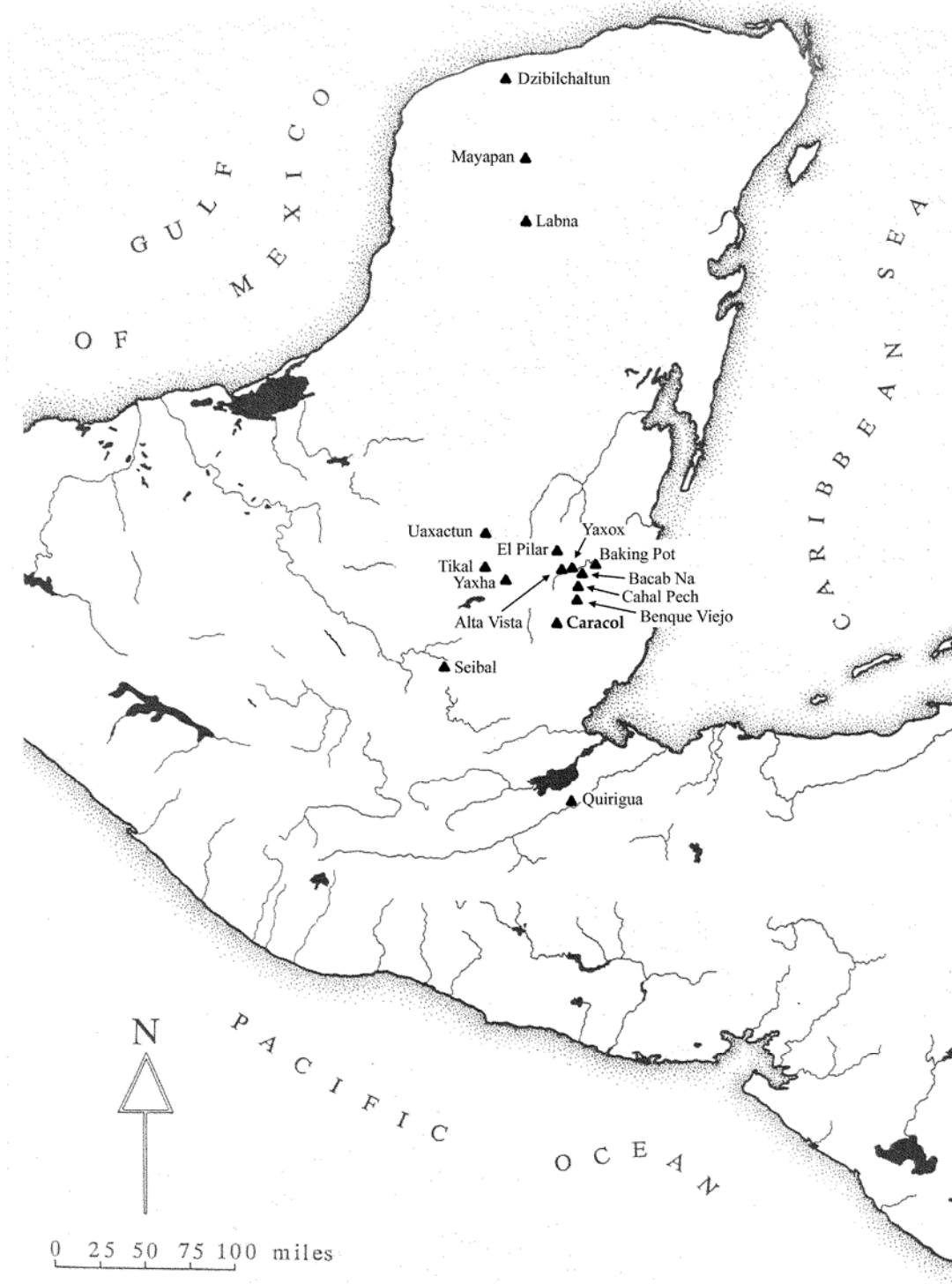


Figure 2.1. Map of the Maya area with sites mentioned in Chapter 2.



Figure 2.2. A modern Maya house (photo by author).

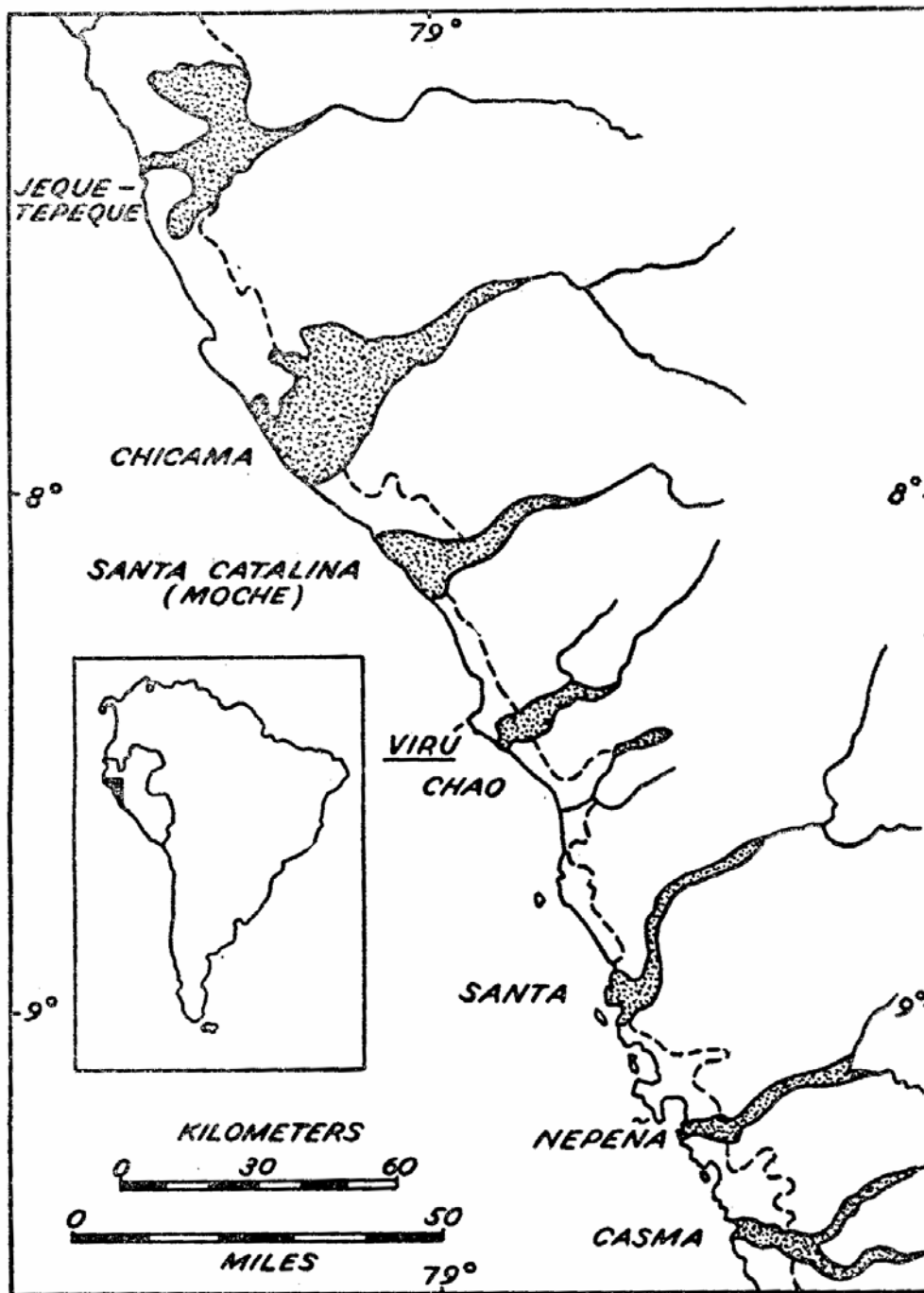


Figure 2.3. Map showing the location of the Virú Valley (from Willey 1953: Fig. 1, p. 14).



Figure 2.4. House mound clusters mapped by William Bullard (from Willey and Bullard 1965: Fig. 2, p. 365).



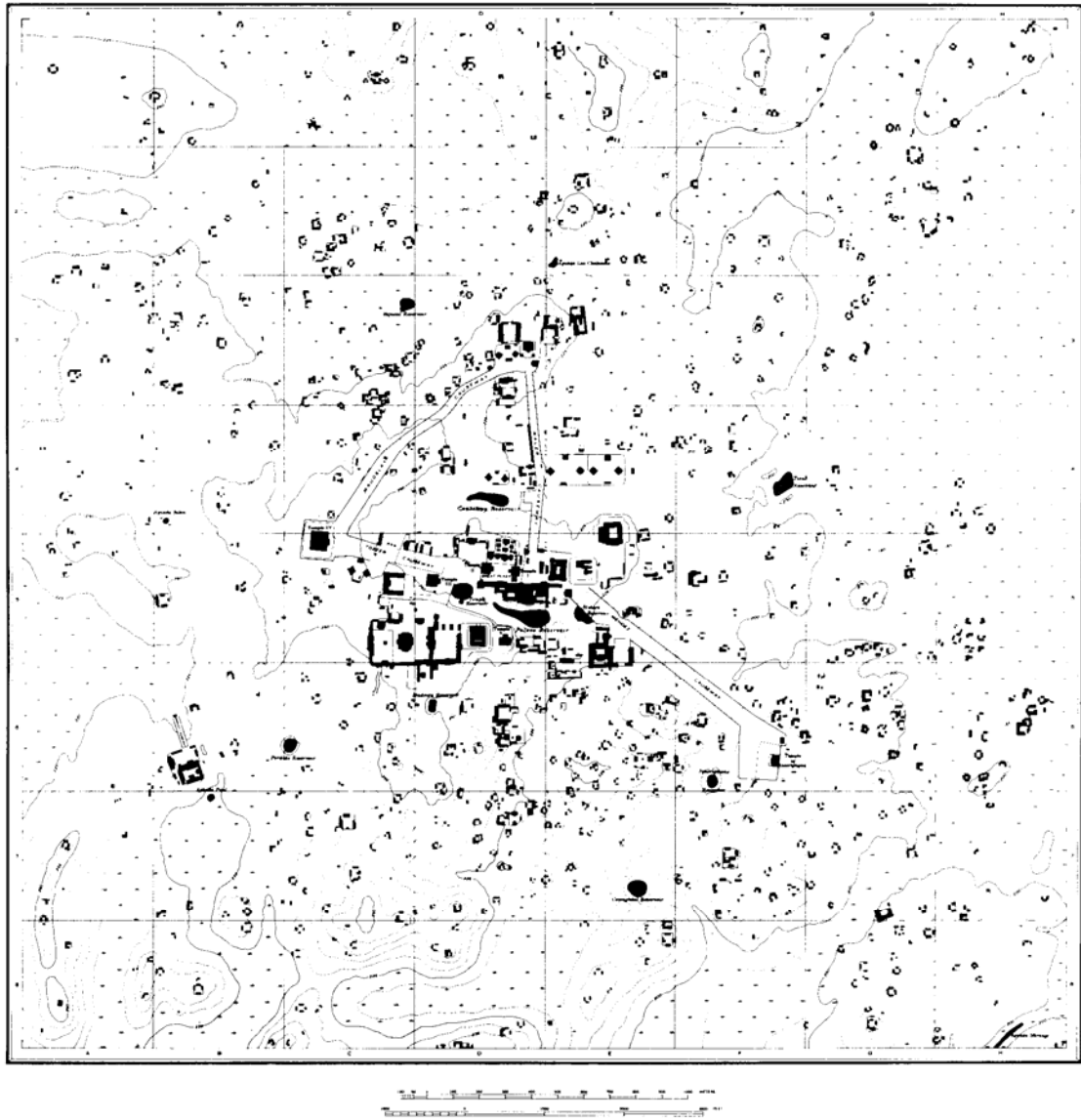


Figure 2.5. Morris Jones' map of the central area of Tikal (from Coe and Haviland 1982: Fig. 12, p. 24).

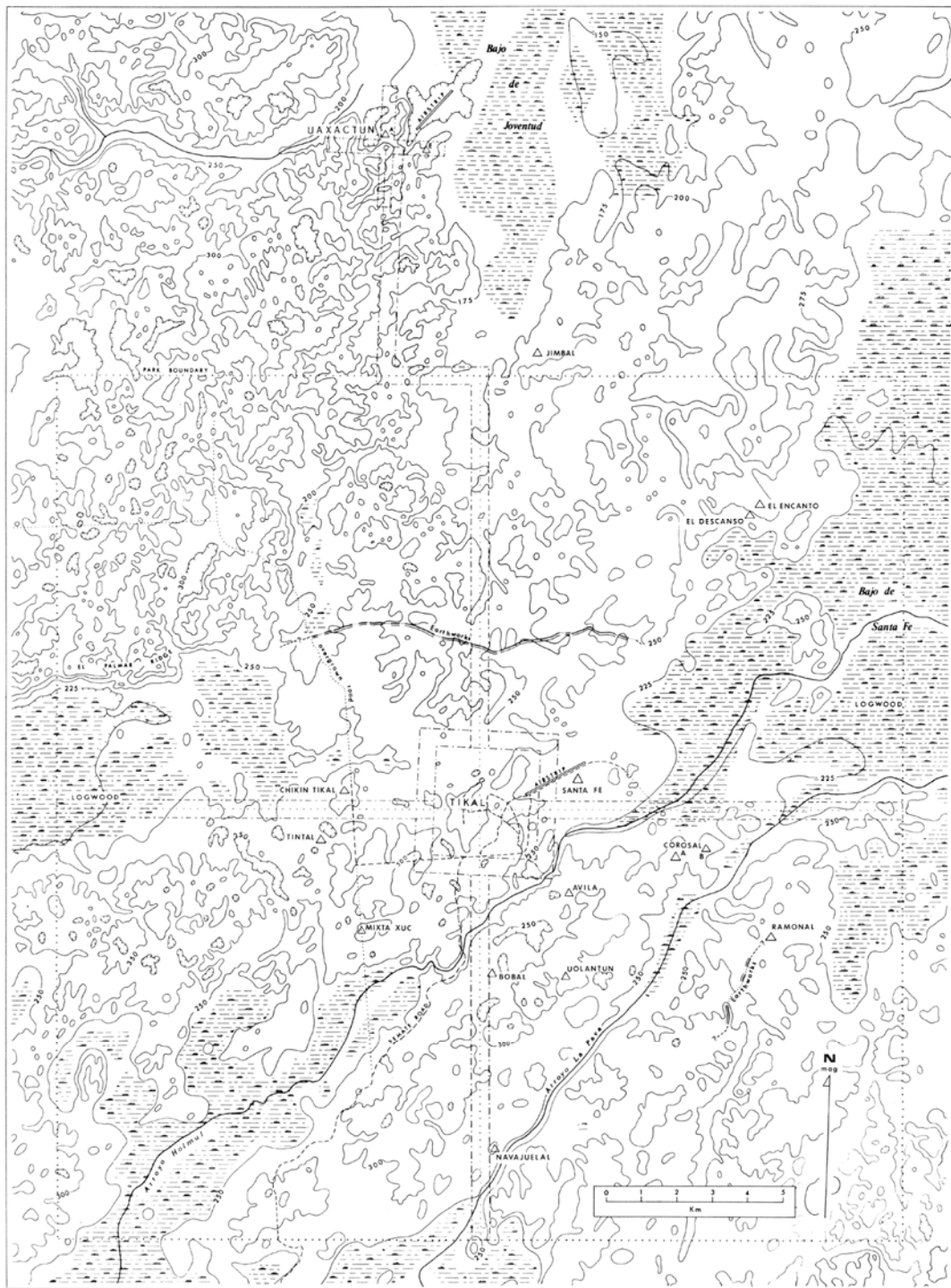


Figure 2.6. Map of the Tikal region showing the radial brechas of the settlement survey (from Coe and Haviland 1982: Fig. 14, p. 30).

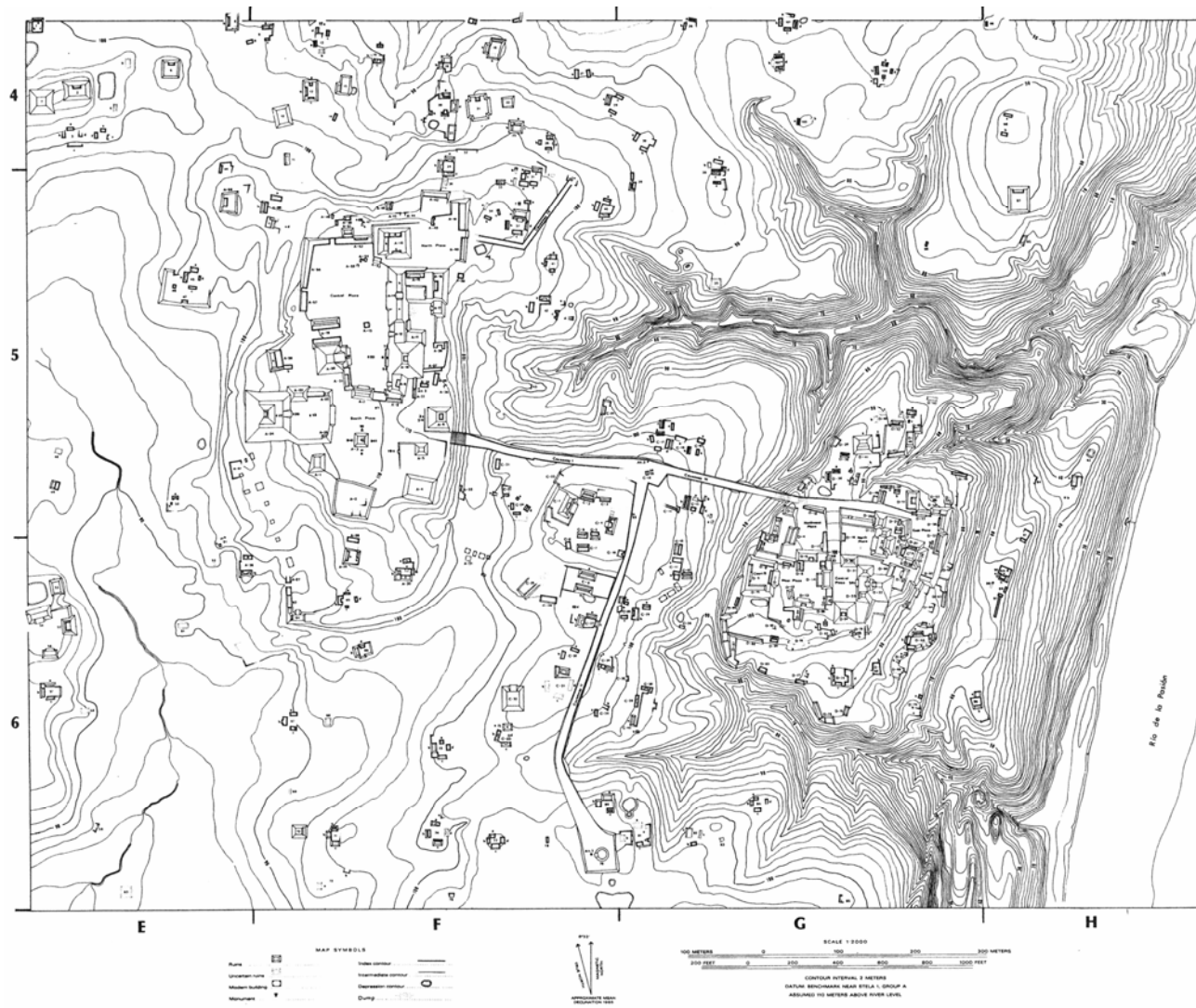


Figure 2.7. Ian Graham's map of central Seibal (from Tourtellot 1988: Map 3, p. 6).

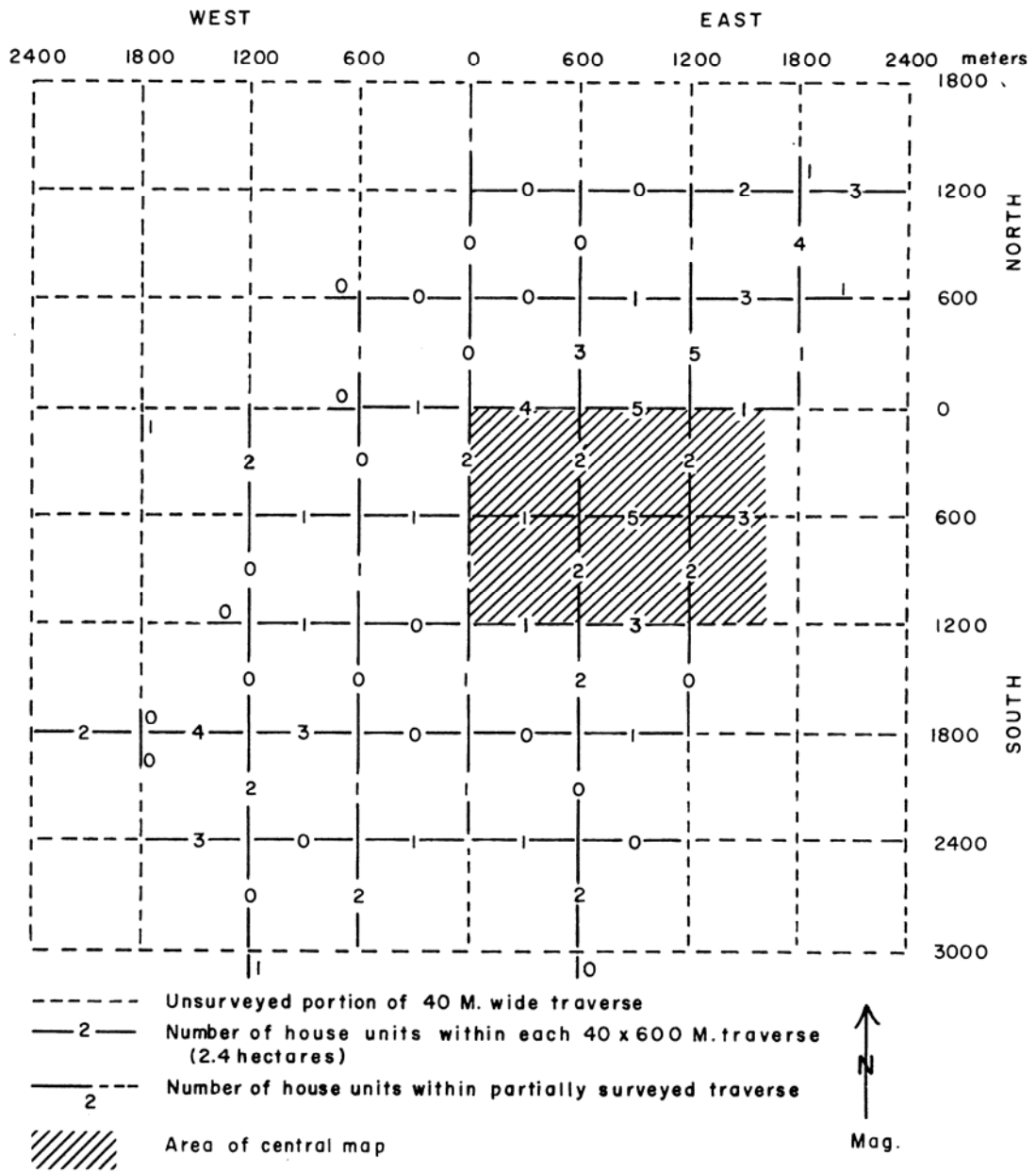


Figure 2.8. Grid system utilized in the Seibal settlement survey (from Tourtellot 1988: Fig. 2, p. 19).

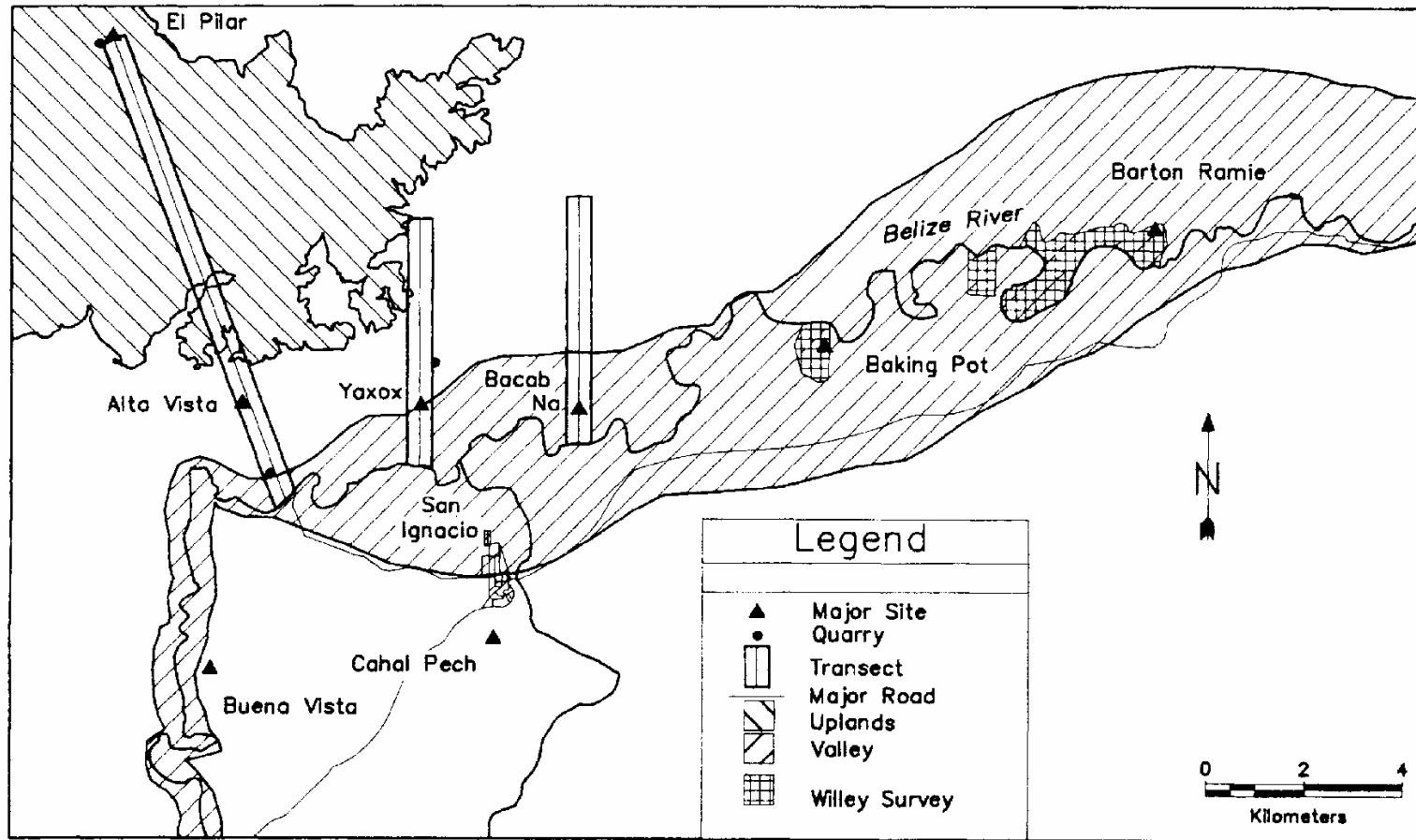


Figure 2.9. Map of the Belize River Archaeological Settlement Survey area (from Ford and Fedick 1992: Fig. 2, p. 37).

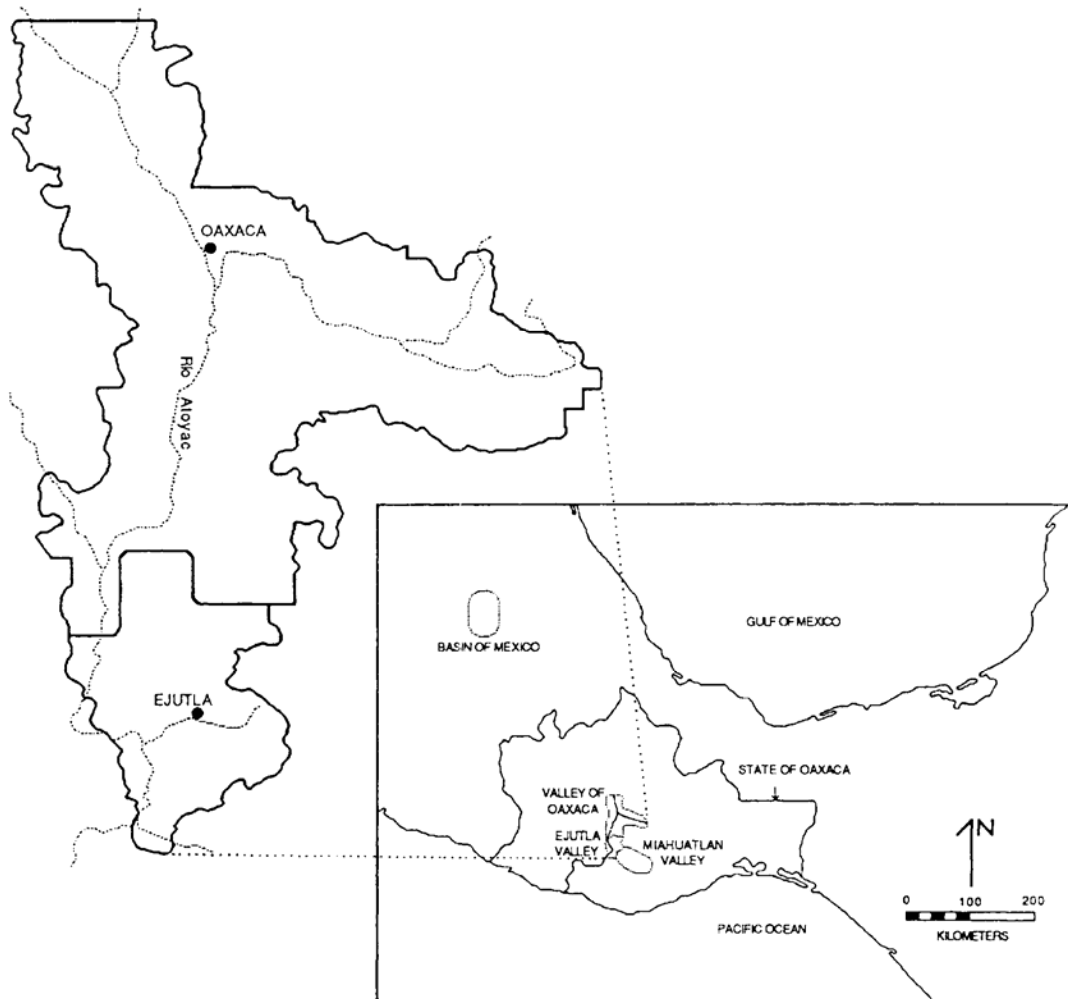


Figure 2.10. Map of the Valley of Oaxaca (from Feinman and Nichols 1990: Fig. 1, p. 218).

## CHAPTER III

### HISTORY OF EXPLORATION AND RESEARCH IN THE UPPER PASIÓN REGION

#### **Environmental and Ecological Setting of the Upper Pasión and Petexbatun Regions**

##### **The Pasión River Region**

The Pasión River region is located in the southwest portion of the Department of Petén, Guatemala and comprises the southwest extent of the Maya lowlands (Figure 3.1). The region is geographically defined by the Mopan hills on the east side, the Sierra mountains to the south, the Salinas-Chixoy River to the west, and the Pasión River to the north (Houston 1987; Mathews and Willey 1991). The Pasión drainage and its tributaries comprise an area of more than 5000 square kilometers. The Pasión River flows through the region beginning in the Alta Verapaz foothills. It flows north for 70 kilometers before turning west for another 60 kilometers where it joins the Salinas and Lacantun Rivers to form the Usumacinta River. The Usumacinta then flows northwest to the Gulf of Mexico. Together, the Pasión and Usumacinta Rivers served as the primary route of trade, communication, and interaction in the ancient Maya world.

The Pasión River region, and particularly the zone near the Pasión River itself, is rich with archaeological sites. A number of these sites are described in more detail later in this chapter. At the head of navigation near the foothills of the Alta Verapaz lies Cancuen, a wealthy and economically powerful kingdom in the Late Classic that is now being intensively investigated. Downriver from Cancuen is the site of Tres Islas, located

on a rise in a bend of the Pasión River. The site was first described by Ian Graham in the 1960s based on a trio of early Classic monuments but very little in the way of structures (Graham 1965). The likely early Classic site center, named “Raudal” for nearby rapids, was only recently discovered several kilometers east of the river by members of the Cancuen Regional Archaeological Project (Tomasic and Quintanilla 2004). To the northeast of Tres Islas on the Machaquila River, which is a tributary of the Pasión, is the site of Machaquila, which was recently investigated by a team of Guatemalan archaeologists (Chocon 2003; Ciudad Ruiz et al. 2004). The site of Seibal is located on high bluffs above the left bank of the Pasión River just as the river begins to turn to the west. Itzan is farther downriver on a tributary of the Pasión and the site of Altar de Sacrificios is situated strategically at the confluence of the Pasión and Salinas rivers. A number of other smaller sites, including La Amelia, La Caribe, Aguas Calientes, Anonal, El Cedral, and Raxruja Viejo, are located along the Pasión River and its tributaries.

## **The Petexbatun Region**

### *Ecological Setting*

The Petexbatun region, which is named for the Petexbatun Lake and River, encompasses an area of approximately 200 square kilometers and is located in the central northern part of the Pasión region between the Salinas and Pasión rivers (see Figure 1.2). The Petexbatun River emerges from an underground spring near the ancient site of Aguateca, flows north into the Petexbatun Lake, and then flows out of the lake farther north until it joins the Pasión River near the modern town of Sayaxche. The dominant



natural feature in the karst Petexbatun region is a series of uplifted horsts and dropped grabens along faults in the underlying limestone (Figure 3.2; Dunning and Beach n.d.; Dunning et al. 1997). The most dramatic of these is the Petexbatun escarpment, which runs in a roughly northwest-southeast direction for approximately 13½ kilometers, rising nearly one hundred meters from the adjacent graben to the east that contains the Petexbatun Lake and River (Figure 3.3). The land to the west gradually descends towards the Río Salinas approximately 20 km away. The low-lying grabens of the escarpment include large areas of uninhabitable swampland while the horsts are well drained and dotted with springs, along with sinkholes with rich, deep deposits of soil lining their bottoms (Dunning et al. 1992). The land at the foot of the escarpment along some sections of the Laguna and Río Petexbatun is among the richest in the region, with bedrock lying two to four meters below the modern ground surface.

Like the southern Maya lowlands as a whole, the Petexbatun region is characterized as having a humid tropical climate (Rice 1993; Vivó Escoto 1964). The year is divided into two seasons based on rainfall, the dry season from December or January through May and the rainy season from May through November or December. The exact onset and duration of the rainy and dry seasons varies, though, regionally and annually. In the Pasión region the average annual rainfall is approximately 2400 mm (Vivó Escoto 1964) and ranges from a monthly low of 50 mm in February and March to a high of 350 mm in September (Urrutia 1964; World Meteorological Organization 1979). The heavy annual rains and the limestone substrate have resulted in a number of features, including sinkholes, chasms, springs, and caves, that played important roles in the history of the region.

### *Archaeological Sites*

A number of significant sites are located in the Petexbatun region. The largest of these, Dos Pilas, Aguateca, and Tamarindito, possess monumental architecture and hieroglyphic inscriptions in the form of monuments and, in the case of Dos Pilas and Tamarindito, hieroglyphic stairways (Figure 3.4). Dos Pilas, named for a pair of springs at the site, is located near the northwest limit of the Petexbatun escarpment in an area of very thin soils that are poor for agriculture. Nonetheless, in the Late Classic period a large center with large temples and palaces was established there. Aguateca, the Late Classic twin capital of Dos Pilas, is located at the southeast edge of the escarpment with the site epicenter just above steep bluffs. A deep chasm divides the site center, which is home to numerous temples and carved temples (Figure 3.5). Tamarindito, the Early Classic capital of the region, is situated between Dos Pilas and Aguateca atop the highest section of a series of hills on the escarpment (Figure 3.6). Below the site are two springs and three small lakes. Although smaller than both Dos Pilas and Aguateca, Tamarindito possesses a number of temples and palaces, in addition to stelae and hieroglyphic stairways.

A number of smaller sites in the region, including Arroyo de Piedra, Punta de Chimino, El Excavado, and La Paciencia, have – or in some cases, had before looters struck – hieroglyphic inscriptions in the form of stelae, hieroglyphic stairways, and/or panels (Figure 3.7). Punta de Chimino is especially significant in that it is the only significant site in the region that is not located on the Petexbatun escarpment. Instead, it is located on a peninsula that extends out into Lake Petexbatun (Figure 3.8). The

strategic location of the site and its protected gardens (see chapter 7) allowed a small population to briefly survive and even thrive there after much of the remainder of the region was abandoned in the Terminal Classic period.

The remainder of the land atop the escarpment and to the west is dotted with settlements that range in size from small villages, such as Quim Chi Hilan and Cerro de Miguel, to scattered households. There is little evidence of occupation in the few areas of year round dry land off the escarpment but a pair of early villages, Bayak and Battel were discovered in 1993 (Van Tuerenhout et al. 1993). Overall, general settlement patterns in the Petexbatun region are similar to those seen throughout the Petén by the Classic period: a number of large primary and secondary sites in the region with numerous villages and homesteads scattered throughout the countryside.

#### *Recent Settlement History*

For more than a millennium after the Petexbatun was almost completely abandoned in the early ninth century the region remained largely devoid of population. Such a population history is common throughout most of the southern lowlands. In fact, towards the end of the 19<sup>th</sup> century the population of the Petén has been estimated as something less than 7000 people, approximately a third of who were native Lacandon Indians (AVANSOCO 1991). The number of Lacandones is similar to Pinelo's (1941) estimate for the middle of the 19<sup>th</sup> century.

In the Petexbatun a few Lacandon families, numbering less than 20 individuals, lived in the region in the 1860s. By 1930 the remaining Lacandones had abandoned the region, forced out by the logging industry that sought to harvest the mahogany and cedar trees in the region. As logging became more profitable, the town of Sayaxche, located at

the confluence of the Pasión and Petexbatun rivers, grew and in 1929 it was made capital of a *municipio* of the same name (Secaira 1992). Over the ensuing 75 years both the town and the municipio of Sayaxche have continued to grow. In the early 1990s the estimated population of the town was 4260 and the municipio 80,000, making it the second largest in the Petén (ibid.). As population grew in the region, some began to follow the Petexbatun River and establish permanent settlements. The initial settlers were Ladino but in 1961 the first Q'eqchi' Maya settlers moved into the Petexbatun. During the 1970s increasing numbers of Q'eqchi' moved into the Petén and in the 1980s several permanent villages were established in the Petexbatun region (Schwartz 1990).

Large swaths of the Petexbatun have been cleared of its majestic jungle cover by the last century of logging and milpa agriculture. Dense secondary growth sprouts from abandoned milpas and many of the giant hardwood trees have been removed. Unfortunately, the pace of destruction has increased since 1996 when the peace accords ended Guatemala's 36-year civil war and indigenous groups began to seize land and archaeological sites in order to assert their rights after 500 years of repression.

## **Previous Research in the Greater Pasión Region**

### **Early Explorations in the Greater Pasión Region**

The Classic period Maya abandoned the greater Pasión region in the early ninth century and, like much of the southern lowlands, for the next millennium the region remained largely devoid of population. Spanish officials and their agents in the 16<sup>th</sup> through 19<sup>th</sup> centuries focused their attention on a few ruins in the northern lowlands and

elsewhere, closer to and more accessible from their colonial cities and towns. Even when intrepid explorers, such as John Lloyd Stephens and his companion Frederick Catherwood, began to penetrate the jungles of the southern lowlands in the middle of the 19<sup>th</sup> century (Stephens 1841, 1843), the ancient centers of the greater Pasión region remained “lost” to the outside world.

Finally in the late 19<sup>th</sup> century explorers penetrated the region. In 1882 Alfred Maudslay made a brief visit to the site Altar de Sacrificios at the confluence of the Pasión and Usumacinta rivers (Maudslay 1883). A decade later Federico Artes visited Seibal under commission from the Guatemalan government in order to make casts of monuments to be exhibited in 1893 at the Chicago Exposition (Maler 1908; Willey et al. 1975). In 1895 Teobert Maler very briefly visited Altar de Sacrificios and Seibal. The excursion to the latter site was undertaken at the recommendation of a government official in Flores who reported that fine sculptures had been uncovered when loggers constructed their camp (Maler 1908). Once at Seibal Maler photographed the ruins and monuments and produced a sketch map of a portion of the site (Figure 3.9). In 1904 he revisited Altar as a member of an expedition with Harvard’s Peabody Museum to photograph monuments and sketch a site map there. The following year he returned to Seibal where he corrected his earlier maps and, thanks to technological improvements in the fledgling field of photography, produced more detailed photographs of the monuments (Figure 3.10; *ibid.*). In 1914 and 1915 Sylvanus Morley and Herbert Spinden visited Seibal and Altar. They discovered additional monuments at both sites, revised Maler’s maps, and at this time Morley began his work deciphering the dates on the monuments. Morley visited a number of other sites in the region and the description of

these, in addition to his drawings of monuments, appear in his multivolume publication for the Carnegie Institution of Washington (Morley 1937-1938). In 1937 the Carnegie mounted an expedition to Altar de Sacrificios. Harry Pollock, Ledyard Smith, and Edwin Shook prepared a more complete map of the site and discovered additional monuments (Kidder 1937). This work laid the foundation for the Peabody Museum's large-scale project at the site.

### **The Harvard Peabody Museum Altar de Sacrificios and Seibal Projects**

The first major archaeological research in the greater Pasión Region was the Peabody Museum of Harvard University's project at Altar de Sacrificios (see map, Figure 3.1) that commenced in 1959 and concluded in 1963 under the direction of Gordon Willey and Ledyard Smith (Willey 1973; Willey and Smith 1969). Over the course of the project the site was mapped, several of the large structures in the epicenter were excavated, and all of the 41 small platforms – assumed to be house mounds – at the site were tested. The researchers discovered a long occupation history for the site, including some of the earliest ceramic evidence of occupation in the southern lowlands, the Middle Preclassic Xe complex. The Altar project provided the first ceramic chronology for the region (Adams 1971), in addition to information on stone, shell, and bone artifacts (Willey 1972), iconography and epigraphy (Graham 1972), osteology (Saul 1972), and architecture, settlement, and burial practices (Smith 1972). The data from the Altar project allowed the investigators to offer hypotheses on important processual issues, including the Terminal Classic “Collapse” of southern lowland Maya civilization. The researchers concluded that the site had fallen to invaders, although they debated whether

there were two invasions (Adams 1973; Willey 1973) or only a single invasion (Sabloff and Willey 1967).

Immediately upon completion of fieldwork at Altar de Sacrificios, the Peabody began a new project upriver at Seibal (see map, Figure 3.1). Field research began in 1963 under the direction of Gordon Willey and concluded in 1968 (Willey 1990; Willey et al. 1975). This project followed the Altar model methodologically but at a larger scale and the archaeologists employed a more complete approach. Specifically, Gair Tourtellot (1988) conducted an extensive survey of the Seibal residential zone, allowing for more accurate reconstructions of the site's culture history. The Seibal project included detailed studies of the site's ceramics (Sabloff 1975; Sabloff et al. 1982), architecture and caches (Smith 1982), osteological remains (Tourtellot 1990), and epigraphy and iconography (Graham 1990). These analyses – particularly the unusual Facies B stelae, fine paste pottery, and certain architectural features – were used in conjunction with the Altar project findings to bolster and refine the theory of the Terminal Classic invasion of the region by foreigners (Adams 1973; Sabloff 1973; Sabloff and Willey 1967; Willey 1990). Subsequent research, however, refuted the theory by reevaluating all of the lines of evidence and showing that the evidence generally cited for invasion could be explained away, often in local terms (cf. Bishop 1994; Foias and Bishop 1997; Mathews and Willey 1991; Schele and Freidel 1990; Schele and Mathews 1998; Stuart 1993; Wright 1994).

### **Early Reconnaissance and Study in the Petexbatun Region**

Around the time that the Peabody Museum was conducting its large-scale, systematic research at Altar de Sacrificios and Seibal, explorers and scholars – some of

whom were members of the Peabody projects – began to investigate other portions of the greater Pasión, including the Petexbatun region. The earliest documented visit to Dos Pilas occurred in the early 1950's when residents of Sayaxche reported discovering the site (Berlin 1960; Navarrete and Luján 1963; Vinson 1960). Aguateca was rediscovered by the outside world a few years later, also by inhabitants of Sayaxche. In the ensuing years a number of visitors investigated one or both of these sites (I. Graham 1967; J. Graham 1973; Greene et al. 1972; Grieder 1960; Ivanoff 1968; Vinson 1960). Robert Lindsley and Oscar Guzmán produced the first sketch map of Aguateca in 1958 (Graham 1967) and G. L. Vinson (1960) produced his own map a year later when he visited the site while working for the Standard Oil Company. Shortly thereafter Carlos Navarrete and Luis Luján embarked upon the first archaeological research at Dos Pilas, mapping part of the site and conducting limited test excavations (Navarrete and Luján 1963). From 1959 to 1962 Ian Graham made a number of trips throughout the greater Pasión region and produced maps and photographs and drew monuments (Figure 3.11) at a number of centers, including Dos Pilas, Aguateca, Machaquila, and Seibal (Graham 1961, 1967). He also identified wall systems that appeared to be defensive at both Dos Pilas and Aguateca (Figure 3.12).

Little fieldwork was carried out over the ensuing two decades but the growing corpus of inscriptions provided by these researchers, especially Maler's early photographs and Graham's drawings, provided a rich data set for epigraphic analysis in the 1970s and 1980s. At that time epigraphers were making breakthroughs in deciphering the ancient Maya hieroglyphic writing – work that continues today – and were able to finally read the inscriptions and formulate hypotheses on issues such as



political organization and polity interaction (Houston and Mathews 1985; Marcus 1973, 1976, 1983; Mathews 1979, 1985, 1988; Perry 1981).

Stephen Houston visited the Petexbatun region in 1984 and 1986 to conduct field research for his doctoral dissertation (Houston 1987). With Boyd Dixon and Kevin Johnston, he investigated sites in the region in order to search for additional inscriptions and record the context of the monuments. While fieldwork focused primarily on Dos Pilas where the researchers produced an extensive site map, they also explored and mapped Aguateca, Arroyo de Piedra, La Paciencia, El Caribe, El Excavado, Itzan, La Amelia, Tamarindito, Punta de Chimino, and several other small sites (Houston 1987, 1993).

### **The Vanderbilt University Petexbatun Regional Archaeological Project**

Intrigued by the wall systems at Dos Pilas and Aguateca and inspired by the issues raised by the Harvard projects at Altar de Sacrificios and Seibal, Arthur Demarest designed a large-scale, multidisciplinary research project in order to address the debate on the collapse of Classic period Maya civilization (Demarest 1997, 2006; Demarest and Houston 1989). The nature, intensity, and importance of ancient Maya warfare was also a key focus of the research. Beginning in 1986, Demarest laid the groundwork for a regional project that, unlike most archaeological projects in the Maya area up to that time, which focused on a single site and its outlining area or an ecologically defined zone, such as a valley, would explore a historically defined political region based on Classic period inscriptions. The project would explore all aspects of ancient life in the region at all levels of society, from large centers with massive ceremonial architecture and elaborate

monuments to the most humble villages and isolated settlements. Through this approach the entire history of a region would be analyzed and reconstructed in order to reevaluate theories on the so-called “Collapse.” With these goals in mind, the Petexbatun Regional Archaeological Project commenced in the spring of 1989 (Demarest and Houston, eds. 1991).

The Petexbatun region was selected because previous mapping and epigraphic research had demonstrated that warfare played an important role in the area and that the region was the earliest to be permanently abandoned in the Late/Terminal Classic Maya world. The initial fieldwork concentrated primarily on the site of Dos Pilas and emphasized the investigation of fortifications there and further epigraphic decipherment and interpretation. Preliminary research, consisting of mapping and surface collecting, was also conducted at the small peninsula site of Punta de Chimino by Takeshi Inomata (Inomata 1989). Inomata’s team discovered surprising evidence of warfare there in the form of three moat and wall systems that served to effectively cut the site off from the mainland and create an island fortress (Figure 3.13).

During the second season research expanded in order to explore the other significant sites in the region and to examine other aspects of ancient Maya life. Subprojects began mapping and excavating at Aguateca (Inomata et al. 1990), Arroyo de Piedra (Stuart 1990), and Tamarindito (Houston et al. 1990) while work continued at Dos Pilas (Chinchilla 1990; Foias 1990; Foias and Soza 1990; Inomata et al. 1990; Inomata and Symonds 1990; Palka 1990a, 1990b; Robles 1990a, 1990b; Robles et al. 1990; Symonds 1990; Symonds et al. 1990; Wolley and Wright 1990a; Wright 1990) and Punta de Chimino (Wolley and Wright 1990b). The Petexbatun Subterranean Survey Project

was initiated under the direction of James Brady (Brady et al. 1990) in order to study the caves in the region and the relation between the underground and surface worlds. Several material analysis subprojects were also initiated in 1990, including ceramic and chemical composition studies (Foias et al. 1990), osteological studies (Wright 1990), and the regional paleoecological and subsistence subproject (Demarest and Dunning 1990).

By 1991, the Petexbatun project included nearly 50 specialized scholars and graduate students and hundreds of local workers. A dozen semi-independent subprojects based at six camps scattered throughout the region were intensively studying warfare, economy, politics, and daily life through the analysis of ceramics, lithics, architecture and settlement patterns, human and faunal remains, paleoecology, paleobotany, and iconography and epigraphy. Also that season the Petexbatun Intersite Settlement Pattern Subproject was initiated under the direction of Tom Killion (Killion et al. 1991). This subproject investigated intersite zones in order to fully understand settlement strategies in the region over time and to correlate these strategies with socio-political events (see chapter 4 for the complete history, goals, and methodology of this subproject).

Over the next three years (1992-1994) the Petexbatun project continued these investigations on a scale – both in geographical area and in personnel – rarely seen in the Maya area before or since. A final field season was conducted in 1996 in order to more thoroughly excavate Punta de Chimino and to complete the regional settlement survey (Demarest, Escobedo, and O’Mansky 1997). The Petexbatun Regional Archaeological Project has yielded significant new data on many aspects of ancient Maya civilization, particularly the Classic period collapse (see chapter 8). These findings have been disseminated through a wealth of papers and publications, including more than twenty

Ph.D., M.A., and Licenciatura theses, nine volumes of preliminary Spanish reports, and scores of published articles and book chapters. Additionally, the first two volumes of the Vanderbilt Institute of Mesoamerican Archaeology monograph series on the Petexbatun project have been published (Demarest 2006; Wright 2006) and the next five volumes are in the final stages of preparation.

### **Recent and Ongoing Research in the Greater Pasión Region**

The last decade has witnessed several projects initiated in the greater Pasión region. In most cases these have direct links to the Petexbatun project. In 1996 Takeshi Inomata returned to Aguateca to continue the research he had conducted for his doctoral dissertation (Inomata 1995). With his co-directors Daniela Triadan and Erick Ponciano, the Aguateca Archaeological Project has been studying the evidence of rapid site abandonment in the Terminal Classic period (Inomata and Triadan 2003), an event first identified by Inomata (1995, 1997) while a member of the Petexbatun project.

At Laguna Las Pozas, located 7½ km southeast of Aguateca, Kevin Johnston and his colleagues extracted two cores from the lake in 1997 in order to collect paleoecological data (Johnston et al. 2001). Their analysis of the cores indicates that the area around the lake was occupied, deforested, utilized for agriculture, and reforested during the early Postclassic period (ca. A.D. 900 to 1200), a time when much of the southern lowlands was largely devoid of population. While no survey or settlement pattern research has yet been conducted around Laguna Las Pozas, the argument presented by Johnston and his colleagues based on the multiple analytical methods applied to the lake cores is convincing. It is not surprising that pockets of population

remained in remote regions of the southwest Petén and elsewhere long after the Terminal Classic collapse.

The largest recent project in the region in geographic, temporal, and logistical terms, is the Cancuen Regional Archaeological Project under the direction of Arthur Demarest. Several discoveries made by the Petexbatun project led Demarest and other project personnel to turn their attention to Cancuen. These include Dos Pilas Panel 19 (Figured 3.14), discovered in 1990 (Palka 1990b) and now on display in the Museo Nacional de Arqueología y Etnología in Guatemala City, and a fine masonry palace at Dos Pilas. Panel 19 depicts a young prince of Dos Pilas performing a genital bloodletting in the company of a number of witnesses. One of these is his mother, a wife of Ruler 3, and she is identified as a woman from Cancuen (Houston and Stuart 1990). Based on such discoveries and armed with the report by a small team from the Seibal project, which spent four days at Cancuen in 1967 (Tourtellot et al. 1978), several members of the Petexbatun project made reconnaissance trips to Cancuen.

In 1999 the Cancuen Regional Archaeological Project commenced work in the upper Pasión region (Demarest and Barrientos 1999). Like the initial field season of the Petexbatun project where the archaeologists focused primarily on Dos Pilas, initial research concentrated on the site of Cancuen while the project members became politically and socially acclimated to the region – a region that was previously almost entirely unknown archaeologically. During the second season project members began to identify additional sites that would later be mapped and excavated in the upper Pasión under the umbrella of Demarest's regional permit (O'Mansky 2000). As in the Petexbatun project, dozens of senior scientists and graduate students working with

hundreds of local workers are now exploring all aspects of ancient Maya life at sites throughout the region.

All of the research described above, in conjunction with past and present projects at sites along or near the Usumacinta River, such as Palenque, Piedras Negras, and Yaxchilan (Figure 3.15), are now allowing archaeologists to discuss and debate major themes in Maya research on a pan-regional scale. Scholars are now able to correlate archaeological, epigraphic, iconographic, and paleoecological data in order to reconstruct the history of the western Maya world. In fact, during the 2004 meetings of the Society for American Archaeology, Arthur Demarest and Gair Tourtellot organized a session wherein scholars who have conducted research at sites in the Pasión/Usumacinta region presented data from their site zones so that a coherent picture of the collapse in the west could begin to be formulated. Such macro-regional approaches will lead to a better understanding of all aspects of ancient Maya civilization.



Figure 3.1. Map of the Pasión region showing major archaeological sites (from Demarest 2006: Fig. 2.1, p. 14).

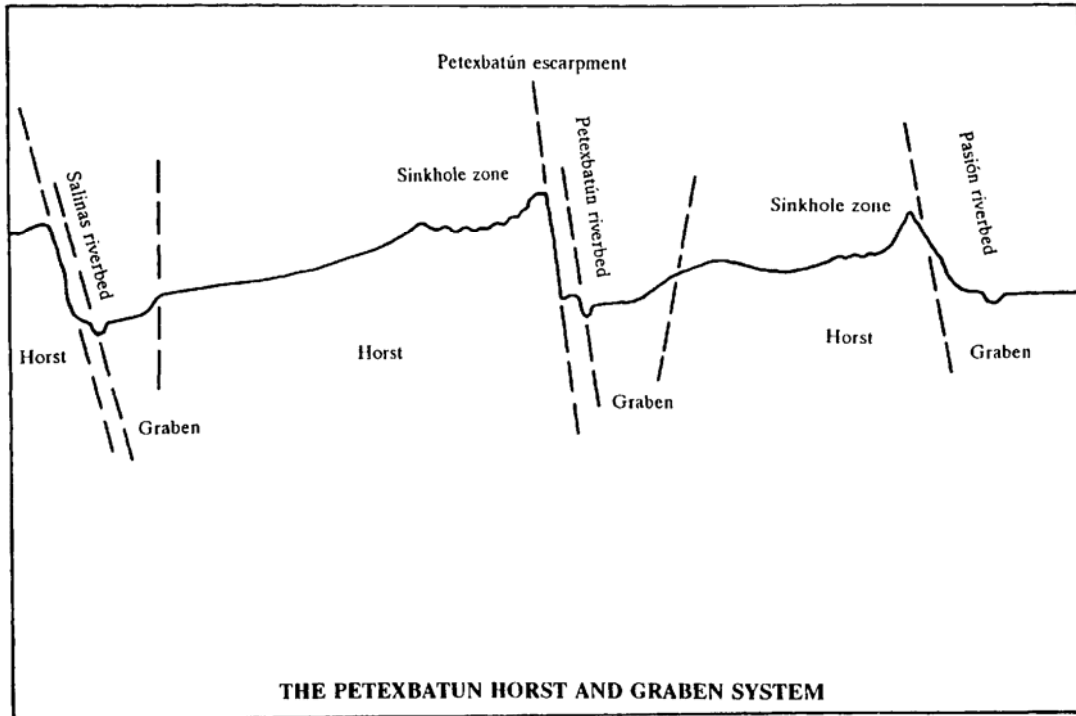


Figure 3.2. Profile of the Petexbatun region showing the system of horsts and grabens (from Dunning et al. 1991: Fig. 46.2, p. 831).

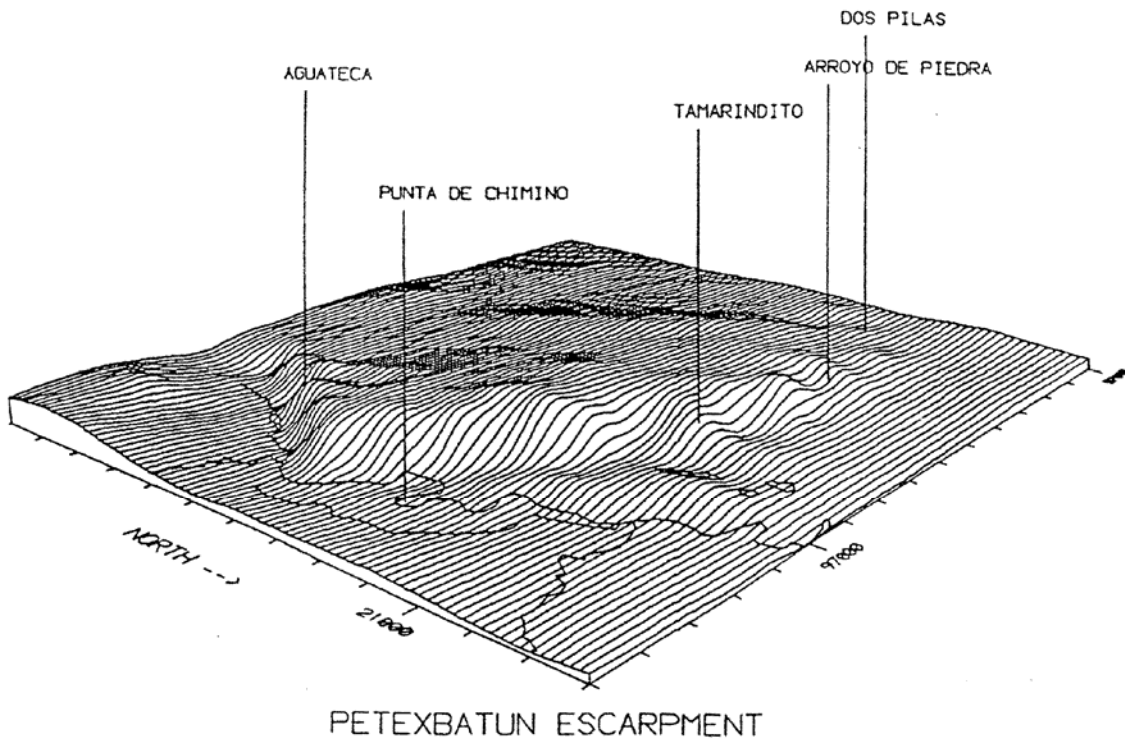


Figure 3.3. Three dimensional view of the Petexbatun region showing the escarpment (from Inomata 1995: Fig. 2.2, p. 57).





Figure 3.4. A hieroglyphic stairway from Dos Pilas (from Demarest 2006: Fig. 5.5, p. 59).



Figure 3.5. Map of Aguateca showing the chasm through the site center (from Inomata 1997: Fig. 3, p. 340).

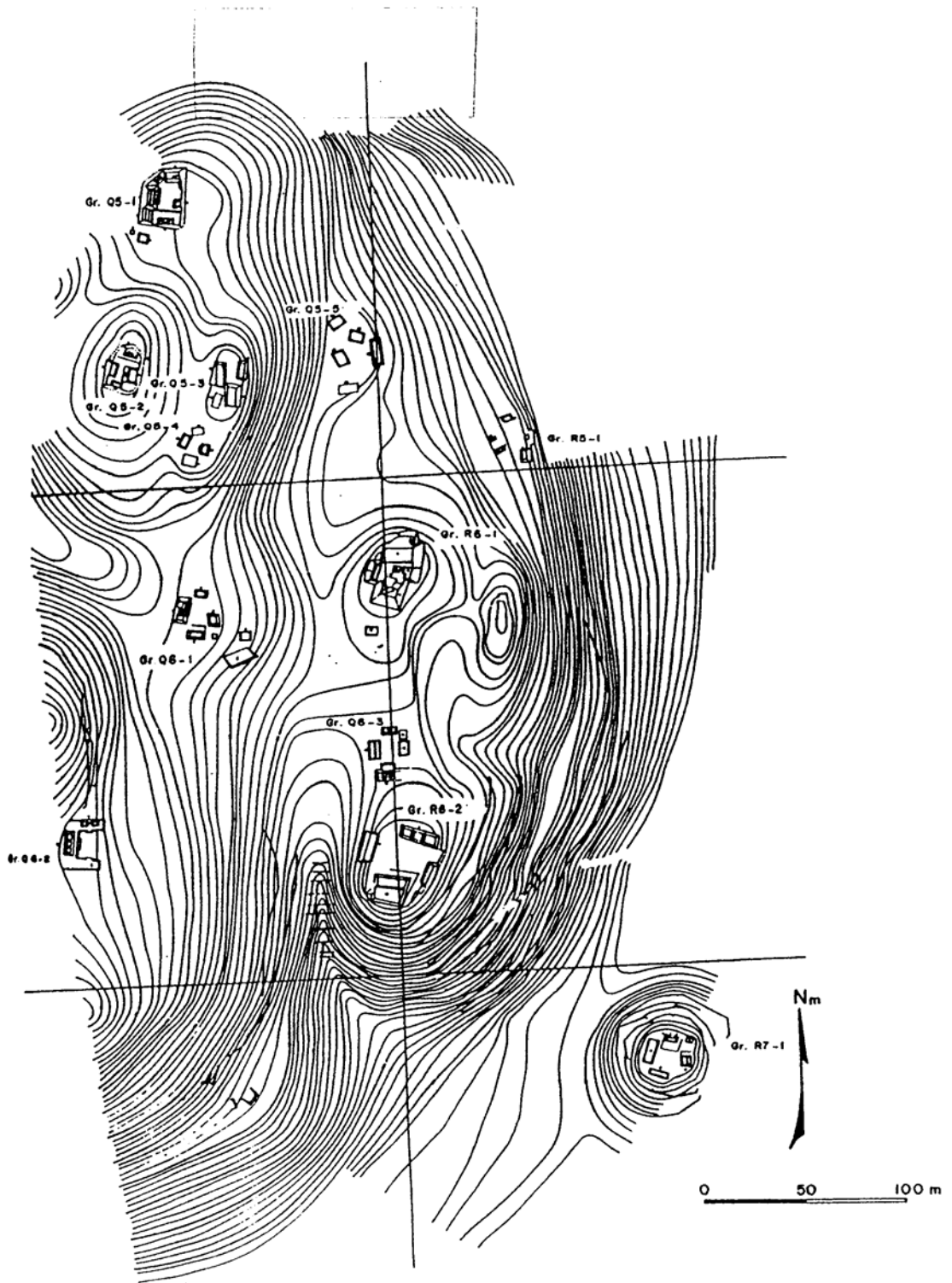


Figure 3.6. Map of a residential zone in the east part of Tamarindito showing topography (from Chinchilla 1993: Fig. 14.1, p. 115).



Figure 3.7. Photograph of a fallen stela from Arroyo de Piedra (from the slide library of Arthur A. Demarest).

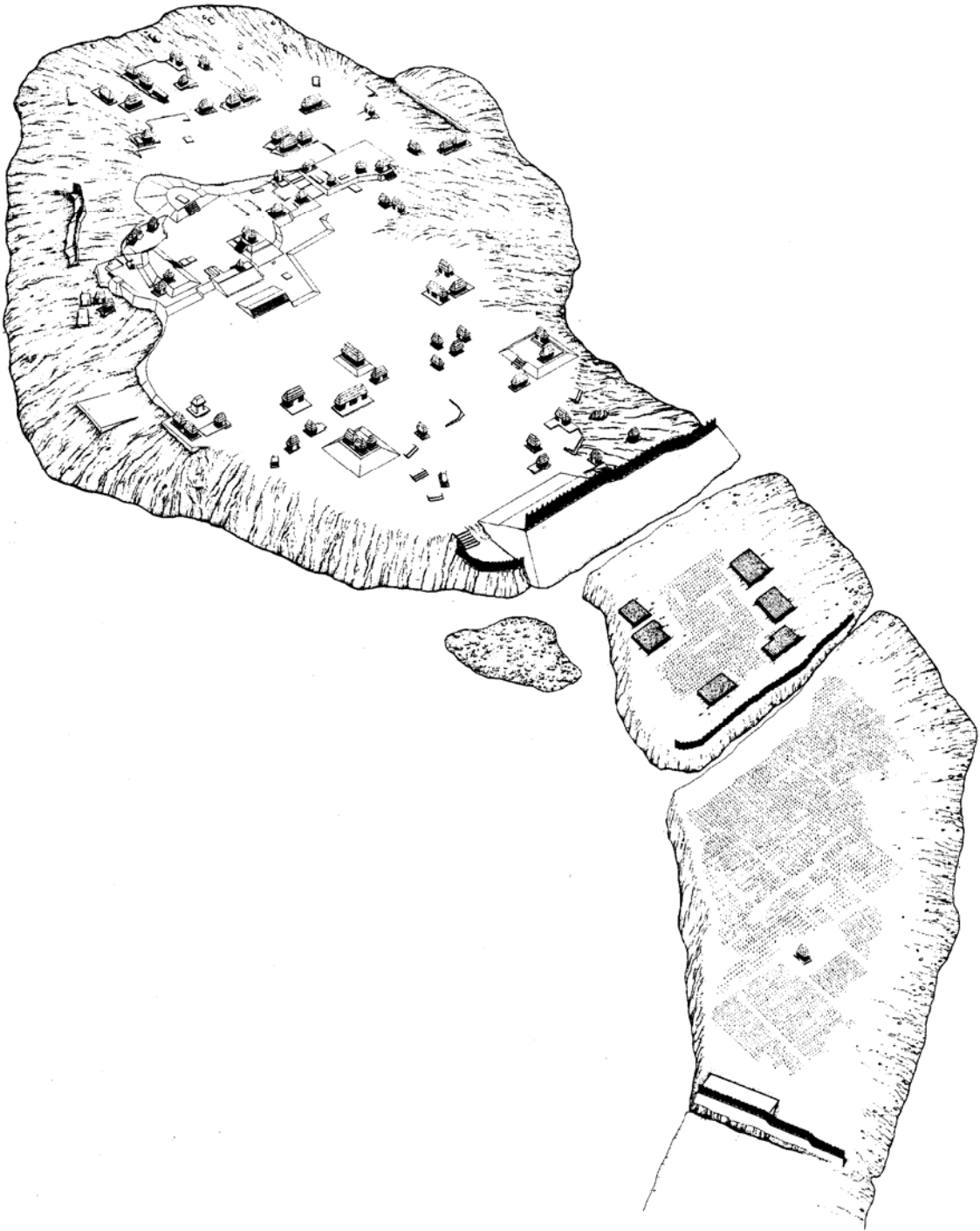
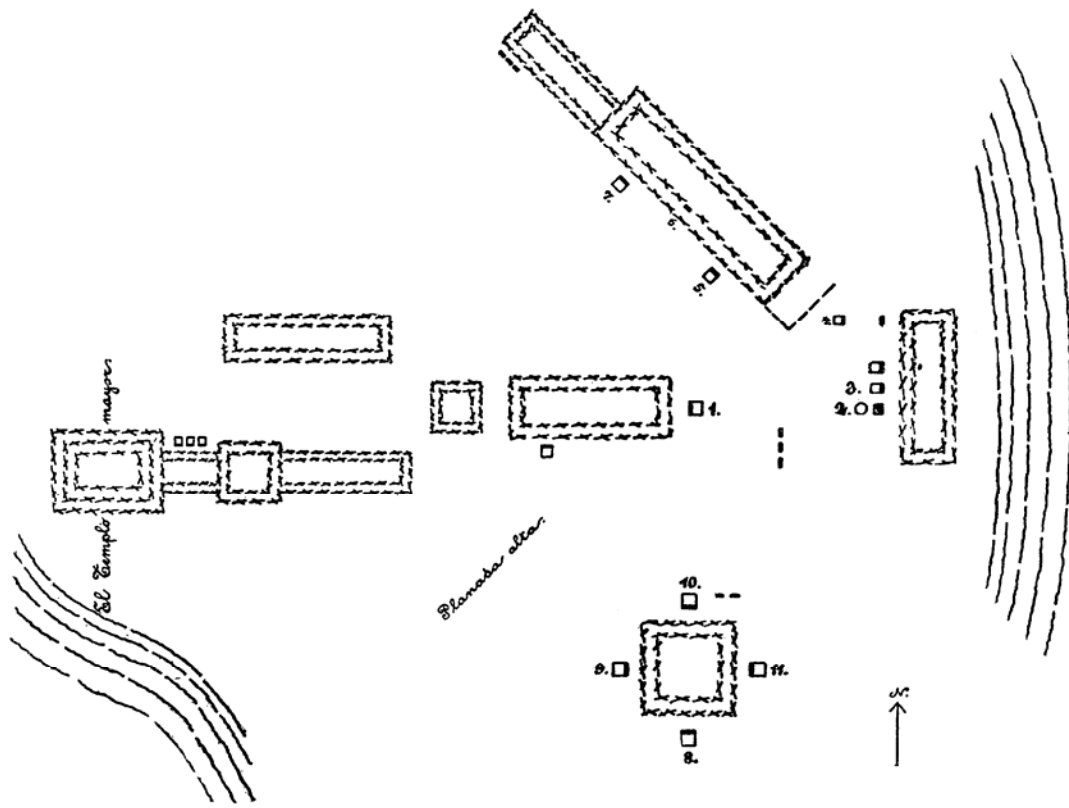


Figure 3.8. Reconstruction drawing of Punta de Chimino (from Demarest et al. 1997: Fig. 10, p. 240).



SEIBAL. PLAN OF RUINS.

Figure 3.9. Teobert Maler's map of Seibal (from Maler 1908: Fig. 3, p. 13).



Figure 3.10. Photograph of Seibal Stela 11 (from Maler 1908: Plate 9).

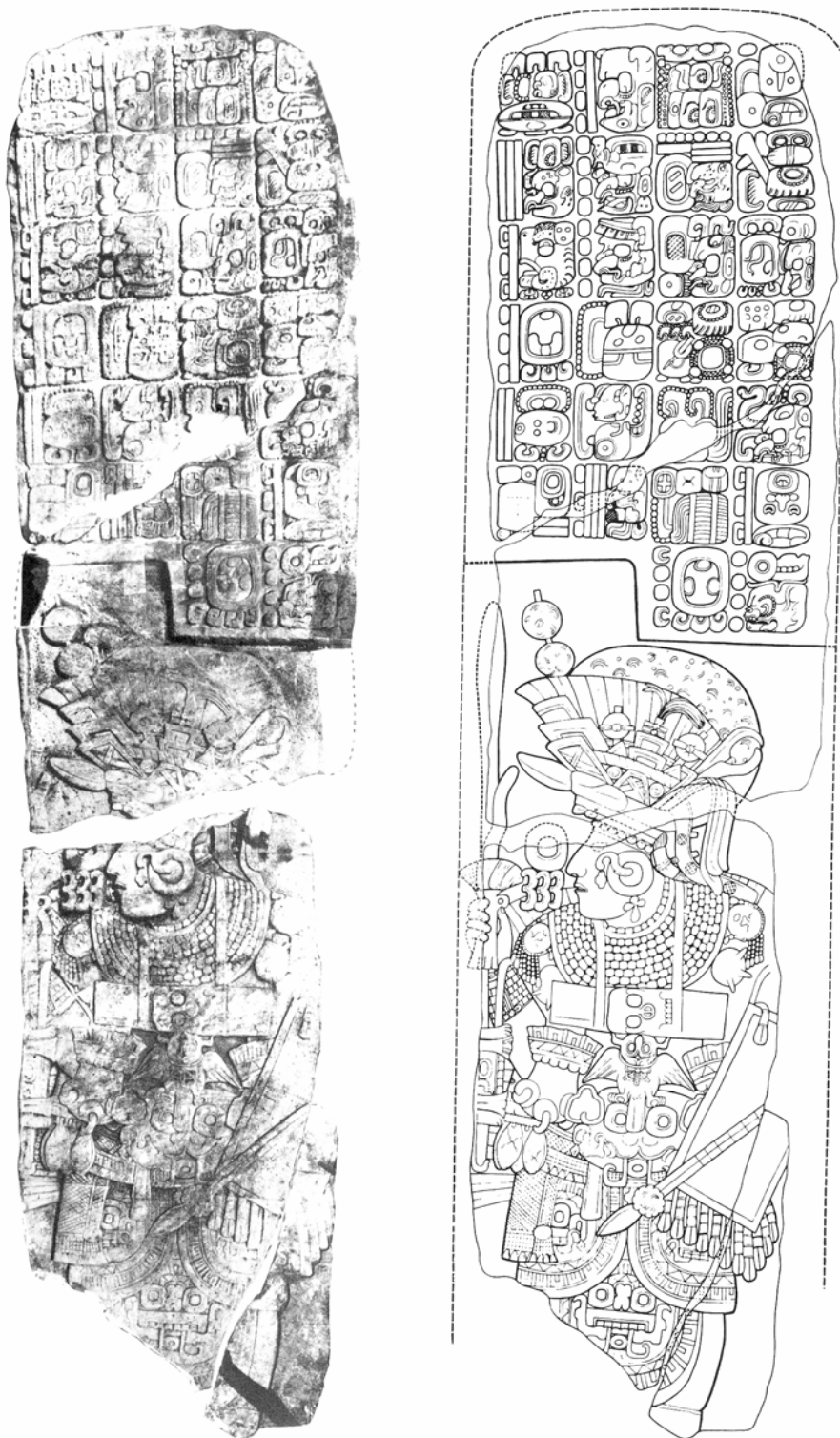


Figure 3.11. Photograph and drawing of Dos Pilas Stela 16 (from Graham 1967: Figs. 6 and 7, p. 12).



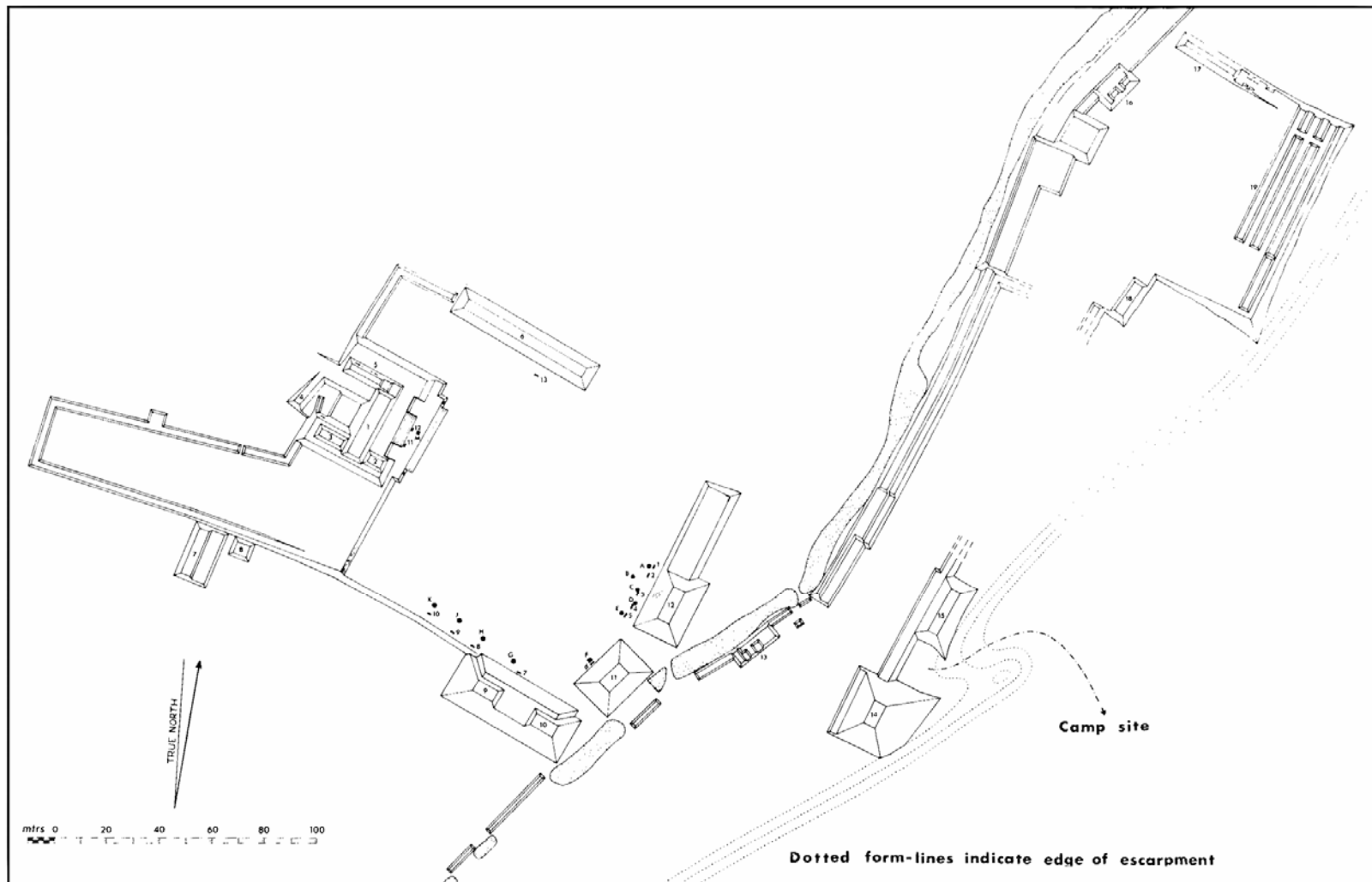


Figure 3.12. Ian Graham' map of Aguateca (from Graham 1967: Fig. 1, p. 2).

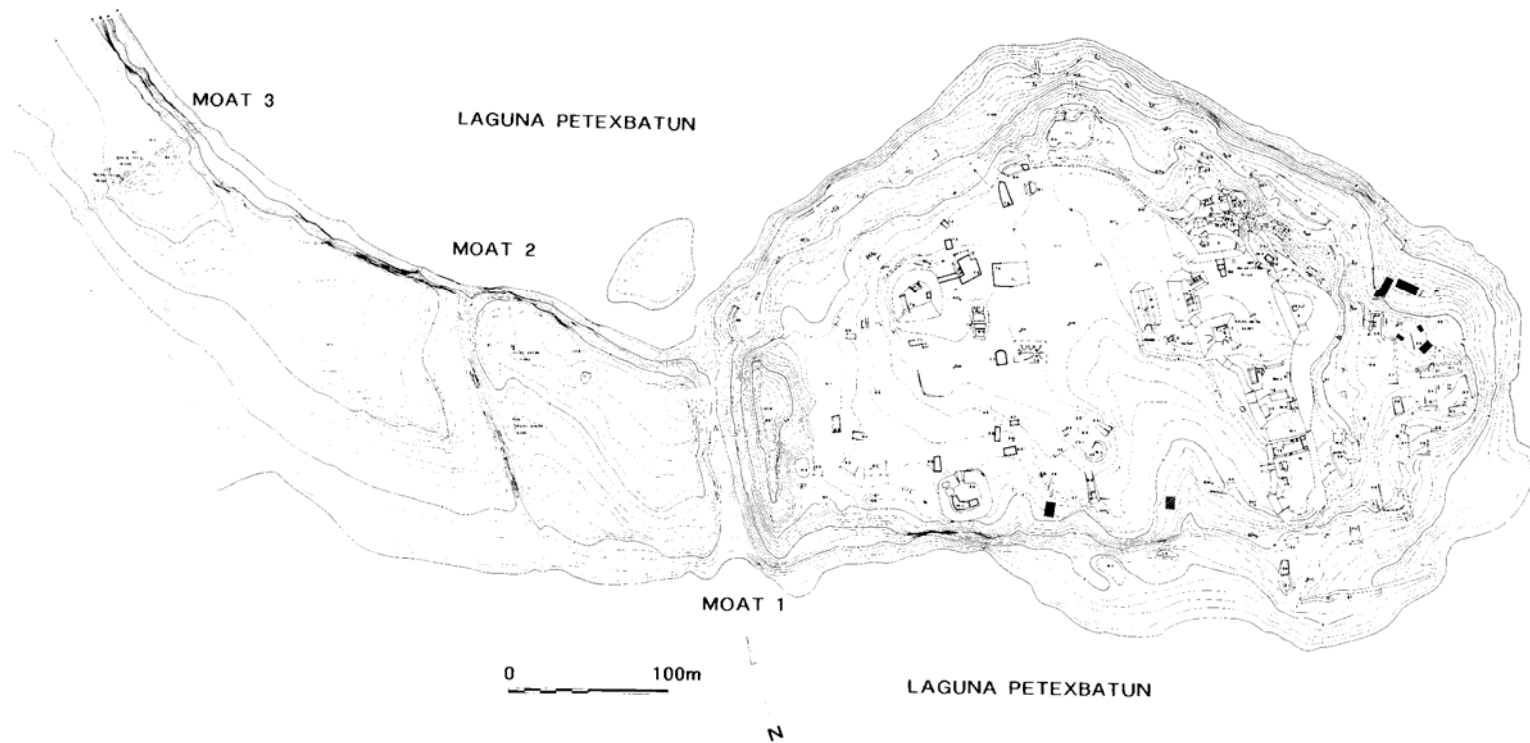


Figure 3.13. Map of Punta de Chimino showing defensive features (from Demarest et al. 1997: Fig. 9, p. 239).



Figure 3.14. Dos Pilas Panel 19 (from Demarest 2004b: Fig. 9.9, p. 226).

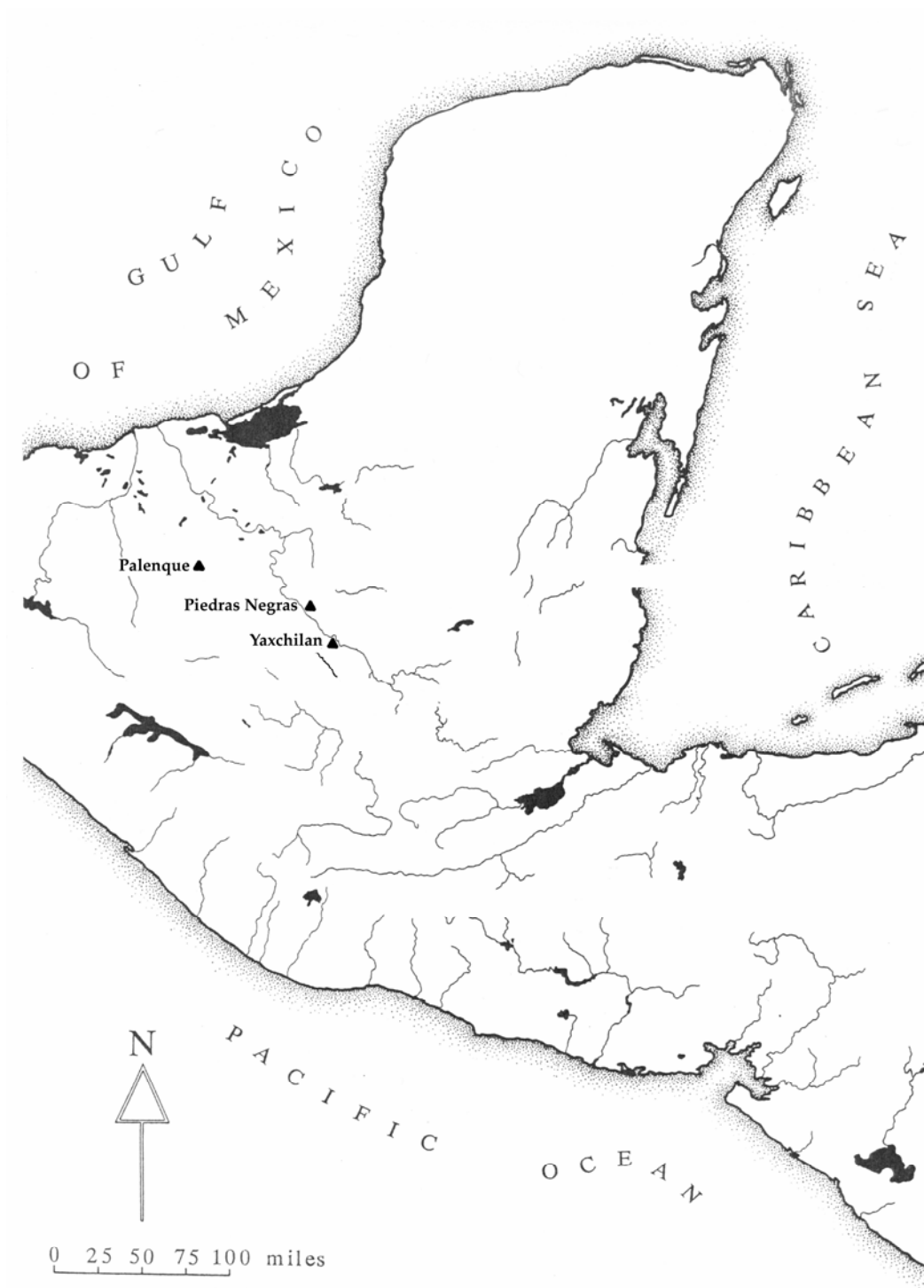


Figure 3.15. Map of the Maya area showing sites along the Usumacinta chapter mentioned in this chapter.

## CHAPTER IV

### THE PETEXBATUN INTERSITE SETTLEMENT PATTERN SUBPROJECT

#### Goals of the Petexbatun Intersite Settlement Pattern Subproject

From its inception, the Petexbatun project was intended to be a regional project in scope. As discussed in chapter 3, warfare and the collapse of Classic Maya civilization were to be studied on a regional scale, at all levels of society, by an interdisciplinary team of scholars. Thus while initial fieldwork focused on the major sites in the region – sites with nucleated, large scale constructions and carved monuments – a regional settlement pattern study was always part of the research design. This intention was made clear by the Petexbatun Regional Archaeological Project directors in their introduction to the report of the first field season, writing that one of the goals of the project was to “map the escarpment of the Petexbatun and the adjacent uplands” (Demarest and Houston 1989: 7).

While research both before the Vanderbilt Petexbatun project and over the first two seasons of that project began explorations of these features, little was known of the density and distribution of settlement between the major sites in the Petexbatun region before the third field season in 1991. Prior to that season Houston had explored the escarpment as part of his dissertation research in the 1980s (Houston 1987) and during the 1989 and 1990 field seasons Takeshi Inomata conducted reconnaissance north of Aguateca (Inomata et al. 1990) but information was known about the chronology, settlement patterns, or factors surrounding the conditions of settlement in intersite areas.

Thus the Petexbatun Intersite Settlement Pattern subproject was initiated in order to map and test areas between and around the major Petexbatun sites, including samples of all ecological zones, in order to understand the development of regional settlement over time, the relationship between settlement and the environment, and the impact of political events – particularly Late Classic warfare – on settlement strategies. The specific objectives of the subproject, which consisted of a program of mapping and excavation, were:

- 1) to develop an understanding of the temporal and spatial variation of the distribution of ancient settlement outside of Maya centers;
- 2) to recover information about the ancient agricultural systems in the region, and;
- 3) to document the evidence of ancient warfare in intersite zones (Killion et al. 1991).

The data collected toward these objectives would facilitate the calculation of population estimates, which could then be used in conjunction with paleoecological data to understand the ways in which the ancient Maya succeeded – and failed – in maintaining relatively high population levels in the region. Toward this end the subproject sought to discover what factors, including environmental, agricultural, and political, were issues in ancient settlement location and how these factors and their impact on settlement strategies changed over time. Thus the Intersite Settlement Pattern subproject recorded information that would yield data on ancient population levels and ancient agricultural techniques, including all methods of modifying the landscape, such as wall segments and terraces, during all time periods (*ibid.*: 591).

## **History of the Petexbatun Intersite Settlement Pattern Subproject**

In February of 1991 the intensive study of settlement patterns in intersite areas in the Petexbatun region began. The investigations of the subproject were initially directed by Thomas W. Killion, then of Boston University (Killion et al. 1991). The settlement pattern studies of the Petexbatun during the 1991 season were conducted in conjunction with Nicholas Dunning's studies of Precolumbian and contemporary ecology (Dunning 1991). In addition to Killion, members of the Intersite Settlement Pattern subproject in 1991 included Dirk Van Tuerenhout of Tulane University, Daniela Triadan of the University of Berlin, Inez Verhagen of Vanderbilt University, Lisa Hamerlynck of the University of Oregon, Matthew McDermott of the University of Hawaii, and José Genovés of the University of San Carlos of Guatemala. Field work was assisted by 16 Q'eqchi Maya workmen who were hired from the village of El Excarvado (Killion et al. 1991). Based on the local environment, which consists largely of heavy secondary growth or primary jungle, it was obvious from the start that full coverage survey was not an option. Therefore a sampling transect strategy, the specific methodology of which is discussed below, was employed (see Figure 1.4). During the 1991 season two transects, Transect 1 and Transect 2, were mapped. Base camp for the intersite settlement pattern team that season was at the Posada de Mateo, located at the site of Punta de Chimino and owned by John and Aurora Schmidt. It was therefore necessary to travel each day to the transects via boat and foot on a round trip journey that took approximately three hours.

After the 1991 season Killion began a job with the Smithsonian Institution and was therefore unable to continue active fieldwork with the Petexbatun project. In 1992 Van Tuerenhout led excavations in the walled Transect 1 village of Quim Chi Hilan

(Figure 4.1) as additional transect mapping was placed on a short hiatus (Van Tuerenhout and Verhagen 1992). During the 1993 field season Van Tuerenhout continued to direct the Intersite Settlement Project as additional excavations were conducted at Quim Chi Hilan (Van Tuerenhout, Méndez, and Alldritt 1993). A third transect, Transect 3, which is the only Petexbatun transect that is located entirely off of the escarpment, was mapped that season (Van Tuerenhout, Henderson, et al. 1993). To facilitate mapping on the new transect a base camp was constructed under the direction of John Schmidt along the river north of Punta de Chimino and a ten to fifteen minute walk north of the transect's benchmark, which was near the modern village of El Faison.

By the end of the 1993 field season Quim Chi Hilan had been extensively excavated and Van Tuerenhout left the Petexbatun project to focus on the write up of his dissertation, which focused on the Late Classic history of that Transect 1 village (Van Tuerenhout 1996). A new director of the Intersite Settlement Pattern subproject was therefore needed and a fortuitous series of events led to me continuing the work of Killion and Van Tuerenhout.

After graduating from Indiana University in 1991 I went to Europe where I participated on a Magdalenian dig in the Oise River Valley under the direction of the prominent French archaeologist Françoise Audouze and James (Jim) Enloe (Audouze and Enloe 1991; Enloe 1997). Over the next two years I engaged in a variety of activities, including working in a physical anthropology laboratory at Johns Hopkins University in Baltimore and archaeological fieldwork at Chau Hiix, Belize with Anne Pyburn, then of Indiana University-Purdue University at Indianapolis (Andres and Pyburn 2004; Pyburn 2003). While at Chau Hiix I directed the site's settlement survey with John Douglas,



then a graduate student at the University of Pittsburgh. By the fall of 1993 I had decided it was time for graduate school and I sent out my applications and visited some of the universities on my list.

While at the University of Arizona I had a lengthy meeting with Pat Culbert. In the course of our conversation I talked about my settlement mapping at Chau Hiix and, upon hearing that, Dr. Culbert asked me if I was available the following spring. He had been contacted shortly before by Bill Saturno, then a Ph.D. candidate at Harvard University, to inquire if he knew any archaeological surveyors who were free for fieldwork in the spring of 1994. Culbert gave me Saturno's contact information and I called Saturno the following week. Saturno was very friendly and informed me that Ron Bishop of the Smithsonian Institution was the one looking for a surveyor. I contacted Dr. Bishop who told me the individual behind this grand search for a mapper was Vanderbilt University's Arthur Demarest, who needed someone for the 1994 field season of the Petexbatun project. Coincidentally, Vanderbilt was one of the schools to which I had applied. Shortly thereafter I was brought on board to direct the Intersite Settlement Pattern subproject.

I was joined in the field by Q. Joshua Hinson, a fellow incoming graduate student at Vanderbilt, Kay Sunahara, then a Masters student at Trent University, and professional surveyor Robert (Bob) Wheat, who had also assisted with the intersite settlement survey in 1993. At the start of the 1994 field season we lived at the river camp that had been constructed the previous year so that we were conveniently close to Transect 3 where we excavated test pits in one of the Preclassic villages, Bayak (Figure 4.2; O'Mansky, Hinson, Wheat, and Sunahara 1995). After completing excavations there we turned out

attention to Transect 2, which had been mapped three years earlier but had yet to be excavated. We completed a 10% sample of that transect (*ibid.*), then moved our base camp to Aguateca.

By 1994 Aguateca had been thoroughly mapped by Takeshi Inomata and the center of the site had been extensively excavated (Inomata 1991a., 1991b, 1993a, 1993b; Inomata and Moscoso 1991; Inomata, Symonds, et al. 1990; Inomata and Wright 1991). However, only a few excavations had been conducted beyond the epicenter (Chinchilla 1991; Moscoso 1991a, 1991b; Wright and Chinchilla 1991). Therefore, after moving to Aguateca in 1994 our team excavated a number of small, outlying residential structures north of the site center (Figure 4.3; O'Mansky, Hinson, and Sunahara 1995). Finally, we mapped and excavated an additional transect, Transect 4, west of Aguateca where we discovered a series of small, fortified hilltop villages (O'Mansky, Hinson, Wheat, and Demarest 1995).

It is important to note an unfortunate and significant shortcoming regarding the records and reporting of the 1994 Intersite Settlement Pattern subproject field season. For a number of excavations on Transects 2 and 3 and the outlying area north of the Aguateca site center we have little information beyond the approximate location of test pits and the artifacts recovered. One member of the team, who fortunately departed the project early before even more damage could be done, did not keep adequate field notes. In fact, after the season ended that member admitted that he/she did not really take any field notes (I am being intentionally vague here out of courtesy to this onetime colleague). Fortunately, the artifacts recovered from those excavations were consistent with other, thoroughly documented, test units in each affected area so we are confident in

our assessments of structure function and period of occupation for those poorly recorded structures.

By the end of the 1994 field season a total of six seasons of fieldwork had been conducted by the Petexbatun Regional Archaeological Project. We decided not to have a field season in 1995 so that we could continue analyzing the great quantities of recovered artifacts and other data collected over the previous years, allowing us to develop a research design for a final season of fieldwork the next year. In 1996, a small crew returned to the Petexbatun, where we lived in a field camp constructed between two of the three moats at Punta de Chimino. While most of the archaeologists focused on excavations at that site, Bob Wheat and I continued the Intersite Settlement Pattern subproject. We first extended Transect 4 to confirm that no settlement existed west of Aguateca beyond the villages discovered in 1994 (O'Mansky and Wheat 1995a). We then returned to Transect 2 in order to extend that transect so that we could ascertain the extent of settlement inland from the escarpment edge (O'Mansky and Wheat 1995b). While some lingering questions remain, the end of Guatemala's long civil war in December of 1996 ironically made it much more dangerous to work in the country. We did not return to the field until 1999 when I joined Demarest and a team of American and Guatemalan archaeologists to begin work far up the Pasión River at the site of Cancuen (Demarest and Barrientos, eds. 1999). Thus, as always in archaeology, more fieldwork could be conducted in the Petexbatun in general and in intersite zones in particular.

## **Methodology of the Petexbatun Intersite Settlement Pattern Subproject**

In order to accomplish the goals of the Intersite Settlement Pattern subproject an appropriate strategy was needed. Given the nature of the environment, in conjunction with the fact that the only maps of the region were the 1:50,000 scale maps of the Instituto Geográfico Militar de Guatemala, a sampling strategy was needed that would produce an accurate representative reconstruction of ancient Maya settlement patterns in the Petexbatun. Thus a series of transects was planned since the combination of high forest and dense secondary growth made full coverage survey of the region impossible and the area to be investigated was large. In fact, the total territory estimated to have been the domain of ancient intersite settlement in the Petexbatun incorporated 30 square kilometers (Killion et al. 1991: 594). The original plan was for five transects, each measuring 200 meters wide by two kilometers long and oriented east to west, resulting in approximately a 7% sample of the 30 square kilometer zone (Figure 4.4). The transects would run through all seven ecological zones in the region, as defined by Inomata (1995: 43-46) based largely on water availability and terrain drainage, following Dunning's ecozone classifications (Dunning et al. 1991: 833):

*Zone 1 (swamp): This mainly refers to the low wetland east of the Petexbatun River, but there are also small areas of swamp to the west of the river. These areas are permanently or seasonally inundated by the river and are not adequate for occupation. There are no modern settlements in this zone. The vegetation is seasonal swamp thicket or swamp vegetation.*

*Zone 2 (dry terrains along the river): High dry terrains along the western bank of the Petexbatun River below the escarpment are most adequate for human habitation. Modern settlements in the region first developed in this zone. The survey of the Petexbatun Project has located archaeological sites such as Punta de Chimino and Tix Li Po (in the first transect). The zone was originally*

*covered with the high canopy of rainforest although a large area is now open or covered with secondary vegetation.*

*Zone 3 (escarpment slope): Escarpment slopes are too steep in most places and are not used for occupation today. However, some areas are opened for milpa cultivations. The survey of the Petexbatun Project... discovered small settlements (in the first transect) and some defensive walls. They are covered with the high canopy of rainforest*

*Zone 4 (high terrain along the escarpment): This refers to the roughly 1 km wide area along the escarpment edge. Terrains are well-drained and soils are fertile. This zone also provides the best locations for defensive purposes. A disadvantage of this zone is difficult access to water: There is no surface water and the water table is deep from the surface. This is why there are only few modern settlements in this zone. However, the area along the escarpment is still close enough to the river, lakes, and springs below the escarpment, and most major centers such as Aguateca, Excavado, Tamarindito, Arroyo de Piedra, are found in this zone. This zone is a main milpa field today. The vegetation is the rainforest with high canopy.*

*Zone 5 (high terrains off the escarpment): This include [sic] high terrains on the Petexbatun horst (about 160 to 210 m asl) that are more than 1 km off the escarpment. This zone has good drainage and rich soils, and it is good for milpa cultivation. However, the availability of water is a more serious problem than in Zone 4. There is no surface water and the area is far away from the river and springs. The area is mainly used for milpa cultivation today, and the only modern settlement in this zone is Maravillas. It is covered with the high canopy of rainforest.*

*Zone 6 (intermediate area between high terrain and low terrain): This refers to areas roughly at the elevation of 150 m asl in the western part of the Petexbatun horst. In these areas, subterranean water is relatively easily accessible by shallow wells, while terrains are still relatively dry. There is a line of springs along the lower edge of this zone (e.g., springs at the site of Dos Pilas and at the modern settlement of Nacimiento). Modern settlements have developed recently in this zone (Sepens, Nacimiento, Jordán, Pacaya, Monterría). Archaeological sites such as Dos Pilas, La Paciencia, and Los Quetzales, are found in this zone. The vegetation is the rainforest with high canopy.*

*Zone 7 (low terrain): This includes area between Zone 6 and the Salinas River and lowlands to the north of Dos Pilas and Arroyo de Piedra. There is surface water (Riachuelo Chacrío, Arroyo Lo Veremos), but terrains are not well drained during the rainy season. There are no modern settlements except for those on the river banks of the Salinas River. Palka and others (Palka and Houston 1991) have located small Lacandón settlements on slightly elevated terrains in this zone. The areas are not used for milpa cultivation today. The vegetation is seasonal swamp forest, which is characterized by canopy lower than that of the rainforest Inomata 1995: 43-45).*

The benchmark for Transect 1 was placed at a point approximately one kilometer north of the end of obvious settlement at Aguateca and approximately 10 kilometers southeast of the main plaza at Dos Pilas. This point was assigned arbitrary coordinates North 000000 East 000000. The coordinates for the Transect 1 benchmark are North 5300 East 13600. The four additional originally planned transects were to run parallel to Transect 1 with benchmarks placed at one kilometer intervals north from each preceding transect (Killion et al. 1991: 595).

### **Mapping Methodology**

The process of surveying the Petexbatun transects involved four steps (Figure 4.5; Killion et al. 1991: 597). First, a central line was established for the transect being mapped. This central line began at the transect benchmark and ran the length of the transect. Every 25 meters along the line a point was established as an elevation control. Every 50 meters along the central line points were established from which 100 meter long side trails were cut to the north and south, resulting in a total transect width of 200 meters. The result of this process was a series of 50 by 100 meters units within the

transect. Throughout this process elevations were recorded wherever needed to produce an accurate topographic map.

The second step of the intersite settlement program's methodology included full coverage survey within the transect, one 50 by 100 meter unit at a time. Along the side trails that marked the width of the transect, the surveyors and work crew lined up spaced at intervals of five to twenty meters, depending on visibility. They then walked west to the next side trail, marking all visible remnants of structures, walls, or other features. Once the next side trail was reached the crew would return to clear all structures and features and to establish lines of site from the central line. The third step of the survey program was the mapping of the structures and features using a theodolite and/or an electronic distance meter (EDM).

### **Excavation Methodology and Goals**

The fourth and final step of the transect investigations was the excavation program. A 10% sample was deemed adequate to accurately represent ancient settlement on each transect. Thus within each transect 10% of all structures were tested, in addition to walls or other features. The sample was not random; instead, the surveyors and archaeologists generally selected structures so that all areas of the transect were tested. Because there was generally little obvious variation between structures within each transect there was no fear of a sample biased toward certain types of structures and, presumably, social groups. Excavations took the form of one by two meter test pits, usually placed on the back of structures in the hope of locating middens, thereby dating

occupation. Only under special circumstances, such as the discovery of a burial, were test pits extended.

Because bedrock tends to be shallow in much of the Petexbatun region, excavations tended to move quickly as the intersite settlement crew sought to cover as much territory as was reasonably possible. At times this led to conflicts between members of the various Petexbatun subprojects. For example, during the 1991 season the intersite settlement team did not want to excavate burials since such excavations must proceed slowly. Obviously, this was problematic for the human osteology subproject. Project director Arthur Demarest wisely intervened on behalf of the osteologist (Demarest 2006). Also in an effort to maximize regional coverage, soils were rarely screened in the course of excavations except under special circumstances, such as when excavating a burial. This concerned the project lithicists who needed all possible debitage recovered so that questions of production and other issues of economic organization could be addressed.

### **The Evolution of the Research Design**

In addition to the disagreements over methodology between various subprojects, other issues resulted in changes from the original Intersite Settlement Pattern subproject research design. For example, Transect 2, which was mapped initially in 1991, is not fully oriented east-west. Thanks to an uncooperative land owner the transect extends west from its benchmark for a distance of just over one kilometer, then turns 90° to the south for 600 meters before turning again and resuming a westerly heading (Killion et al. 1991: 606). Similarly, the plan for uniform two kilometer long transects was altered on a



case by case basis. For example, Transect 3 is only 1200 meters long with the terminus at the edge of Laguna Tamarindito (Van Tuerenhout et al. 1993). Transect 2 was extended in order to provide a better sense of the distance west from the escarpment edge that dense settlement penetrated (O'Mansky, Hinson, Wheat, and Sunahara 1995).

More significantly, the original plan for five two kilometer long by 200 meter wide transects spaced at one kilometer intervals was altered. By the end of the 1993 field season, which marked the completion of five years of research by the Petexbatun Project and three by the Intersite Settlement Pattern subproject, three transects had been mapped but only one, Transect 1, had been extensively excavated. Clearly there would not be time to map two additional transects and excavate four without significantly extending the duration of the project. This issue was solved in part thanks to years of informal reconnaissance and exploration throughout the region, which indicated that the zones covered by transects 1, 2, and 3 as originally planned (not as ultimately executed – the original Transect 3 was never mapped) were largely redundant ecologically and had similar surface indications of densities and sizes of settlement. The third transect mapped, which is now called Transect 3 but in the original research design was to be Transect 5, tested a different ecozone – the rich soils off the escarpment between the Petexbatun River and Tamarindito – and yielded very different settlement information, as is discussed in chapter 7. The original Transect 4 was ecologically redundant with this transect.

The final change to the research design occurred in 1994 when we mapped and excavated a previously unplanned transect, which became Transect 4. This transect is located west of Aguateca in an inhospitable zone of extremely thin soils interspersed

among exposed bedrock. The sole purpose of the transect was to provide hard data on a zone ignored by previous transects. Surprisingly, rather than the empty landscape we expected to encounter, a series of small fortified hilltop villages were discovered along the transect (O'Mansky, Hinson, Wheat, and Demarest 1995). These findings were among the most significant made by the Intersite Settlement Pattern subproject.

By the conclusion of our field research in 1996, four transects had been fully mapped and excavated. These covered an area of 1.484 square kilometers, or approximately 4.95%, of the 30 square kilometer research zone and provided a representative picture of prehistoric settlement in intersite zones in the Petexbatun region.

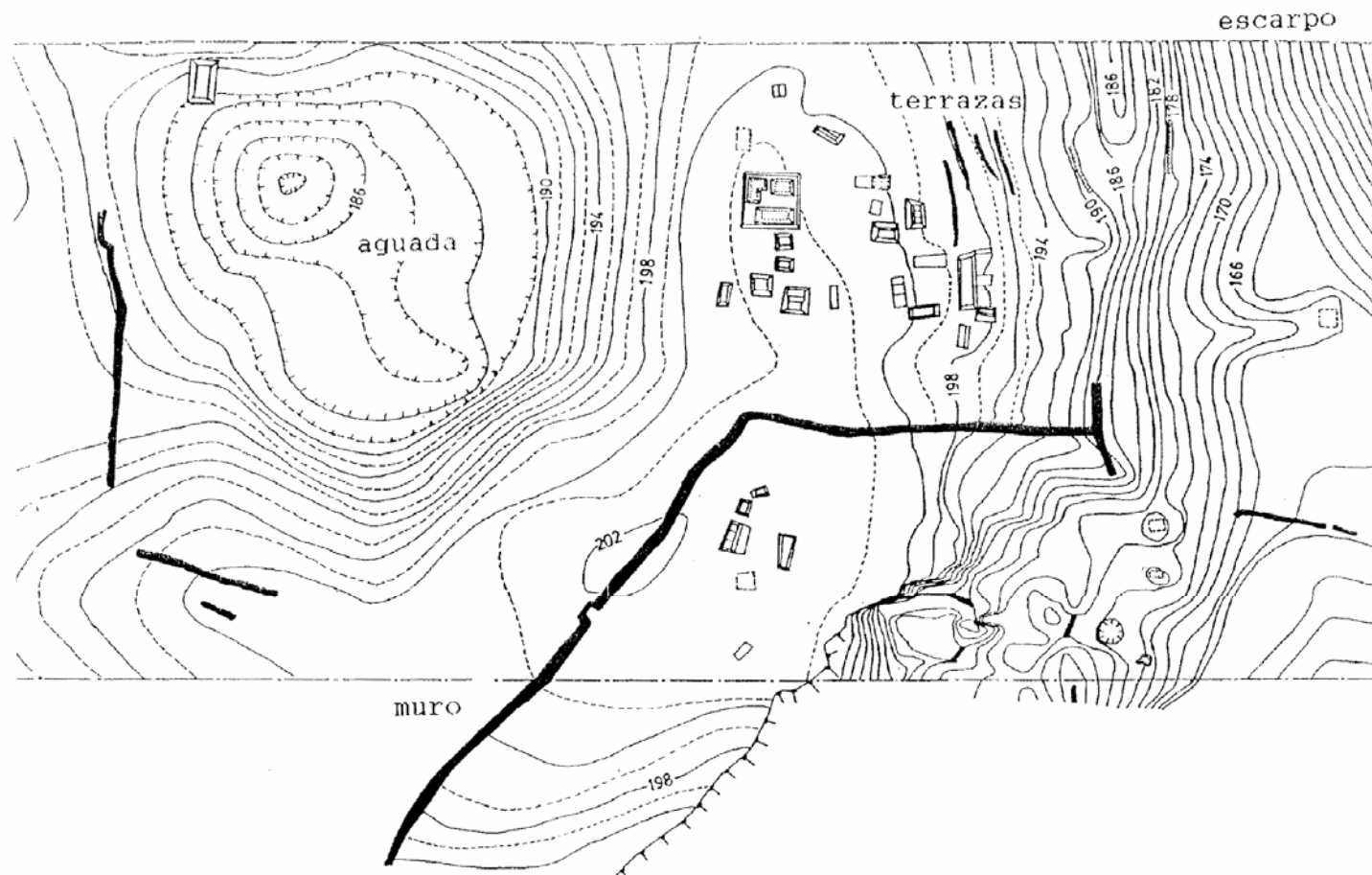


Figure 4.1. Map of the Transect 1 village Quim Chi Hilan (from Killion et al. 1991: Fig. 35.4, p. 599).

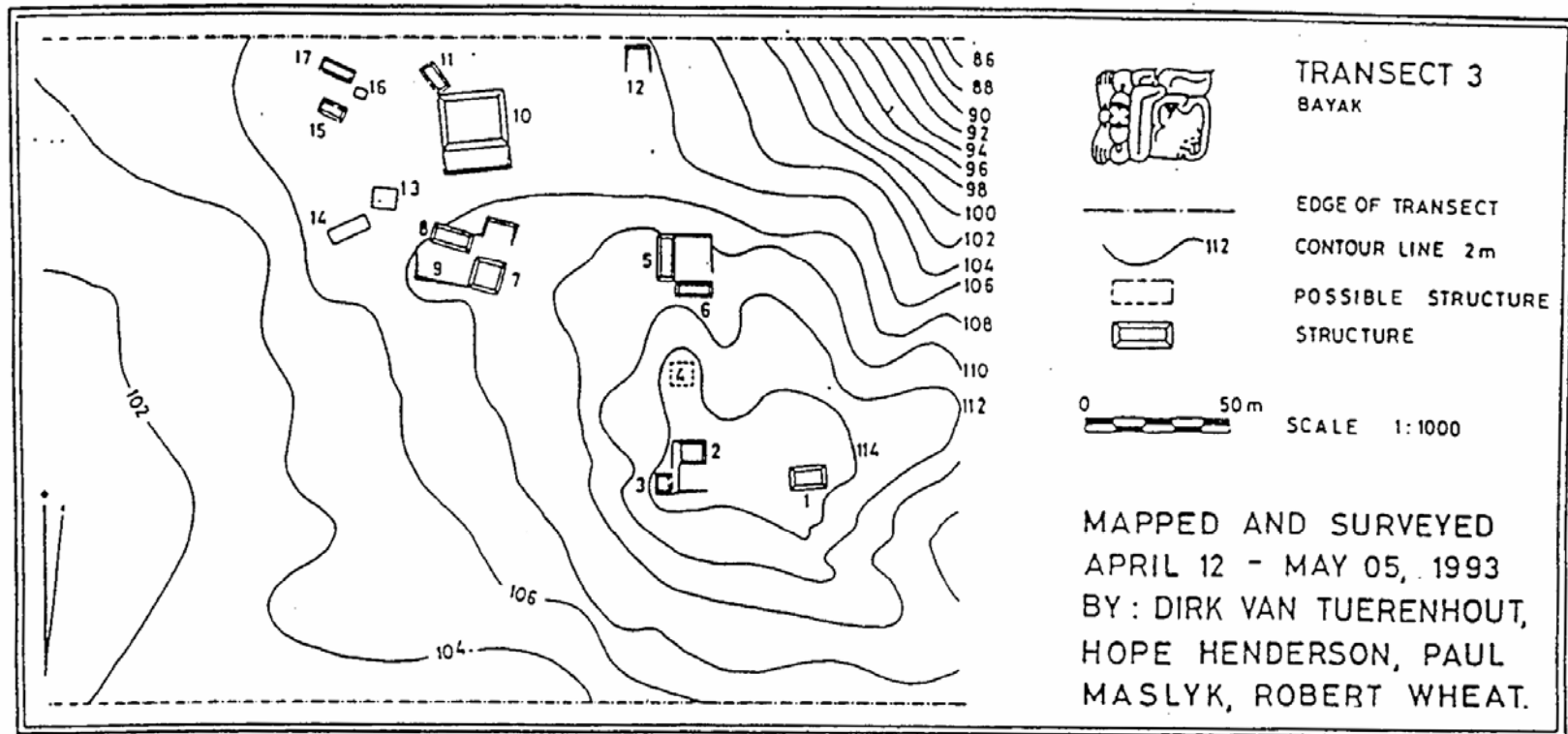


Figure 4.2. Map of the Transect 3 village Bayak (from Van Tuerenhout et al. 1993: Fig. 2, p. 86).

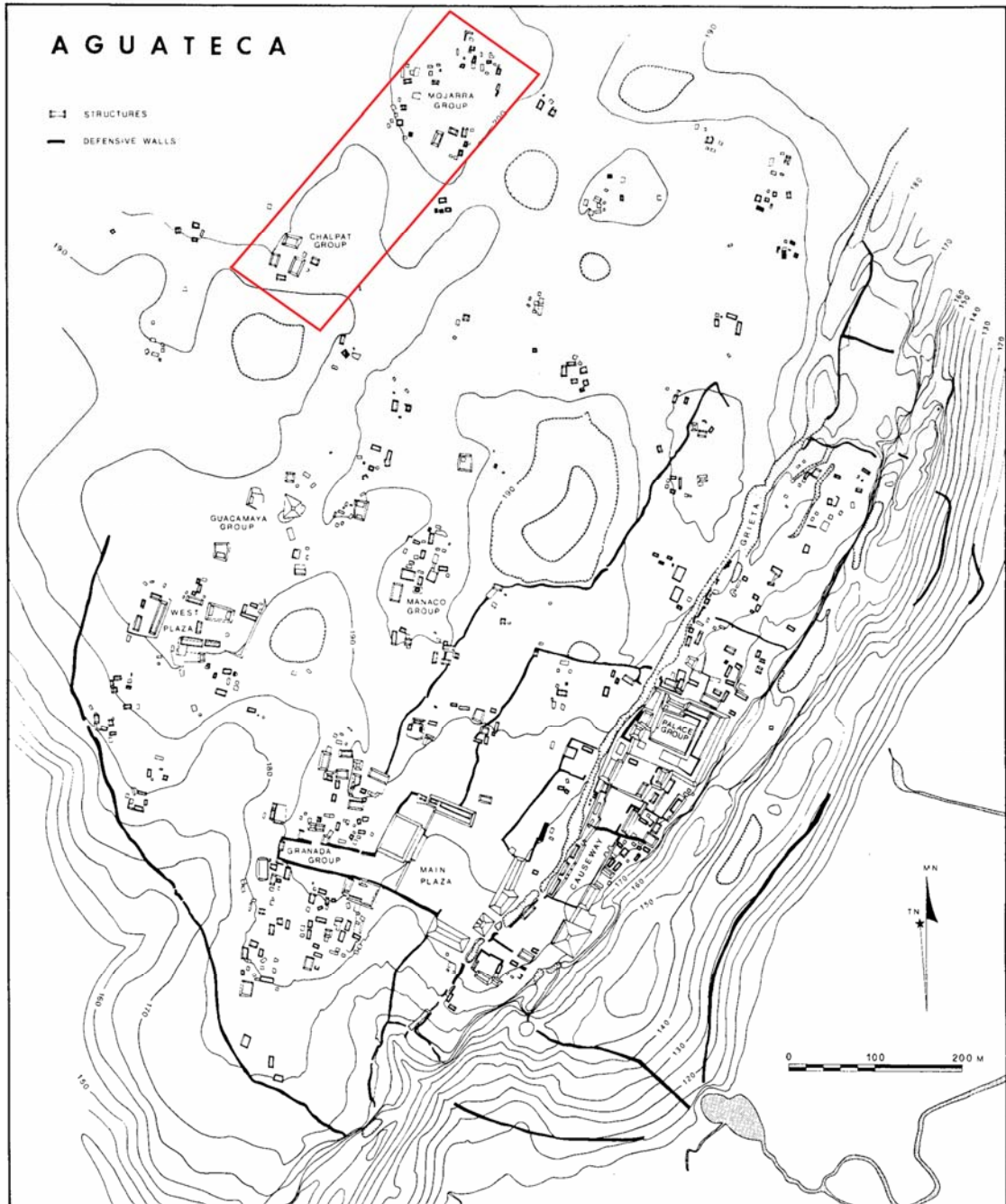


Figure 4.3. Map of Aguateca showing area excavated by the Intersite Settlement Pattern subproject in 1994 (after Inomata 1997: Fig. 3, p. 340).

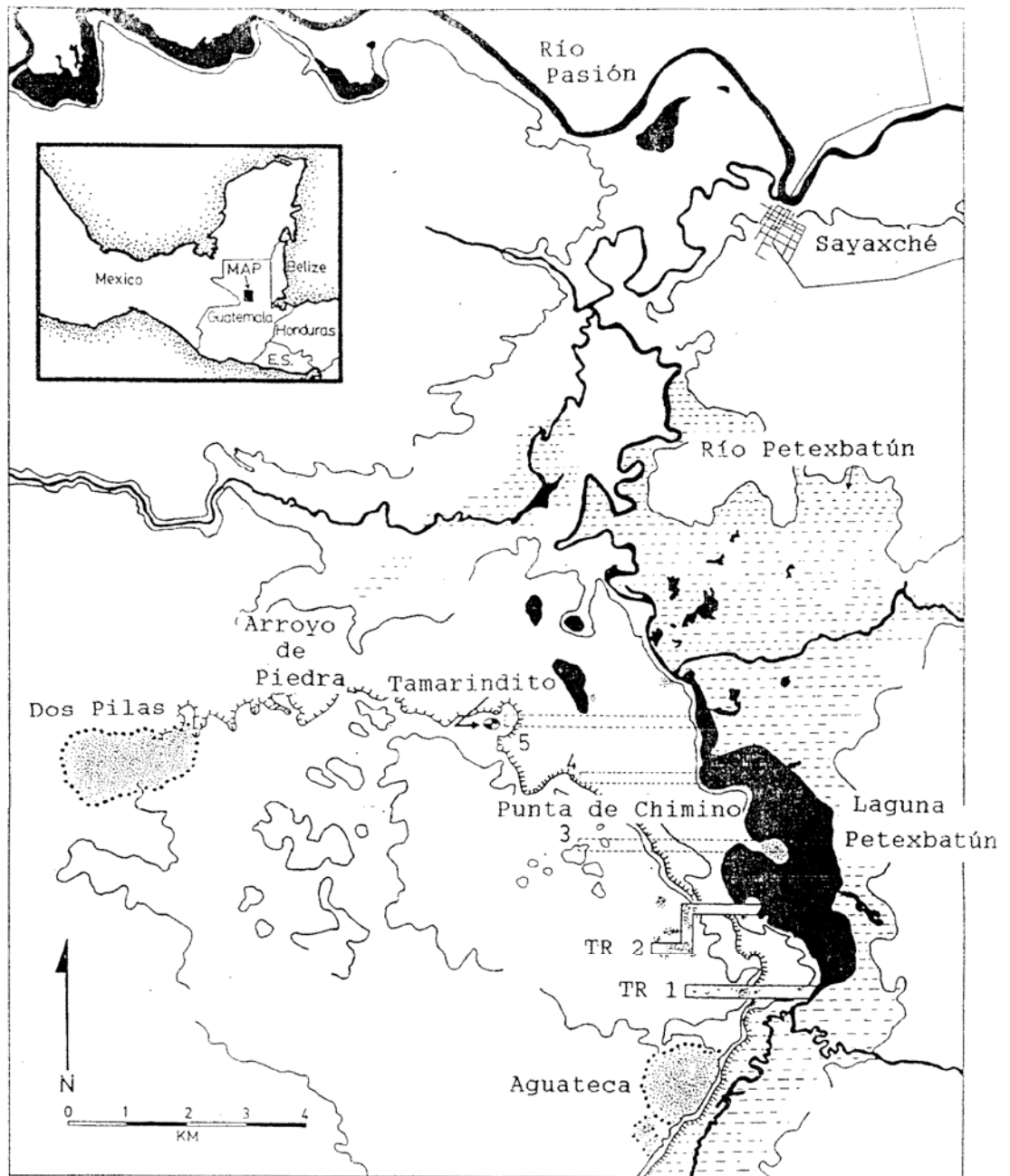


Figure 4.4. Map of the Petexbatun region showing Transects 1 and 2 and the originally planned Transects 3, 4, and 5 (from Killion et al. 1991: Fig. 35.1, p. 590).

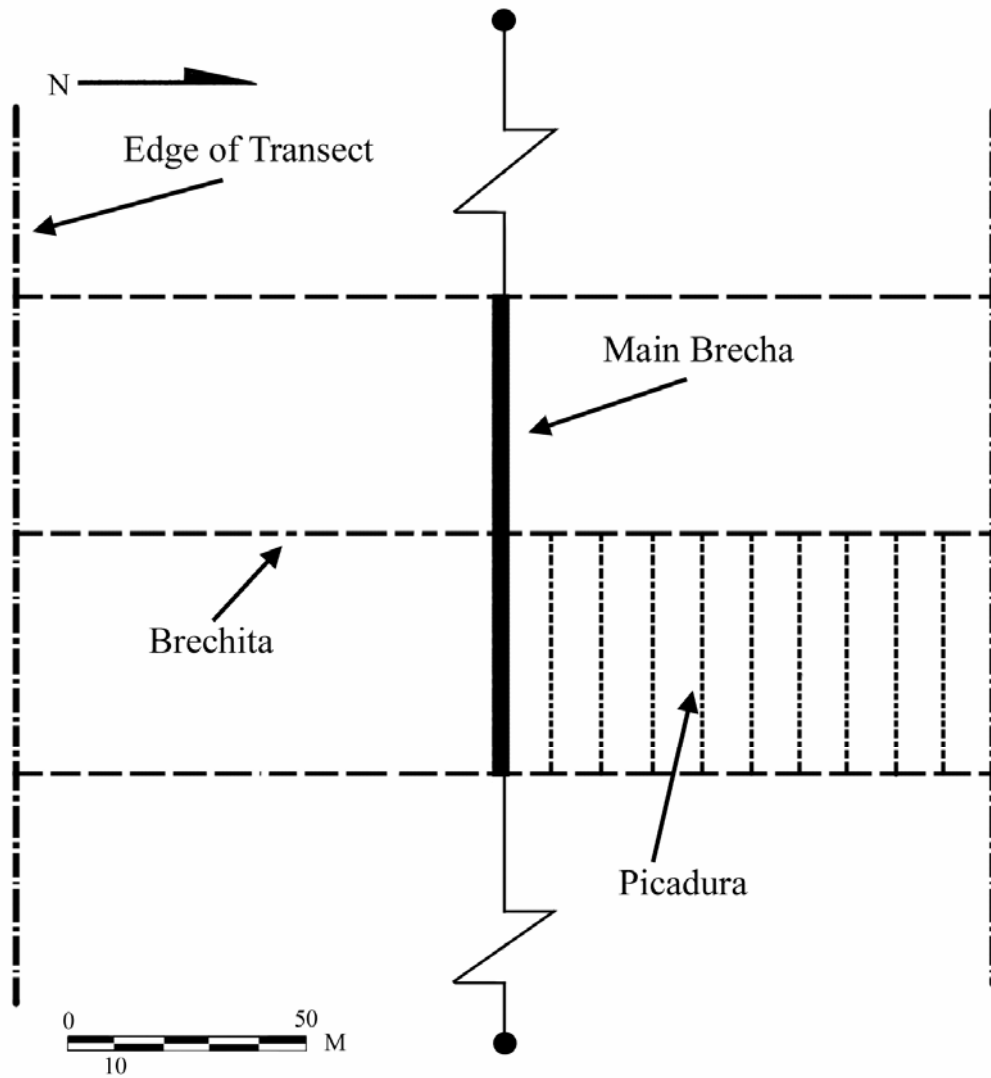


Figure 4.5. Schematic drawing of the Intersite Settlement Pattern subproject transect mapping methodology (from Killion et al. 1991: Fig. 35.2, p. 599).

## CHAPTER V

### THE PETEXBATUN INTERSITE SETTLEMENT PATTERN SUBPROJECT EXCAVATIONS

This chapter presents the data from four field seasons of excavations by the Petexbatun Intersite Settlement Pattern Subproject (1991, 1993, 1994, and 1996). Except for two test pits in Transect 2 that were excavated in 1991 (TR2-23-TP1 and TR2-24-TP1 [Killion et al. 1991]), all excavations in Transects 2, 3, and 4 were conducted by myself and my colleagues in 1994 and 1996 (O'Mansky, Hinson, and Sunahara 1995; O'Mansky, Hinson, Wheat, and Demarest 1995; O'Mansky, Hinson, Wheat, and Sunahara 1995; O'Mansky and Wheat 1996a, 1996b). The information presented here on Transects 2, 3, and 4 is gleaned primarily from excavators' field notes and lot forms and subsequent informants. Excavations from Transect 1 are only summarized as these were described and discussed in considerable detail previously by Van Tuerenhout (1996). Van Tuerenhout's sources were the same that I employ for the other transects – field notes, lot forms, and informants (Killion et al. 1991; Van Tuerenhout, Henderson, Maslyk, and Wheat 1993; Van Tuerenhout, Mendez, and Aldritt 1993; Van Tuerenhout and Verhagen 1992).

#### **Excavation Unit Nomenclature**

Over the course of the subproject there were minor variations in the way that excavation units were labeled for identification purposes. All excavations in Transect 1 include a three part label that identify the transect, the transect quadrant, and the test pit



number within the quadrant. Thus a label of "TR1-22-TP2" identifies the second test pit laid out in quadrant 22 of Transect 1. Because of an almost complete turnover in personnel in 1994 – the lone holdover was Robert Wheat, who is a professional surveyor and, as such, did not participate in excavations – there was a slight change to the labeling system used on Transect 2 that season. For Transect 2 test excavations we included a "Q" in the labels before the quadrant number and all test pits were labeled sequentially, regardless of quadrant. Thus while Transect 1 excavations include many "TP1" and "TP2" designations, Transect 2 excavations were numbered TP1 through TP17 in 1994. A typical complete label from that season takes the form of "TR2-Q32-TP5." The only exceptions are test pits 3, 4, and 7 (TR2-TP3, TR2-TP4, TR2-TP7) because these units were placed in structures off of the transect and were therefore not associated with a quadrant.

For excavations on Transect 3, Transect 4, and the Transect 2 extension we simplified the labeling system, omitting the quadrant designation. Instead, excavation units were labeled sequentially within each transect. Transect 4 units, then, begin with TR4-TP1 and continued through the final unit, TR4-TP11. Transect 3 units begin with TR3-TP1 and end with the seventh unit, TR3-TP7. The Transect 2 extension excavations in 1996 began with TR2-TP18 as the final unit in 1994 was TR2-Q27-TP17. The last pit laid out in 1996 was TR2-TP24.

The final notes regarding unit designation nomenclature regards Van Tuerenhout's thesis (1996). While there were some changes in the way units were labeled from season to season over the course of the project, as noted above, the first part of the system – that which identified the transect in which the excavation unit was located – remained

consistent. Yet despite the consistency in field notes and informe chapters, Van Tuerenhout replaced the "TR" designation with an "S" for "survey transect" (e.g., instead of "TR1-23-TP1" he writes "S1-23-TP1"). Because his dissertation is the only place this nomenclature is employed I have reverted here to the more standard "TR" designation. Additionally, Van Tuerenhout added an extra number to the Transect 1 excavations (for example, "S1-21-0-5" rather than "TR-21-5"). As noted above, these numbers indicate transect number, quadrant, and excavation unit. Much like his "S" designation, this change appears only his thesis and the reason for it is unclear. While every excavation unit includes this extra number, in every case the number is 0. Perhaps he intended it as an operation number, as was done elsewhere in excavations by the Petexbatun Regional Archaeological Project. However, it is unclear what this extra 0 denotes and for this reason and for the sake of consistency with all other publications and reports by the Intersite Settlement Pattern subproject, I have changed Van Tuerenhout's numbering system back to the more standard system.

## **Transect 1**

### **Setting and Description of Transect 1**

Transect 1 (Figure 5.1), which was mapped in 1991 and excavated in 1993, begins at the edge of the southern tip of Lake Petexbatun, approximately 1.5 km north of Aguateca. From its datum, the 200 meters wide transect extends west for two kilometers. Transect 1 includes one of the few areas of settlement in the Petexbatun region where settlement is situated off of the escarpment. The small village of Tix Li Poh (Figure 5.2)

is located in the northern half of the transect near the foot of the escarpment, between 150 and 300 meters from the edge of Lake Petexbatun. Tix Li Poh consists of two small groups of low mounds and a number of walls, patios, and terraces. The western portion of the village contains four structures, the eastern portion another eight. The terraces, patio, and wall segments are interspersed between and within the groups with additional portions 100 meters to the south. The steep rise of the escarpment begins 600 meters west of Tix Li Poh and rises nearly 100 meters over a distance of another 200 meters. Seven terraces are located in this section of the transect (Figure 5.3). These terraces are oriented parallel to the natural contours of the terrain.

The densest cluster of occupation on Transect 1 and the most intensively investigated area anywhere along the Petexbatun transects is the fortified village of Quim Chi Hilan (see Figure 4.1). This site includes 29 structures and a number of terraces. The most dramatic feature of the site is the extensive wall system that begins just below the top edge of the escarpment slightly east of the village. The main segment of the wall measures approximately 1 meter wide by 1.25 meters high, lies south of most of Quim Chi Hilan and runs west for just over 100 meters. From there, it turns to the southwest and runs for more than half a kilometer toward Aguateca. In this section of the wall and 400 meters south of Quim Chi Hilan is a baffled gate (Figure 5.4).

Of the 29 structures at Quim Chi Hilan, 23 are located north of the wall in an area of about 100 by 100 meters. Van Tuerenhout divided the village into four distinct groups, labeled Cluster A, Cluster B, Cluster C, and Cluster D (Figure 5.5). Cluster A includes structures 2, 3, 4, and 10 which form a well-defined plaza group on the east side of the village. Four terraces are located directly north of this group. Just north and

slightly to the west of this group is Cluster B, which includes structures 1, 6, 7, and 11. These appear to surround a small plaza. Directly west of Cluster B is a platform that supports structures 12, 13, and 14. These structures and the platform comprise Cluster C. South of Cluster C and due west of Cluster A is Cluster D, a loose configuration of mounds that includes structures 15, 16, 17, 18, 19, and 29. Five additional small structures lie to the north of these clusters. South of the wall that divides Quim Chi Hilan are 6 buildings, structures 23, 24, 25, 26, 27, and 28. All except Structure 23 surround a plaza. The position of Quim Chi Hilan was fixed via GPS readings atop Structure 1 during the 1993 field season. However, as this was before GPS signals were unscrambled for non-military users (these signals were unscrambled beginning in 2000), these readings should not be used.

West of Quim Chi Hilan the terrain gradually descends. This zone includes two additional walls, one of which is located nearly 200 meters beyond the fortified village and just west of an aguada (Figure 5.6). The other is an additional 150 meters to the west. Both are oriented north-south. A single structure is located just north of the aguada near the first wall. Between the second wall and the end of the transect is another aguada. Several small structures lie east and south of the aguada. Additionally, four terraces are on a hill slope northeast of the terrace and an unusual wall segment lies just southeast of the aguada (Figure 5.7).

## **Excavations in Transect 1**

### *Excavations in Tix Li Poh: TR1-04-1, TR1-04-2, TR1-06-1*

Three 1 x 2 meter test pits were excavated in Tix Li Poh in order to date the village and determine construction sequences in the structures that were tested. TR1-04-1 was placed in the west side of Structure 2, a 7 x 5 meter mound standing 1 meter high (Figure 5.8). TR1-04-2 was placed in the center of Structure 9, a 7 x 3 x 0.5 meter mound 50 meters northeast of Structure 2. TR1-06-1 tested Structure 7, a low 6 x 4 meter mound 80 meters northwest of Structure 2 (Figure 5.9). This test pit was placed in the northeast corner of the structure and was aborted when a burial was discovered beneath structure fill. The relatively small quantity of ceramics recovered in the excavation of these three test pits indicate that Tix Li Poh was constructed and occupied during the Late Classic period.

### *Excavations in Quim Chi Hilan, Cluster A: TR1-22-09 and TR1-22-10*

The only structure excavated in Cluster A of Quim Chi Hilan (Figure 5.10) is Structure 4, the easternmost structure in Quim Chi Hilan. Structure 4 is a long, rectangular structure oriented north-south and measuring 20 x 4.5 meters and rising 1 meter tall. TR1-22-09 was a 3 x 2 meter excavation unit in the southern end of the structure. TR1-22-10 was 3 x 2 meter unit located in the center of Structure 4. Both test pits consisted largely of construction fill. Additionally, a total of 4 burials, 3 from unit 09 (Figure 5.11) and 1 from unit 10 (Figure 5.12), were unearthed. The most elaborate of these – and the most elaborate in all of Quim Chi Hilan – was Burial 5 from TR1-22-10. An adult male was interred there with three vessels in a pit excavated into bedrock.

Based on the size and location of Structure 4 and the multiple burials within, Van Tuerenhout (1996: 89-90) argues that the building held an important position in Quim Chi Hilan.

*Excavations in Quim Chi Hilan, Cluster B: TR1-22-11 and TR1-22-14*

Two of the four structures that comprise Cluster B, structures 1 and 7, were tested. Structure 1 is an 8 x 6 x 1 meter high mound on the south side of the Cluster B plaza. On the north side of the plaza is Structure 7, a low bi-level mound. TR1-22-11 was a 2 x 2 meter test pit excavated into the center of Structure 1. The presence of a wall segment in the fill of the structure led the excavators to believe that there were at least two construction phases (Figure 5.13; Van Tuerenhout 1996: 92). TR1-22-14 was a 4 x 2 meter trench across both levels of Structure 7. Beneath the fill of a well-preserved floor rows of large, flat stones were encountered. Based on excavations in Cluster A it was believed that these stones capped a burial or multiple burials. As the end of the field season was approaching, the excavators decided to close the unit, rather than excavate the burial(s).

*Excavations in Quim Chi Hilan, Cluster C: TR1-22-02, TR1-22-03, TR1-22-04, and TR1-22-05*

Cluster C was thoroughly tested with excavation units placed in all three structures in the cluster and into the plaza on the one meter high platform on which structures 12, 13, and 14 stand (Figure 5.14). TR1-22-05 (Figure 5.15) was a 2 x 2 meter test pit placed into the center of Structure 12, a 6 x 6 meter structure on the north edge of the group. TR1-22-04 (Figure 5.16) was a 2 x 2 meter test pit placed into the center of Structure 13, an 8 x 4 meter L-shaped structure in the northwest corner of Cluster C. TR1-22-03 (Figure 5.17) was a 5 x 2 meter trench across Structure 14, a 14 x 4 meter

building on the south side of the cluster. The platform was tested with excavated with a test pit, TR1-22-02, in order to date its construction.

Structures 12 and 13 both apparently were hastily built and supported perishable superstructures. While they date to the Late Classic, a few Late Preclassic sherds were mixed with Late Classic sherds in the fill of Structure 13. Structure 14 was more substantial and significant. Figurine fragments and a bird whistle were discovered in association with a floor. Beneath the floor was an intrusive burial of an adult male interred with a Saxche Palmer tripod plate (Structure 5.18). As in Structure 13, a few Late Preclassic sherds were mixed into the fill of the structure. Excavations into the Cluster C platform between structures 12, 13, and 14 yielded a significant quantity of artifacts, including potsherds and lithics, and a floor. Mixed into the fill below the floor were additional small quantities of Late Preclassic pottery. Despite the few Late Preclassic sherds discovered, Cluster C was constructed and occupied during the Late Classic period. Van Tuerenhout (1996: 96) suggests that the earlier pottery was collected near the site, an indication of a small Preclassic occupation in the area.

*Excavations in Quim Chi Hilan, Cluster D: TR1-22-01, TR1-22-06, TR1-22-07, and TR1-22-08*

Three of the six structures that comprise Cluster D, structures 15, 16, and 18, were tested. Structures 15 and 16 are a pair of small (4 x 4 meter), square platforms directly south of Cluster C. Structure 15 is north of Structure 16. Both of these were excavated with 2 x 2 meter test pits placed in the center of each structure. The test pit in Structure 15 was TR1-22-06, the unit in Structure 16 TR1-22-07. Structure 15 was simply but carefully constructed and two burials were encountered in crypts above the bedrock beneath a floor and ballast (Figures 5.19 and 5.20). Most of the sherds recovered in test

pit 6 were Late Classic but small quantities of Early Classic and Late Preclassic pottery also was present. The excavation into Structure 16 found no evidence of floors or walls and its function is uncertain.

Structure 18, the tallest mound at Quim Chi Hilan, stands 2 meters high and measures 8 x 4 meters. It is located south of Structure 16 and was partially looted. The structure includes a possible stairway that leads to a bench. Two excavation units, TR1-22-01 (and an extension, 01A) and TR1-22-08, were opened in this structure in order to salvage information from burials and date construction. TR1-22-01 was a 1 x 2 meter unit laid out on the top of the structure. It was expanded by an additional 1 x 2 meter unit after a burial was encountered. Two individuals were interred in this burial. TR1-22-08 was a 2 x 2 meter test pit in the middle of the bench. Two additional burials, Burial 9 and Burial 10, were found in this unit (Figures 5.21 and 5.22).

*Excavations in Quim Chi Hilan South of the Wall: TR1-21-01, TR1-21-03, TR1-21-04, TR1-21-05, TR1-21-06, TR1-21-07, TR1-21-08, and TR1-21-10*

Five of the six structures south of the wall that divides Quim Chi Hilan were excavated. These five structures, structures 24, 25, 26, 27, and 28, form a plaza group. The final structure in the area, Structure 23, was not tested. TR1-21-03 was a 2 x 5 meter trench over the eastern half of Structure 24, a 4 x 4 meter platform on the south side of the group. Late Classic potsherds were recovered from the fill of the platform. TR1-21-05 and TR1-21-10 tested Structure 25, a 1.5 meter high 12 x 6 mound on the east side of the group. The northern third of the structure is higher than the remainder. TR1-21-05 was a 2 x 7 meter trench oriented east-west across the structure where the raised platform meets the lower section. During excavation of this unit retaining walls and the remains of a floor were discovered in the raised portion of the mound (Figure 5.23). All pottery



recovered dates to the Late Classic period. TR1-21-10 was a 2 x 4 meter test pit on the southern part of Structure 25. Only the humus layer was removed from this unit in order to confirm the presence of an indentation in the structure. In the plaza between structures 24 and 25 was a 3 x 3 meter U-shaped feature constructed of cut limestone. This feature was excavated with TR1-21-04, a 2 x 2 meter test pit within the feature. Little was discovered in this feature but the few sherds recovered were Late Classic.

TR1-21-01 and TR1-21-06 were placed in Structure 26, a complex three-leveled structure with three rooms and cut limestone blocks located on the west side of the plaza group. Structure 26 measures 12 x 6.5 meters and was looted. TR1-21-01 was a 1 x 2 meter test pit centrally located on the structure perpendicular to the central access. Small quantities of Late Classic pottery were recovered from this unit and floor ballast, the remains of an interior wall, and some wattle and daub were discovered. TR1-21-06 (Figure 5.24) was also measured 1 x 2 meters and was placed in the northeast corner of the platform. A high density midden of Late Classic pottery, including Tinaja, Saxcha-Palmar, Infierno, and Cambio sherds, was excavated.

TR1-21-07 (Figure 5.25) was a 5.25 x 2 meter trench by the southern edge of Structure 27, a 5 x 7 x 1 meter high structure on the northwest side of the plaza group. This low mound had been damaged by a tree that once grew out of its center and the trunk of which had been burned. While no remains of a superstructure were discovered, Late Classic potsherds and three shell beads were recovered from this unit. The final test pit in the group south of the wall at Quim Chi Hilan, TR1-21-08 (Figure 5.26), was a 2 x 4 meter unit placed over the southwestern end of Structure 28. Structure 28 is a low 4 x 6 meter mound on the north side of the plaza group. Van Tuerenhout (1996: 83) concludes

that this building was likely an ancillary structure.

*Excavations in the Quim Chi Hilan Wall: TR1-21-01, TR1-21-02, and TR1-21-09*

Three trenches were excavated in the wall that begins in Quim Chi Hilan before turning south toward Aguateca (Figure 5.27). These excavations sought to determine the date and method of construction of the wall. TR1-21-01 was a 1 x 4 meter trench across the wall 75 meters south of the corner at which the wall turns south. TR1-21-02 (Figure 5.28) was a 1 x 5 meter trench across the corner of the wall. TR1-21-09 (Figure 5.29) was a 2 x 4 meter trench that crossed the wall 5 meters east of the corner. Recovered ceramics from these trenches placed the date of the wall's construction in the Late Classic period. Furthermore, they indicated that the wall was constructed by placing fill material of soil and small stones between parallel lines of larger stones.

*Excavations in the Baffled Gate: TR1-41-03 and TR1-41-04*

Two excavation units were placed into the baffled gate in the wall south of Transect 1 in order to date the gate and determine its construction method (Figure 5.30). TR1-41-03 was a 1 x 13 meter trench along the east side of the wall along the gate. The southern end of this trench was expanded with a 3 x 3 meter unit after fragments of wattle and daub were discovered. TR1-41-04 was a 2 x 2 meter test pit on the west side of the wall over the gate's entrance. While no artifacts were recovered that allowed the gate to be dated, the construction method was consistent with the remainder of the wall. Therefore the gate can safely be assumed to date to the Late Classic. The wattle and daub present indicates that a palisade once stood atop the wall. Furthermore, the remains of a possible raised platform were discovered by the gate on the east side (inside) of the wall,

*Excavations in Terraces: TR1-18-01, TR1-41-01, and TR1-41-02*

Excavation units were placed in several of the terraces located on Transect 1 in order to determine their function, construction method, and date. TR1-18-01 was a 1 x 3 meter trench that was laid perpendicular across one of the seven terraces near the base of the escarpment. The fill of the terrace consisted of a mix of soil and stone. Late Classic potsherds were recovered from the surface of the unit and in the fill. Van Tuerenhout (1996: 176) concluded that this terrace was a domestic platform.

TR1-41-01 was a 1 x 3 meter trench in a short terrace segment that followed the natural contours 60 meters east of the baffled gate. This terrace was the lower of two on the slope and the trench was laid out across and perpendicular to the terrace. TR1-41-02, another 1 x 3 meter trench that was similarly oriented, was laid out across the upper of the two terraces. The location of both of these terraces, in conjunction with the results of phosphate testing, indicates that they were agricultural terraces. Ceramics recovered from the fill of the terraces date them to the Late Classic period.

*Excavations in Structures West of Quim Chi Hilan: TR1-33-01 and TR1-37-01*

Two of the structures located west of Quim Chi Hilan were investigated by the Intersite Settlement Pattern subproject. TR1-33-01 was a 1 x 2 meter test pit in an isolated structure located approximately 500 meters west of Quim Chi Hilan and 125 meters north of an aguada. This structure measures 10.5 x 5 meters and included cut stone masonry. TR1-37-01 was a 1 x 2 meter test pit in a structure located 200 meters west of TR1-33-01. This structure measures 8 x 5 meters with an attached 8 x 2 meter platform. It was one of three structures along the edge of an aguada. While the function of these structures is uncertain, they date to the Late Classic period.

## **Transect 1 Summary and Discussion**

While there is some scant evidence for Preclassic settlement on the escarpment in Transect 1, virtually all of the occupation along the transect dates to the Late Classic period. The presence of a village at the foot of the escarpment should not be surprising as this area has deep soils and easy access to aquatic resources from the river. Yet such settlement is extremely rare in the Petexbatun region during the Late Classic. Instead, Quim Chi Hilan and the structures to the west are the norm for Late Classic settlement along the escarpment – dense settlement interspersed with assorted walls and terraces.

The relationship between Quim Chi Hilan and the large site of Aguateca to the south is unclear. At least some of the walls by Quim Chi Hilan clearly served a defensive function, yet their layout does not make sense if their primary purpose was to defend the village. A more logical system would encircle the small village. Instead, the agricultural terraces and isolated structures by fertile aguadas indicate intensive agricultural production. Soil phosphate fractionation testing further indicates intensive agriculture (Dunning and Beach n.d.; Dunning, Beach, and Rue 1997). Perhaps Quim Chi Hilan existed in the Late Classic as a support village for Aguateca, providing food from its fortified field and terrace systems.

## **Transect 2**

### **Setting and Description of Transect 2**

Initially mapped in 1991 (Killion et al. 1991), Transect 2 (Figure 5.31) began one kilometer north of Transect 1 and just south of Punta de Chimino on the western shore of

Lake Petexbatun at the modern village of El Excarvado. The first 1000 meters of the 200 meter wide transect headed west from the lake and was almost entirely unsuitable for habitation as the steep slope of the escarpment made habitation there impossible. A small patio group consisting of three small prehistoric structures lay at the base of the escarpment to the south of the transect. Atop the escarpment, after 1400 meters the transect veered from the standard westerly course of the intersite transects and turned due south thanks to an uncooperative landowner. It then ran south for 500 meters before turning back to the west for an additional 300 meters. In these habitable areas, the survey team discovered dense settlement in a sprawling village they named Nim Li Naj.

Nim Li Naj consists of a number of groups, labeled Groups A, B, C, D, and E that together include more than 120 structures over an area of approximately 600 meters north-south by 200 meters. The first group encountered in Nim Li Naj, Group A, is located approximately 1.1 kilometers west of the Transect 2 datum and just south of a grieta that begins on the main brecha of the transect and runs to the northwest. Group A consists of 5 small structures and a series of low walls (Figure 5.32). The walls are atypical for the Petexbatun zone in that they are not situated in a logical way that would serve a defensive purpose or as an agriculture terrace.

Group B is located approximately 200 meters northwest of Group A in the northwest corner of Transect 2 just before it turns to the south. The group consists of two clusters of structures, totaling 16 buildings (see Figure 5.32). The first cluster includes seven low, small platforms loosely sprawled around a plaza. Just to the west are an additional nine structures that form two patio groups. Four of the nine structures form a C-shape around a plaza that opens on the south side. One of these may have once stood

as high as 2.5 meters but has been heavily damaged by looters. The remaining five structures form the second plaza group immediately to the west and a short section of a low wall runs along the north of this group.

Group C is located approximately 200 meters south of Group B. This group consists of 22 structures that form three distinct groups and includes a number of walls (Figure 5.33). In the center of Group C is a compound of 10 structures and includes platforms that held multiple structures, multi-level platforms, and simple low rectangular platforms. The largest structure in this part of the group is more than two meters high and includes a patio. A wall begins near the northeast corner of this structure and runs approximately 150 meters to the south to Group D. The remains of this wall range from 10 cm to one meter high.

Approximately 50 meters to the southwest of the central part of Group C and beyond the boundaries of Transect 2 is a small cluster of four structures. Another four small structures are located 50 meters north of the central group. A large depression or *aguada* is located approximately 30 meters northeast of the central group. On the east side of this depression are a series of enigmatic walls, including one that is U-shaped and encloses a straight section of another wall. Three structures are just east of these walls.

Group D is a sprawling array of platforms, plaza groups, and walls that begins approximately 150 meters south of the central portion of Group C and is located just before Transect 2 turns back to the west. This group includes a total of 39 structures over an area of 300 by 100 meters and the western portion is outside of the transect (Figure 5.34). South of this area and back within the transect is *rejollada* that runs along the center of the transect. Much of Group D is partially surrounded by a wall while other

short segments of walls run in various directions. While some walls follow contour lines and may therefore serve as terrace retaining walls, the function of many of the walls is unclear.

Group E is located approximately 200 meters south of the eastern portion of Group D on the highest ground in Nim Li Naj. A wall segment extends from the wall around part of Group D to a large platform in Group E. To the east of this structure are two plaza groups, comprising a total of 13 structures (Figure 5.35). A number of short wall segments run north-south on the east and south sides of these plaza groups. Another small mound is located between these groups and the large platform. To the south of the large platform and connected to it by a wall is an even larger platform. A number of wall segments connect this platform to other structures to the south. Additional enigmatic wall segments, including one that forms an “M” shape, are located within Group E.

The dense settlement that comprises Nim Li Naj may be part of the small site of El Excavado (Figure 5.36). This site was visited and the center mapped by Stephen Houston during the course of his dissertation research (Houston 1987). Unfortunately, El Excavado is located on the property of the uncooperative land owner from Transect 2 – the same land that the transect detours around. Therefore, the Intersite Settlement Pattern subproject was never able to investigate the site or establish its relationship to Nim Li Naj.

In 1996 we decided to extend Transect 2 for two reasons: (1) based on some reconnaissances there was some concern over the completeness of the original map (although the original map eventually proved to be quite thorough and accurate) and (2) we hoped to extend the transect into the next ecozone so that the extent of settlement

inland from the lake could be determined. We employed standard Petexbatun Intersite Settlement Pattern subproject transect methodology (see Chapter 4) in mapping an additional 650 meters, beginning at the end of the central brecha from 1991 (Figure 5.37). Work progressed slowly due to the vegetation in the area – the entire extension was under milpa or huaymil.

The area surveyed began on a small rise that gradually drops off to the west before beginning another gentle ascent 300 meters from the 1996 starting point (Figure 5.38). This ascent continues to the west through the remainder the transect. Two villages were discovered while surveying the area. The first, Xibalba Rax (Figure 5.39), consists of 38 structures and 8 walls spread across the first 220 meters of the extension. Most of the structures are quite small and most are not associated with any obvious plaza groups. The largest structure in this village, structure 6, stands two meters high. Approximately 10% of the mounds in this village have been looted. Eight segments of walls were mapped in this group. As with those discovered in 1991, the function of most of these walls is unclear as none serve obvious defensive purposes and only a few are positioned appropriately for terraces.

The second village encountered on the Transect 2 extension,, Najej Yib Ru (Figure 5.40), is located 500 meters west of the 1996 datum and near the southern limit of the transect. The village is unusual for intersite areas in the Petexbatun region in that the twelve mounds of which it consists are very densely packed and several are irregularly shaped. The village is limited to an area measuring approximately 50 by 35 meters and includes a T-shaped building (structure 10), a semi-circular building (structure 8), and two buildings that each have a single round side (structures 1 and 6).



Structure 1 is an impressive and unusual building for intersite zones in the region. Oriented east-west and located on the southwest edge of the village, it measures approximately 25 x 15 meters and stands 2 meters high. Around most of the building, two courses of a wall constructed of large blocks of cut limestone are visible. We hoped to return to excavate at least a portion of structure 1 in 1997 but with the signing of the peace accords in December 1996 that ended Guatemala's long civil war, we decided to not go back into the field due to significant problems in much of the country.

As noted above, the 1996 extension of Transect 2 allayed our concerns about the 1991 map. The density of structures and the number, size, and seemingly odd positions of walls we discovered is consistent with the earlier survey.

#### *La Cueva de Escalera*

Near the base of the grieta on Transect 2 is a cave (Figure 5.41). The cave is on the property of Rodrigo Rey Rosa and is named La Cueva de Escalera for the rough hewn steps that lead up to its mouth. At the urging of Sr. Rosa, we explored and mapped the cave in 1994. The cave mouth sits in the south grieta wall, 4.5 m above the floor of the grieta. Some pottery was seen deep within fissures below the cave mouth but the openings were too small and deep to allow collection. The cave mouth is 2 meters wide and 1.75 meters high. Three meters in from the mouth the cave splits into two passages. The western passage runs for 5 meters before becoming too narrow for anything but a rodent to pass through. A hole in the ceiling 3 m into the passage opens into a small upper chamber. This chamber contained no artifacts on the surface. The eastern passage of the cave is longer, twisting and turning for approximately 25 meters before becoming

too small for passage. A hole is located in the ceiling of the passage 10 meters beyond the split. Like that in the western passage, this hole leads to a small upper chamber. The final 5 meters of the western passage were gained after much digging. It appeared that the cave opened up again and descended sharply beyond the narrow passage. Unfortunately, it was impossible to gain further access in the time we had available for exploration.

## **Excavations in Transect 2**

*Excavations in Nim Li Naj, Group A: TR2-Q19-TP1, TR2-Q19-TP2, TR2-Q19-TP9, and TR2-Q19-TP10*

Test pits 1, 2, 9, and 10 were located in Group A of Nim Li Naj on Transect 2. This group consists of 8 structures and an extensive wall system. The focus of the group is the plaza group consisting of structures 1, 3, 6, 7, and 8. Structure 1 stands on the north side of the plaza, structure 7 on the east side, structure 3 on the south side, and structure 8 on the west side. Structure 6, possibly a small altar, lies in the center of the group, and is connected to structure 1 by a 3 meter long causeway. A wall begins on the southeast corner of structure 3, running due south for 45 meters. A second wall begins on the north side of structure 1. One branch of the wall runs northwest for 70 meters before turning 90° to the northeast for another 85 meters where it ends at the edge of a grieta. A second arm of the wall runs northeast from structure 1 for approximately 50 meters before turning to the southeast for at least another 20 meters. Structure 2 lies within this wall, 20 m north of structure 1. Structure 4 is located 15 m south of structure 3 and 3 m

west of the wall that runs off of that structure. Structure 5 lies 20 meters southeast of the central plaza group.

#### TR2-Q19-TP1

Test pit 1 was located in structure 1 of the group. This structure, the largest of the group, measures approximately 10 x 6 x 1.5 meters and is oriented north-south. Structure walls were visible running west and north from the southeast corner of the structure. Test pit 1, a 1 x 2 m excavation oriented 10° from north, was situated so that it encompassed and crossed the southern structure wall while lying 20 cm west of the east wall (Figure 5.42). The surface of the structure was scattered with weathered cut limestone measuring from 15 to 40 cm across.

The uppermost 20 cm of the excavation contained a few limestone rocks in humus with numerous roots. In these levels, potsherds, lithics, a chert biface blade fragment, and 7 obsidian blades and blade fragments were discovered. Four of these obsidian fragments were found together at a depth of 33 cm, just south of the south structure wall. Additionally, part of a figurine- from the chin to just below the eyes and from cheek to cheek- was unearthed. This piece of an apparently human face measured 3 x 3 cm.

The subsequent 20 to 30 cm of the test pit consisted of large quantities of limestone measuring an average of 15 to 30 cm across. These rocks were probably fill material but may have also included tumble from the structure walls and pieces of bedrock, which is highly fragmented in this area. This fill laid on bedrock. Artifacts in these levels included potsherds, lithics, and 5 obsidian blade fragments.

The structure wall that bisected the test pit was constructed of cut limestone blocks that measured up to 50 x 35 cm.

### TR2-Q19-TP2

Test pit 2 (Figure 5.43) was located in structure 7 of Group A. Structure 7 measures 8 x 4 x 0.5 meters and is oriented east-west. Test pit 2, a 1 x 2 m excavation, was located on the west end of structure 7, approximately 1 m from the west side of the mound, and was oriented 2° from north. While the eastern half of the structure was littered with limestone rocks averaging 20 cm across, the western half was nearly free of rocks.

The uppermost 10 to 15 cm of the excavation consisted almost entirely of humus and roots. Some potsherds and lithics were discovered in this level. Beneath the humus, a structure wall was unearthed. This wall ran east-west through the north end of the test pit, 30 cm from the north excavation wall. The area within (south of) this wall was littered with rubble fill, consisting of limestone rocks measuring 10 to 30 cm across. This fill material continued to bedrock, 50 cm below the modern ground surface. Within the fill, potsherds, lithics, 3 obsidian blades, 2 *mano* fragments, and a small piece of jade, were discovered.

The northernmost 30 cm of the test pit (the area north, or outside, of the structure wall), was relatively rock free. The artifact assemblage from this area included potsherds, lithics, 2 obsidian blades, 2 chert bifaces, and a stone ring (possibly a rod holder). Bedrock in this section of the test pit was reached 50 to 70 cm below the modern ground surface.

### TR2-Q19-TP9

Test pit 9 was located in structure 8 of Group A. This 1 x 2 meter excavation was laid out on the east side of the structure, just off of the top of the mound, and was

oriented approximately northeast-southwest. The uppermost 20 cm of the test pit was littered with limestone rocks measuring an average of 20 cm across. Potsherds, lithics, and an obsidian blade were discovered within this level. Similar features – limestone (rubble fill) with potsherds, lithics, and obsidian – continued across most of the test pit to bedrock, 50 to 60 cm below the modern ground surface. At a depth of 30 to 40 cm, part of a structure wall was unearthed (Figure 5.44). This wall, constructed of limestone blocks measuring 20 to 50 cm across, ran from the southwest corner of the test pit to a point in the east wall 1.1 m north of the southeast corner. The fill within the structure wall included potsherds, lithics, and 5 obsidian blades.

#### TR2-Q19-TP10

Test pit 10 was located in the wall that runs south from structure 3 in Group A. It was oriented, like the wall, approximately north-south and measured 1 x 2 meters, beginning approximately 8 m south of structure 3. The wall consisted of limestone rubble (measuring less than 30 cm across) and soil atop shallow bedrock. Within the wall, which measured up to 1.5 m across, potsherds and lithics were discovered. Bedrock was reached 15 to 20 cm below the modern ground surface in the northern 160 cm of the test pit. Within the southern 40 cm, bedrock dropped off to a depth of 35 to 40 below the modern ground surface. A sterile layer of marl 10 cm thick was unearthed directly above bedrock in this section of test pit 10.

#### *Excavations in Nim Li Naj, Group D: TR2-TP3, TR2-TP4, TR2-TP7*

Test pits 3, 4, and 7 were located in a group that was designated Group F while in the field in 1994 but is, in fact, part of Group D. This section of the group, which includes 10 structures, is located off of Transect 2, within the elbow where the southern

arm of the transect turns back to the west. The three largest structures of the group lie north, south, and west of a plaza. The eastern edge of the plaza is defined by a long, low wall that runs north-south. Three smaller structures lay to the northwest of the central plaza. Another structure is positioned to the north of the plaza group and south of a large, irregularly shaped platform that measures approximately 100 square meters. The remaining structure is 10 meters west of this platform and a wall begins at the northeast corner of this structure, heads northeast past the platform, then turns south toward the main plaza group. Two other small sections of wall, including one that is almost circular, are present within the group.

### TR2-TP3

Test pit 3 was located in the western structure surrounding the secondary plaza. This structure measures approximately 8 x 5 x 0.5 meters and is oriented north-south. A shallow, narrow (20 cm) ditch runs east-west across the structure 5 m north of the south edge. Test pit 3, which measured 1 x 2 meters and was oriented 17° east of north, began in the middle of the ditch and continued south over the center of the structure. The surface of the excavation south of the ditch was littered with approximately a dozen large and medium sized (15 to 40 cm) limestone rocks. These were either fill or tumble from a rough structure wall and reached a depth of up to 50 cm below the modern ground surface. Mixed with these rocks was fill material consisting of small rocks (less than 10 cm) and soil. These levels were full of potsherds in addition to a few lithic flakes, two obsidian blade fragments, and two *manos* – one complete and one fragment. Beneath this level more fill material- without the larger rocks – was unearthed. Within this material were several additional potsherds and an obsidian blade fragment. This fill extended to

bedrock, 70 to 90 cm below the modern ground surface. The area of the excavation that encompassed the ditch was interesting in that no features whatsoever- including artifacts and rocks- were discovered. This ditch may be a fairly recent creation that was dug to help drain a nearby milpa. This group lies atop a ridge that falls off to the west, directly beyond the structure in which test pit 3 was located.

It appears that this structure experienced a considerable amount, if not duration, of occupation, especially when compared to artifact assemblages from other structures in the region.

#### TR2-TP4

Test pit 4 (Figure 5.45) was located in the southern structure of the central plaza of Group D. This structure measures 8 x 5 x 0.7 meters and is oriented east-west. It sits atop a circular platform – apparently a bedrock outcrop – that measures 10 to 12 meters in diameter and stands 25 cm high. Excavations in test pit 4 determined that this platform is an oddly shaped bedrock outcrop. Test pit 4 measured 1 x 2 meters and was oriented 358° from north. It was located on the north side of the structure, 3 meters east of the northwest corner. The pit was situated half on the structure and half on the platform. Beneath the humus on the structure, fill material that contained rocks up to 20 cm across was encountered. Within this fill, a few potsherds were discovered. In the south end of the pit below this fill a possible bench was unearthed. However, considering the odd bedrock formations in the area, it may simply have been a bedrock outcrop. The northern portion of the test pit (that which laid only over the platform) consisted only of 10 to 20 cm of soil with a few sherds over bedrock.

This structure was probably a house mound that was constructed to take advantage of the unique round bedrock outcrop. It appears to have been occupied only for a relatively brief period.

#### TR2-TP7

Test pit 7 was located in the largest structure of this section of Group D, the building on the north side of the central plaza. This structure measures 10 x 7 x 1.5 meters and is oriented east-west. An auxiliary structure juts off of the northwest corner. Test pit 7 was located just north of the southeast corner of the main structure and was oriented 128° east of north. The surface of the test pit was covered with medium and large (up to 50 cm across) limestone rocks. Some of these extended 25-30 cm to bedrock. The dearth of artifacts discovered in the excavation (only a few sherds) and the size of the rocks encountered suggest a hastily constructed structure. This theory may be supported by the presence of the wall that runs alongside the group. This wall appears to be similar in construction to defensive walls found elsewhere in the Petexbatun region. However, the wall runs around only one part of the group and could have been easily circumvented.

*Excavations in Nim Li Naj, Group E: TR2-Q32-TP05, TR2-Q32-TP06, TR2-Q32-TP08, TR2-Q32-TP11, TR2-Q32-TP12*

#### TR2-Q32-TP05

Test Pit 5 was a 1 x 2 meter excavation, oriented east-west, that lay across a small (2.20 meter east-west x 4.40 meter north-south) protuberance, possible a step, on the west side of Structure 1 in Group E. The purpose of this excavation, like most excavations on the transect subproject, was to (1) study the phases and modes of construction of the structure, (2) obtain a date for the structure from the ceramics recovered, and (3)



complete a 10% sample of the structures (excluding walls) on the transect. Structure 1 is the second largest platform in Group E, measuring 12.40 meters (north-south) x 13.15 meters (east-west). The pit had its east wall against the west wall of the main structure, and the pit extended across the substructure. The soil over the substructure appeared to be only humus and the stones that made up the substructure appeared to be little more than rubble fill or wall fall. The entire excavation produced only two badly eroded ceramic sherds, one lithic flake, and several fragments of shell. Excavation of the unit proceeded to a maximum depth of 58cm below the datum.

#### TR2-Q32-TP6

Test Pit 6 (Figure 5.46) was placed in the nearest mound directly to the east of Structure 1. This mound is a C-shaped structure which opens to the east. The structure measures 8.70 meters (north-south) x 5.70 meters (east-west) and stands approximately 0.5 meters high. The test pit, which measured 1 meter x 2 meters and was oriented east to west, sat directly in the middle of the open area of the structure. Beneath the cover of humus over the unit was a *piedrin* floor. Beneath the *piedrin* lay fill, consisting of larger stones (averaging approximately 28 cm in diameter) that surrounded much larger stones (averaging approximately 40 cm in diameter). Four pieces of cut or drilled stone were recovered from this lot. Bedrock lay at a maximum depth of 60 cm below the datum.

#### TR2-Q32-TP08

Test Pit 8 lay on the west side of a small mound 7.55 meters directly east of Structure 7. The mound measures 7.00 meters (north-south) x 5.70 meters (east-west) and is approximately 0.70 meters tall. The excavation measured 1 meter x 2 meters and was placed across the west wall of the mound. The humus layer of the excavation

contained a considerable amount of ceramic material and some lithic material. Just beneath the humus lay large stones from wall fall. From within the wall fall came even more ceramic material, including the foot of a small figurine. The wall fall continued down to bedrock, which lay at a maximum depth of 86 cm below the unit datum. Close to bedrock, near the southeast corner of the pit, lay several fragments of a vase which was apparently broken in antiquity.

#### TR2-Q32-TP11

Test Pit 11 was a 1 meter x 2 meter excavation which ran east to west across a "zig-zag" wall that runs northeast to southwest, beginning just south of the mound in which unit TR2-Q32-TP08 was placed. The humus over the area of excavation contained very little cultural material and the fill of the wall contained none at all. The structure appeared to consist of uncut stone stacked above stepped layers of bedrock (Figure 5.47). Some question remains, however, as to whether or not the entire structure is a naturally occurring phenomenon.

#### TR2-Q32-TP12

Test Pit 12, a 1 meter x 2 meter excavation running north to south, was located on the north side of what we believe to be Structure 6 of Group E. The structure measures approximately 6m(N-S) X 4.50m(E-W), and it stands less than 1m tall. The north wall of the excavation lay 17.80m due south of the south wall of TR2-Q32-TP6. The humus layer contained some cultural material, including two fragments of what appeared to be drilled limestone. Beneath the humus lay wall fall, which extended to the bedrock at a maximum depth of 65cm beneath the datum.

*Excavations in Nim Li Naj, Group C: TR2-Q27-TP13, TR2-Q27-TP14, TR2-Q27-TP15, TR2-Q27-TP16, TR2-Q27-TP17*

The following excavation units from Nim Li Naj, Group C are those for which adequate field notes were not kept (see Chapter 4). The brief descriptions presented here were all that could be reconstructed from the sparse lot forms filled out by the excavator. For these excavations we are uncertain even in which structures the test pits were placed. Still, the artifacts recovered and chronological data thus provided is useful.

TR2-Q27-TP13

Test pit 13 (Figure 5.48) was a 1 x 2 meter excavation in a house mound in Group C of Transect 2. The test pit, oriented north-south, was laid out on the north side of the structure so that both the structure and the platform on which it stood could be tested. The southern half of the test pit (the portion over the structure), uncovered a retaining wall that began 80 cm north of the south excavation wall, running perpendicular to the test pit. The area south of (within) the retaining wall consisted of rubble fill and included a few Late Classic potsherds and even fewer lithics. The area of the test pit north of the retaining wall overlaid the platform. It consisted of limestone rubble on bedrock with a few potsherds and lithics mixed in the fill. Bedrock was reached at a depth of 80 cm beneath datum throughout the test pit. This structure appears to have been built during the Late Classic and occupied briefly.

TR2-Q27-TP14

Test pit 14 was a 1 x 2 meter excavation in an east-west oriented house mound in Group C of Transect 2. The test pit, oriented north-south, was located on top of the structure, west of center. The excavation yielded fill material of limestone rubble directly on bedrock. Within the fill very few potsherds and a single lithic were collected.

Bedrock was reached 70 cm below datum. It appears that this structure was only briefly occupied.

#### TR2-Q27-TP15

The datum of test pit 15 lay approximately 15.5 meters and 50° east of north from the datum of test pit 14. The unit measured 1 meter x 2 meters and was aligned north to south with the datum in the northwest corner. The structure tested measures approximately 8 meters from east to west and 5 meters from north to south. At a depth of 36.5 cm a piedrin floor lay just beneath the humus layer. This floor rested to the north of a wall which ran east to west through the middle of the excavation (Figure 5.49). The piedrin floor, as well as the wall fall to the south of the wall, extended to bedrock, which lay at a maximum depth of 65 cm below the datum. A considerable quantity of cultural material was recovered, including three bags of potsherds, two bags of lithic material, and four small bags of obsidian.

#### TR2-Q27-TP16

Test Pit 16 lay approximately 65 meters north of TR2-Q27-TP15 in what appeared to be a small structure or portion of a wall. The structure measured approximately 4.00 meters (east-west) x 1.60 meters (north-south). Two lithic flakes and three ceramic sherds were recovered within the first ten centimeters of excavation but the rest of the excavation, which went down to bedrock at a depth of 99 cm, revealed nothing. The mound may have been nothing more than soil raised by a tree fall.

#### TR2-Q27-TP17

Test pit 17, a 1 x 2 meter excavation oriented east-west, was located in a north-south oriented house mound in Group C of Transect 2. The test pit was situated on the

east side of the structure, slightly north of center, laying half on the mound and half on a possible plaza. The excavation yielded limestone rubble and little else. Only a few lithics and even fewer potsherds were unearthed in the course of excavations. Bedrock was reached at a depth of 40 to 50 cm throughout most of the test pit, although it did drop off steeply an additional 30 cm in the westernmost 15 cm. The house mound appears to have been only briefly occupied.

*Excavations in Xibalba Rax: TR2-TP18, TR2-TP19, TR2-TP20, TR2-TP21, TR2-TP22, TR2-TP23*

#### TR2-TP18

Test pit 18 was a 1 x 2 meter excavation located in structure 31 of Xibalba Rax. Structure 31 is a 40 cm high 3 x 4 meter mound oriented roughly east-west. It is somewhat isolated with structure 30 located 10 meters to the east and structure 32 twenty-five meters to the north. Test pit 18 was oriented 27° from north and was located centrally on the south side of the structure, with the southern 1.5 meters off the mound. The primary objective of this excavation was to locate a midden for dating purposes.

After stripping the humus, the mound consisted of limestone rubble in a humus-like soil. Bedrock was reached at a depth of 60 cm below the modern ground surface and no artifacts were found. We expanded the test pit one meter to the north but had the same results – rocks but no artifacts. A workman informed us that a tractor passed through this part of the transect two decades ago and created a number of “features.” “Structure” 31 is probably a remnant of that tractor.

#### TR2-TP19

Test pit 19 was a 1 x 2.9 meter trench in wall 2 of Xibalba Rax. Wall 2 is a winding wall that begins just south of the main brecha of Transect 2 at the 80 meter mark

of the 1996 extension. From there, it runs northwest for 45 meters, turns south-southwest for 25 meters, then turns southwest for 7 meters, south for 10 meters, then southeast, northeast, and again southeast for 3 meters per leg. After the initial 45 meter section, wall 2 runs approximately parallel to the contour of the terrain. Structures 17 and 18 lie within the rough “L” of the wall.

Test pit 19 was located just south of the first bend, as described above, in wall 2. The excavation, oriented 283° from north, was laid out perpendicular to and spanning the wall. The main objectives of this test pit were to date the construction of the wall and to discern its purpose.

The wall was constructed by piling up medium to large (20 to 40 cm) limestone rocks over bedrock (Figure 5.50), which lies approximately 40 cm below the humus covering the wall. The large size of the rocks used in construction indicates that the wall was probably not defensive. Excavations in 1994 of walls on Transect 4 that were clearly defensive indicated that defensive walls in intersite zones in the Petexbatun were generally constructed by piling up small rocks so that palisades could be placed in the rubble base (Figure 5.51). The size of the rocks used in constructing wall 2 at Xibalba Rax would have made the positioning of wooden palisades impossible.

While we were able to examine the construction of wall 2, no artifacts were recovered so we are unable to date the wall. A soil sample was collected from the east (uphill) side of the wall for examination by Dr. Timothy Beach and the paleoecological team.

## TR2-TP20

Test pit 20 was located in structure 23 of Xibalba Rax. Structure 23 is part of a tight cluster of six mounds (with structures 19, 20, 21, 22, and 24) that, with 3 more (25, 26, and 27), together lie within walls 1, 3, 4, and 5. Structure 23 measures 10 x 4 x 0.6 meters and is oriented north-northeast – south-southwest. Test pit 20 was oriented 103° from north and was located centrally on the east side of the mound. Just south of the test pit was a looters' trench that bisects structure 23. The western 65 cm of the test pit was placed on the east side of the mound with the remaining 135 cm off the east edge. The primary objective of this excavation was to locate a midden for dating purposes.

A line of large (approximately 40 x 25 cm) cut limestone blocks ran along the edge of the structure, bisecting the test pit (Figure 5.52). West of this line (on the structure) was fill material. It consisted of smaller (5 to 20 cm across) rocks in a humus-like soil. Within this fill, 47 small, badly eroded potsherds were recovered. No artifacts were discovered in the humus east of the line of stone. A second course of cut stone was beneath the line of limestone. These two courses of stone were probably part of the platform retaining wall. Beneath the wall the remainder of the test pit consisted of fill and tumble. It included stones measuring 5 to 25 cm across with a considerable quantity of potsherds and a few lithics in dark brown soil with increasing marl inclusions as bedrock was approached. Through these levels, an additional 353 potsherds and 9 lithics were recovered. At a depth of 60 cm, we hit considerably larger slabs of limestone. These appeared to be pieces of bedrock that had flaked off (bedrock lay immediately below these slabs). In the remaining fill and tumble we recovered an additional 136 potsherds, 5 lithics, and a mano. Bedrock was reached at a depth of 65 cm.

While we did not find a midden when excavating test pit 20, sufficient potsherds were unearthed in the fill to allow dating of structure 23.

#### TR2-TP21

Test pit 21 was a 1 x 2 meter excavation located in structure 9 of Xibalba Rax. Structure 9 is the western building of a plaza group that includes structures 10, 11, and 12 on the north, east, and south sides, respectively. Structure 9 is oriented roughly north-south and measures 10 x 5 x 1 meters. Test pit 21, which was oriented 278° from north, was located just north of center on the west side of structure 9 with the western 1.5 meters off the mound. As with test pits 18 and 20, the primary objective of this excavation was to locate a midden for dating purposes.

The western 120 cm of the test pit was simply humus over bedrock, which was reached 35 cm below the modern ground surface. The eastern 80 cm of the test pit consisted of fill and tumble that included several large (up to 40 cm across) pieces of cut limestone and numerous smaller (5 to 25 cm) uncut stones. While we again failed to hit a midden, the 152 potsherds (in addition to 11 lithics) recovered from the fill and tumble are sufficient for dating the mound.

#### TR2-TP22

Test pit 22 was a 1 x 2 meter excavation located in structure 6 of Xibalba Rax. Structure 6 is the largest building on the whole of transect 2 (including the section surveyed in 1991). It is oriented east-west and measures 10 x 7 meters while standing more than two meters tall. Although part of a large village, only one structure is within 15 meters of structure 6 – structure 5 is eleven meters to the north. Structure 6 has been heavily looted with one looters' pit on the west side of the structure and a second just



west of center atop the mound. The second looters' pit measures approximately 1.5 x 2.5 meters and a 1 x 0.5 x 0.1 meter *laja* was on the back dirt pile. Several smaller *lajas* were also visible in the back dirt. It appears that the looters discovered a burial that, by intersite standards, was substantial. Test pit 22 was placed atop structure 6 just east of the second looters' pit and was oriented 263° from north. Beyond dating the structure, we hoped to recover some information from the burial.

The upper 35 to 40 cm of the excavation was the humus and contained a number of rocks in addition to 50 potsherds, 5 lithics, and a fragment of an obsidian blade. The subsequent 15 to 20 cm contained more rocks, most of which measured 5 to 20 cm across in humus-like soil. Four lithics and 42 potsherds were unearthed in this level. Beneath this level, a line of uncut stones ran from the northwest corner to the east side of the test pit (Figure 5.53). South of the line of stones was rubble fill that consisted of rocks 5 to 20 cm across and almost no soil. A mano, 2 lithics, and 38 potsherds were pulled from this fill, which continued to a depth of 70 cm from datum. The fill north of the line of stones was similar to that to the south in that it contained rocks 5 to 20 cm across, but these were mixed in a gray-brown soil of humus-like texture with a large quantities of artifacts – 303 potsherds, 10 lithics, and 2 fragments of obsidian blades. The line of stones may have simply been coincidental as it did not appear to constitute any kind of structure line or denote any sort of feature. Indeed, beneath the line, fill stretched across the entire test pit. This fill consisted of large stones (30 to 70 cm across) with some smaller stones in soil much like that described for the fill north of the wall. This fill continued all the way to bedrock, which was reached at a depth of 170 meters. Within

this fill, we recovered 455 potsherds, 24 lithics, a hammerstone made of chert, and two pieces of carved bone that together appeared to make up half of a ring.

No floors were encountered in the excavation, nor was any portion of a burial discovered. Structure 6 appears to be a typical Petexbatun building – a pile of rubble heaped together in a single construction phase.

### TR2-TP23

Because excavations in wall 2 (test pit 19) failed to yield any artifacts, we decided to excavate a second wall in Xibalba Rax. Test pit 23, located in wall 5, was that excavation. Wall 5 was chosen because it is the most substantial wall on the Transect 2 extension. It runs northwest-southeast and is approximately 85 meters long, 2.5 meters wide, and ranges from 25 to 50 cm high. The northwest end of wall 5 lies approximately 170 meters west and 95 meters south from the beginning of the transect extension. Test pit 23, which was oriented 10° from north and crossed the wall, was located 60 meters southeast of the northwest end of the wall and measured 1 x 2.8 meters. As with test pit 19, the main objectives of this excavation were to examine the construction of the wall in order to discern its function and to recover diagnostic artifacts so that the wall could be dated.

Like wall 2, wall 5 was constructed of large (up to 80 x 50 x 40 cm) uncut pieces of limestone with some humus-like soil now mixed in (Figure 5.54). Also like wall 2, no artifacts were unearthed while excavating test pit 23. Again, the construction method of the wall indicates that it was likely not for defensive purposes. The location of wall 5 offers no clues to its purpose as it does not follow any terrain features. In order to possibly learn something of the wall's function, two post holes were dug. One of these

was dug one meter north of the north side of test pit 23 (north of wall 5), the other one meter south of the south side of test pit 23 (south of wall 5). The soil samples from these posthole tests have been sent to Tim Beach for analysis. Similarly, posthole tests were conducted on wall 1. These were located along the 50 meter side brecha, 1.2 meters north and 5 meters south of wall 1.

*Excavations in Najej Yib Ru: TR2-TP24*

TR2-TP24

Test pit 24 was the lone excavation in Najej Yib Ru and was dug over the final two days of the 1996 season in order to obtain a date on the village. Because we could not afford to fail to obtain diagnostic materials, test pit 24 was placed on structure 5. Structure 5, which is oriented roughly east-west, measures 5 x 3 meters and stands 20 cm high. It is the middle of three small buildings (with structures 4 and 6) that lie on the north side of Najej Yib Ru. Test pit 24, which was a 1 x 2 meter excavation, was located atop the east end of structure 5 and was oriented 20° from north.

While sweeping the surface of the mound before laying out the test pit, we found a figurine fragment. The fragment was the head of a jaguar and measured 5 cm tall. Beneath this, the humus was typical for the area – rich brown soil with a scattering of limestone rubble. Within the humus we recovered 84 potsherds and 3 lithics. Beneath this level, we discovered the rubble fill of the platform. This fill consisted of limestone rocks 5 to 20 cm across mixed in a humus-like soil with large quantities of potsherds. In addition to the 368 potsherds pulled from the fill, we unearthed 4 lithics, 3 fragments of obsidian blades, a mano, a chert biface, and a 3 cm tall monkey head from a figurine. Bedrock was reached at a depth of 45 cm.

## **Transect 2 Summary and Discussion**

The Transect 2 excavations correlate well with findings elsewhere in the Petexbatun region. Virtually all pottery recovered date to the Late Classic period. In fact, only six Early Classic and two Preclassic sherds were recovered from the 17 test pits. It may be assumed that these few sherds were introduced into Late Classic structures with fill material. The predominance of Late Classic pottery in shallow deposits corresponds nicely with the heavy and often exclusively Late Classic settlement in much of the Petexbatun region.

The findings of the Transect 2 extension are consistent with those of surveys and excavations in similar ecozones in the Petexbatun region, namely, Transect 1 and the 1991 section of Transect 2. All buildings tested were constructed in a single phase and appear to have been occupied for only a fairly short time during the Late Classic period. This correlates well with the eruption of endemic warfare in the region during that period. All known intersite settlement during that time was on the escarpment, as opposed to the Preclassic when intersite settlement appears to have been limited to the rich but vulnerable (to attack) terrain on Transect 3 just above the banks of the river north of Punta de Chimino.

The one mystery regarding Transect 2 is the purpose of the myriad walls. Unlike those discovered on Transects 1 and 4, these do not appear to serve defensive purposes, nor in most cases do they seem to be placed in any way that would take advantage of the terrain for agricultural purposes. It is possible that they may have separated family held plots of lands. However, the shallow bedrock in the region may offer a clue as to the reason for these walls. Today, as one travels along Interstate 70 in southern Pennsylvania

and western Maryland a number of farms are visible from the highway. Exposed bedrock pokes through the shallow topsoil on these farms and haphazard stone walls cross the fields. These walls do not serve a clear purpose; rather, they are constructed through the process of clearing fields. The farmers use heavy machinery to push the stones, which end up in lines along the edges of the fields. It is quite plausible that the ancient Maya followed a similar pattern but, lacking machinery or beasts of burdens, they simply carried the stones to the edges of their *milpas*.

### **Transect 3**

#### **Setting and Description of Transect 3**

Transect 3 (Figure 5.55) is located three kilometers north of Transect 2 and two kilometers north of Punta de Chimino near the modern village of El Faisón. This transect was to be the northernmost of the five originally planned transects spaced at one kilometer intervals so its benchmark was determined in 1991 based on the benchmark of Transect 1. Mapped in 1993, coordinates for the benchmark were taken with a Global Positioning System (GPS) unit. However, this was before GPS signals were unscrambled for civilian use and thus should not be used. It is only mentioned here in case the reader looks at reports that cite the GPS readings. From its datum the transect extends west for 1200 meters before ending in a lagoon east of Tamarindito. As per standard Petexbatun Intersite Settlement Pattern subproject procedures, the transect is 200 meters wide and all structures and features were recorded, as were contours (Van Tuerenhout et al. 1993).

Two small groups were encountered along the transect. The first group, dubbed “Bayak,” consisted of 17 mounds and terraces and was located in the easternmost 300 meters of the transect (see Figure 4.2). The second group was considerably smaller than the first. Consisting of 9 somewhat dispersed structures and located 900 meters west of the transect’s datum, it was named “Battel” (Figure 5.56). Bayak is located on the highest point of the transect. From there, the ground drops at a fairly steady rate, with a total decline in elevation of 30 meters from Bayak to Battel. In 1994 seven test pits were excavated in four of the structures at Bayak. While this constitutes a 23.5% sample of structures in that village, the overall Transect 3 sample may be inadequate as no excavations were conducted in Battel.

### **Excavations in Transect 3**

#### *TR3-TP01*

Test Pit 1 was excavated by the archaeologist who kept inadequate notes during the 1994 field season. Thus the description provided here is necessarily brief. Test Pit 1, a unit measuring 1 meter x 2 meters and oriented 60° east of north, lay across the eastern edge of Structure 1 of Bayak. Structure 1 sits atop the highest point of Transect 3 and measures approximately 12.5 meters (east-west) x 8 meters (north-south) x 2.5 meters in height. Immediately beneath the humus layer and to levels more than 1 meter deep structural fill, consisting primarily of limestone rubble, was encountered. A low-density midden lay beneath the structural fill, extending to the bedrock at a depth of 183.4cm in some areas. Excavations throughout the unit produced large quantities of ceramic

materials, lithic materials, obsidian, bone, and shell. Soil samples were collected from the midden for soil flotation analysis.

### *TR3-TP02*

Test Pit 2, measuring 1 meter x 2 meters and oriented 25° west of north, lay across the north edge of Structure 1. Just beneath the humus layer lay structural wall fall, and beneath this lay structural fill. Beneath the fill, we uncovered a deep deposit of reddish brown soil containing large ceramic sherds, lithic material, obsidian, shell, bone (including some worked bone), and carbon. At a depth of 83.9cm, we uncovered a stone and rubble wall running from the northwest corner of the unit to the middle of the eastern excavation wall and to the north of this wall lay a stucco floor. Beneath the reddish soil, the wall, and the stucco floor lay a level of dark brown, hard-packed soil containing few stones, a significant quantity of ceramic material (including one figurine fragment), some lithic flakes and obsidian, one bag of shell, and one piece of green stone. An archaeobotanical soil sample was collected from the midden. Another stone wall, starting in the west profile of the unit and running to the southeast corner, was uncovered at a depth of 99.0 cm (Figure 5.57). Beneath this wall we encountered a burial (Figure 5.58).

The burial was located at an approximate depth of 130 cm and it contained the flexed, articulated remains of an adult male. The individual was placed on his left side, facing north, with his head to the west and feet to the east. Overall preservation of the remains was excellent. At some point after the burial was deposited, a wall was constructed, which crossed the individual's abdomen, crushing the chest and abdominal area. In order to recover the upper half of the skeleton, we added an additional 1 meter x 1 meter extension to the southwest corner of TR3-TP2, and this addition was numbered

TR3-TP2B. A small, jade disk was found between the individual's upper- and lower-right molars. No whole vessels were found associated with the burial, and the concentration of ceramic, lithic, and non-human osteological material found close to the burial was the same as that throughout the rest of the lot. Thus this individual apparently was buried in a trash midden. Alternatively, the fill used to cover the body contained a great deal of cultural material.

Beneath the level of the burial, but within what appeared to be the same deposit in which the burial was housed, we discovered yet another possible wall at an approximate depth of 135 cm. The large stones, which emerged from the west profile of the unit, appeared to form the corner of a structure in the center of the excavation unit. Beneath the level of this feature, we encountered a thin layer of black soil in the northern half of the unit. Finally, we encountered a dense, cream colored soil at a depth of approximately 190 cm that contained no cultural material, and which was identical to sterile deposits that were designated "bedrock" in TR3-TP1 and TR3-TP3, both of which were completed before this unit. After sinking another small test pit in the middle of the unit, we were convinced that we had reached bedrock, and we ceased excavations on the structure. Another addition to TR3-TP2 was added to the northeast corner of the unit in an attempt to recover what we at first believed to be a burial or a midden in that corner. This deposit, which turned out to contain nothing more than animal bone and ceramic material, was designated TR3-TP2A.

### *TR3-TP3*

Test pit 3 (Figure 5.59) was located on the south side of Structure 2 of Bayak, near the southwest corner. Structure 2 is a 12 x 9 meter house mound that is oriented



east-west. It lies on the north side of a small plaza that includes one other structure, Structure 3, on the southwest edge of the plaza. TR3-TP3 measured 1 x 2 meters and was oriented 346° from north. A wall of cut limestone dressed on parallel sides ran east-west across the excavation, bisecting the test pit. The northern half of the pit consisted of fill material composed of limestone rocks measuring up to 15 cm across. Very few artifacts – some potsherds and lithic debitage – were encountered in this level, which reached a depth of 26 cm below the modern surface. Beneath this level a floor may have once existed. The fill beneath this floor consisted of smaller (less than 15 cm) rocks mixed with soil. More potsherds and lithics were discovered in this fill, in addition to two chert bifaces, one of which was complete.

South of the wall very few rocks were encountered in the first 27 cm of excavation. Those that were measured no more than 7 cm across. A few potsherds and lithic flakes were unearthed in this level. Beneath the level fill material was discovered. The limestone rocks were still small but considerably more plentiful. An eroded floor may have existed above this level. A chert biface was unearthed in the fill material.

The wall that bisected the test pit consisted of a single course of large cut stone, each stone measuring approximately 40 x 30 x 30 cm. The wall could be observed extending along the face of the mound for at least four meters east of the test pit and three meters to the south. Potsherds and lithic flakes were mixed in the soil around and between the stones of the wall. A hammerstone was found adjacent to the north face of the wall. Like the chert tools previously mentioned, it was located near the west excavation wall. All of these tools were between 31 and 36 cm below the datum. The fill beneath and on either side of the wall, spanning the extent of the test pit, was uniform,

consisting of light brown soil with flecks of marl and medium sized (<10 cm) limestone rocks. In addition to potsherds and lithics, 3 obsidian blade fragments and a small amount of daub was discovered in this fill.

Beneath this level (60 cm below datum), a possible second floor was discovered. While the soil remained identical, there were no longer rocks of any size. Concentrations of potsherds and lithics increased. Additionally, two obsidian blade fragments, a non-human mammal bone, a chert biface, a limestone bark beater, and a small amount of shell was unearthed. Beneath this floor, rubble fill was encountered in the southern half of the test pit. This fill was 22 cm thick and contained, in addition to small rocks, potsherds, lithics, shell, and two obsidian blade fragments. The northern half of the test pit continued to be nearly rock-free. Pottery encountered in this level was Preclassic and included much of a large broken vessel. Several rocks measuring 10-15 cm across laid in a rough row just south of the vessel. The break between the northern and southern halves of the test pit was marked by a large (45 x 30 x 25 cm) piece of dressed limestone, possibly tumble from the structure wall.

Beneath these levels a floor of hard-packed marl was encountered. In addition to a few lithics, a small amount of Preclassic pottery was discovered. The fill material under the floor was comprised of small rocks (<10 cm) in a medium grained, hard-packed soil. Few artifacts – only a few lithics and Preclassic potsherds – were present in this fill. Sterile soil was struck at a depth of 1.7 meters.

The depth of cultural deposits in Structure 2, in conjunction with the Preclassic pottery found in the earliest levels, suggests a long period of occupation that witnessed

the construction of several successive floors and possibly shifting dimensions of the structure itself.

#### *TR3-TP4*

Test pit 4 (Figure 5.60) was located on the north side of Structure 2, approximately 3 meters from the northeast corner of the structure. The pit measured 1 x 2 meters and was oriented 340° from north. A wall of rough cut limestone, running east-west, bisected the test pit into north and south halves. The south section of the unit was largely rubble fill, comprised of a high density of rocks less than 20 cm across in humus with some potsherds and lithics mixed in. The rocks below the humus and rubble (26 cm below the modern ground surface) were more uniform in size with most measuring 10 to 20 cm across. The artifact assemblage for this level was similar in composition and density to the level above it.

The humus layer in the north half of the test pit contained few rocks of any size. Some potsherds and lithics were located in this level and, as the excavation progressed, the top of a midden was struck (at approximately 21 cm below the modern ground surface). Artifacts unearthed at this boundary included a high density of potsherds and lithics, three obsidian blade fragments, a fragment of an animal bone, and a possible rod holder made of limestone. As work progressed in this area of the test pit, shell was found, along with additional lithics and potsherds. All pottery was Preclassic. A soil sample was taken from the midden near the north wall of the excavation.

The wall that bisected the excavation consisted of two courses of limestone. The southern (interior) course was constructed of cut stone that was dressed on all faces. These stones measured approximately 40 x 20 cm. The northern (exterior) course

consisted of uncut limestone slabs that measured up to 40 x 30 cm. Within the fill of the wall, a second rod holder was discovered, along with more pottery and lithics.

The Preclassic midden in the north portion of the test pit extended beneath the wall and the fill across the excavation. The midden encompassed the extent of the test pit beginning approximately 38 cm beneath the modern ground surface. The midden reached a maximum thickness of 60 cm (north end of test pit) and was 35 to 40 cm thick to the south. It yielded an extensive artifact assemblage, including perhaps the largest known collection of Preclassic pottery in the Petexbatun region. Also unearthed was a large collection of lithic debitage, a significant quantity of shell, one complete obsidian blade and six blade fragments, some animal bone, including a portion of a single burnt bead, and a ceramic stamp. Sterile soil was encountered 80 cm below the modern ground surface. However, because cultural deposits reached a depth of 1.7 meters in test pit 3, further excavation, in conjunction with postholes, extended the test pit an additional 70 cm. The test pit remained sterile.

Structure 2 clearly witnessed considerable occupation in the Preclassic. Earlier structural remains may exist slightly further south of and/or within the current structure. Part of this earlier structure may have been excavated in test pit 3. Within Structure 2 population growth may have necessitated expansion of the structure over part of the midden.

#### *TR3-TP5*

Test pit 5 (Figure 5.61), a 1 x 2 meter excavation oriented approximately east-west, was located centrally on the east side of structure 10, near the east edge of the structure. Structure 10, measuring approximately 20 x 20 meters and standing more than

3 meters high, is the largest structure in Bayak. A terrace extends off of the south side for 7 meters. While structure 10 is not part of a plaza group, it faces structure 8, which lies 10 meters to the south.

The humus level of TR3-TP5, encompassing the uppermost 20 cm of the test pit, contained only a few rocks, most of which measured less than 15 cm across, and some potsherds. The ensuing 40 cm consisted of rubble fill with small limestone rocks mixed with some potsherds and lithic debitage. At a depth of 60 to 80 cm below the modern ground surface, larger rocks (20 to 50 cm across) were encountered in the westernmost 80 cm of the test pit. Within this level, potsherds, lithic debitage, and a single obsidian blade were unearthed.

As excavation progressed, it became evident that rough walls of uncut stone stood in the east and west ends of the test pit. The west wall began 30 cm below the modern ground surface and continued to a depth of 190 cm. It consisted of rough limestone slabs measuring up to 20 x 30 cm. The eastern wall began 20 cm below the modern ground surface and, due to the slope of the mound, 50 cm below the top edge of the western wall. This wall also consisted of uncut limestone slabs but these, measuring on average approximately 20 x 30 cm, were considerably more uniform than those found in the western wall. The eastern wall stood three courses high and continued to a depth of more than 80 cm below the modern ground surface. The west wall may have been an exterior structure wall, the east a platform wall.

The area between the two walls consisted of fill material with small bits of limestone imbedded in a firm, light brown soil. The few artifacts present in the fill included potsherds and lithic debitage. As the west wall continued down, the lower

courses were situated slightly farther to the east until the final course was 30 cm from the west excavation wall. Within this 30 cm area a thick plaster floor was encountered at the base of the wall. The top half of the floor consisted of white plaster that was 10 cm thick. The bottom section was 20 cm of pink-hued plaster. This sterile floor began at a depth of 190 cm and terminated at 220 cm. East of the floor and wall fill material continued to a depth of 240 cm below the modern ground surface. Within this fill, remnants of a low density midden were discovered. This midden included potsherds, lithic debitage, a small amount of bone, shell, 5 obsidian blade fragments, and an obsidian core. There was a considerable increase in the density of pottery in the deepest 15 cm of the midden. The lower boundary of this midden was marked at a depth of 240 cm by a thin, 3 cm plaster floor that began 60 cm from the west excavation wall and continued across the test pit.

A layer of ash covered the test pit just beneath the floor. Much of a fragmented vessel was located in the ash at the west end of the excavation at a depth of 245 cm. Shell adjacent to this pot marked the beginning of a high density midden. This midden continued to a depth of more than 350 cm below the modern ground surface. It consisted of large quantities of shell and pottery in addition to a few lithics, a bit of animal bone, and an obsidian blade. Excavation ceased at a depth of 350 cm below the modern ground surface due to safety concerns.

#### *TR3-TP6*

Test pit 6 (Figure 5.62), a 1 x 2 meter excavation oriented approximately north-south, was located on the north side of Structure 10, near the mound's northwest corner. Once the humus was stripped away, the test pit consisted of rubble fill that reached a

depth of 75 cm. This fill was comprised of limestone rocks measuring up to 40 cm across and averaging 15 cm. The artifact assemblage within the fill included potsherds, lithic debitage, and two obsidian blade fragments. Additionally, at a depth of 64 cm, a 4.5 by 3.5 cm ax was found. This ax was made of highly polished stone that had the appearance of jade and may have been green chert.

A plaster floor was discovered beneath the fill. This well-preserved floor began at a depth of 75 cm and was 10 cm thick. It began at the south excavation wall and continued north for 1 meter. A low density midden began beneath the floor and continued to a depth of 180 cm. The artifact assemblage in the midden included potsherds, lithic debitage, bone fragments (possibly turtle or fish), and 8 obsidian blade fragments.

At a depth of 180 cm, the midden ended. A 20 cm thick floor extended 1 meter out from the south excavation wall. A possible hearth, defined by a semi-circle of limestone rocks, was unearthed at this depth in the northern 40 cm of the test pit. Within this feature, potsherds, lithic debitage, turtle shell and bone, and snail shell were found in an ashy soil. The hearth was not excavated beyond a depth of 2 meters.

A well-made wall of cut limestone was discovered beneath the floor in the southern half of the test pit. This wall began in the south excavation wall and ran northwest into the west excavation wall, which it met approximately 60 cm from the test pit's southwest corner. The wall stood at least 5 courses (a total of 40 cm) high and was constructed of fairly uniform slabs of cut limestone. These measured on average approximately 30 cm in length. The fill between the wall and the hearth yielded additional potsherds, lithics, two obsidian blade fragments, bone, shell, and a jade bead.

As with TR3-TP5, excavations in this test pit ceased when the depth of the excavation (240 cm) made the sides of the test pit unstable, thereby posing a potential hazard.

#### *TR3-TP7*

Test pit 7 was located in Structure 8 of Transect 3. Structure 8 is on the north side of a plaza group that also includes Structure 7 to the southwest and terrace walls to the north, south, and west. Structure 8 is oriented east-west and measures approximately 14 x 6 meters and 1.5 meter high. Test pit 7 began as a 1 x 2 meter excavation oriented 358° from north. It was located on the top and north side of Structure 8, slightly east of center. The edge of a crypt was discovered in the south test pit wall at a depth of 92 cm. The excavation was subsequently expanded one meter to the south. Once the direction of the burial was established, the excavation was further expanded by 1 meter to the west of the initial expansion, to a width of 140 cm (north-south).

The original 1 x 2 meter test pit consisted almost entirely of rubble fill. The first 30 cm excavated contained pieces of limestone and chert that measured more than 15 cm across. Three of the limestone rocks, including one that was 40 x 30 x 15 cm, were dressed on all faces. These probably were tumble from the crypt. In addition to pottery, lithics, shell, and an obsidian blade fragment in this level, two ceramic torch holders, one of which was 17 cm long and nearly intact, were discovered in the south excavation wall at a depth of 20 cm. Rubble fill continued through the next 40 cm but the rocks were smaller, with most under 10 cm. More pottery, lithics, and shell were discovered, in addition to another obsidian blade fragment. At a depth of 75 cm, the excavators began to discover higher densities of potsherds and a mano was found at a depth of 78 cm near



the north edge of the test pit. No additional shell was unearthed in the remainder of the excavation. The rubble continued unchanged at these depths and more lithics and another obsidian blade fragment were collected. The rubble fill did not change in size or density until a depth of 135 cm was reached.

From 90 to 117 cm, no lithics other than a single obsidian blade fragment were found. Potsherds continued to be plentiful and a mano fragment was discovered. Beginning at a depth of 117 cm, artifacts became somewhat scarce. However, a few lithics were again unearthed, in addition to some potsherds. Other than a single non-human bone at a depth of 160 cm, the artifact assemblage did not change until sterile soil was reached 170 cm below the modern ground surface. There was a change in the fill material at 135 cm, with some larger rocks (up to 35 cm across) mixed with the smaller rubble fill. At 150 cm in depth, the original humus layer was reached. There were still a number of rocks in this level but by 175 cm it was clear that the soil was sterile.

The expansion of the test pit above the crypt yielded similar remains as those found in the original 1 x 2 meter excavation. The top 20 cm consisted of rubble less than 15 cm across with some potsherds and lithics and a single obsidian blade fragment. The ensuing 20 cm continued through the rubble fill but yielded very few artifacts – some potsherds and a mano that was located at a depth of 26 cm, 140 cm north of the south excavation wall and 116 cm west of the east wall. The final 20 cm over the crypt consisted of additional rubble fill and small quantities of pottery and lithics. Additionally, an obsidian blade fragment and a prismatic chert blade were discovered in the east end of the expanded excavation.

The crypt itself began at a depth of 65 cm in the east end of the extension and 41 cm in the west. It was constructed of limestone blocks, some of which were dressed. The crypt had not completely collapsed but had shifted and settled, particularly the western section. The rocks of the crypt and the soil mixed in the rocks yielded few artifacts. Most of a vessel, vessel 1, was crushed between rocks in the northeast corner of the extension. A few potsherds and lithics were also unearthed. The crypt ended at a depth of 80 cm (+/- 5 cm depending on location within the extension).

The burial itself contained a Late Classic polychrome tripod vessel, vessel 2, with rattles in the legs. This vessel measured 25 cm across and its center was located 62 cm north and 51 cm west of the southeast corner of the extension. The vessel was inverted, probably over the skull, and the soil beneath/within it included a few potsherds and lithics. A third pot, vessel 3, was discovered 60 cm west of vessel 2. It was a simple bowl with a blood red slip on the interior and, like vessel 2, was inverted. Its diameter measured 15 cm and it stood 5 cm high, beginning at a depth of 90 cm. Its center was located 75 cm north and 89 cm west of the southeast test pit extension corner. Despite being in situ, it had been low-fired and was in dozens of pieces, held together only by the soil under the pot.

Despite the crypt, the burial was very poorly preserved. Seven teeth were found but these were scattered up to 75 cm from one another. Four of the teeth were carved incisors and two of these had had jade bead inlays, one of which was still in place. Three of the teeth were located under vessel 2. The remainder of the burial was highly fragmented and disturbed. Four long bone fragments were unearthed and the orientation of these – northeast-southwest – may suggest a flexed burial. However, the general

disorder of the skeleton may imply secondary burial. Beyond the complete vessels, few artifacts were discovered in the burial. Those unearthed included potsherds, lithics, shell, an obsidian blade fragment, and a chert point that was located 25 cm west of any bone at a depth of 89 cm. Most of the bone was located at a depth of 92 to 106 cm below datum, although one was as shallow as 70 cm. The complete vessels and potsherds from the burial and the fill above it all date to the Late Classic, indicating an intrusive burial in the otherwise Preclassic village.

An individual of some standing was interred in the grave in Structure 8. One vessel, vessel 2, was placed over the head and a second, vessel 3, may have been located over the abdomen. The crypt was capped and the entire mound was covered with chert and limestone rocks. Finally, at least two candles or torches were placed above the crypt. The grave goods and ceremony that accompanied the burial, in addition to the filed and inlaid teeth and, perhaps, the proximity of Structure 8 to the largest building in the area, Structure 10, indicate that an individual of some significance was entombed within the crypt.

### **Transect 3 Summary and Discussion**

It was expected that the excavations of structures on Transect 3 would correlate well with findings elsewhere in the Petexbatun region. That is, we would encounter shallow deposits of Late Classic material. However, all structures tested yielded deposits that were surprisingly deep and, more surprisingly, early. All seven test pits, save one, consisted solely of Preclassic artifacts. The lone exception was the burial in test pit 7 (TR3-TP7). This Late Classic burial was intrusive in a Preclassic structure. Test pits one

through three, five, and six consisted of Late Preclassic Chicanel pottery over contexts with Late Middle Preclassic Mamom. Test pit four also began with Chicanel, but the earliest deposits consisted only of a Mamom-Chicanel mix. The earliest structure in the Bayak group may be the largest, Structure 10. When excavations ceased, abundant Mamom deposits were still present.

While the findings on Transect 3 – early dates and an absence of defensive features – were unexpected in light of other excavations in the region, the early deposits are not out of line with early settlement elsewhere in the Pasión region. The deep soils in and near the Transect 3 villages would have been ideal for agriculture and fresh water was near at hand from two sources – Lake Tamarindito to the west and the Petexbatun River to the east. The anomaly is the Late Classic burial: who was placed with such ceremony in this location that was relatively remote from the remainder of contemporary settlement in the region?

## **Transect 4**

### **Setting and Description of Transect 4**

The first three transects mapped by the Petexbatun Intersite Settlement Survey subproject were relatively ecologically redundant. While Transects 1 and 2 were located primarily on the escarpment and Transect 3 was just east of the escarpment, all covered the areas of good to prime soil for agriculture with ready access to water. For these reasons, population densities in these areas may not be representative of the greater Petexbatun region. In order to remedy this and to generate more accurate regional

population estimates, a fourth transect was mapped during the 1994 and 1996 field seasons (see Figure 1.4). Transect 4 (Figure 5.63), located west of Aguateca and several kilometers from the nearest water source, is in an inhospitable area of very thin soil with exposed bedrock outcrops.

The transect began 120 meters west of the northwest corner of the defensive wall on Cerro de Mariposas. This cerro is one of a series of fortified hilltop villages that lie to the west of Aguateca (Figure 5.64). The datum for the transect stood atop a hilltop fortress that we named Cerro de Miguel (Figure 5.65). This cerro consists of 14 small structures clustered within a defensive wall and agricultural terraces. The northern portion of the cerro contains most of the village, with 10 structures densely packed within the defensive wall. On the upper portion of the south slope of the hill, three structures stand within a wall while a nearly circular terrace wall lies within. A single structure is located just west of the defensive walls at Cerro de Miguel and appears to be the lone unfortified structure on the cerro.

A second fortified village, Cerro de Yax (Figure 5.66), lies 150 meters west of Cerro de Miguel. Like the first cerro, Yax consists of a tightly clustered settlement atop the hill and additional structures on the southern slope. The northern settlement is group Y-1, the southern Y-2. Group Y-1 consists of 14 small structures, 8 of which are within or bisected by a defensive wall that rings the hilltop. Of the 6 remaining structures, 5 are part of a pair of patio groups that include structures bisected by the defensive wall. Group Y-2 consists of 19 structures with a central plaza group. Only one wall was discovered while mapping this group. The location of the wall, downhill of all structures, implies that it was likely an agricultural terrace.

At the 600 meter mark of the transect a third fortified hilltop village, Cerro de Che, was discovered (Figure 5.67). Like the other cerros, it consists of walled settlement atop the hill with additional settlement to the south. The northern settlement includes 21 somewhat dispersed structures and a single defensive wall strategically ringing the hilltop. Only four structures, however, lie within the wall while three are connected to it. The remaining 14 appear to be unfortified. The southern cluster of settlement was designated Group A. Group A, consisting of 11 structures and what may be a pair of walls, is the only low-lying settlement on Transect 4. While it appears to not have defensive walls associated with it, it may have been fortified (see TR4-TP10, below).

No structures were found within the final 400 meters of the transect mapped in 1994. While the terrain does drop 10 meters in this area, the descent is gradual, with no high, defensible sites for settlement. The absence of strategic locations, in conjunction with the thin soils and lack of water in this area would have made it unappealing for settlement in the Late Classic Period when the rest of the villages on Transect 4 were constructed and occupied.

In 1996, we decided to extend Transect 4, continuing mapping westward until reaching a new ecozone. However, the logistics in this remote region west of Aguateca made work difficult and slow – it was impractical to construct a camp on the transect and the daily round trip commute from the 1996 season field camp at Punta de Chimino took over four hours. For these reasons, the transect was extended only 750 meters. The Transect 4 extension continued the trends found over the last 400 meters of the transect in 1994. The terrain continued to descend gradually, dropping less than 10 meters over the 750 meter extension. Soils in the area remain quite shallow with bedrock frequently

exposed and several sink holes are beginning to form. No structures or artifacts of any kind were found within the extension.

Locally hired workers informed us that the land continued its gradual descent through the modern village of Jordan approximately two kilometers further west. Additionally, they said that no prehistoric structures existed between the end of the transect and the modern village.

#### **Excavations in Transect 4**

The extremely thin soils of Transect 4 and the very low platform heights in the villages of the transect allowed us to complete excavations quite rapidly. Few artifacts were present in our excavation units and most pits went through the shallow humus layer and a thin layer of fill before striking bedrock. As such, excavations descriptions are brief.

##### *Excavations in the Cerro de Miguel Hilltop Fortress*

##### TR4-TP1

Test Pit 1 (Figure 5.68) was a 1 meter x 2 meter unit oriented east-west and was located on the eastern edge of Structure 7 of Cerro de Miguel. Structure 7 measures approximately 7 x 5 meters, is 0.5 meters high, and is oriented north-south. A possible stone tool was present in the humus layer of the unit, as well as a small quantity of ceramic sherds and obsidian. Beneath the humus layer lay tumble from a structural wall and beneath the tumble lay what appeared to be platform fill consisting of medium-sized rocks (averaging approximately 15 cm in diameter). Beneath this level we encountered a

floor of dense piedrin and beneath that level, at a maximum depth of 90cm, we came across soft limestone bedrock. Few ceramics or lithics were recovered in the test pit.

#### TR4-TP2

Test Pit 2 was a 1 meter x 2 meter unit oriented 60° east of west, placed across the western side of Structure 14. Structure 14 lies near the bottom of a small ridge that runs south of the cerro. The structure measures approximately 6 meters east-west x 4.5 meters north-south and it stands just under 1 meter tall. Beneath the humus that covered the unit lay structural wall fall and on the eastern end of the unit we encountered a piedrin floor at an approximate depth of 45 cm. We collected a 2 liter soil sample from the fill of the floor, but very little cultural material was recovered from the unit. Rubble fill lay beneath the structural wall and the floor, and crooked, angular sheets of limestone bedrock lay just beneath that at an average depth of 90 cm beneath the datum.

#### TR4-TP3

Test pit 3 (Figure 5.69) was a 1 meter x 5 meter trench oriented 70° east of north that lay across the semicircular terrace wall in the southern section of Cerro de Miguel. The purpose of the unit was to study the construction and of the wall and to date it. Very little cultural material was recovered and then only from the fill within the wall (outside the semicircular structure) but not from within the wall. The wall was approximately 65 cm tall at its highest points and the rubble material from which it was constructed seemed to have collapsed to either side.



*Excavations in the Cerro de Yax Hilltop Fortress*

TR4-TP4

Test pit 4 (Figure 5.70) was located in Structure 13 of Cerro de Yax. This structure is oriented north-south and measures approximately 7 x 4 meters x 50 cm high with a porch or terrace on the east side. Three structures of similar size (Structures 11, 12, and 14) lie within 2 to 3 meters to the north, west, and south. Test pit 4 was a 1 x 2 meter excavation oriented 90° east of north. It was laid out on the west side of the structure near the northwest corner. The eastern 110 cm of the excavation tested the structure itself while the western 90 cm was located off of the structure. The humus layer measured approximately 15 cm in thickness and yielded potsherds and a few lithic flakes. Rubble tumble from a structure wall with rocks averaging approximately 15 x 20 cm was scattered throughout and below this level across the eastern 150 cm of the test pit. Part of the wall was discovered just beneath the modern ground surface in the western end of the excavation. Uncut stones continued down from these to a small bedrock ridge. The soil east of the structure wall contained fill material consisting of small rocks (less than 5 cm) and a few potsherds. Excavations west of the wall unearthed more tumble and fill similar to that found to the east. Potsherds and a few lithic flakes were also discovered. Bedrock was reached between 35 cm (at the west end of the test pit) and 60 cm (at the east end) below the modern ground surface. The structure appears to have been a house mound occupied only during the Late Classic period.

TR4-TP5

Test pit 5 was located in Structure 4. This structure is oriented north-south and measures approximately 7 x 5 x 1 meters. A standing wall of dressed stone runs along

the east side of the structure. Test pit 5 measured 1 x 2 meters and was oriented 79° east of north. The structure wall bisected the excavation into east and west sections. A few large rocks (up to approximately 20 cm across) were located on or near the surface of the excavation across the western 150 cm of the excavation. Beneath these, the test pit consisted predominantly of fill material of small rocks mixed with soil. Within this fill, a few potsherds were discovered on both sides of the structure wall. East of the wall a few lithic flakes and a small piece of limestone measuring 4 x 1.5 cm with parallel lines incised across two faces were also unearthed. The structure wall itself was constructed of cut limestone blocks measuring up to 30 x 15 cm (Figure 5.71). Very little fill material was used in construction and no artifacts were found within the wall. A sterile plaster floor 15 cm thick was laid directly on bedrock beginning beneath the east edge of the structure wall and extending west into the structure. The floor appears to have been built to provide a level surface over the bedrock, which slopes down toward the west. Very few artifacts were discovered in the excavation but those that were found date to the Late Classic. It is interesting and puzzling, especially when considering the desperate times in which the structure was occupied, that so much labor would be invested in a small, common house mound.

#### TR4-TP6

Test pit 6 (Figure 5.72) was a 1 x 4 meter excavation oriented 103° east of north. The pit crossed a portion of the wall that surrounds Cerro de Yax in an attempt to date the wall's construction. The excavation tested a section that measures approximately 2 meters wide and up to 40 cm high. Test pit 6 crossed this section of wall approximately 4 meters north of Structure 6. The wall itself was constructed of rough, uncut limestone

rock measuring up to 40 cm across but averaging closer to 20 cm. The wall was packed with fill material that consisted of soil with small rocks and pebbles and a few artifacts, including small amounts of potsherds, lithic debitage, and 4 obsidian blade fragments. The center of the wall was constructed directly on bedrock and reached a height of 30 cm. Tumble from the wall laid to the east and west of the wall, covering the excavation area. The artifacts recovered, like those from the structures tested on this cerro, date to the Late Classic.

*Excavations in the Cerro de Che Hilltop Fortress*

TR4-TP07

Test Pit 7, a 1 meter x 2 meter unit oriented 102° east of west, was located on the eastern side of Structure 9 in Cerro de Che. This mound measures approximately 8 meters north-south x 9.5 meters east-west by 1 meter tall and stands near the northern end of Cerro de Che. Beneath the humus of the unit lay a layer of structural wall fall. Just beneath the wall fall, at an average depth of approximately 70 cm below the datum, we encountered the same soft, crooked, limestone bedrock as elsewhere in Transect 4. Small amounts of ceramics, lithics, and shell were recovered from the excavation.

TR4-TP08

Test Pit 8 was located almost due north of Test Pit 7 in Structure 2. The 1 meter x 2 meter unit, which was oriented north to south, lay across the southern wall of a small mound. The structure itself measures approximately 6 meters east-west x 4 meters north-south X 1 meter tall. As in TR4-TP02 and TR4-TP7, wall fall lay beneath the humus layer, and a piedrin floor lay to the north of the existing wall. Although cultural materials were scarce, some ceramics, lithics, and three prismatic obsidian blades were found.

Beneath the structural wall, wall fall, and floor, we encountered a layer of rubble fill, and just beneath that lay the limestone bedrock at an average depth of 70 cm below the datum.

#### TR4-TP09

Test Pit 9 (Figure 5.73) was a 1 meter x 4 meter trench oriented 114° east of north, which lay across the section of defensive wall on the east side of Cerro de Che, just south of Structure 7. The purpose of the excavation unit was to study the construction, date, and function of the presumed defensive wall. The rubble from which the wall was constructed seemed to have collapsed on either side of the wall since the edges of the wall were difficult to distinguish in the unit. Small quantities of ceramics, lithics, and obsidian were recovered from the fill of the wall. The wall measured 65 cm tall from its highest point to the bedrock below, and the bedrock lay at an average depth of 70 cm below the datum.

#### *Excavations in Group A*

#### TR4-TP10

Test pit 10 was located in the northernmost structure of Group A, Structure 1. This structure, measuring approximately 5 x 4 x 0.5 meters and oriented east-west, stands approximately 5 meters north of the northern structure around the main plaza of this group. Test pit 10 was a 1 x 2 meter excavation oriented 87° east of north and was located centrally on the west side of the structure. The surface of the eastern 150 cm of the pit was littered with limestone rocks measuring 10 to 40 cm across. Many of these rocks were dressed. Beneath these rocks at a depth of 30 to 40 cm below ground level smaller, uncut rocks, averaging 15 cm across, proliferated (Figure 5.74). Within this

level several tools were found. These include a possible awl and a chert ax in addition to two other chert bifaces.

The dressed stone used in the construction of this structure, which may have been taken from the large structures around the plaza of Group A, may display a microcosm of the latter days at Dos Pilas, where stone facing was ripped from structures in order to hastily construct fortifications. The residents of this low-lying group may have hastily constructed a guard house or outpost for defensive purposes. This structure, containing several tools or possible weapons, stands to the north of the group, between the group and the nearby well-fortified hilltop fortresses.

#### TR4-TP11

Test pit 11 was located on the east side, near the northeast corner, of the largest structure of Group A, Structure 3. This structure measures approximately 10 x 7 x 1.5 meters and stands on the east side of the central plaza. Two smaller structures, one on the north side of the plaza and one on the south side, complete the central plaza. The structure in which test pit 10 was placed is located just north of this plaza.

Despite the apparent presence of standing structure walls on the west side of the main structure, test pit 11 was laid out on the east side in hopes of striking a midden. This 1 x 2 meter excavation was oriented 99° east of north. While the surface of the test pit had no discernible features, a number of large limestone rocks up to 30 cm across were discovered in the west half of the pit. These may have been tumble from a structure wall. Smaller rocks in fill material were mixed within and beneath these rocks and continued to bed rock. The bedrock was highly fractured and irregular, ranging from 30

to 80 cm below datum. No midden was found in the excavation and few artifacts – some Late Classic potsherds and lithic debitage – were unearthed.

#### **Transect 4 Summary and Discussion**

The findings of the Petexbatun Intersite Settlement Pattern subproject on Transect 4 attest to the last desperate days of the Petexbatun kingdom. A primary reason for placing Transect 4 where we did was, as stated above, to obtain a more accurate overall perspective on intersite settlement in the Petexbatun region. Yet, rather than discovering little evidence of habitation, densely packed settlement was recorded along much of the transect. In fact, estimates of population densities for this marginal area are considerably higher than those for the other three transects mapped in the region (see Chapter 7). This high population density is especially surprising when the environment is considered – soils are quite shallow and not well suited for agriculture and water sources are not near at hand. The lone obvious advantage of settling in this area is the easily defensible hilltops.

The location of the defensive walls atop the cerros and their relationships to house mounds attest to a possible two stage developmental scheme. It is not possible to support this archaeologically because the few potsherds recovered were all Late Classic and settlement was quite brief, perhaps on the order of just 25 years in the late 8<sup>th</sup> century. Initially, settlements were constructed on the hilltops for defensive purposes. Clearly, the socio-political environment in the region was unstable, but not as unstable as it would become. At some point the situation deteriorated further and, as at Dos Pilas, defensive walls and palisades were quickly constructed. These walls passed through some

structures, making them part of the wall, and some plaza groups were bisected. On each hilltop fortress, save possibly Cerro de Miguel, approximately half of all structures were left unprotected. These were clearly desperate times.

The absence of settlement west of Cerro de Che is not surprising. The lone advantage to settling in the marginal area west of Aguateca was the defensible hilltops. Once the land begins to flatten (at the 600 meter mark of Transect 4), the thin soils and lack of convenient water sources would have made this region unappealing to the prehistoric Maya.

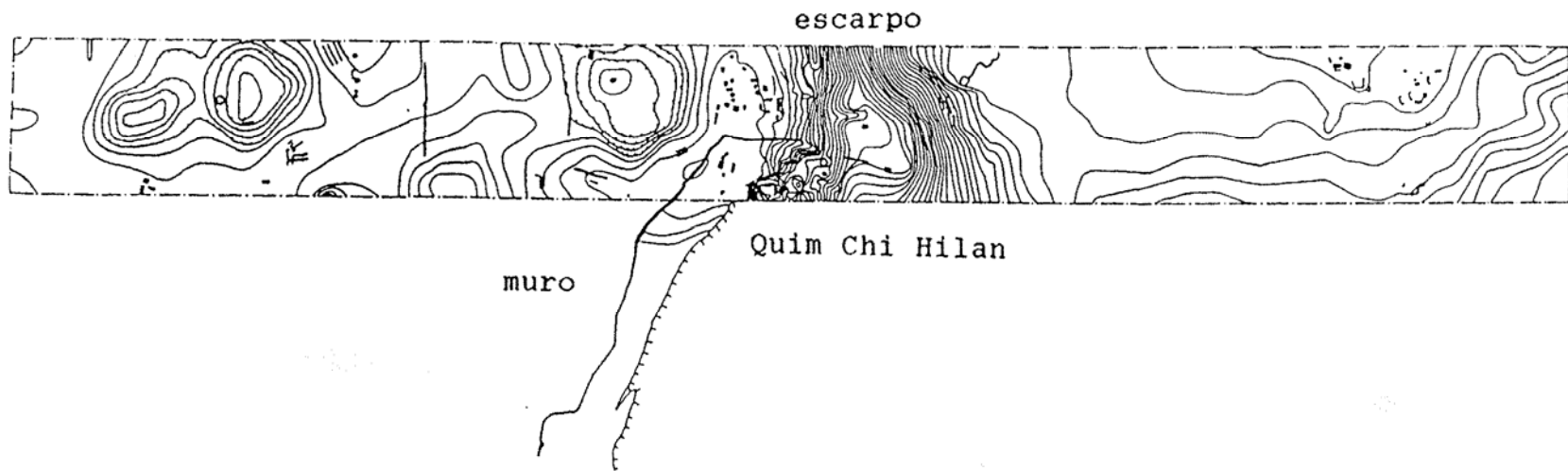


Figure 5.1. Map of Transect 1 (from Killion et al. 1991: Fig. 35.3, p. 598).



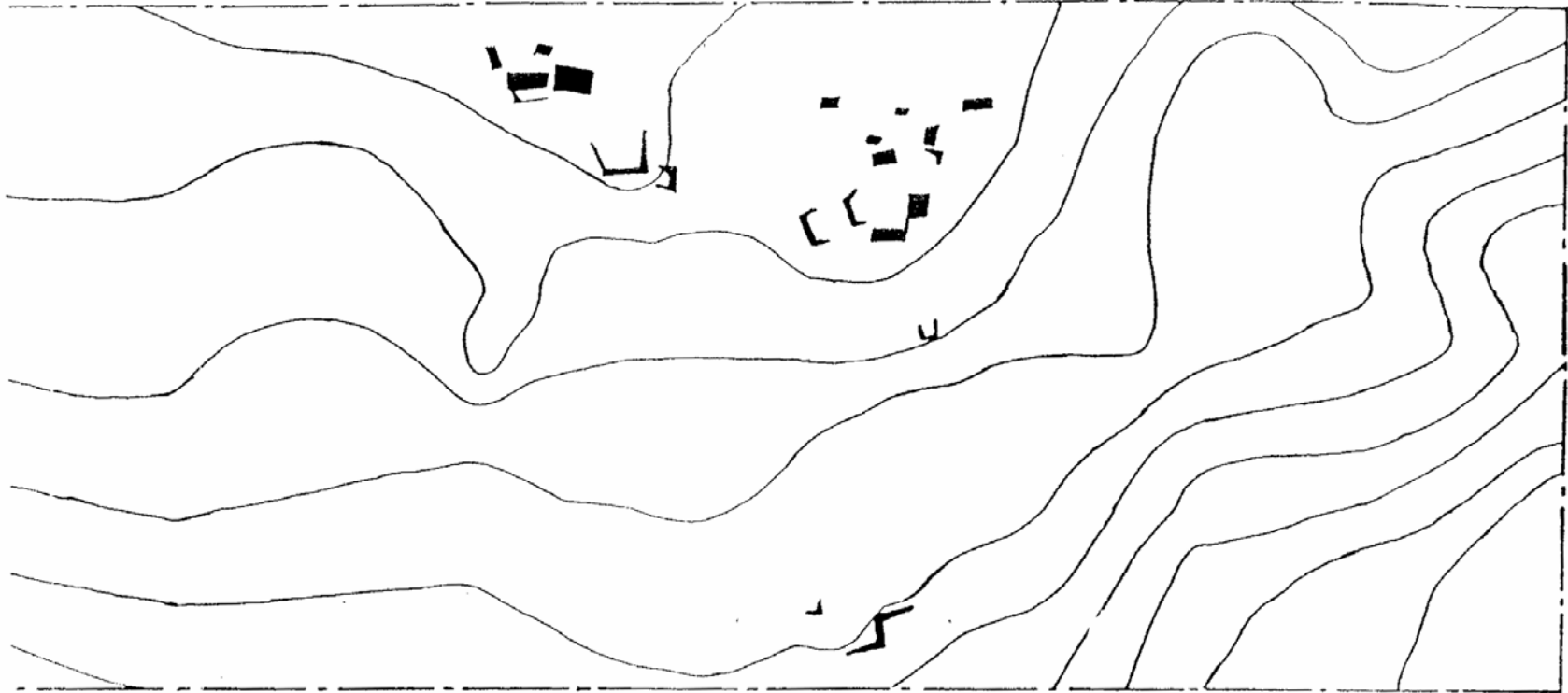


Figure 5.2. Map of the Transect 1 village Tix Li Poh (from Killion et al. 1991: Fig. 35.8, p. 605).

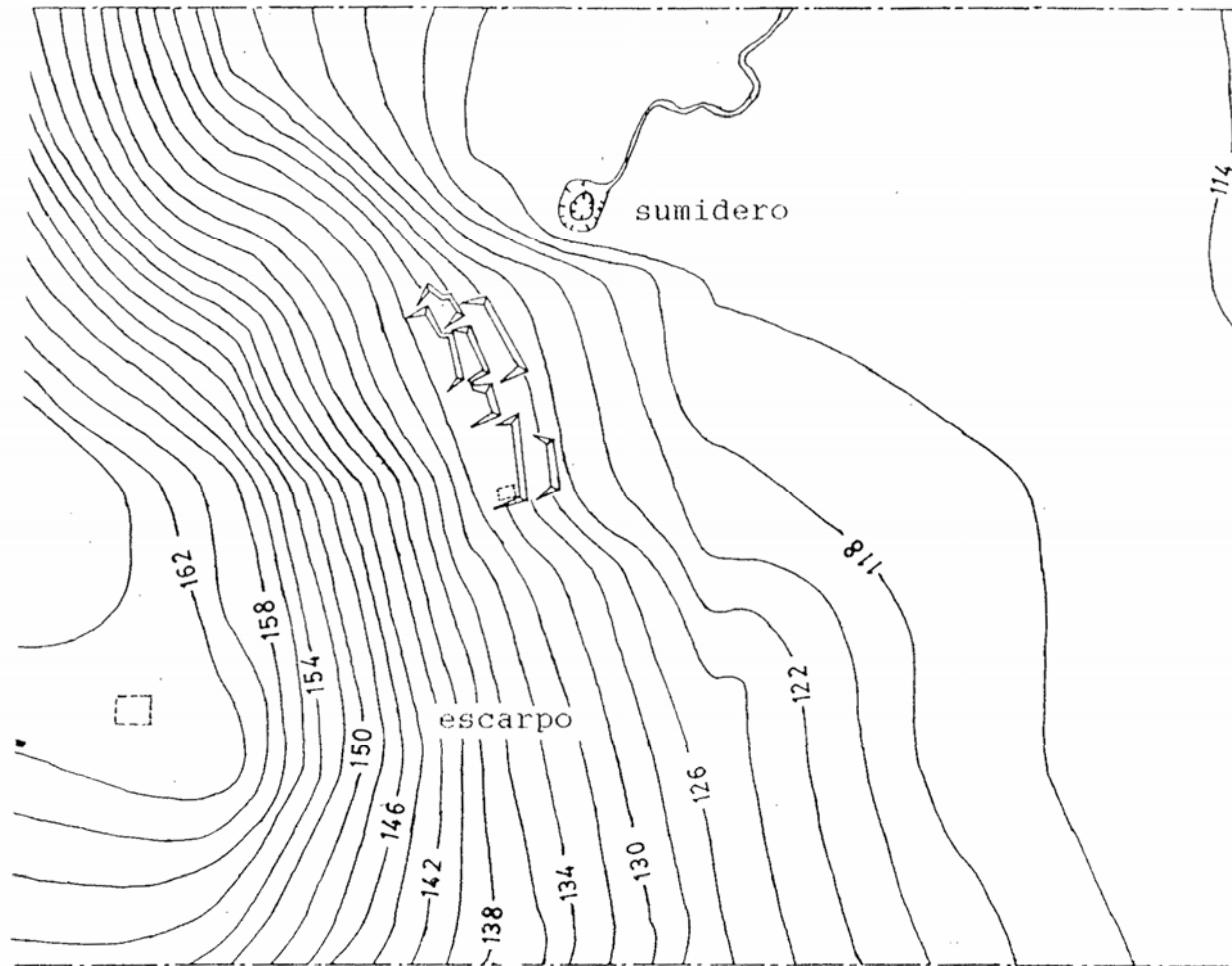


Figure 5.3. Map of Transect 1 terraces near the base of the escarpment (from Killion et al. 1991: Fig. 35.7, p. 603).

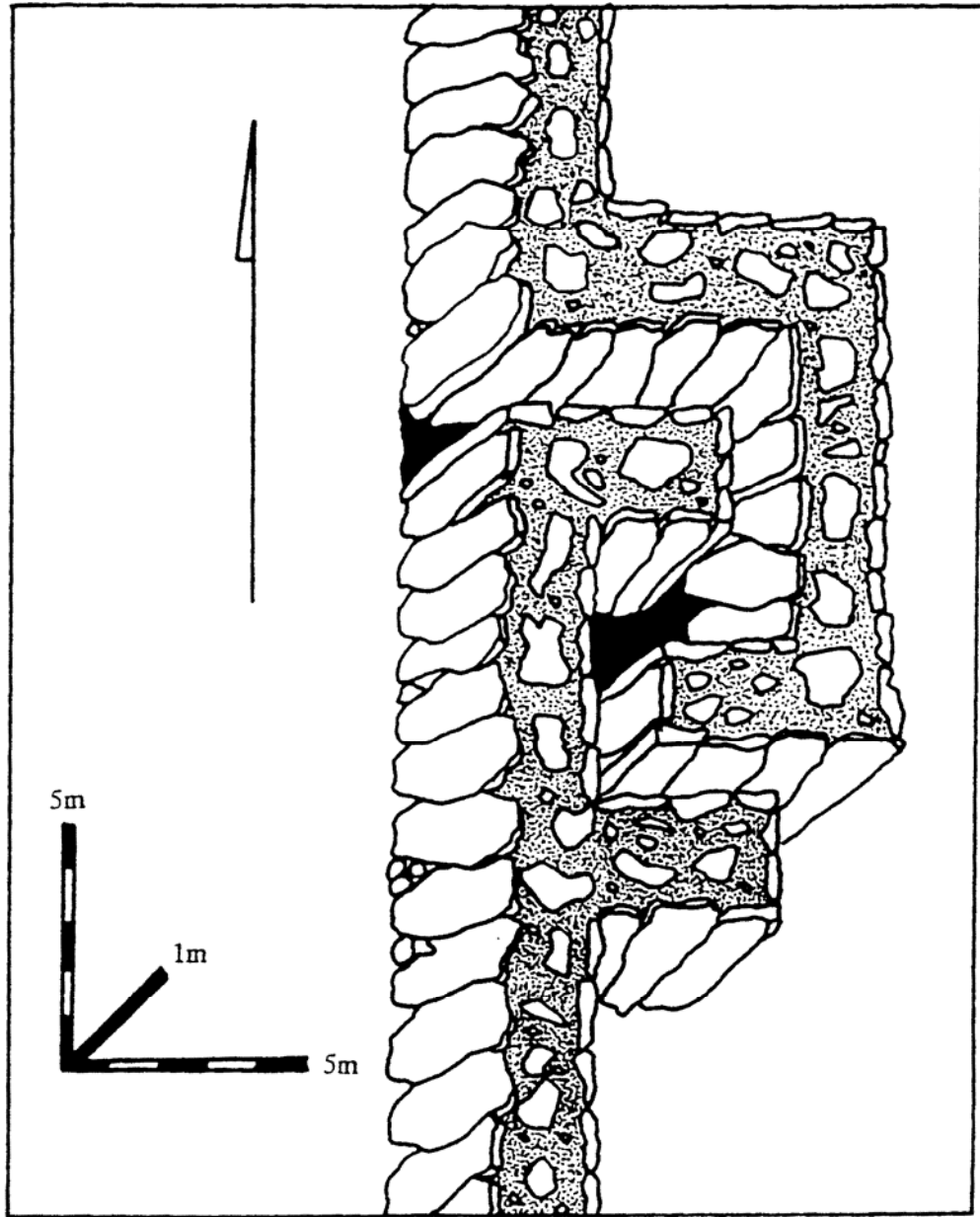


Figure 5.4. Reconstruction drawing of the baffled gate in the wall south of Quim Chi Hilan (from Van Tuerenhout 1996: Fig. 5.10, p. 172).

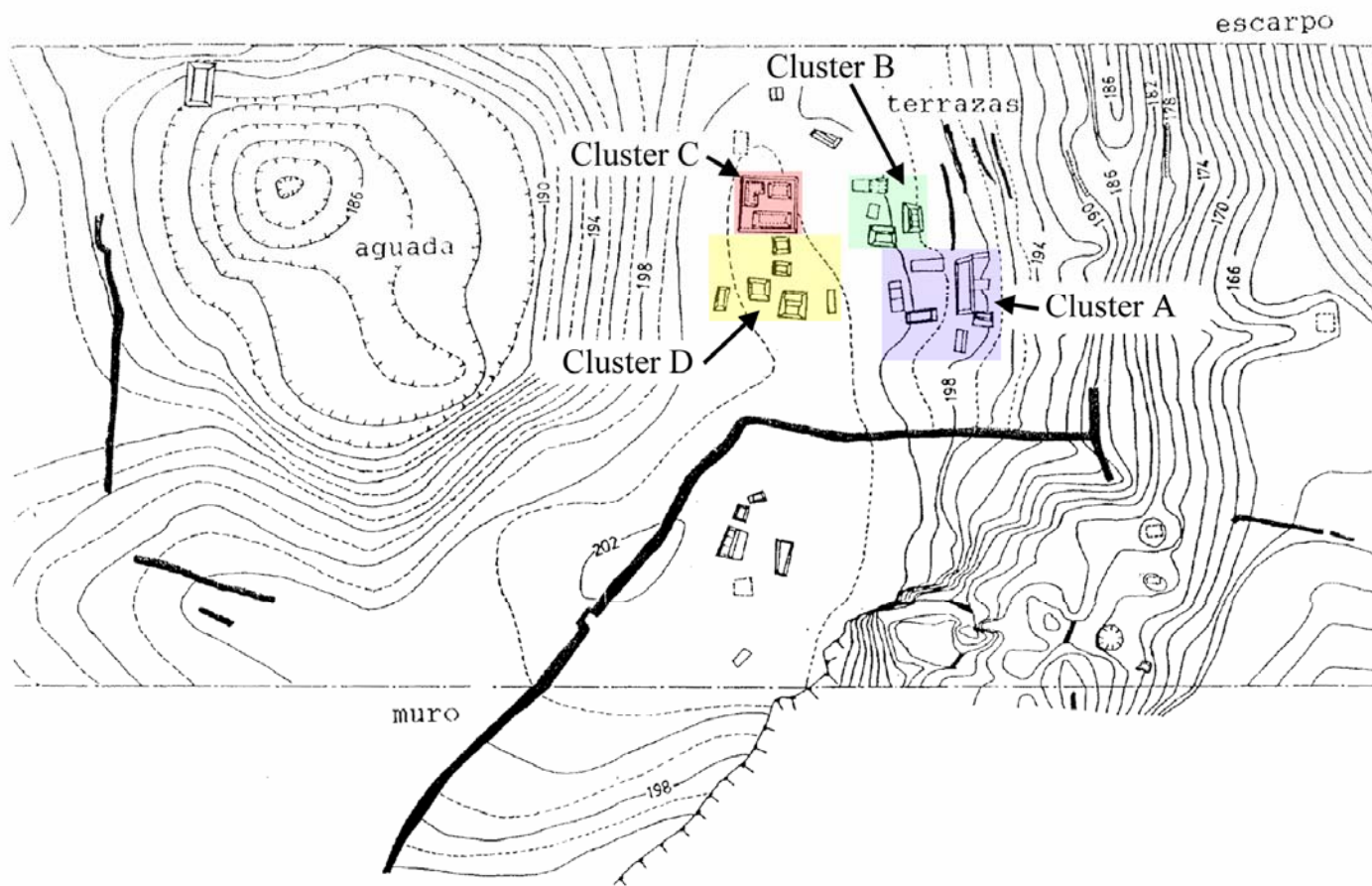


Figure 5.5. Map of Quim Chi Hilan showing Clusters A, B, C, and D (after Killion et al. 1991: Fig. 35.4, p. 599).

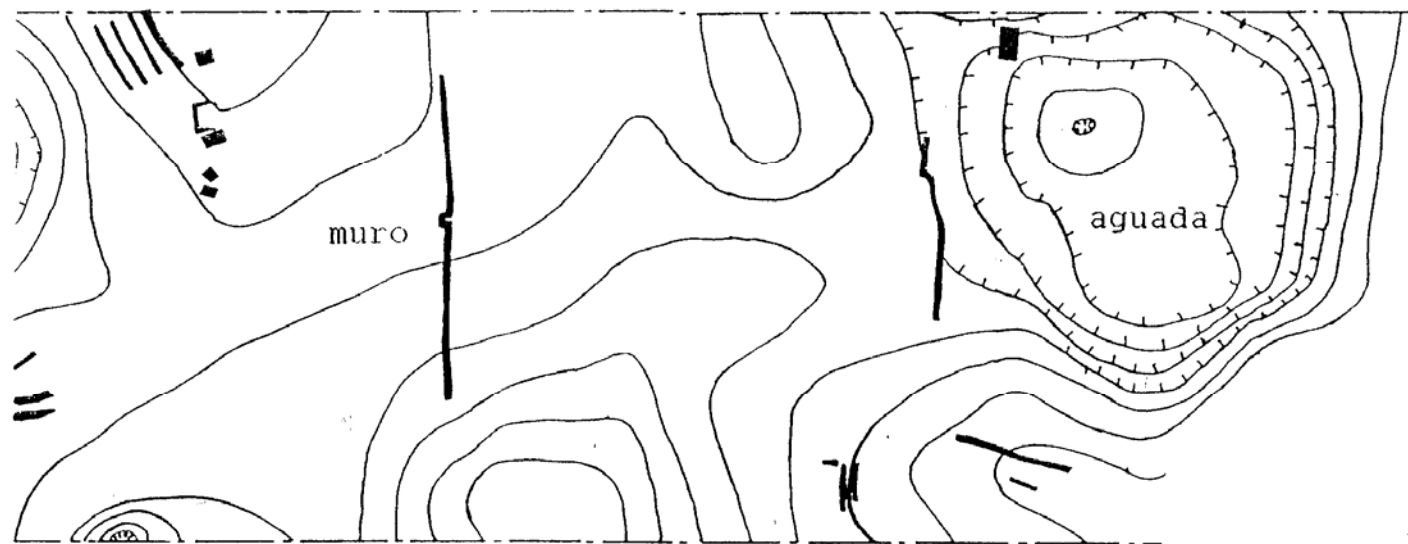


Figure 5.6. Close up map of aguada and walls west of Quim Chi Hilan, Transect 1 (from Killion et al. 1991: Fig. 35.5, p. 601).

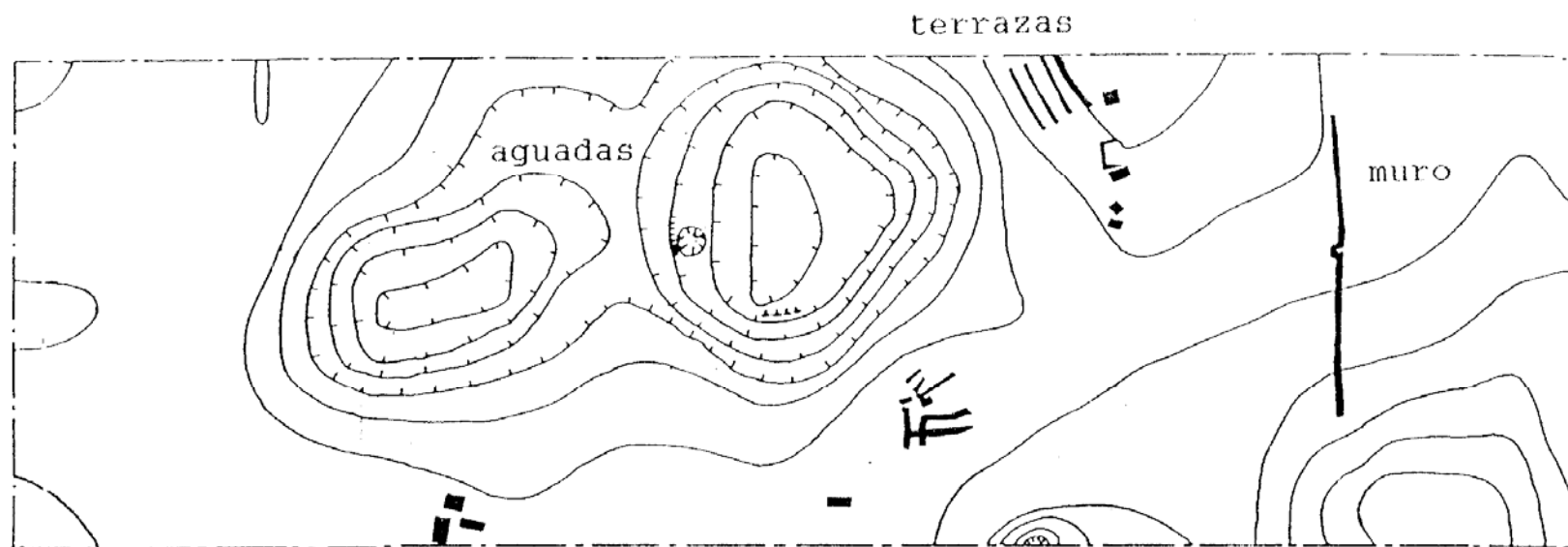


Figure 5.7. Close up map of walls and terraces west of Quim Chi Hilan, Transect 1 (from Killion et al. 1991: Fig. 35.6, p. 602).

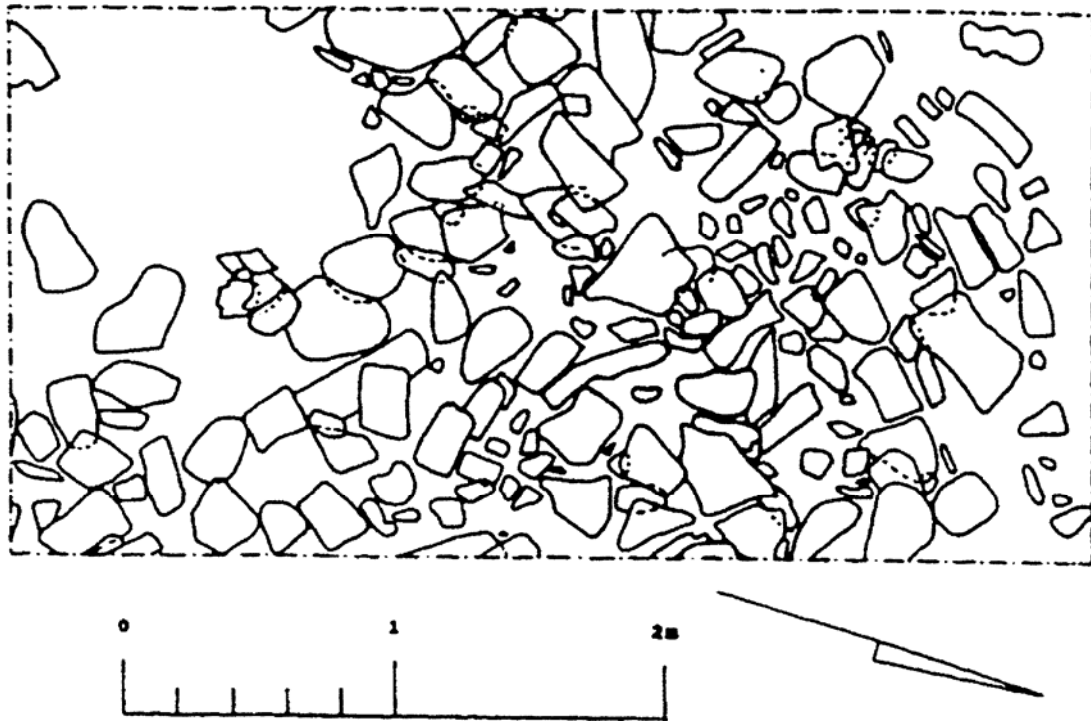


Figure 5.8. TR1-04-2 plan view (from Van Tuerenhout 1996: Fig. 6.4, p. 197).

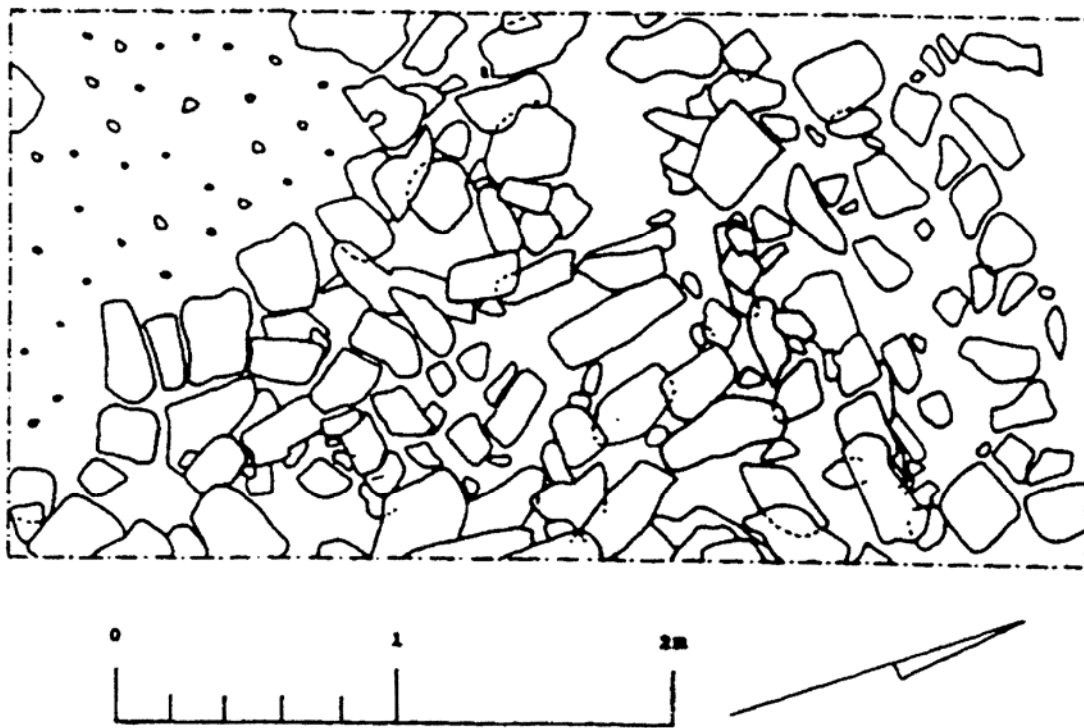


Figure 5.9. TR1-06-1 plan view (from Van Tuerenhout 1996: Fig. 6.5, p. 197).

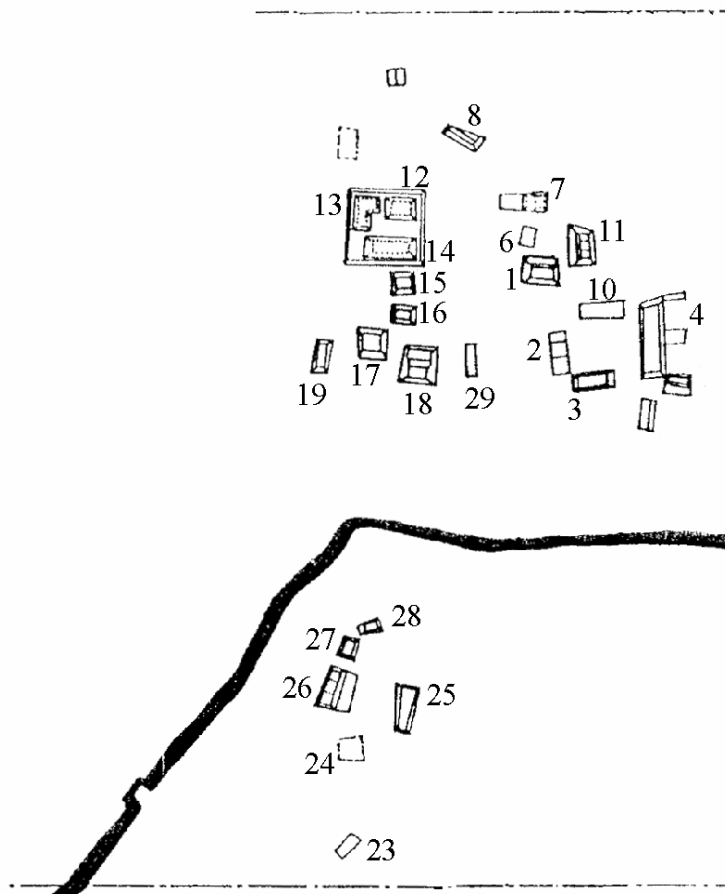


Figure 5.10. Simplified map of Quim Chi Hilan with structure numbers (after Killion et al. 1991: Fig. 35.4, p. 599).



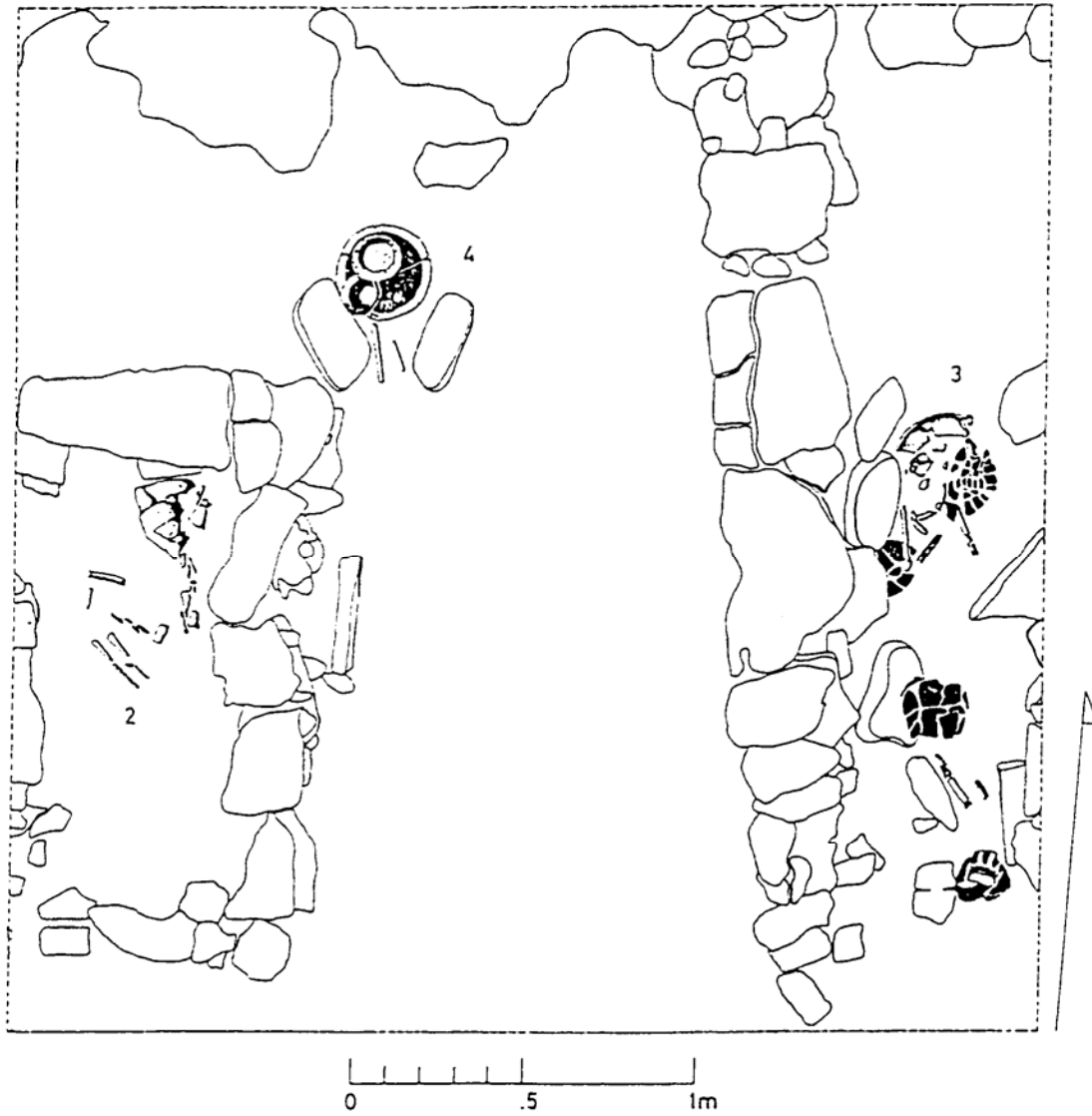


Figure 5.11. TR1-22-09 plan view showing the location of the three burials (from Van Tuerenhout et al. 1993: Fig. 09, p. 75).

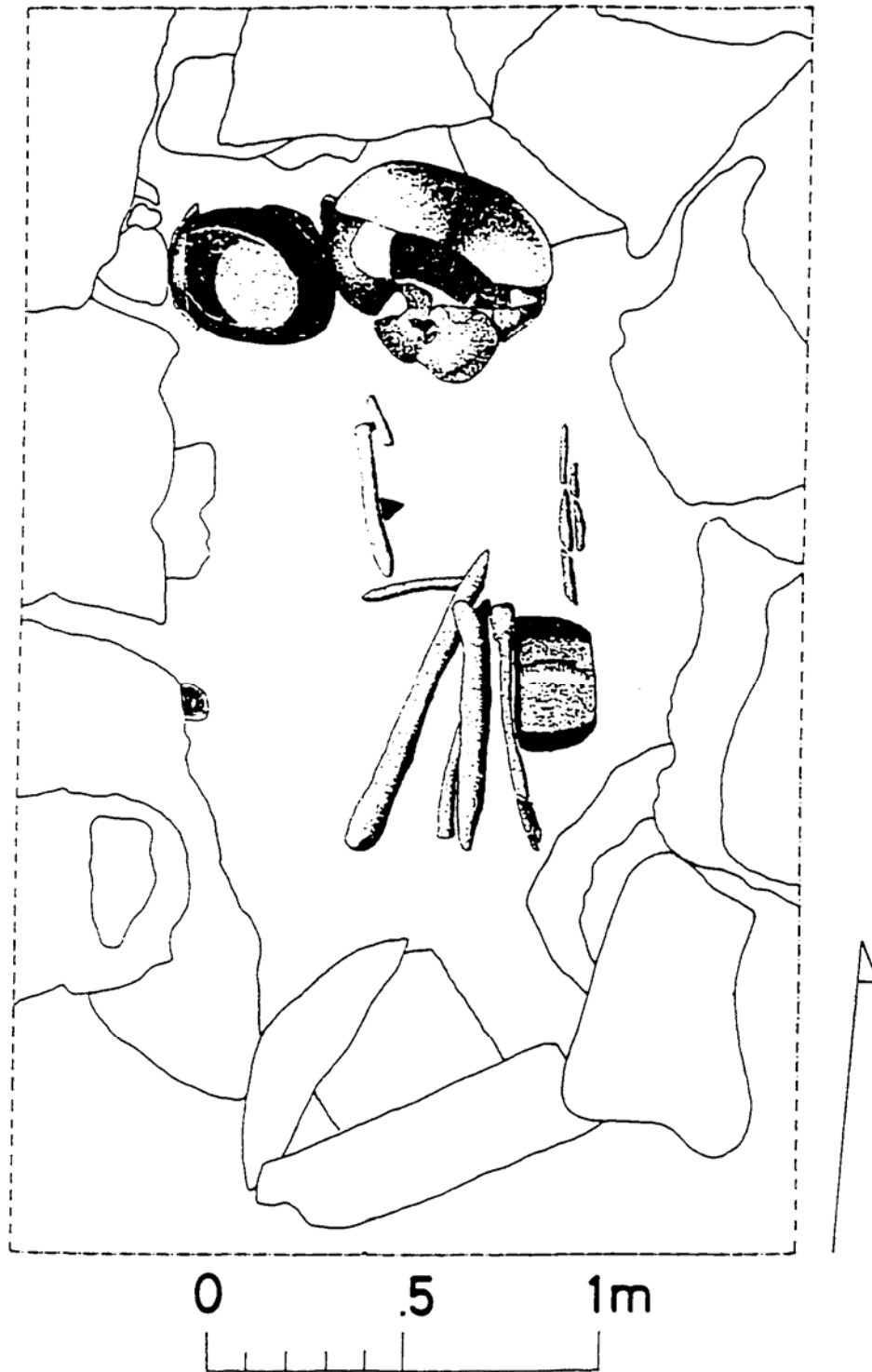


Figure 5.12. TR1-22-10 plan view showing the location of the burial (from Van Tuerenhout et al. 1993: Fig. 10, p. 75).

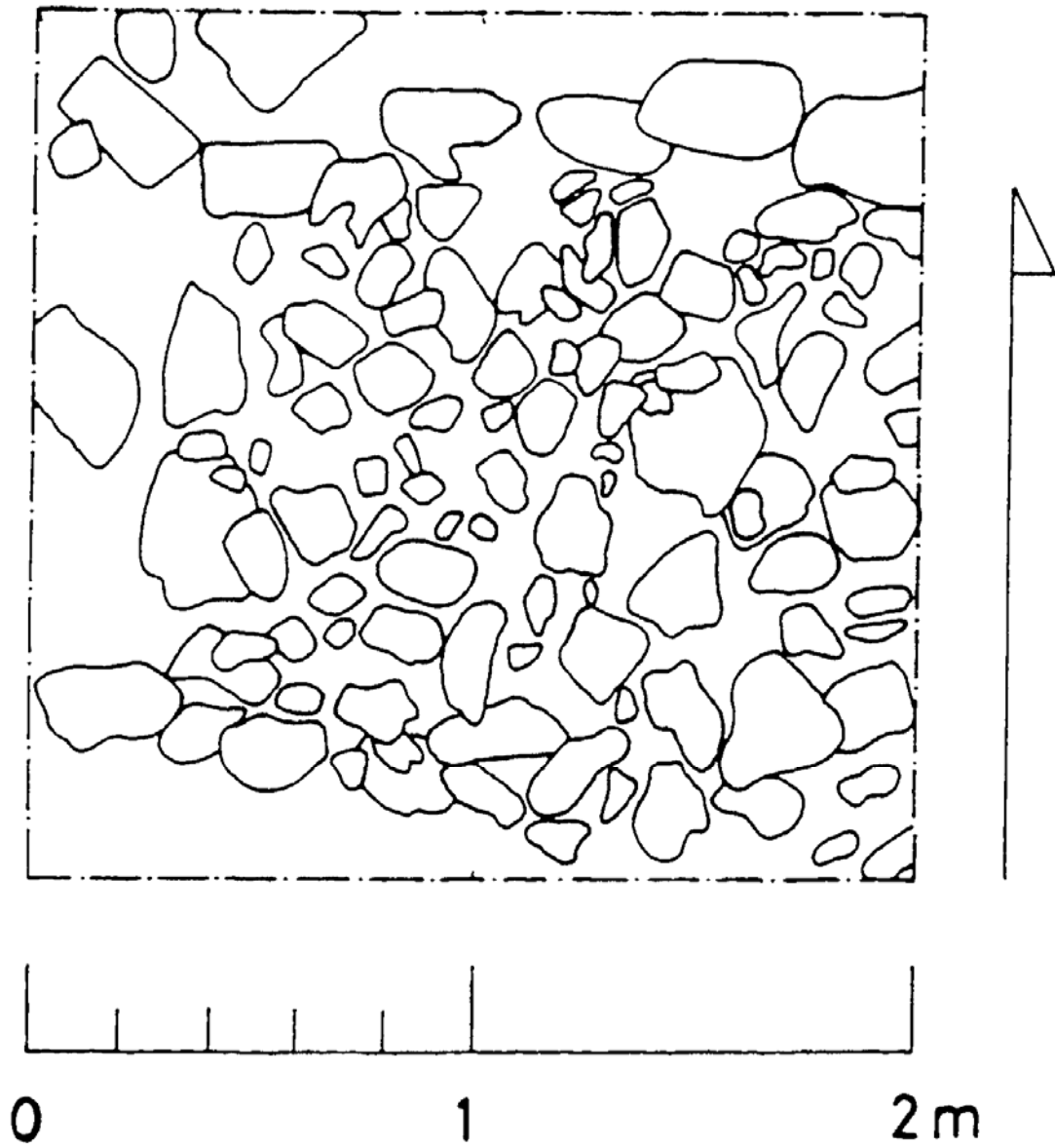


Figure 5.13. TR1-22-11 plan view (from Van Tuerenhout 1996: Fig. 4.12, p. 118).

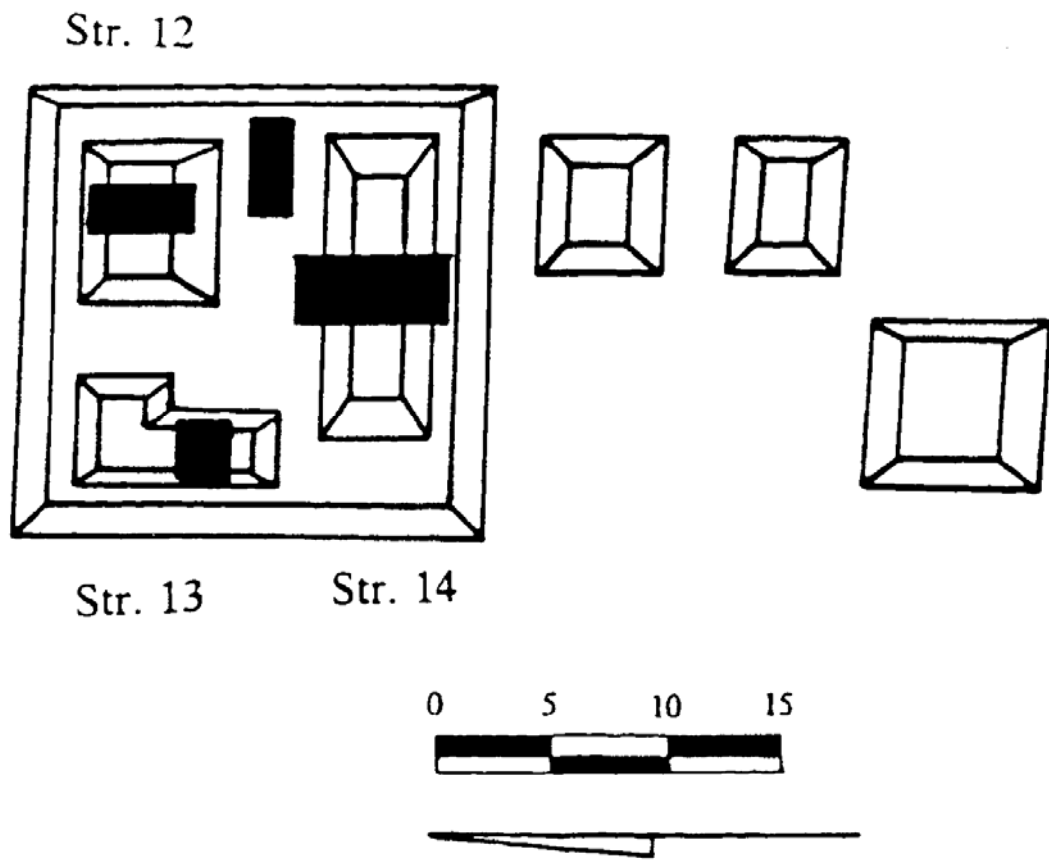


Figure 5.14. Map of Quim Chi Hilan Cluster C showing the locations of excavation units (after Van Tuerenhout 1996: Fig. 4.13, p. 119).

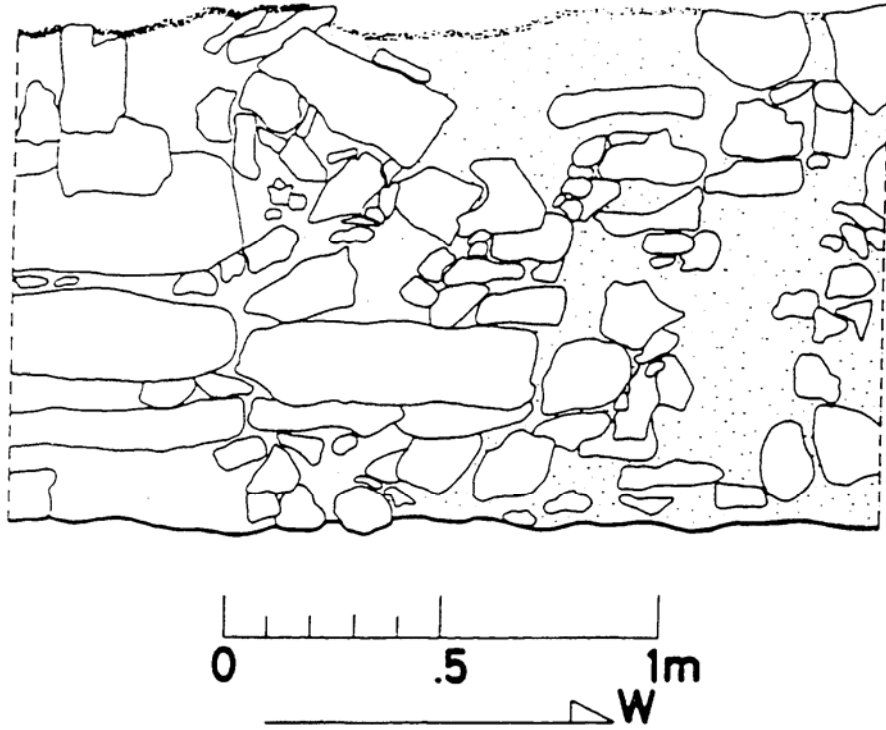


Figure 5.15. TR1-22-05 south profile (from Van Tuerenhout et al. 1993: Fig. 02, p. 71).

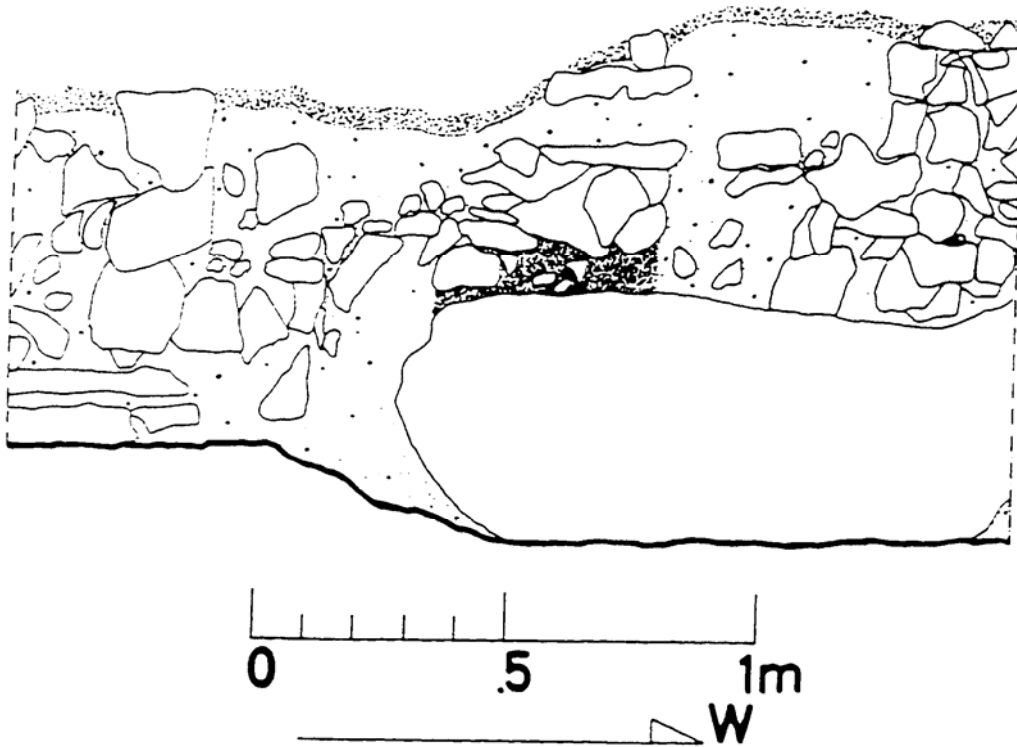


Figure 5.16. TR1-22-04 south profile (from Van Tuerenhout et al. 1993: Fig. 03, p. 71).

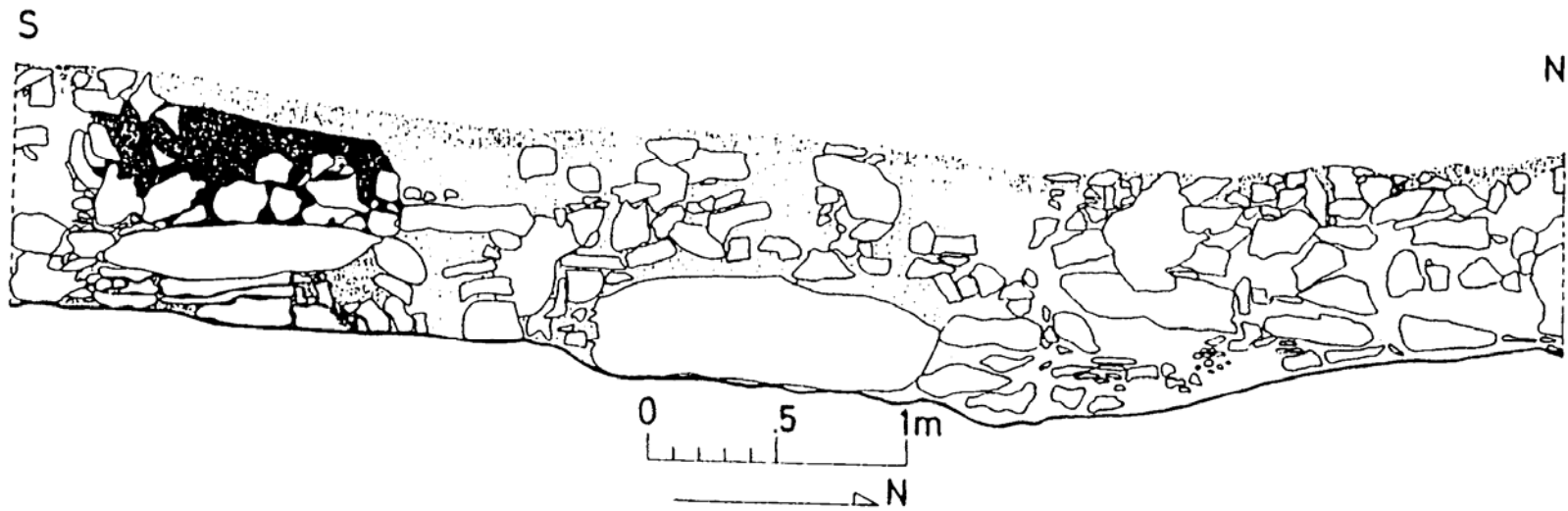


Figure 5.17. TR1-22-03 construction fill (from Van Tuerenhout 1996: Fig. 4.17, p. 123).

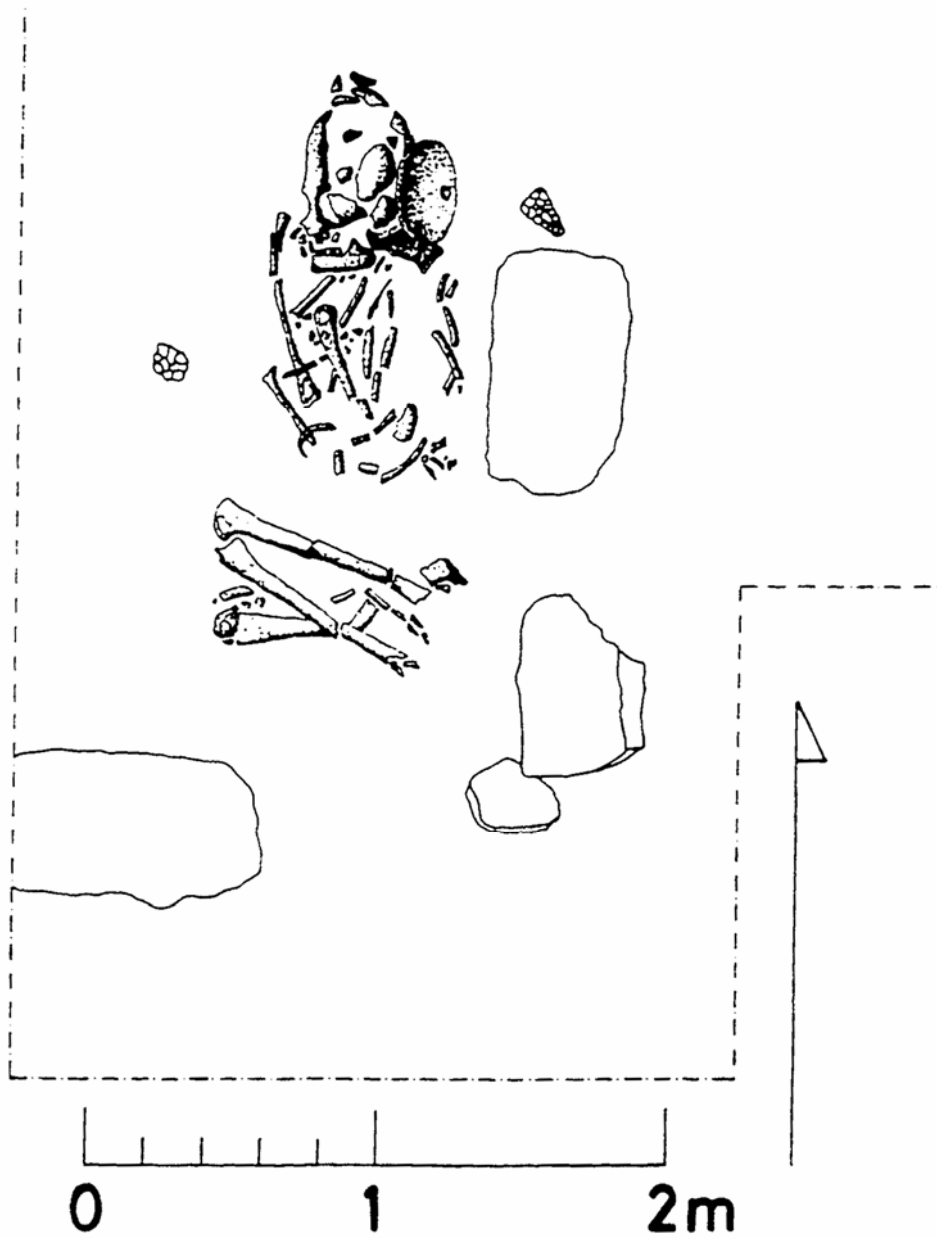


Figure 5.18. TR1-22-03 plan view of burial (from Van Tuerenhout 1996: Fig. 4.16, p. 122).

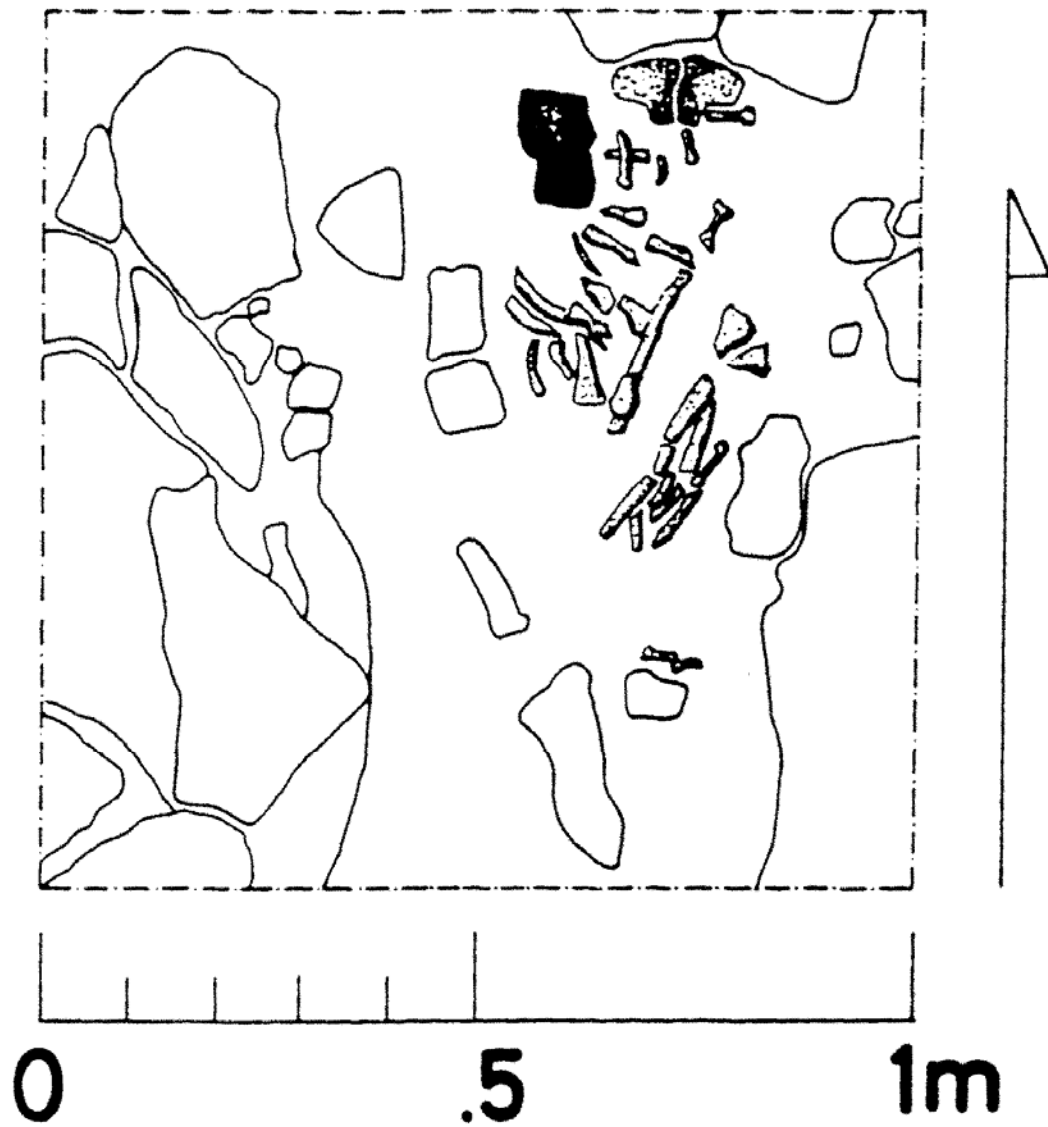


Figure 5.19. TR1-22-06 plan view of Burial 7 (from Van Tuerenhout et al. 1993: Fig. 07, p. 74).



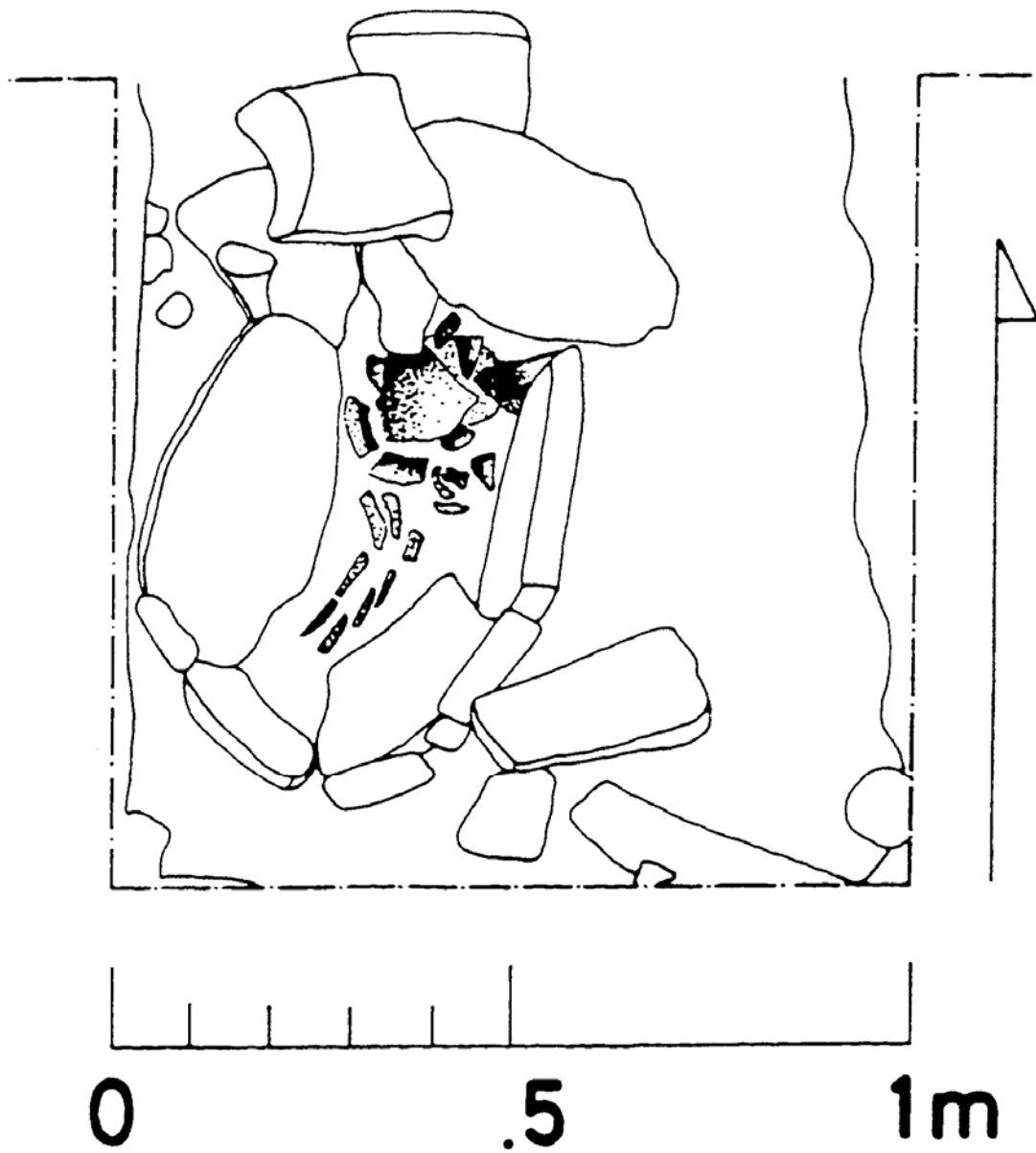


Figure 5.20. TR1-22-06 plan view of Burial 8 (from Van Tuerenhout et al. 1993: Fig. 08, p. 74).

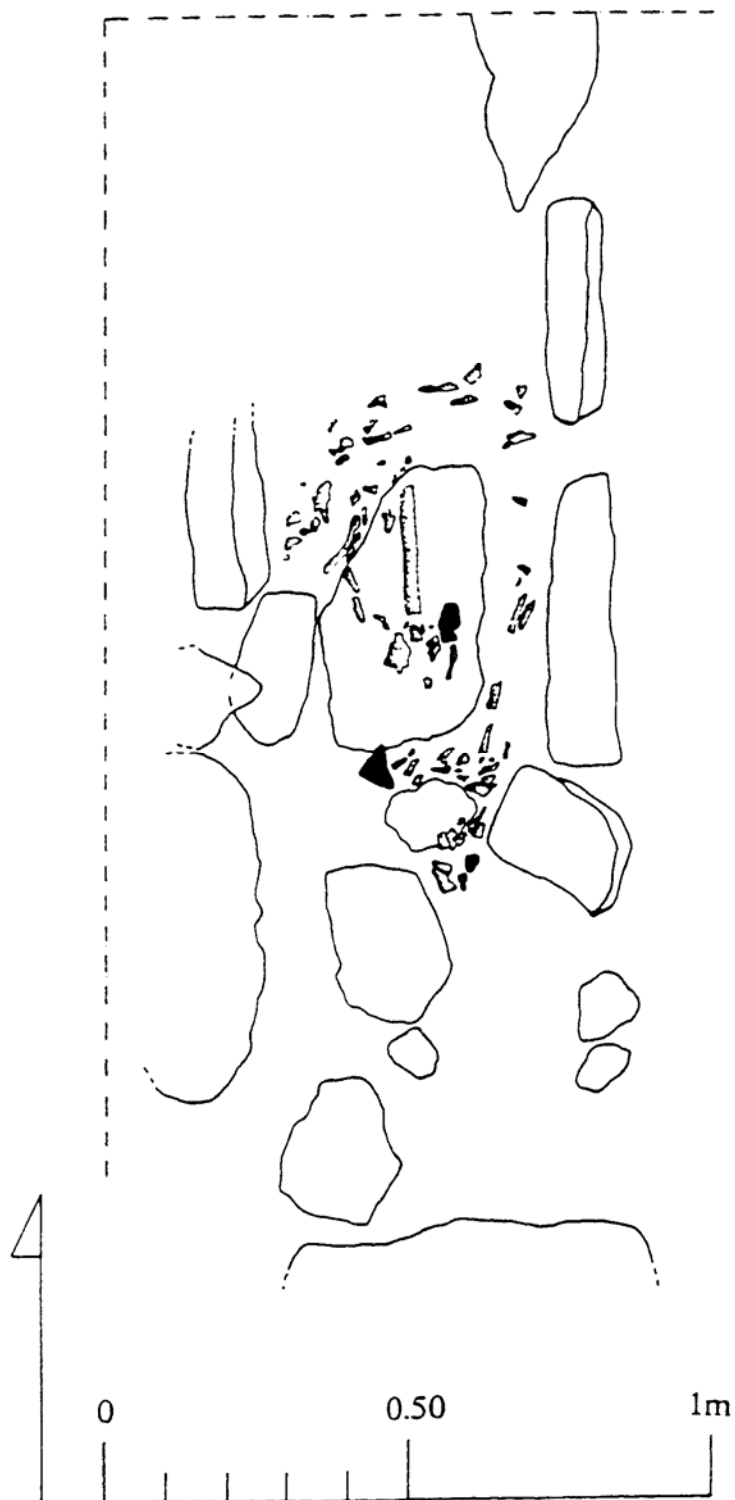


Figure 5.21. TR1-22-08 plan view of Burial 9 (from Van Tuerenhout et al. 1993: Fig. 06a, p. 73).

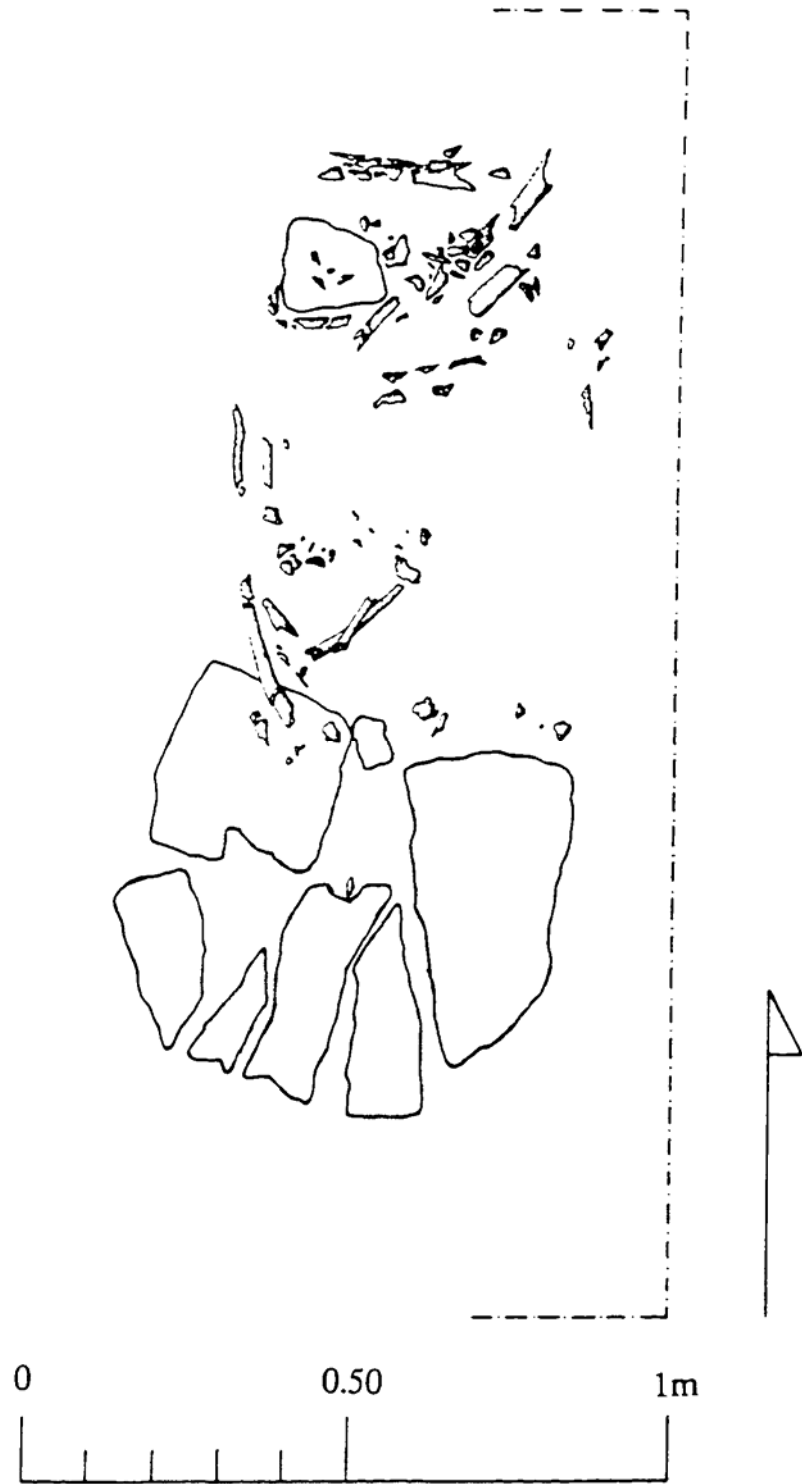


Figure 5.22. TR1-22-08 plan view of Burial 10 (from Van Tuerenhout et al. 1993: Fig. 06b, p. 73).

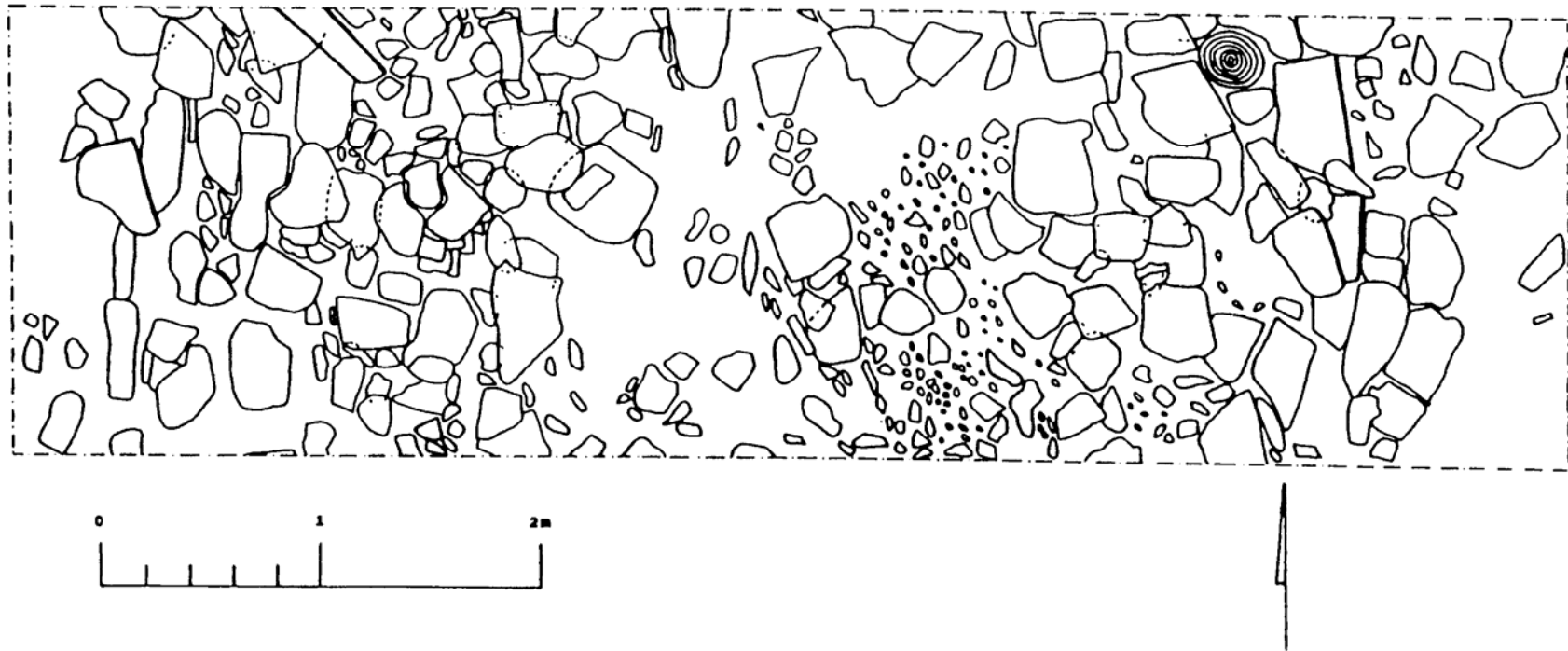


Figure 5.23. TR1-21-05 plan view (from Van Tuerenhout 1996: Fig. 4.3, p. 110).

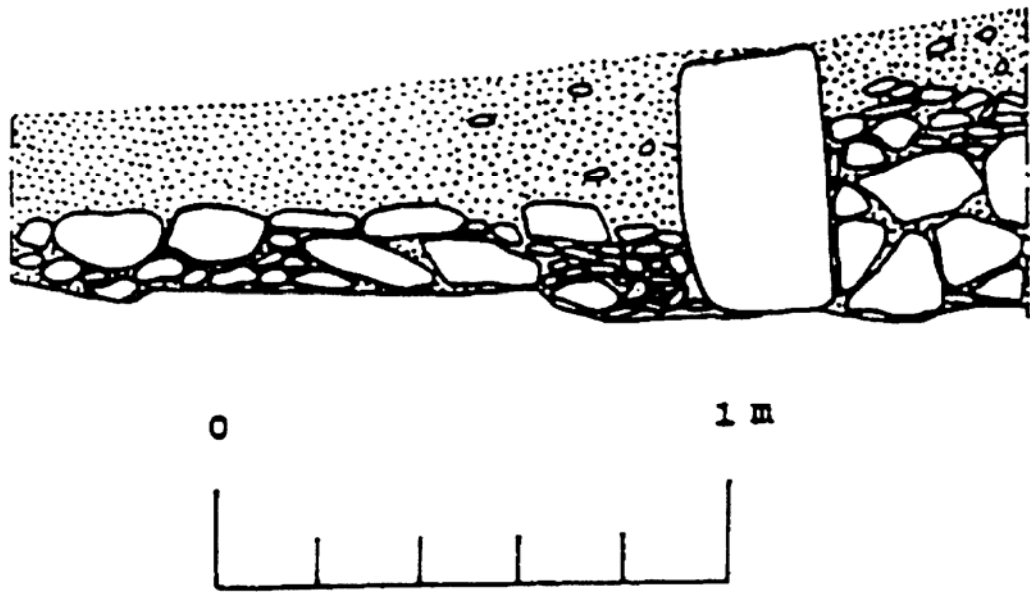


Figure 5.24. TR1-21-06 profile (from Van Tuerenhout 1996: Fig. 4.5, p. 111).

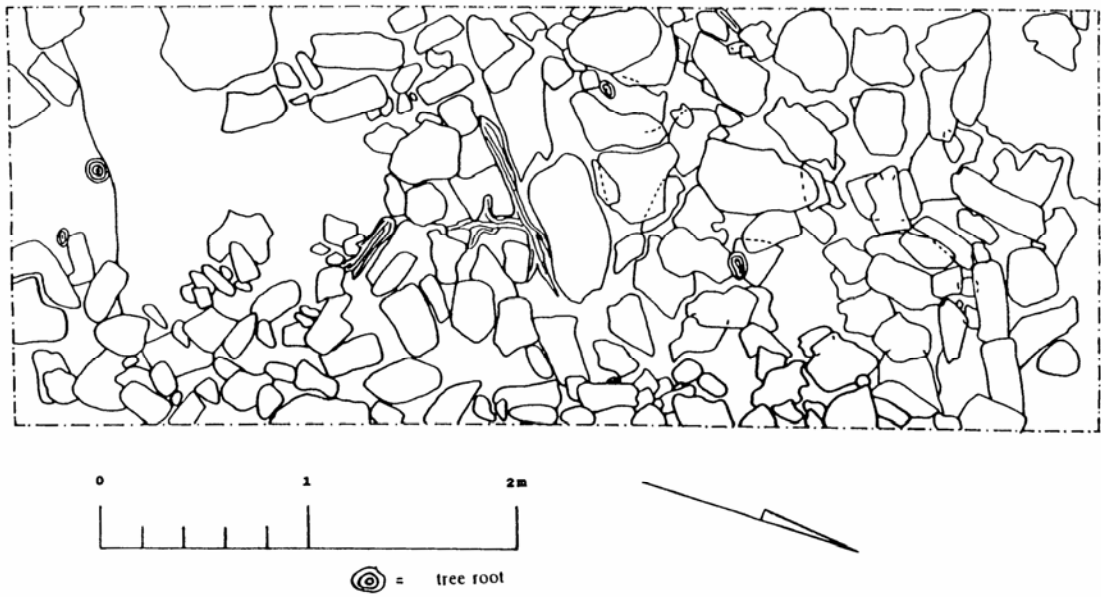


Figure 5.25. TR1-21-07 plan view (from Van Tuerenhout 1996: Fig. 4.6, p. 112).

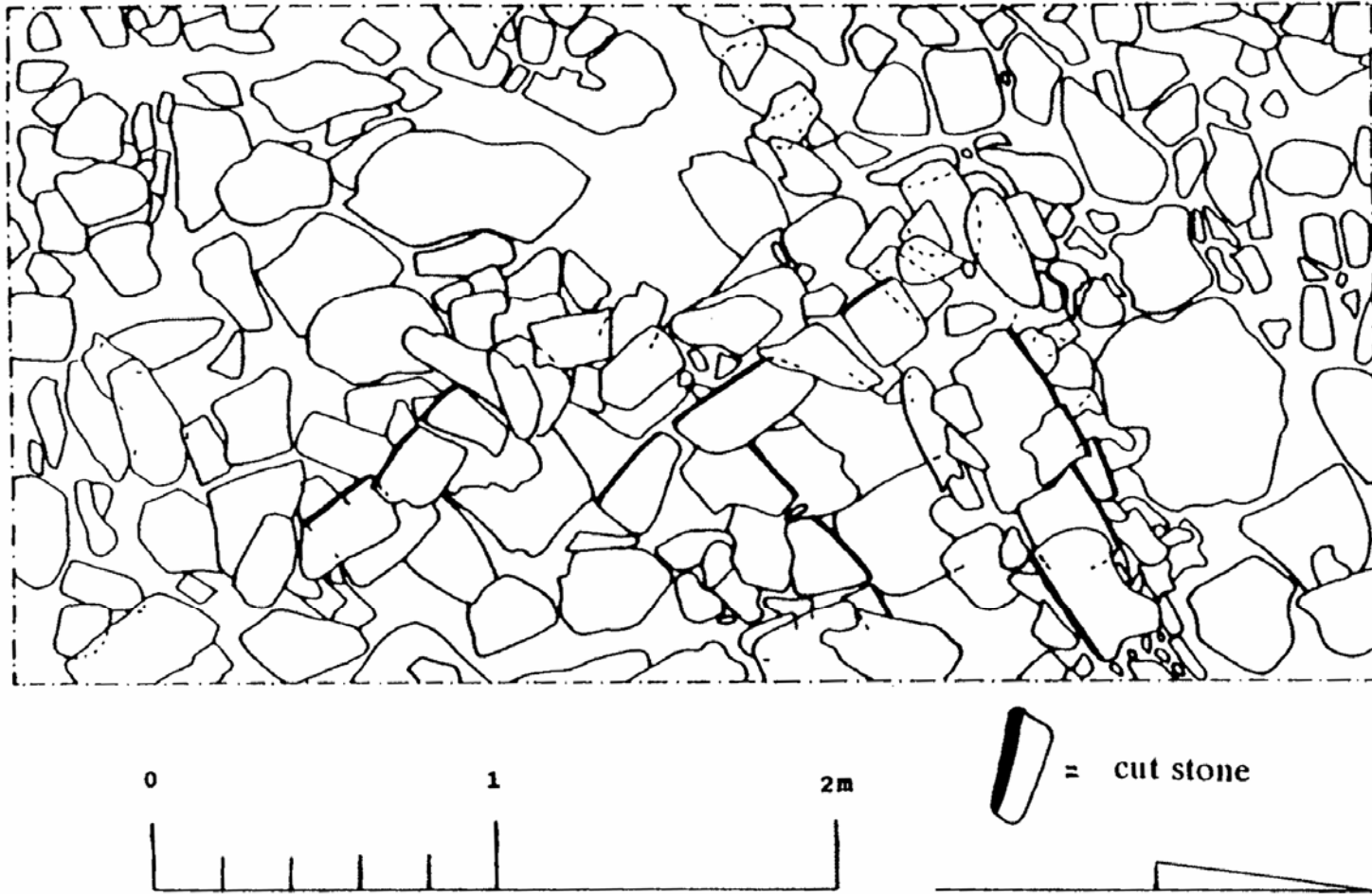


Figure 5.26. TR1-21-08 plan view (from Van Tuerenhout 1996: Fig. 4.7, p. 113).

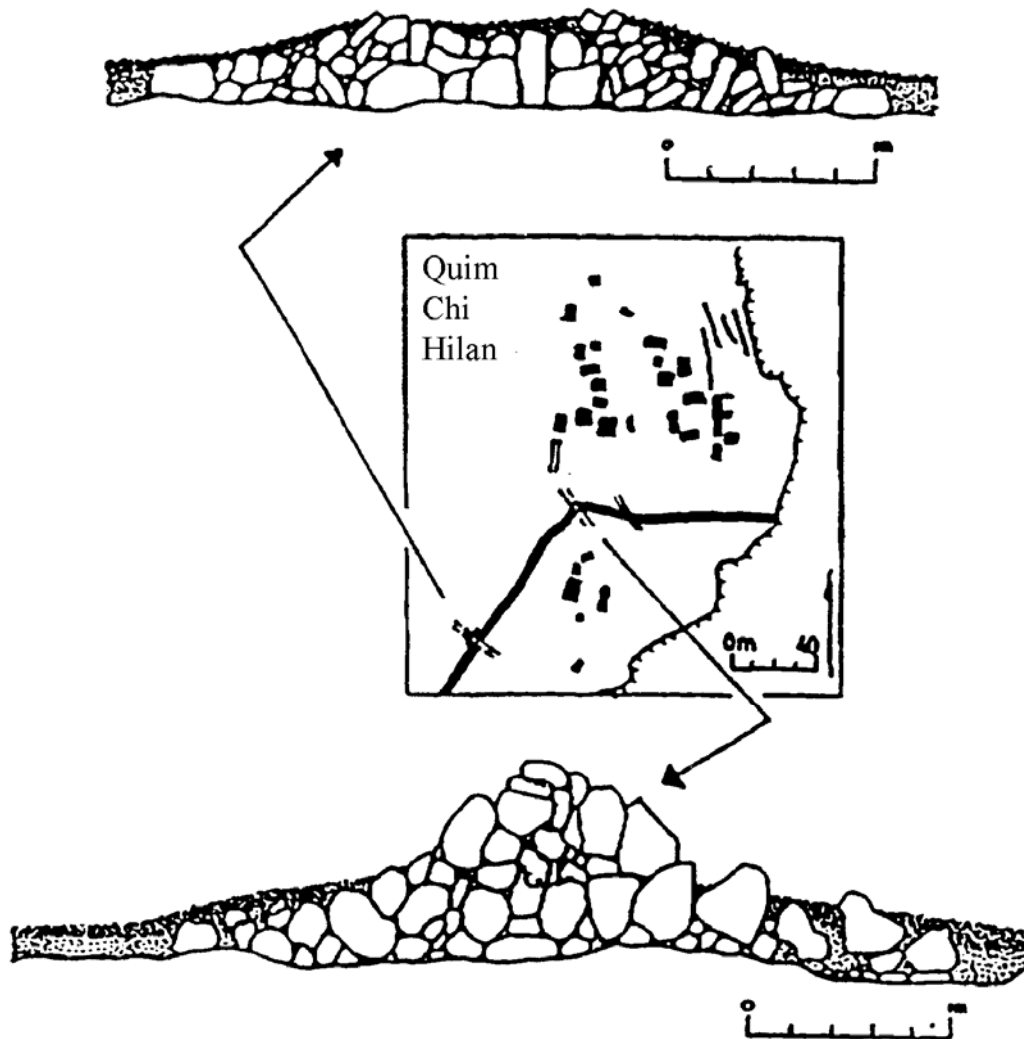


Figure 5.27. Quim Chi Hilan showing locations and profiles of trench excavations in the wall (from Killion et al. 1991: Fig. 35.15, p. 627).

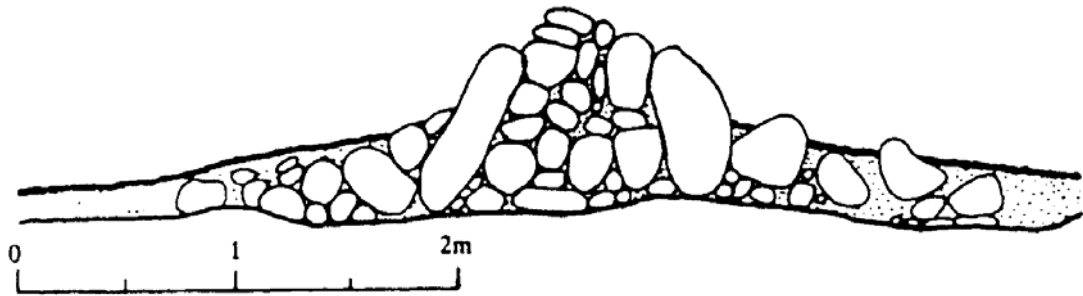


Figure 5.28. TR1-21-02 excavation profile (from Van Tuerenhout 1996: Fig. 5.2, p. 165).

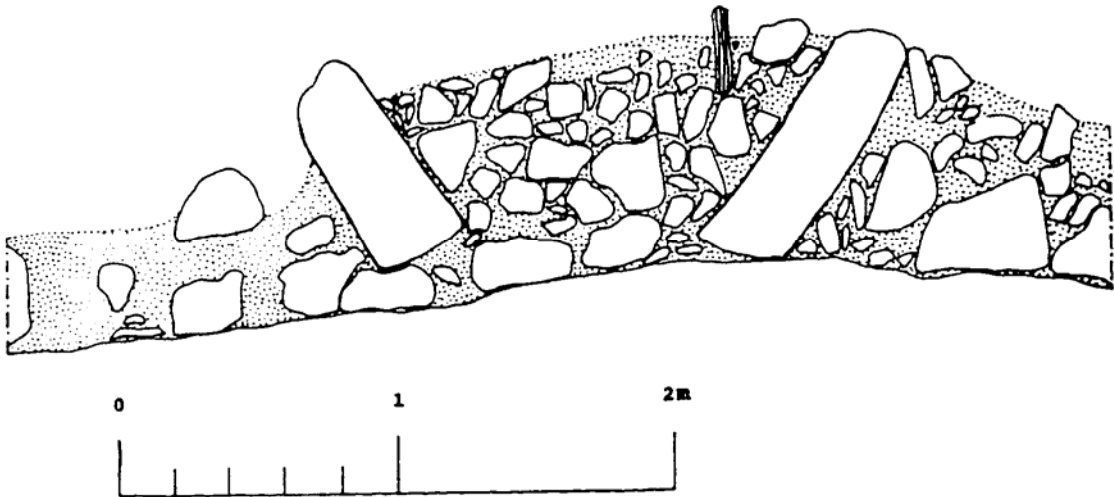


Figure 5.29. TR1-21-09 excavation profile (from Van Tuerenhout 1996: Fig. 5.3, p. 165).



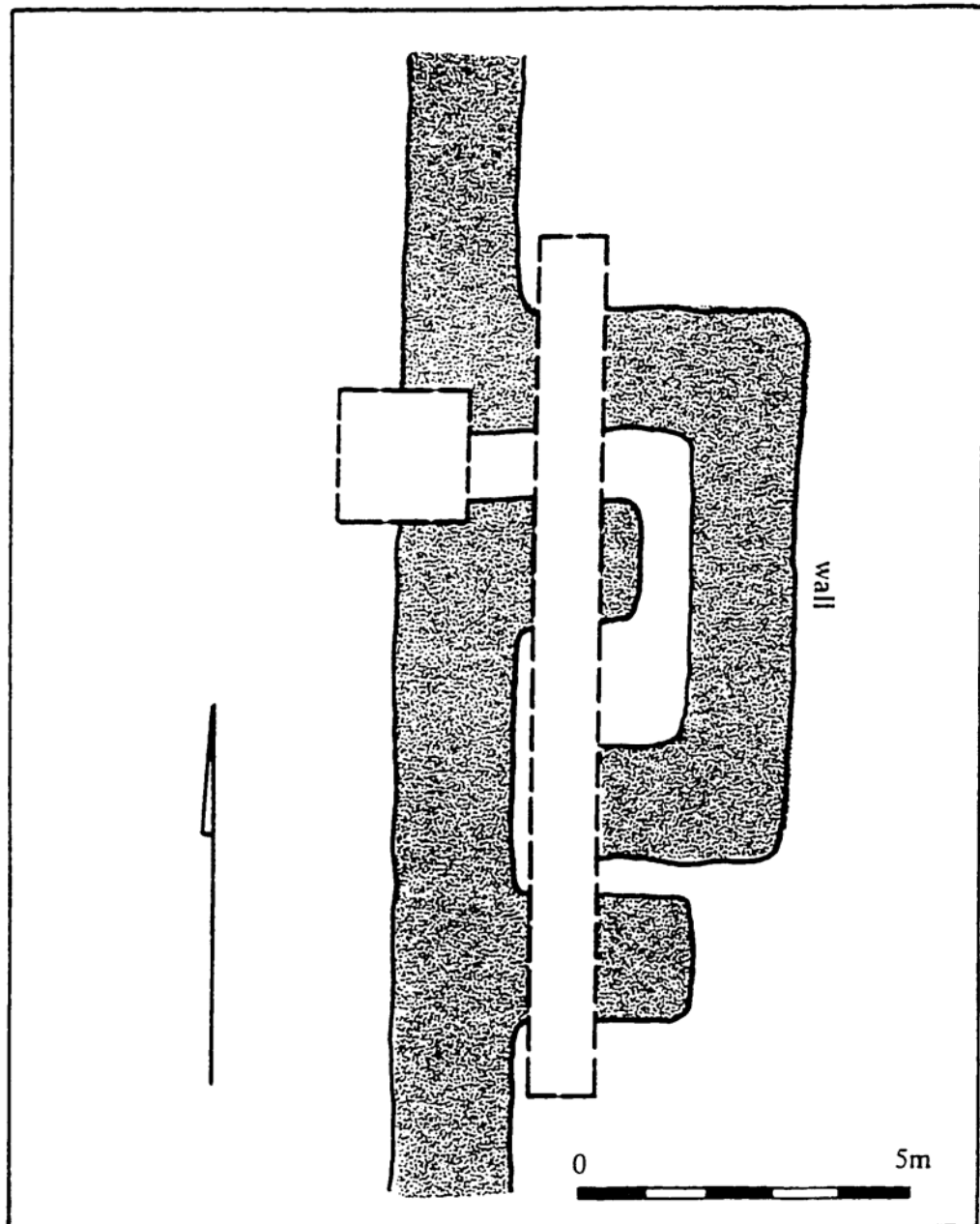


Figure 5.30. Location of excavation units in the baffled gate south of Quim Chi Hilan, TR1-41-03 and TR1-41-04 (from Van Tuerenhout 1996: Fig. 5.6, p. 168).

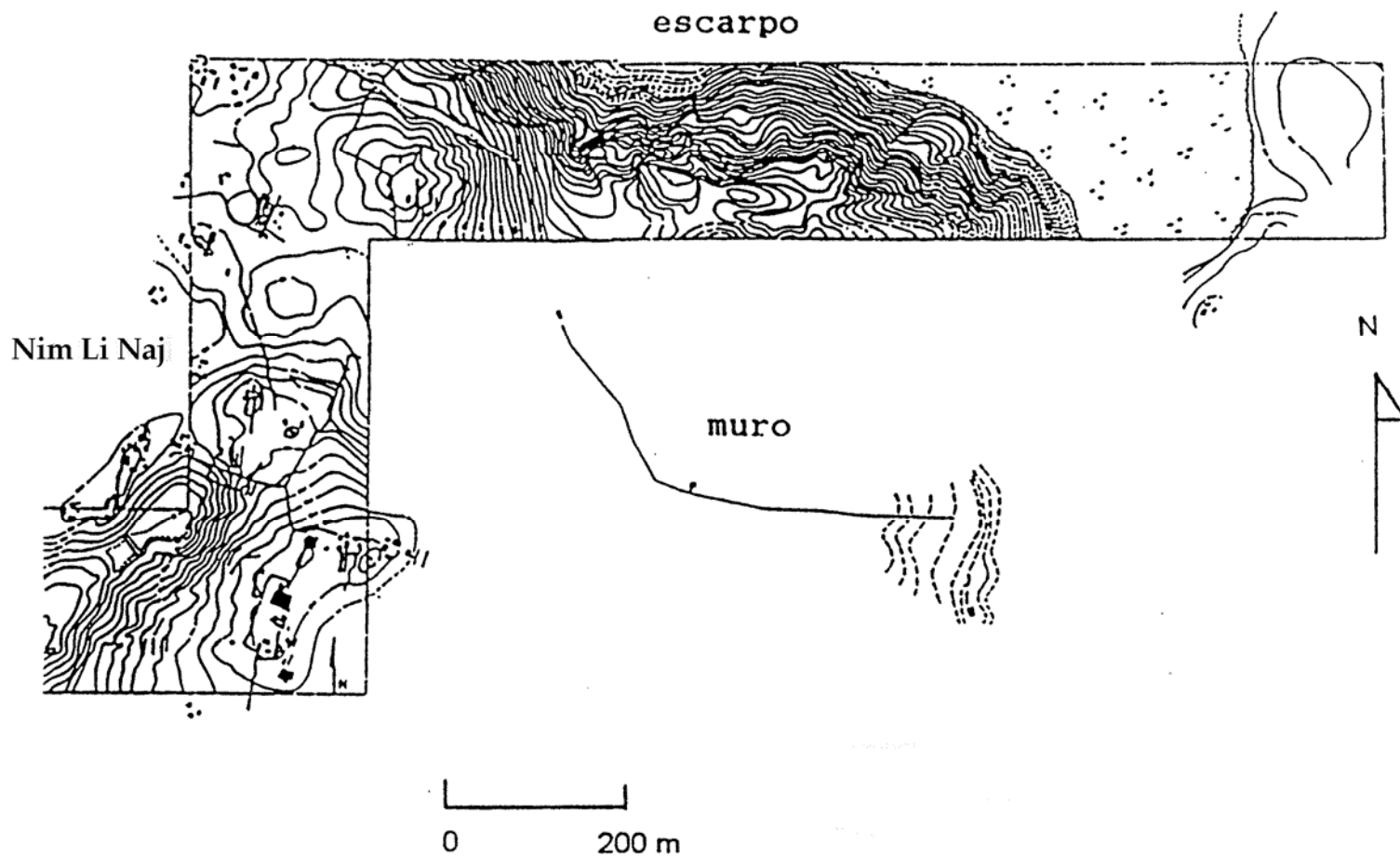


Figure 5.31. Map of Transect 2 drafted after 1991 field season (from Killion et al. 1991: Fig. 35.9, p. 607).

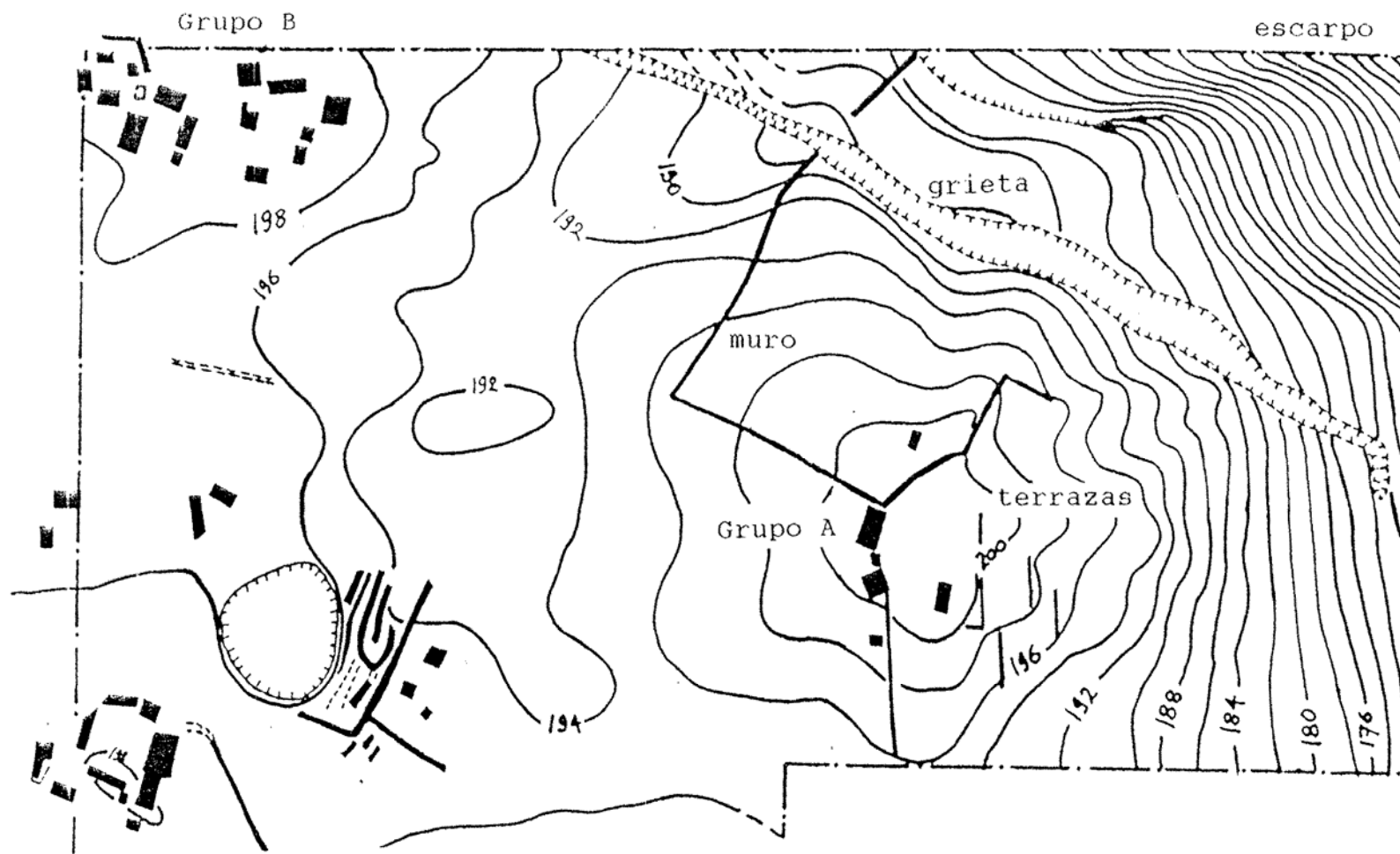


Figure 5.32. Close up of the Transect 2 village Nim Li Naj, Groups A and B (from Killion et al. 1991: Fig. 35.10, p. 609).

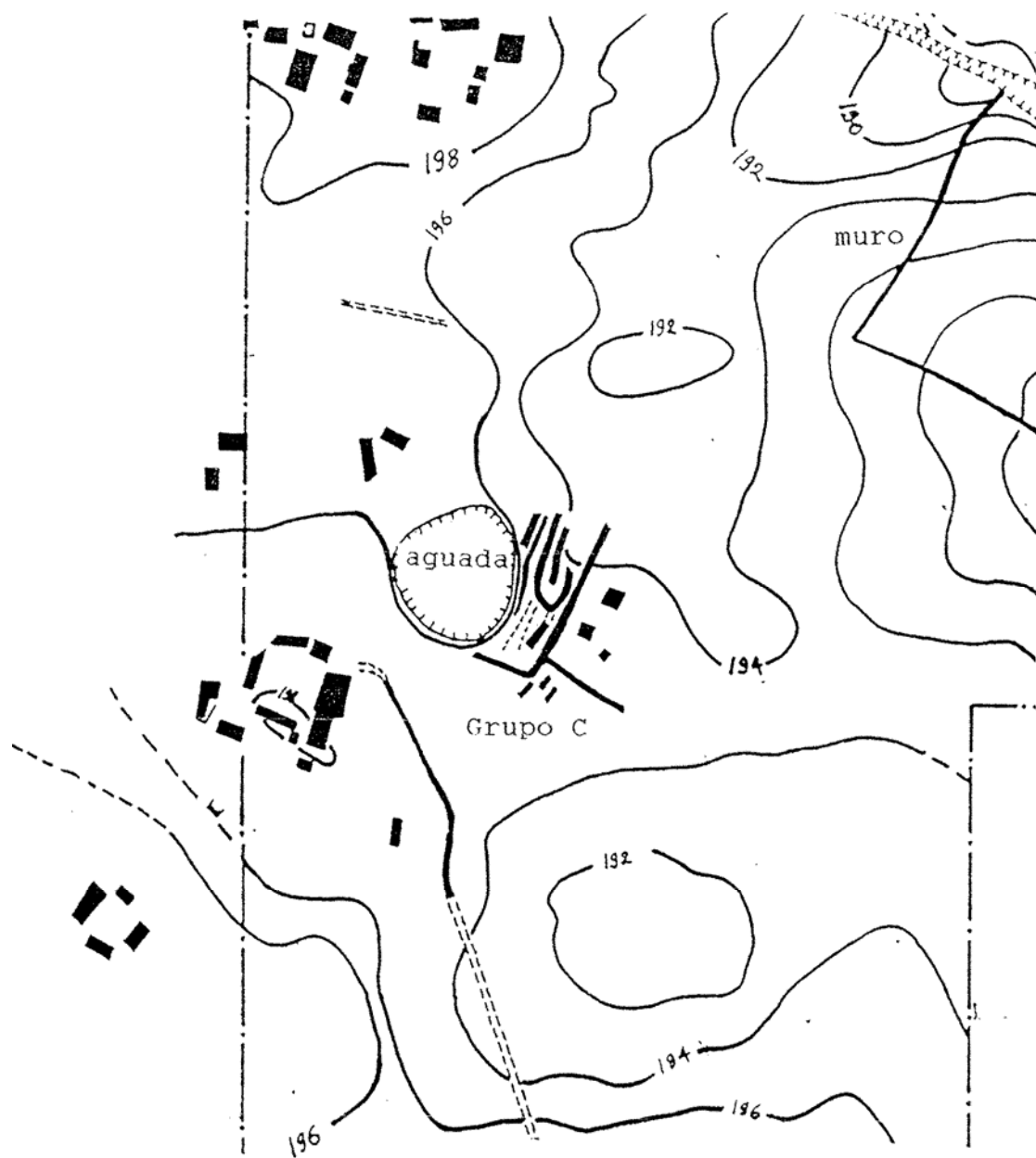


Figure 5.33. Close up of the Transect 2 village Nim Li Naj, Group C (from Killion et al. 1991: Fig. 35.11, p. 611).

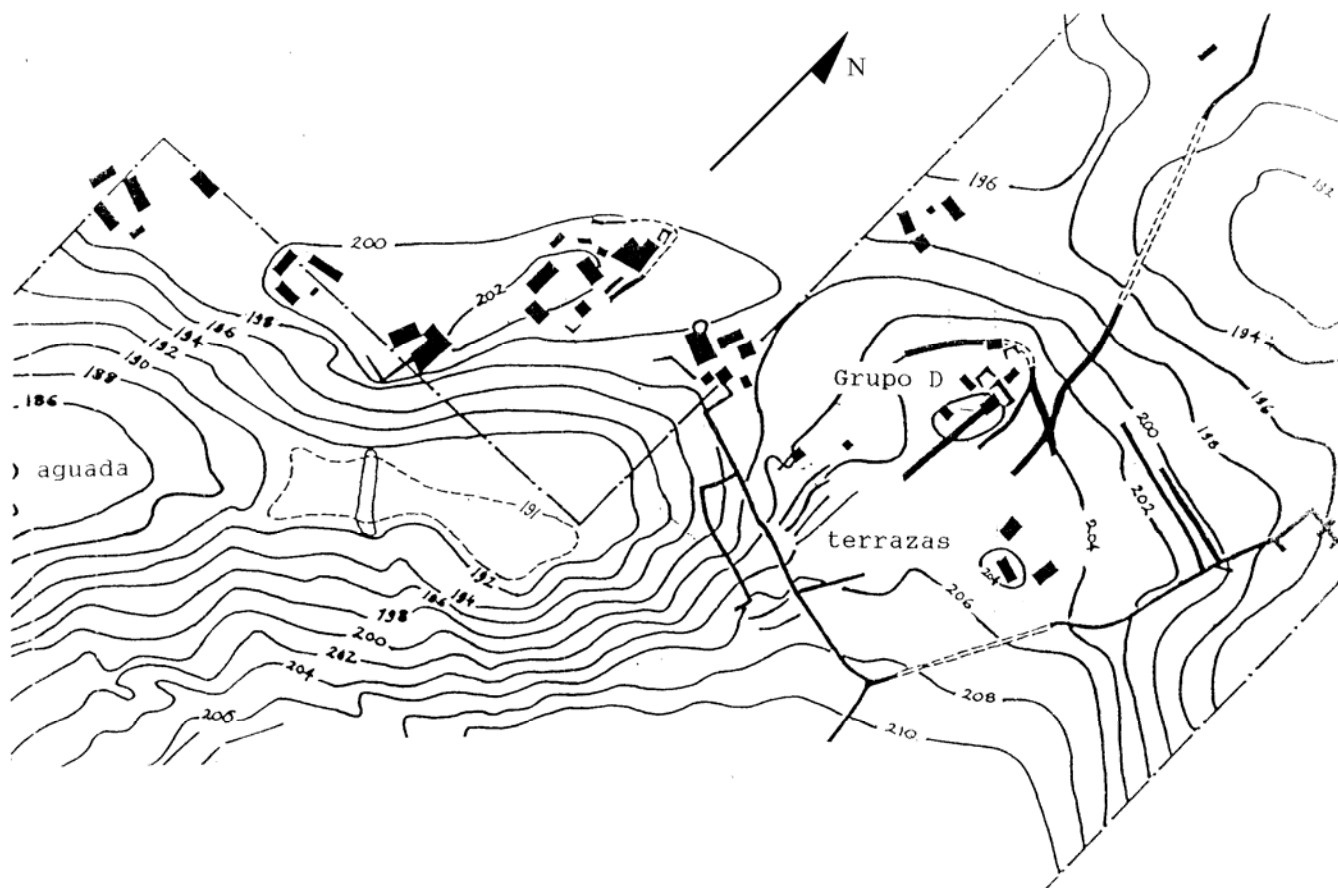


Figure 5.34. Close up of the Transect 2 village Nim Li Naj, Group D (from Killion et al. 1991: Fig. 35.12, p. 612).

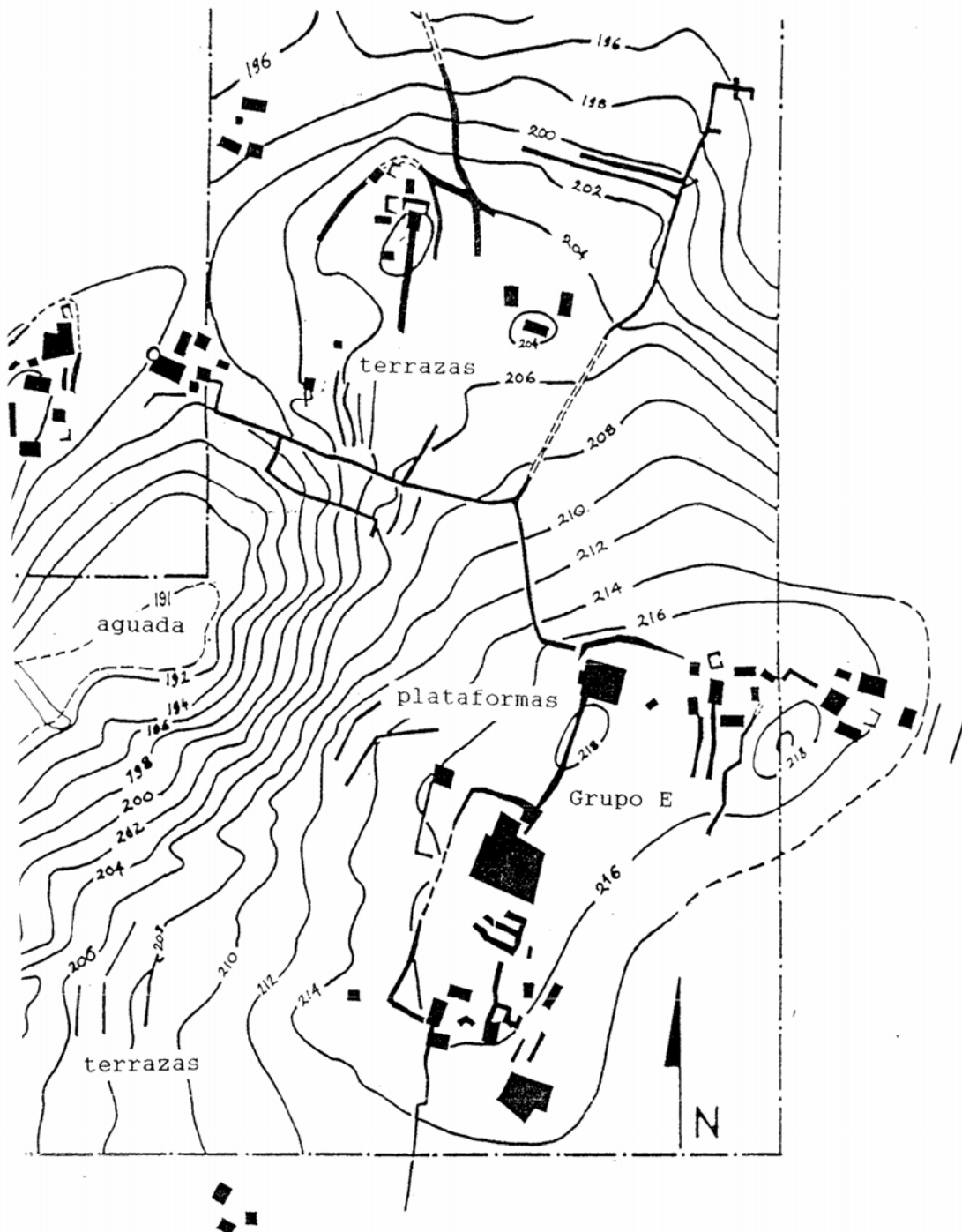


Figure 5.35. Close up of the Transect 2 village Nim Li Naj, Group E (from Killion et al. 1991: Fig. 35.13, p. 614).

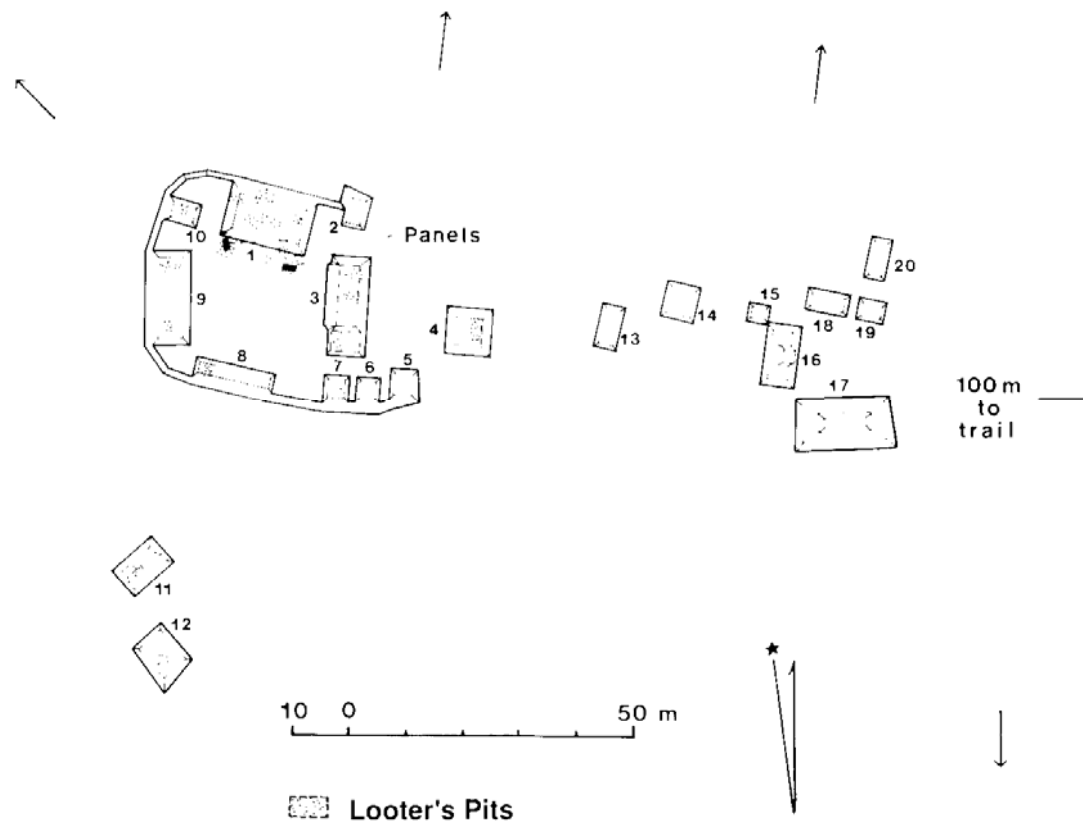


Figure 5.36. Map of El Excavado (from Houston 1993: Fig. 2-12, p. 48).

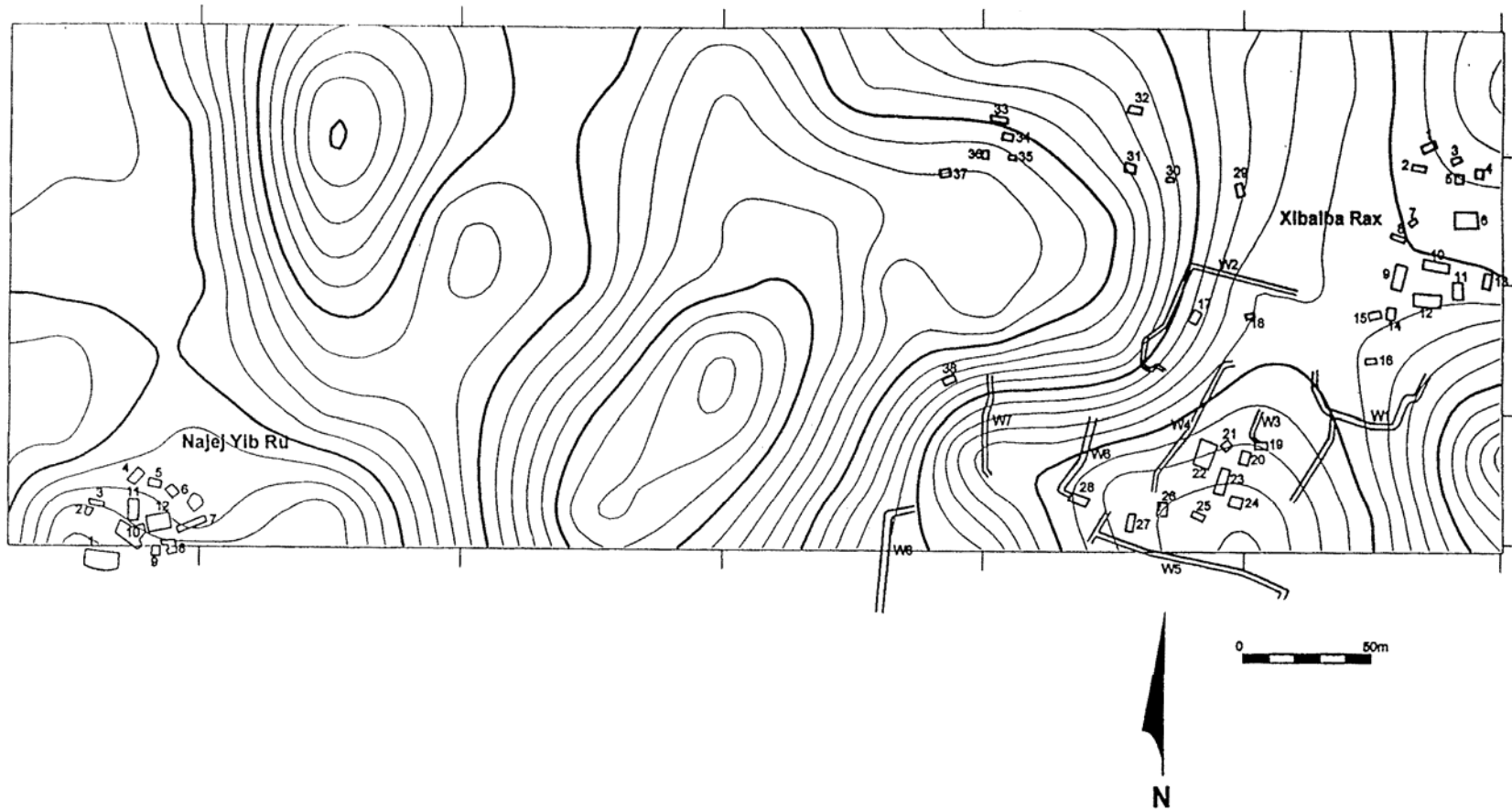


Figure 5.37. Map of the Transect 2 extension (from O'Mansky and Wheat 1996b: Fig. 11.2a, p. 119).



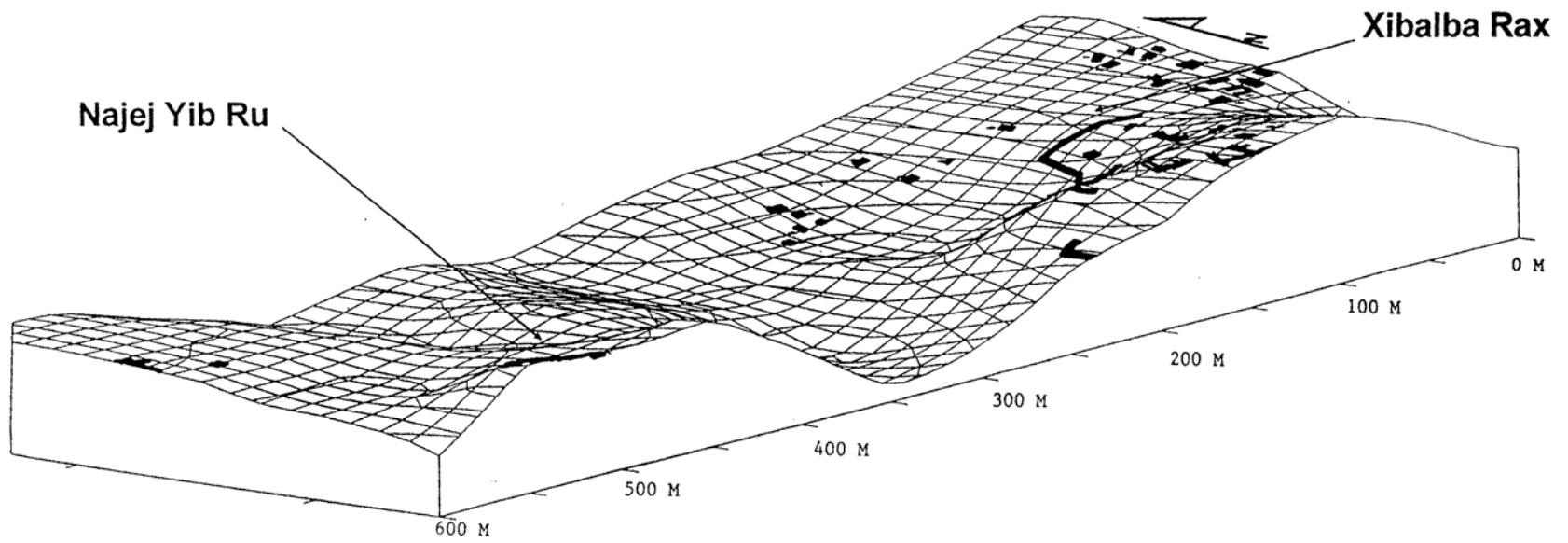


Figure 5.38. Three dimensional model of the Transect 2 extension (from O'Mansky and Wheat 1996b: Fig. 11.2b, p. 120).

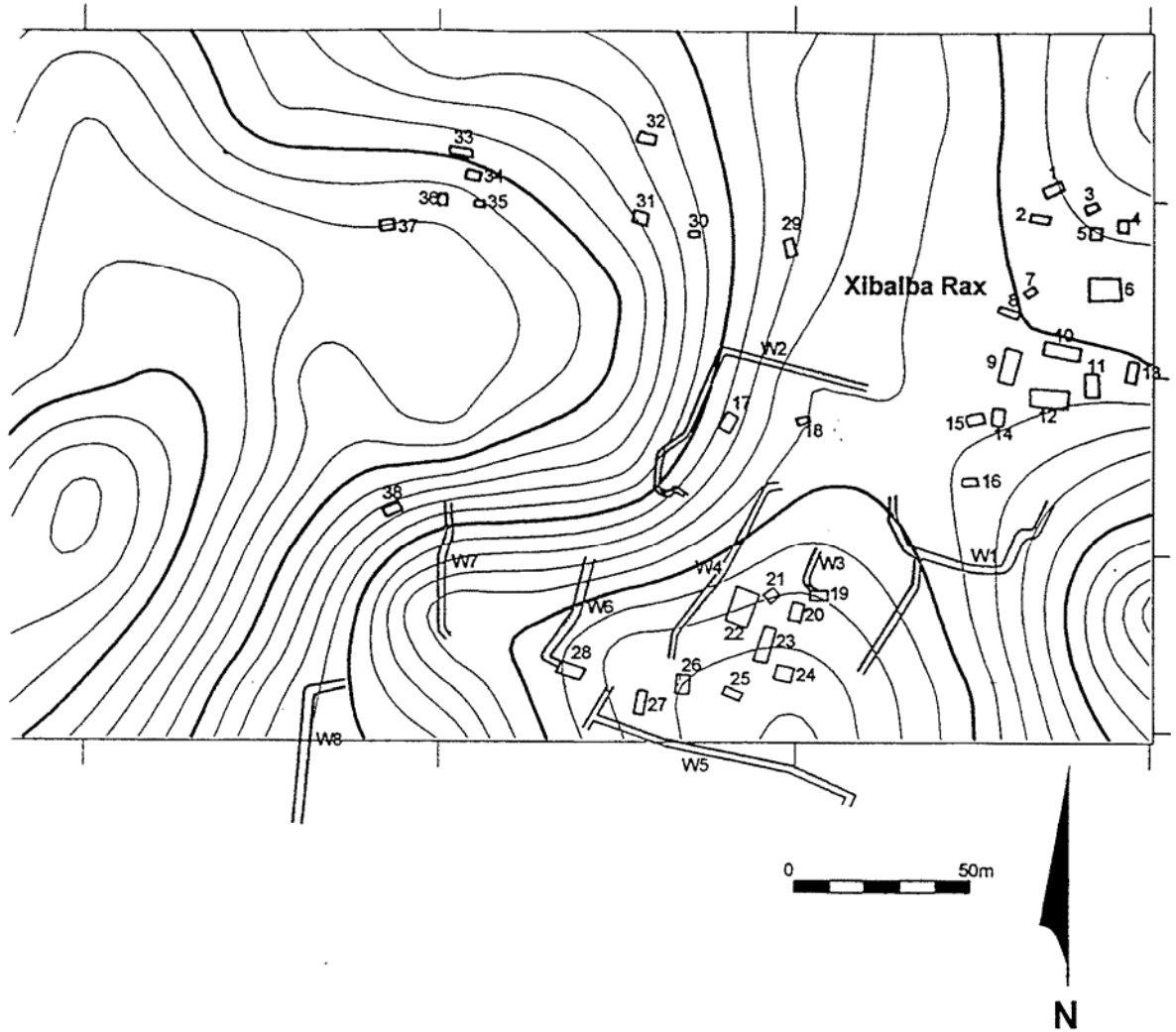


Figure 5.39. Close up of the Transect 2 village Xibalba Rax (from O'Mansky and Wheat 1996b: Fig. 11.3, p. 121).

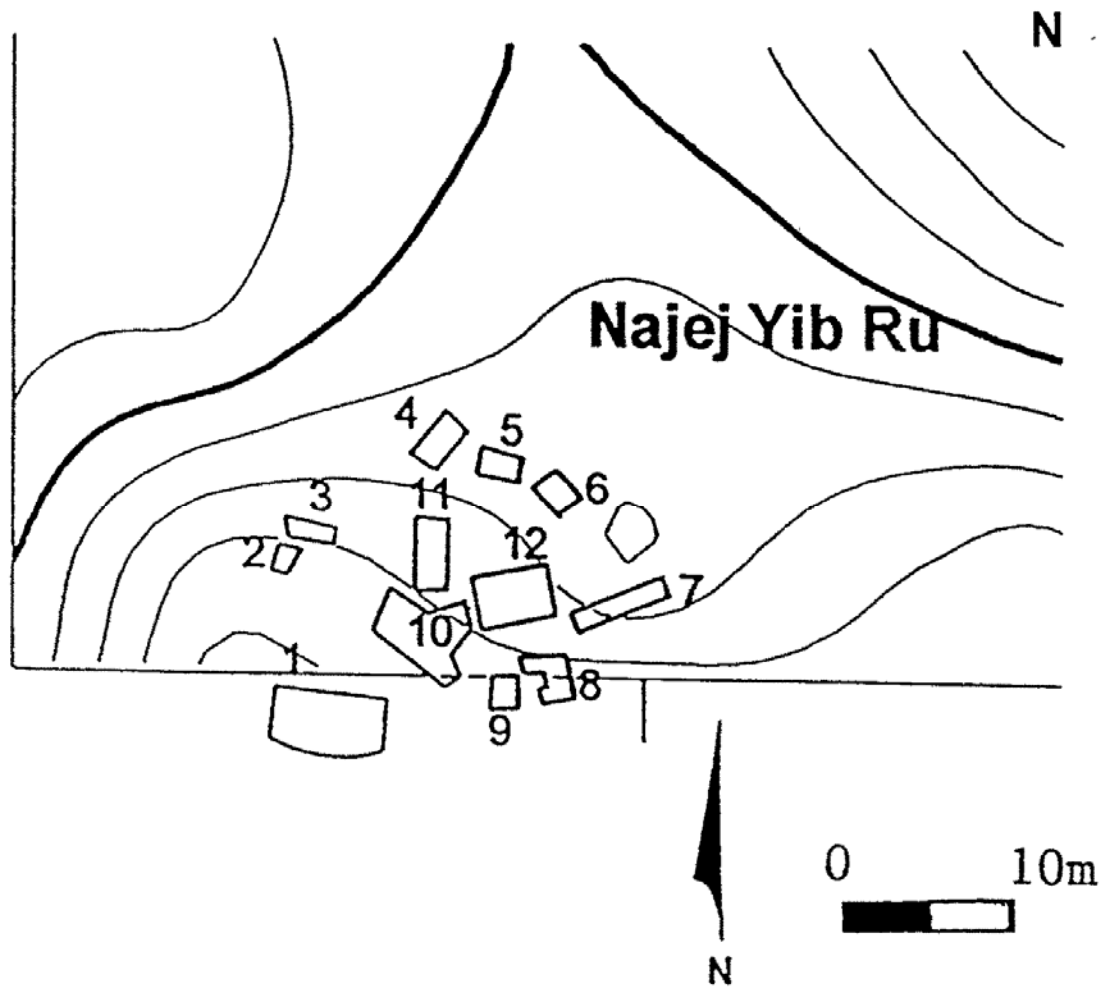


Figure 5.40. Close up of the Transect 2 village Najej Yib Ru (from O'Mansky and Wheat 1996b: Fig. 11.4, p. 121).



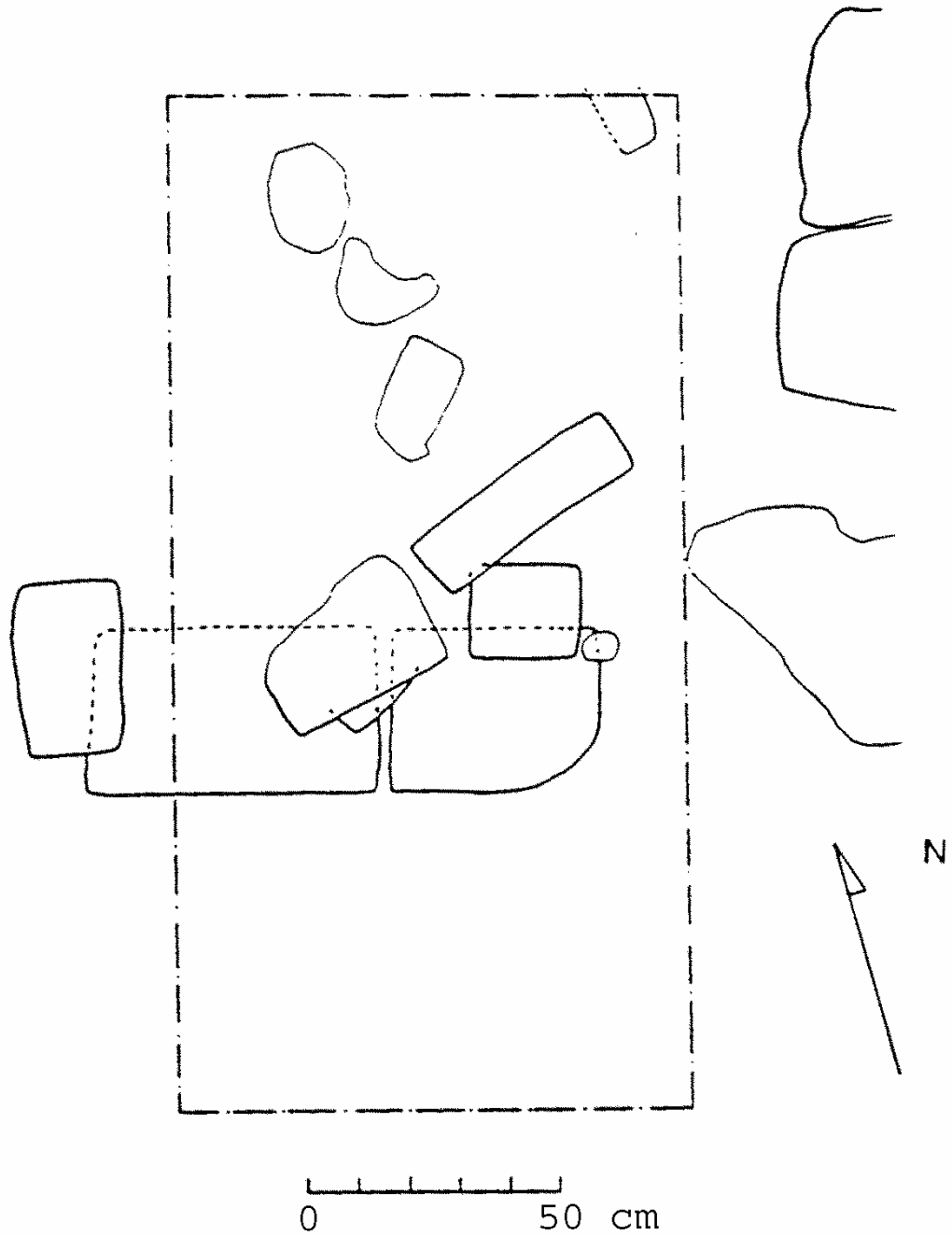


Figure 5.42. TR2-Q19-TP1 lot 1 plan view showing the structure wall (from O'Mansky, Hinson, Wheat, and Sunahara 1995: Fig. 42.3, p. 411).

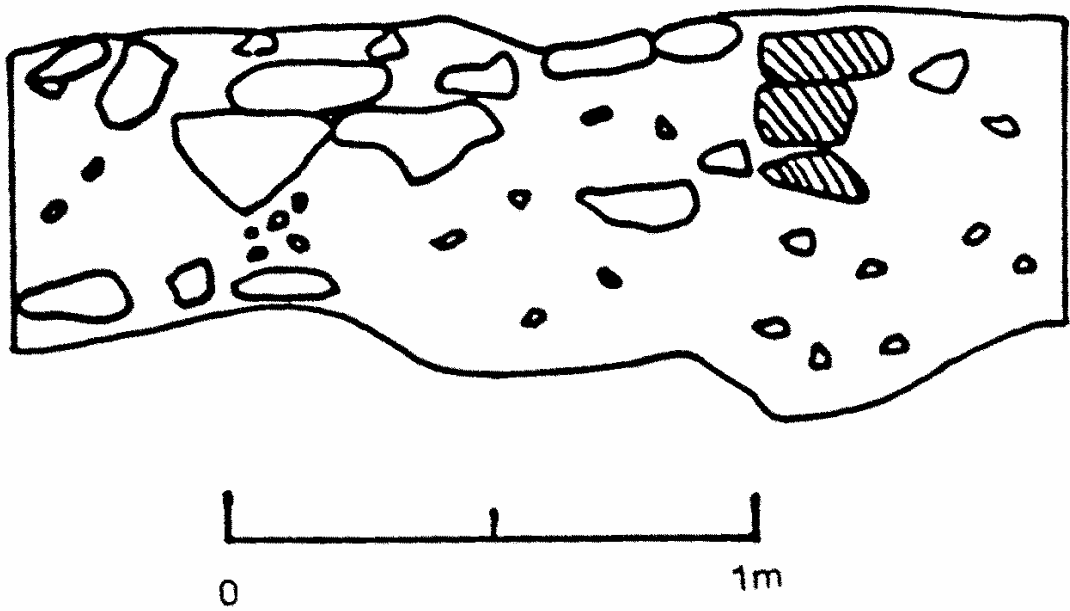


Figure 5.43. TR2-Q19-TP2 west profile (from O'Mansky, Hinson, Wheat, and Sunahara 1995: Fig. 42.4, p. 411).

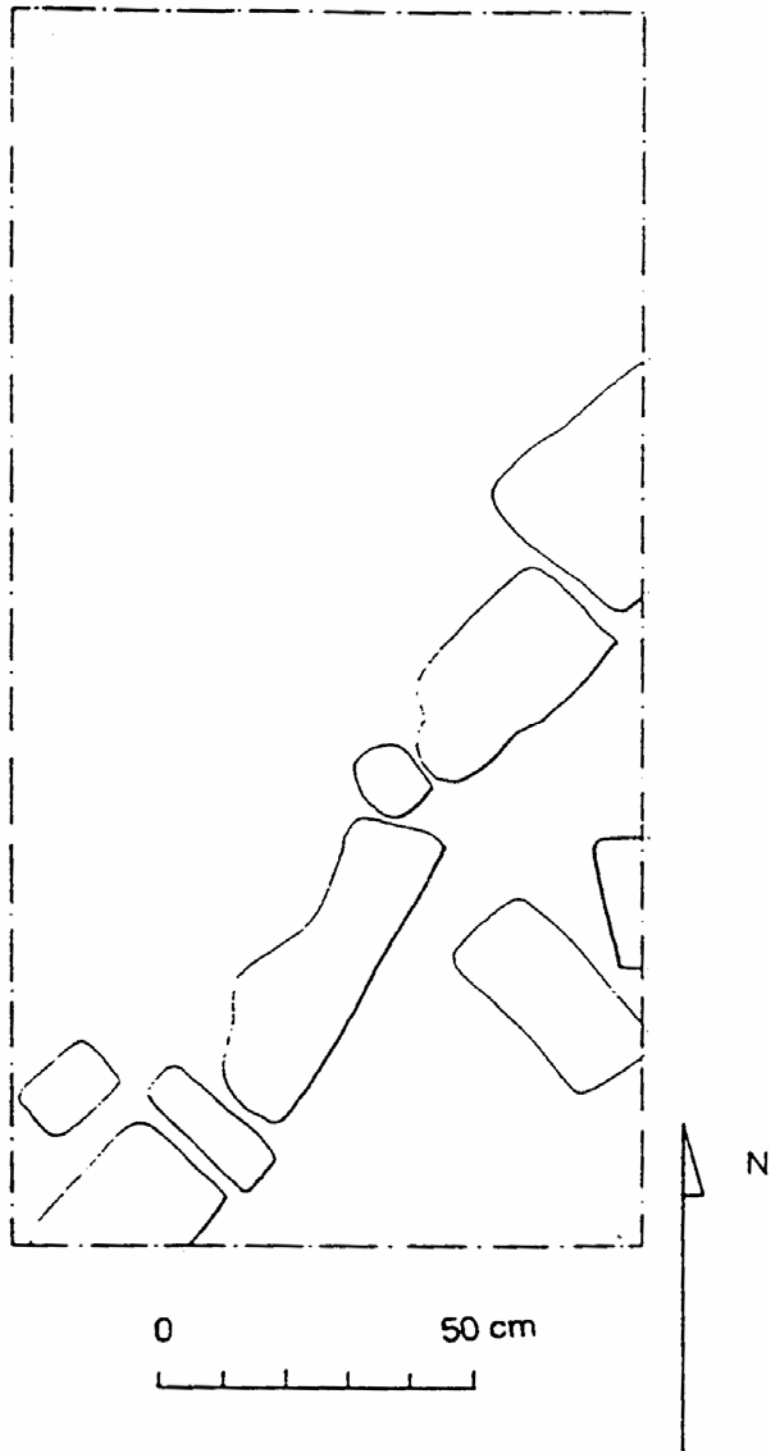


Figure 5.44. TR2-Q19-TP9 lot 2 plan view showing structure wall line (from O'Mansky, Hinson, Wheat, and Sunahara 1995: Fig. 42.5, p. 413).

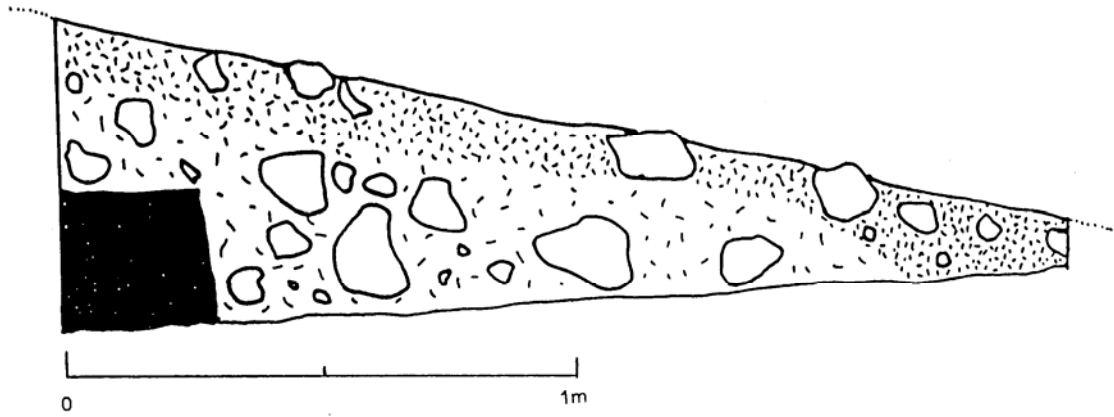


Figure 5.45. TR2-TP4 west profile (from O'Mansky, Hinson, Wheat, and Sunahara 1995: Fig. 42.7, p. 417).

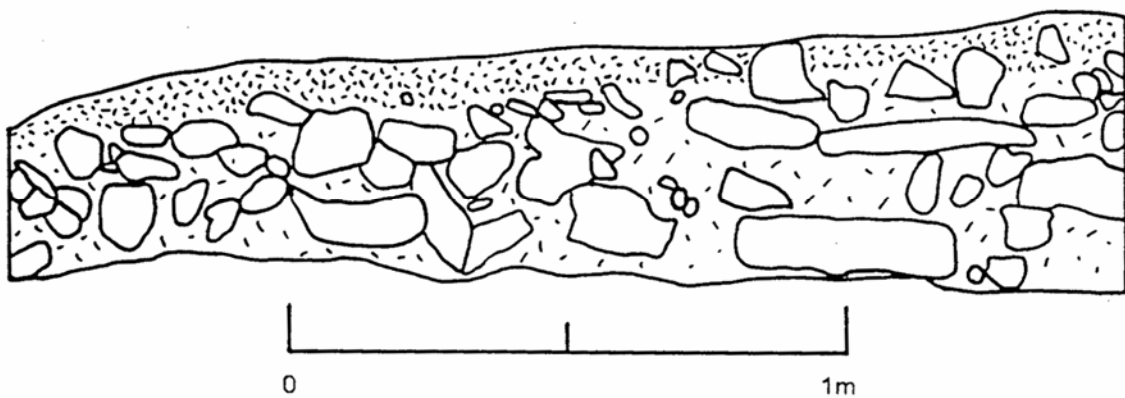


Figure 5.46. TR2-Q32-TP6 south profile (from O'Mansky, Hinson, Wheat, and Sunahara 1995: Fig. 42.9, p. 421).



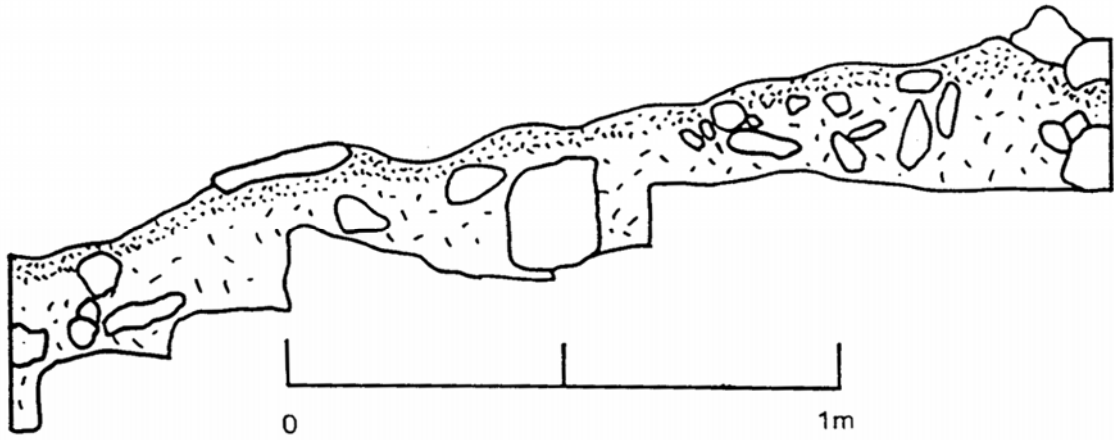


Figure 5.47. TR2-Q32-TP11 south profile (from O'Mansky, Hinson, Wheat, and Sunahara 1995: Fig. 42.10, p. 421).

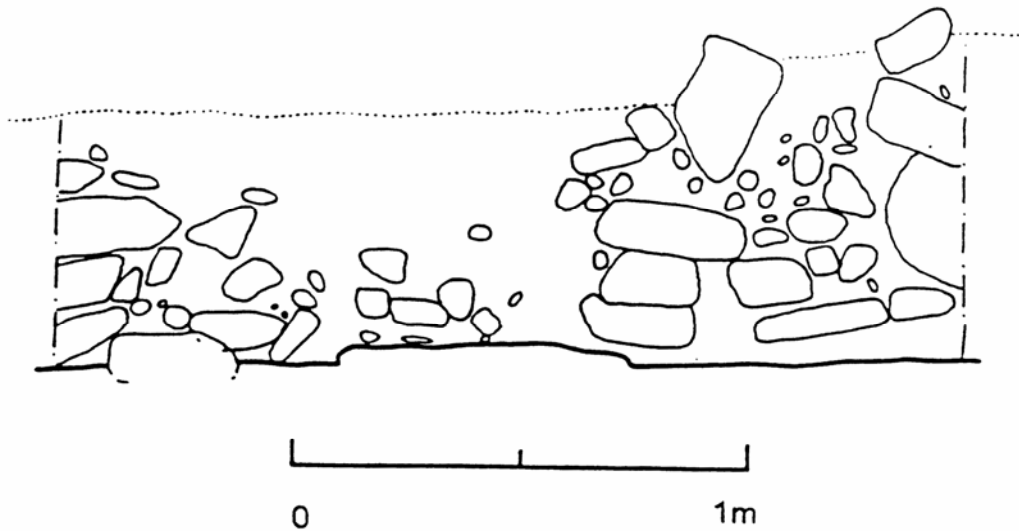


Figure 5.48. TR2-Q27-TP13 west profile (from O'Mansky, Hinson, Wheat, and Sunahara 1995: Fig. 42.11, p. 423).

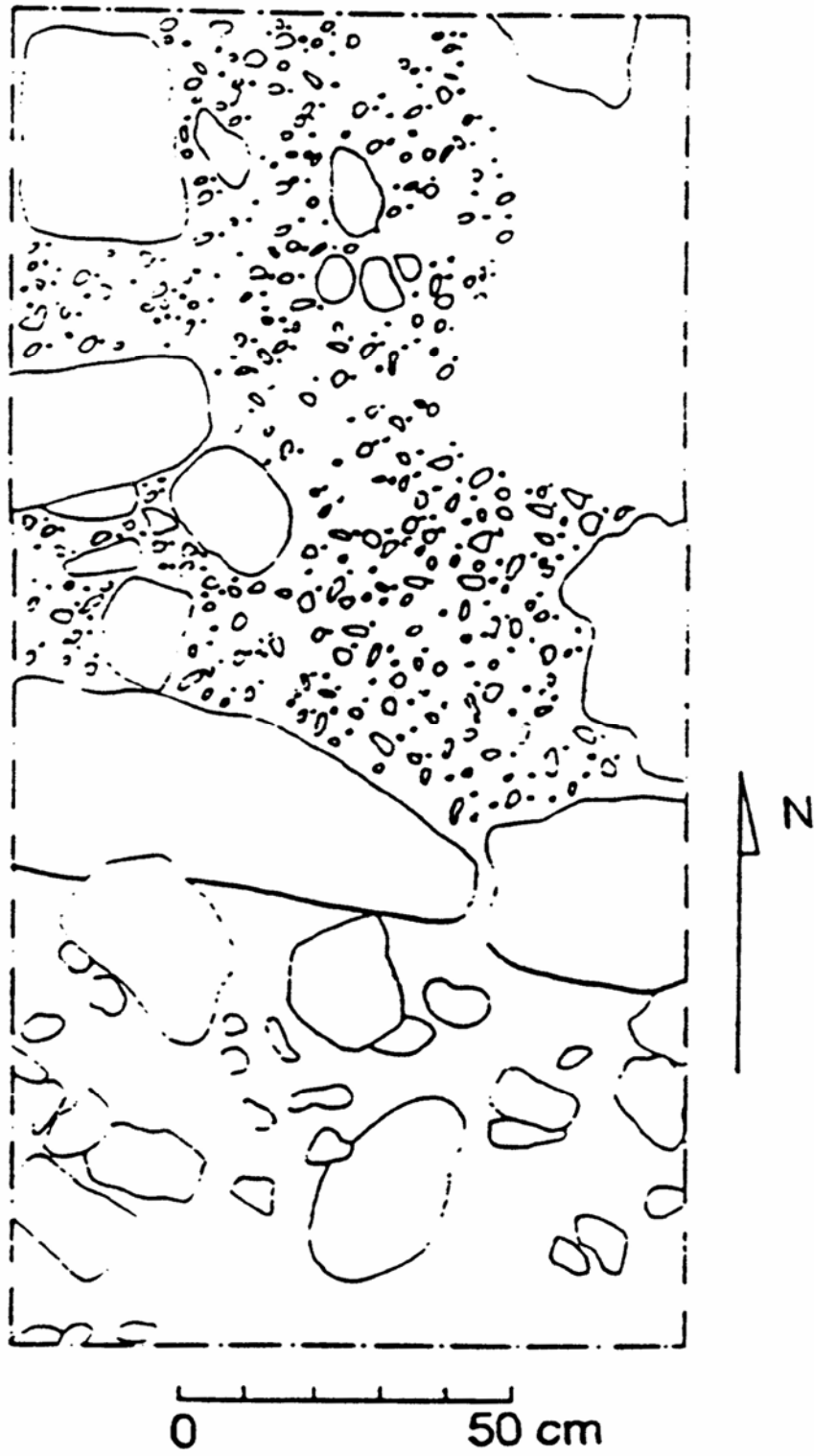


Figure 5.49. TR2-Q27-TP15 plan view of floor and wall (from O'Mansky, Hinson, Wheat, and Sunahara 1995: Fig. 42.12, p. 423).

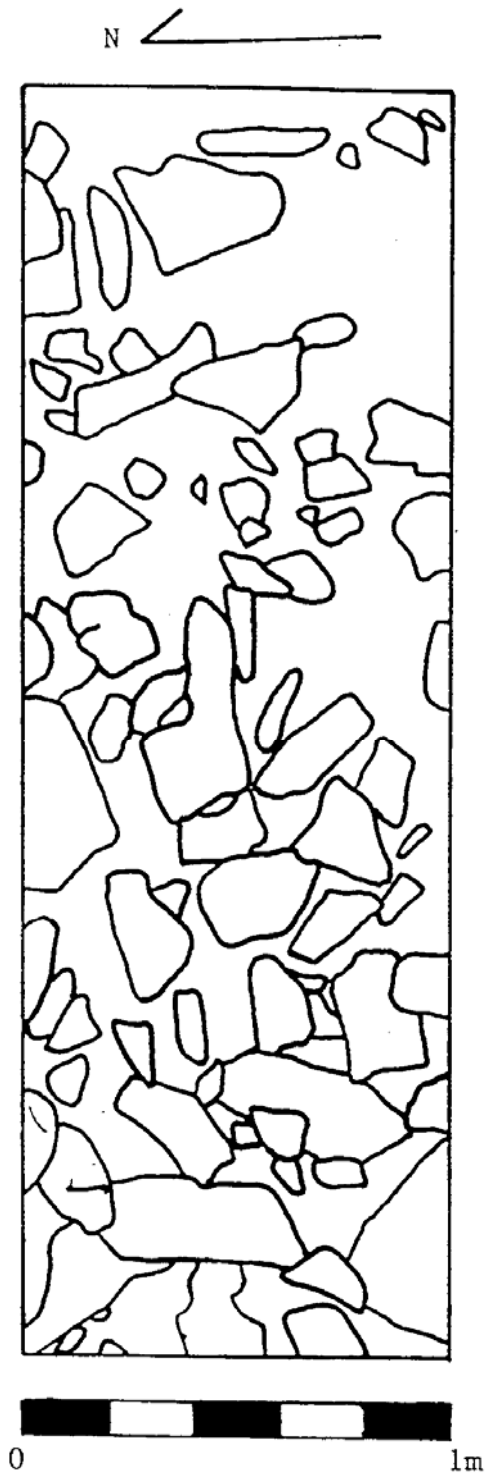


Figure 5.50. TR2-TP19 lot 2 plan view (from O'Mansky and Wheat 1996b: Fig. 11.5, p. 124).

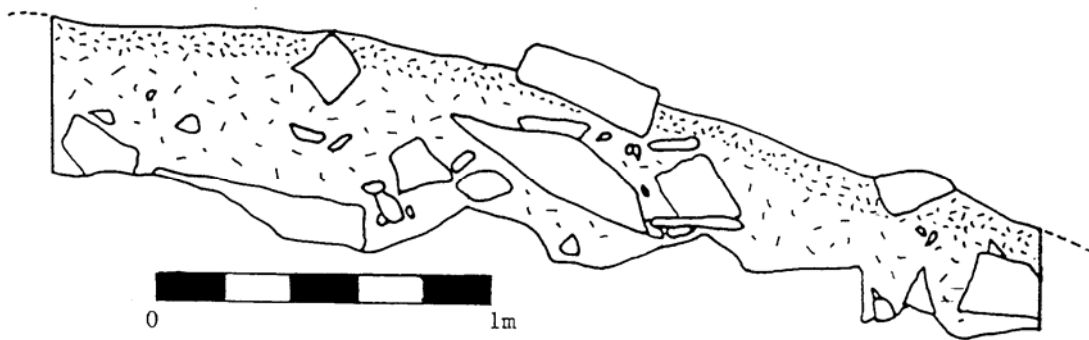


Figure 5.51. TR2-TP19 south profile (from O'Mansky and Wheat 1996b: Fig. 11.6, p. 124).



Figure 5.52. TR2-TP20 lots 1 and 2 plan view (left) and lot 3 plan view (right) (from O'Mansky and Wheat 1996b: Figs. 11.7 and 11.8, p. 125).



Figure 5.53. TR2-TP22 lot 5 plan view (from O'Mansky and Wheat 1996b: Fig. 11.9, p. 128).



Figure 5.54. TR2-TP23 west profile (from O'Mansky and Wheat 1996b: Fig. 11.10, p. 128).

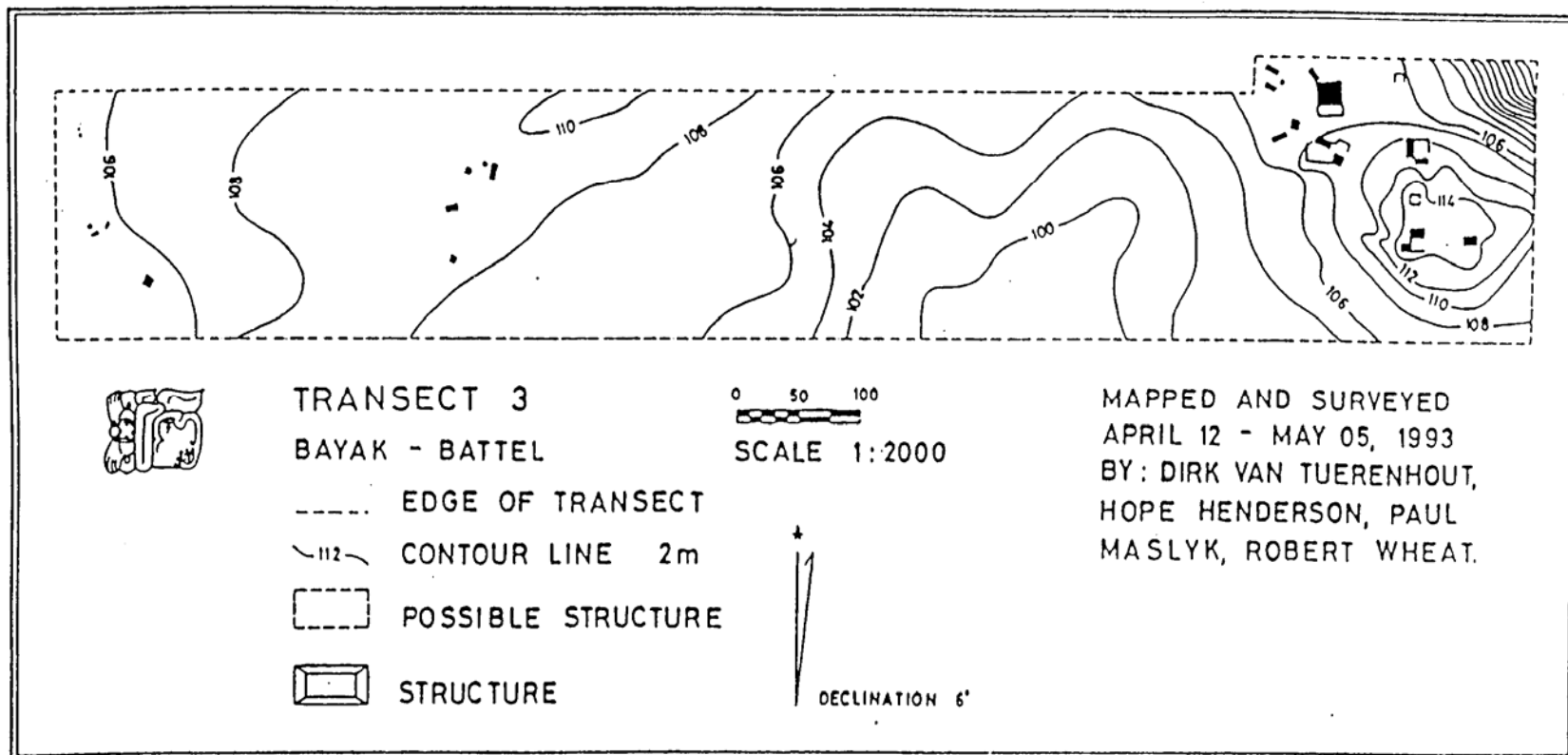


Figure 5.55. Map of Transect 3 (from Van Tuerenhout, Henderson, Maslyk, and Wheat 1993: Fig. 01, p. 85).



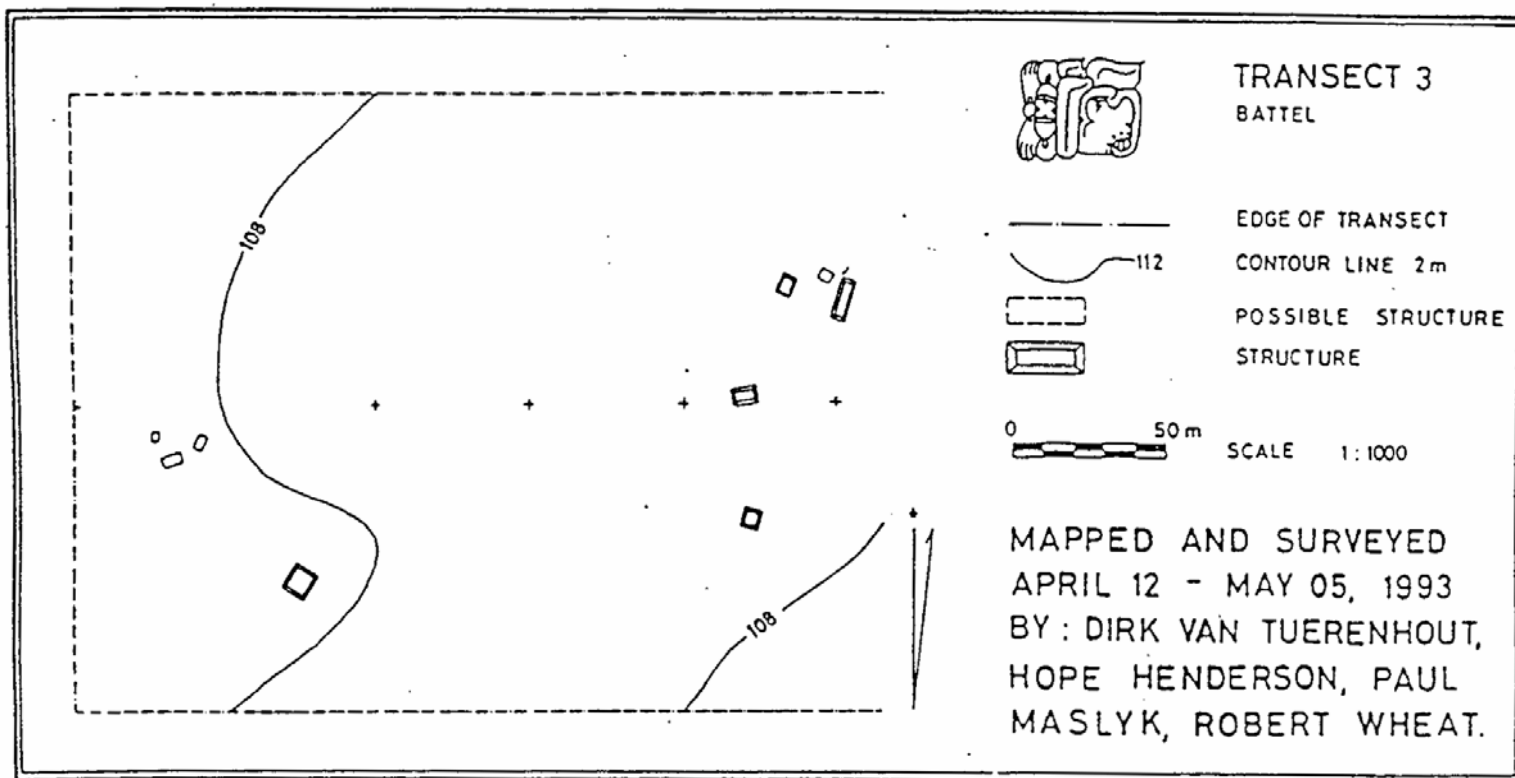


Figure 5.56. Map of the Transect 3 village Battel (from Van Tuerenhout, Henderson, Maslyk, and Wheat 1993: Fig. 03, p. 87).

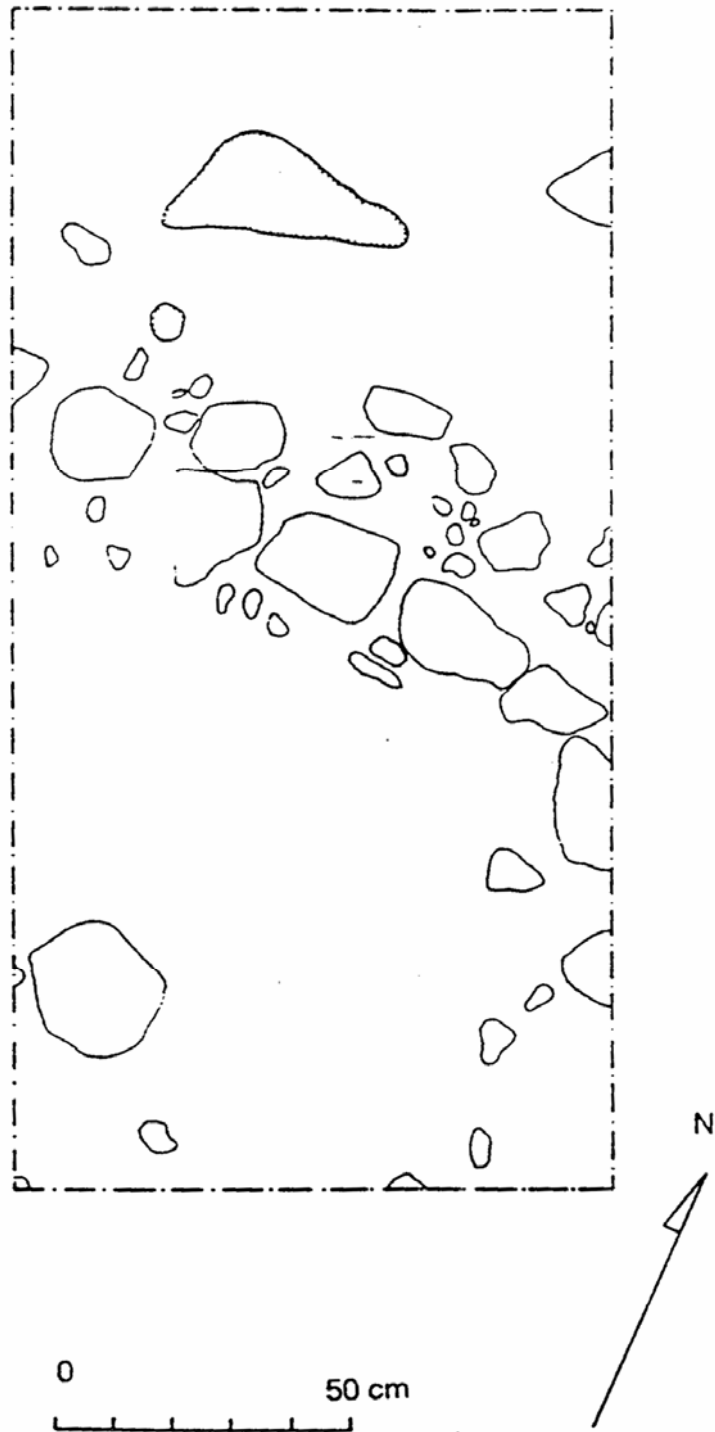


Figure 5.57. TR3-TP2 lot 5 plan view showing structure line (from O'Mansky, Hinson, Wheat, and Sunahara 1995: Fig. 42.17, p. 432).

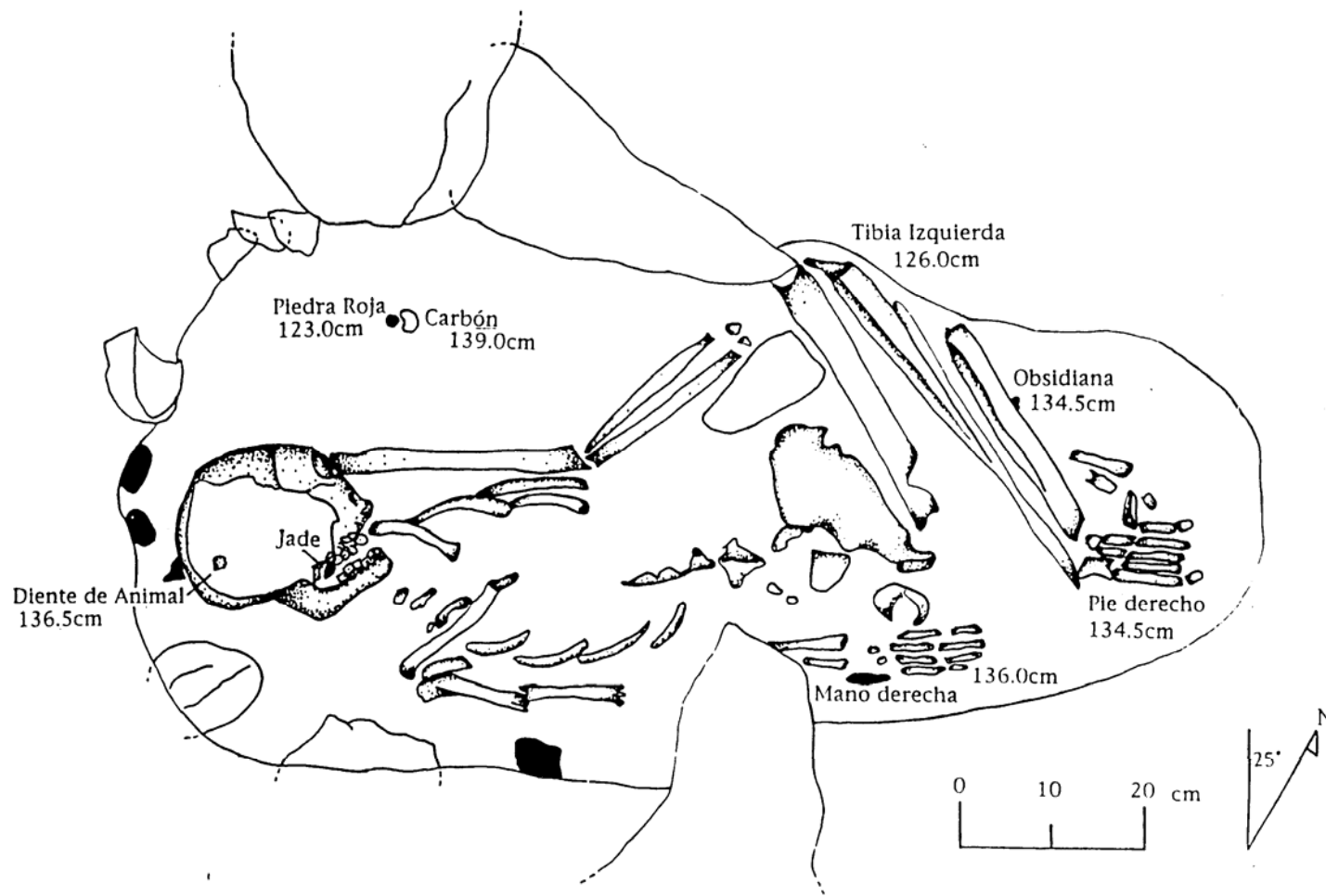


Figure 5.58. TR3-TP2B lot 5 burial plan view (from O'Mansky, Hinson, Wheat, and Sunahara 1995: Fig. 42.18, p. 433).

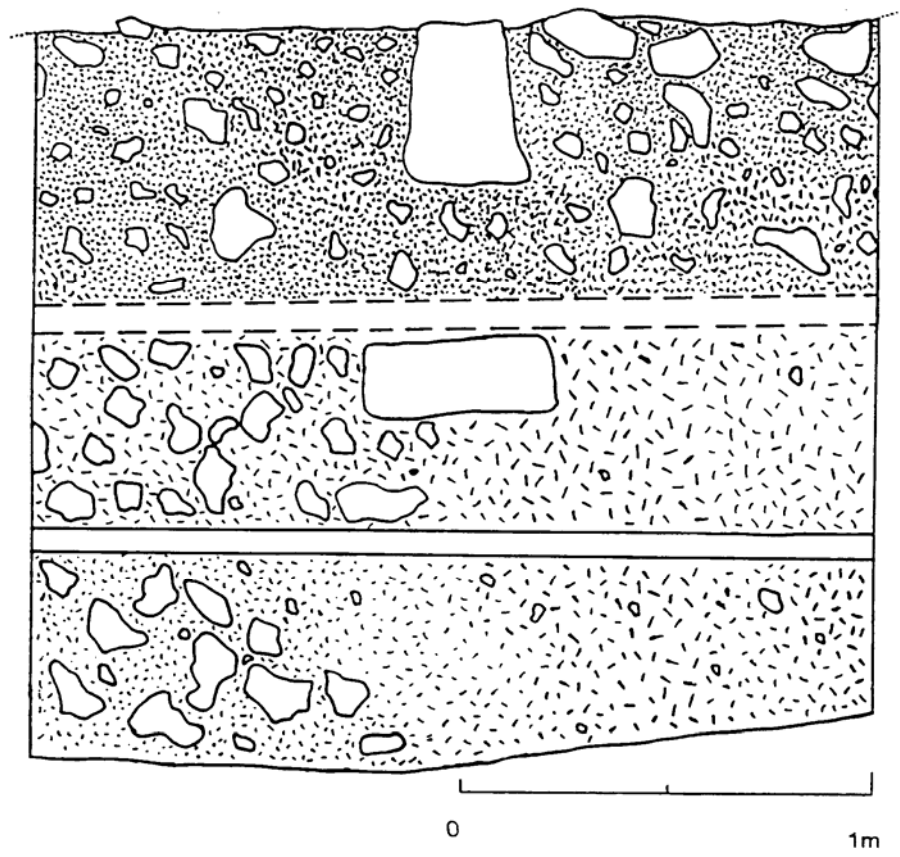


Figure 5.59. TR3-TP3 east profile (from O'Mansky, Hinson, Wheat, and Sunahara 1995: Fig. 42.19, p. 435).

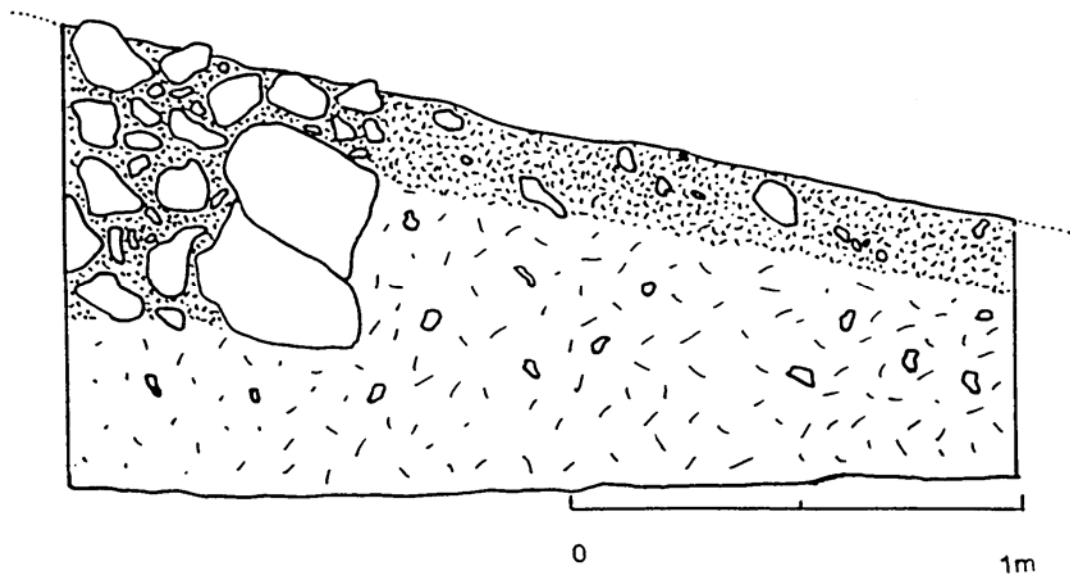


Figure 5.60. TR3-TP4 west profile (from O'Mansky, Hinson, Wheat, and Sunahara 1995: Fig. 42.20, p. 435).

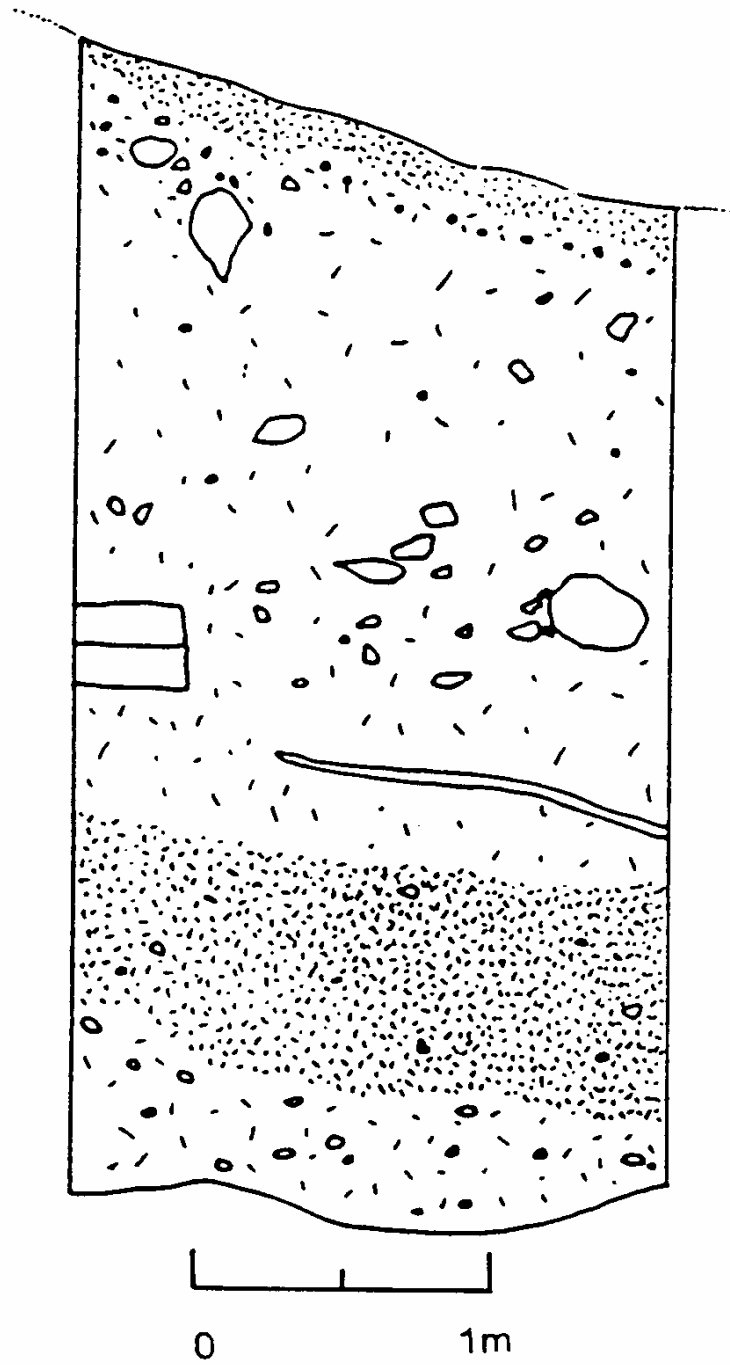


Figure 5.61. TR3-TP5 west profile (from O'Mansky, Hinson, Wheat, and Sunahara 1995: Fig. 42.21, p. 439).

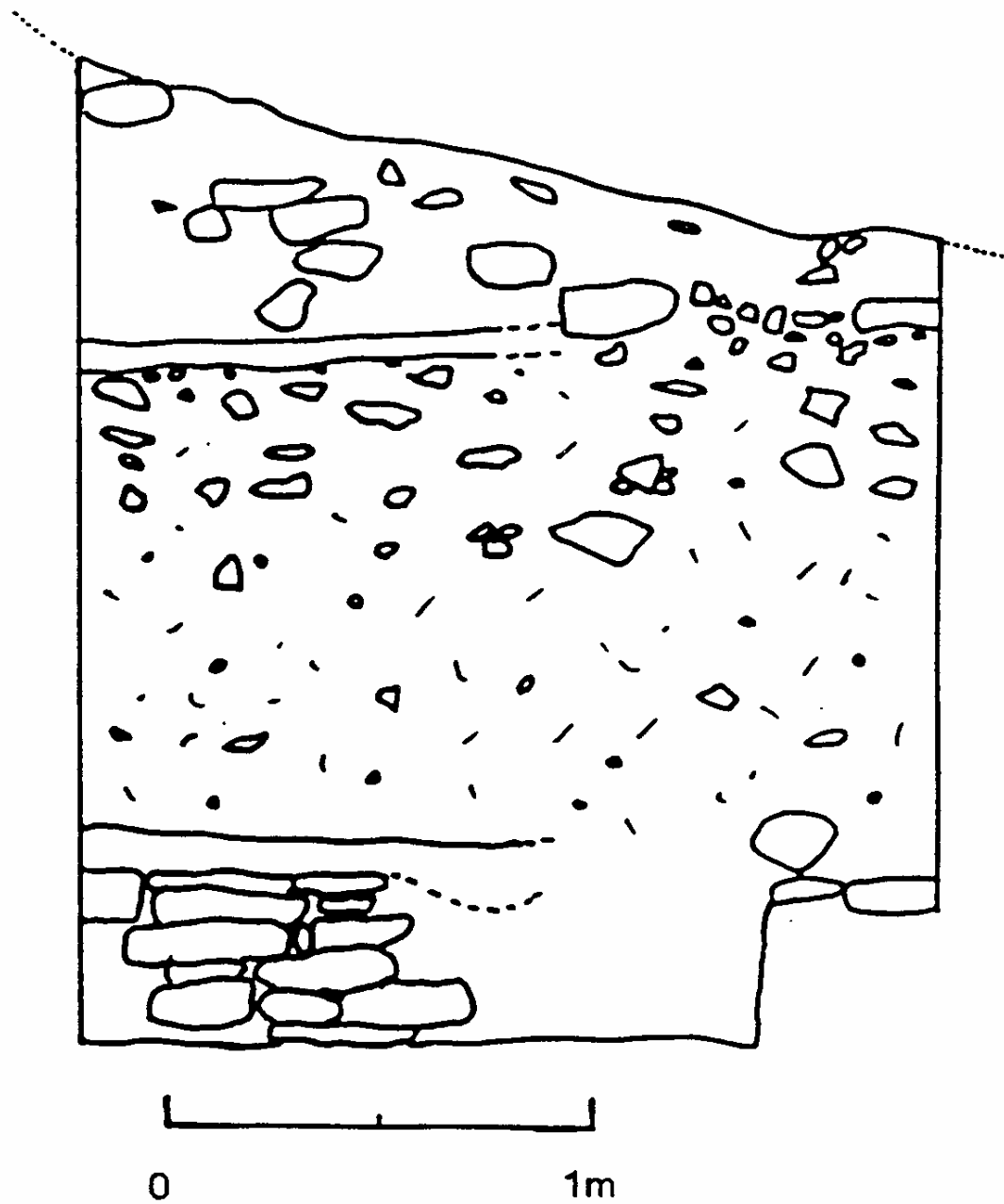


Figure 5.62. TR3-TP6 north profile (from O'Mansky, Hinson, Wheat, and Sunahara 1995: Fig. 42.22, p. 439).

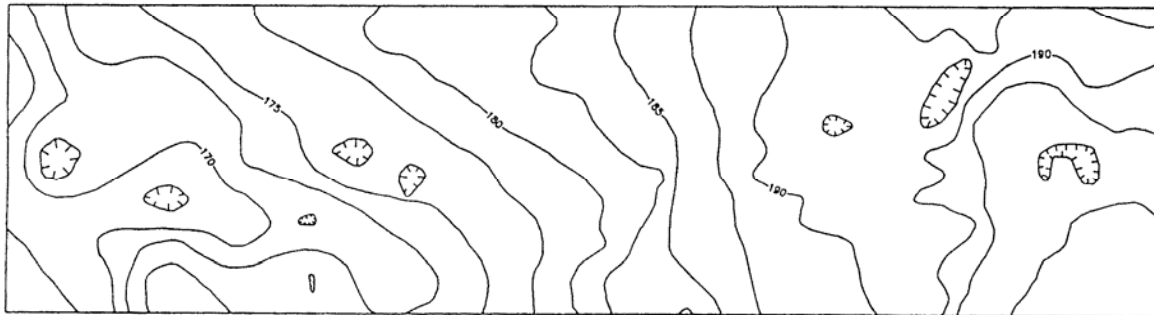
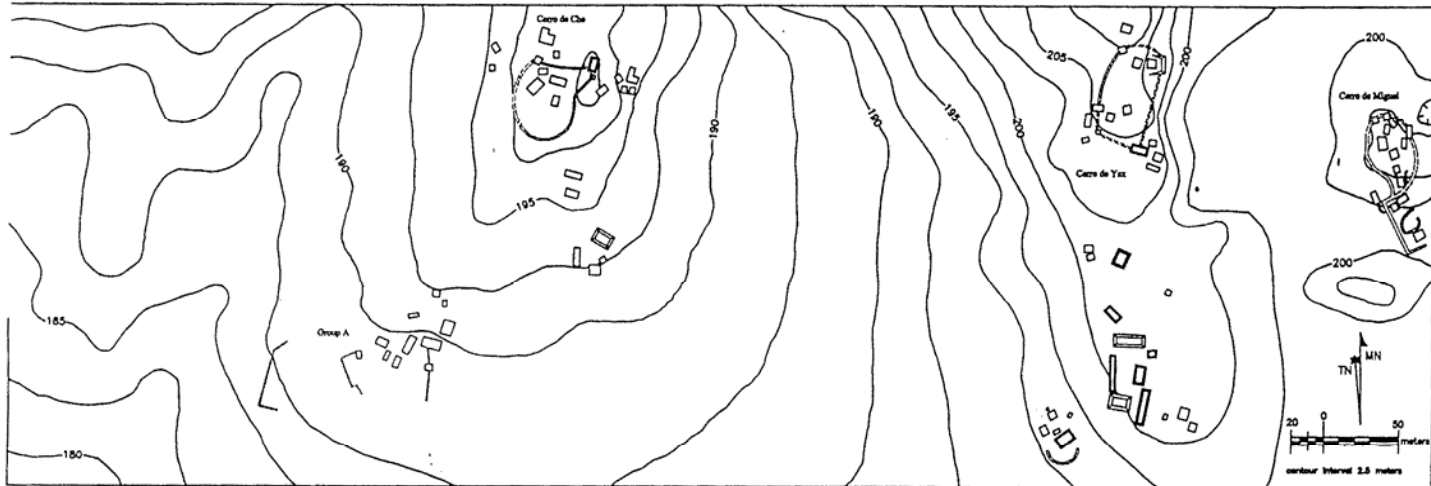


Figure 5.63. Transect 4 map showing original transect mapped in 1994 (top) and the 1996 extension (bottom) (from O'Mansky and Wheat 1996a: Fig. 12.7, p. 139).

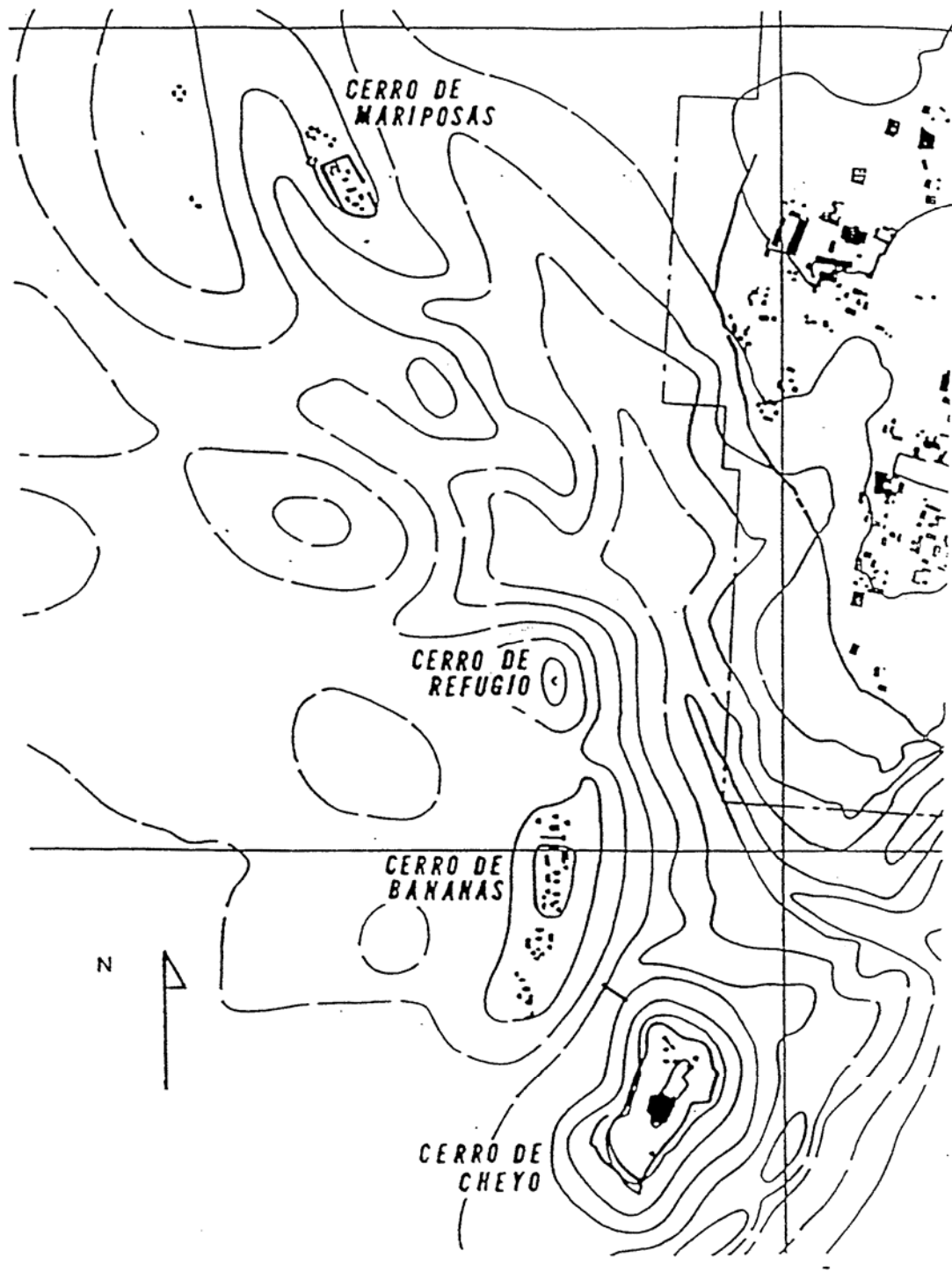


Figure 5.64. Map of hilltop villages west of Aguateca (from Inomata and Stiver 1993: Fig. 3.2, p. 12).



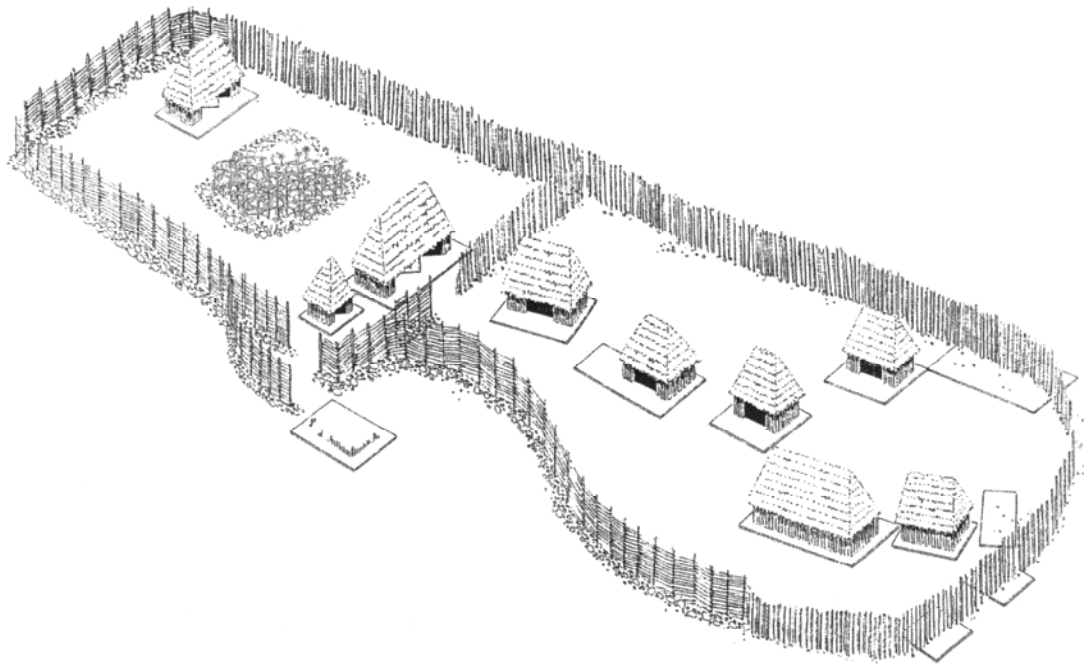


Figure 5.65. Reconstruction drawing of the Transect 4 hilltop village Cerro de Miguel (from O'Mansky and Dunning 2004: Fig. 5.5, p. 99).

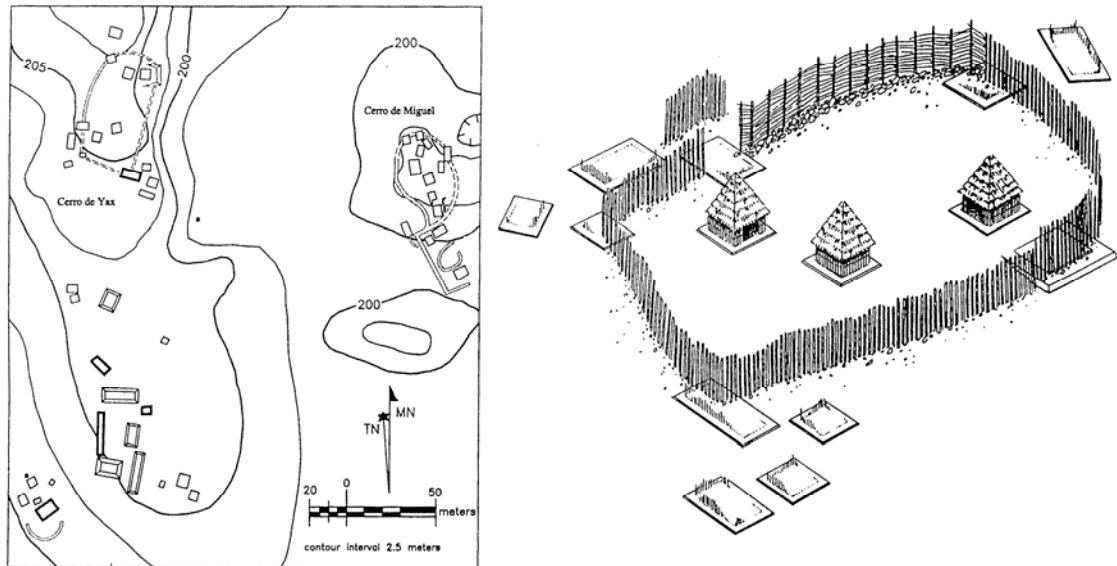


Figure 5.66. Map and reconstruction drawing of the Transect 4 hilltop village Cerro de Yax (from O'Mansky and Wheat 1996a: Figs. 12.4 and 12.5, p. 136).

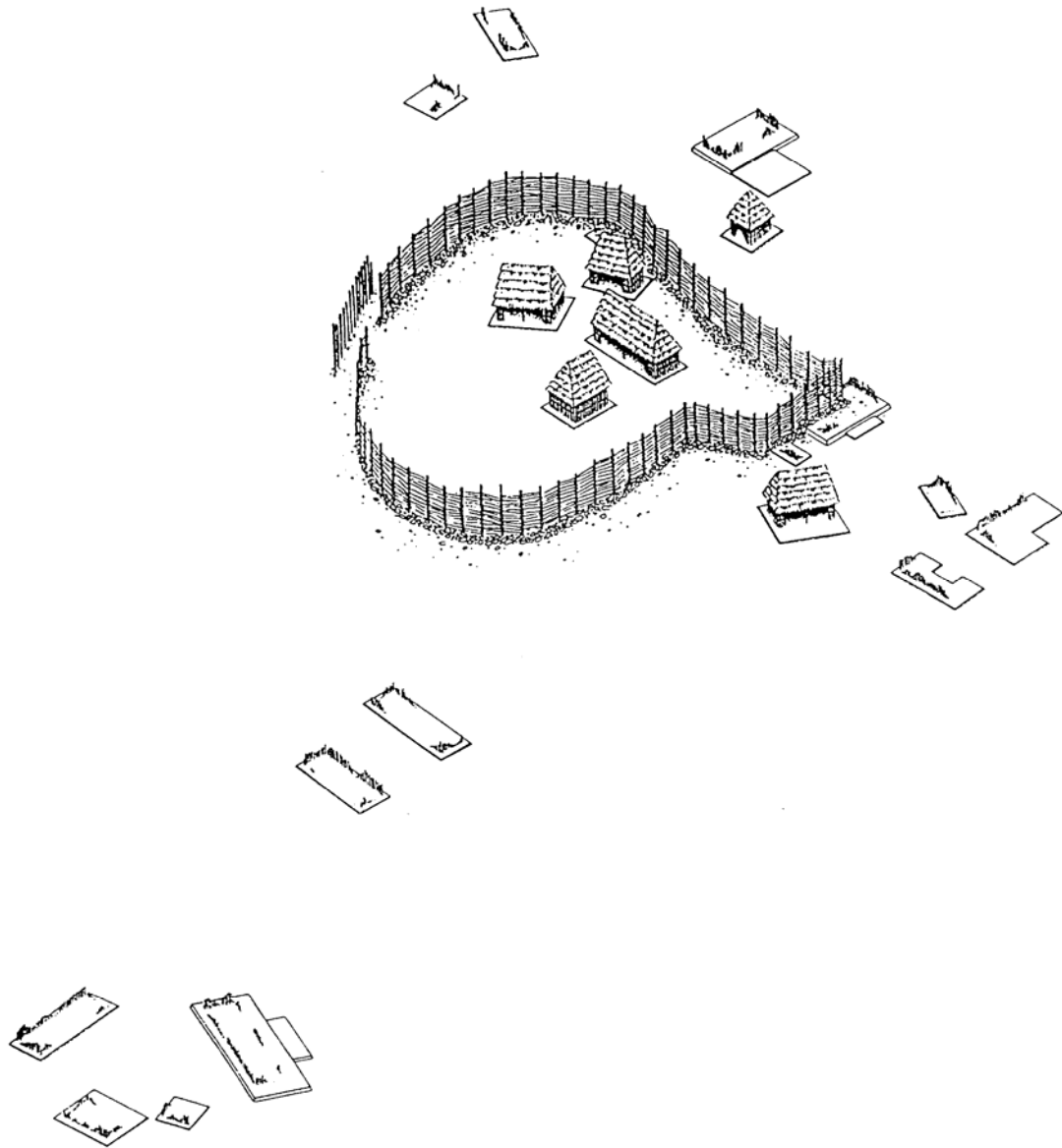


Figure 5.67. Reconstruction drawing of the Transect 4 hilltop village Cerro de Che (from O'Mansky and Wheat 1996a: Fig. 12.6, p. 137).

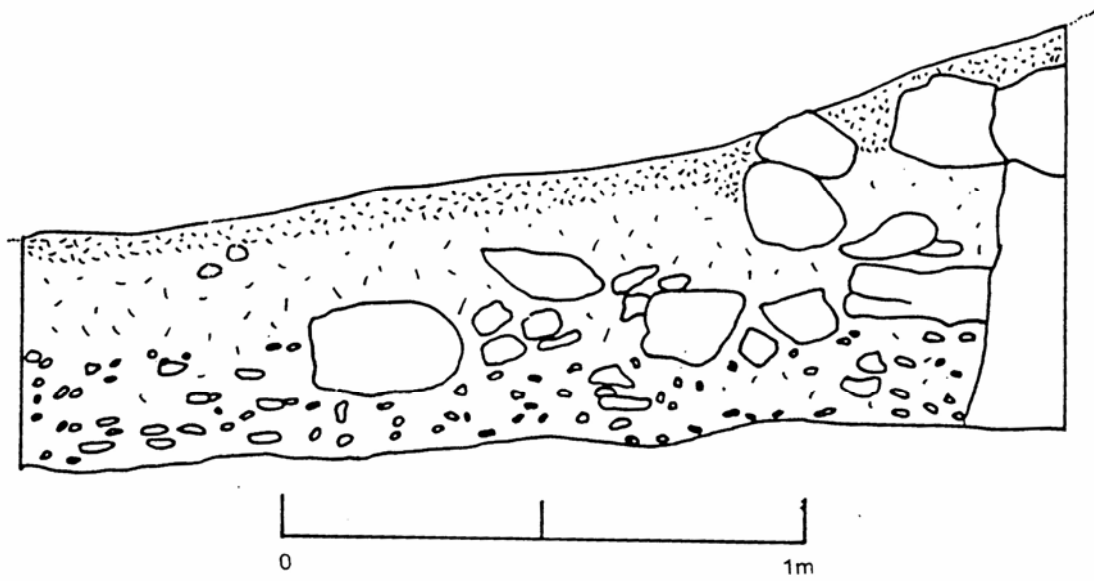


Figure 5.68. TR4-TP1 south profile (from O'Mansky, Hinson, Wheat, and Demarest 1995: Fig. 43.12, p. 460).

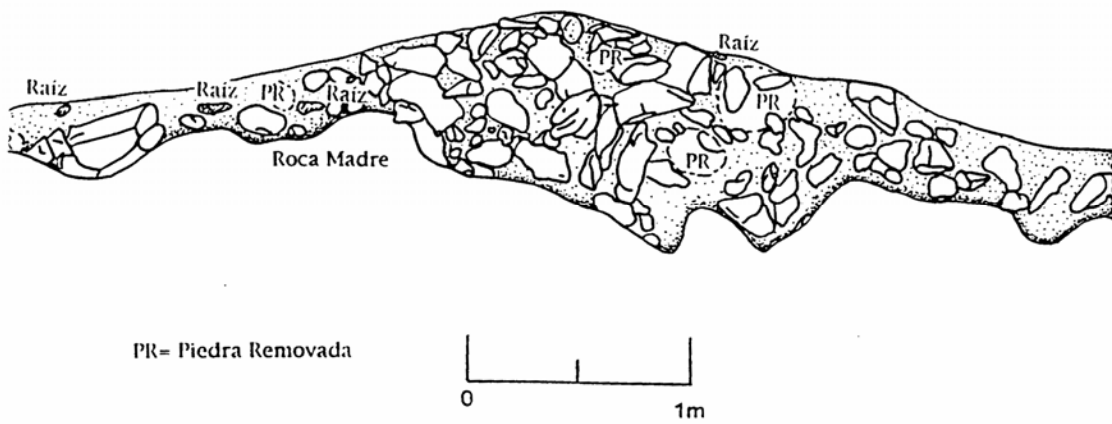


Figure 5.69. TR4-TP3 north profile (from O'Mansky, Hinson, Wheat, and Demarest 1995: Fig. 43.13, p. 460).

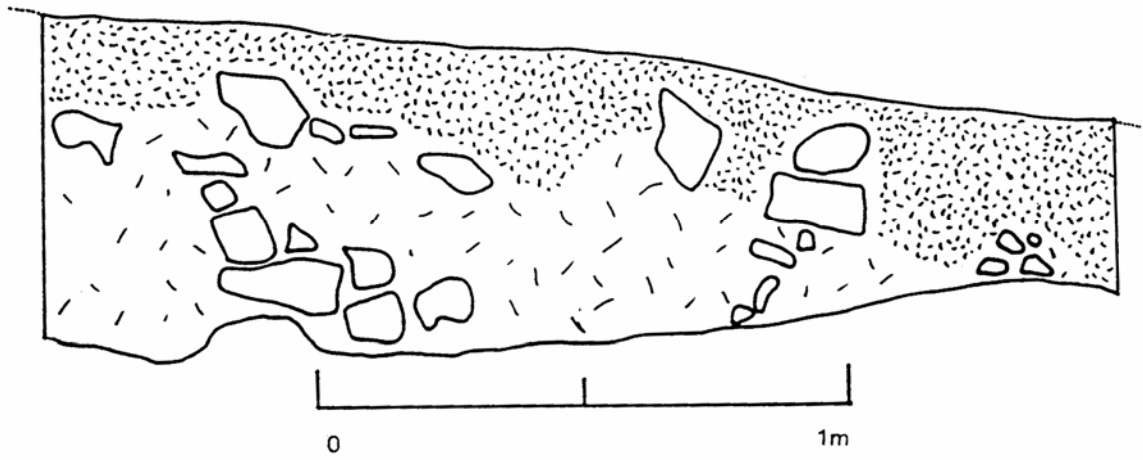


Figure 5.70. TR4-TP4 south profile (from O'Mansky, Hinson, Wheat, and Demarest 1995: Fig. 43.14, p. 462).

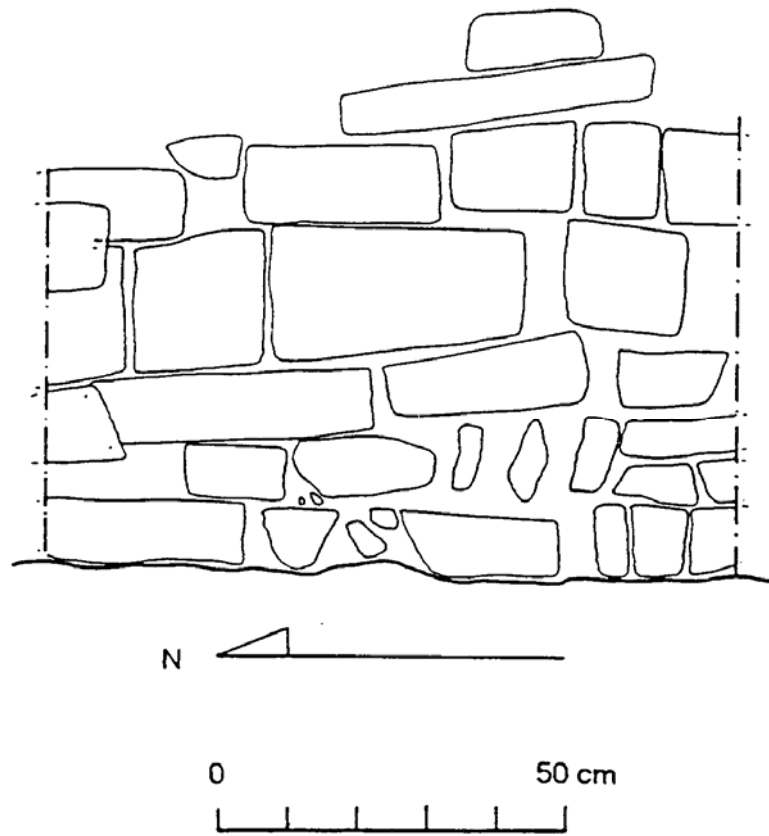


Figure 5.71. TR4-TP5 lot 5, profile of the structure wall (from O'Mansky, Hinson, Wheat, and Demarest 1995: Fig. 43.15, p. 462).

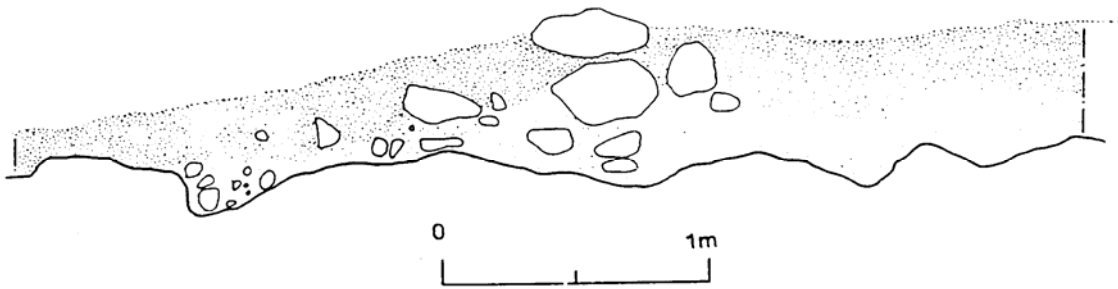


Figure 5.72. TR4-TP6 north profile (from O'Mansky, Hinson, Wheat, and Demarest 1995: Fig. 43.16, p. 465).

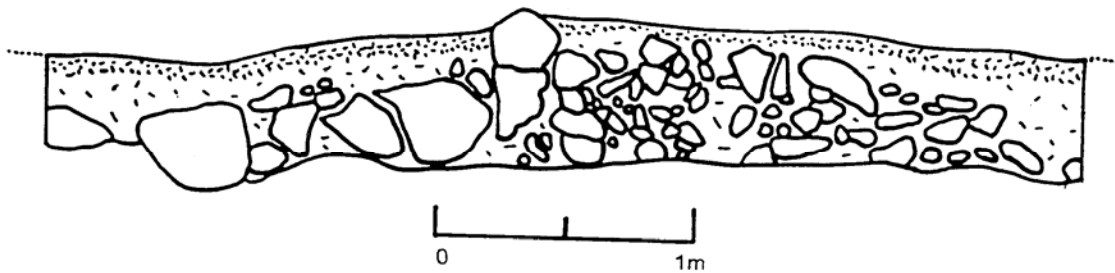


Figure 5.73. TR4-TP9 north profile (from O'Mansky, Hinson, Wheat, and Demarest 1995: Fig. 43.17, p. 467).

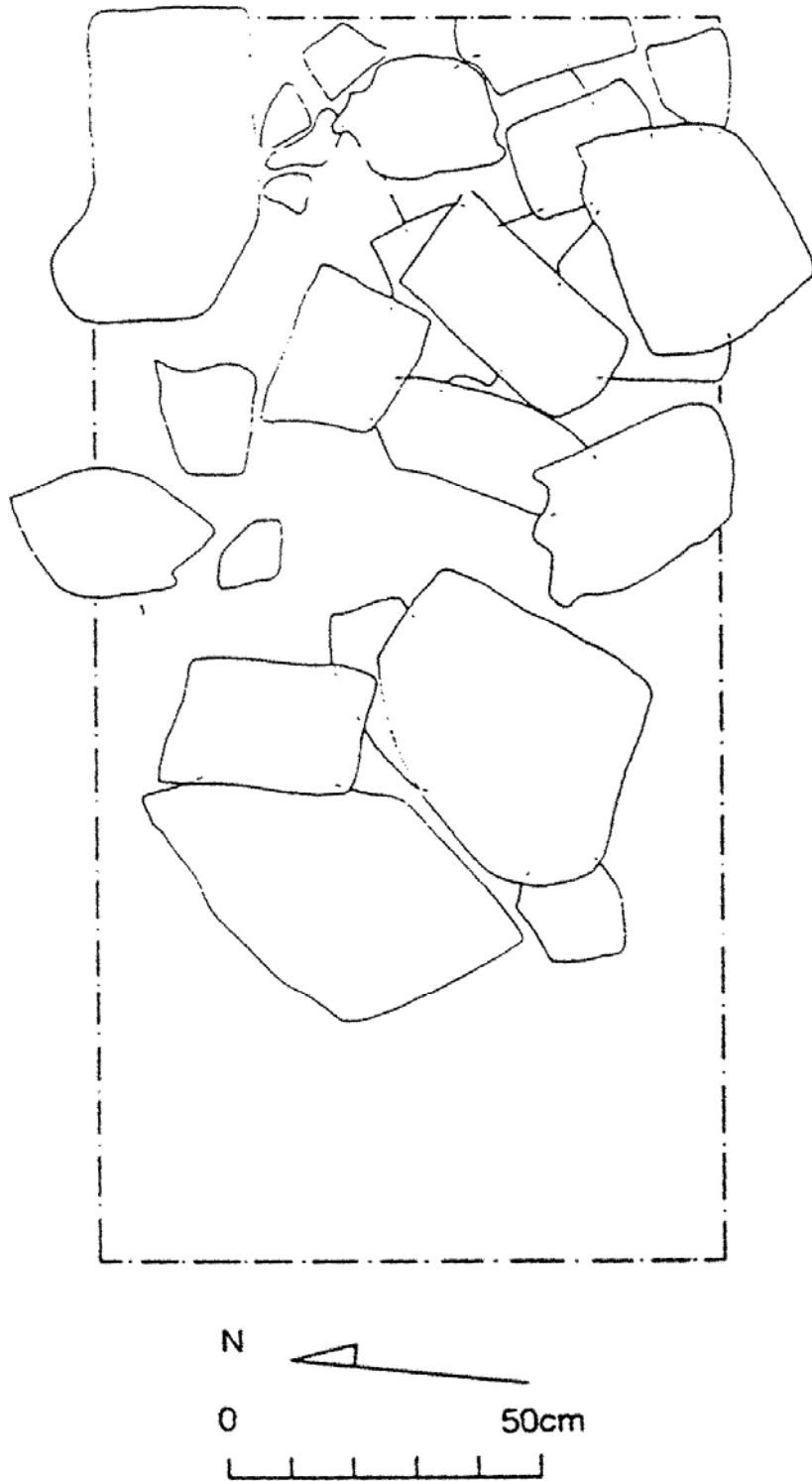


Figure 5.74. TR4-TP10 lots 1 and 2 plan view (from O'Mansky, Hinson, Wheat, and Demarest 1995: Fig. 43.18, p. 468).

## CHAPTER VI

### THE HISTORY OF SETTLEMENT IN THE PETEXBATUN REGION

#### **The First Settlers: Middle Preclassic Occupation of the Petexbatun**

As early foraging groups entered the Maya lowlands for the first time in the Preclassic period, the Petexbatun region must have appeared extremely appealing. With its lakes and rivers teeming with aquatic resources and dense forests full of wild game and edible plants, hunter-gatherer populations could thrive. We do not have evidence for these groups but this is not surprising since successful foragers tend to have minimal impact on the local ecology and leave few archaeological traces.

Sometime during the second millennium B.C. the initial colonizers of the region settled down on the fertile grounds between the Petexbatun escarpment and the Río and Laguna Petexbatun to the east. Small farming villages were established as the settlers exploited the rich, fertile soils in that ecozone. Excavations in Transect 3 between the river and Tamarindito found that bedrock lies 2 to 4 or more meters beneath the modern humus layer (O'Mansky, Hinson, Wheat, and Sunahara 1995). The earliest evidence for occupation in the region, however, comes not from excavations in the area; instead the evidence comes from lake cores extracted by the Petexbatun Project paleoecological team. A total of six cores were extracted in 1991 and 1995, two from Laguna Petexbatun and four from Laguna Tamarindito (Dunning et al. 1991, 1997, 1998; Dunning and Beach n.d.). Evidence from a core extracted from Laguna Tamarindito in 1991 indicates that the initial settlement of the region occurred between 2000 and 1000 B.C. At that time

significant portions of the forest were cleared and erosion greatly increased, presumably as a result of slash-and-burn farming by a small sedentary population.

The earliest evidence of occupation in the Petexbatun region based on material culture indicates that these inhabitants selected those niches with the most abundant natural resources in which to build their homes. The soils between the northern tip of Laguna Petexbatun and the escarpment are deep and well suited for agriculture. The land at Punta de Chimino is similarly fertile. It is in these locations that the Maya first settled. All seven excavations in the village of Bayak on Transect 3 (see Figure 4.2) yielded pottery of the Excavado Mamom ceramic complex, which dates to the late Middle Preclassic period (600 to 300 B.C.). In fact, over 99% of the Middle Preclassic pottery recovered over the course of the Petexbatun Project comes from this village. Much of the Excavado Mamom sample was recovered from the 60 cm thick midden on the north side of structure 2. The origins of this complex in the region may be even earlier based on its similarity to the Ox Mamom complex from Nakbé, which has been dated to 1000 B.C. (Foias 1996). Further evidence for earlier occupation of Bayak comes from the test pit on the north side of structure 10. These excavations uncovered the upper two courses of a cut stone wall with Middle Preclassic fill at a depth of 4 meters. At that point the excavator judged that the walls of the excavation were too unstable to safely continue digging and the test pit was closed (O'Mansky, Hinson, Wheat, and Sunahara 1995). The size of structure 10 likely indicates early social stratification and/or an early religious structure in the region. Measuring approximately 20 meters on each side and more than three meters in height with a terrace or patio extending from the south side of the structure, the building dwarfs all others in the region at that time.



The only other place where Middle Preclassic pottery has been discovered in the region is Punta de Chimino, where trace amounts of Excarvado Mamom ceramics were recovered in the deepest levels of excavations from what later became the Classic period center of the site – the acropolis, main plaza, and the southwestern port area. This small sample includes a number of Middle to Late Preclassic transitional forms, indicating that these lots date to the end of the Middle Preclassic period (Foias 1996).

### **Late Preclassic Settlement Expansion**

In the Late Preclassic period the population expanded to other parts of the Petexbatun. The Late Preclassic ceramic complex in the region, the Faisan Chicanel complex, dates from 300 B.C. to A.D. 350. During this period the village of Bayak continued to be occupied as Faisan Chicanel ceramics were recovered from all seven excavation units, comprising nearly 60% of the regional total of that complex (Table 6.1). Significant quantities from the ceramic complex – nearly 30% of the total for the Petexbatun – were also excavated at Punta de Chimino. The other major locus for Faisan Chicanel ceramics was Aguateca, from which slightly more than 10% of all Late Preclassic pottery in the Petexbatun was recovered. Trace amounts of Late Preclassic pottery were also recovered from excavations at Dos Pilas, Arroyo de Piedra, and Tamarindito (Foias 1996). The Regional Cave Survey subproject found that ritual activities took place in the caves surrounding these three sites beginning during this period (Brady et al. 1997).

Table 6.1. Counts of pottery in the Petexbatun region (from O’Mansky and Dunning 2004: Table 5.1, p. 91).

<b>Site</b>	<b>Excarvado</b> 600-300 BC	<b>Faisan</b> 300 BC- AD 350	<b>Jordan</b> AD 350-600	<b>Nacimiento</b> AD 600-830	<b>Sepens</b> AD 830- 950
Dos Pilas	0	41	1115	92,531	6364
Aguateca	0	681	42	40,371	7
Tamarindito	0	15	1253	14,190	261
Arroyo de Piedra	0	3	1816	21,279	17
Punta de Chimino	28	1801	29	0	7498
Survey Transects	4856	3743	173	16,980	3
<b>Total</b>	4884	6284	4428	185,351	14,150

### **Summary of Preclassic Settlement in the Petexbatun**

The earliest Petexbatun inhabitants chose zones with abundant natural resources and high agricultural potential for their houses and villages. Both Punta de Chimino and the Transect 3 villages were well situated to exploit aquatic resources and both areas had rich, fertile soils several meters deep, in contrast to the thin soils atop the escarpment, which were favored by Classic period populations. Preclassic pottery at Aguateca is known from cave locations, suggesting early ritual use of these sacred features. The Middle to Late Preclassic settlement strategy here, as in most regions of the Petén, was based on access to water sources and fertile soils.

By the end of the Preclassic period, the once rich environment chosen by the first settlers in the Petexbatun was suffering from the effects of a millennium of *milpa* farming. Soils were eroding and becoming less fertile as the forests were cleared back to

the base of the escarpment. Lagunita Tamarindito, beneath Battel, was increasingly filled with sediment (Dunning et al. 1998; Dunning and Beach n.d.). Recent research at Laguna Las Pozas on the southern margins of the Petexbatun region also indicates significant environmental degradation during the Preclassic (Johnston et al. 2001). Faced with decreasing productivity in their fields and a shortage of arable land, the Petexbatun Maya shifted the focus of settlement up onto the escarpment in ensuing periods.

### **Early Classic Settlement Strategies**

Towards the end of the Early Classic period Tamarindito emerged as the primary center in the Petexbatun region and the site includes the earliest known monument in the region, Tamarindito Stela 5, which dates to A.D. 513 (Figure 6.1; Houston 1987). Its dominance of the region is indicated in part by epigraphic evidence that the ruler of Tamarindito placed a subordinate ruler on the throne of Arroyo de Piedra in A.D. 573 (Escobedo 1997a, 1997b).

Located on the escarpment immediately above the Preclassic villages of Transect 3, Tamarindito was strategically situated atop the highest section of a series of hills. Below the site are two springs and three small lakes. Towards the end of the Early Classic, the inhabitants of Tamarindito began to implement strategies to increase agricultural production. These adaptations included a complex system of hill slope box terraces and check dams to control erosion and provide sustainable field systems. A reservoir dam was also constructed in order to provide ready access to fresh water for gardens (Figure 6.2; Beach and Dunning 1995; Dunning et al. 1997; Dunning and Beach n.d.). To the west of Tamarindito was the smaller site of Arroyo de Piedra, a secondary

capital to Tamarindito founded in the 6th century, as noted above. The Early Classic shift in settlement strategy seems to have resulted from Late Preclassic population growth and milpa-related erosion, leading to the settlement of less ecologically exhausted escarpment areas, which then became the focal area for larger centers.

Despite its political dominance and ecological advances, Tamarindito was never a particularly large center. The heart of the site includes two groups, Groups A and B, that are situated atop adjacent hills. Group A includes seven plazas with palaces, a temple pyramid, and uncarved panels (Foias 1993, 1994; Valdés 1997). Group B, located approximately 400 meters east-northeast of Group A, was likely the seat of the ruling lineage at Tamarindito and includes numerous plazas and large structures, in addition to three hieroglyphic staircases (Valdés 1993, 1994). Much of the pottery recovered indicates that construction and occupation of central Tamarindito occurred primarily during the Late Classic period but Early Classic Jordan ceramics were found in small quantities in both Groups A and B (Valdés 1997).

The main locus of residential settlement at Tamarindito is located on a high hill slope northeast of the site center. This settlement is comprised of a dozen residential groups with a total of 60 structures and nine agricultural terraces. Forty of the structures in eight of the twelve groups were excavated during the 1994 field season. While Early Classic ceramics were recovered, no associated construction was identified (Valdés 1997).

The Early Classic Petexbatun ceramic assemblage suggests an overall decrease in population from Preclassic times, as well as the known shift in settlement location. Although the total number of diagnostic Early Classic Jordan (A.D. 350-600) sherds is

smaller than that of the Late Preclassic Faisan assemblage, Tamarindito and Arroyo de Piedra, while still fairly small centers, had significant population increases at this time. Punta de Chimino, Aguateca, and intersite zones – the foci of earlier settlement – show significantly reduced Early Classic occupation (Foias 1996; Foias and Bishop 1997). In fact, the Preclassic Transect 3 villages were totally abandoned by this time. This apparent shift in settlement strategy, however, may be an artifact of sampling, as many intersite areas were not tested and some centers were tested more completely than others. Alternatively, it may reflect the nucleation of settlement around Tamarindito and Arroyo de Piedra, which comprise approximately 28% and 41%, respectively, of the recovered ceramic assemblage at this time for the region. Another 25% of all Jordan ceramics was excavated at Dos Pilas (*ibid.*).

The apparent population decline may also be a result of Mayanists' difficulties in securely separating Early Classic ceramics from those of the Late Preclassic (Lincoln 1985). In the central Petén and some other zones Early Classic markers are well defined. In the Petexbatun many Late Preclassic types and modes likely continued after the third century. Thus, the apparent demographic decline may be, to some extent, a methodological, not culture-historical, problem. The presence of architectural caches in Early Classic style at Punta de Chimino tends to support this thinking (Escobedo 1997c). On the other hand, sediment core analysis from Laguna Tamarindito indicates that in the Early Classic considerable regrowth of high primary forest occurred in the Petexbatun region, suggesting that there may have been a decrease in population (Dunning et al. 1997; Dunning and Beach n.d.). Either way, settlement expansion to the escarpment and

areas further inland indicate a shift in settlement with the onset of the Classic period, possibly accompanied by some degree of population decline.

By the middle of the 7<sup>th</sup> century, the Petexbatun was characterized by a small but growing population base well in tune with the local environment. The foci of occupation were situated to exploit natural springs and deep soils that lined the bottoms of sinkholes. Work then began on ecological adaptations that would sustain higher populations. Contrary to scenarios of Late Classic anthropogenic degradation of the environment, the sixth to eighth centuries here saw the construction of terraces, *rejollada* depression gardens, household gardens, and a variety of other systems. These adaptations contrast with the ecological degradation of the Late Preclassic period and created highly productive fields and gardens with lower levels of erosion (Dunning and Beach n.d.; Dunning et al. 1997).

### **Late Classic Population Growth in the Petexbatun Region**

#### **The Founding of Dos Pilas and Initial Expansion of the Dos Pilas Polity**

Into this stable setting came a new, unsettling force early in the 7<sup>th</sup> century A.D. when a royal lineage from Tikal arrived at Dos Pilas. It was once believed that this event was a result of dynastic upheaval at Tikal. Under this scenario, the losing faction set off through the jungle and rapidly established a new, competing “Tikal,” even co-opting the Tikal emblem glyph as their own (Houston 1987; Houston and Mathews 1985; Houston et al. 1992; Mathews 1979; Mathews and Willey 1991). However, recently recovered hieroglyphic evidence indicates that the founding of a new city at Dos Pilas occurred in

A.D. 632 (Figure 6.3; Demarest and Fahsen 2003; Fahsen et al. 2002, 2003) and was a planned, strategic move by Tikal, most likely in an effort to regain control of the Pasión River trade route and, therefore, control of access to highland prestige goods (Demarest 2004b; Demarest and Fahsen 2003).

The reasons for choosing Dos Pilas were both ecologically and politically motivated. While there are traces of Late Preclassic and Early Classic Jordan ceramics at the site, few people lived there before the 632 *entrada*. Therefore, there would have been little resistance to new settlers. The presence of two springs in the vicinity provided fresh water for this new population. There is one mystery regarding the location of the site; if the goal of settlement at Dos Pilas was to control the flow of goods along the Pasión River, why is the site located so far from the river? From Dos Pilas one must travel more than 5 kilometers to the Río Petexbatun and from there approximately seven kilometers more via canoe to the Pasión. Surely a location could have been found somewhere closer to the main trade route.

In order to understand the political motivations in establishing Dos Pilas in such a relatively remote location it is essential to understand broader Maya political history in the late sixth to seventh centuries. Tikal was a powerful Late Preclassic and Early Classic center but in A.D. 562 was defeated by Caracol, apparently under the instigation of Calakmul. This event began a prolonged decline at Tikal, an event known as “The Middle Classic Hiatus.” The hiatus ended in A.D. 695 when Tikal defeated Calakmul (Martin and Grube 2000). When the Tikal ruling dynasty sent a faction to Dos Pilas to attempt to regain control of the Pasión River trade route, then, the site was in a weakened state. By establishing a new center in a location that was remote but with access to the

trade route, the new Dos Pilas center could quietly establish a strong base before attempting to seize control of the river system.

Once founded, the newly arrived Tikal leaders quickly constructed an impressive capital (Figure 6.4). Monumental constructions were rapidly raised as the new ruling lineage consolidated its power base, increased its local prestige and influence, and supplanted Tamarindito as the regional capital. This final event was likely militaristic in nature (Escobedo 1994, 1996, 1997a, 1997b). The lack of earlier sizeable populations at Dos Pilas had an ecological reason: the soils in the area are either extremely thin over bedrock or waterlogged, in either case very difficult for productive cultivation (Dunning and Beach n.d.). In fact, settlement studies and associated phosphate fractionation analyses indicate that Dos Pilas may never have been the locus of any significant agricultural activity, even in the eighth century when its population numbered in the thousands (Dunning et al. 1997; Dunning and Beach n.d.). To sustain their population in this marginal setting, the leaders of Dos Pilas, their elites, and even non-elites must have relied heavily on regional transport of foodstuffs and on tribute. In contrast, Tamarindito, Arroyo de Piedra, and the rural areas surveyed on Transects 1 and 2 had intensive and extensive agricultural systems that could have provided substantial surplus, perhaps partly rendered as tribute to Dos Pilas (O'Mansky and Dunning 2004; Demarest 2006).

### **The 7<sup>th</sup> Century Conquest of Dos Pilas and the 7<sup>th</sup> to 8<sup>th</sup> Century Expansion of the Petexbatun Hegemony**

Unfortunately for Tikal's strategic designs, in A.D. 650 Calakmul conquered Dos Pilas and turned the now vassal center into its ally and agent. The first k'uhul ajaw of Dos Pilas, B'alaj Chan K'awiil, was sent into exile but was reinstated on the throne a few



years later. His allegiance, however, now lay with Calakmul (Fahsen et al. 2002). Over the course of the next century, the predatory Dos Pilas tribute state employed a strategy of military conquest and strategic alliances to eventually expand its control to an area of 1500 square kilometers, including most of the Pasión River trade route. According to epigraphic evidence, this expansion first occurred under the aegis of Calakmul. Yet after the defeat of that powerful rival by Tikal in 695, the subsequent Dos Pilas rulers asserted their independence and expanded this hegemony while wealth flowed into the kingdom, as evidenced by large-scale construction projects, monuments, and abundant rich offerings (Brady et al. 1997; Demarest 2004b, 2006).

The initial expansion of the Dos Pilas kingdom began under B'alaj Chan K'awiil and was tied to the strategic planning of Calakmul in that site's wars with Tikal. One strategy was through direct battle between Dos Pilas and Tikal. In 672 Tikal defeated Dos Pilas and sent B'alaj Chan K'awiil into exile. He returned to the throne five years later and in 679 was successful in a battle against Tikal. The second strategy adopted by Dos Pilas was alliance building through marriage. One of B'alaj Chan K'awiil's marriages was to a royal woman from Itzan, thereby establishing an alliance with that site. A daughter from another marriage later served as ruler of Naranjo beginning in A.D. 682 (Martin and Grube 2000; Schele and Freidel 1990).

The conflict with Tikal continued into the early eighth century when Ruler 2 of Dos Pilas, Itzamnaaj K'awiil, who acceded to the throne in A.D. 698, defeated a Tikal lord, as recorded on Stela 1 at Dos Pilas. With that victory and the defeat of Calakmul three years earlier by Tikal, Dos Pilas became independent. Ruler 2 then turned his attention to the consolidation and expansion of his power. By the end of his reign in A.D. 726, he

had defeated several presumably small, as yet unknown, sites and he is mentioned on monuments at Aguateca, Tamarindito, Arroyo de Piedra, and Seibal (Stuart and Houston 1994).

The reign of Ruler 3, whose name has not fully been deciphered, marked a massive expansion of the Dos Pilas kingdom as he began to secure control of the Pasión River system trade route. This was accomplished through the capture of the ruler of Seibal in AD 735 and a marriage alliance with a noble woman from the wealthy, strategically located center of Cancuen at the southern edge of the Petén (Houston 1993). The defeat of Seibal was recorded in monuments not only at Dos Pilas, but also at Aguateca, signaling that site's increasing importance as a “twin capital.” Seibal remained under the control of the Petexbatun hegemony for the next half century (Houston and Mathews 1985).

Ruler 4 of Dos Pilas, K'awiil Chan K'inich, continued to expand the kingdom (Figure 6.5) through a series of rapid conquests, including the taking of captives from El Chorro, Yaxchilan, and Motul de San Jose. Monuments were erected by Ruler 4 at sites throughout his kingdom, including Seibal and Cancuen, as he traveled throughout the region and along the Pasión performing elaborate rituals to consolidate and confirm his power (Stuart and Houston 1994).

Throughout this Late Classic expansion of the Dos Pilas kingdom, population of the Petexbatun region as a whole expanded dramatically. Over 85% of all ceramics recovered over the course of the Petexbatun Regional Archaeological Project are of the Nacimiento Tepeu 1-2 Ceramic Complex (A.D. 600-830). At Dos Pilas, Aguateca, Tamarindito, and Arroyo de Piedra more than 90% of each site's ceramic assemblage

dates to this period. Significant quantities of Late Classic pottery also were recovered from intersite Transects 1 and 2. Smaller amounts came from excavations in Transect 4 (Foias 1996; Foias and Bishop 1997). Other than an intrusive burial, no Nacimientto ceramics were found in the Preclassic Transect 3 villages (O'Mansky et al. 1995). Similarly, Nacimientto phase ceramics were not found at Punta de Chimino. Despite these exceptions, by A.D. 760 the Petexbatun as a whole was a wealthy, powerful region with successful centers interspersed with farming villages all along the edge of the escarpment.

### **The Fall of Dos Pilas: Endemic Warfare in the Petexbatun Region**

Both epigraphic and archaeological evidence confirm that the Late Classic florescence of the Dos Pilas hegemony came to an abrupt end in A.D. 761. After a century of successful expansion the overextended kingdom dramatically collapsed when Tamarindito rebelled against Dos Pilas, defeating Ruler 4, K'awiil Chan K'inich, the last known ruler of Dos Pilas, sacking the site, and sending the region into a spiral of intensifying warfare.

The archaeological evidence of warfare has been thoroughly excavated at Dos Pilas. There, defensive walls of stone footings and wooden palisades were rapidly constructed at several key locations using stone ripped from existing nearby structures, including the façades of palaces, hieroglyphic stairways, a ball court, and even the funerary shrine of Ruler 2, Itzamnaaj K'awiil (Figures 6.6 and 6.7; Demarest et al. 1991, 1997). Extensive excavations of these defenses discovered baffle gates, killing alleys, and a cache of decapitated heads of adult males – presumably captured warriors (Brandon

1992; Demarest 1989a, 1990; Demarest et al. 1991, 1995; Escobedo et al. 1990; Inomata et al. 1990; Palka 1991; Rodas 1995; Symonds 1990; Wright 1994, 2006). Ceramics recovered in these excavations date the walls to late Tepeu 2, the ceramically distinct Late Facet Nacimiento complex, coinciding with the date of the fall of Dos Pilas based on epigraphic decipherments (Houston 1987; Houston and Mathews 1985; Houston and Stuart 1990). Mapping and excavations within the plaza area enclosed by the walls discovered a dense grouping of low platforms for thatch-roofed huts. Ceramics from associated middens date this "squatters' village" in the ceremonial heart of Dos Pilas to just after the capture of Ruler 4, from the A.D. 760 to 830 Late Facet of the Nacimiento phase (Foias 1996; Foias and Bishop 1997; Palka 1995, 1997).

After the defeat of Ruler 4, ceremonial construction and the erection of monuments at Dos Pilas ceased and the city was largely abandoned; it had lost the tribute that had allowed it to thrive in the Late Classic and was therefore no longer a rational place for human settlement, nor a safe location for investment in public architecture or even settlement. The remaining elites may have then relocated to the more defensible site of Aguateca, high on a steep eroded fragment of the Petexbatun escarpment with a deep natural chasm bisecting the site center. To further secure the city, six kilometers of stone-footed wooden palisades were constructed in and around it. Some of the wall systems extended out to enclose field areas, *rejolladas* with probable intensively-cultivated gardens, and access to potable water from springs (Inomata 1995, 1997, 2006; Dunning and Beach n.d.). Despite such extensive defenses, Aguateca fell by about A.D. 810 (Graham 1967; Houston and Mathews 1985). Takeshi Inomata (1995, 1997, 2006) discovered evidence for burning and rapid abandonment in the site center (Figure 6.8).

By the early ninth century, the last remaining major center of population in the Petexbatun was at Punta de Chimino. There, the naturally defensible peninsula was fortified through the construction of three wall systems and the excavation of three moats, the largest of which was 12 meters deep (see Figures 3.8 and 3.13). The other two moats protected arable land between the mainland and the tip of the peninsula. Research at the site in 1996 revealed that this neck of land was used for intensive agriculture, including stone box gardens (Figure 6.9; Beach 1997; Dunning and Beach n.d.). The construction of the moats and the erection of palisade walls atop the moats gave Punta de Chimino the most formidable defensive system in the Maya lowlands (David Webster, personal communication to Arthur Demarest 1993). These systems allowed the site to thrive in the Terminal Classic Sepens Boca Ceramic Complex (A.D. 830-950) with elite architecture, including a large ball court (Morgan 1995, 1996). However, by the end of the phase, even Punta de Chimino was nearly completely abandoned.

The warfare that swept the Petexbatun in the Late Classic period was not confined to the large centers and elite lineages. During the late facet of the Nacimiento Ceramic Complex there were also changes in settlement strategies in intersite zones. It is at this time that the villages on Transect 4 were established (see Figure 5.63). The region west of Aguateca was never occupied before this period due to a lack of natural resources. The thin soils were ill suited for agriculture and the nearest water source was two kilometers away. Yet as warfare swept the Petexbatun region, small groups sought refuge in this remote, defensible area, first building small villages on hilltops in the area and later encircling them with palisade walls (O'Mansky, Hinson, Wheat, and Demarest 1995; O'Mansky and Wheat 1996a).

Thus, by the end of the Late Classic period in the Petexbatun there had been yet another significant shift in settlement strategies, even among the rural peasant population. No longer were the usual factors for settlement location – fertile soils, abundant natural resources, and potable water – important. Instead, a single factor, defensibility, determined where people lived. As the surviving populations from the larger sites sought ever more secure locations – from Dos Pilas to Aguateca to the Punta de Chimino island fortress – in the face of endemic warfare in the late eighth and early ninth centuries, the non-elite population moved from prime locations for agriculture to forbidding, but remote and defensible, locations. Yet by the Terminal Classic period, even these zones were completely abandoned. While surviving members of the Dos Pilas royal lineage may have sought refuge with their relatives at Cancuen (Demarest 2004a; Demarest and Barrientos, eds. 2000). The lake core evidence for settlement around Laguna Las Pozas (Johnston et al. 2001) may be indicative of where the Petexbatun non-elites settled in the Early Postclassic period.

### **Chronological Overview of Petexbatun Intersite Population Estimates**

In the Petexbatun region, the first attempt at estimating the ancient population based on settlement remains was conducted by Takeshi Inomata for central Aguateca (Inomata 1995:794-808). For that site he assumed that all structures were occupied contemporaneously since central Aguateca has a very short occupation history. He also assumed that there were few hidden structures as the soils are quite thin and that 46% of structures were non-residential, rather than the more commonly used figure of 16.5% (Haviland 1965). He used such a high percentage of non-residential structures since the

area under consideration is central Aguateca where palaces and other elite architecture are common. Finally, he applied the figure of 4.5 people per household. Based on these figures, he calculated a population of 1480 people for central Aguateca, or a density of 2027 people per square kilometer of habitable land.

For the intersite zones in the Petexbatun, I follow Inomata for comparative purposes and make calculations based on 4.5 individuals per household and no hidden structures since soils in intersite zones are so thin that platforms would have been necessary to provide solid footing even for perishable thatch structures. However, since the Nacimiento Complex extends for a period of more than two centuries, I assume only 75% contemporaneity. Also, as these zones are quite different in function than that studied by Inomata – the ceremonial core of Aguateca – I assume, following Rice and Culbert (1990), that 25% of structures were non-residential. For the sake of consistency and assuming a degree of regional continuity, the same variables are applied to the Preclassic Transect 3 villages (O'Mansky and Dunning 2004).

Based on these variables, the low lying land between the escarpment and the Petexbatun River, such as that included in Transect 3, was occupied at a density of 263 people per square kilometer during the Preclassic period. As the soils were depleted by the Late Preclassic period, these once-fertile zones were abandoned in favor of new lands atop the escarpment. During the Early Classic there is virtually no evidence of occupation outside of Tamarindito, Arroyo de Piedra, and Dos Pilas, but in the Late Classic population size expanded dramatically in the entire region, including in intersite zones.

Using the same variables as applied to Transect 3, we arrive at an overall figure of 486 people per square kilometer of habitable land or a total population of approximately 9720 in all intersite areas in the Late Classic. These figures are based on structure counts for Transects 1 and 2 of 192 structures per square kilometer, less a 25% correction for contemporaneity and an additional 25% for non-residential structures, and 4.5 individuals per household. These numbers are then extrapolated out to include similar intersite zones along the escarpment. While these figures may be skewed high due to the proximity of Transect 1 to Aguateca and Transect 2 to the site of El Excavado, informal surveys indicated that settlement remains similarly dense along the escarpment from Dos Pilas at one end to Aguateca at the other and extends in from the edge of the escarpment for two to three kilometers.

In sum, the Late Classic marked a peak in regional population in the Petexbatun. At that time 99% of all structures tested in the region were occupied (Foias 1996). By the middle of the 8<sup>th</sup> century, the larger Petexbatun centers were at their maximum occupation levels and continuous clusters of population spanned the upland ridges from Dos Pilas in the northwest to Aguateca in the southeast.

Applying the same variables for estimating population as used on Transects 1, 2, and 3 to the Transect 4 settlement data, we arrive at a figure of 357 structures, or 904 people per square kilometer – a density nearly twice that of Transects 1 and 2 (Table 6.2). However, the actual population density is probably considerably higher. A very short duration of occupation in the Transect 4 villages, perhaps on the order of just a few decades, at most, is suggested by the relative dearth of artifacts and middens recovered in excavations. It is therefore likely that all structures were occupied contemporaneously



for a short period. Also, only approximately 45% of the land within Transect 4 is habitable – the remainder consists of steep ravines between the karst towers. This does not mean, however, that more total people lived in the vicinity west of Aguateca than had resided previously in intersite zones such as those incorporated in Transects 1 and 2. The type of terrain in and around Transect 4 that was preferred for settlement was quite limited in area. Still, it appears that at the end of the eighth century, populations abandoned nearby fertile areas to pack themselves tightly atop these defensible hilltops despite the ecologically unfavorable setting of these eroded karst hills as the Petexbatun region was swept up in intersite warfare and soon thereafter was nearly completely abandoned.

Table 6.2. Population estimates for the Petexbatun transects using different variables for contemporaneously occupied houses (75% or 90%) and number of individuals per household (4.5 or 5.6).

Transect	Mounds/ km <sup>2</sup>	Pop./km <sup>2</sup> 75% contemp. 4.5 people	Pop./km <sup>2</sup> 75% contemp. 5.6 people	Pop./km <sup>2</sup> 90% contemp. 4.5 people	Pop./km <sup>2</sup> 90% contemp. 5.6 people
1 Late Classic	168	425	529	510	635
2 Late Classic	215	543	676	652	811
3 Preclassic	104	263	328	316	393
4 Late/ Terminal Classic	357	905	1126	1085	1351

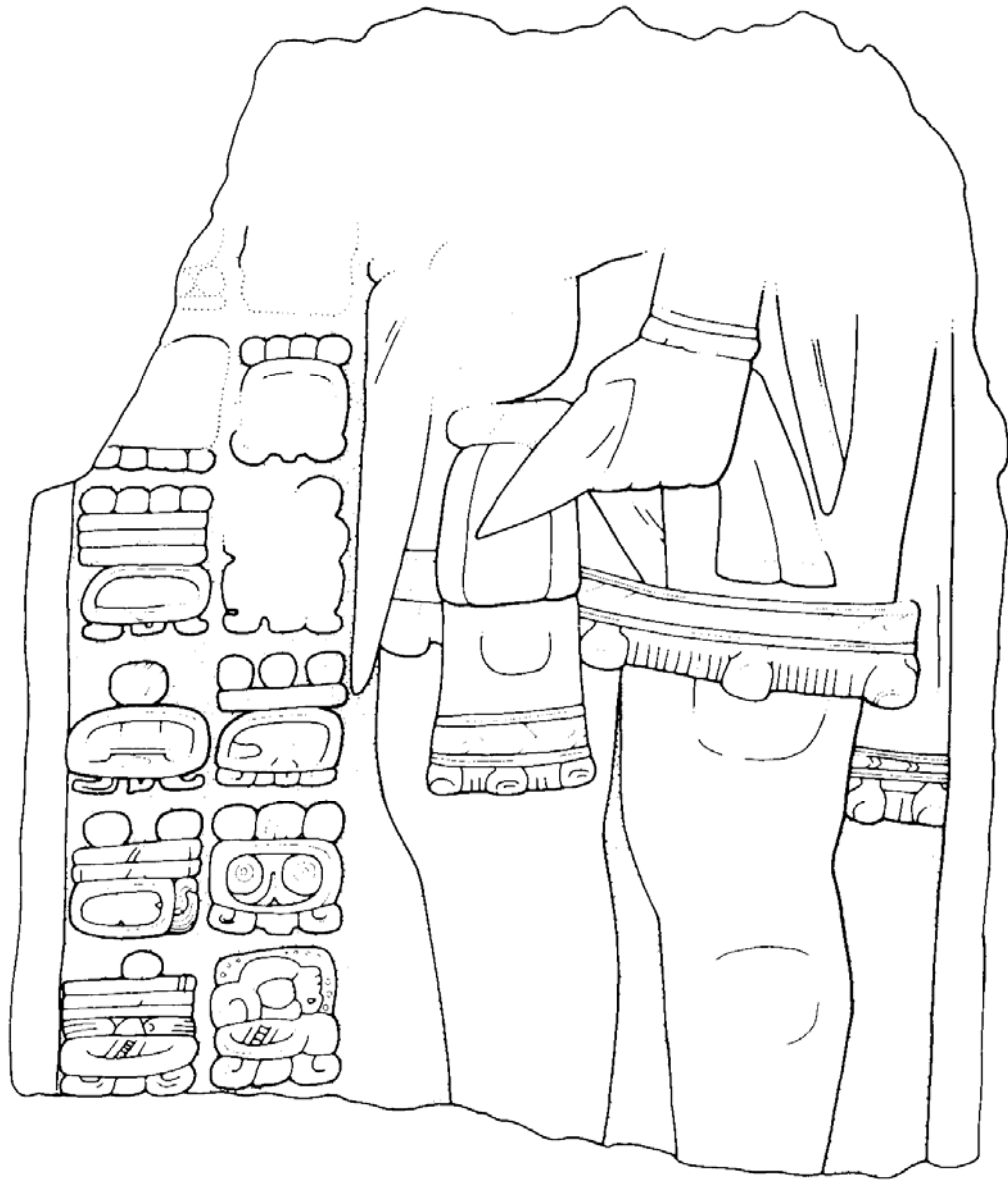


Figure 6.1. Tamarindito Stela 5 (from Houston 1993: Fig. 3-5, p. 77).

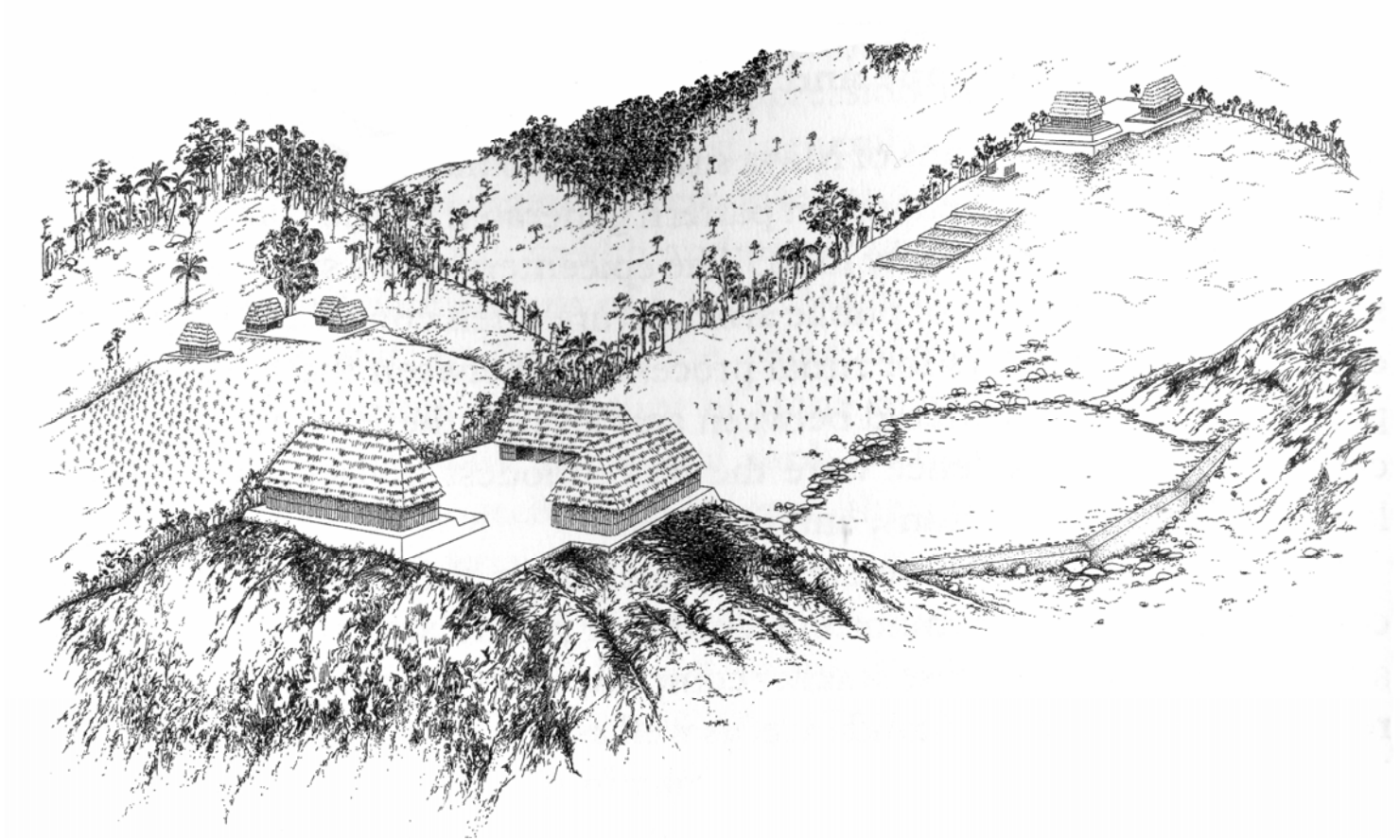


Figure 6.2. Terraces, reservoir, and houses at Tamarindito (from Demarest 2004b: Fig. 6.4, p. 118).

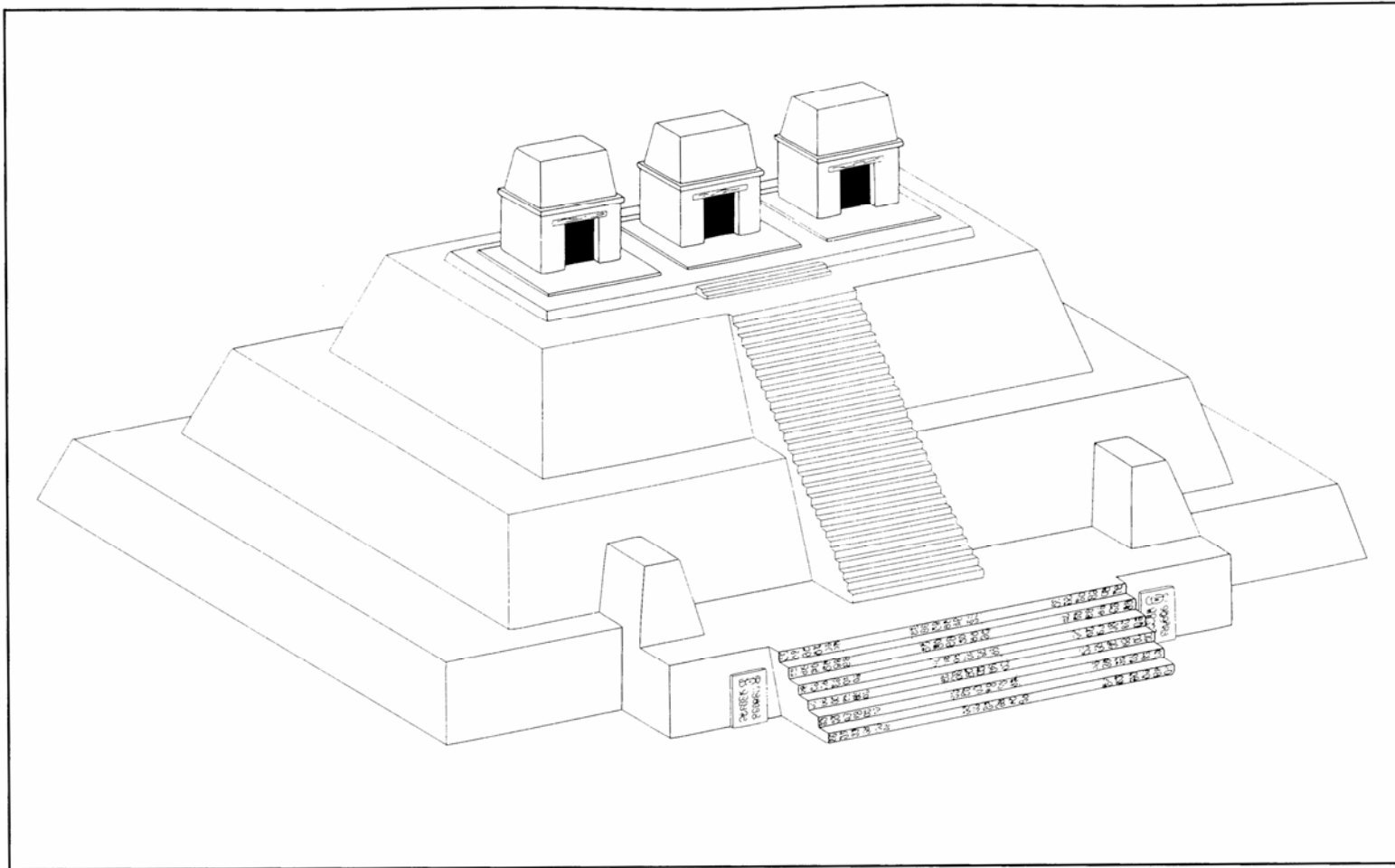


Figure 6.3. Reconstruction drawing of Dos Pilas Structure L5-49 showing the hieroglyphic stairway (from Demarest 2006: Fig. 5.18, p. 93).

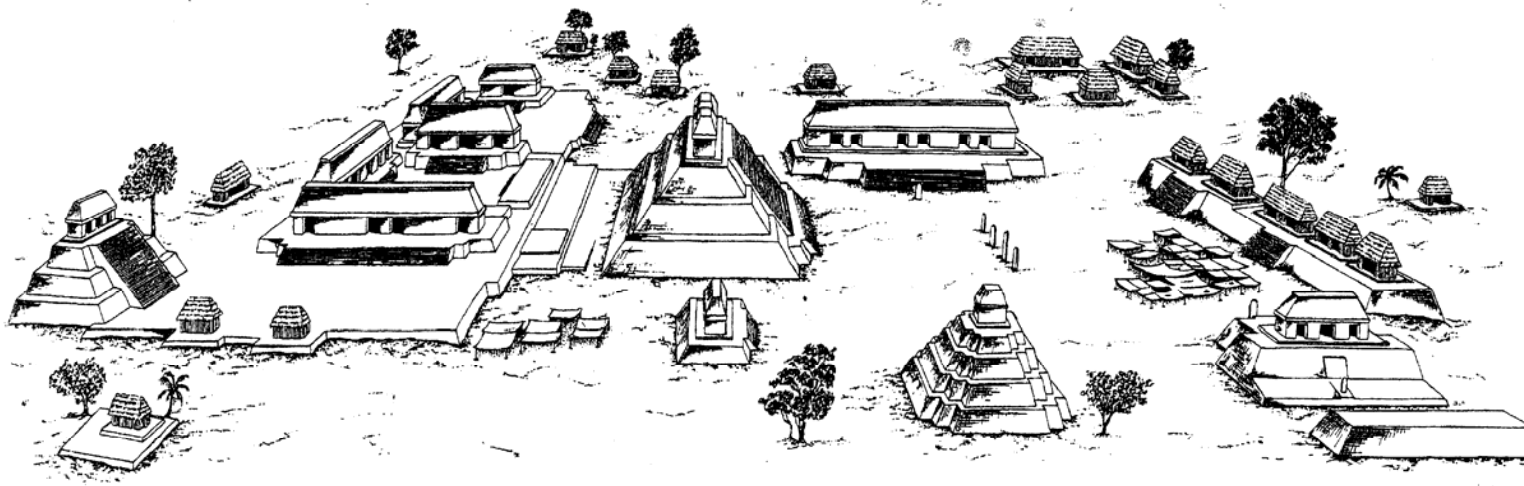


Figure 6.4. Dos Pilas West Plaza before AD 761 (from Demarest 2004b: Fig. 10.5, p. 251).

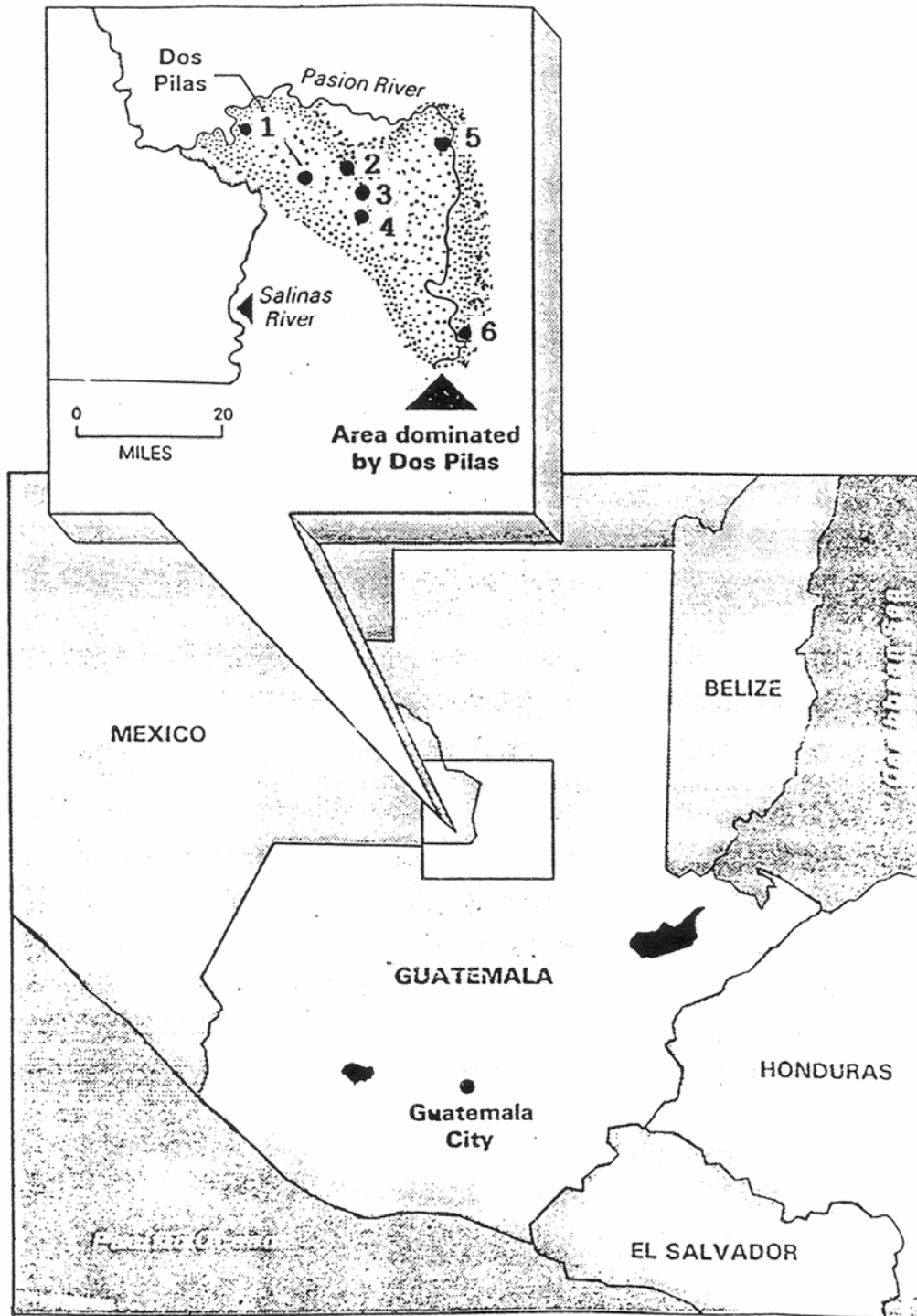


Figure 6.5. Maximum extent of the Dos Pilas kingdom (from Demarest and Houston 1990: Fig. 1.1, p. 4).

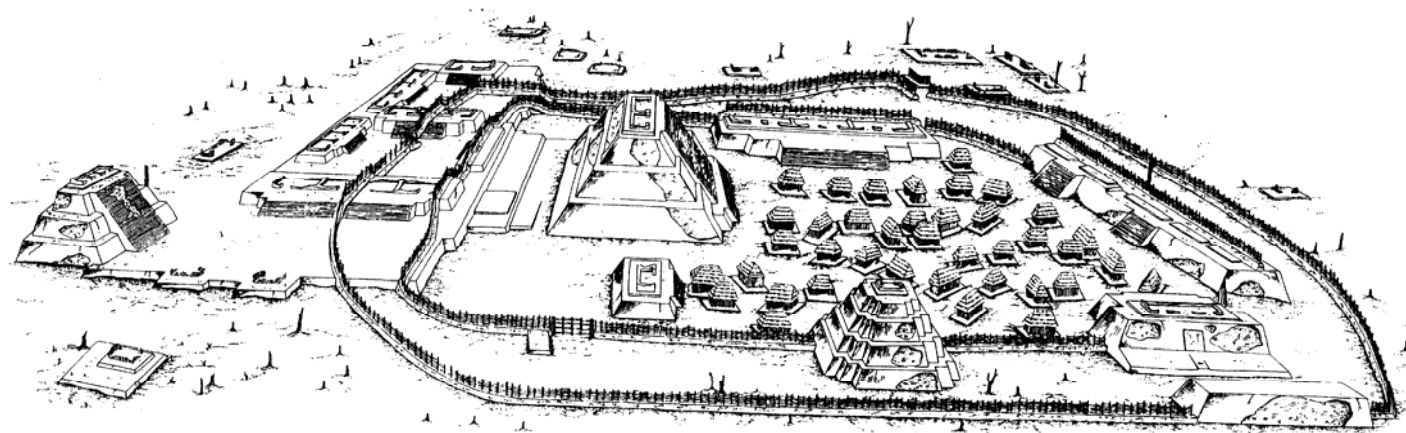


Figure 6.6. Dos Pilas West Plaza group defenses, AD 761 (from Demarest 2004b: Fig. 10.5, p. 251).

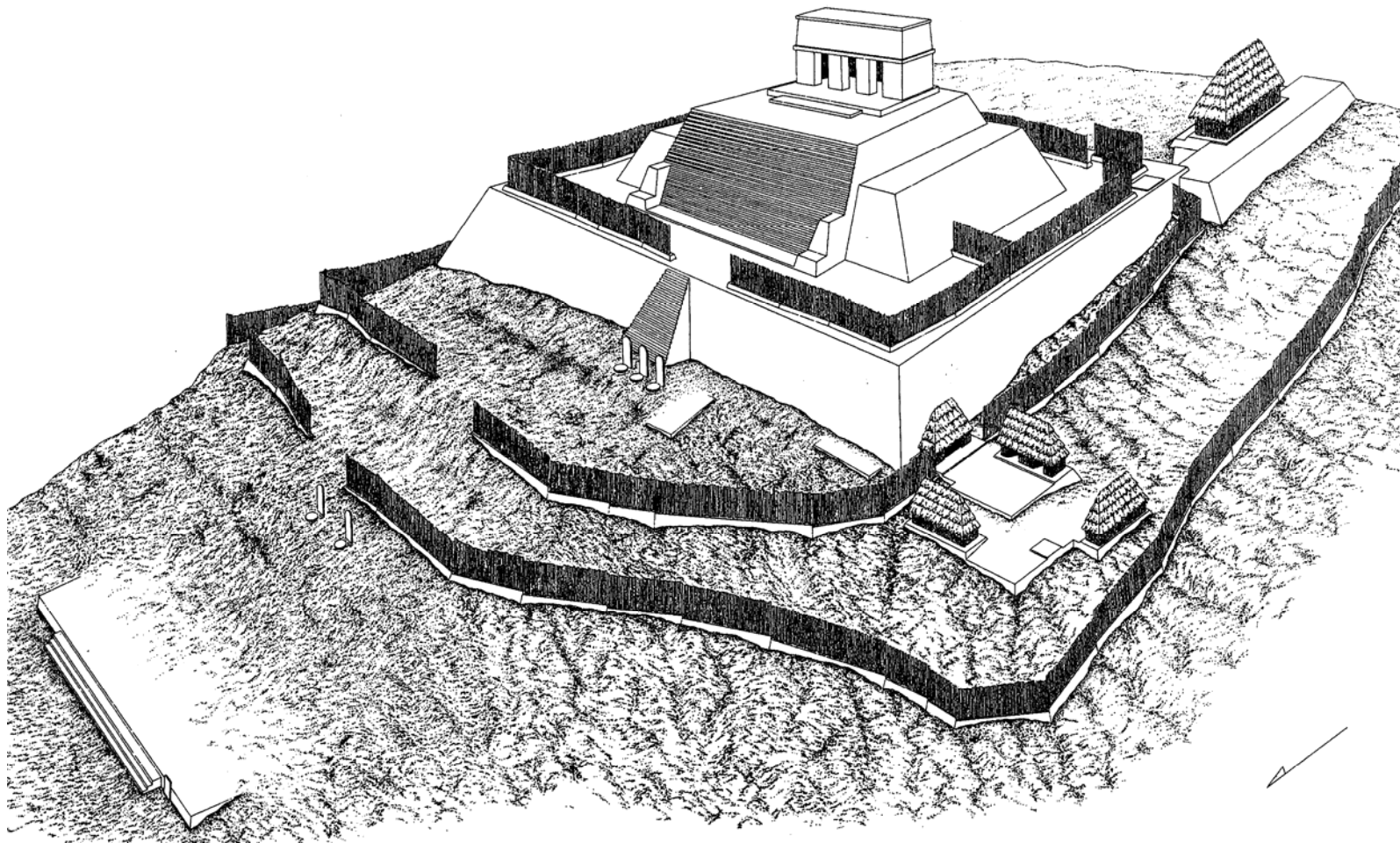


Figure 6.7. Dos Pilas El Duende complex fortifications (from Demarest 2004b: Fig. 10.6, p. 252).



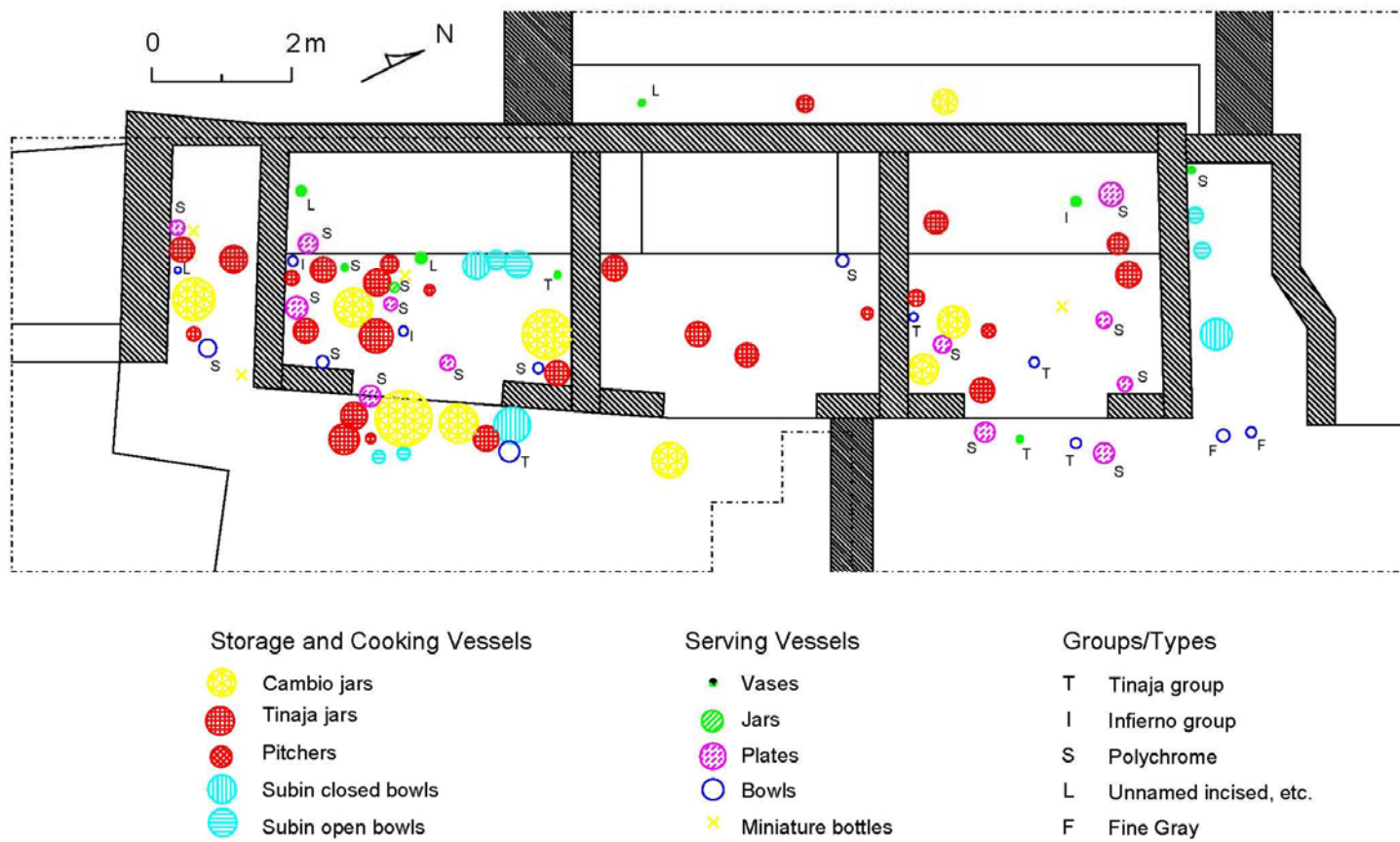


Figure 6.8. Distribution of ceramic vessels in the rapidly abandoned structure M8-10 at Aguateca (from Inomata 1995: Fig. 8.2, p. 720).

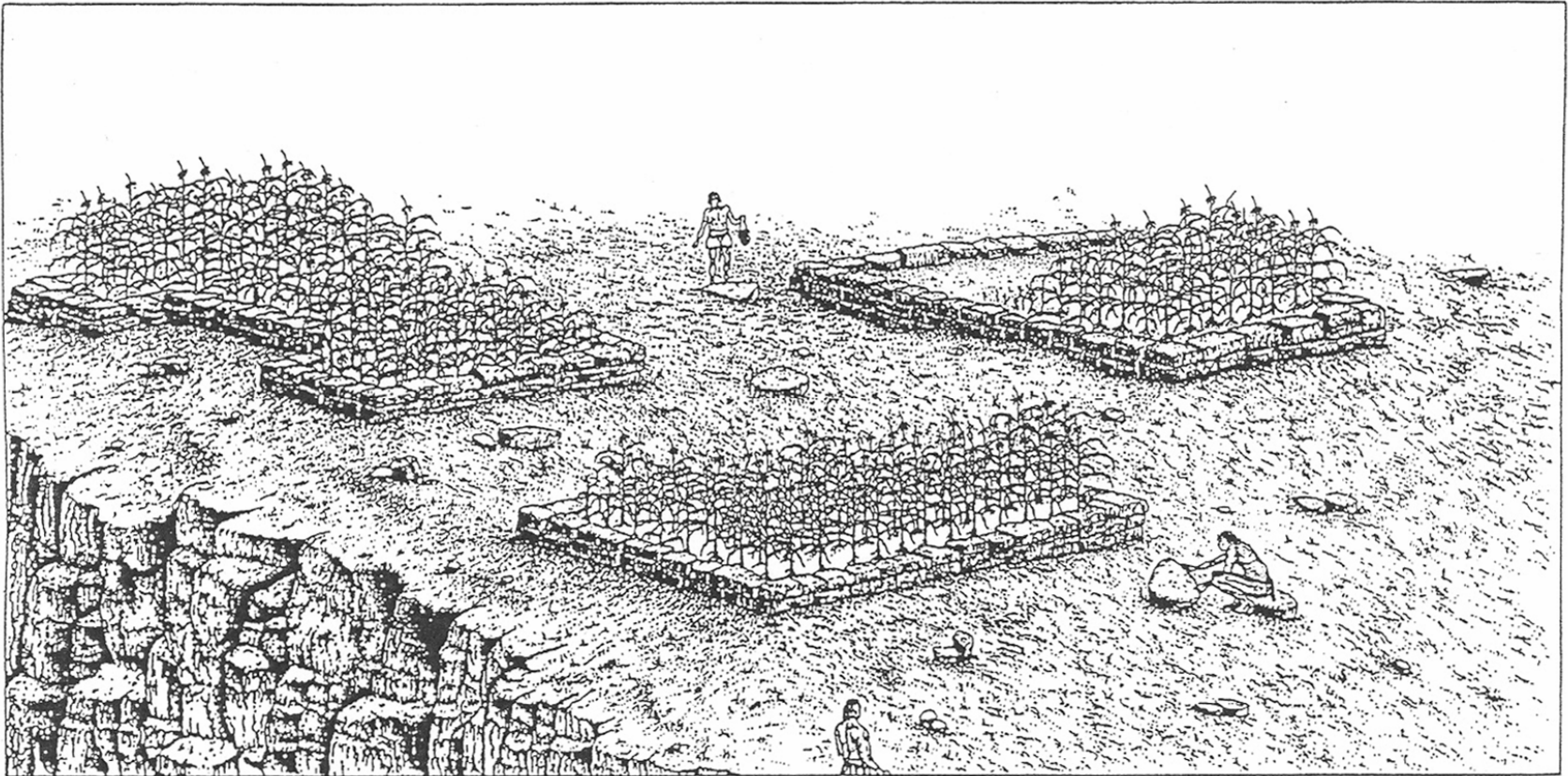


Figure 6.9. Stone box gardens at Punta de Chimino (from Demarest 2004a: Fig. 6.4, p. 113).

## CHAPTER VII

### REGIONAL AND COMPARATIVE DATA: SETTLEMENT FINDINGS FROM OTHER PASIÓN SITES

The Petexbatun Regional Archaeological Project is the only completed research in the Pasión zone that is truly regional in focus. While the Harvard projects at Altar de Sacrificios and Seibal did include studies of settlement patterns, these researches focused on the site epicenters and the immediately surrounding environs. Both projects explored their respective surrounding regions and other parts of the Pasión and adjacent rivers, but these explorations were somewhat haphazard, rather than well designed scientific studies. This is not, however, a failing of these projects. During the course of both of the Harvard projects, and particularly the Altar de Sacrificios project, the Pasión was virtually unknown archaeologically save for the reports of the early explorers (e.g. Maler 1908; Morley 1937-1938) who were concerned primarily with finding and recording carved monuments. The Harvard explorations provided much additional information on the region as a whole, including more thorough descriptions of many sites. This work set the foundation for all later work in the region, including the Petexbatun project.

The Harvard Altar and Seibal projects yielded detailed information on the history of settlement at those sites. However, the scale of the settlement studies were small in comparison to the region encompassed by the Petexbatun project and its Intersite Settlement Pattern Subproject. For this reason, comparative data on the settlement histories of the Petexbatun and other parts of the Pasión region are not necessarily directly comparable. Yet the detailed work of the Harvard projects does still provide a

basis for discussing the settlement history of different parts of the region in a comparative framework, allowing researchers to discuss the development of the Pasión zone from its earliest settlers through the Terminal Classic collapse of the region and into the Postclassic and beyond – even if some social groups were not studied as thoroughly as others in all areas.

### **Settlement Research and Demographic Estimates at Other Pasión Centers**

#### **Altar de Sacrificios**

The first site in the greater Pasión region to be extensively investigated was Altar de Sacrificios, the westernmost site on the Pasión River (see Figure 3.1). The Peabody Museum of Harvard University conducted research at the site from 1959 to 1963 under the general direction of Gordon Willey and the immediate field direction of A. Ledyard Smith. The project had two primary foci: (1) the exploration of the region and the establishment of the regional cultural sequence and (2) the examination of the relationship between regions both within and outside of the Maya lowlands, particularly regarding artifact assemblages. Other areas of study included epigraphy, iconography, architecture, osteology, and settlement patterns (Willey 1973: 3-6; Willey and Smith 1969: 8).

#### *Site Location and Setting*

Altar de Sacrificios (Figure 7.1) is located on a rise on the south bank of the Pasión River slightly less than 2 kilometers before it joins the Salinas River to form the Usumacinta. What the Harvard researchers refer to as the “site proper” is located on a

narrow strip of land that grows wider from east to west and is demarcated by natural features that define the limits of settlement. On the north and south the site is bordered by the Pasión River and the Arroyo San Felix, respectively. To the east, the terrain abruptly drops three meters in elevation to the low, narrow, flood-prone spit of land between the Pasión and San Felix. The western limit of the site is less clear but appears to be some two kilometers from the eastern edge of the site where the Pasión and Salinas rivers converge (Willey 1973: 1-3; Willey and Smith 1969: 18-19, 22). In fact, all of the mapped structures save one are located within 1100 meters of the eastern limit of settlement. Within this area, the site is only approximately 250 meters wide (north-south) at its eastern edge and it expands in a “V” shape to a width of approximately 850 meters to the west. Farther west the land descends to elevations that are susceptible to rainy season flooding (ibid.: 18).

#### *Site Description*

The scale of construction at Altar de Sacrificios generally falls into two broad categories, large ceremonial and elite architecture that is clustered in three groups on the east side of the site and smaller platforms to the west that the Harvard researchers refer to as “house mounds.” These latter structures were themselves rather substantial, standing one to three meters high and averaging twenty to thirty meters in diameter (Willey and Smith 1969: 22).

The site is dominated, whether measured by number of structures, the scale of architecture, or the number of monuments, by the easternmost cluster of mounds, Group A (Figure 7.2). Group A consists of two large plazas, each measuring approximately 100 meters on a side, surrounded by a total of 24 platforms, structures, and features (three

depressions were given structure numbers), the tallest of which, Structure A-III, rises more than 11 meters from the adjacent terrain. Structure A-II is the largest structure at the site by volume with an elevation just shy of that of Structure A-III and basal dimensions of approximately 110 by 40 meters. The two plazas of Group A are separated by the only ballcourt at the site. Twenty-four monuments are located within Group A, half of which are carved (*ibid.*: 19-20 and site map). Group A may have contained a few additional structures as the northern limit of the group has been eroded away by the shifting course of the Pasión River. However, based on the contour lines on the Harvard map, it is apparent that that portion of the site likely did not extend more than 30 meters beyond what the Harvard project mapped and few structures, if any, were completely destroyed.

Group B (Figure 7.3) is located approximately 60 meters west of the northern portion of Group A and measures approximately 125 meters by 125 meters. The group consists of nine structures, including three large pyramids (Structures B-I, the tallest building at the site at 13 meters, B-II, and B-III) on the west side of the group and a large structure on the northeast corner, Structure B-IV, that is topped by numerous platforms and appears to be a palace-type structure. Four stelae and two altars are located in the small plaza between Structures B-I, -II, and -III. Another stela is located atop structure B-II and an uncarved altar sits on a platform above the eastern entrance to Structure B-IV (*ibid.*: 22 and site map).

Group C is a small cluster of three structures located on a ridge approximately 30 meters southeast of Group B and 15 meters west of Group A. The two largest structures in the group, C-I and C-II, are both topped by multiple platforms and each structure

contains a single plain altar. The third structure in the group, C-III is a low mound situated halfway between Group B and the remainder of Group C. While the Harvard researchers limited Group C to these three structures, calling the group "...the least impressive and...the least clearly defined of any of the three at the site" (ibid.: 22), an examination of the Altar site map appears to indicate that Group C is associated with several other mounds to the south, Structures 5, 6, 7, 8, 40, and 41, that surround a depression and that were categorized by the Harvard survey as "outlying structures." Structure C-II closes off the northern end of this depression that, other than the fact that it is a depression, rather than flat, appears rather plaza-like in form. Furthermore, Structure 8, which is categorized with the other outlying structures as a house mound, is a seven-meter high pyramid (ibid.: 22 and site map).

The remainder of the structures at the site are the aforementioned "outlying structures." Most of these 41 mounds are clustered into three groups, those discussed above located near Group C, twelve mounds strung out along a ridge above the Pasión River just west of Group B, and a cluster of six mounds 550 to 700 meters west of Group B. Most of the remaining mounds are scattered between these clusters with the exception of two mounds north of Group B that have been partially eroded away by the Pasión, two mounds 500 and 750 meters, respectively, west of Group B near the Pasión, and a single mound, Structure 38, that is two kilometers west of Group B (Smith 1972: 185; Willey and Smith 1969: 22 and site map).

The Harvard researchers labeled all of the 41 outlying structures at Altar "house mounds" based on their form, size, location, and artifact assemblages (Smith 1972: 186):

*The assumption that they were habitation platforms is based on various facts: their disassociation with the ceremonial groups, their relatively*

*simple form and small size as compared to the ceremonial center buildings, and the nature of the refuse recovered during their excavation. This refuse consisted of utility pottery sherds, ... animal bones, broken artifacts, and other debris. Fine-quality painted pottery was also found in most of the mounds.*

While at least most of these likely were, in fact, residential structures, they do not comprise the sort of population generally encountered in settlement surveys at other sites where a range of social classes, including non-elites, are encountered. Most, if not all, of the people living in the outlying structures at Altar must have been high status, although not as high as those who resided in Groups A, B, and C. The criteria used to categorize these mounds as house mounds are in comparison to the main groups at the site, groups with large-scale ceremonial and domestic architecture and multiple monuments. Yet the outlying mounds are all at least fairly significant in height (minimum 1 meter) and area (20 to 30 meters in diameter), contain artifacts that indicate higher rank (animal bones, fine pottery), and all but one are relatively close to the site epicenter (less than one kilometer). The one more distant mound may have served a special function as it is larger than most of the other outlying mounds and strategically located near the confluence of the Pasión and Salinas Rivers (ibid.).

#### *Site Settlement Pattern Study Methodology*

The field research of the Altar project's general director, Gordon Willey, immediately preceding the Altar work was his Belize Valley project, the first archaeological project in the Maya area that was designed specifically to study ancient settlement patterns through the excavation of house mounds (Willey et al. 1965). Not surprisingly, then, similar investigations were part of the research design at Altar. By 1962, the fourth season of fieldwork at the site, only four of the outlying mounds had



been tested. As the 1962 field season commenced, the archaeologists intended to test two additional outlying mounds. This would result in a total sample of nearly 15% of the outlying mounds (Smith 1972: 128). However, an unexpected discovery led to a much more extensive testing program.

Excavations in Mound 25, an isolated mound two meters high located approximately 550 meters west of Group A, yielded a Middle Preclassic ceramic phase that predated any pottery then known from the Maya lowlands. The researchers named this phase “Xe.” Based on this discovery, the researchers decided to test all 41 of the outlying house mounds during the 1962 and 1963 field seasons in order to:

*...[follow]up the discovery of a Xe phase community..., obtain some idea of the settlement size and arrangement around the ceremonial center during its entire history,...[and]supplement the ceramic collection from Altar...especially the Early Classic, little of which had been found... (Smith 1972: 129).*

Due to limitations of time and money, the outlying structures were, with a few exceptions, sampled with 1.5 by 2 meter test pits excavated in 20 cm levels to sterile soil. In most cases, units were placed on top of platforms (ibid.). Note that no attempt was made to locate and excavate behind structure middens as is commonly done today in the Maya lowlands.

#### *Regional Reconnaissance*

The Harvard researchers knew that the Altar site proper could not have supported a population large enough to sustain the site, even if all of the mounds were contemporaneously occupied (Willey and Smith 1969: 33). A significantly larger population would have been required to sustain the site’s population, to construct and maintain the site’s temples and other large buildings, and to carve the site’s monuments.

In order to find this sustaining population and to explore the vast *terra incognita* of the region, the Altar project included a regional settlement study.

Willey and Smith (1969: 33) noted the presence of clusters of mounds and associated field areas on two high points across the Pasión River from Altar de Sacrificios. They suggested that the residents of these mounds formed part of the supporting population for Altar and speculated that such clusters existed on high ground all along the river from the site to Sayaxche and also down the Usumacinta River. In fact, remnants of ancient settlement are located in similar settings on the Pasión from Sayaxche south to Cancuen (O'Mansky 2000, 2002).

The Altar project's regional settlement study visited a number of small sites in the region, most of which had not been visited previously by archaeologists (Willey and Smith 1969: 33-36). These include El Pabellon, La Amelia, Seibal, El Caribe, Aguas Calientes, a small site at Laguna Ixcoche on the Usumacinta River, and the three Petexbatun sites that had been "discovered" not long before, Aguateca, Dos Pilas, and Tamarindito. Most of these sites and a number of others are within 20 kilometers of Altar in straight line. While many, if not all, of the sites would have certainly had interaction with Altar, the exact nature of their relationship is unclear.

#### *Site Occupation History*

The dating of occupation at Altar is based on multiple lines of evidence, including ceramic and architectural sequences, dates on monuments, and radiocarbon dates. It is important to note that no paleoecological studies were undertaken at the site. Such information could provide additional chronological data, particularly for the early occupation history of the site. For example, lake cores in the Petexbatun region provide

evidence for occupation more than a millennium before the earliest artifactual evidence of occupation (Dunning and Beach n.d.; Dunning et al. 1997).

The earliest evidence for occupation at Altar de Sacrificios is the Middle Preclassic Xe ceramic phase (900-600 BC) identified first in Mound 25 and subsequently in additional outlying structures. The dating of the phase is supported by a Xe burial radiocarbon dated to 745 BC  $\pm$  185 years. The Altar archaeologists date initial site settlement to the early part of the Xe phase, 900-800 BC. Where evidence of Xe phase occupation was discovered it was always beneath later mounds at the level of the ancient ground surface. Thus it is believed that the Xe phase occupants of the site were maize farmers who lived in perishable structures built directly on the ground (Smith 1972: 110; Willey 1973: 22-26). It is surprising, then, that the Harvard archaeologists did not test for or apparently even consider the possibility of additional hidden Xe phase structures in other parts of the site beyond those under later constructions. Occupation during the Xe phase was sparse with evidence of probable occupation beneath only four mounds but these were widespread across the site (Smith 1972: 110; Willey 1973: 22-26).

During the subsequent San Felix phase (600-300 BC) there was little increase in population but perishable structures were built atop low earthen mounds. As many as six mounds show good evidence of occupation during this period and the ceramic phase is present in numerous other outlying mounds. During the latter portion of the phase (500-300 BC) ceremonial construction begins with several platforms built in Group B, including a five-meter high structure. For the first time at the site lime-encrusted mussel shells are used in construction, signifying the onset of an "Almeja Architectural Period" that lasted until AD 400 (Smith 1972: 110; Willey 1973: 27-31).

Population at Altar de Sacrificios increased significantly during the ensuing Plancha (300 BC – AD 150) and Salinas (AD 150-450) phases. During the Plancha phase most of the outlying structures at the site were constructed and they continued to be occupied through the Salinas phase. During this time construction continued in Group B and Group C was completely constructed. After AD 450 no additional construction was undertaken in these groups. Towards the end of the Salinas phase a shift in construction technique occurred as structures were covered in redstone. This marked the onset of the “Redstone Architectural Period” (AD 400-635) (Smith 1972: 110-111; Willey 1973: 31-39).

During the late Early Classic Ayn phase (AD 450-554) there was an apparent population decline at Altar as evidence of occupation in outlying structures declined by roughly 40%. In the ceremonial center of the site construction activity virtually came to a halt although 4 stelae, dating from AD 455-524, were erected in Group B (Smith 1972: 112-113; Willey 1973: 39-43). During the subsequent Veremos phase (AD 554-573) construction began in Group A and this activity continued through the Chixoy phase (AD 573-613). However, there is a significant decrease in evidence of occupation in outlying structures during these phases, particularly the Veremos phase when a maximum of only seven structures may have been occupied (Smith 1972: 113, 130; Willey 1973: 43-47). The data on these phases, however, is somewhat problematic as it is based largely on comparisons to ceramic assemblages from elsewhere in the lowlands. At the time of the Altar project such assemblages were available from only a few sites and comparisons were difficult to ascertain. In fact, Willey (1973: 19) admits that dating of the Veremos phase is “largely guesswork,” albeit within “fairly restricted limits.”

Evidence of occupation in outlying structures during the Pasión phase (AD 613-771) returned nearly to Salinas phase levels. In the ceremonial center, construction activity continued in Group A, including the construction of the first all limestone building at the site. This marked the onset of the “Limestone Architectural Period (AD 635-900) (Smith 1972: 113, 120; Willey 1973: 47-52).

Altar de Sacrificios reached its height in both population and large-scale construction during the Late Classic Boca phase (AD 771-909). At that time all but five of the outlying structures were occupied. Between AD 680 and the end of the Boca phase all structures around the North Plaza of Group A were constructed, as was the site’s ballcourt and several of the Group A South Plaza structures. While Smith (1972: 113) seems to indicate that the bulk of this construction occurred during the Boca phase, Willey (1973: 52-53) suggests that Group A construction was minimal during the Boca phase when it was limited to final renovations.

Altar de Sacrificios suffered a dramatic decline during the ensuing Jimba phase (AD 909-948). Only 25% of the outlying mounds were occupied at the time and little evidence of new construction exists in the ceremonial center. There is, however, evidence of occupation in the ceremonial center. In fact, most of the population at the site during this period occupied part of Group A (Smith 1972: 113, 130; Willey 1973: 57-58). The Altar researchers attributed the Jimba phase decline to conquest by foreign invaders (Smith 1972: 113; Willey 1973: 58). Subsequent research in the greater Pasión region, particularly the Petexbatun Regional Archaeological Project (e.g., Demarest 2006), disproved the invasion theories. Instead, the abandonment of Altar de Sacrificios

was part of broader socio-political processes that led to the collapse of the entire Pasión/Usumacinta River system (Demarest 2004b: 257-261; O'Mansky et al. 2004).

There is little evidence of occupation or activity at Altar after the Jimba phase. A few post-Jimba potsherds were recovered in excavations at the site, including two Tohil Plumbate sherds. Willey (1973: 58) concludes, "[It] seems likely that these few pieces were dropped at Altar by casual occupants at some time after the Jimba abandonment."

#### *Altar de Sacrificios Population Estimates*

As part of the Altar de Sacrificios settlement pattern research, A. Ledyard Smith (1972: 187) calculated population estimates for the outlying mounds based on the number of dwellings. The issues of contemporaneity and non-residential structures were not factors in the calculations since all of the outlying mounds were tested and all were assumed to be house mounds. The variables in the Altar population estimates were:

- 1) the number of structures occupied in any given period,
- 2) the number of perishable structures (houses) supported by any given mound,
- 3) the number of occupants in each house.

The first variable was relatively easily calculated since the 100% sample allowed the researchers to simply count the number of mounds in which a given phase was present. It is possible, however, that some phases may have been missed since the mounds were only excavated with test pits, rather than horizontal exposures.

Furthermore, the presence of ceramics from a particular phase does not necessarily indicate occupation. Smith took this latter factor into account in estimating populations so that only those mounds with unambiguous evidence of occupation in any given phase were counted.

The second variable, the number of perishable structures supported by each mound, required more speculation. During the course of investigations at Altar, it was noted that several mounds had clearly supported multiple perishable superstructures. In fact, five outlying mounds supported two secondary platforms and one supported three. On the other hand, Smith noted that at least half of the outlying structure supported only a single superstructure. He therefore assumed that each of the 41 outlying mounds contained, on average, 1.5 perishable houses and that each house was the residence of one biological family (Smith 1972: 187). That figure has precedent in the Maya lowlands as Willey had applied the same figure to his Belize Valley survey (Willey et al. 1965: 576).

For the final variable, the number of occupants in each house, Smith considered the various estimates commonly suggested at the time based from ethnographic studies and settled on Redfield's figure of 5.6 individuals per household (Redfield and Villa Rojas 1934: 91). Based on these assumptions, Smith calculated a maximum population of approximately 300 people for the Altar outlying area. While Smith does not provide population estimates for all time periods, it is easy to calculate these based on the above variables and his detailed chart that lists the nature of ceramic evidence ("probable occupation phase," "activity but occupation not certain," "only a few sherds," etc.) (Smith 1972: 130, Table 3). Table 7.1 provides the phase-by-phase variables and population estimates for the 41 house mounds. The Harvard researchers did not attempt to calculate the population of the ceremonial center of the site, Groups A, B, and C. Such calculations are much more difficult than those for house mounds since the number of occupants of a palace, for example, is difficult to calculate from the archaeological

records and relevant ethnographic data is unavailable or highly debatable (for example, can the British royal family’s residences be used as a model for the ancient Maya?).

Table 7.1. Population estimates for each phase for the outlying structures at Altar de Sacrificios. The high figure of occupied mounds and subsequent calculations are based on Smith’s (1972: 130, Table 3) categories “probable occupation phase” and “activity but occupation not certain.” The low figure includes only those mounds categorized as “probable occupation phase.”

<b>Phase</b>	<b>Dates</b>	<b>Occupied Mounds (count)</b>	<b>Adjusted Occupied Mounds (count x 1.5)</b>	<b>Population (adjusted count x 5.6, rounded)</b>
Jimba	AD 909-948	9-10	13.5-15	76-84
Late Boca	AD 850-909	34	51	286
Early Boca	AD 771-850	35	52.5	294
Late Pasión	AD 700-771	21-22	31.5-33	176-185
Early Pasión	AD 613-700	11-12	16.5-18	92-101
Chixoy	AD 573-613	8-11	12-16.5	67-92
Veremos	AD 554-573	6-7	9-10.5	50-59
Late Ayn	AD 500-554	7	21	118
Early Ayn	AD 450-500	10	20	112
Late Salinas	AD 300-450	24-25	36-37.5	202-210
Early Salinas	AD 150-300	23-24	34.5-36	193-202
Late Plancha	AD 1-150	20-21	30-31.5	168-176
Early Plancha	300 BC – 1 AD	20-22	30-33	168-185
Early San Felix	500-300 BC	4-5	6-7.5	33.6-42
Late San Felix	600-500 BC	5-6	7.5-9	42-50
Xe	900-600 BC	3-4	4.5-6	25-34

The Altar de Sacrificios population estimates are problematic for a number of reasons. While such estimates are always problematic, the varying lengths of ceramic phases make temporal comparisons difficult. For example, the late Early Classic Veremos phase lasted just 19 years while the early facet of the Late Preclassic Plancha phase lasted 300 years. Not surprisingly, the population for the Plancha phase is considerably higher. Were all mounds with early facet Plancha pottery occupied



contemporaneously? Or were some mounds occupied only in the third century BC while others were occupied after 100 BC? If the Early Classic phases at Altar – Late Salinas through Chixoy – are combined into a temporal phase of comparable duration as the early facet Plancha, a much higher Early Classic population is present at the site. Similarly, other than the earliest phases at Altar, the phases with the least evidence of occupation are those of the shortest duration. Therefore, the apparent Early Classic population decline may be a ceramic problem, as it is in other parts of the lowlands (cf., Lincoln 1985), rather than an actual decrease in population.

Regardless of these difficulties, at any given time in the site's history Altar sustained only a very small population. As noted by the Harvard team, the site proper must have been supported by other hamlets, villages, and other small neighboring sites (Willey and Smith 1969: 33). While the researchers called for work to be done at these sites "immediately," they also suggested that a more fruitful pursuit would be research at other major centers in the lowlands for a decade or so in order to better understand ancient Maya civilization (ibid.: 37).

## **Seibal**

Upon the completion of field research at Altar de Sacrificios, Gordon Willey and his colleagues sought to continue their research in the Pasión region and to pursue lines of inquiry begun at Altar. Thus, in 1964 the Peabody Museum began a field project at Seibal (Figure 7.4) under the general direction of Willey with A. Ledyard Smith serving as general field director. Field research continued at the site annually through the 1968 season.

Some members of the Altar project had visited Seibal in 1961 as part of their regional reconnaissance. While there, they explored part of the site and conducted test excavations. Based in part on these limited investigations, Seibal seemed to be an ideal site from which to build on the corpus of data and theories accumulated at Altar. Thus specific research goals and questions focused on several crucial topics, including but not limited to (1) general descriptive historical problems, including constructing a site chronology, (2) the nature of the Preclassic period (specifically regarding the presence of the Xe phase), (3) the Early Classic period, including evidence of Teotihuacan influence, and (4) the Terminal Classic period and evidence of Mexican influences, especially pertaining to the so-called Classic Maya Collapse (Willey et al. 1975: 7-8).

#### *Site Location and Setting*

Seibal is located approximately 50 kilometers by air east (upriver) of Altar de Sacrificios within the "great bend" of the Pasión River where it changes course from a north to a western heading (Willey et al. 1975: 1). The site is positioned on a series of hills above the left bank of the river at 16°32' north x 90°4' west. The maximum elevation of the site is 110 meters above the Pasión (ibid.: 27). The Peabody team identified six distinct topographic zones within the 25 square kilometer site area:

*(1) a low, seasonally flooded mud bank and adjacent flats, down along the river; (2) a very steep slope along the presumed Seibal fault; (3) extensive flatish tableland atop and behind the bluff; (4) valley bottomland at the foot of steeper slopes, and west of Group A [part of the site epicenter]; and (5) flat bajo land drained by networks of meandering streams during the rainy season floods. (Willey et al. 1975: 21)*

The sixth topographic zone is characterized by “gently sloping terrain down the back sides of the upland.” Such topography is found scattered across the northeast, west, and

south portions of the site. The majority of settlement at Seibal is located on topographic types 3 and 6, the flat tableland and gently sloping terrain (ibid.).

The limits of the site were defined based on observed or assumed drop offs in ruin density, the latter based on topography apparently unfavorable to settlement. The Harvard team assumed no ruins were located on the east side of the Pasión River since parts of that zone are swampy and susceptible to flooding. Furthermore, no high ground that would be suitable for occupation was observable for at least 15 kilometers farther inland (ibid.: 3; Tourtellot 1988: 8).

The site epicenter, which covers approximately 1 square kilometers and is comprised of groups A, C, and D, is located in the east-central part of the site atop the highest ground at Seibal (see Figure 2.7). To the north and south of the epicenter, dense settlement extends for approximately 1 kilometer in each direction in a narrow strip along the Pasión River. A similar density of occupation extends west from the site center for 1 kilometer. To the north, south, and west evidence of settlement decreases significantly beyond a kilometer from the epicenter (Willey et al. 1975: 3; Tourtellot et al. 1988: 8).

#### *Site Description*

As discussed above, the site of Seibal encompasses a total area of approximately 25 square kilometers with the ceremonial center occupying approximately 1 square kilometer. The ceremonial center, which was mapped by Ian Graham, is comprised of three groups, A, C, and D, which are set atop the highest ground at the site. The remainder of the site is the peripheral zone wherein structures are generally smaller and more dispersed than those in the center.

The primary group of structures, based on number, height, and location, is Group

A (Figure 7.5). Group A is located approximately one kilometer west of the Pasión River on the highest hill at Seibal (elevation 110 meters above the river). The group contains numerous monuments, 3 plazas, and 61 structures, including Structure A-24, the most massive construction at the site, and a ballcourt, Structure A-19. The group measures approximately 600 by 300 meters and is oriented north-south. The Central Plaza is the most extensive of the plazas, measuring approximately 200 by 100 meters (north-south) and is surrounded by more than a dozen structures, including the ballcourt Structure A-19. Both the North Plaza and South Plaza are considerably smaller but the South Plaza includes the massive Structure A-24 on its west side and Structure A-3 in the center of the plaza. Structure A-3 is a small temple that is surrounded by the best known monuments from the site, Stelae 8, 9, 10, and 11. A fifth monument, Stela 21, was discovered within the structure. These stelae are from the odd Terminal Classic “Facies 1” and “Facies 2” periods (Graham 1990) that contributed to the Peabody team’s theory that foreign invaders led to the collapse of Seibal and other areas (see Chapter 8). Two causeways, Causeway I and Causeway IV, are connected to the east side of Group A. Causeway I begins in the South Plaza between Structures A-5 and A-6 and runs east for approximately 250 meters to a platform atop which sites Structure C-18 and three stelae. From there, Causeway III begins and continues east for another 250 meters before terminating on the northwest corner of Group D. Causeway II also begins at the C-18 platform and runs south for more than half a kilometer through Group C. Causeway III terminates in a platform, atop which is the round building Structure 79. Causeway IV is shorter than the other causeways, running east for 60 meters from the east side of the North Plaza before turning to the northeast and ending 100 meters farther along in a small

building with a stela and an altar, Structure 23 (Willey 1990: 185, 189; Willey et al. 1975: 3-4; site map [Willey et al. 1975, figure 2, map insert]).

East and southeast of Group A and connected to that group by Causeway I is Group C (Figure 7.6). Group C is on a hill slightly lower than Group A with elevations generally between the 100 to 104 meter contour lines above the river. The group is oriented north-south and measures approximately 400 by 200 meters. It contains 41 structures, including an “I” shaped ballcourt, Structure C-9, but the layout of the group is much less formal than that of Groups A and D. A sizable courtyard, measuring approximately 40 meters on a side, is located towards the north end of the group where Causeways I and II meet. Otherwise, the group is a combination of small plaza groups and individual structures or clusters of structures. The structures in Group C are overall smaller and less densely packed than those of Groups C and D (Willey 1990: 185, 207; Willey et al. 1975: 4-5; site map).

The easternmost of the major groups at Seibal is Group D (Figure 7.7). Group D is located on the east side of Seibal atop the first hill above the Pasión River at elevations above the river of 90 to 100 meters. The group is oriented roughly north-south and measures approximately 400 by 200 meters. A steep ravine more than 10 meters deep separates Group D from Group C. The group contains 90 structures, many of which are located around the group’s five plazas and two courtyards. The structures in Group D are more densely packed than anywhere else at the site and the volume of construction is also the highest at Seibal. However, only a single plain stela is located in the group (Willey 1990: 185-189, 210; Willey et al. 1975: 5; site map).

Beyond the one square kilometer of the ceremonial center of Seibal lies the site

periphery. The site periphery contains numerous structures, most of which occur in groups of one to four structures around a small plaza. Other common features in the periphery include terraces that appear to have been used as living areas and minor ceremonial centers, usually little more than a single temple and plaza (Willey et al. 1975: 5-6). More information on peripheral settlement is provided in the next section.

#### *Site Settlement Pattern Study Methodology*

The Seibal peripheral settlement survey was directed by Gair Tourtellot and built on Ian Graham's map of the ceremonial center of the site. The peripheral survey addressed four general problems at Seibal: (1) the definition of the site and its natural limits; (2) examining variations in site area and settlement distribution throughout the site's history; (3) examining artifact assemblages for not only temporal, but functional, variation; and (4) "...describing the organizational principles behind the observed settlement data" (Tourtellot 1988: 4). In order to achieve these goals, Tourtellot sought to develop a methodology that, as much as possible, combined the benefits of full coverage survey with the kind of sampling necessitated by the environment of the Southern Maya Lowlands. Thus, coming on the heels of Binford's writings that spurred the New Archaeology (e.g., Binford 1962, 1964, 1965), Tourtellot attempted to devise a sampling technique that was statistically representative of the population to be studied.

Based on what were believed to be the observable limits of settlement at Seibal and in order to include a "substantial area" to the north, south, and west of the site, Tourtellot and his team selected a limit of approximately 2 kilometers from the site center for their peripheral survey. This limit varied somewhat according to terrain and the presence or absence of archaeological remains so that the total area blocked off for the

survey, which included the ceremonial center, measured approximately 25 square kilometers. Of this total, only approximately 20 square kilometers was actually intended to be included in the survey as the remainder consisted of bajos and very steep terrain, areas which reconnaissance had found to be empty of ancient occupation. In reality, however, only 11.9 square kilometers outside of the site center were sampled (Tourtellot 1988: 11, 24).

The survey team created a grid over the site using 40 meter wide transects with centerlines spaced 600 meters apart (see Figure 2.8). These transects overlaid the entire site, including the site center already mapped by Ian Graham. Part of the northeast section of the site where a higher density of mounds was observed was further subdivided with transects placed at 200 meter intervals. The area between the centerlines of any two traverses in most of the site therefore measured 600 meters long by 40 meters wide or 24,000 square meters. Tourtellot and two workmen cut 2-meter wide central trails for each transect and then searched for ruins within 20 meters on either side of the trail. All visible ruins were mapped (*ibid.*: 9-13). The researchers were aware of the question of hidden structures and conducted six test excavations in areas likely to contain such ruins if they were present at the site. No evidence of hidden structures was discovered (*ibid.*: 345-350). Such a methodology should result in a sample of slightly less than 10% of the population (the population, in this case, is the total site area). Based on the sample, Tourtellot estimated a total of 995 “units” were present at the site, or approximately 40 per square kilometer. These figures include the site epicenter. A unit was defined as “one or more structures spatially distinct from others” (*ibid.*: 39). In addition to the systematic survey, 229 surface collections were gathered. These were random grab

samples taken wherever possible, often from tree falls (ibid.: 25-26). After the peripheral survey was completed in 1968 the survey team fully walked through each 600 by 600 meter grid square adjacent to the site center in order to fill out the map and to check the representativeness of their sample. They concluded that the sample did, in fact, accurately represent the total site population (ibid.: 13).

While the Seibal peripheral survey did an admirable job in devising a methodology that gave a representative sample of a large area, the accompanying excavation program was much more problematic. This is largely a result of the sample selected for testing. Despite the identification and mapping of numerous structures outside of the site center, the peripheral survey limited the population for excavation to “small structure ruin units on Graham’s...central map” (ibid.: 45). In other words, after carefully devising a strategy to map a representative sample from Seibal’s approximately 25 square kilometer area, the peripheral survey team chose to excavate structures only within the center of the site, an area of just over 1 square kilometer that includes the major ceremonial architecture at the site. A few test excavations were conducted in areas outside of the site center but these were not part of the “probability sample” of the peripheral settlement study. While non-ceremonial structures are present in the zone selected as the population for excavation, a more fruitful approach would have been to systematically include other parts of the site in the excavation program. Tourtellot (1988: 45) suggests that “a modicum of control over this limitation is provided by the similar appearances of ruins in the farther peripheries...” Still, systematic excavation would have determined form followed function throughout the site.



The primary purpose of the excavation program was “to supply direct and controlled information on contexts and temporal sequences....” Working from Graham’s map of the ceremonial center, Tourtellot divided the “small structures” within the center of Seibal into seven categories, based primarily on the number of structures clustered together. Each cluster of structures was termed a “unit.” Once all structures were classified, the researchers employed a stratified random sampling scheme which tested at least 10% of the units in each category. The excavation methodology was generally to place a 2 by 2 meter test pit into a plaza close to a structure in order to gather information on dating, depth of construction, and construction sequences. Excavation proceeded in 20 centimeter arbitrary levels unless soil changes, floors, or other features were encountered. Artifacts were hand collected only; no screens or flotation devices were use. The initial test pits were expanded along the level of the latest floor in trenches that extended into buildings and construction features in order to gather more information on the form and function of structures (ibid.: 34-49). Significantly, Tourtellot notes that “...of the 41 units actually [excavated]...half changed their class...membership as a result of excavation....” He calls this high frequency of change “quite unexpected” (ibid.: 188). This is a more telling critique of the choice to include only units from Graham’s map in the peripheral settlement excavation sample since, clearly, form and function were not well indicated by surface appearance.

### *Regional Reconnaissance*

The Peabody team working at Seibal briefly explored several other sites in the greater Pasión region. As at Altar de Sacrificios, there was no systematic search for additional sites and, of the three such sites visited, only one, Anonal, can truly be said to

have been “discovered” by the Seibal researchers. Anonal is a minor ceremonial center on the far western edge of the “Greater Seibal Zone,” about 4 kilometers west of the Seibal site epicenter. The site contains two small temples on a plaza, several large platforms, and a number of monuments and is similar in form to other small ceremonial centers near Seibal (Willey et al. 1975: 46-47).

In 1967, Gair Tourtellot, Jeremy Sabloff, Arthur Miller, and six workmen visited the major center of Cancuen in the upper Pasión Region, some 116 km south of Seibal. Over the course of four days the team discovered and made a map of the site’s massive palace (“Group C”), discovered 11 stelae and 9 altars (one stela is carved, the remainder of the monuments are plain), and excavated several test pits (Tourtellot, Sabloff, and Sharick 1978). This work provided important information for the later Vanderbilt University research at the site (see below).

During the following field season, volunteers from the United States Peace Corps visited the Seibal field camp and reported ruins on the Laguna Itzán in the lower Pasión region. Based on that information, Tourtellot, Norman Hammond, and Richard Rose spent five hours at the site of Itzán in February 1968. Itzán is located approximately 50 kilometers by water downriver (west) of Seibal atop a bluff above a lagoon. In their brief time at the site the researchers created a preliminary map of the site that included part of a causeway, 2 plazas, and 33 structures, including a large acropolis. They also identified 15 stelae, 6 altars, 3 panels, and a number of hieroglyphic steps on 2 stairways. Unfortunately, while several of these monuments were carved, all were badly eroded. In the subsequent months Ian Graham made several visits to Itzán in order to study and

record the monuments. While there he also further explored the site and refined the site map (Tourtellot, Hammond, and Rose 1978).

### *Site Occupation History*

Based on the archaeological evidence, the first settlers arrived at Seibal during the Middle Preclassic Real Xe phase (900-600 BC), the dating of which is supported by radiocarbon dating. Traces of Xe ceramics were found in nine locations at the site with the bulk of these under Group A. There is evidence for ritual activity in the form of a cruciform cache with Olmecoid artifacts between two later temples, A-10 and A-20. Signs of settlement extend from Group A through parts of Group C to the terminus of what was later Causeway III. Thus in the Middle Preclassic a simple village community formed on the highest hills at Seibal and the land in between where they would have had good access to aquatic resources and to well-drained potential farmland to the north, west, and south (Tourtellot 1988: 372; Willey et al. 1975: 40; Willey 1990: 193-195, 235-239).

In the ensuing Escoba Mamom phase (600-300 BC), the population at Seibal increased in both number and area. Occupation was heavier in Groups A and C than in the preceding Real Xe phase and new settlement appeared to the north and northwest of Group A. There is also evidence of occupation far to the west at Anonal. Architecture in this phase generally consisted of low platforms with stone retaining walls, gravel floors, and pole-and-thatch superstructures. Evidence for ritual activity includes some very large platforms in the South Plaza Group A and a cache with a jadeite celt. At Anonal, the pyramid structure may have been begun at this time (Tourtellot 1988: 373-376; Willey et al. 1975: 40-41; Willey 1990: 195, 239-241).

There was a considerable surge in population at Seibal during the Late Preclassic Cantutse Chicanel phase (300 BC – AD 270) and population likely remained high throughout the phase. By the year AD 1 settlement had grown to reach all parts of the site. Groups A and C continued to grow substantially, as did the zones to the north and northwest, while Group D and the ridge west of Group A were occupied for the first time. Most construction at the site consisted of large, boulder-walled terraces and platforms topped with perishable superstructures. Several small single temple-and-plaza constructions were erected around the site and more significant ritual architecture presumably was present in Group A, although such buildings are under later architecture (Tourtellot 1988: 376-389; Willey et al. 1975: 41; Willey 1990: 195-196, 241-245). Gordon Willey (1990: 244) suggests that Late Preclassic Seibal was a major politico-religious center surrounded by lesser centers.

The Early Classic Junco Tzakol phase (ca. AD 270-500) is in form largely a continuation of the Preclassic community as Seibal. Groups A, C, and D were still occupied, as were outlying parts of the site. However, the density of settlement was significantly decreased, particularly in outlying areas. Population size may have decreased by as much as 50% from the Cantutse Chicanel phase (Tourtellot 1988: 389-392; Willey et al. 1975: 41; Willey 1990: 196, 245-247). No evidence was found to suggest that the large public architecture in the site epicenter that was constructed during the Late Preclassic was significantly enlarged or “importantly utilized” during the Early Classic (Willey 1990: 247). Ritual activity apparently did occur at some of the outlying temples but less frequently than in earlier times.

The end of the Junco Tzakol phase marks the beginning of a hiatus at Seibal that lasted until approximately AD 650. The hiatus likely began even earlier with the Early Classic decline of the site. Unlike some areas, where archaeologists now understand that the Middle Classic “hiatus” was actually a decline or cessation in ritual construction and activity at some sites due to political developments across parts of the southern lowlands (e.g., Martin and Grube 2000), the decline at Seibal appears to have been truly a hiatus. Typical ceramic markers for the period AD 500-700 are absent at Seibal and fresh humus layers developed directly over several Junco period floors and occupation levels. Additionally, a number of Late Preclassic temples were ritually shut down during the Early Classic period (Tourtellot 1988: 392-393).

Seibal was repopulated in the Late Classic Tepejilote Tepeu phase (AD 650-830). All parts of the site were occupied, although preferred loci for settlement may have shifted throughout the phase. For example, the areas around Group A and the south end of Causeway II were more populous during the early part of the phase while Groups C and D and the area just to the north of Group A were favored later in the phase. Overall, though, population grew throughout the Tepejilote phase. Still, the site was less populous than during the Late Preclassic Cantutse phase. With the Late Classic population influx came a renewed construction program of not only domestic architecture, but public architecture, too. Preclassic and Early Classic residential platforms were built over and enlarged, as were the large platforms and pyramids in the epicenter. The surrounding small ceremonial centers consisting of single temples and plazas were reconstructed and new ones were built. The first hieroglyphic dates appear at Seibal during the Tepejilote phase. The earliest comes from a panel in Group A dated AD 751. Overall, the Seibal

researchers believe that Seibal had reemerged as an important politico-religious center (Tourtellot 1988: 393-400; Willey et al. 1975: 41-42; Willey 1990: 196-197, 247-256).

Seibal reached its apogee during the ensuing Bayal Boca phase (AD 830-930). The onset of the phase is marked a number of period ending monuments (Cycle 10 in the Maya calendar began in AD 830 at 10.0.0.0.0) and the appearance of Fine Paste pottery. Some aspects of Bayal occupation are difficult to differentiate from the preceding Tepejilote phase, particularly in the site periphery where little Fine Paste pottery was discovered. In the periphery, then, it is uncertain whether occupation declined significantly or if Tepejilote pottery continued to be used. In the site epicenter, however, there is no question that population, construction, and activity increased significantly. Group A became the single major focus of ritual construction and activity while Group D, which had previously been an important area of politico-religious functions, appears to have become strictly a residential zone (Tourtellot 1988: 400-406; Willey et al. 1975: 42; Willey 1990: 197, 256-260). The most readily apparent development in Bayal was the construction of the stelae associated with Structure A-3 in the South Plaza of Group A. The unusual iconography of these monuments, in conjunction with the appearance of Fine Paste pottery, the round structure 79 at the terminus of Causeway II, and other features that seemed to be non-typical Classic Maya led the Peabody team to conclude that the site had been taken over by foreign invaders (Tourtellot 1988; Willey et al. 1975; Willey 1990). Subsequent research at other sites and zones – particularly the Petexbatun – has led to a reevaluation and rejection of the invasion hypothesis and instead ties the Cycle 10 florescence at Seibal to regional events (e.g., Tourtellot and González 2004).

The Bayal florescence at Seibal was relatively short lived. After AD 930 there is very scant evidence for occupation at the site. A few scattered finds of Postclassic pottery suggest a few families may have resided at Seibal after the site was largely abandoned. These finds are located in Groups A and D, the highest parts of the site and those that were preferred by the first settlers in the area some 2000 years earlier (Sabloff 1975: 222-228; Tourtellot 1988: 407-408; Willey 1990: 260).

### *Seibal Population Estimates*

By the time the final Seibal reports were completed in the late 1980s, 15 years had passed since Richard E.W. Adams had completed his population estimates for Altar de Sacrificios (Adams 1972). Over those years much research had been conducted in the Maya area and, with this accumulating mass of data, more sophisticated processual questions could be asked and more information could be gleaned. One avenue of increased inquiry was estimating ancient populations from ancient ruins. Researchers at Tikal, in particular, published numerous articles on that site's population size (e.g., Haviland 1965, 1969, 1970, 1972a, 1972b; Thompson 1971). Similar calculations and methodological refinements occurred for many sites, culminating in an organized session on Precolumbian population estimates for the Maya area at the 1985 meetings of the Society for American Archaeology. This session led to a published volume (Culbert and Rice 1990). Gair Tourtellot included a chapter on Seibal in the volume (Tourtellot 1990) and that article, rather than previous population calculations in his monograph (1988), is the basis for the following discussion.

Tourtellot developed a methodology considerably more complex than that employed by Smith at Altar de Sacrificios in hope of calculating the ancient population

size of Seibal more accurately. He began with *units of structures*, rather than individual structures, since approximately 50% of units in the central map changed class when excavated (as discussed above) while the number of units as loci for habitation changed little. Tourtellot calculated that 14.3% of structures were ancillary, rather than dwellings, but attempted to define the number of dwellings more precisely. He therefore defined dwellings as “structures wherein people slept and lived” and, based on excavations, calculated that there were 2.72 dwellings per unit (Tourtellot 1990: 86). He then extrapolated this figure to all parts of the site and all time periods. Not all units were included in his calculations, however, since five excavated units lacked dwellings.

The dating of occupation of units was based on the presence of diagnostic pottery and, in most cases, excludes cases where only trace amounts of a specific type were present. The exception is the Early Classic Junco Tzakol phase for which only approximately 1000 sherds were recovered at the site. Tourtellot counted all such traces as representing occupation but listed unit counts for this phase with a question mark in his tables. That methodology is followed here in Table 7.2. Dating of peripheral structures for all phases is based on the 229 surface collections since excavations adjacent to loci of such collections indicated that they were representative of buried deposits, at least on a presence or absence basis. Regarding the issue of contemporaneity, after lengthy consideration of multiple factors and alternatives, Tourtellot assumes 90% of units within any given time period were occupied at the same time (*ibid.*: 90-92).



Table 7.2. Seibal population factors and estimates (after Tourtellot 1990: Tables 4.1 and 4.2, pp. 101-102).

Phase	Dates	Raw Count of Units	Weighted Count of Units	Domestic Proportion
Postclassic	AD 930-?	7	18.7	100%
Bayal	AD 830-930	48	130.1	95
[Late/Terminal Classic]		26	69.7	100
[Late/Terminal Classic + Tepejilote]		53	130.9	90
Tepejilote Hiatus	AD 650-830	27	61.2	79
Junco	AD 270-500	23	51.8?	88
Late Cantutse	AD 0-270	12	42.1	100
[Early + Late Cantutse]		58	153.5	100
Early Cantutse	300-0 BC	50	125.8	100
Escoba	600-300 BC	21	42.8	100
Real Xe	900-600 BC	9	21.2	100

Phase	Estimated Domestic Units	Central Units	% non-residential	Peripheral Units
Postclassic	18.7	191	0?	707
Bayal	123.6	191	20.2	707
[Late/Terminal Classic]	69.7	191	0	707
[Late/Terminal Classic + Tepejilote]	117.8	191	16.5	707
Tepejilote Hiatus	48.3	191	16.5	707
Junco	45.6	191	6.4	707
Late Cantutse	42.1	191	0	707
[Early + Late Cantutse]	153.5	191	0	707
Early Cantutse	125.8	191	0	707
Escoba	42.8	191	0	707
Real Xe	21.2	191	0	707

Phase	% of Area	Chronological Proportion	Domestic Units	Population
Postclassic	100	12.2%	98.6	1173?
Bayal	100	80.6	636.8	7577
[Late/Terminal Classic]	100	45.4	366.9	4366
[Late/Terminal Classic + Tepejilote]	100	76.9	610.1	7260
Tepejilote Hiatus	100	31.5	249.9	2974
Junco	14.3	29.6	32.5	387
Late Cantutse	100	27.4	221.4	2635
[Early + Late Cantutse]	100	100	808.2	9618
Early Cantutse	84.2	82.0	251.7	2995
Escoba	42.1	27.9	42.7	508
Real Xe	26.3	13.3	6.2	74

To calculate the number of occupants per unit, Tourtellot begins with a figure of 5 persons per dwelling, rather than the commonly used 5.6. Multiplied by the 2.72 dwellings per unit, he calculates 13.6 persons resided in each unit. However, he assumes that each dwelling was occupied by a nuclear family and that there would be overlap in the figures between dwellings within any given unit. For example, a grown son may be counted as part of the nuclear family of one unit with his parents and siblings but also counted as part of a second family in another dwelling in the unit for which he is the head of household. Thus Tourtellot reduced the number of individuals per household by 12.6% or 1.72 individuals, resulting in approximately 11.9 individuals per unit.

Table 7.2 lists the variables and population figures for the various phases at Seibal. Following Tourtellot (1990: 101, 102 tables 4.1 and 4.2), several time periods are combined and placed in brackets in the table. These represent alternative chronological alignments based on questionable materials. "Count of Units" is simply the raw count of excavated units for which the relevant ceramic phase is present. "Weighted Count of Units" is the raw count multiplied by 2.72, then adjusted to correct for sampling bias (see Tourtellot 1990: 100, note 1 for an explanation of how this correction was calculated). "Domestic Proportion" lists what percentage of units was domestic based on excavations. This number is then multiplied by the weighted count of units to calculate "Estimated Domestic Units" for each time period. "Central Units" is the total count of units in the site center based on units mapped on the 600 meter interval transects, then extrapolated to the central 1.9 square kilometer area of the site center. Because not all excavated units in the site center showed evidence that they were residential, the column "% non-residential" lists the percentage of the 191 units that were used for other functions during

any given period. The total number of units estimated in the peripheral zone based on the transect survey is 707, the figure listed in “peripheral units.” Because not all parts of Seibal were occupied at all times, “% of area” lists the percentage of units occupied during each phase based on excavations in the site center and surface collections in the periphery. The column “Chronological Proportion” is the “estimated domestic units” divided by the weighted total of all central domestic units (153.5 according to Tourtellot). Finally, the various categories can be used to calculate the total “Domestic Units” during any given period. This number is calculated by multiplying the sum of the number of domestic units in the center and periphery, less the percentage of non-residential units and non-populated area, by the “chronological proportion” and the assumed 90% (0.9) occupancy factor. The number of domestic units is then multiplied by the assumed number of individuals per unit, 11.9, to calculate the total site population.

Despite Tourtellot’s detailed consideration of factors that decrease the accuracy of his population estimates, several problems remain. Primary among these is the lack of excavation in the periphery of Seibal. Are surface collections alone adequate for dating all periods of occupation over the vast majority of the site? Controlled excavation is needed to determine if the surface collections truly are representative of sub-surface deposits. Additionally, since a number of units in the site center proved to be non-residential and were thus discarded from calculations, is it not possible that some of the peripheral units were not residential? Granted units in the periphery are much more likely to be residential than those on the site center but an excavation program would have answered such questions. Tourtellot was aware of many of the additional potential pitfalls in his calculations, such as the fact that Preclassic dwellings may be buried under

the later massive constructions in Group A or that his figures do not include the site's highest elite, and discusses these at some length (Tourtellot 1988: 411-421, 1990). Still, the factors on which he bases his calculations are among the most detailed for any site and his population figures at least depict the general sequence of occupation at the site, if not necessarily the precise figures. Overall, Seibal was always a fairly small site but with population zeniths in the Late Preclassic and again in the Late to Terminal Classic. Other than the apparent Early Classic hiatus, the history of Seibal coincides with what is now known of the ancient Maya world. A small early population steadily grew into a sizeable community. After an unexplained depopulation – one that may have been tied to the warfare between Calakmul and Tikal and their allies – the site reached a Late/Terminal Classic peak before being abandoned once and for all.

## **Cancuen**

The fourth major research program conducted in the greater Pasión region – after the projects at Altar de Sacrificios, Seibal, and in the Petexbatun region – is the ongoing Cancuen Regional Archaeological Project. In 1991 archaeologists working at Dos Pilas discovered a panel, Panel 19, depicting a young prince's first bloodletting in front of several witnesses (see Figure 3.14). The accompanying hieroglyphic text identified one witness as a lady from Cancuen. Subsequent fieldwork yielded additional fascinating clues about this woman. These include her “death throne” and her palace of cut stone, an architectural style that is unusual in the Petexbatun region but, as researchers subsequently discovered, *de rigour* at Cancuen (Barrientos et al. 2001).

These discoveries and several reconnaissance trips to Cancuen led Petexbatun

project general director Arthur Demarest to select Cancuen as the focus of his next major research program. Field research began at Cancuen in 1999 and has continued for seven seasons to date under the direction of Demarest and project co-director Tomás Barrientos. The archaeological aspects of the project are being conducted under the auspices of Vanderbilt University in conjunction with several Guatemalan Institutions, including the Universidad del Valle and San Carlos University. A key goal of these studies is simply to investigate and record the archaeological record of the upper Pasión region, a zone that was previously almost completely unknown. Additional foci include the nature of highland-lowland interaction and the nature of ancient Maya economic systems. To achieve these goals, a large multidisciplinary team was assembled in order to investigate all aspects of Cancuen and the region, including epigraphy, architecture, settlement patterns, caves, osteology, ceramics, and lithics (Demarest and Barrientos, eds. 1999, 2000). An additional major research program of the Cancuen project is a sustainable development project that works with the modern Maya in the region (Demarest and García 2002).

#### *Site Location and Setting*

Cancuen (Figure 7.8) is located in the upper Pasión region near the interface of the southern lowlands and the foothills of the Alta Verapaz. The site is strategically located on the right bank of the Pasión River in a horseshoe bend 90 kilometers south of Seibal near where the river system becomes navigable at the foot of the highlands. The site is well defined on its east, west, and south sides by the river but the northern limit is unclear. The site epicenter is situated on high ground just above the Pasión on the east side of the horseshoe. Settlement extends for approximately two kilometers south and

one kilometer west of the epicenter. In both cases signs of occupation end as the terrain descends to the river. Evidence of ancient occupation north of the site's epicenter is fairly dense for a distance of half a kilometer, but clusters of settlement continue for many kilometers more on higher ground in the rolling terrain of the region (O'Mansky 1999, 2000).

### *Site Description*

Cancuen is dominated by its epicenter, particularly the massive palace (Figure 7.9), Group C, discovered by members of Harvard's Seibal Project during their brief visit to the site in 1967. The palace is oriented east-west and is one of the largest in the Maya world, measuring approximately 220 by 125 meters with a maximum height of 14 meters above the surrounding terrain. The palace is built entirely of stone and contains more than 200 corbel vaulted rooms (Figure 7.10). Eleven courtyards are enclosed within the massive complex, each smaller than the previous and with ever-more restricted access (Barrientos et al. 2001; O'Mansky 2000).

Approximately 100 meters east of the palace on a bluff above the Pasión River is Group B, discovered by Sylvanus Morley during his visit in 1915 (Morley 1937-1938). The group consists of four structures, including two small temples and a ball court. In the vicinity of the ball court he found a carved marker, now residing in the National Museum in Guatemala City. Two additional ball court markers have since been unearthed in the course of the ongoing Vanderbilt research. Morley also reported a plaza group to the south of Group B.

Group A, discovered by Teobert Maler in 1905 (Maler 1908), is located approximately 200 meters north of the palace. The group consists of several small

mounds, two elaborately carved stelae (Figure 7.11), and an altar. The stelae were unusual in that they had two notches in the top corners, rather than the more typical rounded tops. Maler noted numerous other monuments and structures, and concluded that Cancuen would provide a very interesting archaeological study. Between the palace and Group A several additional structures were identified during the 1999 and 2000 field seasons. These include a small but finely constructed ballcourt (O'Mansky 1999).

The areas outside of Cancuen's epicenter comprise the site periphery. The vast majority of small, apparently residential mounds at the site are located immediately south and west of Groups B and C. During the first season of the Vanderbilt project at Cancuen research focused primarily on these areas, which were at the time largely cleared cattle pasture and recently burned land. Visibility was therefore excellent and the survey crew was able to rapidly and accurately map a large area of the site. Some 208 mounds were discovered within an area of approximately 1.75 square kilometers. Almost all of these structures were within half a kilometer of the palace. Even more structures are likely located in this zone but were not constructed on platforms (i.e., they are "hidden structures"). Several identified mounds barely rose above the modern ground surface and were discovered only because all vegetation had recently been burned off. This fact, in conjunction with the higher ground within the bend of the river on which these mounds were located, suggests that hidden structures may be present. Even if they are not, occupation south of the Cancuen epicenter was dense and heavy. The most distant group from the epicenter was nearly two kilometers south of the palace by the southern border of the site, as defined by the river (O'Mansky 1999).

Many mound groups are also located north of the site center, although these are more widely spaced than those to the south. A depression just north of the A Group separates Cancuen's epicenter from the northern settlement area. Some of those structures closest to the epicenter are sizable and well built, including a large elite residential structure of stone masonry. Farther from the site center low mounds are situated on much of the higher terrain to form a continuum of scattered settlement (O'Mansky 1999, 2000).

#### *Site Settlement Pattern Methodology*

The Cancuen settlement pattern survey was conducted initially by Matt O'Mansky (1999, 2000, 2002) and was continued by Marc Wolf beginning in 2003 (Wolf 2003). After the preliminary 1999 field season, a site grid was created for Cancuen. Grid lines run north-south and east-west spaced at 250 meter intervals. The benchmark used for the initial placement of grid lines was Datum 1, one of ten cement markers placed at the site at the end of the 1999 season. Datum 1 is located approximately 300 meters south of the southeast corner of the palace and 200 meters southwest of the center of the project camp. The coordinates of the benchmark are 16°00'25" north by 90°02'26" west with an elevation of 127 meters. For the grid, the benchmark was arbitrarily assigned coordinates of 5000 meters northing by 5000 meters easting. These coordinates were chosen to assure that no point on the site map would have negative coordinates.

Each east-west grid unit is assigned a number, beginning at "0" at the southern edge of the peninsula and then numbered sequentially from south to north. North-south grid units are lettered beginning with "A" well west of the known extent of the site (again, to assure that negative letters will not be used). Each subsequent unit to the east



is then lettered with the next letter of the alphabet. Each specific grid unit of the site map is referenced by the corresponding number and letter of the grid, beginning with the letter (for example, grid unit L6). Each such 250 by 250 meter grid unit measures 62,500 m<sup>2</sup> or 1/16 km<sup>2</sup>.

Structures are numbered sequentially within each grid unit and are referred to by the grid unit number, then the number of the structure within that grid unit. For example, the first structure numbered within map grid unit J6 is denoted J6-1. The second structure in that unit is J6-2, etc. Each grid unit begins the numbering process anew, so that the first numbered structure in unit K7 is K7-1. This numbering scheme was also used for all previously parts of the site, including Maler's Group A, Morley's Group B, and the Seibal reconnaissance team's Group C.

With the site grid completed, survey and mapping was conducted in order to investigate and plot blank areas of the map. The methodology employed varied according to terrain and foliage. For example, in those clear zones south and west of the epicenter, total coverage survey was used. Some parts of the southern zone were under dense secondary growth and these were investigated by means of transects and informal walking tours. All of these areas were at least 325 meters from the palace. No additional mounds were discovered within such areas. While this may be a sampling problem, the distribution of mounds in this zone suggests that there are likely few, if any, additional mounds located on the peninsula south of the palace. Almost all structures in this area are located close to the palace. As one moves farther south from the palace, the density of ancient structures drops drastically (O'Mansky 2000).

To the west and northwest of the epicenter, the land is largely jungle covered and visibility is excellent. In such areas mounds were readily visible and teams of archaeologists and local workmen spaced at regular intervals walking through the jungle were able to identify ruins. These were then plotted by total station and added to the site map (O'Mansky 2000). The situation north of the site center varied. During the first several field seasons much of the zone within 500 meters north of Group A was under banana trees. It was nearly impossible to locate mounds beneath the low, tightly spaced trees and cutting transects would have been an especially arduous and time-consuming task. Despite these difficulties, some mounds and groups were discovered and mapped. By 2002, much of the area had been cleared and mapping continued. There are many fewer ruins than in the southern zone, but many of those mounds discovered are considerably larger and better constructed than those in the south. Structure M9-1, located just over 400 meters north of the palace, is particularly impressive. This elite residential structure is constructed of cut stone and measures approximately 8 by 13 meters and stands more than 6 meters high. Farther to the north mounds are considerably smaller. Scattered low housemounds and residential groups are located on high ground along the Pasión River and inland for many kilometers (O'Mansky 1999, 2000, 2002).

Excavation in the periphery did not employ any kind of statistical sampling strategy. Instead, scores of local workers were hired to work with the Guatemalan and American archaeologists in order to intensively and extensively excavate the peripheral zones. To date, excavation units have been placed in approximately 25% of peripheral structures at Cancuen. Excavation generally began with 2 by 2 meter test pits placed so as to discover behind structure middens. Many of these pits were then extended to follow

floors, walls, or other features. In several cases complete living surfaces were uncovered in horizontal exposures. This strategy yielded abundant artifactual remains from a variety of contexts, including common household goods, workshop tools and debris, and higher status items such as elaborate figurines (Demarest and Barrientos, eds. 1999, 2000). In conjunction with excavations and restoration in the palace (Barrientos et al. 2001), these finds are allowing the Cancuen research team to reconstruct the sociopolitical and economic systems of the site and region.

### *Regional Reconnaissance*

Because the Upper Pasión region was virtually unknown archaeologically before the Vanderbilt team began its research at Cancuen, a regional reconnaissance that included identifying, mapping, and excavating additional sites was always part of the project research design. A regional subproject was therefore begun in 2000 with preliminary reconnaissance and discussions with the local population in order to identify previously unknown sites. Intensive regional research began in 2002 and has continued ever since. Most of the sites mapped and tested in the upper Pasión region by the Cancuen Archaeological Project are small villages, such as El Guaraní, El Achiote, and La Caoba. Other sites, however, are substantial in size and contain multiple monuments and/or large ceremonial architecture. Examples of these include Raxruja Viejo and Raudal (O'Mansky 2000, 2002).

The first sites studied are located fairly close to Cancuen. For example, El Achiote (Figure 7.12) is located on the high east bank of the Pasión River approximately 3 kilometers south of Cancuen. The village is comprised of approximately 40 low mounds that are set atop three ridges or hills roughly equidistant from the highest hill at

the site. No evidence of construction was found atop this hill but it likely served a ritual function as a lone stela is located on the west side of the hill. The stela seems to have been plain but the front (downhill) face is eroded and partially sloughed off. Most of the mounds at the site are very low. The densest concentration of settlement and the largest mounds are those located farthest from the river on high ground 150 meters northeast of the highest hill. Small clusters of mounds are located farther inland on other hills but an uncooperative landowner prevented additional study (O'Mansky 2002).

The site of El Guaraní (Figure 7.13) is a small village located approximately 3.2 kilometers north of Cancuen near the modern village of El Zapote on the east bank of the Pasión River. It consists of eleven structures, one of which is a 400 m<sup>2</sup>, 2-meter tall platform occupying the highest ground in the immediate vicinity. The remainder of the site consists of small, low mounds that likely served as houses and assorted outbuildings. Based on the distribution of mounds in a few groups east of the large platform with two scattered to the west, it is likely El Guaraní was home to only two or three families (O'Mansky 2000).

The site of La Caoba (Figure 7.14) is located under the modern town of the same name approximately 11.5 kilometers northeast of Cancuen. It is a small village comprised of more than 30 structures with the main plaza group situated at 16°05'80"N, 89°58'96"W. Settlement is concentrated on high ground in a region surrounded by cave-riddled karst towers that were used for rituals as early as the Preclassic period (Woodfill et al. 2003). Despite two small *aguadas*, there is no nearby permanent source of abundant potable water. The main group is a fairly massive plaza group, dominated by four structures around a central plaza. The largest of these cover more than 400 m<sup>2</sup> and

are more than two meters tall. This group is set atop a hill on the east edge of the site and this hill was modified in a large-scale (relative to the size of the ancient village) leveling project. Fortunately, the modern inhabitants of La Caoba have not built over this group. However, school buildings were built just south of the main group and the village cemetery is just to the north. Additionally, the south structure was heavily mined for stone in the 1990s to build a church. Small clusters of structures are located atop other hills in the area to the east and southeast of the main group (O'Mansky 2002).

The most substantial site investigated to date by the Cancuen regional project is Raxruja Viejo (Figure 7.15), located approximately 2 kilometers south of the modern town of Raxruja and 17 kilometers south of Cancuen. It is situated among the foothills of the Alta Verapaz and is bounded by the Río San Simón to the south. Patricia Carot (1989) briefly examined the site in 1975 while studying caves in the area. She produced a sketch map of the site center but did not conduct any excavations. Today the site is in a poor state of preservation overall due to looting and the mining of architectural fill for use in roadbeds and other construction projects over the last 35 years (Figure 7.16). The central plaza of Raxruja Viejo covers an area of approximately 25,000 square meters and includes 14 structures and 21 monuments – 19 stelae and 2 altars, all plain and clustered toward the northwest corner of the plaza. The limits of the plaza are defined by the Río San Simón to the south and cave-riddled karst towers to the east and west. A 60-meter long range structure, probably the royal residence, measures up to 8 meters tall, closes off the north side of the plaza, and continues along the east side of the plaza, abutting one of the karst towers. Large holes left by looters indicate that this massive structure was built in a single phase. A pass between the two eastern towers is blocked by a low, looted

mound that once contained a tomb according to the present owners of the land on which much of the site lies. A cave is adjacent to this structure. A four-meter tall platform near the northwest corner of the plaza is built into the western karst tower. Five stelae line the front of this platform. Two structures are located high up the face of the slope above this platform. Both of these are looted through their central axes and, like the looted mound across the plaza, both reportedly contained tombs. On the south side of the same karst tower, a large cave mouth is situated just above the river. In fact, all of the karst hills around the site are riddled with caves. Visible settlement beyond the central plaza is limited. Approximately 60 structures have been identified and mapped. However, numerous additional structures fell victim to the bulldozers and plows and there are likely hidden structures at the site. Remnants of ancient structures are also evident several kilometers from the site center under modern Raxruja (O'Mansky 2002).

Numerous additional sites have been investigated as research continues both downriver (north) along the Pasión River corridor and south up into the highlands toward Coban. Among these is Raudal, located east of the Pasión River near Tres Islas. Raudal is dominated by a large platform that is oriented slightly east of north and measures approximately 340 meters on its north-south axis. The northern third of the platform is largely open and is approximately 135 meters wide. The central section of the platform is heavily looted and contains approximately two dozen structures, most of which surround a central courtyard. The southern third of the platform narrows to approximately 70 meters in width and is comprised of three plazas and a few small buildings. Only limited research has been conducted at Raudal to date but further investigations are planned

### *Site Occupation History*

Artifact analysis at Cancuen is ongoing. Researchers are therefore not yet able to reconstruct a detailed chronological history of the site as has been done for Altar de Sacrificios and Seibal. Preliminary ceramic analysis, in conjunction with epigraphic studies, indicates that Cancuen was occupied only during the Late Classic period, specifically from about AD 600 to 810. Unlike the lower Pasión sites, which have long, continuous sequences of occupation (the exception being the Middle Classic hiatus at Seibal), the Cancuen kingdom was characterized by a series of shifting capitals. Most of the evidence for these shifts currently comes from epigraphic decipherments (Fahsen et al. 2002; Fahsen and Jackson 2001). During the early Classic, the dynasty was centered in the Tres Islas area, probably at Raudal. In the Late Classic, the dynasty shifted to Cancuen where the site's strategic location made it a target for other powerful centers. While the Early Classic kingdom was allied with Tikal, the shifting of the seat of power to Cancuen was soon followed with a shift in alliance to Calakmul, Tikal's powerful rival. When Tikal defeated Calakmul in AD 695 (Martin and Grube 2000), Cancuen created a marriage alliance with Dos Pilas, which was then expanding its control of the Pasión River system through a series of wars and alliances.

Most of the Pasión and Usumacinta River centers were abandoned in the late 8<sup>th</sup> and early 9<sup>th</sup> centuries as endemic warfare swept the region. The first region to collapse was the Petexbatun beginning with the fall of Dos Pilas in AD 761 but within half a century warfare had led to the abandonment of other centers, including Piedras Negras and Yaxchilan (Martin and Grube 2000). By about AD 810 the warfare had reached the upper Pasión region and Cancuen. Renovations on the palace went unfinished while

defensive walls were constructed at the site (Barrientos et al. 2003; O'Mansky 2000; Sears and Seijas 2002). During the 2005 field season researchers discovered evidence of a royal massacre (Arthur Demarest, personal communication 2005). With the fall of Cancuen the dynasty's seat of power again shifted, this time east, away from the Pasión River to the site of Machaquila (Fahsen and Jackson 2002).

#### *Cancuen Population Estimates*

With work at Cancuen ongoing and in the absence of detailed ceramic analysis, it is too early to calculate population estimates for Cancuen. It is clear, though, that the site was rather small and may have contained fewer than 1000 people for most of its history. A population spike occurred in the late 8<sup>th</sup> century when most, if not all, of the mounds south of the palace were constructed. The timing of this apparent population boom, in conjunction with the pottery types discovered in excavations and the seemingly haphazard placement of the structures, suggests that a refugee population fleeing the warfare in the Petexbatun may have sought refuge with their relatives and allies at Cancuen (Demarest 2004a). The evidence for conflict at the site and the shift of the ruling dynasty to Machaquila suggests that the site may have been largely abandoned in the early 9<sup>th</sup> century. As research at Cancuen and in the Upper Pasión region continues, archaeologists will be able to more definitively make statements regarding the occupation history and population sizes.

#### **Other Greater Pasión Region Sites**

Little extensive fieldwork work has been conducted in the Greater Pasión region beyond the sites discussed above. Kevin Johnston began a project at Itzán (Figure 7.17)



in 1988 and worked there off and on for the next 15 years. The initial stages of this research formed the basis for his Yale University dissertation (Johnston 1994).

Johnston's research design focused on locating and excavating hidden or minimally platformed structures. By the completion of his dissertation he had identified three such structures and extensively excavated all of them, in addition to a small mounded patio group. He subsequently discovered and excavated five additional hidden structures (Johnston 2004). Similar to the findings of the Harvard Project at Altar de Sacrificios, which is located 13 kilometers to the southwest, Johnston discovered evidence for continual occupation at Itzán from the early Middle Preclassic Xe phase through the Terminal Classic period. Johnston's research yielded important data and interpretations regarding a significant issue in lowland Maya archaeology, that of hidden structures. However, more excavation is needed on the visible structures at Itzán to allow archaeologists to better understand the site and interpret it in a regional context.

Field research has also been conducted at the lower Pasión site La Amelia (Foias 1998). In 1997 Antonia Foias of Williams College, along with her co-director Lic. Lilian de Corzo, led a small project at the site in order to build on her dissertation research in the Petexbatun region while a graduate student at Vanderbilt University. La Amelia is located on a high embankment some 45 meters above and 2 kilometers inland from the left bank of the Pasión River approximately 15 kilometers east of Altar de Sacrificios. The site's acropolis, which was mapped by Edwin Shook in 1937, consists of 7 structures, several stelae and panels, and a hieroglyphic stairway on a platform measuring approximately 65 by 80 meters (Morley 1937-1938). The 1997 researchers discovered an additional ceremonial group, "The Group of the Three Temples," and 15 residential

groups. Three 1 x 1 meter test pits, two near the hieroglyphic stairway and one in front of Temple I, were excavated. These limited excavations, in conjunction with previous epigraphic studies by Stephen Houston (Houston 1993), suggest that La Amelia was occupied briefly, mostly during the Terminal Classic period and was abandoned in the middle of the 9<sup>th</sup> century AD (Foias 1998). While more research is needed at the site, if this dating is correct La Amelia was likely an attempt to establish a new seat of power in the Pasión region after the collapse of the Petexbatun hegemony and the eruption of endemic warfare. The processes involved at the site may be similar – albeit in the end less successful – to the initial stages of Seibal’s Terminal Classic resurgence.

Paleoecological research has been conducted in the Pasión region at Laguna las Pozas, a lake located approximately 7 kilometers southeast of Aguateca and the Petexbatun region. Kevin Johnston and his colleagues extracted two cores from the lake as part of a broader paleoecological study (Johnston et al. 2001). While no reconnaissance or archaeological research was undertaken, the cores indicate that the area around the lake was settled by agriculturists who deforested the zone in the Early Postclassic (ca. AD 900-1200) while surrounding areas, such as the Petexbatun, were experiencing forest regrowth. There is no indication that the Laguna la Pozas region was occupied and farmed before or after this period (ibid.). It is likely that Petexbatun refugees fleeing the warfare there settled around the lake and sustained themselves for several hundred years.

## Summary and Comments

The discussion of occupation history in the greater Pasión region presented above demonstrates different long term settlement strategies in different zones of the river system. At lower Pasión centers such as Altar de Sacrificios and Itzán, early settlers arrived by the Middle Preclassic and the sites remained occupied for nearly 2000 years. In the middle Pasión, Seibal similarly was occupied early and largely continued until the Terminal Classic. The key differences between Seibal and the lower Pasión sites are Seibal's Middle Classic hiatus and Terminal Classic florescence. The cause of the Middle Classic hiatus remains a mystery but the Terminal Classic florescence is tied to larger sociopolitical events in the southern lowlands.

In the upper Pasión region, settlement strategies were different than those in the middle and lower Pasión. Rather than long term occupation at individual centers, sites were occupied for shorter periods before shifting to new locations, from the Tres Islas/Raudal area to Cancuen and then Machaquila. The strong ties of the region to powerful distant rival centers such as Calakmul, Tikal, and Dos Pilas may have played an important role in this pattern of shifting capitals. If the region had remained more independent, perhaps the upper Pasión would have had an occupation history more in line with most of the remainder of the southern lowlands.

Long term settlement strategies in the Petexbatun region varied from site to site with occupation histories at some sites akin to that of the lower Pasión centers while others show similarities to upper Pasión centers, albeit on a more localized scale. The shifts in settlement in the Petexbatun, however, are well understood. Some sites, such as Aguateca, Punta de Chimino, and Tamarindito were occupied from the Preclassic through

the Terminal Classic. However, Tamarindito lost its place as the regional capital when a foreign intrusion from Tikal established a powerful base at Dos Pilas. Intersite zones in the Petexbatun had a separate long term settlement strategy that shifted based on a variety of factors, including ecological and political. Perhaps further study at other Pasión sites will allow archaeologists to better refine and align regional histories.

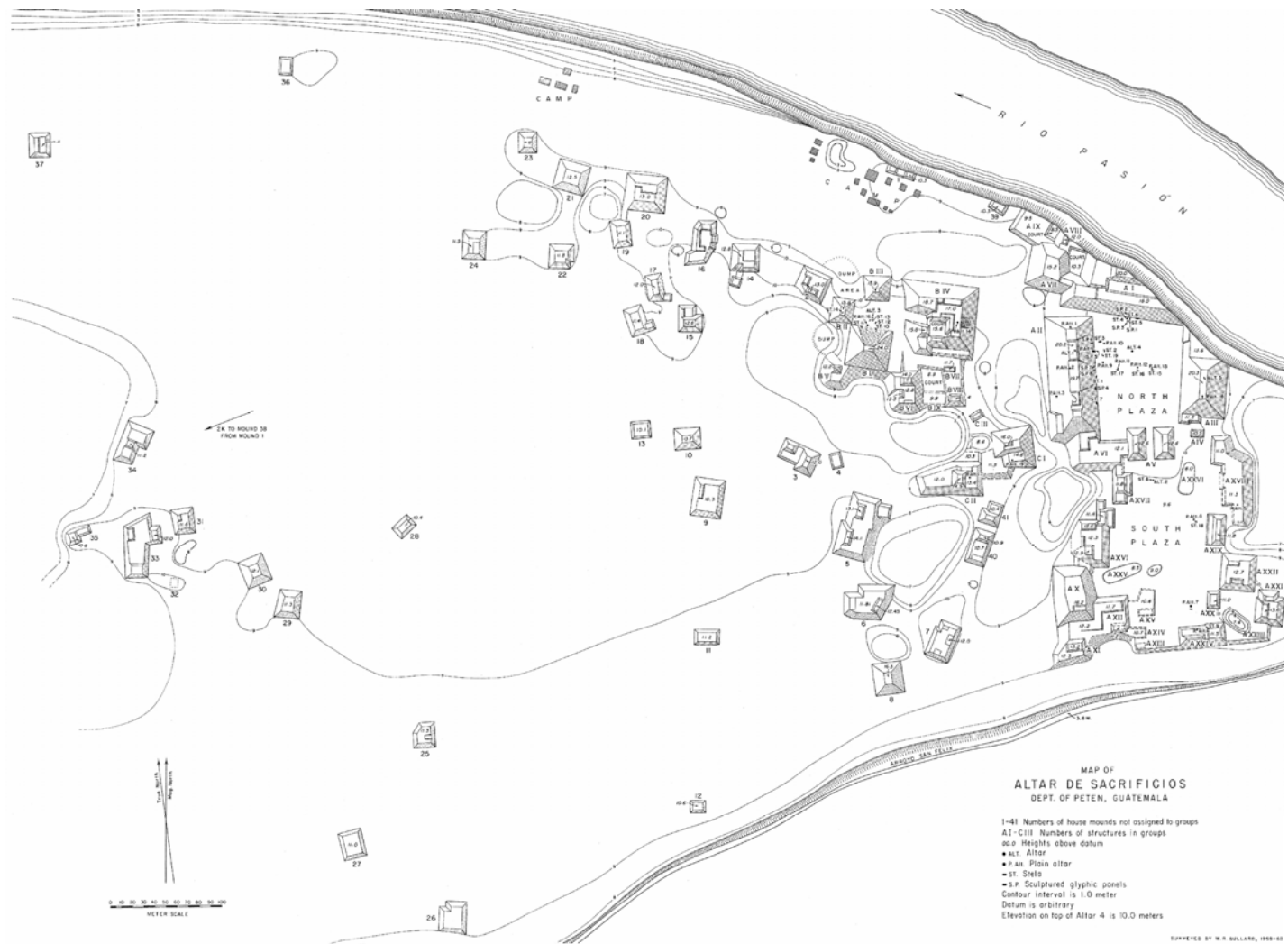


Figure 7.1. Map of Altar de Sacrificios (from Willey and Smith 1969: site map insert).

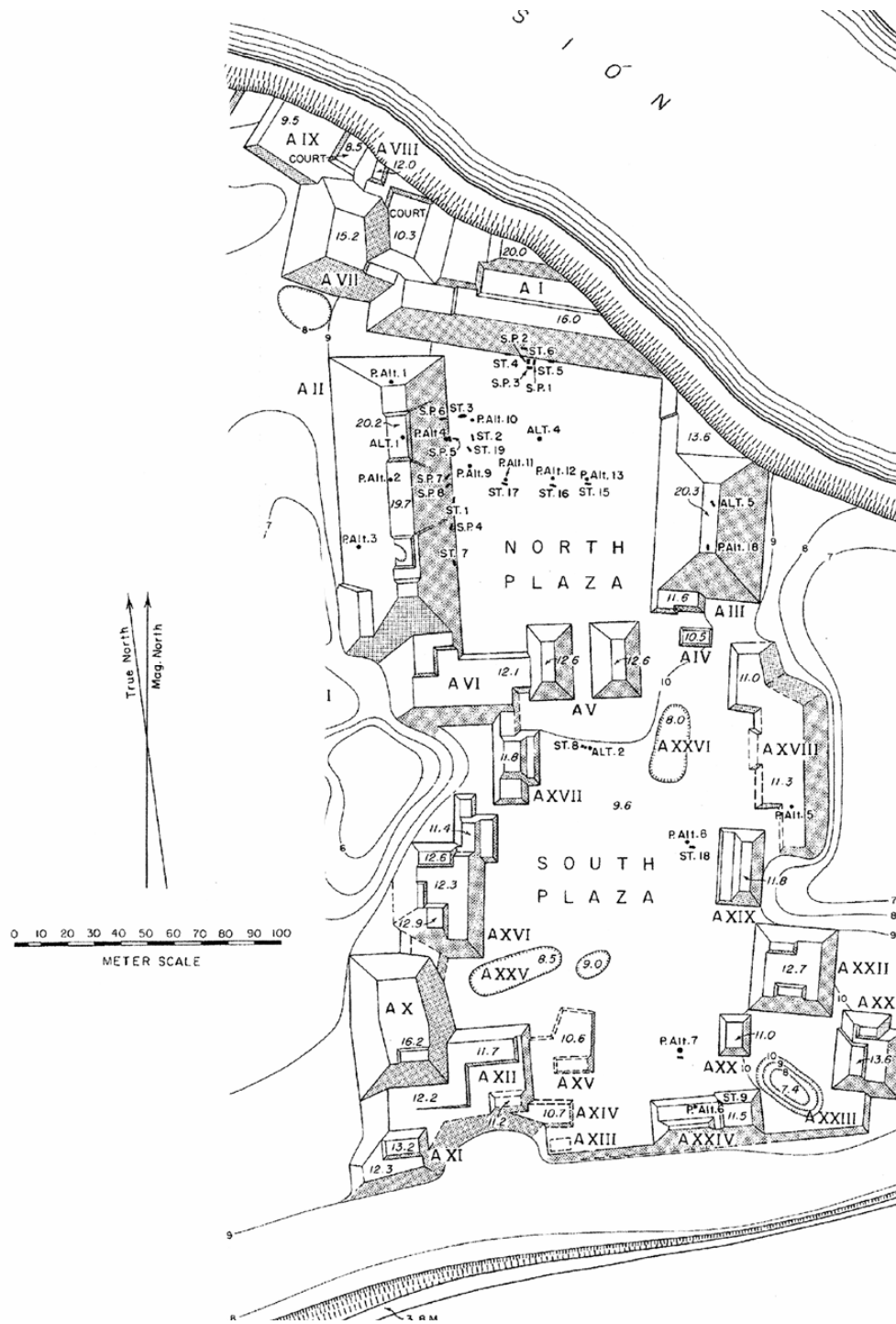


Figure 7.2. Altar de Sacrificios Group A (from Willey and Smith 1969: site map insert).



Figure 7.3. Altar de Sacrificios Groups B and C (from Willey and Smith 1969: site map insert).

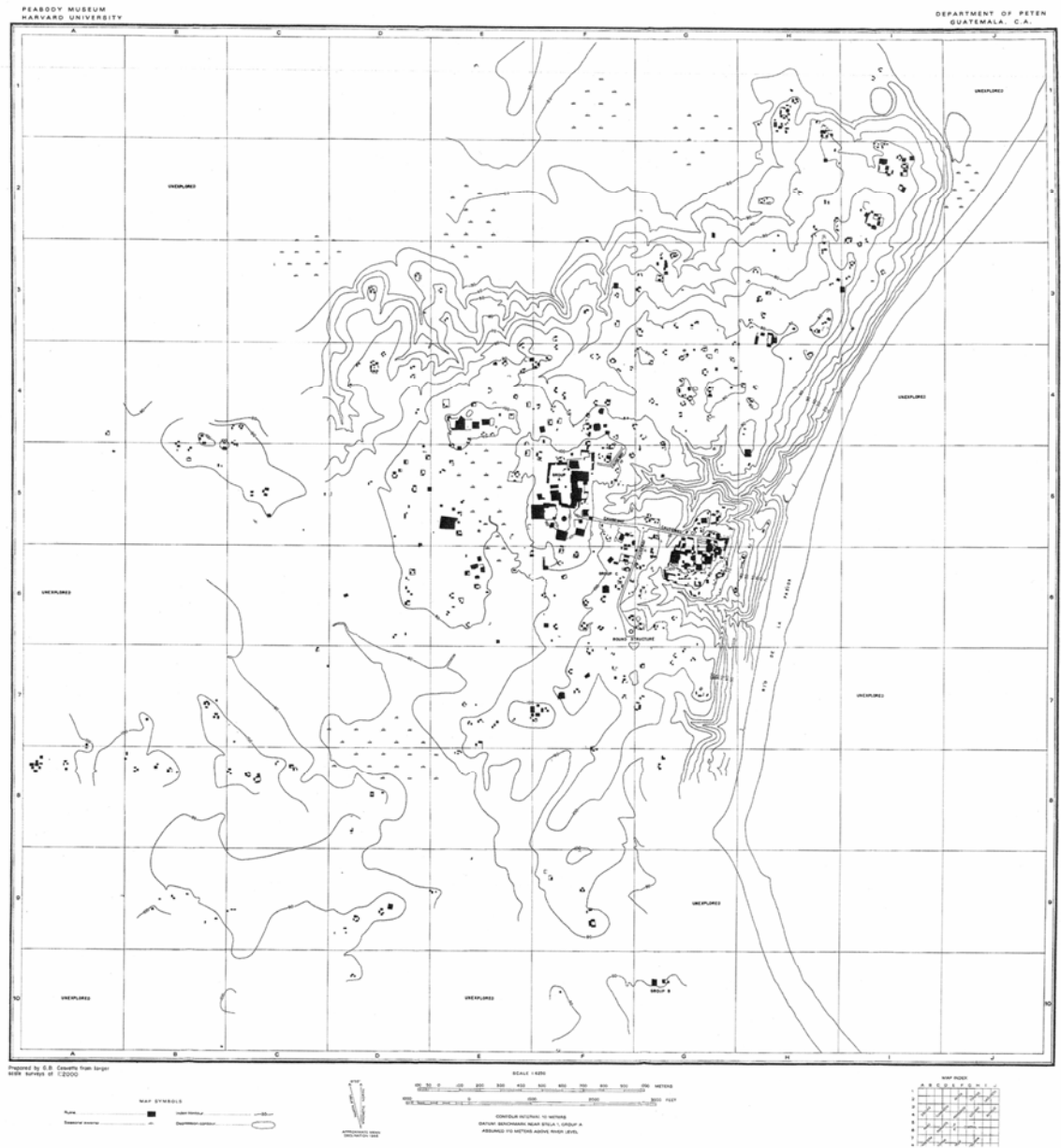


Figure 7.4. Map of Seibal (from Willey et al. 1975: site map insert).





Figure 7.5. Seibal Group A (from Willey et al. 1975: site map insert).

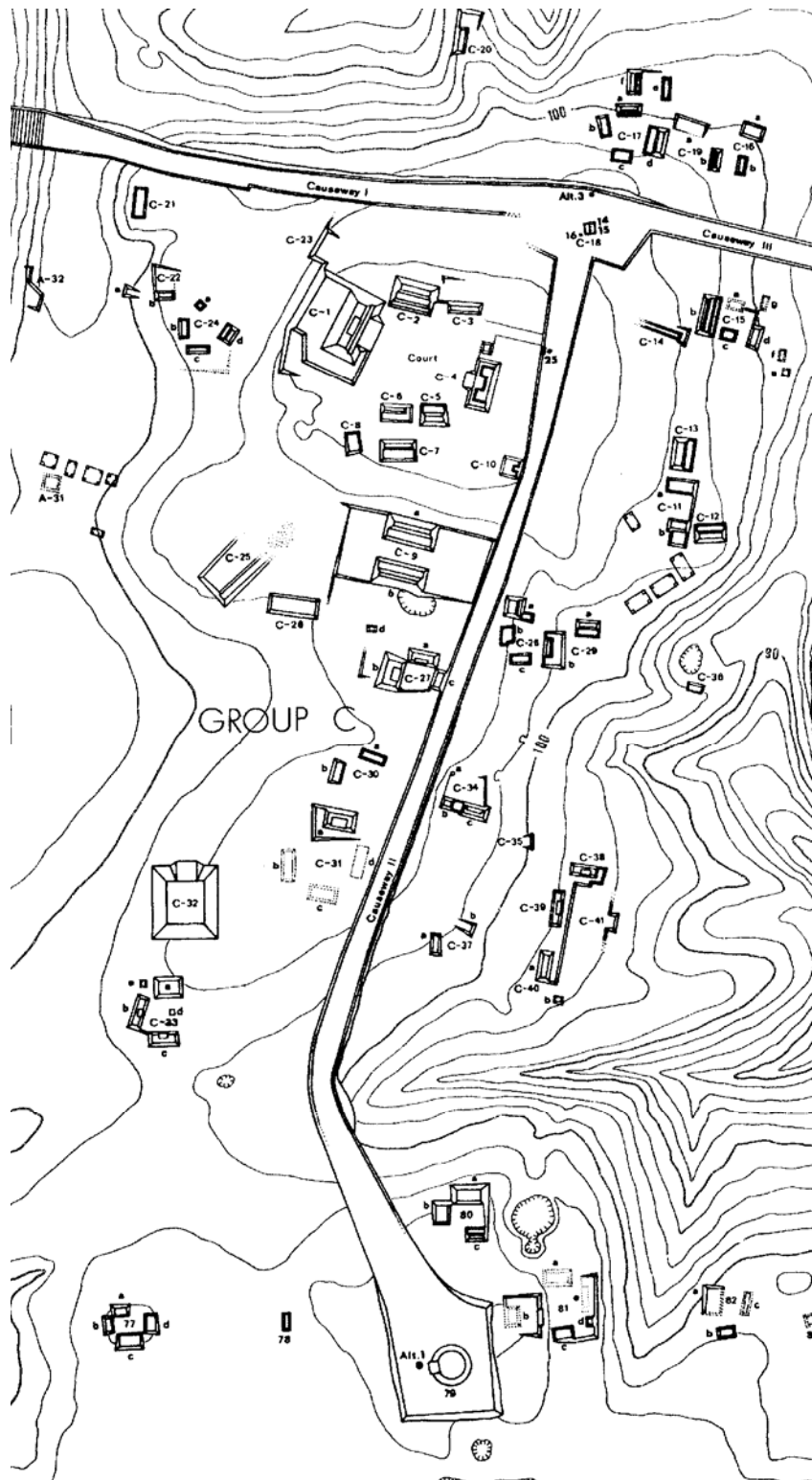


Figure 7.6. Seibal Group C (from Willey et al. 1975: site map insert).



Figure 7.7. Seibal Group D (from Willey et al. 1975: site map insert).

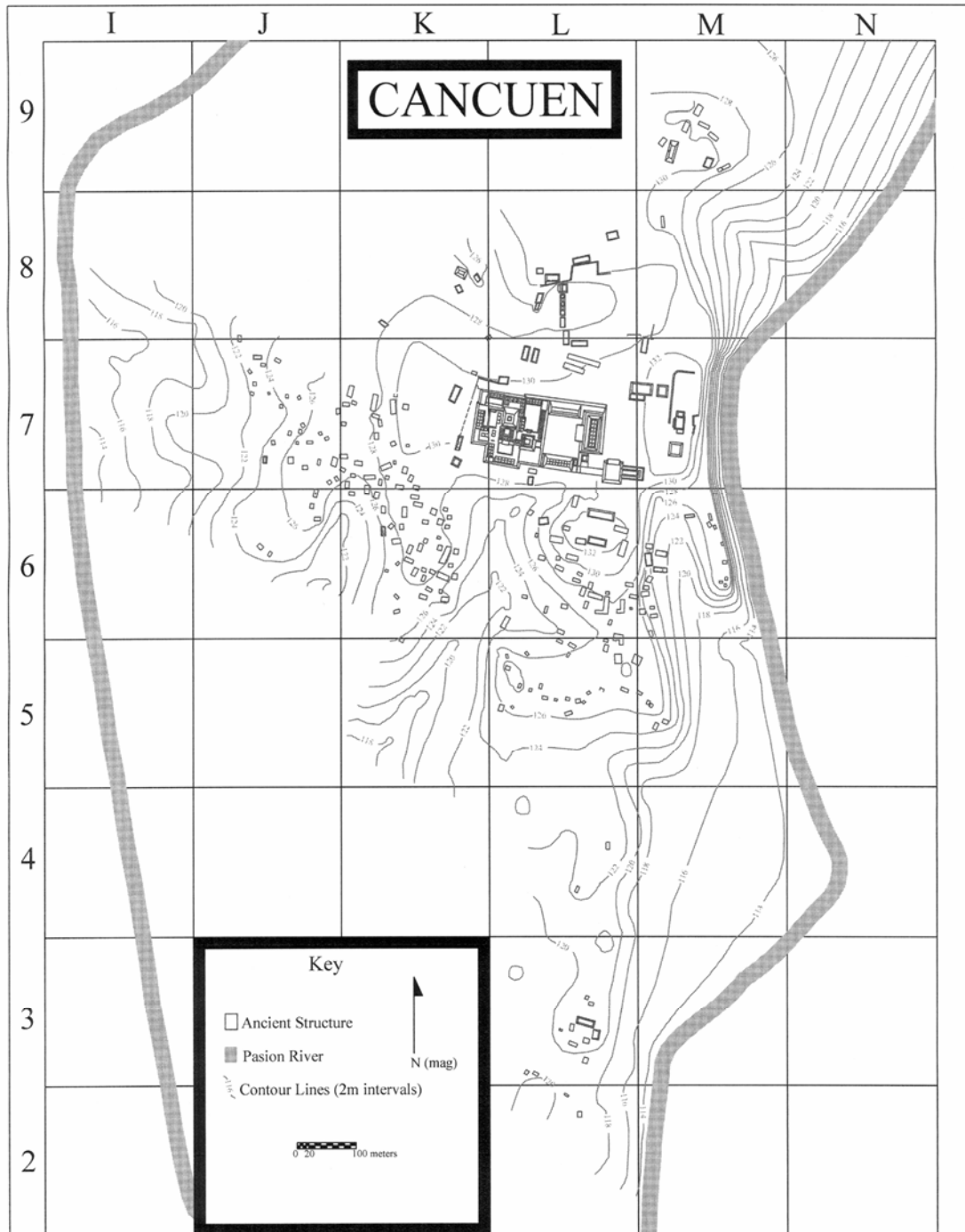


Figure 7.8. Map of Cancuen (from O'Mansky 2000: Fig. 2.1, p. 12).

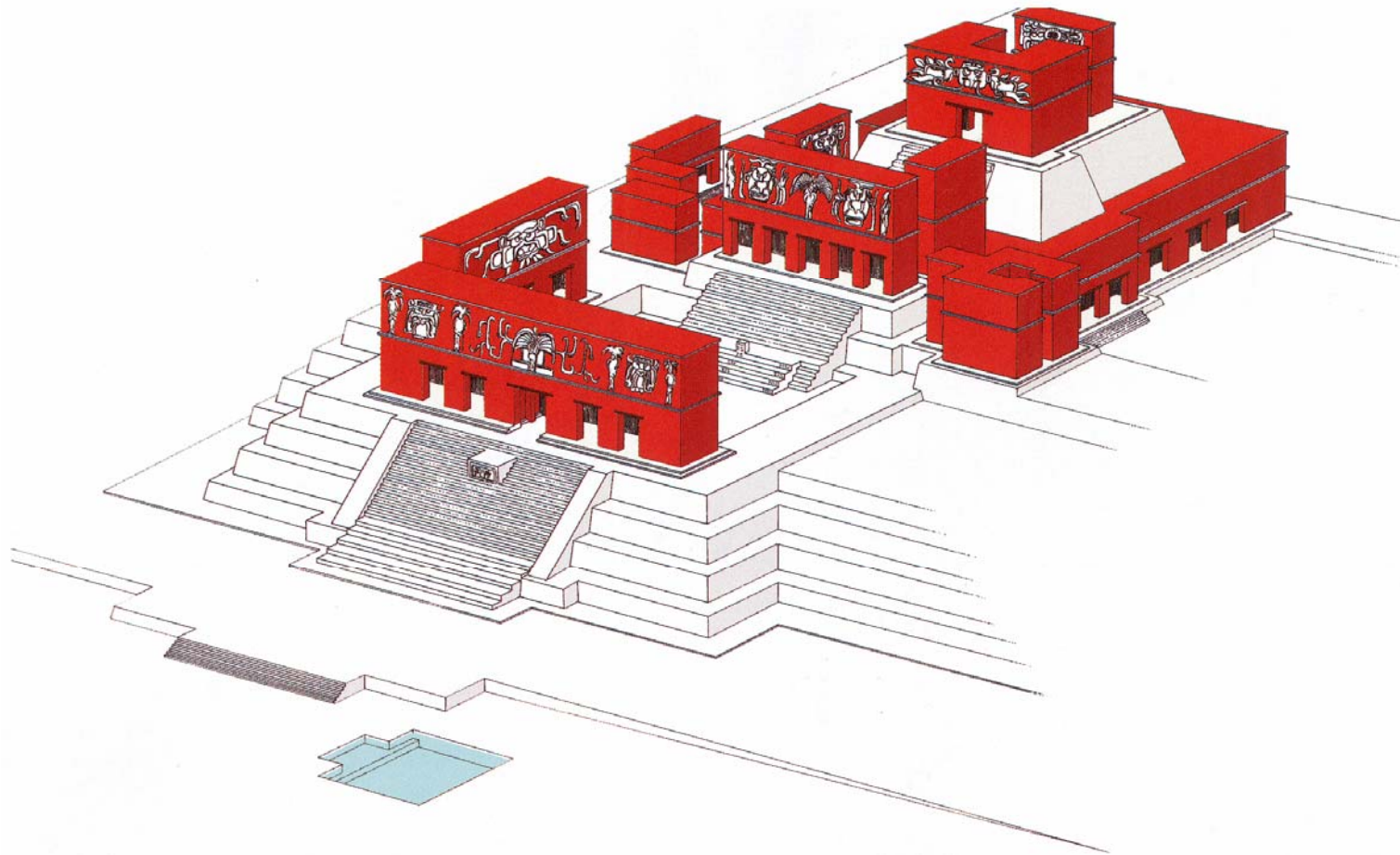


Figure 7.9. Reconstruction drawing of a small portion of the palace at Cancuen (drawing by Luis Fernando Luin).



Figure 7.10. A corbel vaulted room in the palace of Cancuen (photo by author).



Figure 7.11. Cancuen Stela 2 (from Maler 1908: Plate 12.2).

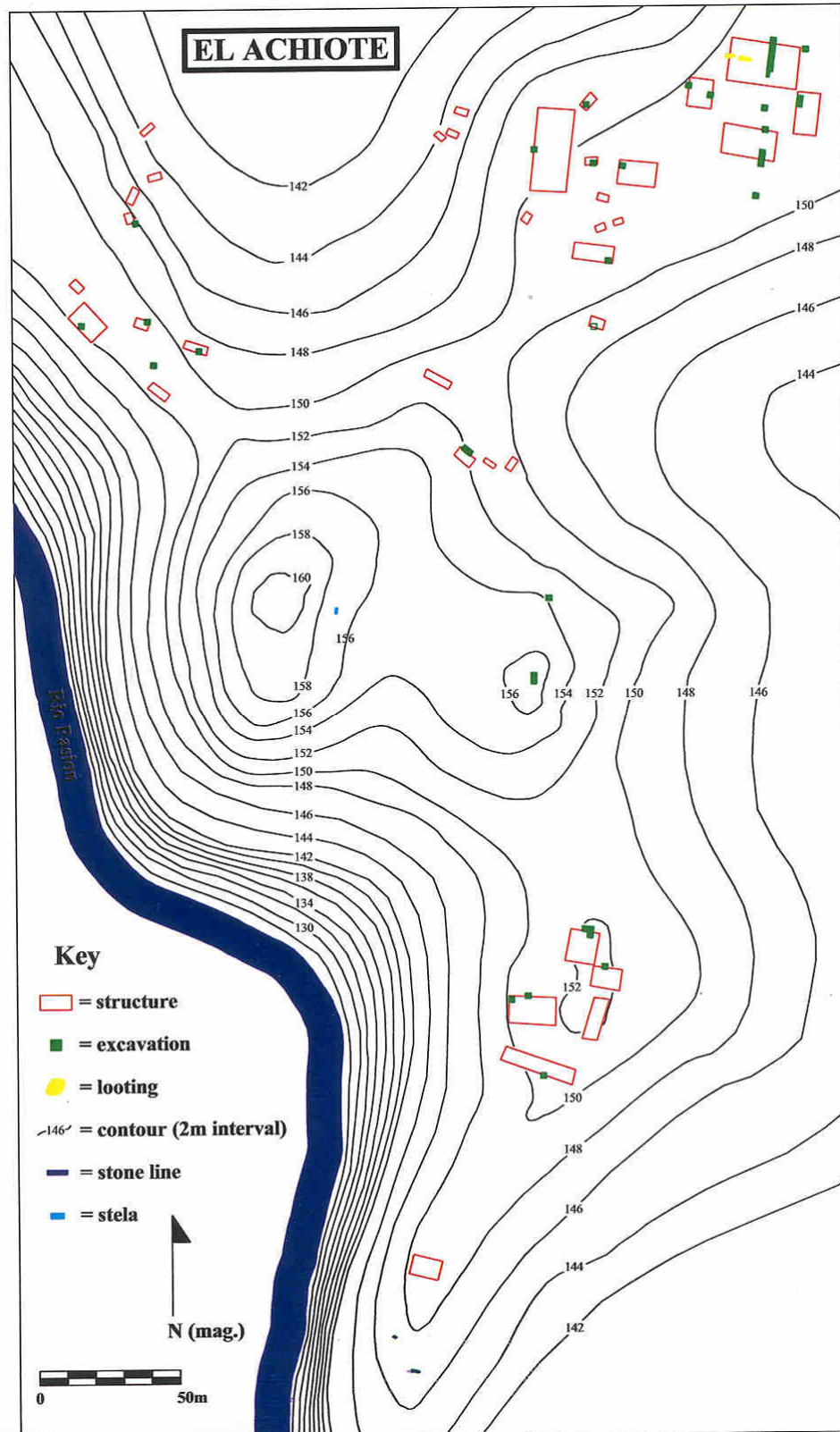


Figure 7.12. Map of El Achiote (map by author).



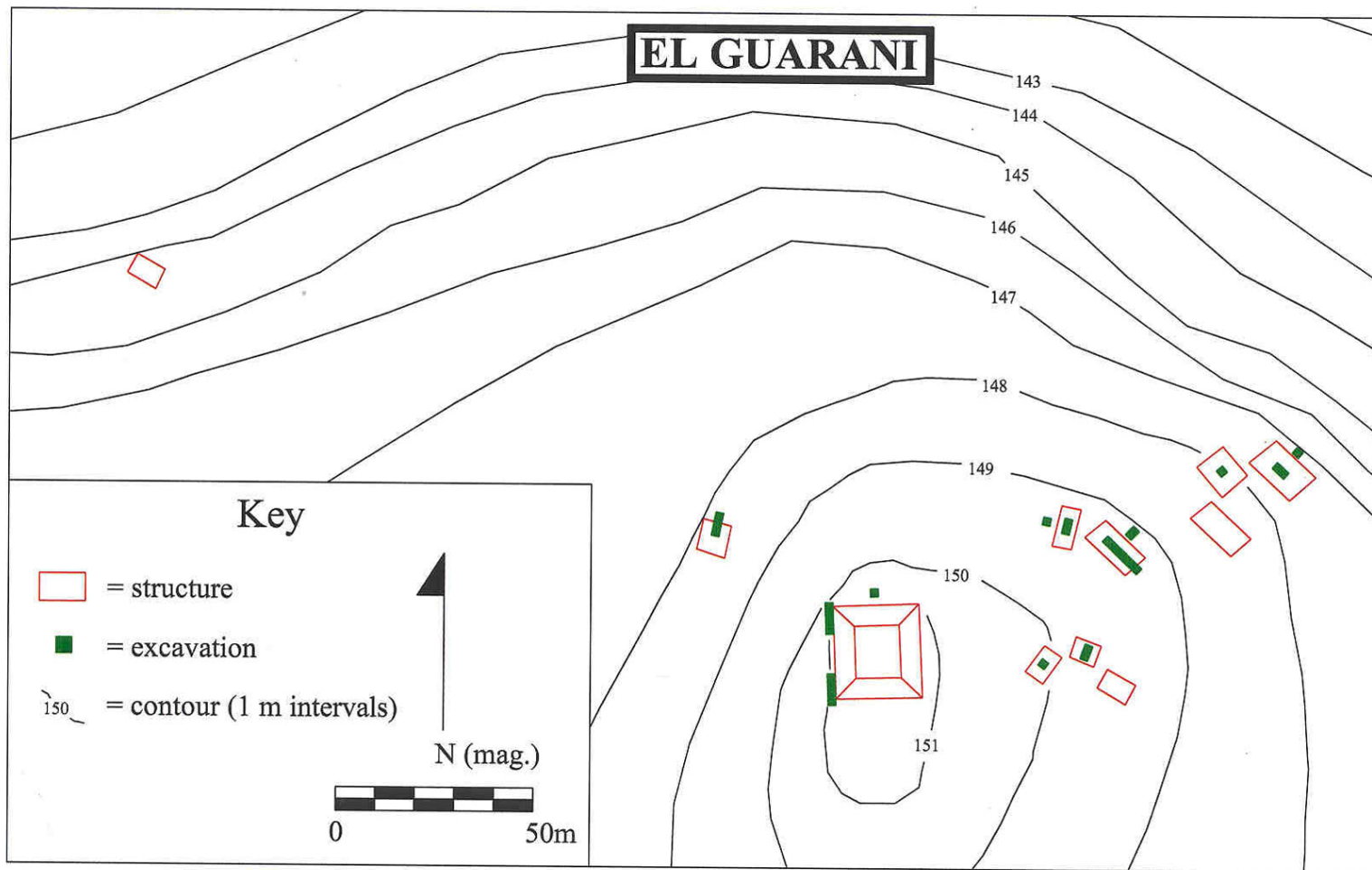


Figure 7.13. Map of El Guarani (map by author).

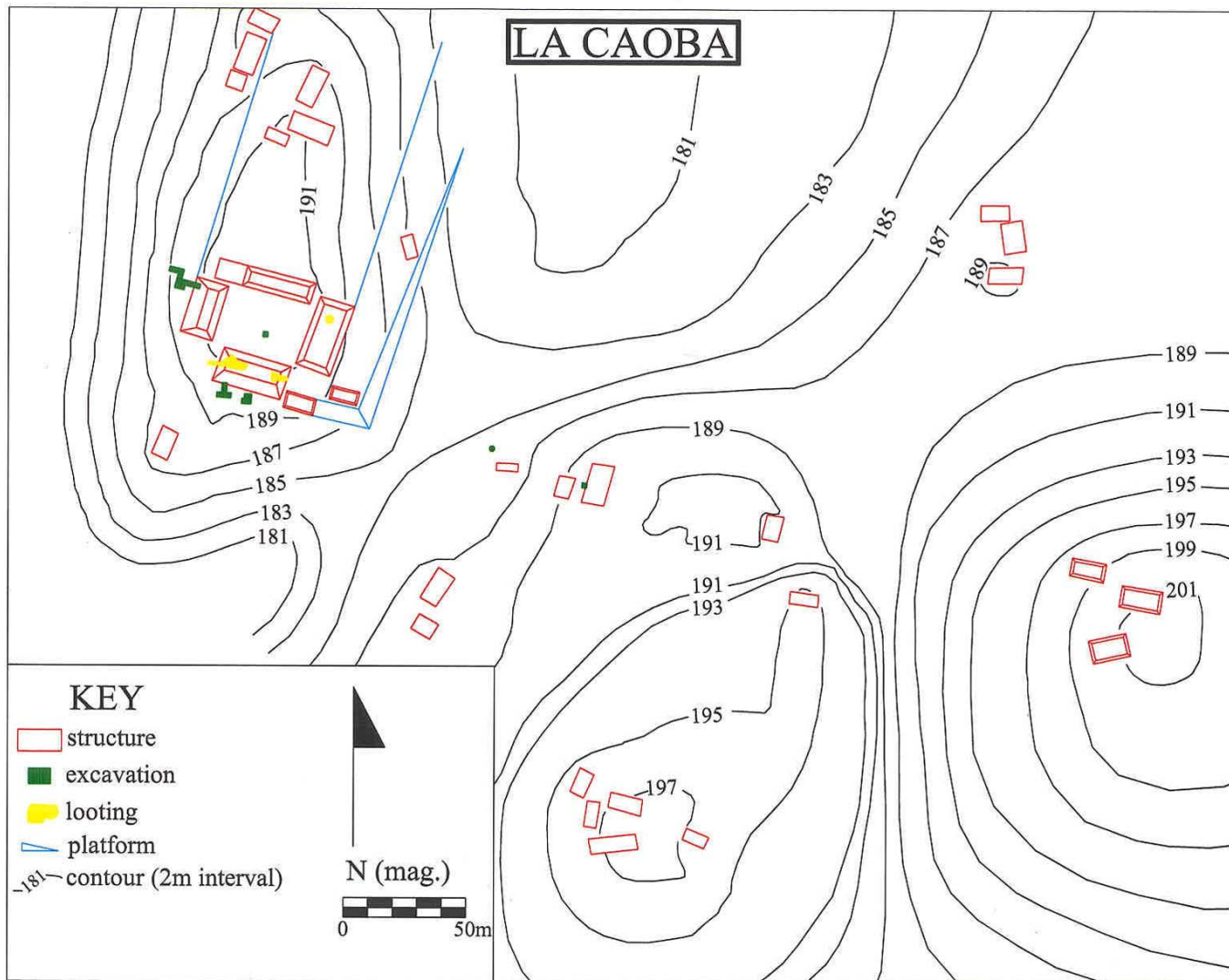


Figure 7.14. Map of La Caoba (map by author).

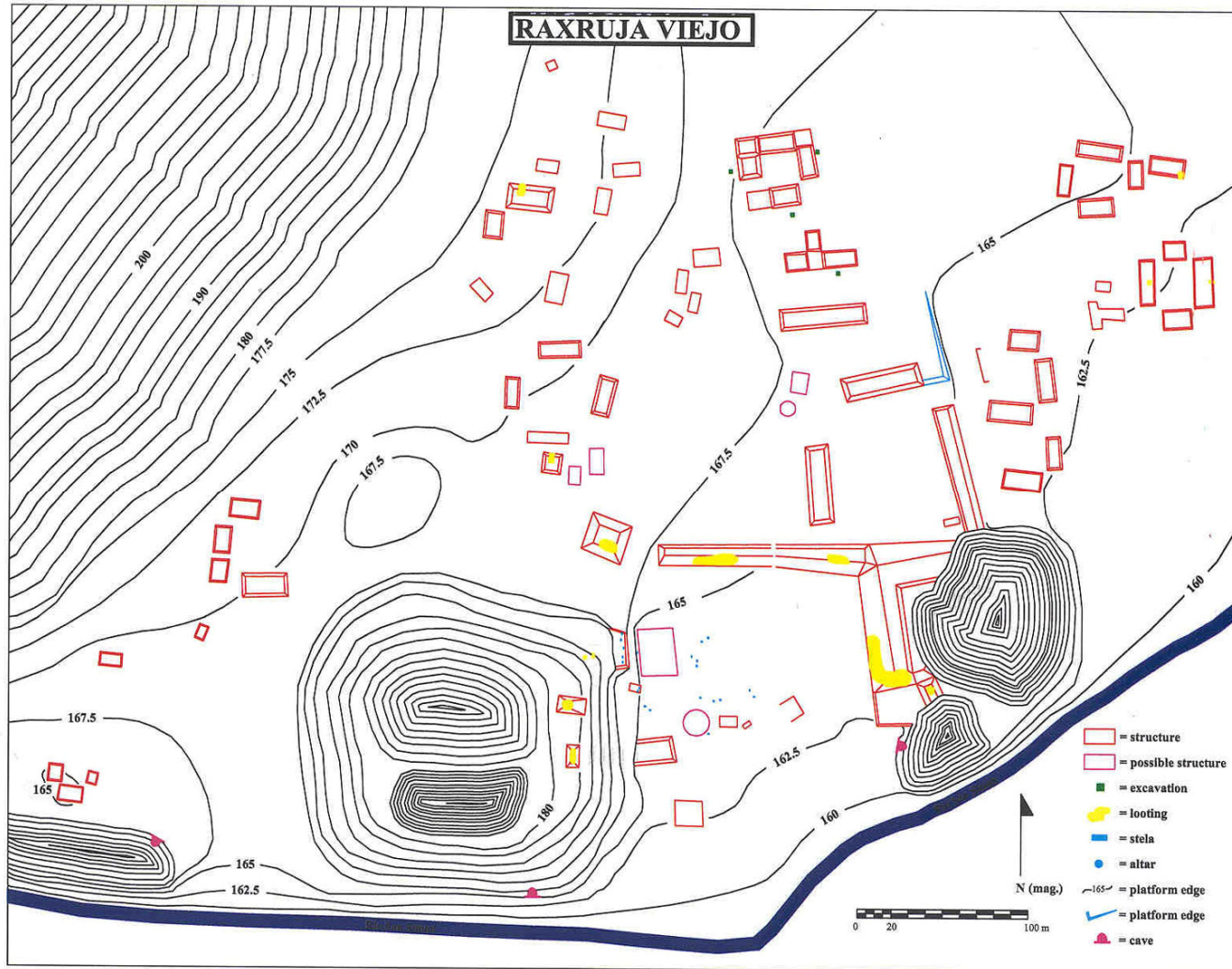


Figure 7.15. Map of Raxruja Viejo (map by author).



Figure 7.16. Mining a structure at Raxruja Viejo for stone (photo by author).

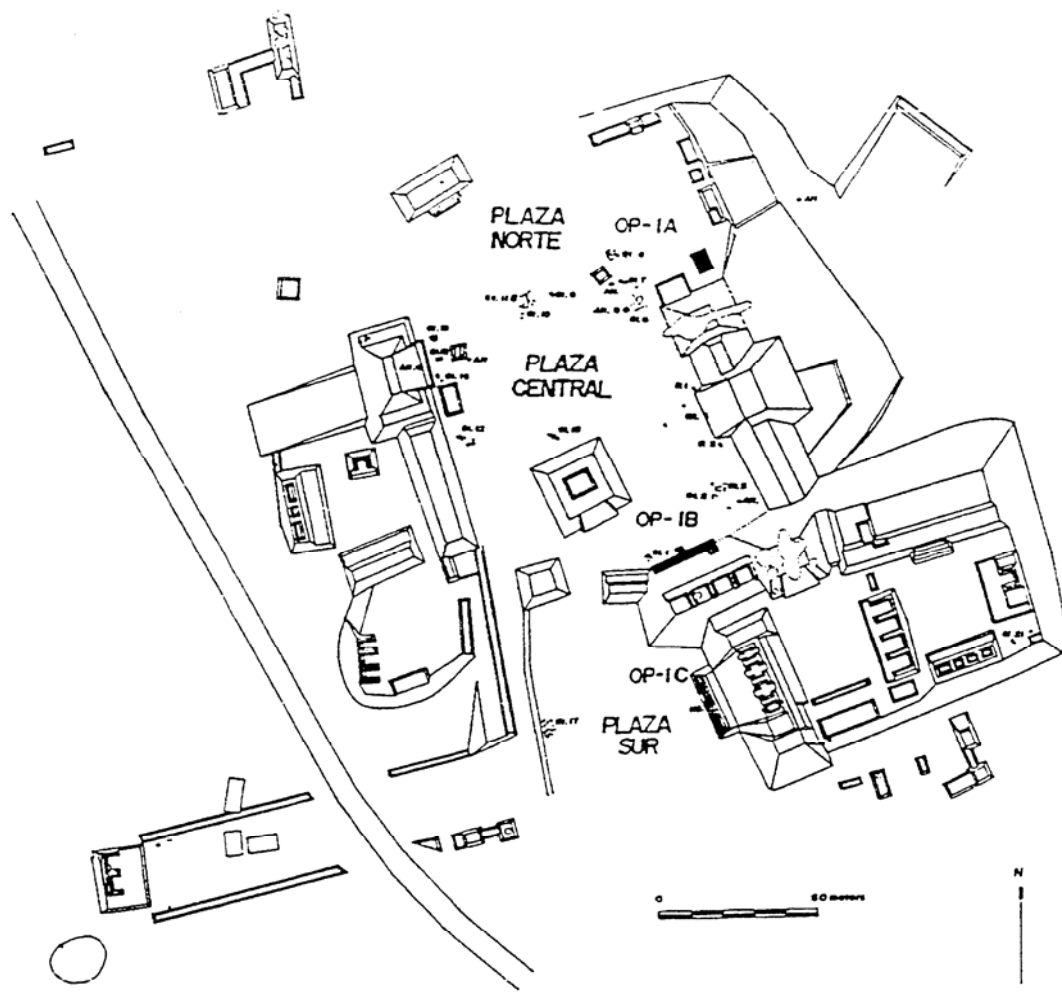


Figure 7.17. Map of Itzan (from Johnston 1994: Fig. 4, p. 587).

## CHAPTER VIII

### THE CLASSIC MAYA COLLAPSE: IMPLICATIONS OF THE PETEXBATUN DATA FOR THEORIES OF THE COLLAPSE

By the mid to late eighth century AD significant changes began to sweep across the Maya world. These changes drastically altered the developmental trajectory of this great civilization. Within approximately 200 years most of the southern lowlands was abandoned. At the same time much of the northern lowlands experienced a cultural florescence. Exactly what took place – and what caused it – has long been debated by researchers. From the time the first European explorers visited the ruins of once great cities in the jungles of the Yucatan Peninsula in the sixteenth century, the collapse of Classic period Maya civilization has intrigued and mystified archaeologists and the public alike. Yet the so-called “Classic Maya collapse” was not a singular, rapid event as once thought. Instead, it was a slow process that reshaped the Maya world in different ways in different regions. In fact, the term “collapse” has fallen out of favor; instead, the years from about AD 750/800 until 1000/1050 are labeled the Terminal Classic period. A recent edited volume on this period succinctly characterized the various changes across the Maya world at this time with the book’s subtitle, “Collapse, Transition, and Transformation” (Demarest, Rice, and Rice, eds., 2004).

## **Defining “Collapse”: The Debate over Terminal Classic Changes in Maya Civilization**

Despite current debates over what, if anything, truly collapsed, events that transpired in the southern lowlands during the Terminal Classic period can accurately be described as a collapse. Over the course of two centuries, overall population of the region was drastically reduced as most of the great cities were nearly completely abandoned. R.E.W. Adams estimates that the population of the southern lowlands was reduced from 3 million to 450,000 at this time (Adams 1973). B.L. Turner calculates a population of just under 3.4 million for the central lowlands in AD 800, a population of 921,000 two hundred years, and just 74,000 in AD 1500 (Turner 1990: 320). Culbert estimates a more conservative loss of one million people (Culbert 1974). The exact number by which population in the southern lowlands was reduced is speculative, since population estimates from the archaeological record are problematic (as discussed in Chapter 2). Whatever the actual population number was, however, it was reduced across the lowlands by approximately 90%, if not more, during the Terminal Classic period.

Not all sites in the southern lowlands experienced such a dramatic loss of population. Still, at sites where the population continued well into the Postclassic period, such as Lamanai in northern Belize, the structure of Maya civilization was drastically altered. While the director of the Lamanai project, David Pendergast, sees continued high populations at the site into the 17<sup>th</sup> century as evidence that there was no collapse there (Pendergast 1986, 1990), the cessation of elite construction activity at the site and an influx of non-elite households in the site's former ceremonial center suggests a significant reorganization of the sociopolitical order.

The key to addressing the issue of Terminal Classic changes, then, is addressing

what exactly is meant by the term “collapse.” In doing so, it is important to differentiate between popular perceptions of collapse and social-scientific discussions and definitions. Several years ago I was having a discussion with a well known Native American archaeologist about the Terminal Classic period when he stated, “We [apparently referring to all Native Americans] don’t like to use the word collapse because people think it means everyone died or went away.” I responded that we can not be held responsible if some do not understand what is meant by a societal collapse.

Joseph Tainter (1988: 38) writes:

*“The process of collapse...is a matter of substantial decline in an established level of complexity. A society that has collapsed is suddenly smaller, less differentiated and heterogeneous, and characterized by fewer specialized parts; it displays less social differentiation; and it is able to exercise less control over the behavior of its members. It is able at the same time to command smaller surpluses, to offer fewer benefits and inducements to membership; and it is less capable of providing subsistence and defensive security for a regional population. It may decompose to some of the constituent building blocks (e.g., states, ethnic groups, villages) out of which it was created.*

Based on these criteria, most, if not all, of the Maya southern lowlands certainly experienced a collapse during the Terminal Classic period. The question, then, is why did that region collapse?

### **Explanatory Theories of the “Classic Maya Collapse”**

Over the last 500 years numerous theories have been offered to explain the collapse of Maya civilization during the Terminal Classic period. A common fault with many theories – particularly early theories – is that the end of Maya civilization is viewed as a rapid event wherein the cities of the southern lowlands were abandoned in a brief



period of time. In fact, the collapse was a protracted event that took different forms in different regions over more than two centuries. As such, simple monocausal theories fail to accurately explain the underlying cause(s) of what was a complex phenomenon. As archaeological research continues across the world of the ancient Maya, data that further sheds light on the Terminal Classic period are accumulated.

Discussions of collapse in general, and the Maya collapse in particular, tend to divide explanatory theories into a number of categories ranging from economic and political factors to ecological and religious factors, among numerous others (e.g. Adams 1973: 23; Sabloff 1973: 36; Tainter 1988: 42; Webster 2002: 217). Such theories may be divided into internal and external categories. Internal theories look at the nature of Maya civilization itself to explain the collapse. These includes themes of political organization, ecological adaptations, population pressure, class struggles and class or intersite warfare, economic structure, ideology, and disease. External theories, or those that look beyond Maya civilization itself in order to explain the collapse, include foreign invasion, economic competition and/or shifting trade routes, and natural disasters.

### **Internal Collapse Theories**

#### *Peasant Revolt*

Among the early popular theories of the collapse was J. Eric Thompson's peasant revolt model. Thompson's theory was heavily influenced by his ideas about the nature of Classic Maya civilization. In Thompson's "traditional model" the Maya were a two-tiered society, divided between a small class of ruling priests who occupied the otherwise

empty ceremonial centers and the peasant farmers who lived in the surrounding countryside and supported the priests. Over time the demands placed upon the peasants for tribute and especially construction of ever larger temples became too much of a burden. Beginning around the year 800, a series of rebellions swept lowland centers as peasant farmers overthrew the priestly elite (Thompson 1931, 1954, 1970).

Thompson's peasant revolt model was quite influential, in part due to the fact that he was such a well-respected scholar and also in eloquent writer. However, there are a number of significant flaws in his theory. Classic Maya civilization was not a simple two-tiered society. By the early 1970s, archaeologists realized that at least three social classes existed (Culbert 1974). More recently, Joel Palka determined that the populace of Dos Pilas in the 7<sup>th</sup> and 8<sup>th</sup> centuries AD could be divided into eight socioeconomic levels (Palka 1995, 1997). Additionally, studies of volumetrics and energetics show that the investment of labor necessary to construct Late Classic monumental architecture was much less than once assumed (Abrams 1994) and therefore not nearly the burden that Thompson and others believed. The most significant flaw in the peasant revolt theory is that it fails to explain the massive depopulation across the lowlands after the seemingly successful revolutions. After the priests were overthrown, not only did the ceremonial centers remain empty in most cases, but the peasant farmers inexplicably abandoned their fields and homes.

Sociologists Robert Hamblin and Brian Pitcher recently attempted to revive the peasant rule theory. Based on their analysis of Classic period artwork and the defacement of sculpture at some sites, they see class warfare as the cause of the Maya collapse (Hamblin and Pitcher 1980). However, their work suffers the same flaws as

Thompson's, particularly the failure to explain depopulation. Furthermore, the types of destruction that they cite as proof of peasant revolt, has convincingly been attributed to termination rituals (Schele and Freidel 1990).

### *Nobles' Revolt*

Researchers at Copán on the southeast edge of the Classic Maya world speculate that rather than a peasant revolt, the nobles at that site rebelled against their king, Yax Pasah (Fash 1988, 1991; Fash and Stuart 1991; Stuart 1993). During the eighth and early ninth centuries A.D. political power at the site became increasingly decentralized. Evidence from architecture and sculpture indicates that Yax Pasah, the 16th ruler of Copán, permitted elite lineages to construct elaborate façades and install carved benches in their residential compounds. Additionally, whereas previous rulers appeared alone on monuments at the site, Yax Pasah often appears with other elites. Fash suggests that Yax Pasah granted these concessions to appease the various elite factions at the site, factions that may have begun to withhold tribute from their ruler (Fash et al. 2003: 261).

Despite Yax Pasah's gestures, several of his lineage's buildings were violently destroyed early in the ninth century. The wooden lintels that supported the roofs of at least two such structures were burned, apparently intentionally. Three other buildings show evidence of fires, although two of these were excavated in the late 1800s by the Peabody Museum of Harvard University and it is unclear if those fires were similarly intentionally set (Fash et al. 2003: 272).

Although the evidence for the nobles' revolt, if that is in fact what occurred, is largely limited to Copán, Fash suggests that similar events may have transpired at many other sites across the Maya world during the Late Classic period (Fash 1991: 175).

However, while the weaknesses of the Classic k'ujul ajaw form of rulership did contribute to a new form of more secular and shared rulership by lineages or councils in the Postclassic period, there is little evidence of nobles' revolts at other sites. The evidence that may exist is now better understood as termination rituals, rather than violent revolt (Schele and Freidel 1990). Finally, even if non-royal elite lineages did revolt against their king at Copán, it does not explain the near total abandonment of the site and the Copán Valley. This abandonment is likely due to the well-documented ecological problems experienced in the valley during the Late Classic period (Fash 1983; Sanders 1989; Webster and Freter 1990). While these problems can be combined with the nobles' revolt to explain the end of Classic civilization at Copán, they are not applicable to the remainder of the Maya world.

#### *Internal/Intersite Warfare*

Much evidence, particularly in the form of artwork, hieroglyphic texts, and fortifications, exists for intersite warfare among the ancient Maya. While there are signs as early as the Middle Preclassic (Brown and Garber 2003), the vast majority of the evidence dates to the Middle to Late Classic, indicating an escalation in frequency and intensity of conflict at that time. Not surprisingly, then, some researchers see warfare as the cause or at least a major contributor to the collapse.

George Cowgill (1979) tied the increase in warfare and the Maya collapse to the fall of the great center of Teotihuacan in Central Mexico, which is now dated to about AD 600-650 (Cowgill 1996). In the 4th century AD a strong Teotihuacan presence appears across the Maya world in the form of iconography, ceramic, and possibly architectural styles. The exact meaning of this 'entrada' is highly debatable (c.f.,

Braswell 2003) but the Teotihuacan presence certainly had an important impact on Early to Middle Classic Maya culture. With the fall of Teotihuacan, Cowgill saw Maya city-states going to war with one another in order to fill the power vacuum left by the withdrawal of their distant overlord (Cowgill 1979). However, Teotihuacan was never the great foreign superpower that dominated the Maya world, as was once believed (c.f., Bernal 1966). While it influenced some aspects of Classic Maya civilization, it was never the single dominating force. Furthermore, the fall of Teotihuacan occurred more than a century before the beginning (and four centuries before the end) of the collapse in the southern Maya lowlands, much too early to reasonably be the ultimate causal factor in the collapse.

Even if we ignore the supposed role of Teotihuacan in the increase in Late Classic Maya warfare and the collapse, internal warfare theories fail to explain the near total abandonment of the southern lowlands. Warfare played an important role in Maya history for many centuries before the collapse. While some sites and regions declined in the aftermath of war, others thrived as population grew and construction activities increased. For example, after Caracol defeated Tikal in AD 562, the former site experienced its greatest apogee while the latter went into decline for more than a century. Similarly, after Tikal defeated Calakmul in AD 695 Calakmul declined while Tikal experienced its greatest period of construction activity (Martin and Grube 2000). Additionally, while warfare would have disrupted trade routes and destroyed some agriculture as fields were burned or crops seized, it would not have resulted in a "scorched earth" across the lowlands necessitating abandonment by nearly all of the farming population. Still, intersite warfare did play a role in the collapse in some regions,

as discussed below.

### *Population/Ecological Overshoot Models*

A number of researchers posit that increasing population sizes in a fragile environment caused the collapse of Classic Maya civilization – or at least the abandonment of the southern lowlands. The roots of such theories lie in early models, such as the “Traditional Model” of J. Eric Thompson (1954) and Sylvanus Morley (1946), that saw the Maya existing almost exclusively on swidden agriculture. Swidden farming is a non-intensive technique that cuts and burns vegetation in order to produce fields. This method initially results in fertile fields as the nutrients trapped in plants and trees are released back into the soil. However, over time the soils become depleted, crop yields are reduced, and the fields must lay fallow while new fields are cultivated. Therefore, large tracts of land are required for swidden agriculture and large populations cannot be supported.

A number of early researchers suggested that the rate of soil depletion increased as population sizes increased, leading to ecological disaster. Such ecologically based models of the collapse were first proposed in the 1930s by C.W. Cooke. Cooke suggested that the swamps at Tikal had once been lakes but the site’s increasing population necessitated the clearing of ever more forest in order to create agricultural fields. This in turn led to increased erosion that silted up the lakes (Cooke 1931). This theme of swidden related erosion was further championed by later archaeologists, including Oliver Ricketson (Ricketson and Ricketson 1937) and Sylvanus Morley (1946).

Although some early research, particularly the Carnegie Institution's project at Uaxactun in the 1920s (Ricketson 1933; Ricketson and Ricketson 1937), indicated that at

least some sites were host to populations too large and dense to exist solely on swidden agriculture, the high regard in which Thompson was held and his eloquent popular writings overshadowed such potentially contrary data. As settlement pattern studies increasingly became part of archaeological research beginning in the 1950s, it became clearly evident that Classic period Maya civilization in the southern lowlands was much too large to have existed exclusively or even largely on a swidden base. Instead, the Maya utilized a variety of agricultural techniques, including terraces, raised fields, and household gardens (cf. Fedick 1996).

Still, as the pace of archaeological and settlement pattern research increased it became increasingly clear that many cities were once home to tens of thousands of inhabitants and that the Classic period population across the southern lowlands numbered in the millions. Even with the many ecological adaptations employed by the Maya, some archaeologists speculated that the fragile subtropical forests of the region could not have sustained such a large population. As population increased beyond carrying capacities from region to region, the Maya eventually depleted the soil, destroying the agricultural potential of much of the lowlands (Culbert 1988).

While evidence exists for severe ecological problems at some Classic period sites, such as Copán (Fash 1991; Webster and Freter 1990), and some cities were home to populations of 50,000 to 100,000 or more, such as Calakmul, Tikal (Culbert et al. 1990), and Caracol (Chase et al. 2002; Chase and Chase, eds. 1994), the data on the Late and Terminal Classic period vary across the Maya world. For example, sites in the Western lowlands, particularly along the Pasión-Usumacinta River system, were among the first sites to be abandoned, yet were home to relatively small populations, and there is little, if

any, data of significant ecological decline at the time, particularly in the Petexbatun region (Dunning et al. 1997; Dunning and Beach n.d.). Furthermore, if a key element in proposed Late Classic ecological problems was overpopulation, those sites that were most densely occupied, such as Calakmul and Tikal, should have been among the first sites abandoned. Yet these centers continued to flourish for a century after other regions had begun to collapse. Finally, population overshoot models cannot explain the sites and regions where large populations continued to thrive for many centuries after the Terminal Classic, such as Lamanai.

#### *Disease and Malnutrition*

Byproducts of environmental degradation and ecological stress often include disease and malnutrition. There is a long history of speculation that one or both of these played a key role in the Classic period collapse. In the first half of the 20th century Herbert Spinden argued that yellow fever may have contributed to the collapse (Spinden 1928: 148) and Earnest Hooten, noting a high incidence of porotic hyperostosis in the small skeletal sample from the Sacred Cenote at Chichen Itza, speculated that “osteoporosis caused the downfall of the Mayan civilization” (Hooten 1940: 275). More recently J. Eric Thompson suggested that both disease and malnutrition may have led to depopulation of many sites and regions in the eighth through tenth centuries (Thompson 1967).

During the 1970 seminar at the School of American Research on the Classic Maya collapse (Culbert 1973) much time was spent considering the impact of and evidence for disease and malnutrition. Dmitri Shimkin wrote, “The importance of infectious diseases and malnutrition as potential factors in the Maya downfall has, in my



opinion, been improperly minimized by archaeologists (Shimkin 1973: 279). Frank Saul concurred: "...I share D.B. Shimkin's opinion...that the importance of disease burden as a potential factor in the Maya downfall has been improperly minimized, partially because data concerning Maya health status as recorded in the skeleton have been few and far between (Saul 1973: 304). Shimkin looked at recent ethnographic data on disease in Central America and drew an analogy between recent populations and the Classic Maya. He concluded that poor nutrition contributed to or exacerbated epidemics of chronic diarrhea, particularly in infants, Chagas' disease, and the *Ascaris* worm and that these led to declining and dispersing populations across the lowlands (Shimkin 1973: 279-283). Saul examined the osteological collection from Altar de Sacrificios and discussed trends in pathologies, including periodontal degeneration, porotic hyperostosis, dental hypoplasia, over time. He concluded that males at the site decreased in stature over time but for most pathologies visible in the burial population there are no clear trends to indicate worsening health in the Late Classic. For example, he writes that evidence of porotic hyperostosis is "found in fairly high and continuing frequencies at Altar..." (Saul 1973: 316).

Evidence suggesting problems with health and/or nutrition in the Late Classic does exist at some sites, such as Copan (Longyear 1952) and Tikal (Haviland 1967) where non-elite male stature decreased over time, but there are no clear trends that suggest this was a pan-Maya problem. In fact, Lori Wright examined or reexamined human skeletal samples from Pasión region sites, including Altar de Sacrificios, Seibal, Aguateca, and Dos Pilas and did not find evidence indicative of increasing malnutrition or disease over time (Wright 1994, 1997).

The lack of evidence of widespread disease or malnutrition during the Late Classic period does not necessarily mean that these were absent. However, analyses are restricted to stresses that leave indications in the skeleton. Any soft tissue evidence decayed long ago. Even skeletal evidence may be lacking since the high humidity and acidic soils of the southern lowlands makes preservation a serious problem. Additionally, burial populations at many sites, and particularly samples that represent all social groups, are often rather small. For example, at Altar de Sacrificios Saul worked with a sample of just 90 skeletons that represented the entire site history. Saul himself acknowledged that his sample was problematic and possibly not representative of the site (Saul 1973: 307). Finally, some researchers cite high population sizes as evidence for ecological stress and subsequent increases in malnutrition and disease (e.g., Adams 1973). However, such arguments are based on population reconstructions that, as discussed in chapter 2, are extremely problematic and inexact.

#### *Ideology and the Maya Calendar*

To the ancient Maya, like a number of indigenous New World cultures, time was seen as cyclical, rather than linear. The past truly did repeat itself. As such, the movement of the heavens was of great importance and the careful tracking of time was a significant source of the power of kings and priests (León-Portilla 1988). In order to keep track of the passage of time in the Maya created a series of calendars, including – but not limited to – a 365 day “vague” solar year, the Haab (or Ja’ab’), a sacred 260 day calendar, the Tzolk’in, and an 819 day calendar that appears to be a permutation of the numbers of the earth (7), the number of levels of the underworld (9), and is a number of levels of the upperworld (13) (Harris and Stearns 1992; Jones 1984). The product of

these three numbers is 819 ( $7 \times 9 \times 13 = 819$ ) (Montgomery 2002). The Haab and the Tzolk'in were combined to form the Calendar Round, a 52 year cycle of time.

In addition to these various calendars the ancient Maya employed the Long Count. The Long Count is similar to linear time systems, such as the Gregorian calendar used today by Western civilization, but is actually a lengthy cycle that resets approximately every 5128 solar years. Within the Long Count the Maya tracked shorter periods of time following their base 20 numeric system. These periods include k'atuns, or 20 years of 365 days, and b'aktuns (approximately 400 solar years) (Harris and Stearns 1992; Jones 1984). The end of any of these periods, in addition to the end of half k'atuns end of the completion of the Calendar Round cycle, were times of great importance. At the end of a k'atun, for example, elaborate rituals were performed across the Maya world, new monuments were erected, and new temples were often dedicated (Coe 1992; Miller and Taube 1993). During the Late Classic period the kings of Tikal dedicated a massive new architectural group, a twin temple complex, at the end of each k'atun for more than a century (Harrison 1999; Jones 1969). It may fairly be said that the Maya were obsessed with time.

Based on the Maya's cyclical view of time and the way in which calendrics was such a focus of Maya life, Dennis Puleston suggested that the end of the one significant calendar cycle led to the Classic period collapse. Puleston argued that the ends of cycles were uncertain times and then at the end of the ninth b'aktun in A.D. 830, the Maya, fearing the end of the world, destroy their possessions and abandoned their great cities (Puleston 1976). Ethnohistoric records indicate that such drastic actions were at least possible and Mesoamerica.

Recently, Pru Rice argued at the end of certain propitious cycles of time did lead to upheaval in the ancient Maya world. During the Postclassic period, the 260 day calendar was linked to a cycle of time known as the Count of the K'atuns or the Short Count. This cycle repeated every 256 years. At the end of each cycle the mantle of "capital" was passed from one city to the next. Rice suggests that the roots of such shifting capitals tied to calendric cycles had its roots in the Classic period, if not earlier. At the end of each 256 year cycle, a different city would be given special status (Rice 2004).

The linking the calendar cycles to potential sociopolitical crisis in upheaval is particularly apparent in the Aztec Empire. For the Aztecs, the end of each day was a time of fear. Huitzilopochtli, the Sun God and God of War, had traversed the sky and was now descending into the Underworld to fight his way back to the east where he would rise again in the morning, allowing the Aztec world to continue as usual. However, if Huitzilopochtli was defeated in the Underworld, the sun would not rise in the world would end. To give him the strength he needed to emerge victorious from his nightly struggle, the Aztec sacrificed tens or even hundreds of thousands of victims, feeding Huitzilopochtli on their hearts and blood (León-Portilla 1963; Taube 1993).

The end of each 52-year cycle was a particularly dangerous time for the Aztecs. As the cycle came to a close people destroyed many personal possessions and all of the fires across the empire were extinguished. When the Pleiades appeared Aztec priests would conduct the New Fire Ceremony, performing a heart sacrifice on a hill overlooking Tenochtitlan and starting a fire in their victim's chest cavity where his heart had resided moments before. Torches were lit from that fire and taken to the Great Temple in

Tenochtitlan to rekindle the fires there. These fires were then used to relight hearths across the Aztec Empire (Elson and Smith 2001; Furst 1992; Taube 1993).

The potential for upheaval at the end of particular units of time was evident recently in our own society as the second millennium came to a close. Some religious sects predicted the second coming while governments and individuals feared the “Y2K” computer glitch would lead to the collapse of computer systems worldwide, resulting in economic and political upheaval. Many fear the end of Western civilization while camping suppliers sold Y2K kits and survivalists prepared for a return to Neolithic times. We will certainly see similar things transpire, although hopefully on a much smaller scale, as the current 5128 year cycle of the Maya Long Count draws to a close on December 21, 2012.

Despite the evidence that societal crises can result from inauspicious dates, the close of b'aktun 9 cannot be blamed for the collapse of the southern Maya lowlands. Were Puleston correct, the cities would have been rapidly and uniformly abandoned as the year A.D. 830 approached. Instead, the collapse was a protracted event that lasted more than two centuries and was manifested differently in different regions. While some cities and regions, such as Dos Pilas, Cancuen, and numerous upper Usumacinta sites, were largely abandoned 20 to 70 years before the end of b'aktun 9, others flourished, particularly in northern Yucatan well into b'aktun 10. The archaeological and epigraphic evidence refute the notion that the approach of the Long Count date 10.0.0.0.0 was responsible for the collapse of Classic period Maya civilization.

*The Stress-Response Model and the Role of Classic Maya Rulers*

Increasingly archaeologists are moving away from relatively simple monocausal theories in order to explain the Classic period collapse, instead focusing on multi-causal models and underlying structural problems within Maya civilization. One focus of a number of such theories is the nature and role of Maya rulership and particularly the ways in which rulers adapted to stresses and changes during the Late Classic.

Robert Sharer (1977) postulated multiple stresses on the Maya cultural system in the Classic period and the responses taken by the elites led to a collapse of the elite class. Sharer focuses on two primary sources of stress, (1) increasing populations leading to the failure of the agricultural system and (2) increasing demands by the elites for labor and goods to reinforce their status. Faced with such stresses, the elites attempted a number of responses, both technological and socio-ideational in order to return the system to a state of equilibrium.

In attempting to mitigate the problem of insufficient food production, the elites intensified agricultural production while expanding subsistence alternatives beyond the customary milpa farming. These adaptations include raised field agriculture, household gardens, the use of root crops and ramon nuts, bajo agriculture, and nucleation of settlement to increase field area (ibid.: 544-545). In addition to these “practical” solutions to the growing crisis, the elites sought supernatural intervention. To appease the gods more and larger temples were constructed and increasingly elaborate rituals were performed (ibid.: 546). Unfortunately, this increase in ritual activity exacerbated the problems by demanding more investment by commoners in elite status-reinforcing activities at the expense of food production. As the situation worsened, foreign invaders

invaded the southwestern Maya area. “Faced with internal chaos and external threat, and an élite patently unable to reduce the crisis, the final solution may have been seized by the non-élite” (ibid.: 547). Rather than a true peasant revolt, however, as proposed by Thompson (1954), Sharer suggests that the elite class collapsed and the commoners then attempted a revitalization movement.

The strength of Sharer’s model lies in his focus on multi-causal stresses on Maya civilization. However, subsequent research has disproved many of the factors cited or demonstrated that the presence and severity of the stresses varied regionally. For example, as discussed below, foreign invasion was a popular theory of the collapse beginning in the late 1960s. This theory was based largely on iconographic, ceramic, architectural, and hieroglyphic evidence produced by the Harvard Seibal project. Yet more recent analyses showed that the evidence for foreign invasion were in fact local innovations. Similarly, while some sites and areas of the Maya world, such as the Copan Valley, did have severe ecological problems during the Late Classic and others, such as Tikal and Calakmul may have had very large populations that pushed carrying capacities to their limits, other zones were much less densely populated and were in good ecological balance during the Late Classic. The Petexbatun in particular was in excellent environmental health with a variety of agricultural adaptations, such as terraces, box gardens, and check dams in use at the time the region collapsed (Dunning et al. 1997; Dunning and Beach n.d.). Finally, intensive was in use in the lowlands as early as the Late Preclassic period (Scarborough 1980, 1983; Turner 1983).

Freidel (1992a) argued that the nature of Classic period rulership prevented the Maya from building large states on par with other Mesoamerican states, such as

Teotihuacan. While new people could and did take the title of ajaw, all ajaws were equivalent in rank. As such, there was no hierarchy of rulership, even between large and small sites. Only when the Classic k'uhul ajaw system of rulership was abandoned in the Terminal Classic and Postclassic periods were large scale conquest states able to be built. At Chichen Itza the Classic form of rulership where the right to rule was based on lineage was replaced by a *mul tepal* system that consisted of a ruling council headed by a leader who had a “charismatic ability to access the supernatural” (ibid.: 116). Other researchers, based on their own research at Piedras Negras (Houston et al. 2003) and Machaquila (Murcosur 2006) have recently suggested that the Classic period collapse similarly was caused by a change in the nature of rulership but that that change was brought about simply because k'uhul ajaws had lost their moral authority.

#### *Economic and Trade Theories*

Various economic-based theories have been proposed to explain the Classic collapse. Some such theories focus on internal factors within Maya civilization while others examine foreign competition.

Prudence Rice (1987) suggests that an increase in commercialization and the subsequent loss of control of material goods by the elite led to the collapse. Rice notes that in the Late Classic, distribution patterns of obsidian and certain pottery types across social classes changed. Obsidian becomes more widely available to non-elites while decreasing in overall frequency. Polychrome pottery remained an elite marker, but Fine Paste wares were more widely available to both the elite and commoners. These factors led Rice to hypothesize that an increase in commercialization undermined elite control in the Late Classic.



Several problems exist for Rice's theory. The most telling is that the evidence she cites is not consistent across the archaeological landscape. The distribution of obsidian and its role as an elite marker, for example, is more a spatial factor than a temporal one. Obsidian is considerably more restricted to elite contexts as one moves away from its most common sources in the Guatemalan Highlands. Similarly, polychrome pottery was not restricted to the elites in the Late Classic (Palka 1995, 1997; Reents 1985) and outside of the Usumacinta production zone Fine Paste wares generally *were* elite goods (Foias 1996; Foias and Bishop 1997). An additional problem for the theory is that there is little agreement as to the degree of elite control of the economy at any time. Therefore, it is difficult to argue that the collapse was related to or a result of economic shifts and the effects of such shifts on the elite class.

Jeremy Sabloff and William Rathje (Sabloff and Rathje 1975; Sabloff 1977) hypothesize that a change of trade routes from across land to water-borne in the Terminal Classic may have led to the breakdown of Classic Maya civilization. The theory is based on the fall of Teotihuacan and the subsequent assumed trade vacuum between the lowland Maya and Mexico. This vacuum was then filled by the Putun of the Tabasco and Campeche gulf coast area. The Putun rose to power at the expense of the Classic Maya elites through their more efficient transport of trade goods.

Numerous problems exist for this theory, beginning with the myriad ethnohistoric difficulties with regard to the Putun – it is not clear exactly who they were or where their homeland was (Kremer 1994). Furthermore, archaeological evidence indicates flaws with the model. While the theory assumes water-borne trade was not important until the Terminal Classic, numerous sites, including the Preclassic center of Cerros (Cliff and

Crane 1989), Punta de Chimino (Demarest et al. 1997), Cancuen (Demarest and Barrientos, eds. 1999, 2000), and Chau Hiix, Belize (Pyburn 2003) have dock facilities dating to earlier times, indicating that coastal and river trade routes were always important. Additionally, the theory fails to explain the pattern of the collapse: why do sites along trade routes, such as the Pasión-Usumacinta River route, collapse before inland sites?

Webb (1973) proposes a theory that is also based on a change in trade routes. He argues that the centers and elites of the resource-poor Maya served no vital, practical needs. Maya civilization rose only through interaction with Central Mexican primary states, such as Teotihuacan and Maya elites maintained their power largely through the redistribution of exotic wares. With the fall of Teotihuacan trade patterns shifted and these new patterns excluded the resource-poor Maya. Lacking the prestige goods that bolstered their claim to power, the elite class collapsed.

Webb's theory fails on several levels. His view of Maya cities as empty cult centers was dealt a serious blow with the early settlement pattern surveys in the 1920s and '30s (Ashmore and Willey 1981). Similarly, it is now known that the Maya achieved large centers with a multi-tiered social hierarchy long before the rise of Teotihuacan (Demarest 1992). Additionally, the lowland Maya were not "resource-poor." They had a wealth of access to a variety of prestige and utilitarian goods including hardwoods, jaguar pelts, feathers, and herbs (Lowe 1985). Finally, Webb's theory, like Sabloff and Rathje's, fails to explain the geographic pattern of the collapse: why did the periphery collapse before the central area?

Economic explanations of the collapse fail to sufficiently explain events of the ninth and tenth centuries A.D. in the Southern Lowlands. While the collapse of any civilization will have dramatic economic effects, it is not clear that economic factors were *causal* in the Maya collapse. It is especially difficult to debate the issue when there is little consensus regarding the role of the elite in economic affairs. Culbert's model, for example, envisions a domineering elite class that has considerable influence even on daily subsistence activities (Culbert 1988). Webb (1973), on the other hand, sees Maya rulers who rely on ideology and control of prestige items as the basis for their power. Until archaeologists can determine more specifically how the Maya economic system worked, they can not easily address changes in that system and the causes and effects of those changes.

## **External Collapse Theories**

### *Foreign Invasion*

The Harvard projects in the 1960s and 1970s at Seibal and Altar de Sacrificios gave rise to one of the popular theories for the Classic Maya collapse, external invasion. Sabloff and Willey (1967: 319) wrote, "*An invasion hypothesis* [for the Classic Maya collapse] *is a better hypothesis than internal processual ones*. Foreign elements in sculpture, new building styles and ceramic forms, and shifts in settlement patterns have been interpreted by the Harvard investigators as evidence for invasion (e.g. Adams 1973; Sabloff 1973; Sabloff and Willey 1967).

The most readily apparent indication of foreign invasion at Seibal is in some of

the stelae at the site. John Graham (1973) divides these stelae into two groups – Non-Classic Facies A and Non-Classic Facies B. The group with facies A elements, which dates from 10.1.0.0.0 to 10.3.0.0.0 (A.D. 859-899), includes stelae 8, 10, 11, 14, 20, and 21. Graham bases his identification of these monuments as non-Classic Maya largely on physiognomy, including lack of cranial deformation, short straight noses, mustaches, and prominent chins. Additionally, figures on the monuments are dressed in Classic Maya fashions but with “significant exceptions and innovations” (ibid.: 211). Graham concludes that the iconography on Facies A stelae most likely was derived from the Northern Lowlands.

Seibal non-Classic Facies B stelae are even more aberrant than are Facies A monuments. Facies B elements are most apparent on stelae 3, 13, and 17 – stelae that either do not possess dates or have non-Classic “Puuc style” dates. These monuments are most easily recognized by the presence of central figures with hair that is at least waist length and by the near total absence of Classic Maya attire and adornment. Additionally, Facies B stelae contain “*a constellation of traits which seem significant in their combination*” (ibid.: 213). These traits include such things as squared cartouche glyphs, large bead necklaces, and the aforementioned non-Classic dates. Graham notes stylistic affinities between Facies B monuments at Seibal and the Mexican Gulf Coast area between western Yucatan and southern Veracruz.

The interpretation of non-Classic Maya stelae at Seibal as evidence for foreign invasion has been criticized by a number of scholars, perhaps most thoroughly by David Stuart (1993). Stuart’s criticisms, especially of Graham’s Facies A, are primarily based on the argument that “non-Classic Maya” does not necessarily mean foreign: “*the*

*ceremonial costume and iconographic detail [of Facies A monuments] are firmly rooted in the greater Classic tradition”* (ibid.: 337). For example, the mustaches and other facial features of Facies A stelae can be found on several earlier monuments at other sites. Stuart admits that the Facies B stelae are more unusual, but points out that differences in dress do not necessarily equate with differences in ethnicity.

Furthermore, Stuart argues against the claim put forth by Mathews and Willey (1991) that the hieroglyphic compound of six phonetic signs – the name of a ruler (*wa-ba-lu-k’a-?-le*) that appears in a number of Bayal phase (A.D. 771-930) inscriptions – indicates a foreign name. Stuart (1993: 337) writes that “*the frequency of phonetic signs in no ways points to the spelling of foreign words. As for the Seibal inscriptions as a whole, there is absolutely no evidence for the presence of non-Maya terminology”*

Overall, while Late and Terminal Classic Seibal sculpture may be considered unusual when compared to contemporaneous monuments at other sites, it is not necessarily evidence for foreign invasion. Graham understood this when he labeled the late stelae as he did (i.e., non-Classic Facies A and B):

*In order to avoid any misunderstanding it should be emphasized explicitly that non-Classic refers not necessarily to non-Maya but simply to features not characteristic of the integrated Classic tradition of the Southern Lowlands* (Graham 1971: 144).

A second key line of evidence cited by invasion proponents at Seibal is the introduction of Fine Paste pottery at the beginning of Late Bayal (A.D. 830-930) times (Sabloff 1970). Fine Pastes are found in heavy concentrations throughout this period at the site and include six types in the Fine Orange Altar (Y) Group, plus types of Balancan (Z), Fine Orange Silho (X), and Fine Grey Tres Naciones (Sabloff and Willey 1967). While the vast majority of Fine Paste pottery was recovered from house mound contexts,

including middens and fill, it was also found in middens within the ceremonial center (Sabloff 1973). The sudden appearance of Fine Paste pottery, in conjunction with its abundance and the range of contexts from which it was recovered, has been offered by some as further evidence for foreign invasion. However, there are some problems with this interpretation.

One difficulty recognized by the Seibal research team was the lack of any purely Bayal phase contexts at the site (Sabloff 1970). There was continuity, rather than disjunction – as might be expected had an invasion occurred – of some major pottery types, especially utilitarian unslipped and monochrome jar and bowl types, from Tepelijote (A.D. 600/650-770) to Bayal times. Sabloff (1973:116) explains this continuity thus:

*Despite the...virtually complete change in decorated...pottery, the local pottery-making industry continued producing pottery, and there was no change in the form or nature of the manufacture of basic pots....*

The notion that Fine Paste ceramics provided evidence for a foreign invasion was dealt a fatal blow by the Maya Fine Paste Project, which for the last three decades has performed Neutron Activation Analysis (NAA) on Fine Orange and Fine Grey pottery from Mesoamerica. This research found that the sources of Maya Fine Paste pottery were *not* outside of the Maya area, but rather were local to or closely associated with the Usumacinta and Pasión drainages (Bishop 1994). So rather than being imported, Fine Paste ceramics were produced from clays along the rivers in these drainages, and probably at a number of centers, including Seibal.

A third line of evidence offered by invasion theorists is based on architecture and is drawn almost exclusively from two structures at Seibal, structure 79 and structure A-3.

Structure 79, located in Group C, is one of the few round buildings in the Southern Lowlands. Carbon dating and pottery place the structure temporally in the Late Bayal phase, making it nearly contemporaneous with the Caracol at Chichen Itza (Sabloff et al. 1982). Structure 79 also has a large jaguar altar associated with it. This altar is supported by Atlantean figure legs, a trait that also occurs at Chichen Itza and that Sabloff and his colleagues describes as “*Maya-Toltec*” (ibid.: 239).

Structure A-3, which is located in the center of the South Plaza of Group A, is a square building with a staircase on each side. This is an uncommon architectural feature in the Southern Lowlands. A stela stands at the foot of each staircase, and a fifth is in the center of the structure. The stucco frieze on A-3 (dated hieroglyphically 10.0.0.0.0 to 10.1.0.0.0 [A.D. 830-849]), like the associated stelae, contains non-Classic Maya elements. Group A as a whole is “less crowded” than typical Classic Maya site layout and is comparable, albeit on a smaller scale, to Chichen Itza (Sabloff et al. 1982: 239). Other non-Classic Maya architectural features at Seibal include an unusual molding type, engaged or split columns, a low-relief figure of a prowling jaguar, and representations of the *patolli* board (Sabloff and Willey 1967; Sabloff et al. 1982). All of these factors were taken by proponents of foreign invasion as supporting evidence for their theory.

Overall, the evidence for invasion of Seibal taken from architecture is weak. While round structures are rare in the Southern Lowlands, structure 79 is not without precedent. Similarly, structure A-3 is not the lone structure with four staircases in the region, the most notable example elsewhere is the Late Preclassic structure 5C-54 in the Mundo Perdido complex at Tikal (Laporte 1995), constructed several centuries before the supposed invaders brought the design to Seibal. Many of the other non-Classic Maya

features similarly appear at other sites. For example, Atlantean figures have been found at Copan (Kubler 1982). The same critiques used in the analysis of non-Classic elements in the sculpture at Seibal also apply to the frieze on structure A-3. Again, the evidence for foreign invasion is less strong than the proponents of that theory state.

As apparent evidence for foreign invasion mounted at Seibal, the Harvard researchers were preparing publications on their earlier Altar de Sacrificios project. It comes as no surprise, then, that the Altar publications cite invasion as a cause of the Classic collapse. As at Seibal, the most significant development – with regard to the collapse – in the pottery assemblage at Altar de Sacrificios is the introduction of Fine Paste wares in the Late/Terminal Classic period, although this apparently occurred several decades later at Altar than at Seibal. Late in Altar's Boca Phase (A.D. 771-909) elaborately decorated Fine Orange and Fine Gray pottery, principally of the Pabellon Molded-carved type, appears (Adams 1971). Additionally, polychrome vessels are less common and the decoration on them is more abstract than in the preceding Pasión Phase (A.D. 613-771). As at Seibal, there are strong continuities in utilitarian wares from the Pasión Phase to the Boca Phase (Willey 1973).

The ensuing Jimba Phase (A.D. 909-950) is marked by total disjunction in ceramic complexes. The Jimba Complex is dominated by two major wares, Fine Orange and Fine Gray. The Fine Orange is of the Altar Fine Orange group, the fine gray the Tres Naciones Fine Gray group. No polychrome exists in the Jimba Complex (Adams 1973).

Interpreting the changes in pottery at Altar as evidence of foreign invasion is problematic. The most telling problem, as at Seibal, is the local production of fine paste wares, as established by the Maya Fine Paste Project. Another difficulty lies in



differentiating between the Boca and Jimba Complexes. There is a lack of clear-cut vertical stratigraphy between the two and they are frequently difficult to differentiate typologically (*ibid.*). Finally, while Smith (1972) argues for a drastic reduction in the importance of polychrome pottery from the Pasion Phase to later times, it is not clear that this is more than a slow change over several centuries, rather than a sudden shift, as might be expected in an invasion. Polychromes make up approximately 15% of the early Pasion Complex, 7% of the late Pasion Complex, and 5% of the Boca sample (Adams 1973). Overall, the changes evident in the Altar pottery may represent little more than gradual evolution in the importance of certain wares and styles, rather than any drastic shifts.

In addition to changes in ceramics, Altar de Sacrificios underwent a number of the changes evident at many sites throughout the Southern Lowlands in the Late and Terminal Classic periods. Major ceremonial construction and renovation ceased by the late Boca phase and no stelae were erected after Pasion times. However, population at the site peaked in the late Boca. Changes were more dramatic in the Jimba phase. No new ceremonial construction on any scale was undertaken and construction that did occur at the site used material from earlier structures. The population decreased and the ceremonial precinct of earlier times became the focus of occupation (Smith 1972).

Among the strongest evidence cited for foreign invasion is the appearance in the Boca phase of figurines that include depictions of warriors in quilted cotton armor with rectangular shields. A few of these depict deities which are usually considered foreign to the Maya area, such as Tlaloc (Willey 1972). However, some of these “foreign”

figurines possess typical Maya headdresses (Adams 1973). As with the sculpture at Seibal, these figurines may represent foreign influence, rather than full-fledged takeover.

Possible evidence for violence at Altar comes from a large test pit in an inner court in Group A. Within this pit, immense amounts of fired adobe from burned wattle and daub architecture was found. The material in the excavation dates the event to the Boca phase and this test pit has been cited as evidence for a possible violent end to this period (ibid.). Several problems exist in this tentative conclusion. First, it is possible that the adobe is part of a termination ritual, rather than some sort of ransacking. Additionally the apparent continuity in pottery from Boca to Jimba times could argue against the kind of disjunction that might be expected in an invasion and takeover. The most serious problem with this “violent end” is sampling size – the evidence comes from just a single test pit.

In sum, the evidence cited in support of a foreign invasion of the southwest lowlands in the Late to Terminal Classic has been systematically called into question by researchers over the last three decades. Most recently, research in the Petexbatun, which collapsed before Seibal and Altar de Sacrificios, demonstrated that the warfare that swept that region was between local Maya centers and found no evidence of a foreign presence (Demarest 1997, 2006). The seemingly odd innovations can be understood within the normal grammar of Maya culture and broad pan-Mesoamerican trends in the ninth century and beyond.

#### *Natural Disaster and Drought*

Natural disasters have had devastating effects throughout history, from the massive eruptions of the Thera Volcano around the year 1600 BC that may have caused

the collapse of Minoan civilization (Wiener and Allen 1998) and the Krakatoa Volcano in 1883 that is estimated to have killed more than 35,000 people (Winchester 2003) to the more recent tsunami triggered by the Sumatra-Andaman earthquake in December 2004 that killed more than 200,000 (Bilham 2005) and Hurricane Katrina that inundated New Orleans. Similar catastrophic events have sometimes been cited as causal factors in the Maya collapse.

Euan MacKie (1985) attributes severely damaged elite and ceremonial structures at Xunantunich to an earthquake. This damage dates to the end of the Benque Viejo IIIb period at the site around AD 900. Yet even if the damage was caused by an earthquake, MacKie fails to put the event into a larger context that could explain the collapse across much of the southern lowlands, nor does he explain why there was no attempt to repair or rebuild the damaged structures. Furthermore, earthquakes are much more common and severe in the highlands, yet that region flourishes after the southern lowlands were largely abandoned. Hurricanes are similarly devastating across much of Central America today and certainly would have impacted the Maya and other Precolumbian groups. However, the greatest impact of hurricanes is felt in coastal zones or highland areas subject to landslides. If hurricanes were a factor in the collapse, such zones would have been affected first and most severely. Yet sites in Belize and other near-coastal areas sustained substantial populations long after the central and western Petén and adjacent zones were abandoned.

Perhaps the most popular current theory is that significant climate change – specifically, a drought – caused the Classic period collapse. The idea that climate affected the historical trajectory of Maya civilization is not new (e.g., Armillas 1964;

Huntington 1913, 1924; Morarity 1967) but it was not until the 1970s that researchers began to accumulate climatological data for the region (e.g., Covich and Stuiver 1974; Dahlin et al. 1980; Deevey et al. 1979). Over the last decade, a number of researchers have retrieved lake cores and other paleoclimatological data that indicate a severe drought occurred in the Maya area between AD 800 and 1000 (e.g., Brenner et al. 2001; Haug et al. 2003; Hodell et al. 1995, 2001; Leyden et al. 1996; Peterson and Haug 2005; Whitmore et al. 1996). Perhaps the strongest proponent of the notion that drought caused the collapse is Richardson Gill (2000: 1) who writes:

*“One by one and by the millions, the people died of starvation and thirst....Their whole world...was in the throes of a burning, searing, brutal drought. Their fields and woods were paper dry and on fire. The smell of smoke was everywhere. There was nothing to eat. Their water reservoirs were depleted, and there was nothing to drink. Some tried to move, but there was no place to go. If they found a respite for a few years from death, it soon caught up to them in their new location.”*

The idea that a severe drought was the single causal factor for the Maya collapse may be appealing in both its simplicity and its correlation to current warnings about our own fate, but there are numerous problems with this theory. While there can be no doubt that a drought did occur, this fact cannot explain the variability in Terminal Classic events across the Maya world and elsewhere in Mesoamerica. Additionally, it is illogical that the dry northern lowlands not only outlasted the wet southern lowlands by several centuries, but flourished and experienced its maximum population size. This is especially troubling for the model since the cores that most clearly indicate drought were extracted from the northern lowlands. The most significant flaw in the drought theory is that is directly contradicted by lake cores from the Petexbatun region. Cores extracted by Dunning and Beach from Lake Petexbatun and Lake Tamarindito show no sign of

drought in the late 8<sup>th</sup> century when the region erupted into warfare and began to be abandoned (Dunning and Beach n.d.; Dunning et al. 1997). Certainly drought impacted Terminal Classic Maya civilization but it exacerbated other problems at the time, rather than being the cause of the collapse.

### **Elite Status Rivalry and the Collapse of Classic Maya Civilization in the Southern Maya Lowlands**

The collapse of any civilization is a complex phenomenon. As such, simple monocausal theories seldom successfully explain the events that transpired. The Maya collapse of the southern lowlands is particularly difficult to explain since external variables had little if any impact. To understand Late and Terminal Classic period changes researchers must then look to internal structural problems. Oddly enough, it is the Maya religious-political system – the very system that resulted in most of the spectacular achievements of Maya civilization – that led to Terminal Classic changes.

#### *The Nature of Classic K'ujul Ajaw Rulership*

At the center of Classic period Maya political organization was the *k'uhul ajaw*, the divine or holy lord. This form of rulership was multiple in its functions and regionally varied. The power of the *k'uhul ajaw* was very heavily ritual and ideological, but was also involved in control over prestige goods and in directing warfare. In general, rulers had a limited role in management of the infrastructure of their states and their power was based on personal performance in ritual and warfare. Polities were not clearly defined entities but rather were dependent on the charisma and influence of their rulers – and in their connections to rulers at neighboring centers (Demarest 1992, 2004b; Freidel 1992b).

The k'uhul ajaws employed a variety of strategies to enhance their personal prestige and to compete with other rulers, whether direct or indirect competitors. These strategies included large scale construction projects, commission of artwork that aggrandized the ruler, and warfare and sacrifice. Even at centers where rulers and elites had more control of local infrastructure, such as Calakmul (Folan et al. 1995), Cancuen (Demarest 2004b: 228-231), Caracol (Chase and Chase 1987), and Edzna (Matheny 1987), the basic k'uhul ajaw form of rulership and its attendant status rivalry is clearly manifested in the archaeological and iconographic record. While the specific form of Classic Maya political organization was variable, the basic tenets of the k'uhul ajaw form of rulership were common across the Maya world.

An additional strategy in elite status rivalry was control and display of exotic and foreign goods that were rare or non-existent in the lowland jungles, such as jade, pyrite, obsidian, quetzal feathers, and jaguar pelts. The source of many of these goods was the southern highlands in what is now Guatemala and adjacent parts of Chiapas, Mexico. From there, goods could flow east through the Motagua River Valley on their way to the Caribbean Sea and a coastal trade route or north to the edge of the Alta Verapaz and the headwaters of the Pasión River. The Pasión flows north, then west before joining the Salinas River to form the Usumacinta, which to the Gulf of Mexico. This route of trade and communication was of critical importance to the entire western and central Maya world. The goods that flowed along this trade artery, including highland obsidian, jade, pyrite, and quetzal feathers, were critical elements to the k'uhul ajaw system and in elite status rivalry, both as part of the regal attire and in reinforcing patronage networks (Demarest 2004b; Freidel et al. 2002). For this reason, the river system was, from at least

the beginning of the Classic period, a target of control by the major powers of the Maya world, as discussed in Chapter 6.

For the underlying causes of the warfare and collapse in the Petexbatun, then, we must look to the political and economic stresses created by the demands of the k'uhul ajaw system itself. These demands were exacerbated in the 7<sup>th</sup> and 8<sup>th</sup> centuries by increasing inter-elite status rivalry, the growing proportion of elites in the population due to elite polygyny, and the consequent increase in inter-elite competition for limited positions of royal power and for status-reinforcing exotic goods (Demarest 2004b: 243-260; Demarest, Rice, and Rice 2004; O'Mansky and Demarest 2007). This cycle led first to inter-center warfare and rapidly devolved into more widespread conflict as the basic infrastructure of the region was disrupted (O'Mansky and Dunning 2004; Demarest 2004a). The siege at Dos Pilas and subsequent endemic warfare in the Petexbatun should not be seen as a unique historical event. Rather, it is a clear example of processes that may have been taking place throughout the west and perhaps other areas of the Maya world at the end of the Classic period.

#### *Terminal Classic Refugees and Enclave Formation*

The most damaging aspect of conflict in both ancient and modern warfare is often the displacement of populations, rather than direct deaths and destruction (e.g., Cohen and Deng 1998; Hakovirta 1986). The impact of events in the Petexbatun surely was felt up and down the Pasión River trade route, which had been disrupted by the endemic warfare of the region, as well as by the probable movement of thousands of refugees (Demarest 2004a).

At Cancuen, a large influx of population occurred in the Terminal Classic period.

More than 200 structures have been identified in the area immediately south of the site's epicenter in a zone of rich agricultural land that previously was unoccupied. Extensive excavations date this occupation to the Terminal Classic and the ceramics recovered demonstrate clear western Petén affiliations (Demarest and Fahsen 2003). The occupants may have been refugees from the Petexbatun region seeking shelter and sustenance from their relatives and allies. Yet it appears that even this distant center at the base of the southern highlands was soon swept up in conflict. At about AD 800, the Cancuen lords began to construct defensive walls around their massive palace and around their vital strategic portage. Shortly afterward, however, the king, the queen, and 40 nobles at the site were massacred and the city was abandoned with its defensive systems left unfinished, with new construction of an even larger palace left half-completed, with a royal tomb chamber left empty, and with bodies left unburied where they fell. Epigraphic evidence suggests that the seat of power was moved inland in the 9<sup>th</sup> century to the site of Machaquila – a move east, away from the wars along the Pasión River (ibid.).

Meanwhile, closer to the Petexbatun, the early 9<sup>th</sup> century florescence at Seibal rises from the wreckage of the Petexbatun kingdom. This florescence occurred under the guidance of an agent from distant Ucanal, apparently with the support of Tikal, Calakmul, Motul de San José, Lakamtun, and possibly Chichen Itza (Tourtellot and Sabloff 2004). These centers may have been attempting to re-open the Pasión/Usumacinta route in order to regain access to the status reinforcing goods that were essential to the k'uhul ajaw system. Furthermore, the Seibal construction program in monumental art and architecture at that time – once attributed to foreign invasion (Sabloff and Willey 1967) – might have been part of the strategy of the site's elites to



politically maintain diverse remnant populations from other western centers. There is evidence for similar enclaves at Punta de Chimino (Demarest et al. 1996; Demarest 2004a) and Altar de Sacrificios (Willey 1973). Such militaristic enclaves at sites along the Pasión and Usumacinta Rivers would have continued to disrupt that important trade route. Thus, in addition to the direct impact of Late Classic warfare, the decline in the western Petén is due in part to the disruption and closure of the Pasión-Usumacinta trade route along which most major centers were portages. Farther north on the Usumacinta, the collapse of other centers in the early 9<sup>th</sup> century, such as Yaxchilan and Piedras Negras, were a consequence of recorded military defeats, just as elsewhere in the Maya world (Martin and Grube 2000).

The depopulation of the Petexbatun and the sites along the Pasión and Usumacinta Rivers and the subsequent migrations of refugee populations may have exacerbated problems in other regions. Elsewhere in the Petén, population shifts and increases in the late 8<sup>th</sup> and 9<sup>th</sup> centuries were sometimes accompanied by political fragmentation (Demarest et al. 2004; Rice and Rice 2004). In northeast Petén and northern Belize the picture is complex. While some sites witnessed great population increases, others declined or were abandoned (e.g., Adams et al. 2004). Still, the general late 8<sup>th</sup> and early 9<sup>th</sup> century picture throughout the Petén and to the north in the Puuc zone appears to reflect population increases, but in an irregular pattern. These population increases exacerbated other problems in the Terminal Classic, such as in the Central Petén, where cities may have been stretched to their subsistence limits even before the arrival of displaced populations. In other words, refugee population movements across the lowlands were accompanied by political disruptions and re-entrenchment.

### *The Reformulation of Maya Civilization*

Perhaps the strongest indicator that the k'uhul ajaw system of rulership led directly to the end of Classic period Maya civilization is the form that Postclassic rulership took. Rather than powerful priest-kings, Postclassic centers were led by ruling councils who were much more secular with a focus on commercial matters (Freidel 1981; Rathje 1975; Sabloff and Rathje 1975; Thompson 1970). Religion was still present, of course, but it was greatly reduced in significance. No longer did massive temples soar over great plazas and multiple stelae dedicated to great kings. Instead, small temples and shrines were present in tightly clustered settlements, such as at Mayapan (Jones 1952; Smith 1962). For Maya civilization to survive beyond the Terminal Classic period, the religious-political system that shaped Classic period civilization had to be reformulated.

## CHAPTER IX

### **SUMMARY AND CONCLUSIONS: THE PETEXBATUN INTERSITE SETTLEMENT PATTERN SUBPROJECT AND THE ANCIENT MAYA**

#### **Key Debates on the Historical Development of Maya Civilization: Insights from the Petexbatun**

The Petexbatun Regional Archaeological Project was conceived as an investigation into warfare and the collapse of Classic period Maya civilization. While these topics were thoroughly studied and the results are perhaps the most important produced by the project, our research offers insights into other periods and key issues in Maya archaeology, such as the origins of Maya civilization, the role of Teotihuacan in the Early Classic Maya world, and the Middle Classic hiatus. The Petexbatun research by no means resolves these issues, but our findings add information from a new region to the growing corpus of data. It is with such new information that we as a discipline are increasingly able to approach questions from a pan-Maya – or at least a regional, rather than local – perspective. Such geographically broad approaches are the only way that fundamental debates about the ancient Maya may be resolved.

#### **The Petexbatun and the Origins of Maya Civilization**

The question of where lowland Maya civilization originally came from long perplexed scholars, explorers, and the public. Some early writers saw the roots of the Maya in such disparate groups as the ancient Egyptians, Romans, or even one of the Lost Tribes of Israel or Atlanteans, among countless others (e.g. Churchward 1932; Donnelly

1949; Waldeck 1838). As researchers began conducting methodical fieldwork they were able to look closer to the Maya area for the answer. Some have proposed Olmec origins (e.g. Clark and Blake 1989; Coe 1968; Covarrubias 1957) while others point to the southern highlands and/or the Pacific Coast of Chiapas, Guatemala, and El Salvador (e.g. Demarest 1989b; Pye et al. 1999).

The reasons offered to explain the rise of Maya civilization are equally varied and include such topics as ecological adaptations and innovations (e.g., Puleston and Puleston 1971; see Flannery et al. 1967 and Sanders and Price 1968 for ecological models based in other parts of Mesoamerica), trade (e.g., Rathje 1971, 1973; Webb 1973) and warfare (e.g. Webster 1977). Some of these ideas have been rejected or revised based in large part on the discovery of the massive, early cities Nakbe and El Mirador (e.g. Dahlin 1984; Demarest et al. 1984; Hansen 1989, 1991, 1992; Matheny 1980, 1986, 1987). For example, models that tied the rise of Maya civilization to interaction with Teotihuacan (e.g. Cheek 1977; Michels 1977; Sanders 1977) have been rejected since that site became a large city several centuries after the rise of Nakbe and El Mirador. Increasingly, researchers have looked to internal factors to explain the rise of Maya civilization, seeing it as an *it situ* development, but at the same time part of similar processes across Mesoamerica. Even early scholars like Morley (1946) and Thompson (1966) strongly advocated in situ development for the Maya, although neither could explain the process.

Data from the Petexbatun project supports in situ development. During the second millennium B.C. the first settlers in the region began clearing patches of forest for their fields. It is not known if this was the first time people lived in the region or if they developed from earlier foraging groups. Sometime between 600 and 300 B.C. the early

Maya began building more substantial perishable structures atop small platforms, as seen in the Transect 3 village Bayak. While this appears to be a case of local cultural evolution, the occupants of the Petexbatun were tied to broader Maya cultural spheres, as seen most clearly in their pottery. The Middle Preclassic Excarvado ceramic complex has close ties to other sites in the Pasión region, including Seibal and Altar de Sacrificios, and with central and north Petén (Foias 1996: 208-209). The initial rise of complexity in the Petexbatun region, then, is a case of in situ development independent of Olmec, highland, or other populations in Mesoamerica.

### **The Petexbatun and the Role of Teotihuacan in the Early Classic Maya World**

The role of Teotihuacan in the Early Classic Maya world remains an issue of significant debate (e.g. Braswell, ed. 2003). Evidence of Teotihuacan connections are seen at numerous sites across the lowlands and highlands, including Becan, El Peru/Waka, Kaminaljuyu, Tikal, and Holmul. While some archaeologists see this as evidence of warfare or at least smaller scale conflict (e.g., Ohi, ed. 1994; Sanders and Price 1968), others suggest that the interaction may have been more benign. For example, the presence of Teotihuacan or Teotihuacan-style imagery and artifacts may be part of a shared, pan-Mesoamerican elite ideology or a way to further separate elites from non-elites (e.g., Demarest and Foias 1993; Stone 1989).

In the Petexbatun there is no evidence of Teotihuacan influence until the Late Classic when elements from Teotihuacan iconography appear on some monuments in the region. By that time Teotihuacan imagery had been incorporated into the corpus of Maya elite iconography and should not be seen as direct contact between Central Mexico and

the Petexbatun. In fact, by the time such imagery appears at Dos Pilas and Aguateca (see Figure 3.11), Teotihuacan already had been largely abandoned (Cowgill 1997; Wolfman 1990). The appearance of Teotihuacan motifs occurs only after an elite faction from Tikal – a city that had more direct interaction with Teotihuacan several centuries earlier (e.g. Bove 1991; Stuart 2000) – arrives in the Petexbatun in the 7th century A.D. Thus the role Teotihuacan played in the Petexbatun in the Early Classic is minimal and indirect. If Teotihuacan were attempting to monopolize trade routes, as some have suggested (e.g. Cheek 1977; Michels 1977; Sanders 1977), certainly the Petexbatun or at least Seibal would have been a target.

### **The Petexbatun and the Middle Classic Hiatus**

Beginning in the middle of the 6<sup>th</sup> century A.D. the great city of Tikal fell silent. Monument erections and large-scale construction projects ceased for more than a century. This event was once seen as a global Maya decline and was labeled “The Hiatus” (Willey 1974a). However, hieroglyphic decipherments and archaeological research have determined that this event occurred only at some sites – specifically, Tikal and some of its allies (e.g. Harrison 1999; Martin and Grube 2000; Moholy-Nagy 2003). As these sites were in decline, Calakmul and its allies, particularly Caracol, thrived.

While this period is now well understood, data from the Petexbatun provides a clearer picture of the steps taken by Tikal to return to prosperity. As discussed in Chapter 6, the founding of Dos Pilas in 632 was an attempt by Tikal to regain control of the Pasión River trade route. This event drastically changed the historical trajectory of the Petexbatun region. What had once been a relatively remote, quiet corner of the Petén

became a crucial player in the Late Classic Maya world, first as a pawn in the war between Tikal and Calakmul, then as a predatory tribute state, and finally as the first region to be almost completely abandoned. In sum, although the Petexbatun project focused on warfare and the collapse, the findings of our research offer insights into all periods and aspects of Maya civilization.

### **Issues with the Research Design**

The Petexbatun Intersite Settlement Pattern subproject employed a methodologically sound research design. Of course hindsight, as they say, is 20-20 and looking back on our work there are some things I would change if we were to do the fieldwork again. Some of the things I would change are due to the more complete understanding we now possess of the zone of research. Other changes or shortcomings are the result of the turnover of personnel, particularly field directors, from year to year. This was especially a problem during the 1994 season.

Overall, the four transects mapped and tested over the course of our research were biased toward certain ecological zones. Transect 4 helped to correct this error but significant portions of the Petexbatun region were never systematically surveyed. In particular, areas far inland (west) from the escarpment edge were not mapped. This is the primary reason we extended Transect 2 in 1996. Still, the total length of this transect is only 2.75 kilometers and, with the dogleg in the transect, it extends only approximately 1.2 kilometers beyond the edge of the escarpment. One possible factor in this potential sampling problem was the intensive focus on excavations in and around Quim Chi Hilan in 1993. This is not meant as a criticism of the archaeologists who worked in that village.

Their research provided important data and insights into the history of the Petexbatun region and gave us the most complete view of settlement of a village outside of the major sites in the region. Perhaps a more fruitful approach to regional settlement, however, would have been to utilize two crews; one to conduct excavations in Quim Chi Hilan while the other continued mapping and testing other transects. This is one reason why so much work needed to be done in 1994 and why the total sample size for the Intersite Settlement Pattern subproject was slightly less than 5% of the region.

Another potential problem that may skew our interpretations is the fact that transects 1 and 2, the only transects that investigated the zone preferred for settlement by the Late Classic population, were quite close to more substantial centers. Transect 1 was 1.5 kilometers from Aguateca while Transect 2 was immediately adjacent to El Excavado, a heavily looted site that includes a number of monuments. Thus the density of settlement discovered in these two transects may be disproportionately high. Had the original 5 transects been surveyed and tested we would be able to say with more certainty if the first two transects are truly representative of Late Classic intersite settlement along the escarpment.

Despite these issues with the research design, I am confident that our sample is representative of the Petexbatun region as a whole. While only 1.37 km<sup>2</sup> in intersite zones were fully surveyed, every season members of the Intersite Settlement Pattern subproject informally investigated other parts of the region, whether as part of intentional explorations or as the byproduct of long hikes between the many field camps in the region. For example, in 1994 members of the intersite settlement team walked from the river camp north of Punta de Chimino to Dos Pilas just over 10 kilometers away.



Additionally, lengthy days in the field afforded the opportunity to talk with our locally hired workforce – the true experts about the region. Their observations from years of farming, hunting, and living there supported our own conclusions. Certainly a larger sample that included mapping of additional areas would strengthen our interpretations. However, as always in archaeology, the primary restrictions we faced were time and money. With more of both of these our sample could have been more complete. Still, I am confident additional research would merely allow us to refine our conclusions and would not significantly alter them.

Some of the sampling issues could have been rectified in 1994 with better initial leadership in the field. While I have long been considered the director of the Intersite Settlement Pattern subproject over its final two seasons, I did not begin the 1994 season in that capacity. Instead, a graduate student from a university in Canada had been hired as field director. The other archaeologists that season, including myself, were brought on board shortly before fieldwork commenced and had little knowledge of the Petexbatun project overall and none of the intersite settlement survey. We only met the general director of the overall project, Arthur Demarest, in person briefly in Sayaxche before departing for the river camp. Unfortunately, the individual hired to be director of subproject was not well prepared for that role. This is the person discussed briefly in Chapter 5 who did not keep field notes. When that individual decided to leave the project early I assumed the role of director of the Intersite Settlement Pattern subproject. It was under my direction then and in 1996 and with considerable input from Arthur Demarest, that the research design was altered in order to provide a better overall sample. The result was the placement of Transect 4 (primarily Demarest's suggestion) and the

extension of Transect 2 (primarily my suggestion).

We began excavations in Transect 3 at the start of the 1994 field season. Seven test pits were excavated in the village of Bayak before we turned to Transect 2. Unfortunately, the other village on Transect 3, Battel, was never tested. Was Battel, like Bayak, occupied during the Preclassic period or was it tied to Late Classic settlement at nearby Tamarindito? Admittedly, the lack of excavations in Battel was not entirely the fault of the subproject director. It was expected that bedrock was rather shallow along the transect, as is common in the Petexbatun, and that excavations would subsequently proceed quickly. However, we found that bedrock was actually several meters below the modern ground surface. The excavation of each test pit, therefore, took considerably longer than we had expected.

Despite the issues discussed here, the Intersite Settlement Pattern subproject overall was a well-designed and well-executed study of a large region. While in retrospect some changes may have been beneficial, based on the time and resources available – and the environmental difficulties of survey in the area – I am quite confident in our interpretations. A larger sample would likely serve only to support our conclusions.

### **Directions for Future Research**

Is this research and the overall Petexbatun Regional Archaeological Project the definitive, final word on the Classic Maya collapse or Terminal Classic changes in Maya civilization? Of course not. Archaeology is never finished. No site is ever completely studied. We test and sample and accumulate evidence. We use that evidence to evaluate

our hypotheses and, if necessary, formulate new ones. The Petexbatun Regional Archaeological Project accumulated vast quantities of data from all segments of the ancient Maya in the area. Will I or other members of the project return to the Petexbatun? Perhaps. After completing his degree Takeshi Inomata conducted research for a number of years at Aguateca. Yet so many sites in the Maya lowlands have never been excavated or only minimally studied. We must ask ourselves, “Would our time and money be more profitably spent refining our knowledge of the Petexbatun our investigating unknown cities, towns, and rural villages?” I lean toward the latter.

Still, there is more work that could be conducted in the Petexbatun, even in areas outside of the major centers. In particular, more research should be done in and around Transect 3 and similar zones in the region so that we may better understand the shift to increasingly complex society in the Preclassic period. While it safely may be assumed that hidden structures do not exist in the thin soils atop the escarpment, such buildings may be present in the deep, fertile soils by the Petexbatun lake and river system. Perhaps the somewhat substantial village Bayak was the Preclassic “capital” and smaller villages lacking platforms were scattered about the region. In this scenario, it would not be surprising that the dominant Early Classic center was Tamarindito, located just over one kilometer directly to the west. The intrusive Late Classic burial in Bayak would then be the burial of a newly deceased ancestor in the ancestral village.

At the other end of the timeline, a survey of the area around Laguna Las Pozas may provide insights into the period after the Petexbatun collapsed. How many people remained in or returned to the region? Why did complex society fail to redevelop? Elsewhere, more specific, small-scale research could be carried out. For example, initial

reconstructions of the Cerro de Miguel fortified hilltop village depicted an improbably wall system around the site. In retrospect, I realized that the village probably was encircled by a more typically laid-out wall and that the inner wall was likely a garden area. The inhabitants would have scraped together the thin soil in and around the village and piled it up within a retaining wall providing a small, fertile agricultural area. Tests on soil samples from within the wall would determine if this was, in fact, a garden. Other potential avenues for future research include those shortcomings in the research design discussed above.

Overall, though, the research presented here, particularly when placed in its full context within the Petexbatun Regional Archaeological Project, can be considered a well-executed study into ancient Maya civilization. Will I return to the Petexbatun one day to continue this research? Perhaps. But in the meantime there are other cities – and vast intersite zones – to be investigated.

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