

EXCAVATIONS OF MIDDLE FORMATIVE PERIOD ROUND STRUCTURES AT THE
TOLOK GROUP, CAHAL PECH, BELIZE

A Thesis Submitted to the Committee on Graduate Studies
in Partial Fulfilment of the Requirements for the
Degree of Master of Arts
in the Faculty of Arts and Sciences

TRENT UNIVERSITY
Peterborough, Ontario, Canada

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Anthropology M.A. Program

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ABSTRACT

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Terry George Powis

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Following abandonment (ca. 350 B.C.), both round structures were covered by construction fill and concealed beneath plaster plaza floors. However, the same (plaza) area continued to be used for ritual purposes with the placement of Late Formative and Late Classic burials and caches.

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CHAPTER 1

INTRODUCTION

The comparative scarcity of circular buildings in Mesoamerica suggests a possible unity in conception and origin for this type of structure, and makes it a fit subject for study.

H.E.D. Pollock (1936:3)

Introductory Comments

Ancient Maya architecture is the focus of this thesis. More specifically, it is concerned with what many Mayanists refer to as a "rare" or "atypical" form of architecture - the round structure. The research presented deals with the architectural practices of the late Middle Formative period (650-350 B.C) Maya of the Upper Belize River Valley, Belize. For over half a century, many archaeologists working in the Belize Valley, and elsewhere in the Central Maya Lowlands, have concentrated on the larger, more complex, and grandiose Classic period architecture (see Ashmore 1989:273; Awe 1992:15-16). Previous research designs were not focused on investigation of the development of the Early and Middle Formative period Maya.

Why has the Formative period of cultural development in ancient Maya civilization been neglected? Hester et al. (1983:13) have remarked that:

an intensive examination of Middle Preclassic culture has rarely been achieved for several reasons. Primary among these is the unfortunate fact that Preclassic remains, in general, tend to be buried and obscured by later Classic Period

construction at most sites, and therefore these deposits cannot be easily located. For the same reasons, Middle Preclassic deposits are often deeply buried, and sampling is a logistically difficult and very expensive task, limiting sampling size.

Fortuitously, stratified Middle Formative occupation phases at Cahal Pech have been found relatively close to the present-day ground surface. Since 1990, a particular research objective employed at Cahal Pech, and at its peripheral settlement clusters such as the Tolok Group, has been to concentrate on these accessible Formative period deposits and architecture (Awe 1992:45-46; Awe 1993; Awe and Campbell 1992:2-3; Cheetham 1992, 1995; Cheetham et al. 1993:152-153; Healy and Awe 1995a; Powis 1994:122-124; Powis and Hohmann 1994, 1995). The research orientation employed at Cahal Pech is part of a growing trend in Maya archaeology to study the early cultural development or "genesis" of ancient Maya civilization. Within the past two decades, for example, several sites in Northern Belize (i.e. Cerros, Colha, and Cuello), in Peten, Guatemala (i.e. El Mirador and Nakbe), and in the Northern Lowlands (i.e. Komchen, Dzibilchaltun, and Becan), have been the focus of intensive archaeological investigations into the Formative period occupation by the earliest Maya (Figure 1).

In 1936, Pollock published a synthesis of known round architecture in Middle America. At the time most of the structures he analyzed and classified were dated to the

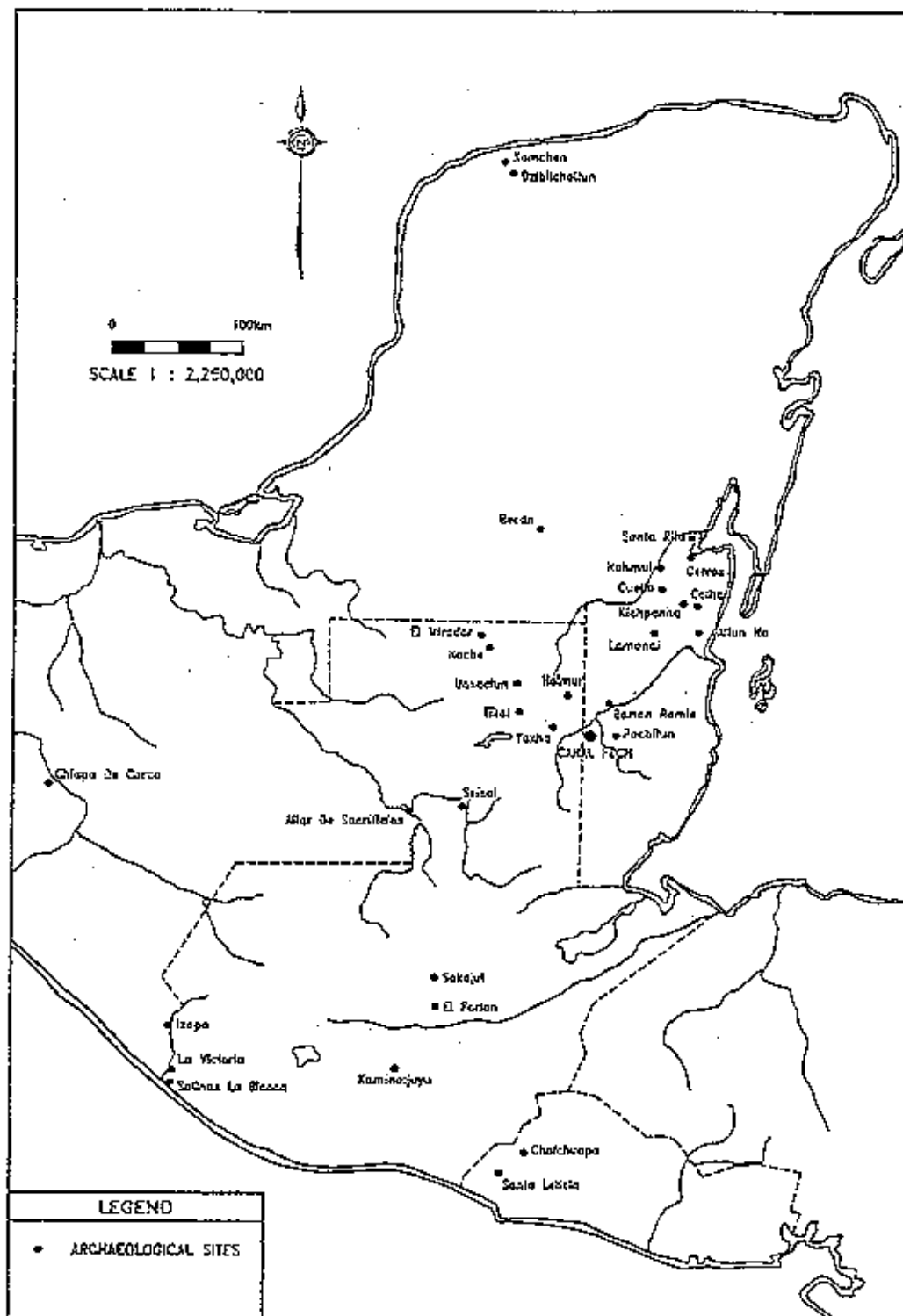


Figure 1: Map of the Maya area indicating Formative period sites (after Awe 1992:Fig.1)

Terminal Classic and Postclassic periods. His data indicated that no Formative period round structures were then known from the Maya subarea. Pollock (1936:160) attributed the development of circular platforms to a Mexican influence, associated with Quetzalcoatl, god of wind and air (known as Kukulcan in the Maya area). Since Pollock's (1936) seminal study, the dearth of archaeological information on Formative period round structures has seemingly fostered the notion by Mayanists, and Mesoamericanists alike, that these structures were "rare" forms of architecture (Awe et al. 1992:124; Chase and Chase 1982:605; Powis 1993a:112; Sidrys and Andresen 1978:648-649). It is, therefore, not surprising that round structures have been considered anomalous forms of Maya architecture compared to the overwhelming majority of excavated rectangular-shaped, and to some degree apsidal-shaped, structures found throughout the Maya realm. In fact, according to Awe et al. (1992:124):

it is a testimony to the rarity of round structures in Mesoamerica that the seminal work on their distribution and significance was published over a half century ago.

Since 1991, however, a total of four late Middle Formative period (late Kanluk phase - 650-350 B.C.) round structures have been excavated in the site core, and in the periphery, of Cahal Pech. This archaeological information suggests that round architecture, at least in the Upper

Belize Valley, may be more common than previously thought. It is important, then, to echo the words of Sidrys and Andresen (1978:649), who wrote "it is possible that many round structures in the Maya area have simply gone undetected, and were used through time". The archaeological evidence of four morphologically different round structures at Cahal Pech, dating to the same time period, has provided a unique opportunity to study Middle Formative architectural practices, settlement, and the level of social complexity associated with these circular platforms.

It should be stressed that the late Middle Formative period in Maya prehistory is still relatively unknown (see Awe 1992:13; Hammond 1992; Sharer 1992:131). Hammond (1986:403) has aptly stated that:

the latter half of the Middle Preclassic, is however still obscure, although from what we know now of the Early (Middle) and Late Preclassic it was in these centuries that the cultural development of the Maya began to accelerate...what happened in the late Middle Preclassic, and why, is one of the most crucial research topics in Maya archaeology today: here lies the key to the genesis of Maya civilization.

The archaeological investigations conducted at the Tolok Group have produced evidence of substantial late Middle Formative activity, particularly within the southern patio group at the site. The two sub-plaza circular platforms (Structures 14 and 15) were discovered in this locale, and have provided intriguing settlement data regarding both the temporal and the spatial relationships

with the other structures located in the patio group. These intra-site relationships form the basis of this thesis. However, in the interest of completeness, a thorough examination of the broader archaeological context (i.e. inter-site and inter-regional relationships) of these round structures will be considered with analogous architectural forms found throughout the Central Maya Lowlands.

In the next five chapters of this thesis, a particular emphasis is placed on the archaeological investigations of both Middle Formative period round structures excavated in the southern patio group at Tolok. Specifically, in Chapters 2 and 3, the excavation results and the contextual analysis of the cultural remains (i.e. artifactual assemblages, burials, and caches) recovered from Structures 14 and 15 at Tolok are provided. Chapter 4 reports the distribution and general architectural description of known round architecture from the Maya area. The second part of Chapter 4 presents a two-tiered classificatory scheme of Maya round structures based on principal architectural attributes. Finally, in Chapter 5, a broad theoretical discussion concerning the advantages and/or disadvantages of constructing round vs. rectangular structures is presented. The second section of Chapter 5 examines various theories regarding the function of Maya round structures. In the third section, an attempt is made to determine the function or role of Structures 14 and 15 at the Tolok Group.

By way of introduction to this study, it would be helpful to describe some aspects of the Upper Belize Valley area, including its biogeographical and climatic setting. The following section also provides a general framework for the prehistoric cultural development of the Belize Valley through a historical review of previous archaeological research undertaken in the area; this information will provide an overview for, and background to, the recent investigations conducted by the Belize Valley Archaeological Reconnaissance Project (BVAR) and the Trent University-Belize Valley Preclassic Maya Project at Cahal Pech.

The Cultural Setting of Cahal Pech

Site Location

The medium-sized Maya site of Cahal Pech is located on the southern outskirts of San Ignacio Town, capital of the Cayo District, in the Upper Belize River Valley region of western Belize (Figures 2 and 3). The site core is situated on an imposing acropolis which overlooks the confluence of two major tributaries (the Macal and Mopan Rivers) of the Belize River (Awe and Campbell 1988:1).

According to Awe (1992:47):

the central acropolis is approximately 270 metres above sea level and provides a commanding view of the Maya Mountains to the south, and the interfluvial bottomlands between the Macal and Mopan Rivers to the north.

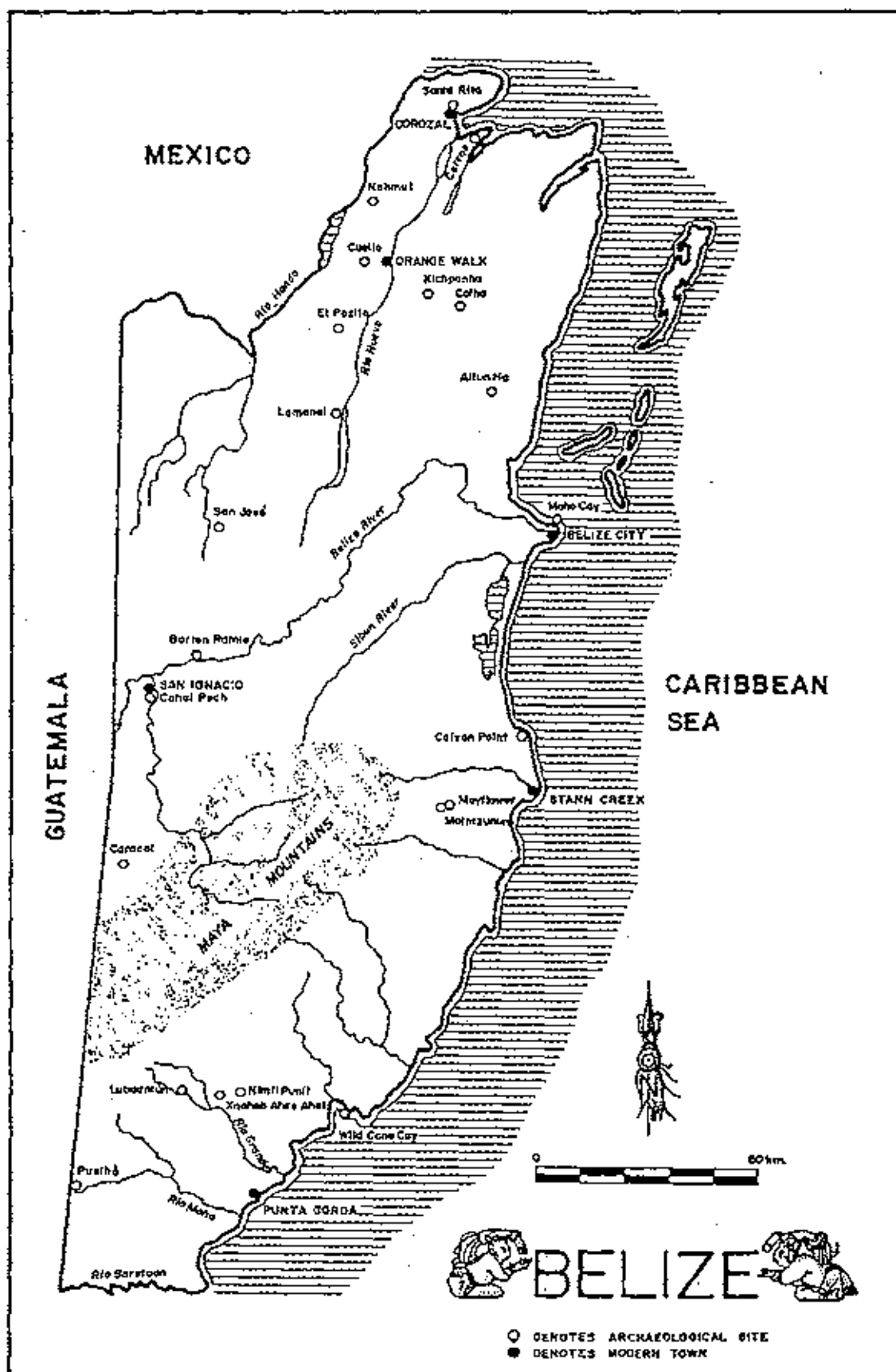


Figure 2: Map of the country of Belize

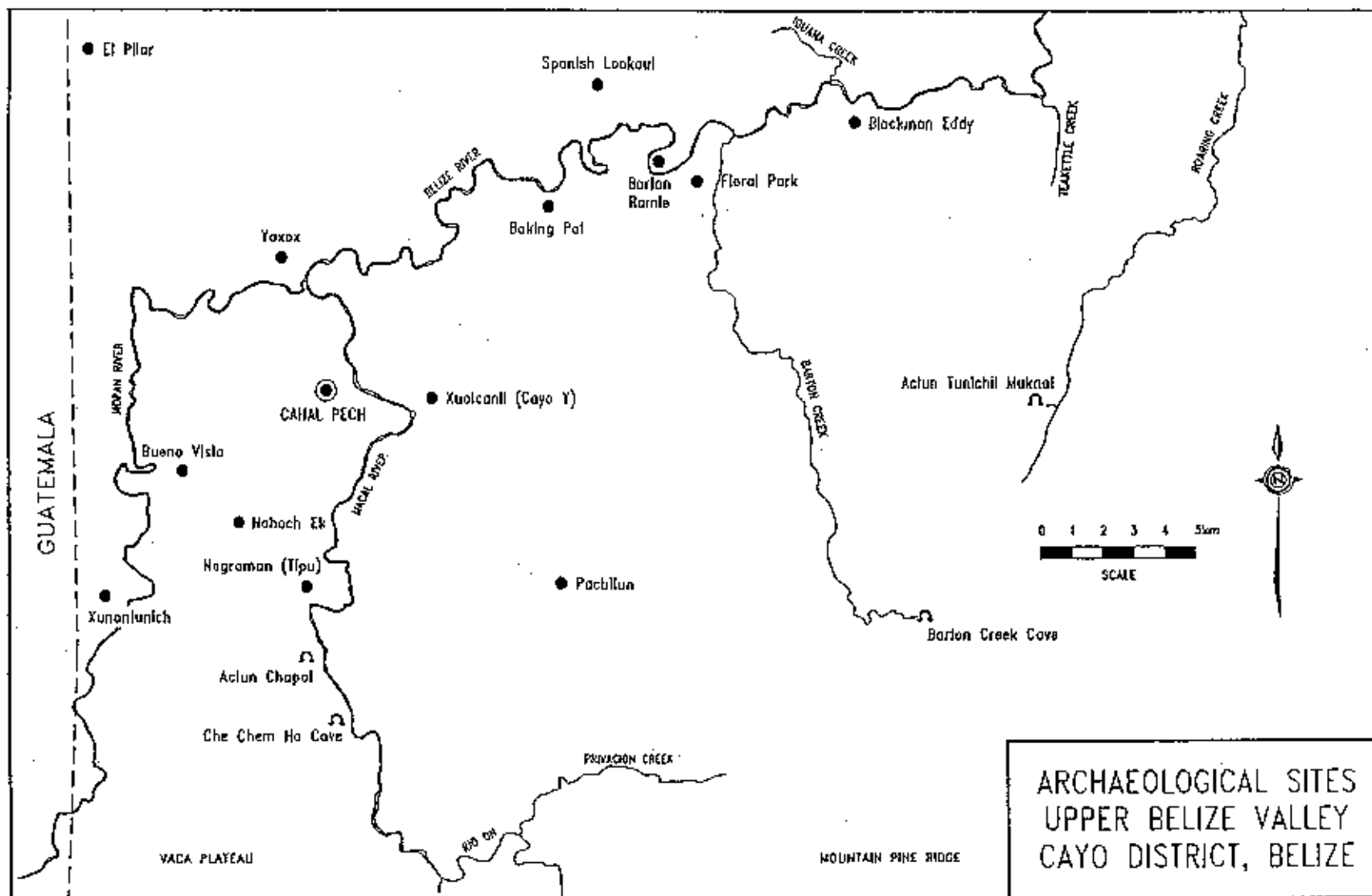


Figure 3: Map of archaeological sites located in the Upper Belize River Valley, Belize (after Awe 1992:Fig.4)

The Cultural Setting

Willey et al. (1965:573) once described ancient Maya settlement patterns in the Upper Belize River Valley as "one of continuous occupation". More recently, a number of archaeological projects working in the valley have expanded knowledge of ancient Maya occupation by conducting more extensive regional settlement surveys and excavations, at a number of Maya centres, both in the valley alluvium and in the uplands (see Ashmore et al. 1993; Awe and Campbell 1990; Ball and Taschek 1986, 1991; Conlon et al. 1994; Conlon and Powis 1995; Ford 1985, 1990; Ford and Fedick 1992; Garber et al. 1993; Healy 1988, 1990, 1992; Leventhal et al. 1992). In addition to a relatively high settlement density within the valley, there are several large, medium-sized, and small centres with continuous settlement clusters interspersed between them (cf. Awe 1992:53).

Cahal Pech is in an advantageous position being centrally located within the valley, near the confluence of the Macal and Mopan Rivers. The distribution of prehistoric settlement surrounding Cahal Pech is both dense and diverse with a number of large and medium-sized centres within 6 to 12 kilometres of the site core, including: El Pilar, Buenavista, Xunantunich, Pacbitun, Baking Pot, and Blackman Eddy (Figure 3). Interspersed between these centres are a number of smaller or "minor" centres, which include: Yaxox, Bacab Na, Nohoch Ek, Actuncan, Negroman (Tipu), Cayo Y,

Bedran, Floral Park, Cocos Bank, Barton Ramie, Warrie Head, Manbatty, Ontario, and Camelote. The majority of these sites have been either intensively tested or excavated by various projects working in the valley. The information gleaned from these archaeological investigations indicates that many, if not all, of these sites had a long history of occupation, dating back to the Formative period.

Since the 1920's, the Belize Valley has been subjected to both sporadic and intensive archaeological investigations of the full range of Maya sites (large, medium, and small centres), including isolated housemounds. Some of the earliest reconnaissance, testing, and excavation of ancient Maya sites in the valley occurred between the 1920's and the early 1960's. Much of this early work was conducted both to the east and to the west of Cahal Pech at such large centres as Baking Pot (Ricketson 1931; Willey et al. 1965; Bullard and Bullard 1965) and Xunantunich (Thompson 1940; Mackie 1985:1-199). During this time period, other investigations were ongoing in the valley at smaller centres, such as at Nohoch Ek (Coe and Coe 1956) and at the Melhado Group (Willey and Bullard 1956). The most intensive archaeological investigations occurred during the mid-1950's when Willey et al. (1965) conducted an extensive survey and excavation of sites along the Upper Belize Valley strip, including: Barton Ramie, Floral Park, Warrie Head, Cocos Bank, and Cayo Y (also see Willey and Bullard 1965). Willey et al. (1965)

also did some work at Baking Pot, Cahal Pech, and Xunantunich, but mainly concentrated on the "outwardly typical" housemounds of Barton Ramie.

Willey et al. (1965) changed the research orientation in the valley from the excavation of large ceremonial centres to a focus on regional settlement distribution across the valley bottomlands. During the 1980's, various continuing projects began to re-examine the prehistoric regional development of the Belize Valley. This attempt to achieve some meaningful regional reconstruction by ascertaining the diachronic development of a number of sites also involved the further study of large centres.

To the south of Cahal Pech, the large and medium-sized sites of Pacbitun (Healy 1988, 1990, 1992), Xunantunich (Leventhal et al. 1992, Leventhal et al. 1993), Actuncan (McGovern 1992, 1993), and Buenavista (Ball and Taschek 1986, 1991) are currently being studied to determine their roles in the evolving social, political, and economic landscape in the valley. This has important implications for the site of El Pilar, possibly the largest centre in the valley (actually located in the northern uplands) and presently being tested by the BRASS/El Pilar Project (Ford and Wernecke 1994; Wernecke 1993). To the east and northeast of Cahal Pech, the medium-sized site of Blackman Eddy is being investigated by the Belize Valley Archaeology Project (Garber et al. 1993; and Garber et al. 1994). They have

received a large permit area to further define the prehistoric cultural development in the eastern zone of the Belize Valley (see Figure 3).

History of Archaeological Research at Cahal Pech

Cahal Pech was almost certainly known to chicleros and loggers during the early part of this century, yet it is surprising that the earliest published reference to this site was made by Thompson (1939:278-282) only in the 1930's. However, it was not until the early 1950's that Linton Satterthwaite (1951:22), from the University Museum of the University of Pennsylvania, carried out some exploratory digging at Cahal Pech. He published his brief report and indicated that he conducted some preliminary mapping and excavations in Plazas B and C in the site core (Awe 1992:56). In the mid-1950's, Willey et al. (1965:309) visited the site of Cahal Pech as part of a full-coverage survey of the valley in order to state that "the settlement pattern represented by the sites which we investigated is typical of the Belize River Valley." Their short description of the site is as follows:

The ruins of the ceremonial center known as Cahal Pech occupy a commanding position on a hilltop about one kilometer south of the town of El Cayo. In terms of relative size Cahal Pech is roughly comparable to the Baking Pot ceremonial center (Willey et al. 1965:313).

During the 1960's, A.H. Anderson, and later Peter Schmidt, both Commissioners of Archaeology, conducted some small-scale salvage operations in the site core. In fact, Anderson made some recommendations for protection of this site to the government. According to Awe (1992:58), Anderson wanted the site to:

be left unaffected by private lands, and that the center and its immediate periphery be developed as a National Park. Due to financial constraints Anderson's recommendations were, unfortunately, never implemented.

Over the next twenty years, no archaeological investigations occurred at Cahal Pech. It was during this time period that the site core was the target of extensive looting. By the mid-1980's, the looting had slowed down as Ball and Taschek (1986) conducted some preliminary mapping and reconnaissance at the site. However, as a result of the decades of destruction by looters, and by the expansion of San Ignacio Town, the Belize Tourism Industry Association (B.T.I.A.) approached Jaime Awe, affiliated with Trent University, to organize the first major archaeological investigation at Cahal Pech (cf. Awe 1992:59).

Research Orientation

In 1988, the initial goals were to develop Cahal Pech for the Belize Tourism Industry Association. More specifically, the developmental objectives were:

to halt further destruction of the center, to produce a map of the site demarcating an area to be established as a national park, to develop the site for tourism, and to obtain the data for publishing a preliminary guide book which could be sold to tourists and help to increase local cultural awareness (Awe 1992:43).

In addition to the site being developed for tourism purposes, there were some long-term research goals which could be implemented without neglecting the developmental objectives. The primary research goal at the site was to conduct intensive excavations in the central precinct to determine the site's diachronic development (also see Awe 1992; Awe and Campbell 1992:1-8). This data could then be added to the information obtained by other projects working in the area as part of a prehistoric regional reconstruction of the Belize Valley (see Awe 1992:44). Through investigations in the site core during the 1988 field season, it was discovered that Cahal Pech had extensive Formative period occupation. In subsequent years (1990-1994), the main objective at Cahal Pech, and at its immediate peripheral settlement clusters, was to focus on this Formative period development in order to:

determine the temporal limits of Formative occupation, and to ascertain the socio-political morphology and complexity of Cahal Pech during the Preclassic period (Awe 1992:45).

The cultural information recovered from Cahal Pech indicated that the site was occupied as early as 1200 B.C. (Healy and Awe 1995b). The archaeological information

provided a dataset not found anywhere else in the Upper Belize River Valley. These data, obtained largely from Structure B-4 in the site core, led to a number of interesting questions regarding the early culture history of the region. Furthermore, the data recovered from the earliest levels of Structure B-4 demonstrated evidence that the valley had a very long history of cultural development. This history could be compared, on an inter-regional level, with the earliest stratified Formative occupation phases of sites located elsewhere in the Maya lowlands, such as in the Northern lowlands, northern Belize, the Peten, and in the Pasion River region.

Site Description

The paucity of archaeological information recovered over the past fifty years or so at Cahal Pech required the Trent University-Cahal Pech Project to conduct a more accurate topographic survey of the site core (cf. Awe and Campbell 1988:6; also see Awe et al. 1990:1-9; Awe and Brisbin 1993:1; Brisbin 1995). This intensive mapping project resulted in a detailed plan of the central precinct, which consisted of 34 structures arranged around seven plazas (both restricted and semi-restricted). All of these structures were located on an acropolis slightly larger than one hectare in size (Figures 4 and 5) (see Awe and Campbell 1988: Figures 4 and 5). The largest plaza at the site is

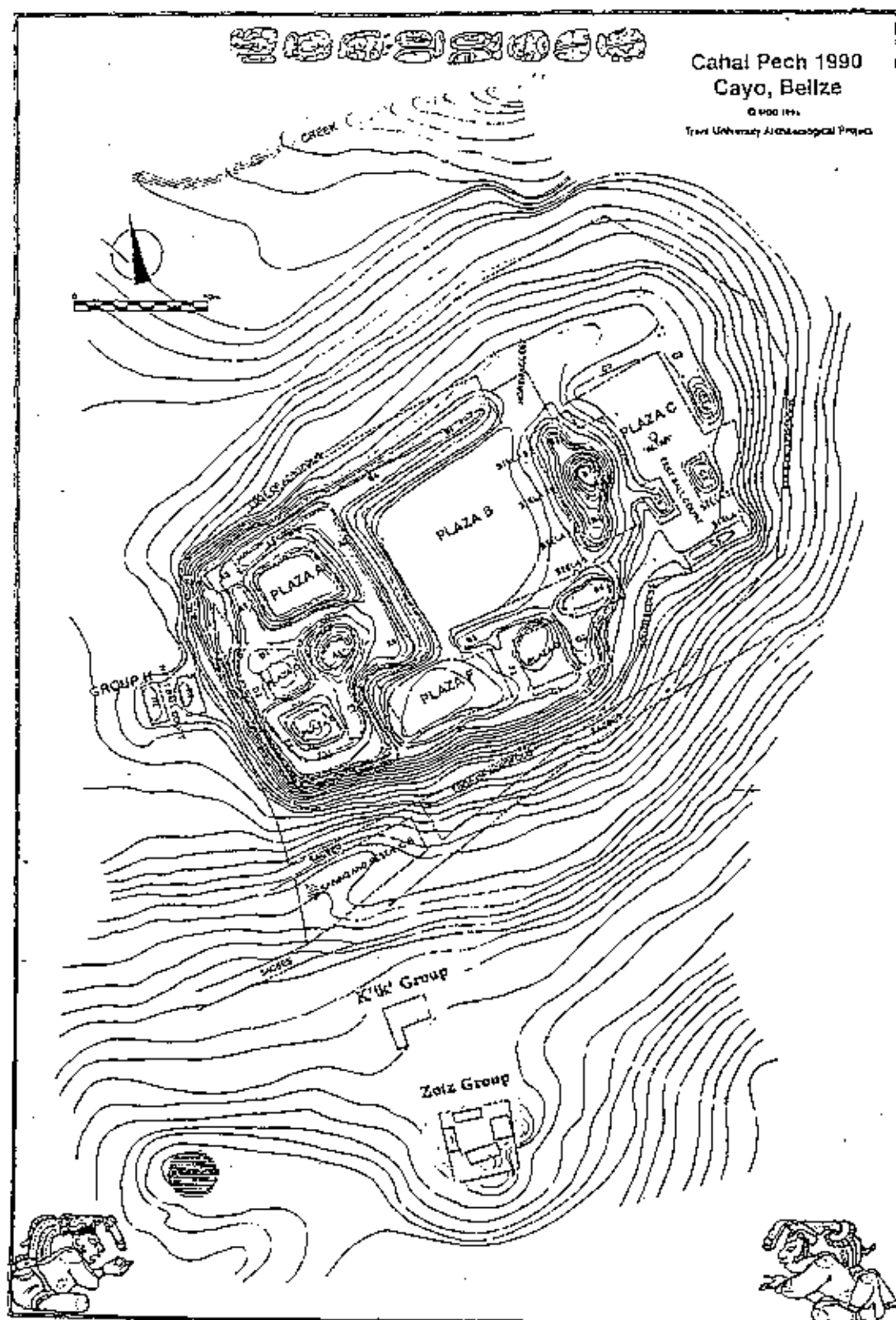


Figure 4: Contour map of the central precinct and immediate periphery of Cahal Pech, Belize (after Awe 1992:Fig.5)

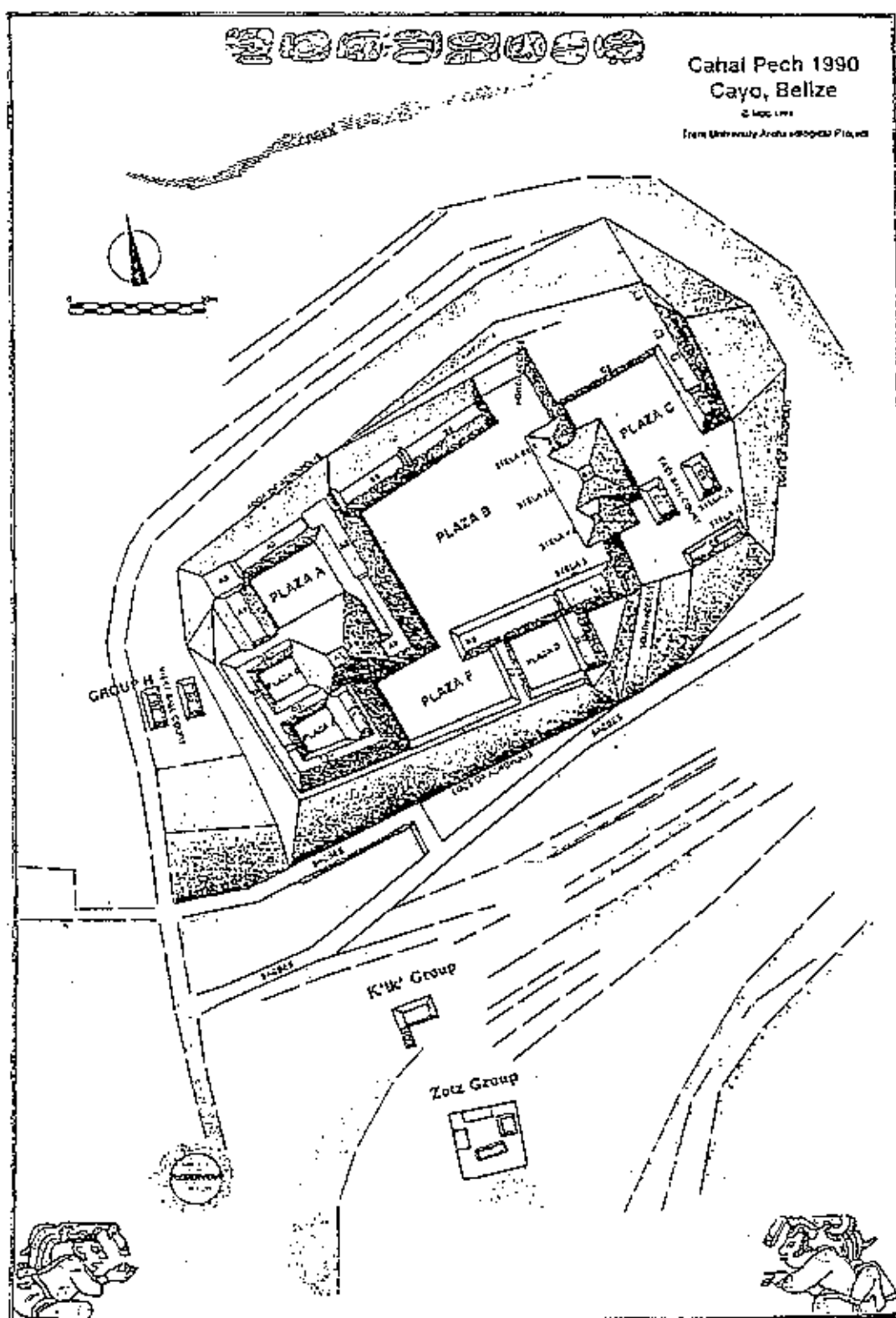


Figure 5: Rectified map of the central precinct and immediate periphery of Cahal Pech, Belize (after Awe 1992:Fig.6)

Plaza B and could be accessed from two separate locales on the east side of the acropolis (see Awe et al. 1991). The principal Classic period courtyard at Cahal Pech is Plaza A, which also contains the largest temple-pyramid, Structure A-1. In addition to this temple-pyramid, there are a number of other smaller pyramidal structures, range-type buildings, two ball courts, as well as six plain stelae and one plain altar, located in the site core.

There are three large reservoirs which were constructed by the inhabitants living in the periphery of the site core. They are located at the base of the acropolis. These artificial reservoirs are located on both the western and the southern limits of the site core and one of them continues to hold water all through the year. These reservoirs were situated at different elevations (the western reservoir was the highest) and would drain into one another during the height of the rainy season. The overflow from the southern reservoir would runoff into a seasonal creek which flowed eastward to the Macal river. This impressive water management system (the combination of both natural and cultural landscapes) separated the site core from several of its immediate peripheral settlement clusters, such as the Tolok Group (see Awe 1992:64; Powis 1992:38; Hohmann and Hartnett 1995:11-32).

The Periphery

After fulfilling many of the developmental objectives for B.T.I.A. during the early years of the Cahal Pech Project, more emphasis was placed on the early culture history of both the site core and the immediate peripheral settlement clusters. The density of prehistoric settlement surrounding the site core is relatively high, including a number of large settlement clusters (Tzinic, Cas Pek, Melhado, Cayo Y, and Tolok); minor centres (Zubin); plazuela and/or patio groups (K'ik, Zotz, Pepeng, Chechem, Nax Che, and Figueroa); residential units; isolated housemounds; and a sacbe termini complex (Zopilote). The majority of these settlement clusters are located within one square kilometre of the site core, with the exception of Zubin and Cayo Y, which are situated approximately two kilometres south of Cahal Pech (Figure 6). According to Awe (1992:60):

Settlement survey and investigations at Cahal Pech indicate that during the Classic period the site and its sustaining area may have encompassed a realm of approximately 16 square kilometres. At the nucleus of this territory was the central precinct or site core.

Since 1990, most of these peripheral settlement clusters have been intensively investigated and have produced evidence of substantial Formative period occupation. In fact, with the exception of both the K'ik and the Figueroa groups, the majority of these sampled settlement clusters, such as Cas Pek (Awe et al. 1992;

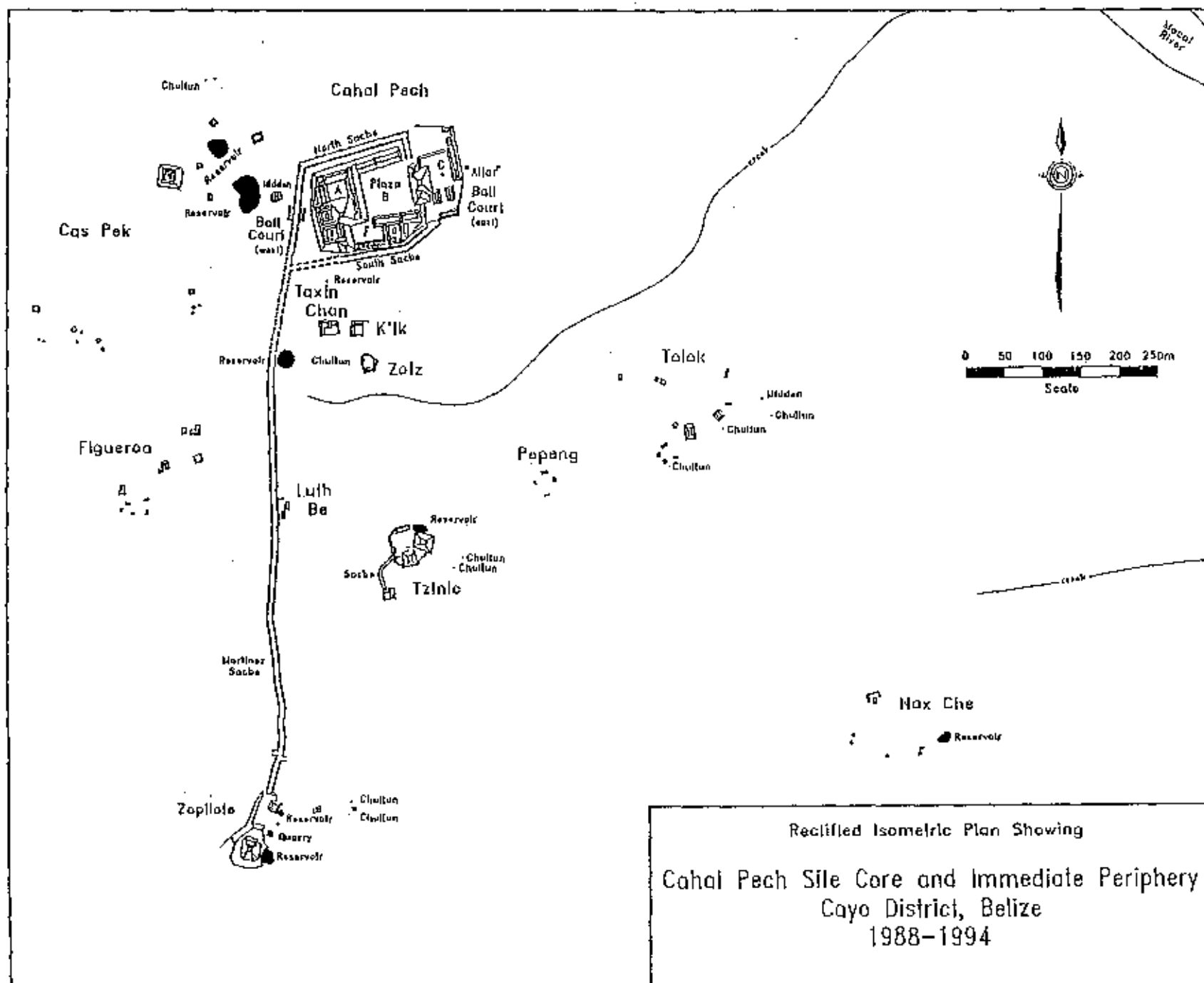


Figure 6

Cheetham et al. 1993; Lee and Awe 1995; Vinuales 1992); Zopilote (Cheetham et al. 1993; Cheetham et al. 1994); Zotz (Aimers 1992; Awe et al. 1992); Tzinic (Conlon 1992; Conlon and Awe 1991); Zubin (Iannone 1993, 1994); and Tolok (Powis 1992, 1993a, 1994; Powis and Hohmann 1994, 1995), have produced evidence of substantial late Middle Formative architecture and associated cultural deposits. Within the past few field seasons, the proximity of these Formative period deposits to the present-day ground surface has enabled major horizontal excavations. The late Middle Formative period (late Kanluk phase) circular platforms discovered at both the Zotz and the Tolok groups, in particular, have been intensively investigated.

The Natural Setting

Geography

The country of Belize, formerly British Honduras, is located on the Caribbean coast of the Yucatan Peninsula and is situated between the Mexican Territory of Quintana Roo to the north and by the Guatemalan Department of Peten on the west (cf. Willey et al. 1965:21). The country is vaguely cut in half from west to east by the Belize River. This river flows from various tributary sources in the Peten, Guatemala and western Belize, and eventually empties into the Caribbean Sea at Belize City (see Figure 7).

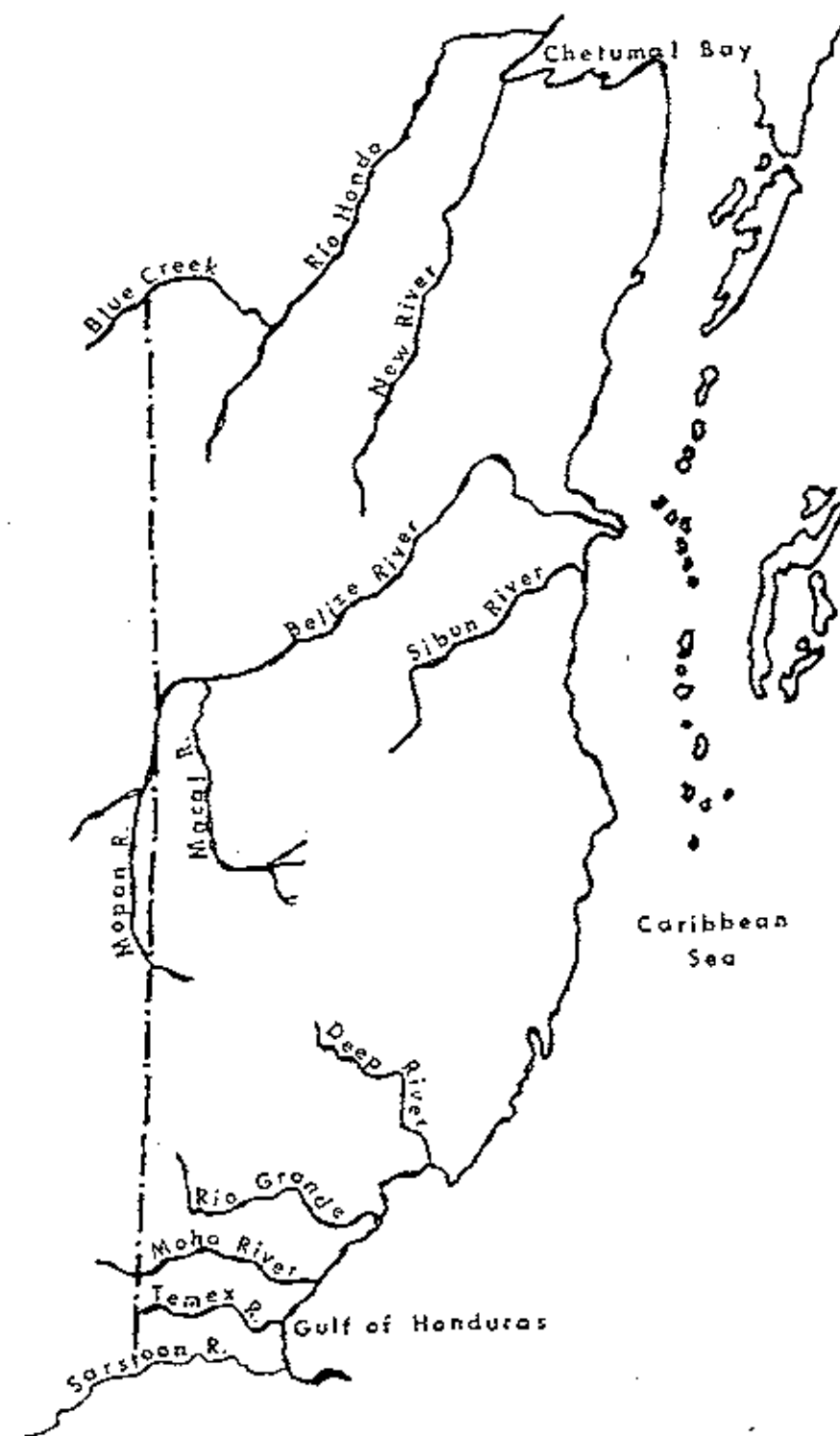


Figure 7: Hydrography of Belize (after Rice 1974:Fig.6)

The Macal and the Mopan are the two principal tributaries of the Belize River and according to Awe (1992:47):

the Macal originates in the central Maya Mountains and flows in a northerly direction along the western edge of the Mountain Pine Ridge. The Mopan is the major drainage for the southwestern Maya Mountains and a series of swamps in the eastern section of the Department of Peten, Guatemala.

These two tributaries join together about two kilometres north of Cahal Pech and are subject to seasonal flooding due to their extensive catchment area. This seasonal flooding of the Belize River, and its tributaries, results in the periodic deposition of river silt on the interfluvial bottomland of the valley. The geographical character of the valley may be described as consisting of two distinct regions: a western upland region and an eastern coastal floodplain. It is in this western zone, usually referred to as the Upper Belize Valley, that the major concentration of ancient Maya settlement is located, including the centre of Cahal Pech.

Environment

The major geological features of the Upper Belize Valley, according to Fedick (1989:217), can be divided into three distinct landform types: alluvial deposits, the limestone bedrock, and the Pleistocene coastal deposits. In the western zone of the valley, near the Guatemalan border,

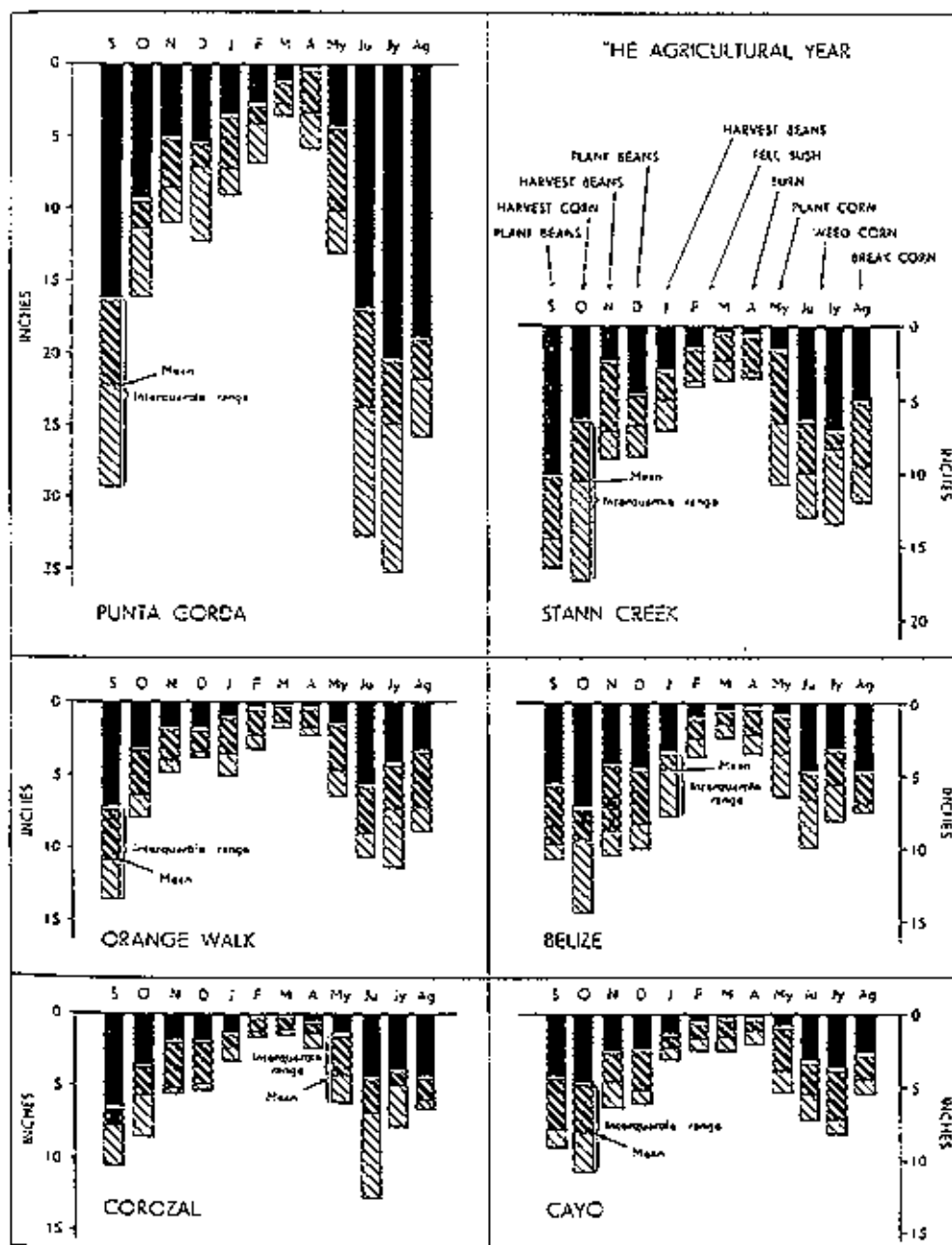
the limestone hills rise quite steeply at least 240 metres from the valley floor, but gradually become lower and more rolling as the river continues toward the northeast (also see Wright et al. 1959:183-84). The valley bottom is characterized by a series of four alluvial terraces which are among the deepest and the most fertile in the region (see Fedick 1989:217). It is here, on the higher river terraces and on the limestone hills overlooking the Belize River, that much of the ancient Maya occupation is found (see Awe 1992:51; Rice 1974:50; Willey et al. 1965:21).

Climate

The climate of the Belize Valley, and its immediate surrounding area, is described as tropical to sub-tropical with two distinctive seasons (also see Rice 1974: Figure 7; Wright et al. 1959:15). According to Fedick (1989:217):

rainfall is seasonally divided, with a distinct wet season from June to January and a drier season from February to April- May being an intermediate month. Maximum monthly rainfall averages 250 mm during the wet season and less than 25 mm during the drier season.

During the rainy season (Figure 8), there is periodic flooding of the Belize River and its tributaries and, in 1960, the Macal and Mopan Rivers rose ten to twelve metres above their banks as a result of Hurricane Hattie belting the Caribbean coast (Rice 1974:12, 50). Although certain destructive elements can be associated with the flooding of



river banks (i.e. loss of home, livestock, and of human life), there can be some beneficial factors, such as the periodic deposition of rich river silt, which helps to maintain the fertility of soils of the interfluvial plain.

During the dry season, the weather of this region is hot and humid, with average annual temperatures ranging between 25° to 30° Celcius. A drastic temperature change, as low as 12° Celcius, can occur in the valley with cold northeasterly winds moving down from the Gulf Mexico during the end of the rainy season (cf. Awe 1992:50).

Flora/Fauna

The natural ecology of the limestone hills surrounding the Belize Valley is dominated by a tropical broadleaf forest which the cohune palm (*Orbignya cohune*), sapodilla (*Manilkara zapota*), mahogany (*Swietenia macrophylla*), cedar (*Cedrela mexicana*), allspice (*Pimenta dioica*), copal (*Protium copal*), and ramon or breadnut (*Brosimum alicastrum*) predominate (see Willey et al. 1965:23; Hammond 1982:351; Rice 1974:12-18; and Wright et al. 1959:28-33). The alluvial flats of the Belize Valley, and to some degree the surrounding slope area, have been extensively cleared for both commercial and private agricultural and pastoral development. The typical vegetation of the alluvial flats are characterized by the cohune palm (*Orbignya cohune*), mahogany (*Swietenia macrophylla*), cedar (*Cedrela mexicana*),

strangler fig (*Ficus glabrata*), and the ceiba (*Ceiba pentandra*).

The fauna inhabiting the Belize Valley is both diverse and abundant, and is represented by a number of large and small mammals as well as a variety of colourful birds and reptiles. This riverine environment hosts a wide assortment of both terrestrial and aquatic species and is adequately described by Willey et al. (1965:23):

The fauna is rich. Several species of edible fish as well as turtles and alligators live in the river, although the last are now much depleted by hunting. The banks are roamed by jaguars, tapirs, deer, and a variety of smaller animals including peccary, agouti (*tipisquintle* or "gibnut"), coati-mundi (*pisote*), armadillo, and iguana. Spider and howler monkeys swing in the tree tops. Birds occur in great variety and abundance, the principal edible species including the curassow (*faisan*), the guan (*cojolite*), the chachalaca, and the ocellated turkey, the last now scarce. Snakes are also common, and venomous species such as the "yellow-jawed tommy-goff" (*fer-de-lance*) and the coral await the unwary man or beast.

Although some of the species mentioned by Willey et al. (1965:23) may be scarce or near extinction today, archaeological investigations conducted within the valley have demonstrated evidence which suggests that many of these animals, as well as other terrestrial and riverine species, were available to, and exploited by, the ancient Maya inhabitants of the area (also see Awe 1993:23-24; Awe et al. 1990:4; Healy et al. 1990; and Powis and Hohmann 1995:60-62; Stanchly 1992:388-397, 1993, 1995).

CHAPTER 2

ARCHAEOLOGICAL RESEARCH AT THE TOLOK GROUP, CAHAL PECH

Introduction

The first three years of archaeological research (1991-93) at the Tolok Group were conducted under the auspices of the Belize Valley Archaeological Reconnaissance (BVAR) Project. In 1994, investigations in both the site core and the periphery of Cahal Pech were funded by the Trent University-Belize Valley Preclassic Maya Archaeological Project.

Four years of archaeological fieldwork at Tolok form the basis for this chapter. More specifically, a detailed architectural description of both round structures (Structures 14 and 15), with intrusive burials and caches, and a discussion of the diachronic development of the southern patio group, will be provided in this chapter. First, however, it is necessary to outline briefly the research design and methodology employed, followed by the locational setting and site description of the Tolok Group.

Research Design and Methodology

The research design employed at Tolok mirrored the objectives implemented in the site core, both developmental and research oriented. As mentioned in Chapter 1, it was important to investigate several peripheral settlement

clusters to determine the diachronic development across the rural landscape to compare with the archaeological information obtained in the site core (see Awe 1992:44-45). To date, these investigations have improved our understanding of the chronological development and inter-regional relationship of settlement at Cahal Pech and within the valley.

Since 1991, the research design at Tolok has had two main objectives: first, to investigate all the mounds in the settlement cluster; and second, to focus on the Formative period of development within the group (Powis 1993a:97; Powis and Hohmann 1995:46). To date, ten of the seventeen mounds surveyed at the Tolok Group have been intensively excavated (see Powis 1992; 1993a; and 1994 for excavation summaries). The remaining mounds in the group have either been surface collected or shovel tested. The majority of these have produced substantial evidence of Middle and Late Formative occupation phases, particularly the sampled mounds located in the southern patio group. Following Awe (1992:45), it was decided to focus on these stratified Formative period deposits:

to determine the temporal limits of Formative occupation, and to ascertain the socio-political morphology and complexity of Cahal Pech during the Preclassic period.

With a particular focus directed toward the Formative period of development in the southern patio group at Tolok, a number of questions concerning social differences,

population estimates, and contemporaneity of mounds within a "group" of mounds could be examined (cf. Haviland 1978:44-46). Additionally, the horizontal exposure of the two sub-plaza round structures would provide further insights to the nature of the built environment, including the level of architectural complexity, during Middle Formative times. This information could also contribute important information regarding Tolok's culture history, the relationship between Tolok and the site core, and the position of Tolok within Cahal Pech's settlement hierarchy.

The excavation method employed at Tolok was similar to the sampling techniques and procedures implemented in the site core. Mounds were selected for excavation based on several factors: the presence of looting, location, size, and chronological considerations (Awe 1992:69). These factors, combined with initial limited financial and human resources, prompted early excavation at Tolok to be somewhat selective. Initially, random sampling was employed but, after four years of investigations, more than half of the structures have been thoroughly excavated (see Powis 1992; 1993a; 1994; and Powis and Hohmann 1995).

Excavation units were placed both in mounds and in plazas at Tolok. In mounds, excavation units were either axial trenches (i.e. 3 m x 1 m) placed across the frontal section or they were smaller units (i.e. 2 m x 2 m or 2 m x 1 m) placed at the summit; sometimes a combination of the two was executed. Plaza units were centrally located between

mounds to ascertain both the construction history and the diachronic development of the group. Plaza units were also generally smaller in dimension (i.e. 1 m x 1 m). One unit (Plaza Unit-2 or PU-2) excavated within the southern patio group, however, was an exception to the initial research design employed at Tolok (see Investigations [1992-94] in the Southern Patio Group).

Excavation units at Tolok were concentrated on cultural stratigraphic levels. Such stratigraphic features as plaster floors, walls, distinct soil changes, construction fill, etc. were used as physical boundaries where one excavation level stopped and another began. In this process, such boundaries were described, mapped, and photographed as judgement required. All cultural features, including special deposits, were excavated and kept separate from other materials from the levels. According to Awe (1992:70), the advantage of following cultural levels rather than arbitrary ones is that it:

provides a more realistic sequence of culture change, and it is a more accurate method for determining the diachronic changes of attributes within different artefact types.

It should be added that many samples were collected in the field for later processing and analysis. Included among these were charcoal samples for radiocarbon assays and botanical identification, and soil samples for flotation. Soil samples were also taken from different contexts, such as burials, for chemical testing of the direct burial

environment for comparisons with bone chemical results for paleodietary reconstruction (R. Song, personal communication, 1995).

Locational Setting

The Tolok Group is located in the southeastern periphery, approximately 500 m from the site core of Cahal Pech (see Figure 6). The group of mounds is situated on a long, narrow, asymmetrically-shaped ridge, which has an elevation of 144 masl (Powis 1992:35-38). Tolok is separated from the site core by a seasonal creek with an east-west orientation. The seasonal creek is connected to the extensive reservoir system located in the western periphery and, during the rainy season, flows eastward to the Macal River. The location of the creek bed also marks the southeastern expansion of San Ignacio Town, Cayo. Urban development is slowly threatening many of the peripheral settlement clusters, such as the Tolok Group (also see Awe and Brisbin 1993). Fortunately, the land owner, Mr. Carlos Habet of San Ignacio Town, has generously allowed fieldwork to continue on his property over the years, despite growing pressures to develop it.

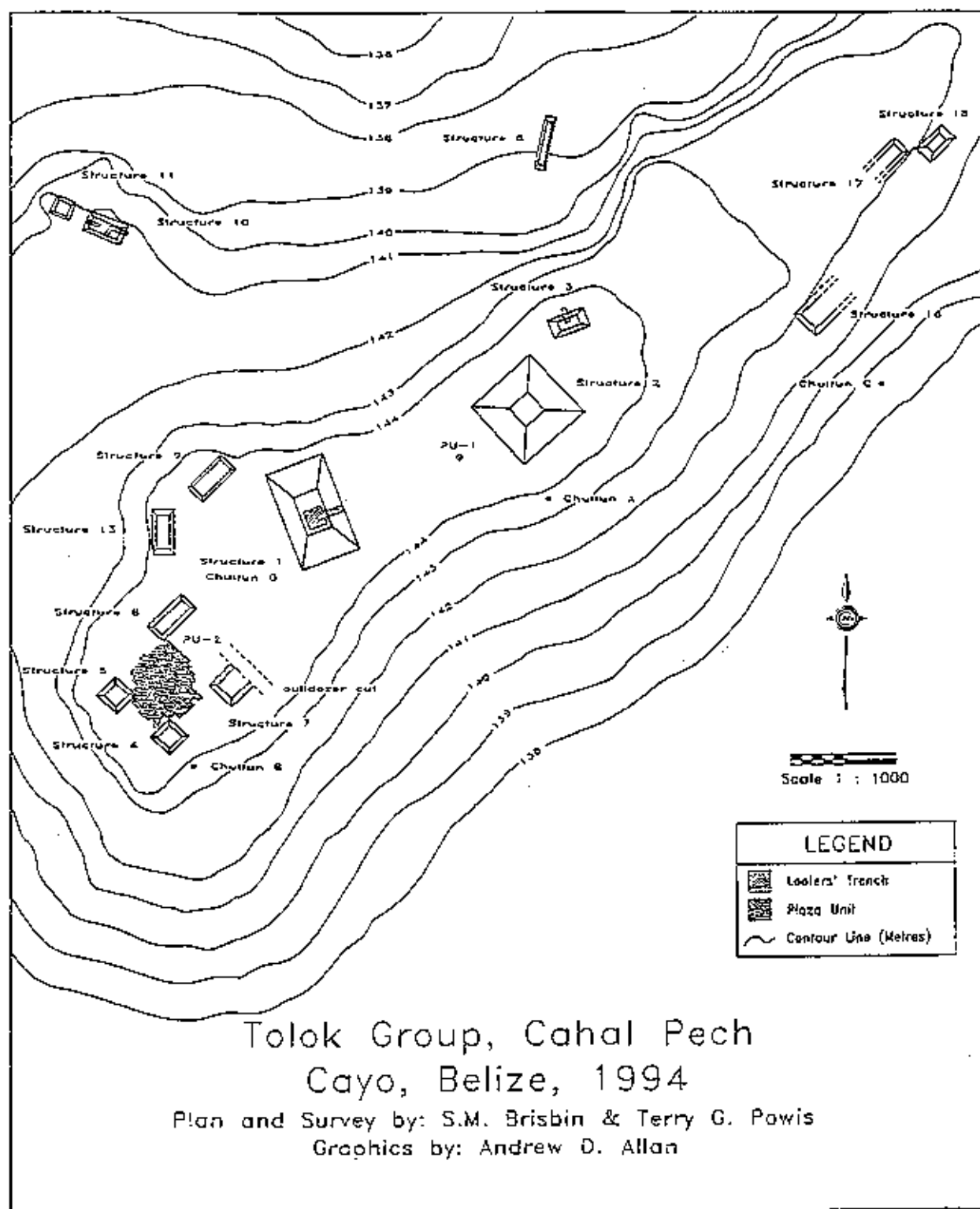
The Tolok Group is one of two, large peripheral settlement clusters occupying this ridge. Geographically, Tolok is located on the western end, while the Manchich Group is situated on the eastern portion of this natural ridge, overlooking the Macal River. A few minimum

residential units (MRU's) and informal groups (after Ashmore 1981:47-49) were found interspersed between both Tolok and Manchich. Other large settlement clusters located on the uneven and hilly terrain near the Tolok Group include: Pepeng, Nax Che, and Zinic. Only Zinic has been thoroughly tested (Conlon and Awe 1991; Conlon 1992). The Pepeng Group has been bulldozed for house construction (see Awe and Brisbin 1993:6; Brisbin 1995:116-117), and the Nax Che Group has, in more recent times, been extensively looted.

Site Description

In 1989, the Tolok Group was discovered by David Cheetham and Nasario Cu during reconnaissance of the southern periphery of Cahal Pech. Tolok (a Yucatec Maya word for "Gecko" or "Lizard") was the name given to this large settlement cluster consisting of seventeen mounds, two sub-plaza structures, two reservoirs, and four chultuns (Powis and Hohmann 1995:46). The Tolok Group covers an area of almost two hectares and its spatial configuration most closely resembles Ashmore's (1981:51) definition of a "Structure-Focused Patio Cluster."

During the past four field seasons at Tolok, an extensive mapping project has been overseen by Shawn Brisbin and the author, resulting in a detailed map (Figure 9). In 1991, local farmers had cleared and burned the ridge for milpa, providing optimal survey conditions to record all the mounds in this settlement cluster. During this initial



survey, eleven mounds and four chultuns forming the Tolok Group were mapped (Powis 1992:36). In subsequent years (1992-94), the survey of the ridge continued with the mapping of an additional six mounds and two reservoirs. This increase in the number of mounds recorded at Tolok is the result of continuous milpa farming in the area. The erosion of topsoil, caused by milpa farming, has facilitated the exposure of retaining walls associated with Late Classic constructions (i.e. Structures 16-19).

Structures 1 and 2 are the dominant mounds in the group and are located on the highest part of the ridge. Both structures measure approximately 3 m in height, while the rest of the mounds generally do not exceed 1.5 m. The majority of the low-lying mounds are concentrated around these two dominant mounds, which are connected by a raised platform or sacbe (Powis 1992:41-42). Of these two mounds, Structure 1, exhibited the most extensive damage caused by looting, followed by Structures 3 and 10, along with Structure 7 which was bisected by a large bulldozer cut.

The spatial organization of the mounds at the Tolok Group are unique compared to other peripheral settlement clusters at Cahal Pech (see Figure 6). For example, there is no formal plan or layout of mounds at Tolok. Instead, the mounds are dispersed across the ridge. To the north of Structures 1 and 2 are a number of low-lying, isolated mounds (Structures 3, 8, 10, 11, and 16-18), which are located on a lower elevation of the same ridge. Mounds to

the south of Structure 1 are more densely compacted, forming an informal patio group consisting of four mounds (Structures 4-7) (Powis 1992:43-44, 1993a:97-102).

Other cultural features identified at Tolok are four chultuns and two reservoirs. Chultuns A, B, and C are located on the eastern slope of the ridge and are associated with mounds. Chultun D was discovered beneath Structure 1 and was exposed by a looters' trench. Two small depressions were found immediately west of the southern patio group, and preliminary investigations indicate they were both used as quarries for obtaining construction materials and, later (or secondarily), as reservoirs.

Archaeological Investigations (1991-94)

Preliminary Research

Initial survey work at Tolok was begun in 1991. At this time, preliminary archaeological investigations were also initiated at a number of the mounds in the group. These preliminary investigations involved surface collecting, testpitting, and excavation (Powis 1992). Several excavation units were placed into a variety of morphologically different mounds, including Structures 1-3, 8, and 9. With the exception of Structure 8, the sampled mounds in the group have produced substantial evidence of Middle and Late Formative activity, and of continuous occupation into the Late Classic period (see Figure 10 for ceramic sequences).

Radiocarbon Years 11,16,0,0,0 Correlation	Major Periods	Cahal Pech	Barton Ramis	Cuculla	Cochu	Yuxha Suenab	Tikal	Uaxactun	Seibal	Aitar
400	Classic	Abohual	Hermitage	Nuevo	Cobweb	Early Tautauy	Manik	Tzakel	Jungo	
300			Floral Park	Freeb water			Cimi			Salinas
200	Proto- Classic	Late Tahul								
100			Mount Hope		Blossom Bank	Late Kuxtin	Cauac	Chicanel	Centutoo	Pisacha
A.D. 0				Cocoa						
B.C. 100	Late Formative	Early Kukul			Onocimo	Early Kuxtin	Chuen			
200			Barton Creek							
300										
400	Late Middle Formative		Late Jenney Creek	Lopez	Chiwa	Late Yuncotil	Taac	Manom	Kacoba	San Felix
500		Late Kankuk				Early Yuncotil				
600										
700			Early Jenney Creek	Bladen		Late Ah Pan	Zh			
800	Early Middle Formative	Early Kankuk			Balay	Early Ah Pan			Roni	Xo
900		Cunil		Bunney						
1000										
1100										
1200	Early Formative									
1300										
1400										
1500										
1600										
1700										
1800										
1900										
2000										

Figure 10: Principal Formative period ceramic complexes in the Maya Lowlands (after Awe 1992:Fig.55)

Two excavation units were placed in Structure 1. One unit was located on the south side of the mound revealing four construction phases, which dated from the late Middle Formative (650-350 B.C.) through the Late Classic period (A.D. 700-900). The second unit was placed in the looters's trench, located at the inner base of Structure 1 (Powis 1992:39-40). The excavation uncovered an undisturbed late Middle Formative midden, located inside a collapsed lateral-chambered chultun (Chultun D). The midden deposit varied in thickness from 3-5 to 60 cm and was rich in ceramics, modelled-clay figurines, lithic tools and debitage, animal bones, shell material (both freshwater and saltwater), and exotic items, such as obsidian, conch shell, and greenstone (see Powis 1992:39-40; Powis and Hohmann 1995:48-62; Stanchly 1993:131-132, Tables 1-4; and Stanchly 1995:136-138, 141-143; for artifact and faunal inventories).

Four construction phases, contemporaneous with Structure 1, were identified in each of two units placed into Structure 2. The construction fill recorded between each occupation phase was similar in both mounds, and consisted primarily of compacted soil, ballast, and dry-stone core masonry. Unlike Structure 1, the excavation in Structure 2 revealed the architectural remains of a terminal Late Formative period building platform (Powis 1992:41-42). This platform was contemporaneous with an exposed building stage unearthed in Structure 3. Structure 3 is a low-lying mound which had been extensively looted. Two small units

were placed in this mound revealing six thin plaster floors. The majority of the floors were Late Classic, but the earliest occupation dated to the terminal Late Formative period. Both units were connected to form a large horizontal exposure of one of the Late Classic buildings, which exhibited a series of small additions or modifications (Powis 1992:42).

Structure 8 was the northernmost mound tested in the group during the 1991 field season. A 5 m x 1 m unit was placed on top of an exposed cut-stone wall, running along the north-south axis of this isolated mound. The exposed wall was part of a Late Classic platform, the only construction phase identified, erected directly on bedrock. Interestingly, there was little, if any, bedrock alteration—a deviation from standard practice during the Formative and Classic periods at Tolok (Powis 1993a:100-102; also see Haviland 1978:114).

Structure 9 was the other mound tested during the 1991 and 1992 field seasons. Investigations were conducted at this low-lying mound to determine its construction history and its relationship with Structure 1. One unit placed at the top of the mound revealed four successive floors, of which the earliest construction phase consisted of a Late Formative platform erected directly on bedrock (Powis 1993a:103). The excavation also revealed another building platform, dating to the Late Classic period, which was constructed on top of the Late Formative structure.

Investigations (1992-94) in the Southern Patio Group

The small southern patio is bordered by four low-lying mounds (Structures 4-7). During the 1991 field season, Structure 4 was selected for investigation in order to determine its possible association with Chultun B (Powis 1993a:98). Of the five construction phases identified in Structure 4, only the penultimate and terminal phases of occupation (Early and Late Classic periods, respectively) were determined to be associated with the chultun (Powis 1992:44-45). The earliest architectural phase of Structure 4 dated to the late Middle Formative period and consisted of a plastered floor (Plaza Floor 1 or PF1), located just above bedrock.

The presence of an Early Classic component in Structure 4 was an integral factor in the decision to conduct further excavations in the small patio in 1992. Tzakol 1-3 sphere ceramics are not well-represented at Cahal Pech or its immediate settlement clusters. The paucity of identified Early Classic deposits may be because of prolonged useage of Chicanel (Late Formative) ceramic types into the Early Classic period (Lincoln 1985:73; also see Awe and Campbell 1988:41; Cheetham 1992:4, 21; Conlon 1992:80, 1993:183). Therefore, Structures 5, 6, and 7 were tested in an effort to determine whether these mounds also contained an Early Classic component and to compare these findings with the artifactual assemblages recovered elsewhere in the Tolok Group.

Structure 5 is a low, square mound, approximately one metre in height with an unexcavated base measuring 5 m x 5 m. It is similar in morphology to Structure 4. No Early Classic component was identified with this mound. The earliest architectural remains in Structure 5 date to the late Middle Formative period and consisted of a corner of a rectangular platform. The corner of this single course platform (approximately 10 cm high) was built on top of PF1 and was contemporaneous with the earliest architectural phase found in Structure 4.

Structure 6 is located on the western edge of the patio and is similar in morphology to Structure 7. Two construction phases were defined in Structure 6 with the earliest phase contemporaneous with PF1 (Powis 1993a:100-101). Similar architectural remains were uncovered in Structure 7. Although Structure 7 was bisected by a bulldozer cut, a 2 m x 2 m unit was placed on the summit to determine whether this mound served a special function, such as the "family" or "household" shrine for the Late Classic inhabitants of the small patio (see Becker 1971; Welsh 1988). The only architecture recorded in Structure 7 were the remains of a late Middle Formative rectangular platform, one course of cut-stone high (approximately 10 cm), found contemporaneous with PF1. No burials were found either above or below the late Middle Formative building platform to indicate this mound served as the family shrine for the group (Powis 1993a:101-102).

During the 1992 field season, Plaza Unit-2 (designated PU-2) was placed in the plaza of the southern patio group to ascertain its construction history and to determine the diachronic development of this small group of mounds (see Figure 10). The unit measured 1 m x 1 m and was placed equidistant between the mounds. The excavation revealed four plaza floors (PF1-PF4), including two replasterings of the terminal floor (Powis 1993a:107). The construction fill between each plaza floor was made consistently of compacted soil, marl, and ballast. The use of wet-laid materials in construction at Tolok was prevalent throughout the history of the group. The artifact assemblages represented in each level were diverse and included: obsidian chips and blade fragments, utilitarian ceramic wares, chert flakes and debitage, figurine fragments, and marine and freshwater shells (Powis 1993a:107).

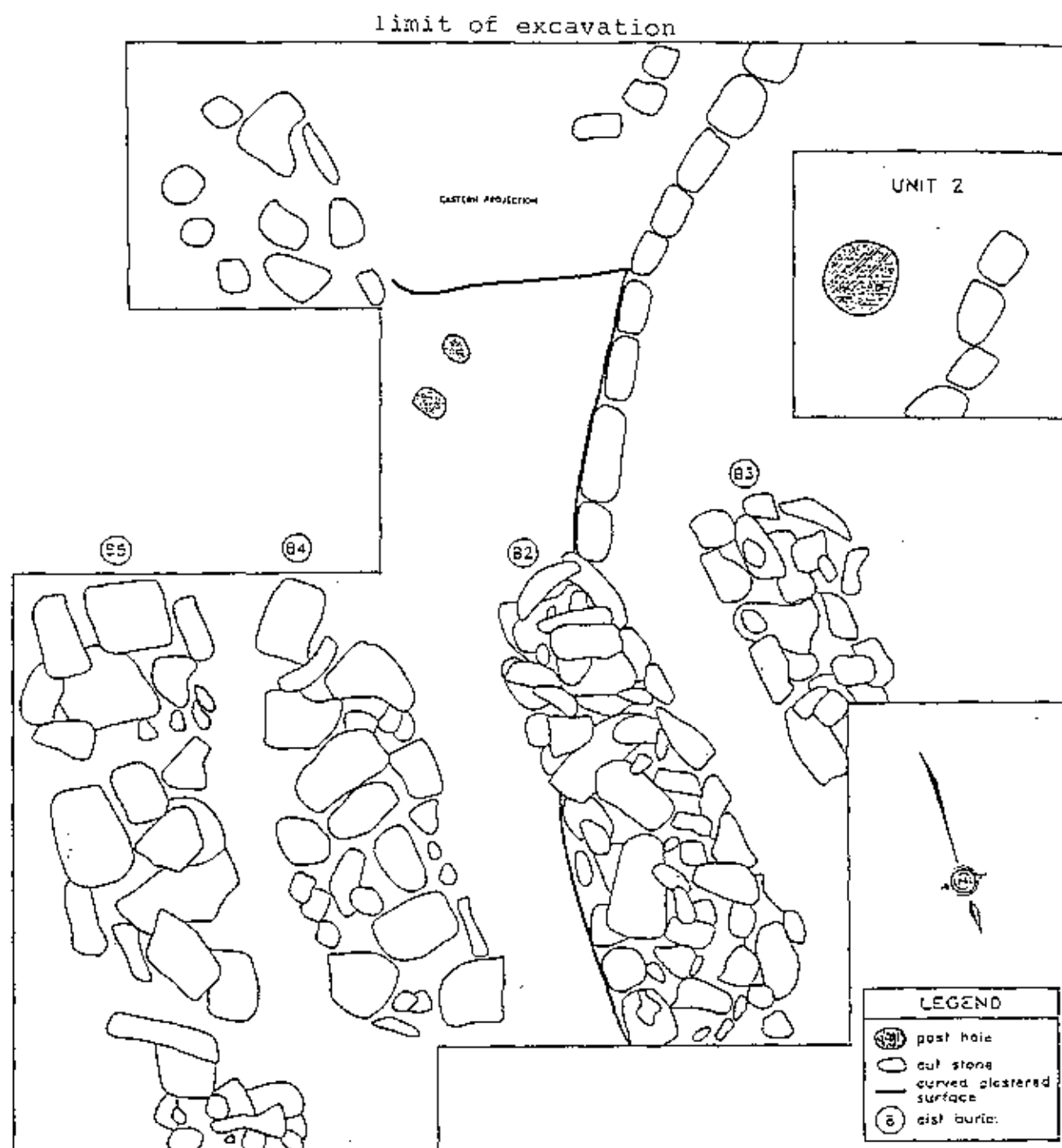
The earliest of four distinct construction phases in Plaza Unit-2 was defined by PF1 (this plaza floor was also recognized in the earliest construction phases of Structures 4-7). This 4 cm thick plaza floor was located above bedrock and, based on ceramic comparisons, was laid during the late Middle Formative period (late Kanluk phase 650-350 B.C.). Two sequential Late Formative construction phases, marked by plaza floors (PF2 and PF3), were recognized, followed by the terminal construction phase and plaza floor (PF4), which has been dated to the Late Classic period.

A human skull was encountered during the excavation of the earliest plaza floor (PF1). As the burial (Burial 2) was exposed, it became evident the human remains were buried across a portion of a circular building platform (designated as Structure 14) (Powis 1993a:107).

The shallow depth of the circular platform (approximately 1 m below the present surface level) facilitated expansion of the unit (4 m x 3 m) demonstrating the contemporaneity of Structure 14 with PF1. The remnant portion of a subsidiary platform (eastern projection) and three postholes were seemingly contemporaneous with the circular platform (Figure 11). Two of the postholes were small (both 5 cm in diameter) and were located in close proximity to the subsidiary platform, while a larger posthole (15 cm in diameter) was found on top of the structure.

During the 1992 excavation, a small unit (Unit 2) was placed into the fill of Structure 14 in order to determine the construction date of the circular platform. The ceramic assemblage recovered from the structural fill included sherds of the Savana, Jocote, and Joventud Groups (see Gifford 1976). This information from a sealed context also suggested that the circular platform dated to the late Middle Formative period (late Kanluk phase 650-350 B.C.).

Burial 2 was intrusive to the circular platform and, therefore, post-dated the construction of Structure 14. Similarly, three other burials (Burials 3-5) aligned in an



Round Structure, Plaza Unit-2 (PU-2\1st)
Telok Group, Cahal Pech 1992

Plan View by: Terry G. Pawis
Graphics by: Andrew D. Allan

Figure 11

north-south orientation were unearthed beside Burial 2. These burials were placed carefully and sequentially on PF1 without disturbing other graves (Powis 1993a:108). This is similar to Haviland's (1978:152) observation in Structure 4F-7 at Tikal, in which four burials were placed at various times without disturbing the previous burials. According to Welsh's (1988:17) typology, the four graves are classified as cist burials and each has been dated to the Late Classic period (A.D. 700-900). A detailed preliminary report of the skeletal remains of Burials 2, 4, and 5 has been prepared (see Song 1993; and Appendix A).

Burial 2 was the only grave to intrude on the eastern wall of the platform of Structure 14. The individual was placed in a prone position, fully extended with the head oriented to the south, and facing east (Powis 1993a:111). Associated grave goods within the burial included 3 pieces of worked shell and a small jadeite disk. Two of the shell artifacts were quadrangular in shape and made from the nacreous interior (pink in colour) of a conch shell (*Strombidae*). One of these artifacts was located beneath the right scapula and the other was found in the pelvic region. The other shell artifact was located at the base (or crown) of the skull and included an intact bivalve, *Nephronaias ortmanni*, perforated at the hinge. Another grave good found with this burial consisted of a flat, polished jadeite disk, 2 cm in diameter, located in the cervical vertebrae region of the individual (see Burial Data section in Appendix B for

inter-site comparisons).

Burial 4 was actually comprised of two individuals interred on top of each other (see Song 1993:117). Both were placed in a prone position, fully extended, with their heads oriented to the south. The head of the individual on the bottom (Individual 2) was facing west. While the skull of Individual 1 (located on top) was fragmentary, it may also have faced this direction. There was a difference in grave typology within Burial 4, because Individual 2 was buried with a separate head cist. It should be noted that few burials with this particularly unique grave type morphology (both a cist and a head cist) have been identified in the Maya Lowlands (W.B.M Welsh, personal communication, 1993). There were two miniature Belize Red: Variety Unspecified ceramic vessels found with these individuals (Powis 1993a:111). One vessel was found on each scapula of Individual 2 with the vessel, located on the right side, still intact. The other vessel located on the left scapula was fragmentary and, after being reconstructed, depicted a human head, with a headdress, which was modelled to the body of the vessel (see Burial Data section in Appendix B for inter-site comparisons).

The individual in Burial 5 was also placed in a prone, fully extended position with its head oriented to the south, and facing east (Powis 1993a:111). A small slate pendant was recovered from beside the twelfth rib (floating rib) on the right side of the body. The pendant was flat, 2 cm in

diameter, and biconically drilled (see Burial Data section in Appendix B for inter-site comparisons).

The horizontal excavation (10 m x 7 m unit) of Structure 14 continued during the 1993 field season and a second circular platform (Structure 15) was found beneath it (Figures 12-14). Also, a number of special deposits were found placed in, and around, both circular platforms, including two Late Formative non-dedicatory caches (Caches 1 and 2), two terminal Late Formative simple crypt burials (Burials 7 and 8), and two Late Classic cist burials (Burials 3 and 6) (see Powis 1993a:108-112, 1994:137-140; Song 1993, Song et al. 1994; and Appendix A).

Burial 3 was placed on the earliest plaza floor (PF1), located within the construction fill of Structure 14 (Figure 15). Burials 2 and 3 were similar in grave morphology, as both were contained in a cist that was completely lined and capped with cut-stones. Although Burials 4 and 5 were placed sequentially to the east of Burials 2 and 3, they were interred directly on top of the plaza floor (PF1). They did not have stone linings. No grave goods were found with Burial 3 and, therefore, the date of interment is based on its context with Late Classic Burials 2, 4, and 5 (see Powis 1994:138).

Burial 6 was found on PF1 along the long-axis (running north-south) of the eastern projection of the subsidiary platform (see Figures 15 and 16). In regard to grave construction, this was one of the most intriguing burials

STRUCTURES 14 AND 15
PLAZA UNIT-2, TOLOK GROUP
CAHAL PECH, BELIZE
MAY 31, 1993

PLANVIEW BY: T. POWIS, B. HOFMANN
R. SONG, A. HARTNETT
D. MARDIROSI, C. CRIMMON

GRAPHICS BY: A. ALLAN

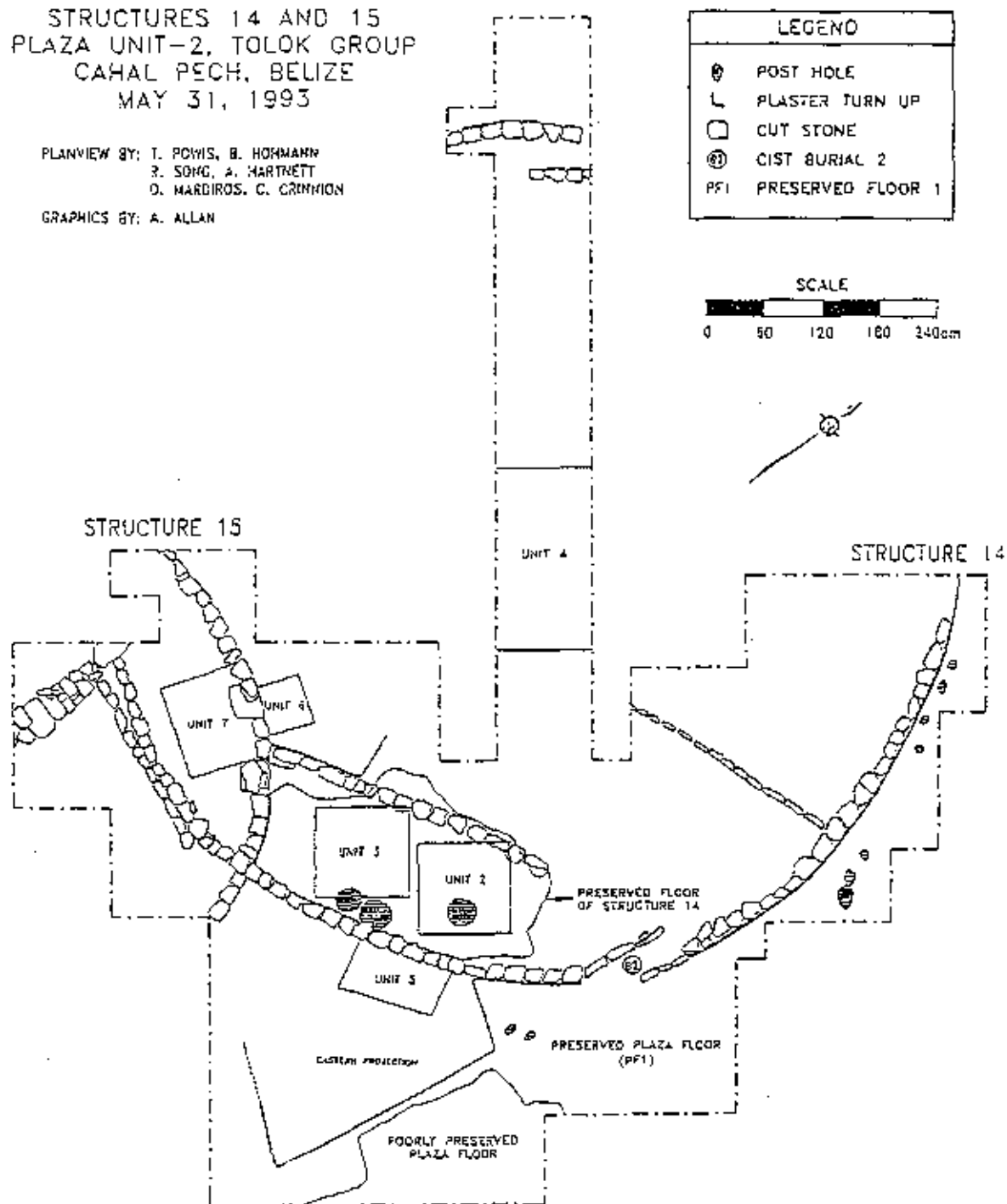


Figure 12

PROFILE OF STRUCTURES 14 & 15, PLAZA UNIT-2
TOLOK GROUP, CAHAL PECH, BELIZE
JULY 3, 1993

PROFILE BY: TERRY POWDS & BOBBI IRDMAN
GRAPHICS BY: ANDREW ALLAN

NOTE: Terminal Plaza Floor & Repasterings are
both destroyed throughout this profile.

LEGEND	
	CUT-STONE
	PLASTER TURNUP
	PLASTERED FLOOR 3
	PLASTERED FLOOR 2
	PLASTERED FLOOR 1
	MARL
	COMPACTED SOIL WITH BALLAST

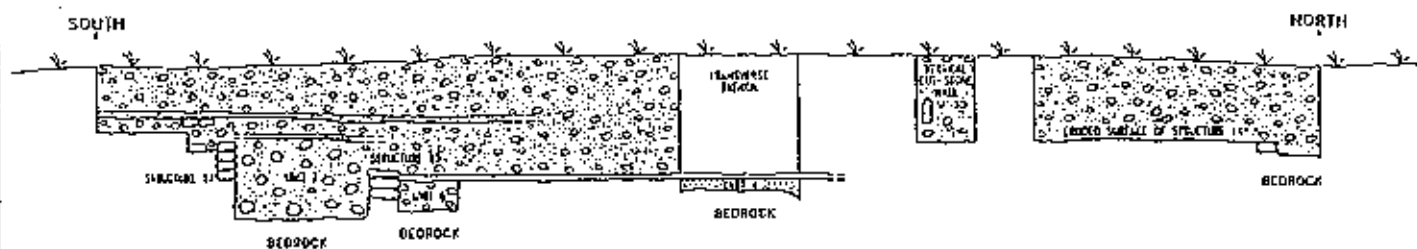
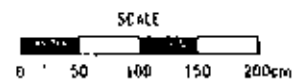











Figure 13

PROFILE OF STRUCTURES 14 & 15, PLAZA UNIT-2
TOLOK GROUP, CAHAL PECH, BELIZE
JULY 3, 1993

PROFILE BY: TERRY POWIS & BOBBY HOLTMANN
GRAPHICS BY: ANDREW ALLAN

NOTE: Terminal Plaza Floor & Replasterings are
both destroyed throughout this profile.

LEGEND	
	CUT STONE
	PLASTER TURN UP
	PLASTERED FLOOR 4
	PLASTERED FLOOR 3
	PLASTERED FLOOR 2
	PLASTERED FLOOR 1
	FLOOR SURFACE OF STRUCTURE 14
	MARL
	COMPACTED SOIL WITH BALLAST

SCALE
0 50 100 150 200cm

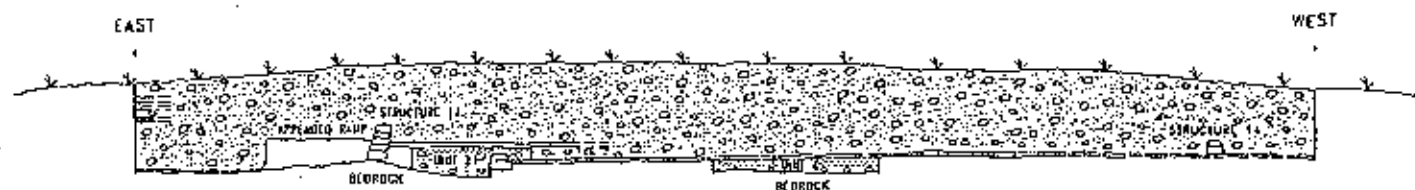


Figure 14

STRUCTURES 14 AND 15
BURIALS 2 - 8
PLAZA UNIT-2, TOLOK GROUP
CAHAL PECH, BELIZE
MAY 31, 1993

PLANVIEW BY: T. POWIS, B. HORNHANN
R. SONG, A. HARTNETT
J. NARDIOS, C. CRINNION

GRAPHICS BY: A. ALLAN

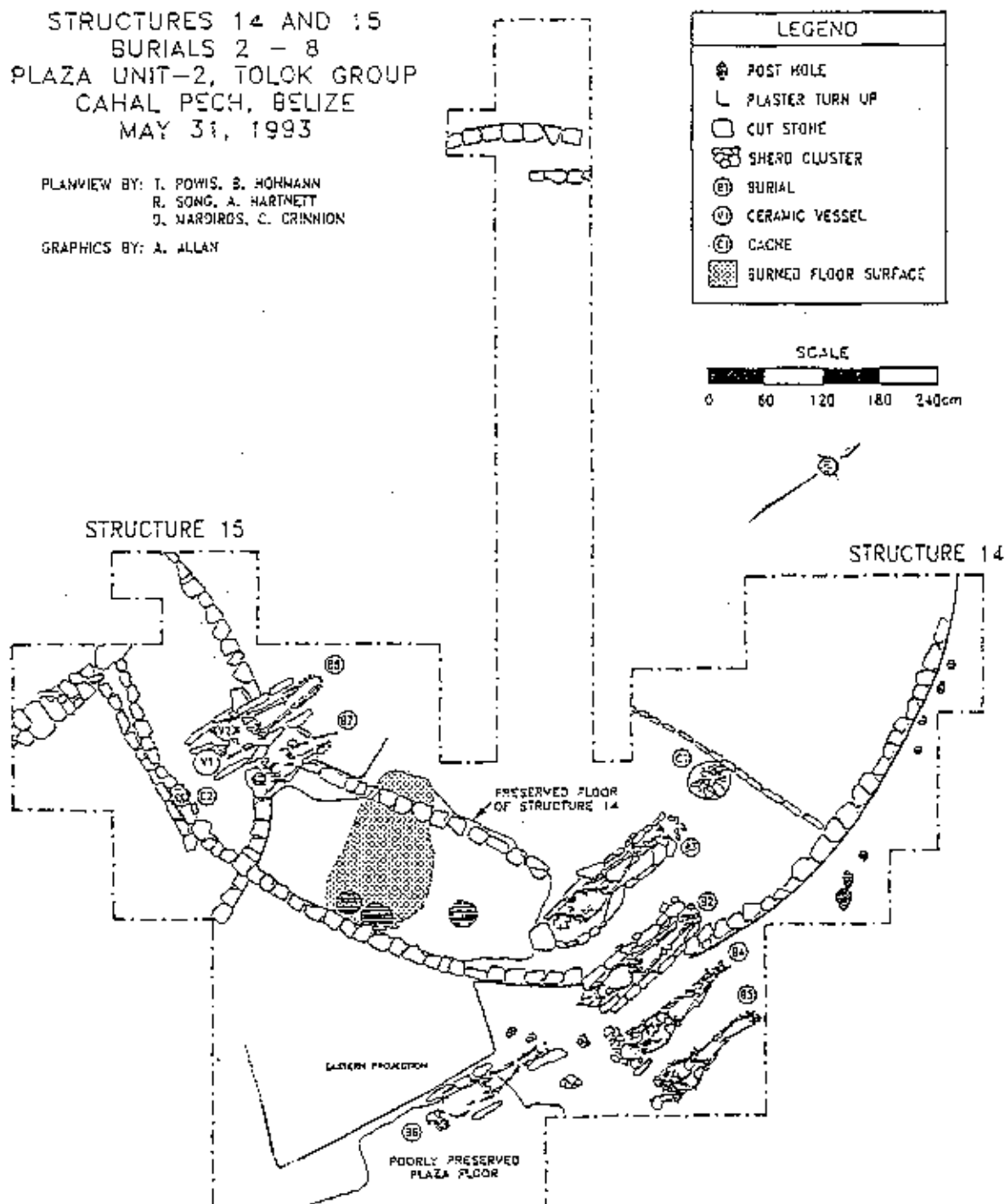


Figure 15

DETAILED PLAN OF INTRUSIVE BURIALS 2 - 6
STRUCTURE 14
PLAZA UNIT-2, TOLOK GROUP
CAHAL PECH, BELIZE
MAY 31, 1993

PLANVIEW BY: T. POWIS, B. MOHMANN
R. SONG, A. HARTNETT
D. MARDIROOS, C. CERNION

GRAPHICS BY: A. ALLAN

LEGEND	
⊗ POST HOLE	☼ SHERD CLUSTER
⌒ PLASTER TURN UP	☉ BIVALVE
□ CUF STONE	• JADE
⊙ BURIAL	◆ NACREOUS SHELL
⊕ CERAMIC VESSEL	⬛ 'JUMI' VESSEL
▨ BURNED FLOOR SURFACE	○ SLATE DISK

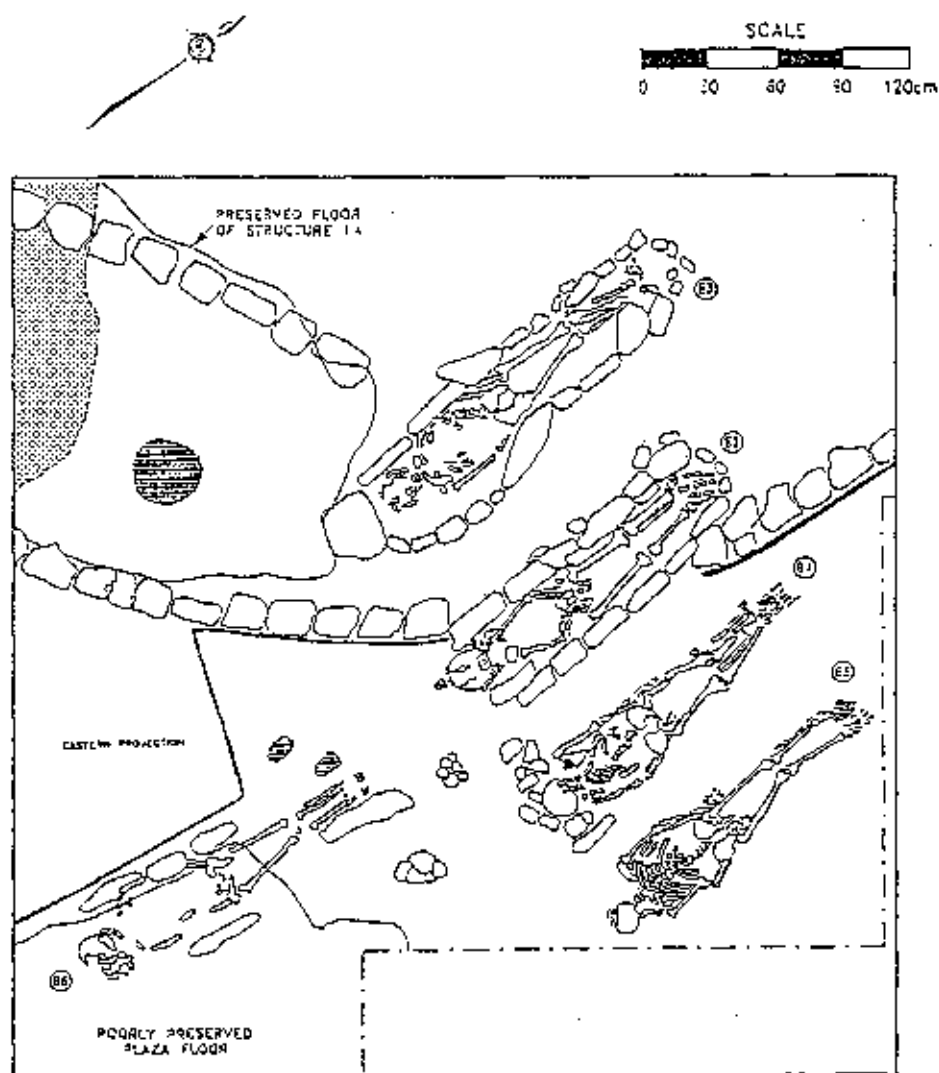


Figure 16

to be excavated in PU-2. As the construction fill was removed above the cist, it became evident in the eastern profile that the inhabitants of the Tolok Group had made a rectangular cut through several of the plaza floors (PF2-4) to inter the body. This Late Classic burial was placed on top of the earliest plaza floor (PF1) and lacked the type of stone lining evident in Burials 2 and 3. No grave goods were associated with this individual. However, two sherd clusters (possibly broken vessels) were found just north and east of the cist. Although the sherd clusters were located outside of the burial, they may still have been special deposits offered to this individual (Powis 1994:138). Further analysis of the sherd clusters will determine contemporaneity between the two features.

During the preliminary investigation of Structure 15, it became evident that this earlier circular platform, partly covered by Structure 14, was also associated with the earliest plaza floor (PF1). Prior to the construction of Structure 14, the earliest plaza floor (PF1) formed a large enclosed patio which was located off the north end of Structure 15. After the abandonment of Structure 15, PF1 was expanded in all cardinal directions. Once completed, the inhabitants of the Tolok Group built the larger round structure, Structure 14, on top of the newly renovated plaza floor (PF1) (see Diachronic Development).

During the investigation into the architectural relationship between Structures 14 and 15, two simple crypt

burials (Burials 7 and 8), and one cache (Cache 2) were uncovered cross-cutting the northern wall of the building platform of Structure 15 (Figure 17). Both simple crypt burials (after Welsh 1988:17-18) were stone-lined and capped with large well-dressed cut-stones. It was also noted that both burials shared the same medial wall whose construction destroyed the upper two courses of cut-stone on the platform of Structure 15.

Burial 7 was found placed on top of both the platform and the retaining wall, of Structure 15 (Powis 1994:138). During excavation on the south end of Burial 7, a broken miniature vessel, placed on top of the simple crypt (the head was also located at this end), was uncovered. Once the cut-stones were removed, a small biconically drilled *Spondylus* shell was located just above the pelvic area of this individual. The shell artifact was circular, 7 mm in diameter, and highly polished on the non-pitted side. When the bones were exposed, a broken, miniature, ceramic vessel was found on the left shoulder (east side). Two other shell artifacts were found placed directly on the pelvis of this prone individual (see Powis 1994:138-139; Song et al. 1994:159). One modified (broken apex) freshwater snail (*Pachychilus indiorum*) was placed inside of a worked marine bivalve (*Spondylus princeps*). The marine bivalve was deep orange in colour, highly polished, approximately 7 cm in diameter, and had four drill holes made for suspension (two intact, one broken, and one unfinished) (see Burial Data

DETAILED PLAN OF INTRUSIVE BURIALS 7 AND 8
STRUCTURES 14 AND 15
PLAZA UNIT-2, TOLOK GROUP
CAHAL PECH, BELIZE
JUNE 9, 1993

PLANVIEW BY: T. POWIS, S. HOHMANN
R. SONG, A. MARTINETT
D. MARDIROS, C. CRONIN

GRAPHICS BY: A. ALLAN

LEGEND	
⊙	POST HOLE
⌒	PLASTER TURN UP
□	CUT STONE
⊙	BURIAL
⊙	CERAMIC VESSEL
⊙	CACHE
⊙	SHERD CLUSTER
⊙	BIVALVE AND JUTE
—	JADE
■	BURNED FLOOR SURFACE

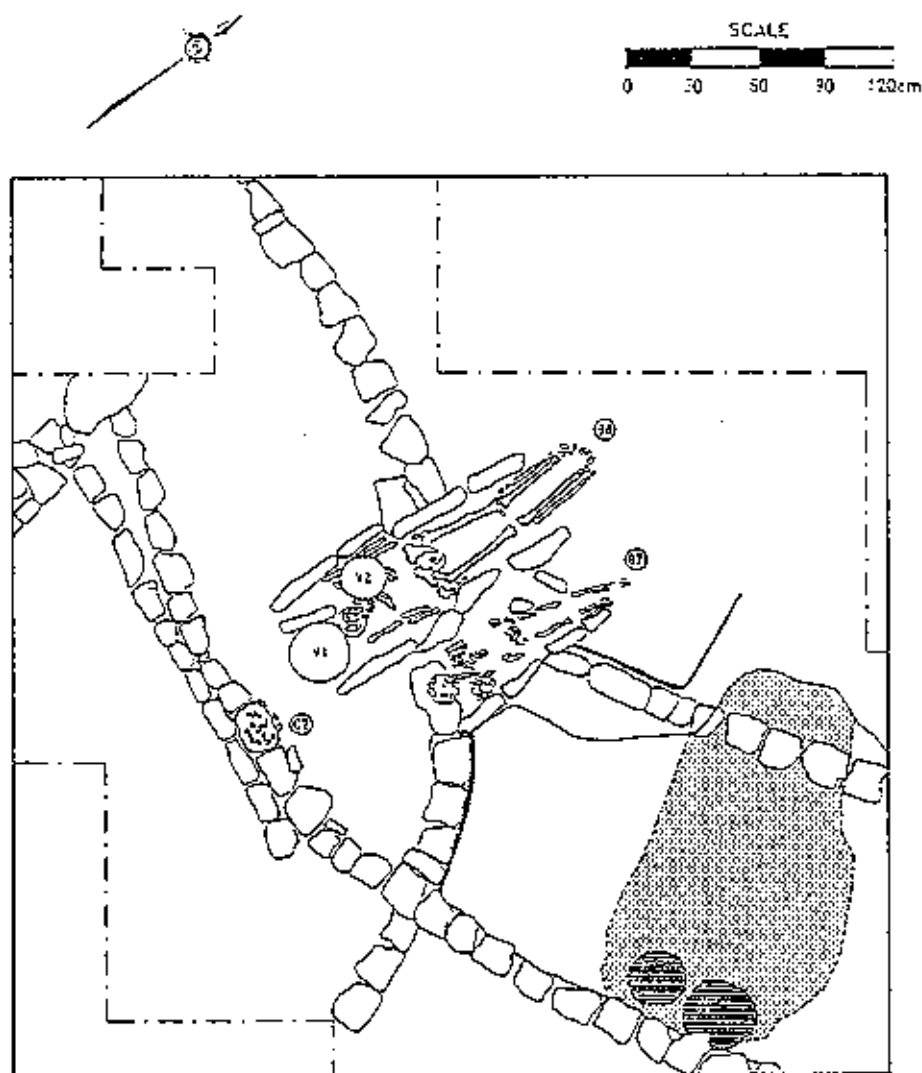


Figure 17

section in Appendix B for inter-site comparisons).

Two intact ceramic vessels accompanied Burial 8 and were located in the southern area of the grave (Powis 1994:138-139). Vessel #2 was placed on the right shoulder (west side) of this individual and has been identified as an Aguacate Orange: Aguacate Variety bowl with a ring base, dating to the terminal Late Formative period (late Xakal A.D. 100-350). The vessel measured 19.5 cm in diameter and was placed upright on the body. No offerings were found inside this vessel. The other intact vessel (Vessel #1) was found slightly above, and just south of, the head of the individual. This vessel was also identified as an Aguacate Orange: Aguacate Variety bowl with tetrapodal supports. The hollow mammiform feet had two opposing holes with clay rattles inside and flattened teat nubbins (see Gifford 1976:129-130). The vessel had a diameter of 24 cm and a surface decoration consisting of five vertical-to-diagonal lines or chevrons painted with a black slip descending from the top of the bowl down to each of the mammiform feet (see Burial Data section in Appendix B for inter-site comparisons). The vessel was placed upright in the grave and contained the remains of a human mandible, maxilla, and some cranial bones. Although the bones were highly fragmented, a near full compliment of teeth were found in the vessel (see Song et al. 1994; and Appendix A). It appears that the maxillary region and the mandible of this individual was removed and placed into the bowl after death.

Cache 2 was found during the excavation of Burials 7 and 8. This cache was found approximately 50 to 70 cm south of these burials and on the top course of the platform of Structure 14 (see Figure 17). Cache 2 was an unusual deposit, because it consisted of fourteen teeth (of mixed dentition) and a single biconically drilled tubular jadeite bead, measuring 8 mm in length (Powis 1994:139). As mentioned above, Cache 2 was found just south of Burial 7 and may represent the post-mortem mutilation of the teeth from the individual interred in Burial 7. Only five teeth (both deciduous and permanent) were found with Burial 7 and it was presumed that the remaining ones were missing. However, the fourteen teeth recovered from Cache 2 provide some evidence that they may likely have been removed from the individual interred in Burial 7 (see Song et al. 1994; and Appendix A). Based on this preliminary dental evidence, it is possible to infer that this tooth cache is related to Burial 7 and dated to the terminal Late Formative period (late Xakal phase). Therefore, it may represent one of the earliest examples of a Maya tooth offering in the Central Maya Lowlands (see Cache Data section in Appendix B for inter-site comparisons).

At the end of the 1993 field season, an 8 m x 1 m transverse trench was placed across Structure 14 to determine its maximum diameter (see Figure 12). Excavation revealed that only remnants of two of the later plaza floors (PF2, PF3) were present and, there was no indication that

the original floor surface of Structure 14 remained intact (Powis 1994:133, 137). At the western end of the trench, the other side of the platform was located. The curvature of the wall at the west end confirmed that Structure 14 was circular in plan with a diameter of 9.5 m. However, only one course of cut-stone with remnants of stucco plaster were found. There were two other architectural features recorded within the transverse trench. They included the earliest plaza floor (PF1) and a low retaining wall, consisting of a single course of cut-stone, located near the western end of the unit.

Initially, it was thought that this low wall was Late Formative in date, based on its proximity to PF2. It was discovered, however, that this single-course retaining wall was connected directly to the west end of Structure 14. The wall consisted of 12 cut-stones in length (with sections of the wall missing) and was contemporaneous with Structure 14 based on the ceramics recovered from between both walls. Its function is unclear, but it may have been used to help stabilize the platform of Structure 14 during construction.

Cache 3 was found near the northern end of this retaining wall and consisted of a human skull placed inside an intact ceramic vessel (Figure 13). Cache 3 was intrusive, through PF2, and was covered by three large cut-stones placed in a triangular fashion over the top of this skull-in-bowl cache. The vessel inside this non-dedicatory cache was an Aguacate Orange: Aguacate Variety tetrapod bowl

exhibiting a lustrous orange-red slip around the exterior of the vessel, with extensive fire clouding. This terminal Late Formative period (late Xakal phase) vessel was 23.5 cm in diameter, 7.2 cm in height, and manifested an outflaring rim profile (see Cache Data section in Appendix B for inter-site comparisons). The well-preserved skull found inside the Aguacate Orange bowl was of a child aged 4-5 years (see Song 1995:185-186), and represents the skeletal mutilation (decapitation) of this individual.

Also, Unit 4 was excavated within the transverse trench to confirm the construction date of PF1 (Figures 12 and 18). The unit was 2 m x 1 m in size, penetrated a well-preserved section of PF1, and was excavated to bedrock, approximately 18 cm deep. Artifacts were varied and included several chert flakes, shell material (*Pachychilus indiorum* and *Pachychilus glaphyrus*), an obsidian blade fragment, and a number of ceramic sherds. The ceramic material was represented by Savana, Jocote, Pital, and Sayab Groups. The ceramics recovered from this unit confirm that the earliest plaza floor (PF1) was constructed in the late Middle Formative period (late Kanluk phase).

As Unit 4 was expanded eastward, a retaining wall was uncovered running diagonally (258° E of N), from the centre of the building platform to the eastern end of Structure 14 (Figure 13). The wall consisted of 20 uniformly-sized cut-stones set vertically into the platform below the floor surface of the round structure (Powis and Hohmann 1995:71).

STRUCTURES 14 AND 15
PLAZA UNIT-2, TOLOK GROUP
CAHAL PECH, BELIZE
JULY 28, 1994

PLAN VIEW BY: T. POWIS, B. KORNWANN, C. ARENDT
R. SOONG, A. HARDNETT, D. MARDIROS
C. CRONIN

GRAPHICS BY: A. ALLAN

LEGEND	
⊙	POST HOLE
└	PLASTER TURNUP
□	CUT STONE
⊙	CIST BURIAL 2
PF1	PRESERVED FLOOR 1

SCALE

0 60 120 180 240 300cm

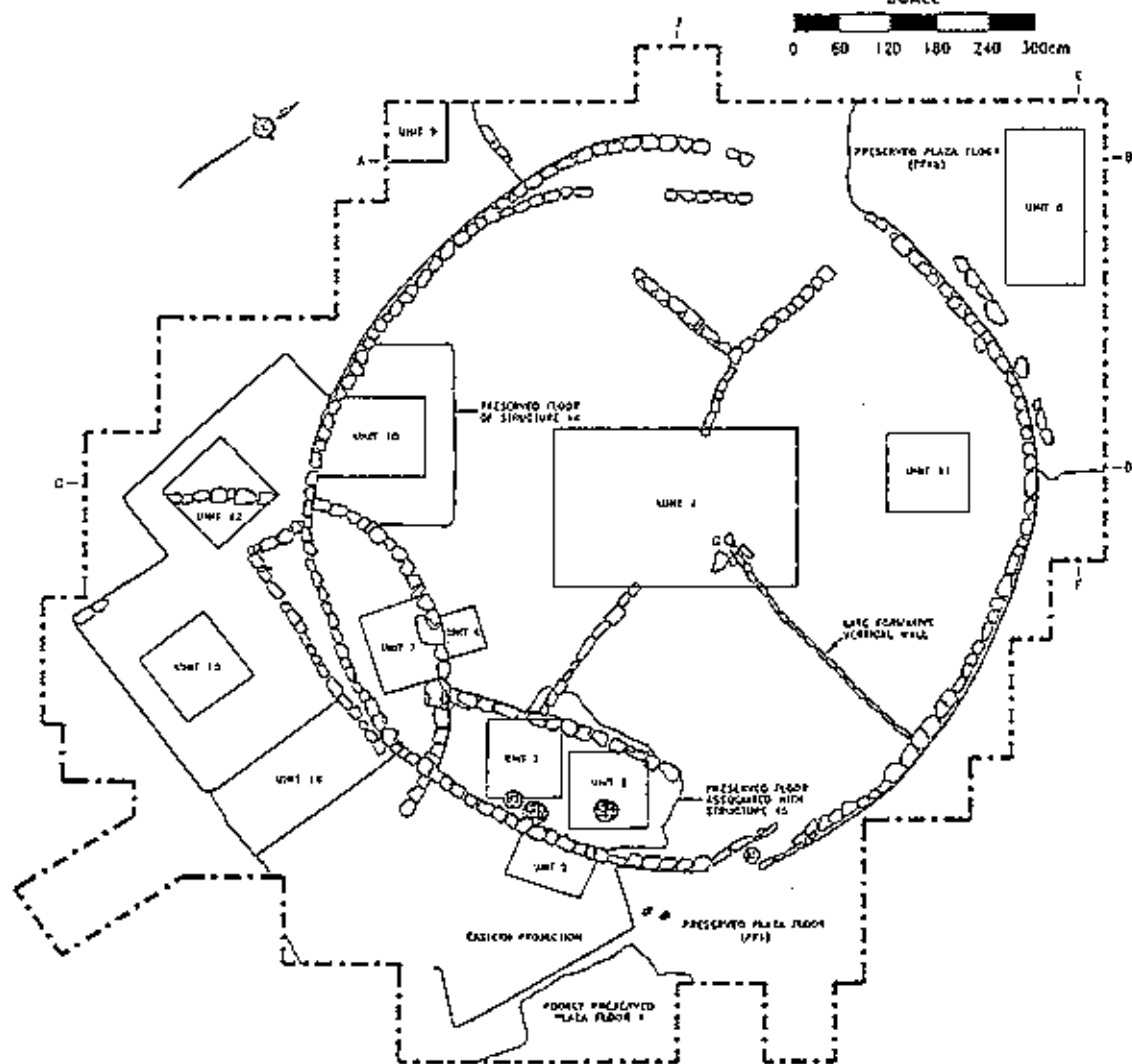


Figure 18

After excavation, it was determined that this wall was intrusive into the construction fill of Structure 14. Based on ceramics found around this wall and from Caches 1 and 4, this wall has been dated to the early Xakal phase of the Late Formative period (c. 150 B.C.).

Cache 1 was located near the middle, and on the south side, of this intrusive retaining wall (Figure 13). It was also found directly below the Late Formative period (early Xakal phase) PF2. This non-dedicatory cache consisted of a partial vessel (lower body and base only) of an Old River Unslipped: Old River Variety (early Xakal phase) olla. Cache 1 has been dated primarily on architectural information rather than on the cached ceramic vessel, since it lacked a rim. However, a ceramic type was assigned, albeit tentatively, based on its form, temper, and surface finish (see Gifford 1976:125-126).

Cache 4 consisted of a fragmented olla placed beneath six large, roughly-made, cut-stones set in a circular fashion, underneath the retaining wall (Figure 13). Cache 4 contained a partial jar of a Paila Unslipped: Variety Unspecified jar (including the rim, but no lower body or basal sherds were found in association with this vessel). This Late Formative period (early Xakal phase) vessel was tan-brown in colour, had extensive fire clouding, and exhibited linear punctates on the shoulder/body break (see Cache Data section in Appendix B for inter-site comparisons).

The horizontal exposure of Structure 14 was completed during the 1994 field season at Tolok (see Figures 18-23). Unfortunately, only about half of Structure 15 was exposed due to the amount of time spent uncovering the larger round structure (Structure 14). Considerable time and effort was taken to remove the large volume of backdirt from the past two years of excavation in PU-2. After removal of the soil, four 3 m x 5 m units (14W1-4) were established over both the western half of Structure 14 and over the northern half of Structure 15. An additional five smaller units were excavated adjacent to these larger ones in order to record other architectural features contemporaneous with both platforms, such as postholes, retaining walls, and any remnant portion(s) of the subsidiary platform (also see Willey et al. 1965:36 for similar excavation strategy).

During the 1994 field season, the overall size of PU-2 measured 13 m x 13 m. The depth of the two sub-plaza round structures was generally less than 1.0 m below the present-day ground surface, which greatly facilitated the horizontal exposure of both structures. As the 1994 excavation was expanded, it became evident that some areas of the plaza floors (PF2-4), including the original floor surfaces of both round structures, were destroyed in antiquity (Figures 19-22). These floor surfaces were destroyed, likely at different times, by the placement of later, intrusive special deposits and by the removal of cut-stones, from both circular platforms, for subsequent construction events.

STRUCTURES 14 & 15, PLAZA UNIT-2
LEVELS 1-6, UNITS 1-15
TOLOK GROUP, CAJAL PECH
BELIZE 1994

PROFILE BY: BOUDI HOUMAH, ALEX HARTNETT,
CARMEN ARCHOE, & TERRY POWIS
GRAPHICS BY: ANDREW ALLAN

NOTE: Terminal Plaza floor & Replasterings are
both destroyed throughout this profile.

LEGEND	
	CUT STONE
	PLASTER TURNUP
	MARL
	DARK BROWN SOIL WITH CHARCOAL FLECKS
	COMPACTED SOIL WITH BALLAST
PFI PLAZA FLOOR 1	

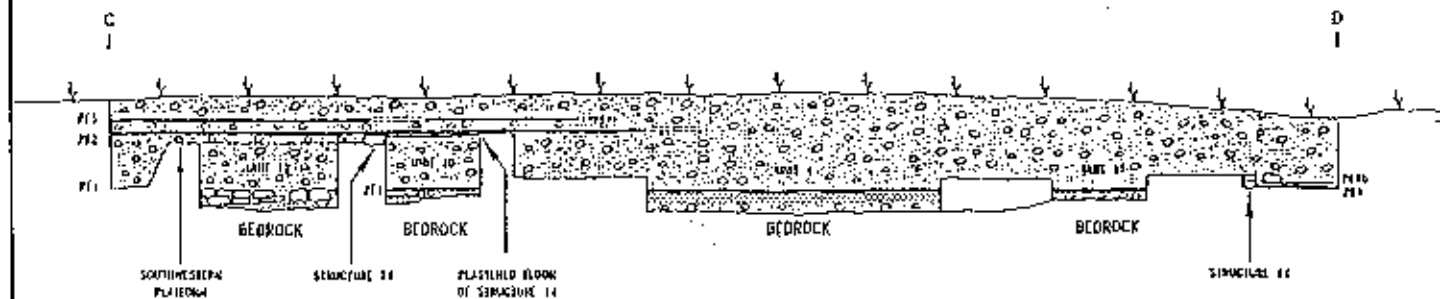
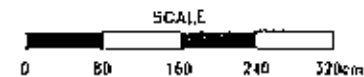




Figure 19

STRUCTURES 14 & 15, PLAZA UNIT-2
LEVELS 1-6, UNITS 1-15
TOLOK GROUP, CAHAL PECH, BELIZE
JULY 13, 1994

PROFILE BY: S. JEDHANNI, T. PAHADDS & H. PAITEL
GRAPHICS BY: ANDREW ANJAN

NOTE: Terminal Plaza Floor & Replasterings are
bulk destroyed throughout this profile.

LEGEND	
	CUT STONE
	COMPACTED SOIL WITH BALLAST
PF1	PLAZA FLOOR 1

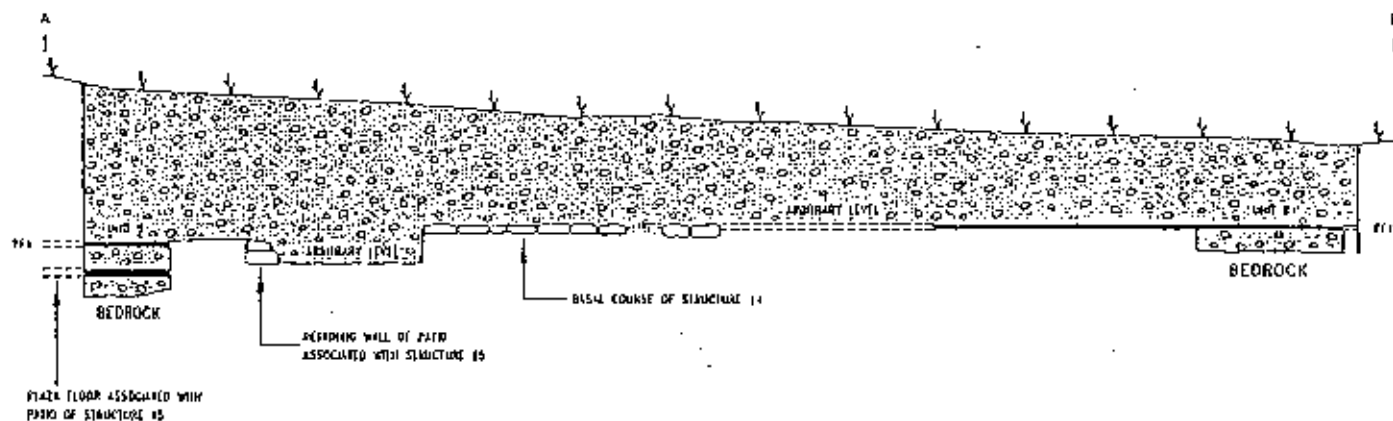


Figure 20

STRUCTURES 14 & 15, PLAZA UNIT-2
LEVELS 1-6, UNITS 1-15
TOLOK GROUP, CAHAL PECH, BELIZE
JULY 11, 1994

PROFILE BY: R. HOHMANN, A. BARNETT,
C. ARENDI & T. POWIS

GRAPHICS BY: ANDREW ALLAN

NOTE: Terminal Plaza Floor & Replasterings are
both destroyed throughout this profile.

LEGEND	
	PLASTER TURNUP
	CUT STONE
	COMPACTED SOIL WITH BALLAST
PF1	PLAZA FLOOR 1

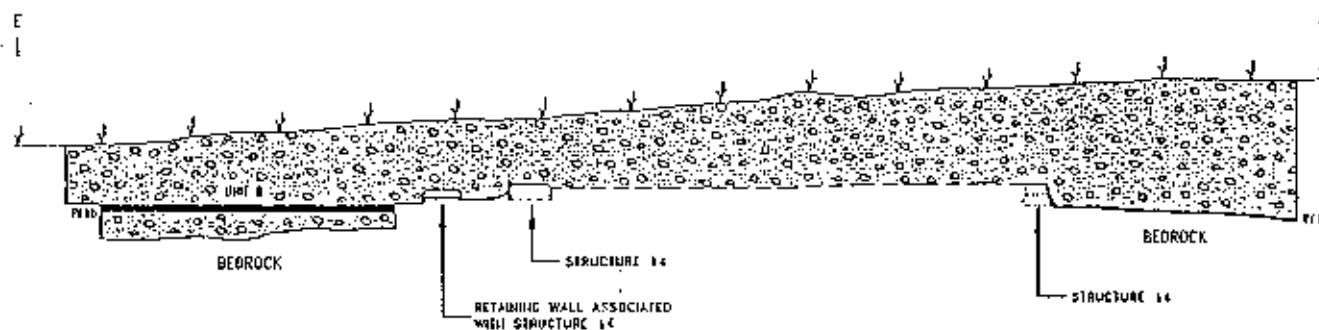
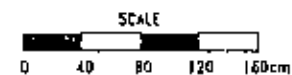






Figure 21

STRUCTURES 14 & 15, PLAZA UNIT-2
LEVELS 1-6, UNITS 1-15
TOLOK GROUP, CAHAL PECH, BELIZE
JULY 12, 1994

PROFILE BY: B. BOJMAN, A. MARNEY & C. ARENDY
GRAPHICS BY: ANDREW ALIAN

NOTE: Terminal Plaza Floor & Replasterings are
both destroyed throughout this profile.

LEGEND	
	PLASTER TURNUP
	CUY STONE
	BURIAL 2
	MARL
	COMPACTED SOIL WITH BALLAST
PF1 PLAZA FLOOR 1	

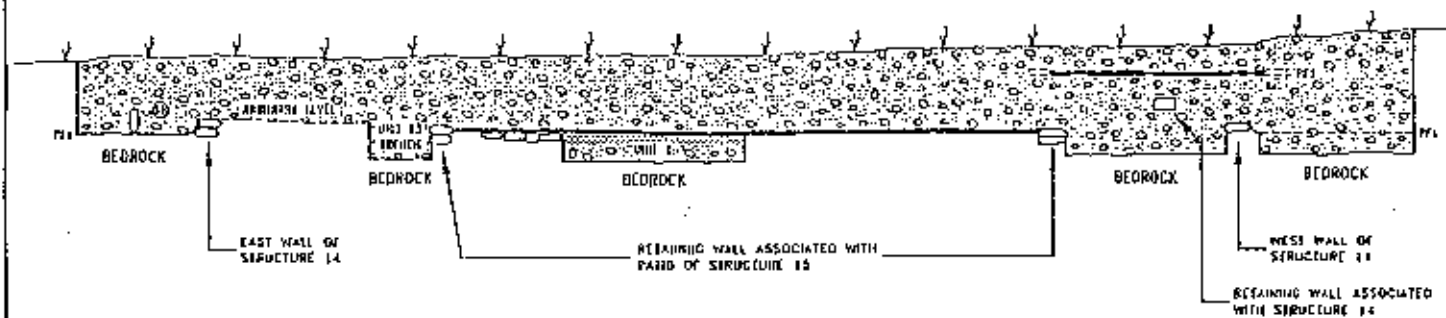


Figure 22

STRUCTURES 14 AND 15
BURIALS 2 - 10
PLAZA UNIT-2, TOLOK GROUP
CAHAL PECH, BELIZE
JULY 28, 1994

PLAN VIEW BY: T. POWIS, B. HOMMANN, C. JENOT
R. SONG, A. HARRIS, G. MARCHOS
C. CRIMMON

GRAPHICS BY: A. ALLAN

LEGEND	
POST HOLE	CACHE
PLASTER TURNUP	BURNED FLOOR SURFACE
CUT STONE	CHARCOAL RICH DEPOSIT
SHERD CLUSTER	REMNANT PLASTER TURNUP
BURIAL	PLASTERED FLOOR SURFACE OF SOUTHWESTERN PLATFORM
CERAMIC VESSEL	

SCALE

0 60 120 180 240 300cm

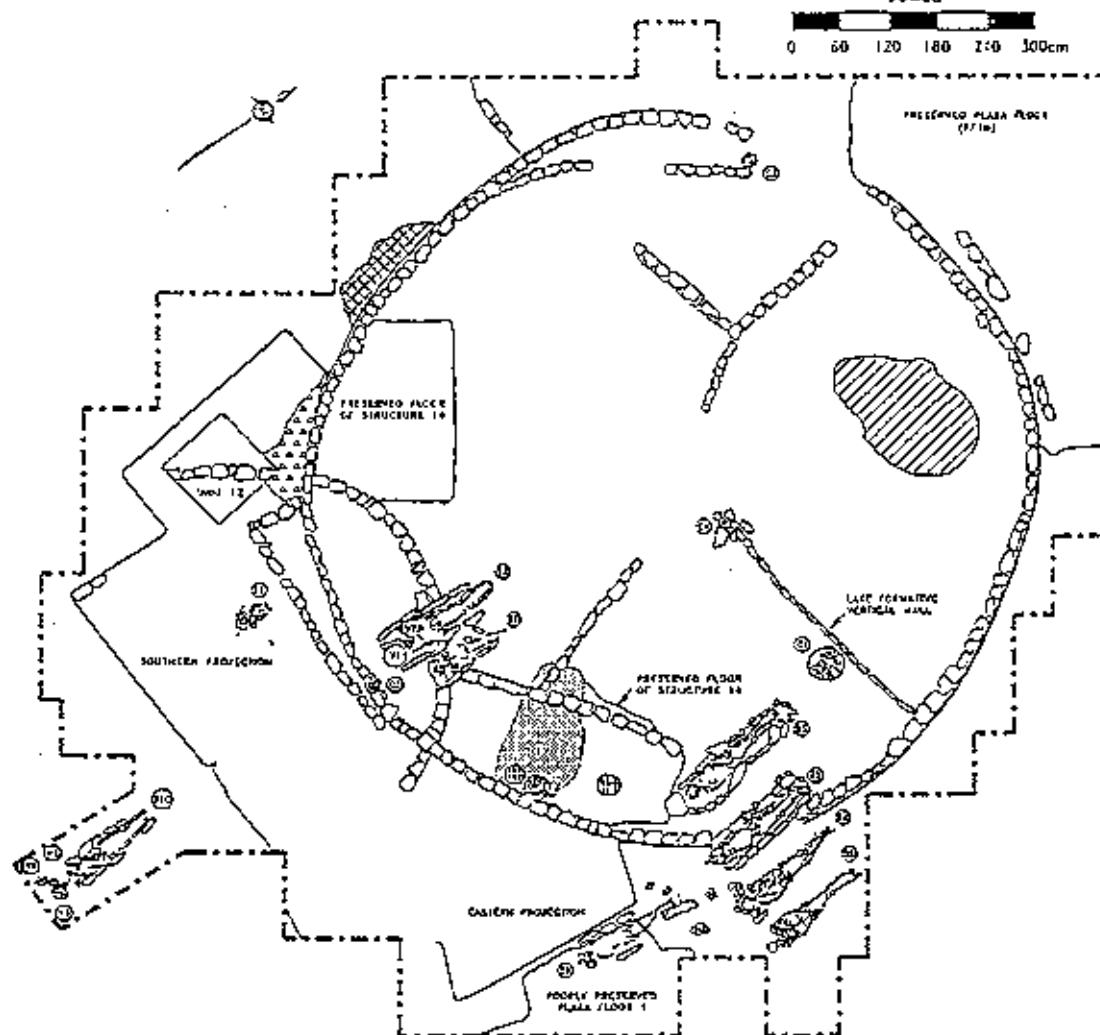


Figure 23

Similar architectural destruction of circular platforms has been recorded for Structure F of BR-1 at Barton Ramie (Willey et al. 1965:52), Structures E and F in Group E at Uaxactun (Ricketson and Ricketson 1937:115), and Structure B-4\7th at Cahal Pech (Awe 1992:136-137, 212).

As stated, Structure 14 was the second earliest construction phase discerned in the plaza unit (the earliest was represented by Structure 15 and will be discussed in more detail later). A firm chronological sequence, based on ceramic cross-dating and one radiocarbon assay, is now available after three years of investigations in PU-2. A late Middle Formative period (late Kanluk phase 500-350 B.C.) date has been assigned to Structure 14 based on the ceramics recovered from Units 2-7 and 10-16 (described below), which penetrated the platform. In support of this preliminary ceramic analysis, a single radiocarbon determination, (Beta-77201) 2370 \pm 60 B.P., was obtained. This calibrates between 485-465 B.C. or alternately 425-385 B.C. (1 sigma) (see Healy and Awe 1995b:199-200), and was obtained from beneath the earliest plaza floor (PF1) in Unit 10, confirming the temporal assignation of Structure 14 to the late Middle Formative period.

The 1994 investigations had revealed that Structure 14 consisted of a circular platform 9.55 m in diameter, 55 cm in height, and was erected on top of the newly renovated plaza floor (PF1) (see Figure 18 and 19). Structure 14

consisted of nine courses of cut-stone and was capped by a plastered floor, but in many instances only a few of the lower courses of the wall were preserved. The platform of Structure 14 sloped inward from the base to the summit of the structure and was coated with a thick layer of stucco. The use of battered walls in the construction of this round structure is an unusual architectural feature and, due to the height and size of the structure, may have been employed to stabilize the structural fill inside the large platform. Other Formative period round structures from the Maya lowlands have exhibited battered walls: the round structure from Luisville, Belize (Haberland 1958:128); Structure F-2 at Chan Chen, Belize (Sidrys and Andresen 1978:649); and Structure 2/2nd at the Zotz Group, Cahal Pech (Awe et al. 1992:120).

Structure 14 was built directly on top of the newly renovated plaza floor (PF1) and to incorporate both this floor and the circular platform into a single (contemporaneous) architectural component, the inhabitants of the Tolok Group applied a thick coat of lime plaster (hereafter referred to as a plaster turnup) along the two basal courses of cut-stone (Powis 1994:128). The plaster turnup was 2-3 cm in thickness and encircled the entire circumference of Structure 14, including the subsidiary platform (Powis 1993a:108; and 1994:128).

The area around the northern perimeter of Structure 14 demonstrated the greatest amount of damage in antiquity due

to the removal of cut-stones from the circular platform. The average height of Structure 14 in this area ranged from one to two courses of cut-stone and, surprisingly, there were sections where the plaster turnup was preserved at a greater height than the surrounding cut-stones.

A single course retaining wall was found adjacent to the northernmost extent of Structure 14. This wall was approximately 2.7 m in length and consisted of seven roughly-made cut-stones aligned along an east-west axis. This haphazard wall (with some cut-stones missing) was erected on top of a plaza floor (PF1b), which had not been found anywhere else in PU-2. This plaza floor was 5 cm thick and abutted the northwestern portion of the platform of Structure 14. Both the wall and the plaza floor (PF1b) have been dated to the transitional period between the late Middle Formative and the early Late Formative (late Kanluk phase), based on the ceramics (Savana Group only) recovered from inside Unit 8 (Figure 18). PF1 was not found in Unit 8 which indicates that this new floor (PF1b) was a later, separate addition to the plaza sequence (Figure 21). This floor is probably contemporaneous with the construction of Structure 6/1st located approximately 1-2 metres to the north of Structure 14.

Unit 11 was placed on the inside of the platform, across from the low retaining wall, found immediately to the north of Structure 14. The unit was centrally located within a large burnt area of the structural fill inside Structure

14. The ceramics recovered from the unit were represented by Savana, Jocote, and Joventud Groups. The soil in the unit was black in colour, contained abundant charcoal flecks, and exhibited large quantities of fire-cracked rock. The location and depth of the burnt soil in Structure 14 suggests this feature may have been either the result of a root burn or perhaps served as a pit-hearth. However, a similar feature was discovered in the hearting of the round structure (Structure C-13/3rd A) at Altun Ha and, according to Pendergast (1982:189), may be evidence of dedicatory activity. Further analysis of both the artifacts and the carbon samples recovered from the unit may shed some light on this unusual feature located inside Structure 14.

Several Late Formative trash deposits were found scattered around the outside of Structures 14 and 15. After the removal of one of these midden-like deposits, a small excavation (Unit 9) was placed off the western side of Structure 14 in order to record any additional architectural features and/or artifacts that may have been contemporaneous with either round structure. A portion of a plastered floor(?), 6 cm thick, was found beneath PF1 and, therefore, predated both Structures 14 and 15 (see Figures 18 and 20). To date, there are no structural remains contemporaneous with this floor. The majority of the ceramics recovered from the lowest level (Level 6) in Unit 9 were very similar in form and design to the Cunil phase (1000-850 B.C.) pottery recorded in the site core (see Awe 1992:Fig.56-57). These

Cunil-like ceramics were likely re-deposited in late Middle Formative (late Kanluk phase material) construction fill contexts, along with later ash-tempered Savana Orange sherds.

It was also during the removal of one of these midden-like deposits that the southwestern projection of the subsidiary platform of Structure 14 was found. The southwestern projection of the subsidiary platform was joined, like the eastern projection, to the round structure by a thick plaster turnup. The southwestern projection was also partially destroyed near the top by later construction activity (Late Formative PF2 was built directly over the top of Structure 14 and this projection) (Figures 18 and 23).

The only preserved section of the original floor surface of Structure 14 was also found in this area. The floor surface of the round structure was not well-preserved, but it was determined to be 3+ cm thick, and was plastered over the top of the platform onto the southwestern projection of the subsidiary platform. The actual preserved, plastered floor of Structure 14 was less than two square metres in surface area (the total surface area of Structure 14 was 70.1 m²), and did not exhibit either postholes or traces of paint. A 1 m x 1 m unit (Unit 10) penetrated the preserved section of the plastered floor of Structure 14 and the ceramics recovered from below this floor confirmed the temporal assignation of Structure 14 to the late Middle Formative period (500-350 B.C.). Excavation of Unit 10 also

confirmed that Structure 14 had a maximum height of 55 cm.

Excavation of the southwestern projection of the subsidiary platform revealed further evidence that this projection, together with the earliest plaza floor (PF1) and the platform of Structure 14, exhibited extensive burnt plastered surfaces (Figure 23). Unfortunately, such burnt areas on the actual floor surface of Structure 14 could not be detected. It is possible that the burnt areas were produced either by the burning of perishable materials or by the burning of copal. The chemical testing of burnt plaster on fire-clouded sections of floors on Structure 2/2nd in the Zotz Group, Cahal Pech indicated that incense and other materials were being burnt on that round structure (Awe et al. 1992:132; also J. Awe, personal communication, 1993). Also, a sample of burnt plaster which was found centrally located on the floor surface of an Early Classic round structure (Structure 2/1st) in the Bedran Group, Baking Pot, has also been collected for future chemical analysis (Powis 1993b:214).

The southwestern projection of the subsidiary platform was rectangular in shape and measured approximately 80-90 cm on its short axes (east and west sides), while the long axis measured about 2.7 m (on its south side). As excavations continued to follow the south side of the subsidiary platform, it was fully expected that it would turn inward toward the platform, forming a keyhole-shaped round structure. Similar structures have been identified at other

sites in the Maya Lowlands, such as Structures E and F in Group E at Uaxactun (see Ricketson and Ricketson 1937:115-117); Structure 304 below Platform 34 at Cuello (Gerhardt 1988:74; Hammond et al 1991:50-51); Structures 1 and 2 of the BA-20 Group at Río Azul (Hendon 1989:96, 100, 129); and Structure F of BR-1 at Barton Ramie (Willey et al. 1965:51-59).

The subsidiary platform continued southwards forming another separate projection, the southern projection, of the subsidiary platform. The southern projection of the subsidiary platform was followed until it abruptly ended, due to some unknown (later?) architectural activity (Figures 23). The southern projection mirrored the southwestern projection in shape, but exhibited a slightly larger base measuring 1.47 m on its west side and approximately 2.81 m on its south side (or long axis). No eastern side to this projection was found, nor associated plaza floor, which indicated that some kind of architectural destruction occurred in antiquity in this area.

The eastern projection was also of similar shape and dimensions with both the southern and southwestern projections of the subsidiary platform of Structure 14. A portion of a fourth projection of the subsidiary platform was located between the eastern and southern projections during excavation of Unit 16. This 2 m x 1 m unit was placed adjacent both to the southern projection and to the L-shaped retaining wall, located in the fill of Structure 14 (Figure

18). In this unit, remnant portions (a small piece of plaster turnup) of another projection, the southeastern projection, were found and these are perhaps enough to suggest that this construction manifested the same shape and dimensions as the other three projections of the subsidiary platform.

Test units (Units 5, 12, and 15) were placed into each of the three remaining projections of the subsidiary platform of Structure 14. Unit 5 was placed into the eastern projection and yielded few artifacts, but the fill included ceramics of the Savana and Pital Groups. This ceramic information indicates that the subsidiary platform was constructed during the late facet of the Kanluk phase (650-350 B.C.), contemporaneous with the construction of the circular platform of Structure 14. The structural fill inside this small (1 m x .5 m) unit consisted primarily of compacted soil and ballast, which was widely used throughout the construction of Structure 14. No burials or caches were found inside this projection of the subsidiary platform.

Unit 12 measured 1 m x 1 m and was centrally located within the southwestern projection of the subsidiary platform. Importantly, this unit was placed over the only preserved plastered area of the subsidiary platform. The ceramics recovered from this sealed unit confirmed a contemporaneous date with both the round structure and the other projections of the subsidiary platform. Inside this unit, the lower two courses of the circular platform of

Structure 15 were also found, abutting the earliest plaza floor (PF1) (Figure 19). After abandonment, the inhabitants of the Tolok Group likely sheared off the upper courses of Structure 15 during the construction of the larger round structure, Structure 14, and its contemporaneous subsidiary platform.

Unit 15 was placed in the middle of the southern projection and contained large quantities of late Middle Formative period artifacts. The volume of artifacts recovered from this unit, particularly ceramics, contrasted with the low number of artifactual materials found in the other units placed into the subsidiary platform. Also of interest was the absence of PF1 in the unit. Instead, a 4 cm thick tamped floor was found in its place consisting of compacted soil and marl. There were few artifacts recovered beneath this tamped floor, but some diagnostic Middle Formative period ceramic types were found, such as Savana Orange [n=7] and Jocote Orange-Brown [n=1].

Burial 9 was found prior to excavation of Unit 15 in the southern projection of the subsidiary platform. This cist burial (after Welsh 1988:17) was intrusive through PF2 and was placed directly against, and partially on top of, an L-shaped retaining wall (Figures 23 and 24). The L-shaped retaining wall was found abutting the fifth course of the platform of Structure 14 and likely served as construction cribbing to stabilize the structural fill of Structure 14 during construction. It consisted of a single-course of cut-

DETAILED PLAN OF INTRUSIVE BURIALS 7, 8 AND 9
STRUCTURES 14 AND 15
PLAZA UNIT-2, TOLOK GROUP
CAHAL PECH, BELIZE
JUNE 9, 1993

PLAN VIEW BY: T. POWES, B. KORMANN
R. SORG, A. HASTNETT
D. MARDIROSI, C. CRUMHORN
GRAPHICS BY: A. ALLAN

LEGEND	
	POST HOLE
	PLASTER TURNUP
	CUT STONE
	BURIAL
	CERAMIC VESSEL
	CACHE
	SHERD CLUSTER
	BIVALVE AND JADE
	JADE
	BURNED FLOOR SURFACE

SCALE

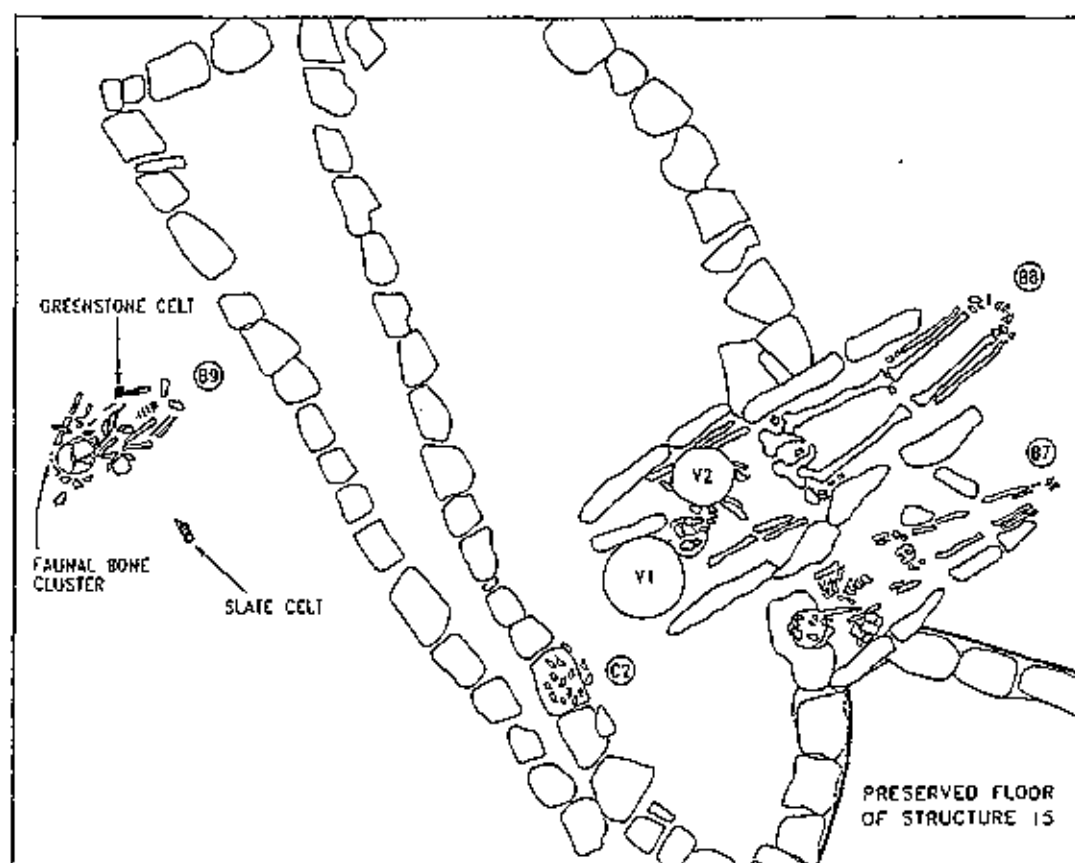
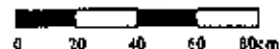


Figure 24

stone with its long axis aligned in an east-west orientation.

This intrusive, early Late Formative period (early Xakal phase) burial was oriented in a north-south direction with its body in a prone (face and stomach down), fully extended position. The head of this individual was oriented to the south and its hands were placed under the pelvis. Each of the other Late Formative burials (Burials 7, 8, and 10) and Late Classic burials (Burials 2-6), intrusive to both round structures, were interred in the same fashion demonstrating a strong burial tradition through time at the Tolok Group (see Powis 1994:137-139, Figures 6-8; Song 1993:120; and Song et al. 1994 for further discussion of similar mortuary practices at Cahal Pech and elsewhere in the Belize River Valley).

There was one primary interment inside this cist consisting of a child aged 2-4 (based on both dental development and estimated long bone length) (see Song 1995:179-183). One interesting aspect of this child burial was that only the upper half of this individual was present in the grave (see Figure 24). The lower extremities, the hand bones, and some pelvic bones (i.e. sacrum) were absent from the cist grave. The skeletal preservation of the upper body of this individual was good to very good, which suggests that the lack of lower limbs was likely the result of skeletal mutilation (Welsh 1988:81).

Of interest is the method in which the cut-stones were placed over this individual. Although only half of the child was present in the grave, the length of the cist exceeded by far the dimensions of the interred. In other words, the cist was nearly twice as long as that of the child's partial body. To date, it is unclear why the inhabitants of the Tolok Group would have exaggerated the length of the cist, but there is the possibility that some kind of skeletal mutilation occurred by removing the lower limbs either before or after the interment of this child (also see Song 1995:180).

There were a number of grave goods associated with Burial 9. Of particular importance were the partial remains of at least three individuals placed on the upper body of the primary interment. Individual 2 was represented by a few long bones and teeth. Based on both dental development and estimated long bone length, this individual was aged between 4-6 years (see Song 1995:181). The partial remains of Individual 2 were found along the left arm, as well as located on each shoulder of the primary interment. Individual 3 was represented by teeth only. However, there is osteological evidence suggesting that its cranium may have been present in the grave. Preliminary analysis of the teeth from this individual, based on dental development, suggests an age between 1-2 years (see Song 1995:182). The teeth of this child were found south of, and scattered around, the skull of the primary interment. Individual 4 was

represented by teeth and one femur. Based on dental development and estimated long bone length, this individual was aged between 0-6 months (see Song 1995:182). The partial remains of this infant were found on the right shoulder of the primary interment.

The fragmentary bones and teeth of these three children, Individuals 2-4, should be considered as grave offerings, based on their secondary context, to the primary interment of Burial 9. Furthermore, it is suggested that these individuals were placed in the grave to accompany this child as part of a single act of interment (cf. Haviland 1990:495).

In addition to the partial remains of three individuals in Burial 9, a clump of faunal material was also found at the base of the child's cranium. In the clump of bone, the remains of an upper mandible fragment of a parrotfish were found, along with two white-tail deer auditory bullae. Although some of the burials in Structure 14 had modified shell artifacts (Burials 2 and 7), this was the only burial in PU-2 which contained animal bone (both mammal and saltwater fish), and these are currently under analysis (Stanchly 1995:138).

Other grave goods which accompanied the child burial included: the medial fragment of a highly polished greenstone celt located on the right humerus; an unmodified piece of slate placed near the pelvis; and a figurine fragment found beside the cranium of the child (see Burial

Data section in Appendix B for inter-site comparisons).

A number of smaller units were excavated to the south of Burial 9 and the southern and southeastern projections of the subsidiary platform to record any architectural features which might lie outside the immediate area of Structure 14. Burial 10 was found in this area. It was placed on PF1, located about one metre to the south of Unit 16 and just to the north of the 1991 excavations of Structure 4 (Figures 23 and 25) (see Powis 1992:43-44).

Burial 10 was an early Late Formative period (early Xakal phase c. 350 B.C.) cist grave (after Welsh 1988:17), which contained a single, primary interment. The individual inside the grave was of an adult female aged 16-23 years and was interred in a prone (face and stomach down), fully extended position (see Song 1995:183-185). The cist burial was oriented in a north-south direction, the head positioned to the south, and the hands were located under the pelvis.

A total of three ceramic vessels (two intact vessels and one partially reconstructed vessel) were part of the grave furniture found in Burial 10 (see Figure 25). One of these vessels was located under the skull of the interred individual and consisted of a Sierra Red: Variety Unspecified bowl with a series of four parallel, vertical lines painted with a black slip on two opposing sides of the vessel. This vessel was 19.3 cm in diameter, 6.2 cm in height, and exhibited an eroded dark red-maroon slip on both the interior and exterior of the bowl, with extensive fire-

DETAILED PLAN OF INTRUSIVE BURIAL 10
STRUCTURES 14 AND 15
PLAZA UNIT-2, TOLOK GROUP
CAHAL PECH, BELIZE
JUNE 9, 1993

PLAN VIEW BY: T. POHNS, B. HORNHANN
R. SONG, A. HARTNETT
D. WARDIROS, C. CARRION

GRAPHICS BY: A. ALLAN

LEGEND

- ⌒ PLASTER TURNUP
- ⊙ BURIAL
- ⊙ CERAMIC VESSEL
- ▭ CUT STONE

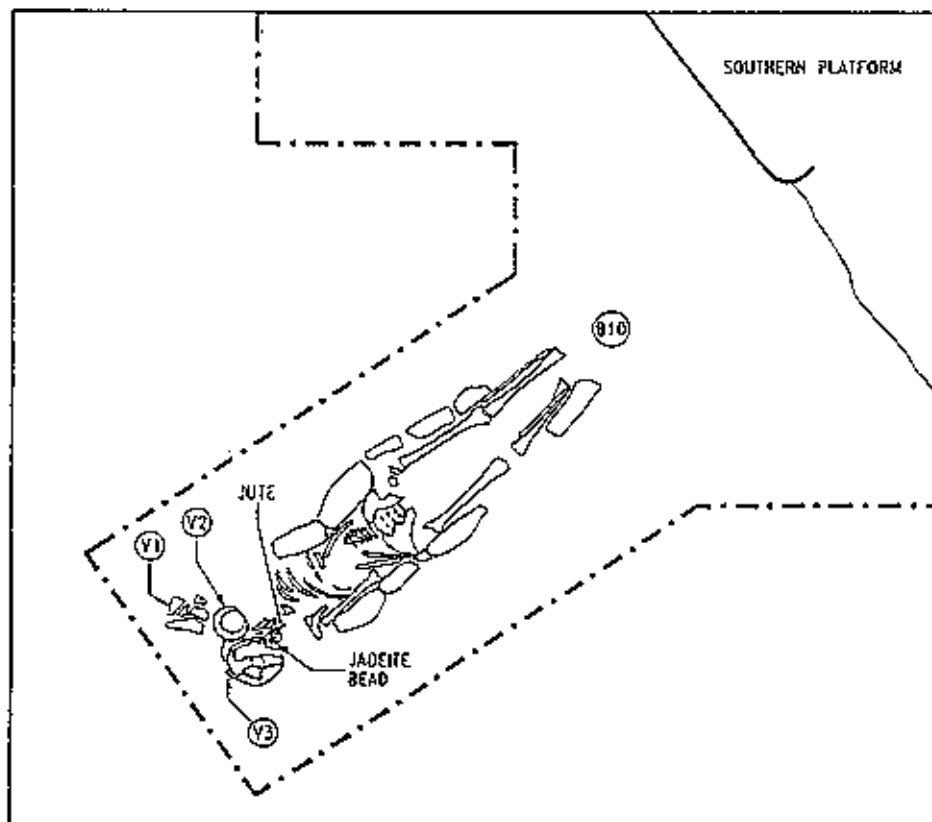
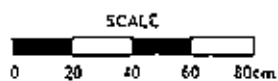


Figure 25

clouding. This skull-in-bowl burial represents a similar practice to that observed in both Burial 8 and Cache 3 at Tolok. Another intact vessel from the burial was a Sierra Red: Variety Unspecified tecomate bowl located on the west side of the cranium of the individual. This tetrapod bowl (Vessel 2) was 10.1 cm in diameter, 7.7 cm high, and had a lustrous dark red-maroon slip exhibiting extensive fire clouding. The other vessel associated with Burial 10 consisted of a number of pieces of a large Laguna Verde Incised: Variety Unspecified vessel, which were partially reconstructed to form only a small portion of an outflaring bowl (see Burial Data section in Appendix B for inter-site comparisons).

Two non-ceramic items were also found in Burial 10, and were located near the cranium and mandible of the interred individual. An intact, polished jadeite/greenstone tubular bead approximately 1.3 cm long was found between the axis and atlas of the vertebral column of this individual. In addition to the jadeite/greenstone bead, an immature jute snail (*Pachychilus indiorum*) with a broken apex was found located inside the mandible of this adult woman (see burial data section in Appendix B for inter-site comparisons).

Four units (Units 2, 3, 6, and 7) were placed into Structure 15 to determine a relative chronology and to understand the architectural relationship between both round structures. One of the most interesting features exposed during excavation of Structure 14 was its relationship with

Structure 15. As noted earlier, the platform of Structure 15 was also circular in plan, although both smaller in height and diameter, and predated Structure 14. Excavations revealed evidence that Structure 14 was superimposed directly over the top of the platform of Structure 15. At times, it was possible to observe the eastern retaining wall of Structure 14 resting directly on top of the northern portion of Structure 15.

Investigations revealed that Structure 15 had a diameter of approximately 5.5 m, a height of 38+ cm and, consisted of at least five courses of cut-stone. The excavation of Structure 15 also indicated that it was partially incorporated into the platform of Structure 14 rather than being completely destroyed for its ready-made construction materials. Certainly some cut-stones were removed for such subsequent construction, but it was minimal compared to the amount of damage later done to its larger, more complex counterpart (Structure 14).

Two units (Units 6 and 7) were placed on either side of the northern portion of the platform of Structure 15 to determine a relative chronology (see Figure 18). Unit 6 was placed on the northern side of the platform to determine its height and to further define its contemporaneity with PF1. The .5 m x .5 m unit was excavated to bedrock at a depth of approximately 24 cm and, consisted of fill primarily made of compacted soil, marl, and ballast. The platform exposed in Unit 6 indicated a height of five courses of cut-stone,

although the upper two courses were removed for the interment of intrusive Late Formative Burials 7 and 8. As suspected, the plaza floor (PF1) did abutt the building platform of Structure 15, at the second course of cut-stone. The plaza floor (PF1) was 4 cm thick and was constructed on top of a base made of marl (approximately 6 cm thick). Artifacts recovered from the fill of Unit 6 were few in number and consisted primarily of lithics and ceramics. The majority of the pottery were unslipped body sherds, but some diagnostics (n=6) were identified as Savana Orange variety (late Kanluk phase).

Unit 7 was placed on the south side, between both platforms to obtain as much architectural information as possible and to determine the nature of the construction fill. The unit measured approximately 1 m x 1 m in size and was excavated to bedrock. The construction fill in the unit was very different from other areas excavated in PU-2. It consisted mostly of medium-sized rubble and ballast with smaller amounts of compacted soil. It should be noted that no marl was encountered in the unit and, perhaps, indicates the absence of a plastered floor surface, observed in Unit 6. No evidence of PF1 has been found on the south side of the platform of Structure 15. The artifacts recovered from Unit 7 were few in number and included ceramics (primarily Savana Orange and Jocote Orange-Brown types) and freshwater snails (*Pachychilus* spp.). The ceramics recovered from inside both Units 6 and 7 suggests that Structure 15 dated

to the late Middle Formative period (650-500 B.C.), and predated Structure 14.

The other two units, Units 2 and 3, were placed into a preserved section of a second (later) patio or plaza floor which abutted the fifth course of the platform of Structure 15 (Figure 18). Unit 2, like Unit 3, was placed into the preserved section of this plastered floor to determine the date of construction. The ceramic assemblage recovered from the structural fill included sherds of the Savana, Jocote, and Joventud Groups (see Gifford 1976). This information suggested only that this addition to Structure 15 was constructed during the late Middle Formative period (Powis 1994:131-132). No carbonized material was found in this unit to provide a more accurate date of construction.

Also, beneath this second (later) patio or plaza, a low retaining wall, two courses high, was exposed. This retaining wall was well-defined in both Units 2 and 3 and was contemporaneous with PF1. It appears that this wall was used as a retaining wall for PF1, forming an enclosed rectangular patio or plaza area, located off the north end of Structure 15 (Figure 18). Furthermore, there is evidence which suggests that this retaining wall may have been several courses higher but some of them were removed for the renovation and expansion of PF1 during the construction of Structure 14. This retaining wall was followed north and, unfortunately, was destroyed by the interment of intrusive Late Classic Burials 2 and 3 (see Figure 16).

In addition to Units 2, 3, 6, and 7, other units (Units 13-15) were placed beneath Structure 14 in order to follow the retaining wall, contemporaneous with PF1, found in Units 2 and 3. The retaining wall of PF1 was found in each of the three units (Units 13-15), forming a T-shape, consisting of two courses of cut-stone (Powis 1994:131-132). One of these walls was aligned in a north-south direction and exhibited some remnant pieces of a plaster turnup. This plaster turnup had connected both the T-shaped wall and PF1 to Structure 15. This north-south wall was approximately 5 m long (although some cut-stones were missing) and abutted another low wall (running east-west) located to the north of Unit 4. It should be reiterated that in Units 3, 4, and 13-15, PF1 was constructed entirely within these low retaining walls forming a large, enclosed patio or courtyard to the north of Structure 15. In support of this premise is the fact that remnant portions of plaster turnup were found on both PF1 and the retaining wall.

Diachronic Development

A diachronic reconstruction of the southern patio group is presented to provide a better understanding of both the spatial and the architectural relationships between each mound in the group. More specifically, a combination of architectural, burial, and ceramic studies have indicated that significant changes occurred during the Middle and Late Formative periods. These changes can be divided into four

distinct construction phases.

During Phase 1 (late Kanluk phase c. 650-500 B.C.), Structure 15 was erected on top of a tamped floor made primarily of compacted soil, marl, and small ballast. The tamped floor was laid down to even out the irregularities of the bedrock. At this time, a large, enclosed patio, contemporaneous with Structure 15, was constructed off the northwest end facing the site core. This patio was either square or rectangular consisting of two or more courses of cut-stone, capped by a plaster floor (PF1), and abutted the second course (from the bottom) of Structure 15.

A second (later) patio or, perhaps, plaza floor was found contemporaneous with Structure 15 but most of it was architecturally destroyed during the subsequent construction of Structure 14. This plastered floor abutted the fifth course (from the bottom) of the platform of Structure 15 and was also located on the northeast side of the platform (see location of Units 2 and 3). No original floor surface capping Structure 15, nor other structural remains contemporaneous with Structure 15, have been found in PU-2. To date, there are no contemporaneous special deposits associated with Structure 15.

During the second half of the late Kanluk phase (c. 500-350 B.C.), Structure 15 was abandoned, partially destroyed, and replaced at this location by a larger circular platform, identified as Structure 14. Prior to the construction of Structure 14, the inhabitants of the Tolok

Group enlarged PF1, effectively doubling its size. Once completed, they built the larger, more complex round structure, Structure 14, on top of this newly expanded and renovated plaza floor (PF1). This larger round structure covered some, but not all, of the north end of the platform of Structure 15.

During the initial construction of Structure 14, the inhabitants of the Tolok Group may have experienced some difficulty erecting this massive structure. To alleviate potential construction problems, they erected a number of retaining walls within the structural fill of both the subsidiary platform and the platform to prevent the insloping walls from collapsing.

At about the time Structure 14, and its subsidiary platform, were erected two rectangular platforms (Structure 5/1st and Structure 7/1st) were also built on the southwest and northeast sides, respectively, of the round structure. The spatial configuration of two rectangular structures located around the outside of a circular platform formed an informally organized residential patio group (after Ashmore 1981:48-49). To date, however, no late Middle Formative platforms of either Structure 4/1st or 6/1st have been found contemporaneous with Structure 14. It should be noted that only PF1 was found during the excavation of Structures 4 and 6. The failure to locate the structural remains of Structures 4/1st and 6/1st may be the result of sampling error but, perhaps, future work on settlement density in

this locale will uncover this early architecture.

Structure 14 appeared to have been used for some time before it, too, was abandoned and destroyed (possibly by fire) prior to the construction of PF2. No evidence of replastering has been found associated with Structure 14, despite the long period of use. However, most of its original floor surface was destroyed in antiquity by the placement of intrusive special deposits (i.e. burials and caches) and, by the removal of cut-stones by the later inhabitants of the Tolok Group for subsequent construction.

By the early Kakal phase (350 B.C.- A.D. 100), marking Phase 2, the southern patio group was transformed with the round structure being partially destroyed, like its predecessor (Structure 15), and replaced by a plaza floor (PF2) covering the entire circular platform. In fact, to the south, a large retaining wall (approximately 5.5 m long and 70 cm high) was built, behind Structure 5/1st, to increase the overall size of PF2.

After the abandonment of Structure 14, a number of special deposits, including Burials 9 and 10 and non-dedicatory Caches 1 and 4, were placed within the construction fill of a now buried Structure 14. These deposits were intrusive through PF2 which covered Structure 14. No platforms associated with Structures 4-7 were contemporaneous with the construction of PF2, but this may have been the result of sampling error during the testing of these structures.

PF2 was replaced during the terminal Late Formative period (late Xakal phase A.D. 100-350) by the penultimate plaza floor (PF3), marking Phase 3. A number of special deposits (Burials 7 and 8, and Caches 2 and 3) were contemporaneous with this floor. Some of these deposits, particularly Burial 8 and Cache 3, contained ceramic vessels of Aguacate Orange: Variety Unspecified which is a good time marker for the end of the terminal Late Formative period in the Belize Valley (Gifford 1976:127-128).

It should be noted that one building stage, represented in Structure 4/4th, dated to the Early Classic period (A.D. 250-600). It is the only component at Tolok, including the southern patio group, to date to this time period. Tzakol 1-3 sphere ceramics are also not well-represented in the site core.

During the Late Classic period (A.D. 700-900), marked by Phase 4, rectangular platforms were raised in Structures 4-7 and bordered the terminal plaza floor (PF4). At this time, a number of sequential Late Classic period burials (Burials 2-5) were placed through PF2-4 and they were interred either into the structural fill of Structure 14 (i.e. Burials 2 and 3) or placed just outside of it on PF1 (i.e. Burials 4 and 5). Burial 6 was interred adjacent to the eastern projection of the subsidiary platform of Structure 14 sometime during either the initial (PF4a) or the second replastering (PF4b) of the terminal plaza floor (PF4) in the patio group.

Summary

Summarizing briefly, the majority of the sampled mounds at Tolok have produced substantial evidence of Middle and Late Formative occupation phases. The bulk of archaeological information on Middle Formative activity at Tolok was derived from the excavation of two sub-plaza or hidden circular platforms, Structures 14 and 15, located in the southern patio group. The excavations conducted in PU-2 have demonstrated the complexity of Middle Formative architecture, particularly the superposition of two round structures. In addition to the architectural data, the placement of dedicatory material (Burials 2-10 and Caches 1-4) in the area of the buried (sub-plaza) round Structures 14 and 15 have provided important insights to the type of long-term ritual activities associated with the patio group.

CHAPTER 3

THE ARTIFACTS

Introduction

The artifactual assemblage recovered from each of the four construction phases (PF1-4) in PU-2 is the focus of this chapter. More specifically, a detailed contextual analysis of these artifacts recorded from both Structures 14 and 15, and represented by five major artifact classes, will be provided. Following Awe (1992:223), the main objectives of the artifact analysis of the Tolok material are:

- 1) to provide descriptions of the Formative Period artefacts from Cahal Pech; 2) to conduct regional comparisons of the assemblage; and 3) to determine which materials represent trade items. This information is subsequently used to document diachronic changes at the site, and to ascertain the cultural relationship between Cahal Pech and other sites in the region.

The methodological approach used to analyze the artifacts recorded from PU-2 closely followed the system employed by Kidder (1947), Willey et al. (1965), Garber (1989), and Awe (1992). According to this analytical system, the artifacts are organized into different categories on the basis of their raw material including: clay, stone, shell, and bone. At Cahal Pech, Awe (1992:223) stated that:

these raw material categories are subsequently subdivided according to industry (or technology) used for production of the artefact and, with the exception of ceramics, they are classified according to form.

Similarly, the industries represented in the artifact assemblage from the different construction phases in PU-2 at Tolok include: ceramic, modified ceramic sherd, modeled clay, ground stone, polished stone, chipped stone, worked shell, and miscellaneous. The frequency of these artifacts, as well as their context and chronological placement represented in each industry, will be discussed. Comparative data will also be provided to help establish both the temporal and geographic distribution of these artifacts at Tolok with other sites in the Maya lowlands.

Abundant artifactual material was recovered from each of the four construction phases in PU-2, with the exception of the material recovered from below the plastered floor in Unit 9. It is important to note that in all cases the artifact assemblage recovered during excavation in PU-2 was from architectural fill contexts. Nevertheless, the artifacts recovered from PU-2, and examined in this chapter, are from sealed contexts. Although there was destruction in antiquity of some sections of the plaza floors by intrusive special deposits and by the removal of cut-stones for subsequent construction in PU-2, all artifacts described in Chapter 3, including ceramics, were obtained from secure, stratified deposits with the exception of the material recorded from the humus layer of PU-2. Although this last material is due to centuries of milpa farming, soil erosion, and land development, it is not associated with any architecture. Therefore, in the interest of completeness,

some of the artifacts recovered from the surface layer in PU-2 have been analyzed and provide comparative data with artifacts found at other sites in the Maya area.

The preservation of this material, particularly animal bone and ceramic, ranged from poor to very good depending on natural and cultural transformation processes. Of note, the artifacts associated with the burials and caches in PU-2 will be discussed separately in the Burial and Cache Data Section of Appendix B.

The Ceramic Industry

The most abundant artifacts recovered from construction fill contexts in PU-2 were ceramics. In the field, all ceramics were recorded according to both their stratigraphic and spatial contexts. In the lab, the ceramic typology followed the type:variety/mode method employed by Gifford (1976) at Barton Ramie, as well as Kosakowsky (1987) at Cuello, and Valdez (1987) at Colha. The ceramics were used primarily to establish a relative chronology for the architectural remains uncovered in PU-2. The majority of the ceramics recovered have been dated to the Formative period and, based on Awe's (1992:224-248) classification for Cahal Pech, they have been divided into three local ceramic complexes (Cunil, Kanluk, and Xakal). These local ceramic complexes are roughly coeval with Gifford's Barton Ramie phase sequence (see Figure 10).

The ceramics recovered from the Tolok Group, particularly from Structures 14 and 15, will be analyzed in

greater detail as part of a separate study to be conducted sometime in the future. Therefore, the results of the ceramic analysis presented here should be considered preliminary in nature. Nevertheless, this preliminary analysis has been completed and a comprehensive listing, including frequencies of the ceramic types, is available in Table 1. Each construction phase (PF1-4, including Unit 9) recorded in PU-2 is represented in Table 1 as well as the ceramic material recovered from the surface (humus) layer.

A total of 36,091 sherds were recovered from PU-2. The ceramic material was divided into complete rim profiles (n=2,736), body sherds/non-diagnostic sherds (n=32,998), and miscellaneous pieces (n=357). A rim sherd was considered analyzable based on a number of attributes, including the preservation of both the interior and exterior surfaces and the lip. Body sherds were categorized according to their shape and decoration and, similarly, non-diagnostic sherds included those pieces which lacked identifying attributes, such as partial rims and olla fragments. Miscellaneous sherds were considered a separate category consisting of a variety of pieces, including: strap handles (n=148), bases (n=131), legs and/or nubbins (n=33), spouts (n=18), eroded figurines(?) (n=10), briquettes (n=8), lumps of clay (n=6), and censor fragments (n=3).

No stratigraphically sealed deposits of Cunil ceramics have been isolated in PU-2. Although 25 complete rims and 74 body sherds have been identified as Cunil, they have been

Table 1. Preliminary Analysis of Ceramics Recovered from Plaza
Unit-2, The Tolok Group, Cahal Pech, Belize, 1992-94.

Phase	Ceramic Type (Complete Rims)	Body Sherds/ Non-Diagnostic	Misc.
Surface	311 DOLPHIN HEAD RED 295 CAYO/ALEXANDERS 201 SIERRA RED 58 BELIZE RED 49 SAVANA ORANGE 44 JOCOTE ORANGE-BROWN 44 MOUNT PLEASANT RED 42 GARBUTT CREEK RED 23 ROARING CREEK RED 20 HILLSBANK RED 14 MOUNT MALONEY BLACK 11 PLATON PUNCTATED-INCISED 10 AGUACATE ORANGE 8 VACA FALLS RED 7 CAYO UNSLIPPED 7 REFORMA INCISED 5 MOUNTAIN PINE RED 5 POLVERO BLACK 5 SILVER CREEK IMPRESSED 5 ALEXANDERS UNSLIPPED 4 FLOR CREAM 3 MINANHA RED 3 MEDITATION BLACK 2 LAGUNA VERDE INCISED 2 PITAL CREAM 1 KAWAY IMPRESSED 1 MCCRAE RED IMPRESSED 1 DOS HERMANOS 1 HAPPY HOME ORANGE 1 STARKEY INCISED 1 PINOLA CREEK INCISED 1 ACHOTE BLACK		
	1,182	15,878	212
PF4	45 SIERRA RED 23 CAYO UNSLIPPED 17 DOLPHIN HEAD RED 14 SAVANA ORANGE 13 JOCOTE ORANGE-BROWN 4 SAPOTE STRIATED 3 HILLSBANK RED 2 VACA FALLS RED 2 REFORMA INCISED 2 POLVERO BLACK 2 GARBUTT CREEK RED		

Table 2. Continued.

	2	BELIZE RED		
	2	FLOR CREAM		
	2	SAMPOPERRO RED		
	1	MOPAN STRIATED		
	1	JOVENTUD RED		
	1	ROARING CREEK RED		
	1	LAGUNA VERDE INCISED		
	1	MEDITATION BLACK		
	1	PITAL CREAM		
	139		1,705	10
PF3	130	SIERRA RED		
	56	SAVANA ORANGE		
	44	JOCOTE ORANGE-BROWN		
	19	HILLBANK RED		
	12	POLVERO BLACK		
	12	REFORMA INCISED		
	9	SAYAS DAUB-STRIATED		
	5	CUNIL		
	4	SAMPOPERRO RED		
	4	PITAL CREAM		
	3	JOVENTUD RED		
	3	CHAN POND UNSLIPPED		
	3	STARKDY INCISED		
	2	AGUACATE ORANGE		
	1	PAILA UNSLIPPED		
	1	MINANHA RED		
	1	DOLPHIN HEAD RED		
	1	SOTERO RED-BROWN		
	1	LAGUNA VERDE INCISED		
	1	LECHUGAL INCISED		
	1	GUACAMALLO RED-ON-ORANGE		
	1	PASO DANTE INCISED		
	1	MATEO RED-ON-CREAM		
	1	SAVANNAH BANK USULUTAN		
	1	SAPOTE STRIATED		
	317		4,094	32
PF2	355	SIERRA RED		
	162	SAVANA ORANGE		
	155	JOCOTE ORANGE-BROWN		
	33	SAYAS DAUB-STRIATED		
	33	POLVERO BLACK		
	10	REFORMA INCISED		
	25	JOVENTUD RED		
	25	PITAL CREAM		
	24	PAILA UNSLIPPED		

Table 2. Continued.

	22 HILLBANK RED			
	18 SAMPOPERRO RED			
	15 CUNIL			
	14 CHUNHINTA BLACK			
	8 DEPRECIO INCISED			
	7 LAGUNA VERDE INCISED			
	5 FLOR CREAM			
	3 STARKEY INCISED			
	3 LECHUGAL INCISED			
	2 CAYO UNSLIPPED			
	2 DOLPHIN HEAD RED			
	2 CHACCHINIC RED-ON-ORANGE			
	2 PALMA DAUB-STRIATED			
	2 PINOLA CREEK INCISED			
	2 PASO DANTE INCISED			
	1 MOUNT PLEASANT RED			
	1 SAVANNAH BANK USULUTAN			
	1 AGUACATE ORANGE			
	1 IGUANA CREEK WHITE			
	1 NEVER DELAY IMPRESSED-BLACK			
	1 SAPOTE STRIATED			
	1 ESCOBAL RED-ON-BUFF			
	976	10,616	87	
Pf1	46 SAVANA ORANGE			
	35 JOCOTE ORANGE-BROWN			
	10 REFORMA INCISED			
	5 CUNIL			
	5 JOVENTUD RED			
	4 SAMPOPERRO RED			
	3 SAPOTE STRIATED			
	3 SAYAB DAUB-STRIATED			
	2 PITAL CREAM			
	1 CHUNHINTA BLACK			
	114	630	16	
Unit 9	3 JOCOTE ORANGE-BROWN			
	2 JOVENTUD RED			
	1 SAMPOPERRO RED			
	1 SAVANA ORANGE			
	1 PINOLA CREEK INCISED			
	8	75	-	
Total	2,736	32,998	357	

found mixed with late Middle Formative architectural fill deposits. To date, no sealed deposits nor architectural remains associated with the Cunil Ceramic Complex have been found outside the site core of Cahal Pech (see Awe 1992:226-232, 1993:10-11, 1994:8; Healy and Awe 1995b; and Cheetham 1992:19-22, 1995).

The majority of the ceramics recorded in PU-2 are dated to the late Middle Formative period (late Kanluk phase) and was recovered from the construction fill below PF1 and PF2 (see Table 1). The most abundant Ceramic Groups recorded in these levels are Sierra, Savana, Jocote, Pital, and Joventud (Figures 26 and 27a-e) (see Gifford 1976). The majority of vessel forms dating to the late Kanluk phase consisted of both shallow and deep bowls with preslip incisions, as well as wide-mouth jars which were decorated with strap handles and impressed with fillet appliques (Figure 27j, k). Some vessel types, such as Savana Orange and Chunhinta Black, include spouted chocolate pots with strap handles, which are akin to types found in northern Belize (see Kosakowsky 1987:47-48; Valdez 1987:105-109) and elsewhere in the Maya subarea (also see Smith 1955:31; Sabloff 1975:74; Forsyth 1989:16-17). Awe (1992:240) has indicated that:

late facet Kanluk pottery, which is related to ceramics from the Mamom sphere, shares a greater number of modes and types with other Lowland regions than previous Cahal Pech assemblages. This is particularly indicated by the increased occurrence of waxy wares. Strong ties with northern Belize also continue and are manifested by the presence of Jocote and Savana groups in both regions, and by modal similarities in the pottery from the two assemblages...These ceramic parallels suggest that

during the late Middle Formative there was an increase of regional interaction and the establishment of greater ceramic homogeneity in the central Maya Lowlands.

The ceramics found in the construction fill of PF3 are diverse and reflect a pattern found at Cahal Pech and elsewhere in the Belize Valley (Awe 1992:247). During the terminal Late Formative period, the Sierra Red sherds are predominant and continue to be used into the Classic period at Cahal Pech, including Tolok. Although small quantities of terminal Late Formative ceramics, such as Aguacate Orange: Aguacate Variety, occur in burials at Tolok, they are, according to Awe (1992:247):

a small percentage of the terminal Late Formative Xakal ceramic assemblage. The red Sierra group and the unslipped-striated Sapote group remain the predominant ceramic types during this time. The cream-slipped Flor group, and the black Polvero group also continue, but their relative frequency remains much lower to that of red-slipped pottery.

In the terminal phase of architecture (PF4) in PU-2, Late Classic pottery is predominant. The most common Late Classic ceramic types are Cayo and Alexanders Unslipped (n=23) jars, and Dolphin Head Red (n=17) bowls (see Gifford 1976). The majority of the ceramics from this construction phase (PF4) were unanalyzable body sherds (n=1,705). In the humus layer, there was a mix of both Formative and Classic period sherds due to the aforementioned natural and cultural transformation processes.

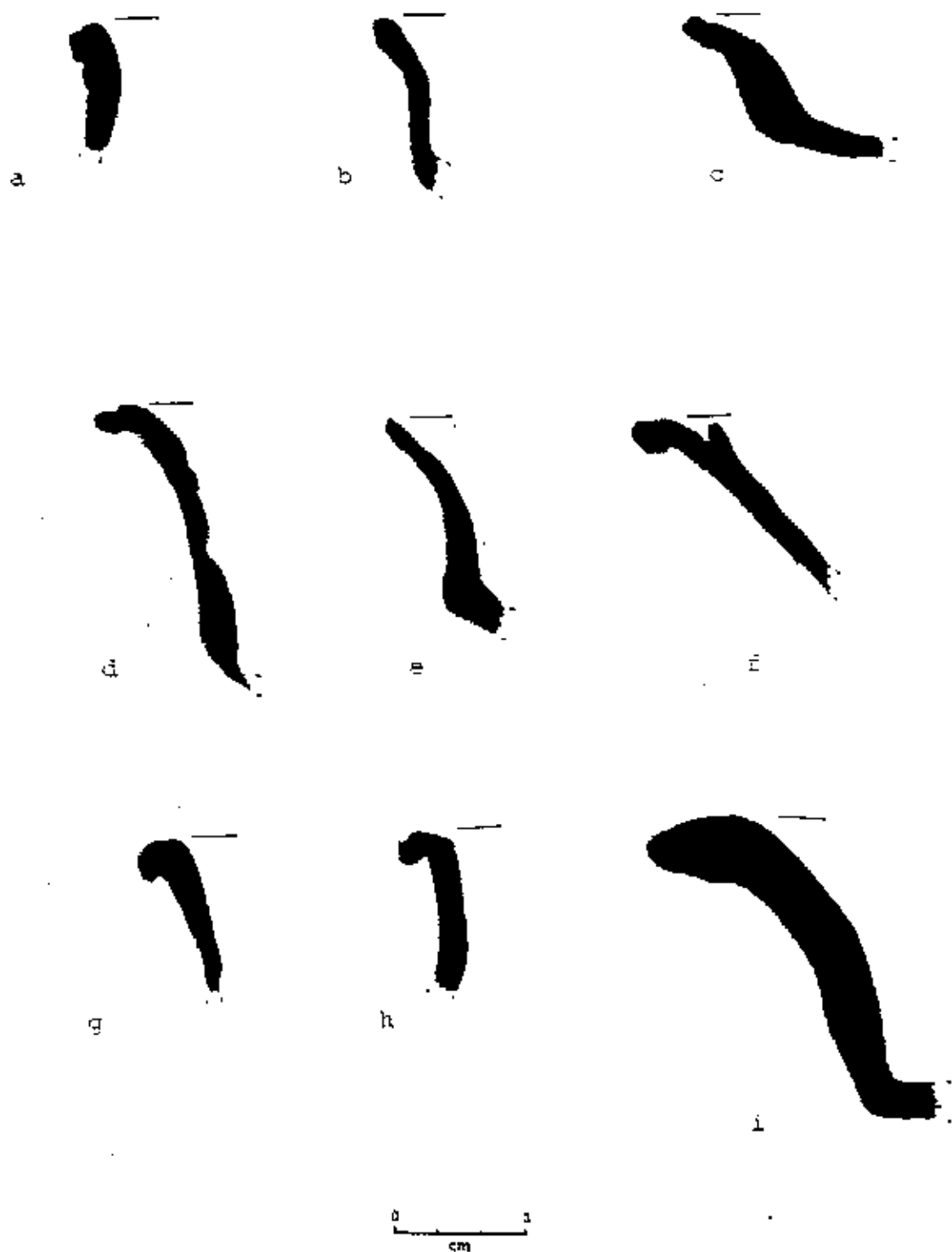


Figure 26: Savana Orange (a-c); Reforma Incised (d, e);
Pital Cream (f); Jocote Orange-Brown (g, h);
Joventud Red (i); and Chunhinta Black (j)

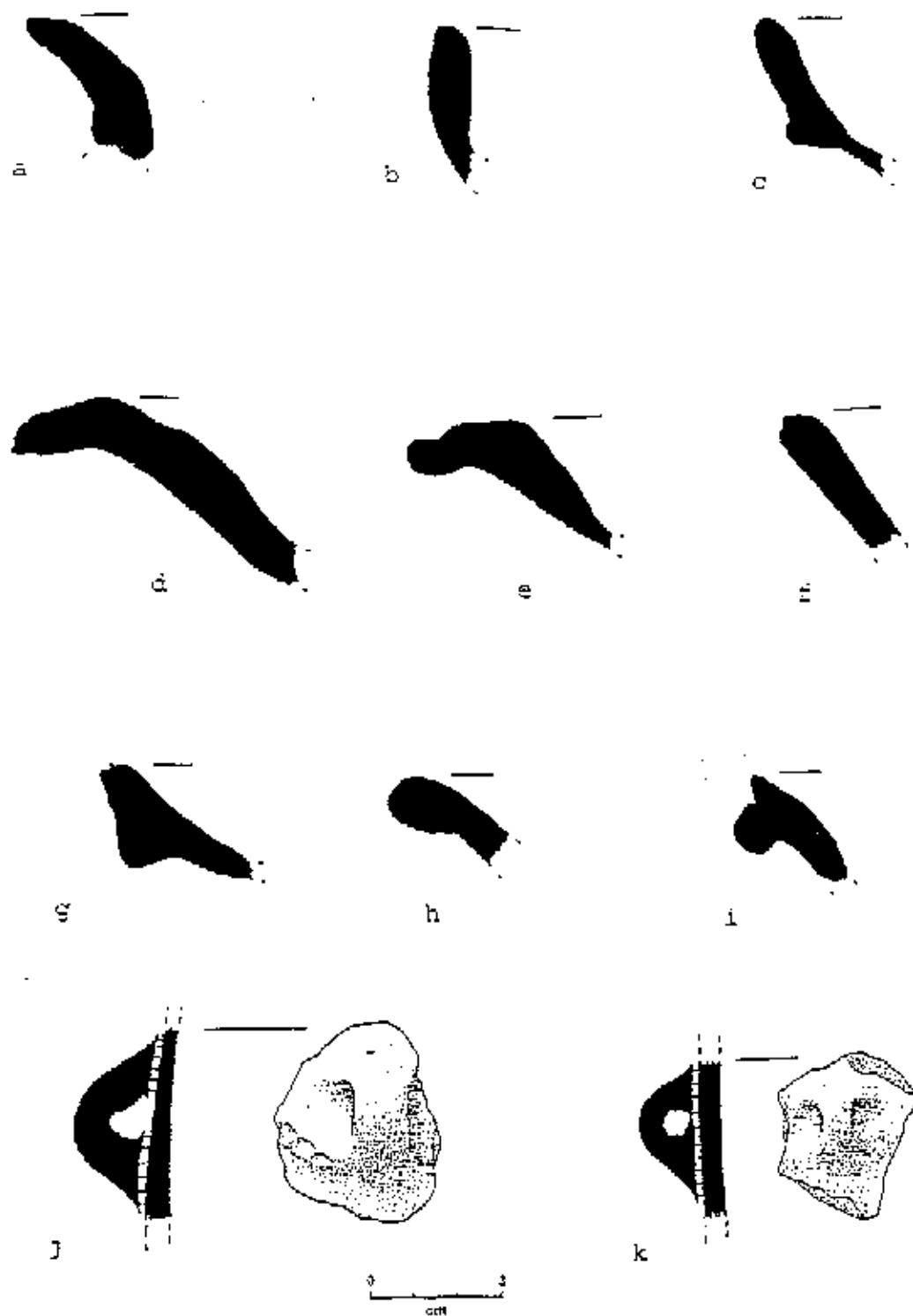


Figure 27: Joventud Red (a); Chunhinta Black (b); Sierra Red (c, d); Laguna Verde Incised (e); Hillbank Red (f); Polvero Black (g, h); Flor Cream (i); and Jocote Orange-Brown (j, k)

The Modified Ceramic Sherd Industry

There are four modified pieces represented in this industry, which have been manufactured from ceramic sherds. Specifically, all four ceramic sherds have been biconically drilled, and the edges rounded by flaking and grinding (Garber 1989:73). The size of these perforated disks range from 5 to 6 cm. However, none of the four specimens recovered were found intact (Figure 28e, f). Three of these disks were found in the construction fill of PF2 and the other one was located in the humus layer. None of these disks were typed according to Gifford's (1976) type:variety/mode method, but three of them are dated stratigraphically to the late Middle Formative period. These three disks are contemporaneous with specimens found in the Structure 1 midden at Tolok (Powis and Hohmann 1995:59) and with those found in Structure B-4/7th and 8th in the site core (Awe 1992:248, Fig.69a-e). Similar perforated ceramic disks, dated to the Middle and Late Formative period, have been found at Uaxactun (Kidder 1947:68, Fig.87b), Cuello (Hammond 1991:176), and Cerros (Garber 1989:75-77). It is unclear what function these perforated disks may have served, but some researchers have suggested they were used as spindle whorls, pot lids, or gaming pieces (Willey et al. 1965:402-406; also see Willey 1972:80-81; and Garber 1989:75-77).

The Modeled Clay Industry

These solid, hand-modeled artifacts are part of separate research being conducted by David Cheetham (University of British Columbia). Therefore, a detailed analytical report will not be provided in this thesis. However, a summary and illustrations of some of these artifacts are given below. A total of seventeen figurine fragments (Cat #193-233, 393) were recorded in PU-2, and with the exception of five, they are all dated to the late Middle Formative period. Also, approximately ten eroded figurine fragments were identified. However, they were too poorly preserved to be included in this sample. The figurines which could be analyzed were subdivided into anthropomorphs, zoomorphs, whistles, and a miscellaneous category. All of the figurines in the Tolok sample were broken, possibly intentionally (see Awe 1992:283), and the anthropomorphs were represented by torsos (n=6), heads (n=2), appendages (n=5), and miscellaneous (n=1) (Figure 28a-c). The zoomorphs included one small animal head fragment (dog?) (Figure 28d), one appendage fragment, and a miscellaneous piece. Overall, the preservation of these artifacts was poor to fair compared to the excellent preservation of the figurine fragments found in the Structure 1 midden at Tolok (Powis and Hohmann 1995:59, Figure 5d).

Although the total number of Formative figurine fragments from PU-2 is small it has, nonetheless, increased

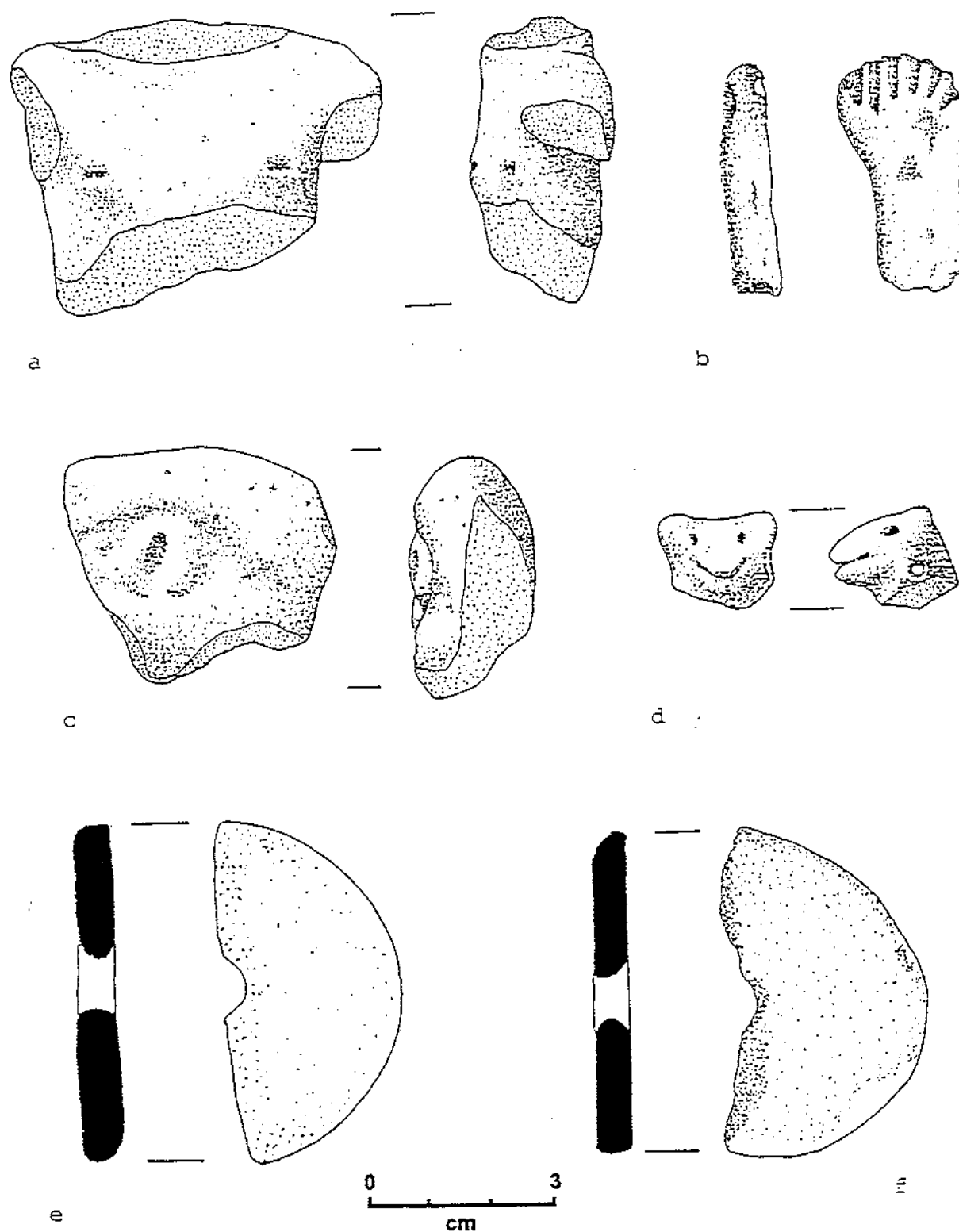


Figure 28: Anthropomorphic figurine fragments (torso - a; appendage - b; head - c); Zoomorphic head (d); and Modified ceramic sherds (e, f)

the Cahal Pech total sample size to approximately 400 specimens. The figurine assemblage at Cahal Pech is the second largest Formative period collection recorded in the Maya lowlands (D. Cheetham, personal communication, 1995; also see Awe 1992:255, 1994:12-15; Cheetham 1992). The figurine fragments found in PU-2 at Tolok were very similar in style and form to those recorded both in the site core and elsewhere in the Maya lowlands (Awe 1992:270-275, 1994:12-15; Cheetham 1992).

The Chipped Stone Industry

The lithic inventory recovered from PU-2 consisted of local raw materials, such as chert, and more exotic or foreign materials, such as obsidian, likely obtained exclusively from the Guatemalan Highlands. Similarly, the formal tool types, produced by reduction technique, were recorded in the fill of each construction phase and were made of either chert or obsidian. The bulk of the lithic assemblage, however, consisted of chert flakes (n=6,209) and debitage (n=7,777), followed by exhausted chert cores (n=413) (Table 2). A more detailed study of the formal chert implements and debitage will be conducted in the future by Gyles Iannone (University of London). Therefore, only a summary of the tool types is provided below.

A number of bifaces (n=24), unifaces (n=8), and drills (n=11), including one projectile point, were found in PU-2. The variety of bifaces found in the different construction

phases include: unstemmed knives or points, choppers, small chisels, and tranchet bits (see Awe 1992:312, Fig.92; Willey et al. 1965:416-431, Figs.262-274). Bifaces occur throughout the cultural sequence except in the construction fill of PF1 and Unit 9 and, like the unifaces represented, are more predominant in Classic period contexts at Tolok (Figures 29-31).

The number of chert drills found in Formative period contexts in PU-2 is small (Figure 32). In fact, it is a fraction of the number of drills recorded in the Cas Pek Group, located in the western periphery of Cahal Pech (see Sunahara and Awe 1994:209, Fig.7; and Lee and Awe 1995:110-114). Also, Awe (1992:312) has reported a number of Middle Formative burins or drills from Structure B-4 in the site core, which are similar to those found at Colha (Potter 1991:Fig.2), Cerros (Mitchum 1991:Fig.2), and Cuello (McSwain and Johnson 1991:163, Fig.8.5). One of the most interesting tools recovered from the fill of PF4 was a fragment of a chert prismatic blade (Figure 31g). To date, few chert blades have been identified at Cahal Pech and, thus, little comparable data is available for this implement.

A total of 362 pieces of obsidian fragments were found in PU-2 (Table 3). The obsidian pieces, including blades and debitage, are part of a more detailed study being conducted by Bobbi Hohmann (University of New Mexico). Therefore, only a brief synopsis will be provided (see Table 3, Appendix D).

Table 2. Frequency and Provenience of Both the Products and the By-Products of the Chipped Stone (Chert) Industry from Plaza Unit-2, The Tolok Group, Cahal Pech, Belize, 1992-94.

Provenience	Cores	Flakes	Debitage	Bifaces	Unifaces	Points	Drills
Surface	238	3470	4803	14	6	1	6
PF4	23	515	413	1	1	-	-
PF3	43	631	684	2	-	-	1
PF2	102	1487	1788	7	1	-	3
PF1	5	95	75	-	-	-	1
Unit 9	2	11	14	-	-	-	-
Total	413	6209	7777	24	8	1	11

Table 3. Frequency and Provenience of Both the Products and the By-Products of the Chipped Stone (Obsidian) Industry from Plaza Unit-2, The Tolok Group, Cahal Pech, Belize, 1992-94.

Provenience	Blade Fragments	Debitage	Worked Disk
Surface	281	-	1
PF4	8	-	-
PF3	30	2	-
PF2	35	5	-
PF1	1	-	-
Unit 9	-	-	-
Total	355	7	1

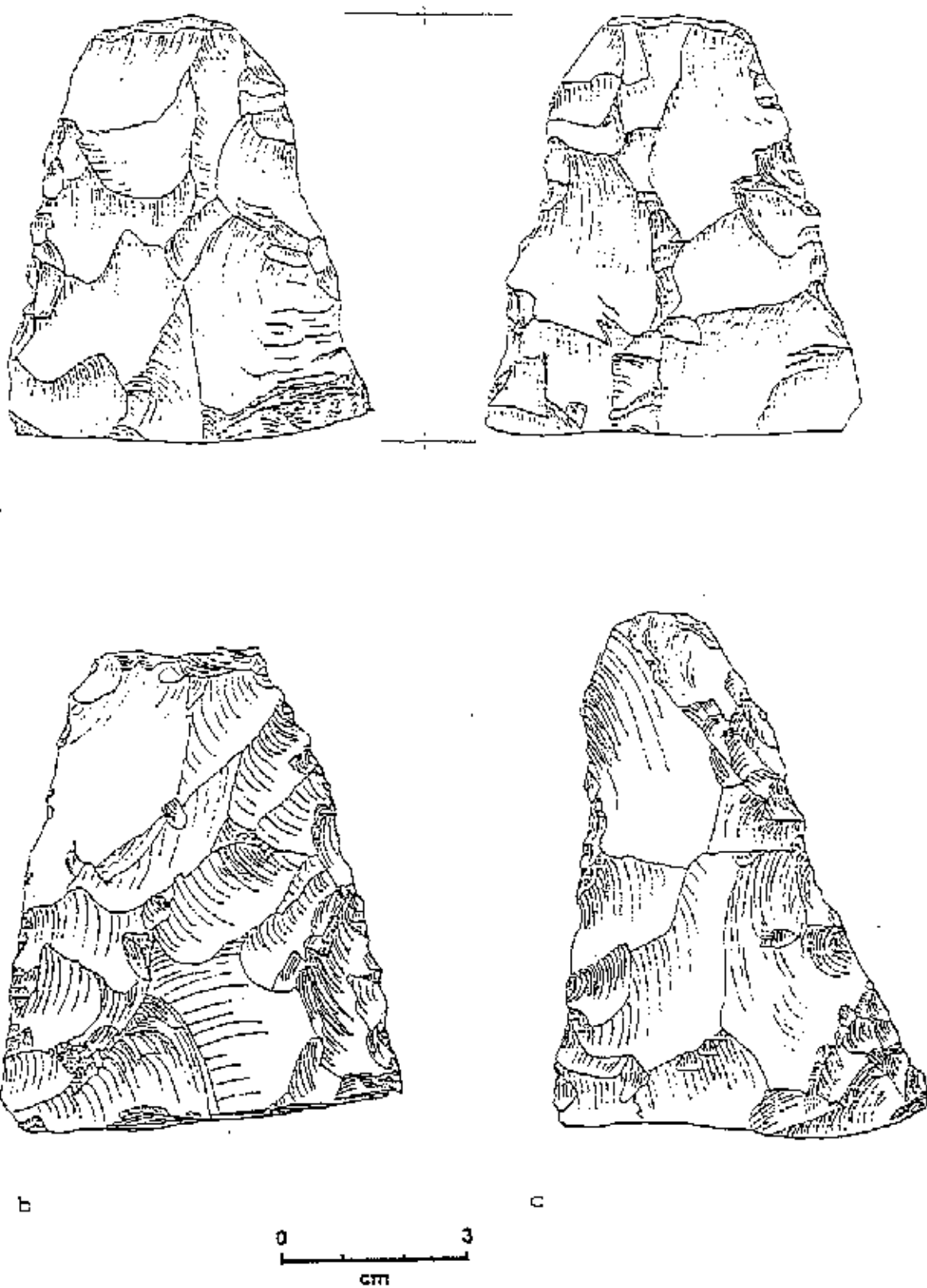


Figure 29: Representative sample of chert bifaces

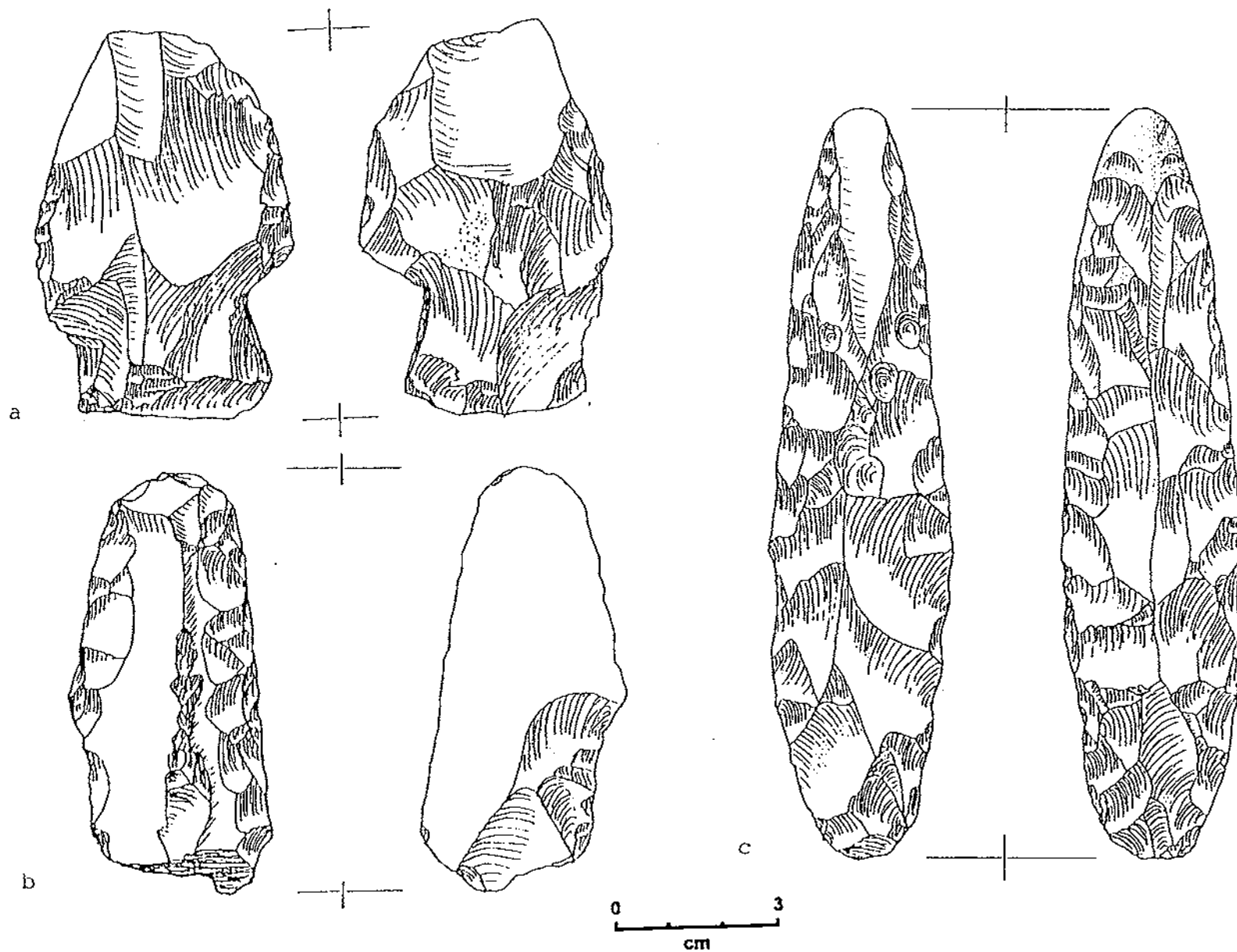


Figure 30: Representative sample of chert bifaces (a, b), including one intact chisel-like tool (c)

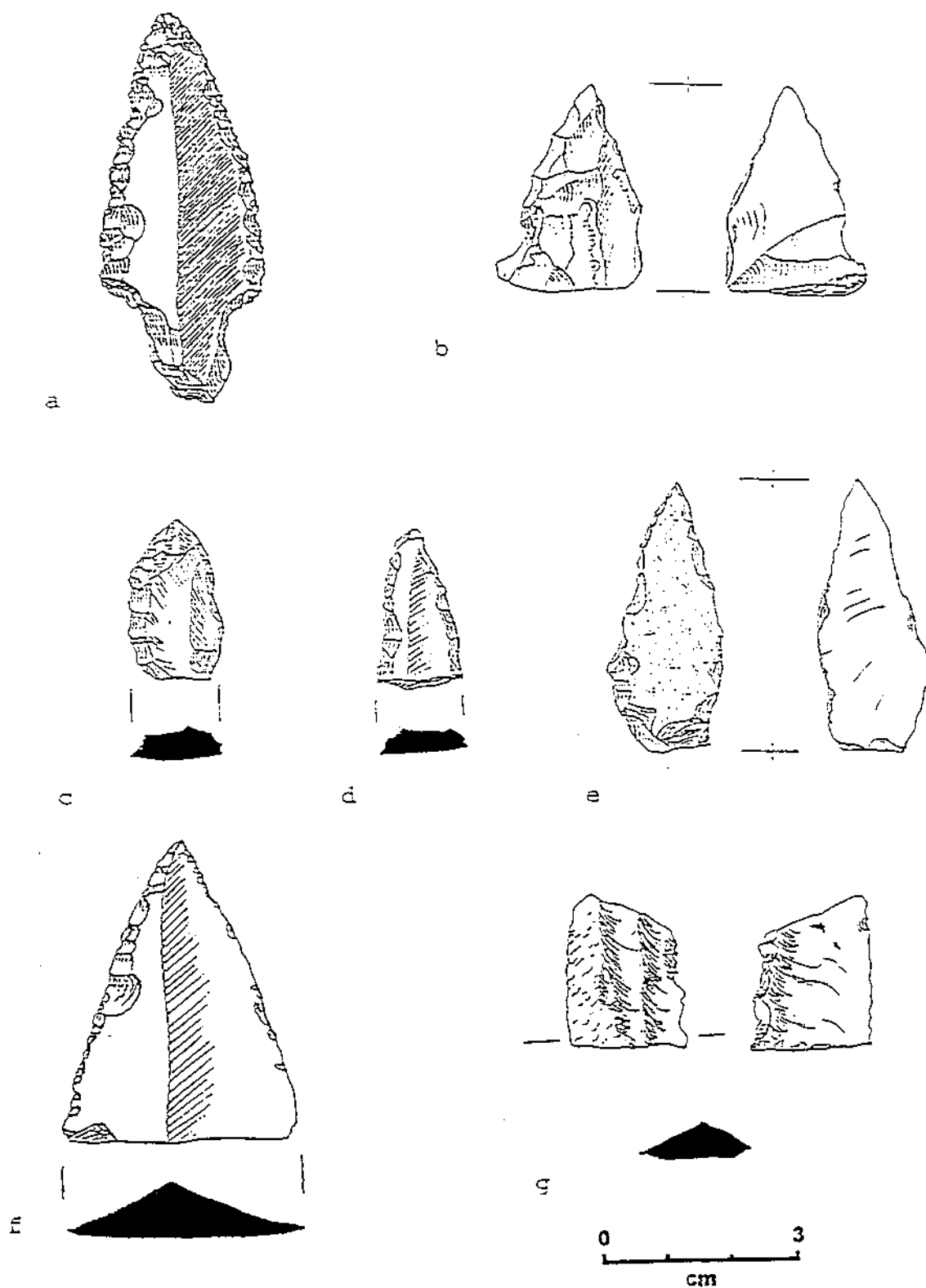


Figure 31: Chert tools (stemmed projectile point, unifacial - a; projectile point fragments - b-f; chert prismatic blade - g)

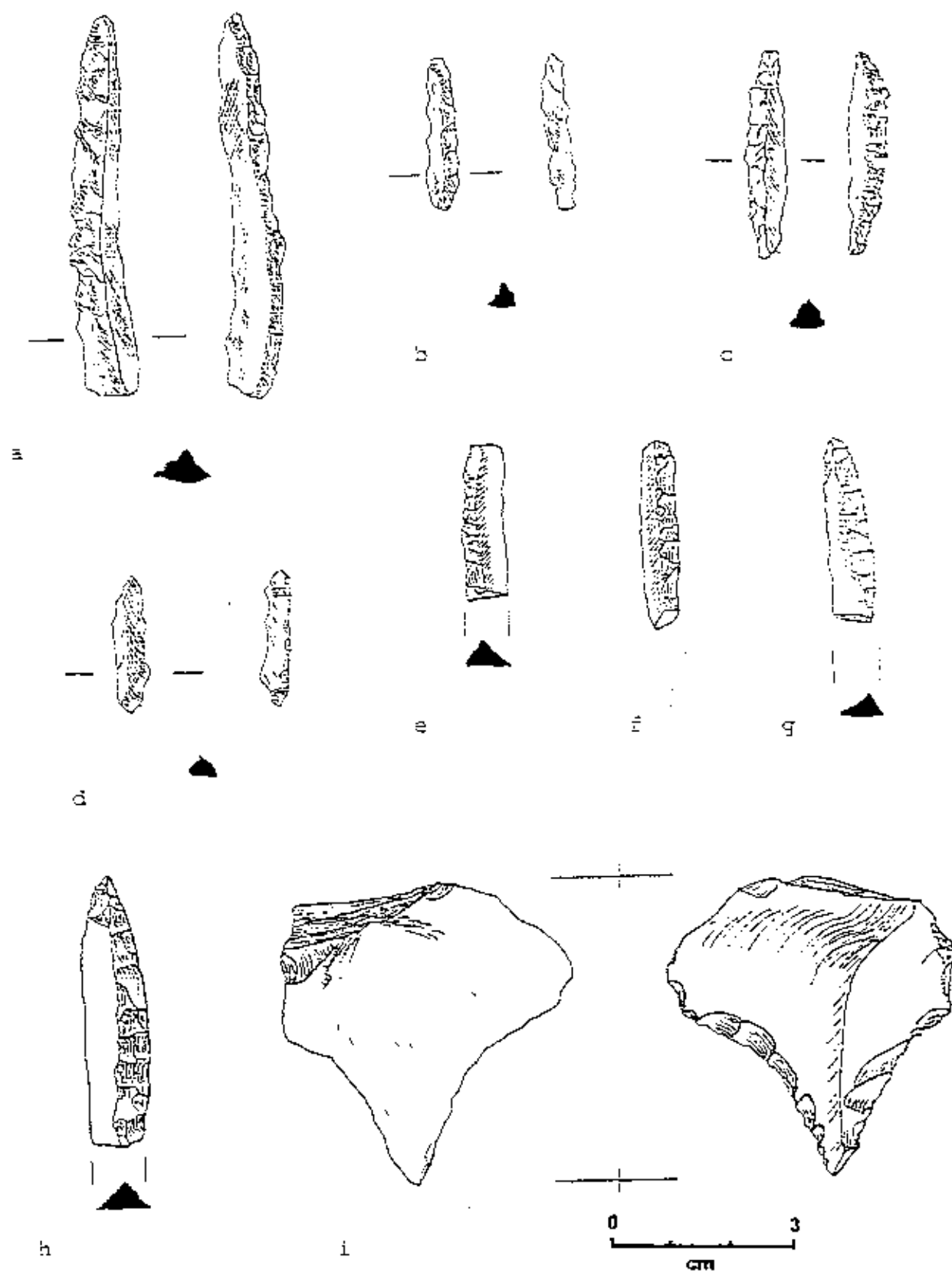


Figure 32: Chert drills (a-h), including one triangular unifacial drill or punch (i)

Of the total number found, the majority of the obsidian fragments were found in the humus layer (n=281), dating to the Late Classic period. Of the 362 fragments, a total of 81 were found in Formative period contexts, with approximately half of them (n=40) located inside the fill of Structure 14.

The majority of obsidian pieces were prismatic blades (n=355) (Figure 33a-f), while the remaining seven specimens represented debitage (Figure 33g, h). The obsidian debitage was found exclusively in the fill of PF2 and PF3 (Late Formative period). All the specimens in the Tolok assemblage were either black-banded or smokey grey in colour (see Awe 1992:320-323; Awe et al. 1995 for source analysis at Cahal Pech). Although none of the blades were found intact, the size of these fragments ranged from <1 cm to >7 cm in length. The width varied at the medial section for the Formative blades but, generally, they measured from 0.4 to 1 cm (see Appendix D). Interestingly, there was an attempt to modify one of the blade fragments into a rounded, perforated disk for suspension(?) (Figure 33i).

The Ground Stone Industry

The variety of raw materials used to produce ground stone tools included granite, slate, and limestone. Limestone outcrops occur naturally around Cahal Pech. Granite and slate, however, must be obtained from the foothills of the Maya Mountains, located to the south of the site core (see Awe 1985:15-16; Healy et al. 1995; and

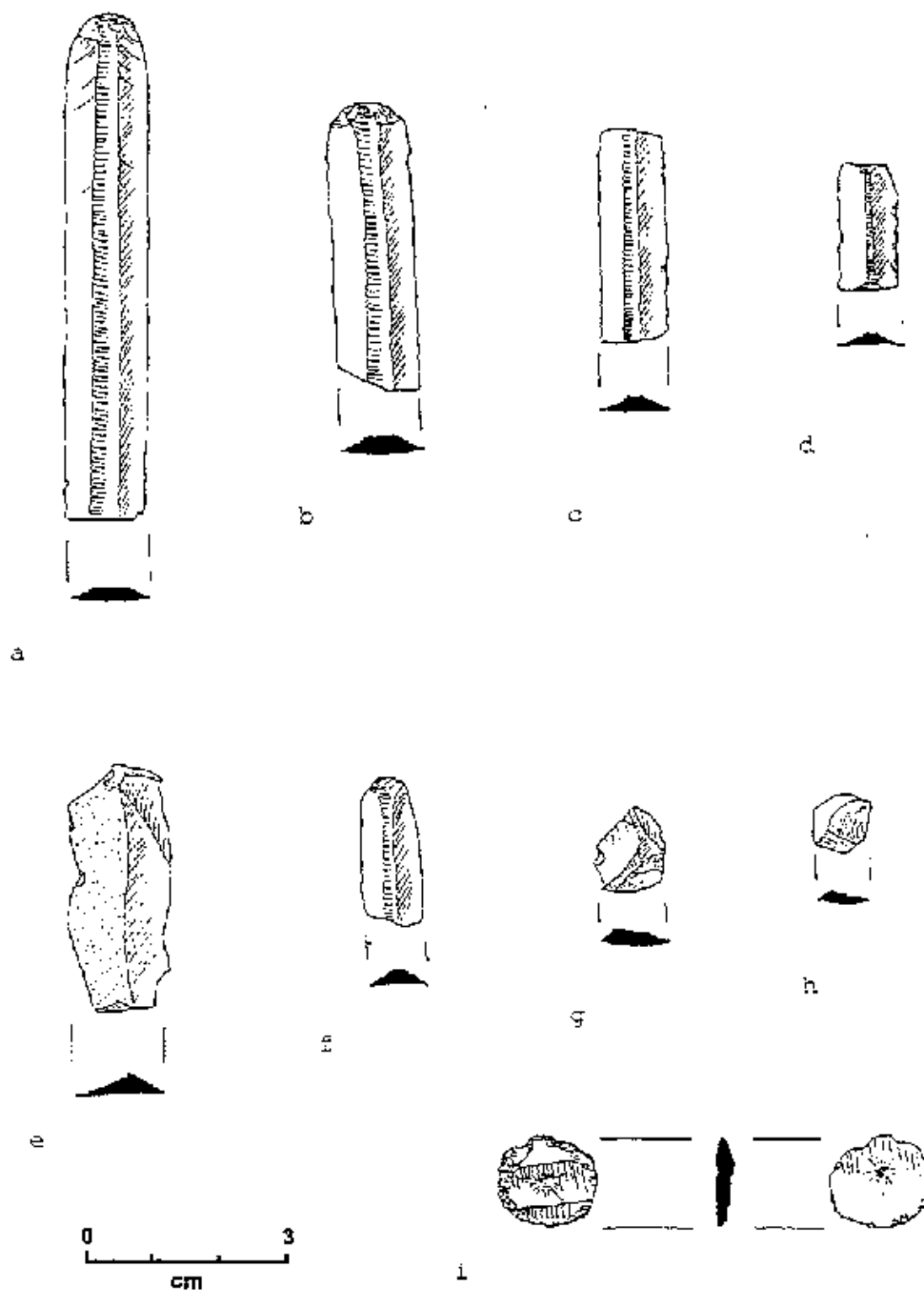


Figure 33: Obsidian fragments (prismatic blades - a-f; flakes - g, h; and a rounded, perforated disk - i)

Shipley and Graham 1987 for discussions on granite and slate sources). A few slate artifacts were found in PU-2, but they will be described in the Polished Stone Industry section (see below). However, a large quantity of slate debitage was recorded from the excavation of the two round structures and is listed in Table 4. It is unclear, at this time, whether the quantity and distribution of this waste material represented access to, and production of, slate artifacts at Tolok (also see Healy et al. 1995; Sunahara 1995:106).

The types of artifacts made from non-local grey and pink granitic materials included manos and metates. These grinding implements are utilitarian in nature and are common throughout the Maya lowlands. A total of 8 mano fragments and 6 metate fragments were found during the excavation of the round structures (Table 4). Several varieties of manos were found including square, large square, rectangular-thin and rectangular-thick, oval, and circular (Figure 34) (after Kidder 1947:34, Fig.16; Willey et al. 1965:457-465). These mano fragments ranged in diameter from approximately 5.5 cm to 10 cm and, exhibited extensive use wear and polish. Similar specimens, in size, shape, and wear, have been identified both in the site core and in the periphery of Cahal Pech (Awe 1992:287-294). Although manos have a wide temporal distribution in the Maya area, they were predominantly recovered in Late Formative and Late Classic contexts in PU-2.

Table 4. Frequency and Provenience of Both the Products and the By-Products of the Ground Stone Industry from Plaza Unit-2, The Tolok Group, Cahal Pech, Belize, 1992-1994.

Provenience	Manos	Metates	*Slate	*Quartz	Grinding Stone	Bark Beater
Surface	4	4	31	12	-	1
PF4	-	1	9	3	1	-
PF3	1	1	4	1	-	-
PF2	3	-	44	5	-	-
PF1	-	-	4	-	-	-
Unit 9	-	-	1	-	-	-
Total	8	6	93	21	1	1

Note: * represents debitage

Table 5: Frequency and Provenience of the Products of the Polished Stone Industry from Plaza Unit-2, The Tolok Group, Cahal Pech, Belize, 1992-94.

Provenience	Greenstone/Jadeite	Slate	Andesite
Surface	-	3	-
PF4	-	1	-
PF3	-	1	1
PF2	-	2	-
PF1	2	-	-
Unit 9	-	-	-
Total	2	7	1

Similarly, a number of metate fragments were found in the ground stone assemblage. Only the turtleback or basin-shaped metate (large and small forms) were recovered from PU-2 (Figure 35). These fragments were large, exhibited heavy use wear, and were found in construction phases dated to both Formative and Classic periods. It should be noted that metate fragments have been found in Middle Formative contexts elsewhere at Tolok (Stemp n.d.). Additionally, Middle Formative period metate fragments have been found in the site core and in the periphery of Cahal Pech (Awe 1992:294-298), and at Barton Ramie (Willey et al. 1965:453-454).

Only two artifacts made of limestone were recovered in PU-2. One was a Late Formative period circular hammer-grinding stone, and the other was a fragmented piece of a bark beater dating to the Late Classic (Figure 38a, b). The grinding stone was made of calcitic limestone, exhibited both pitting and wear but, there was no evidence of polishing. Similar specimens were found in Late Formative levels at Barton Ramie (Willey et al. 1965:Fig.289d-f). The bark beater was too fragmented to identify its original shape (i.e. rectanguloid or ovoid) but the parallel grooving diagnostic of these artifacts was present. Because of its condition, no dimensions were recorded for this specimen. Bark beaters have been found in both Late Formative and Late Classic contexts at a number of peripheral settlements clusters around Cahal Pech, including Cas Pek (Awe 1992:299)

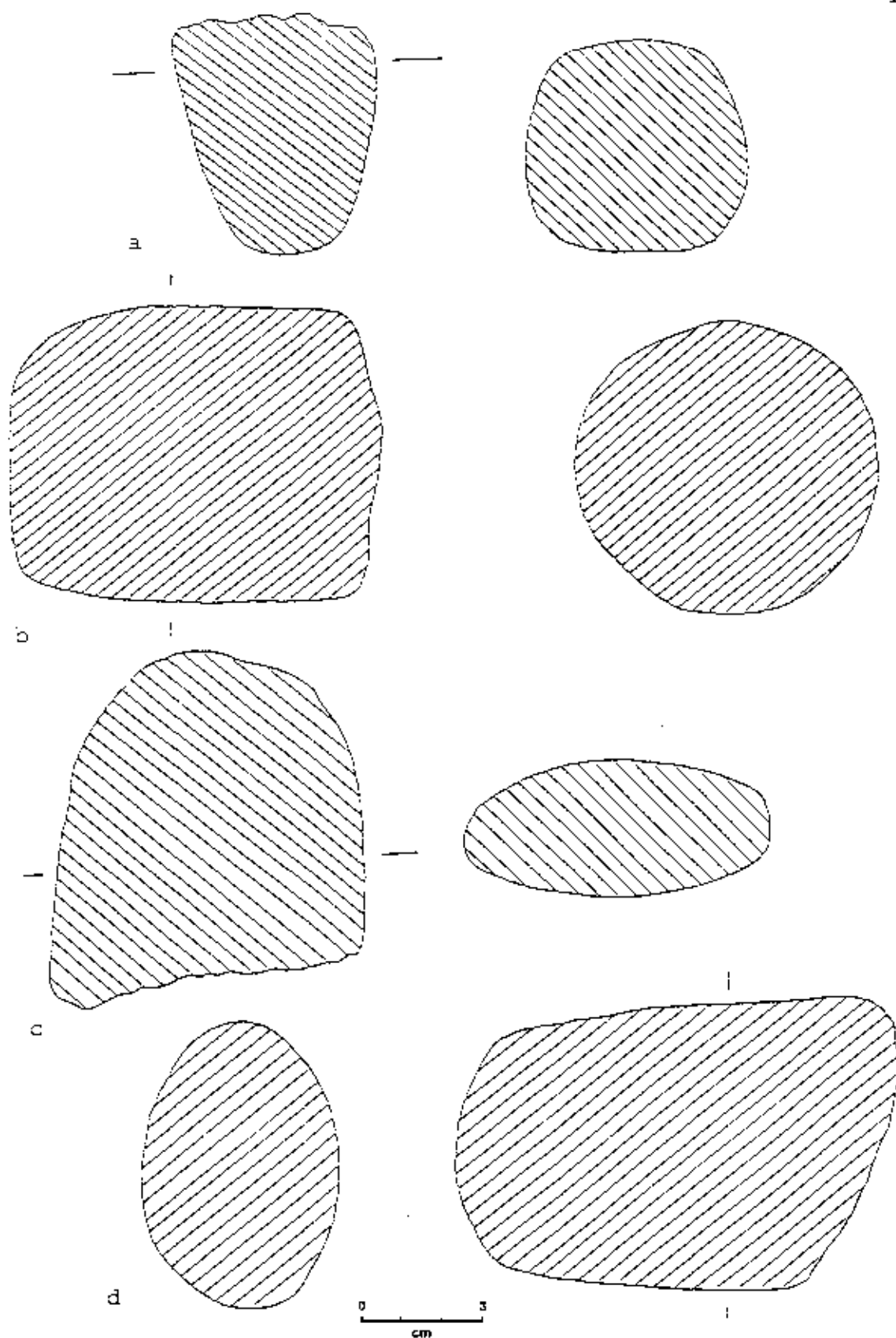


Figure 34: Mano varieties: large square (a); large circular (b); rectangular-thin (c); rectangular-thick (d)

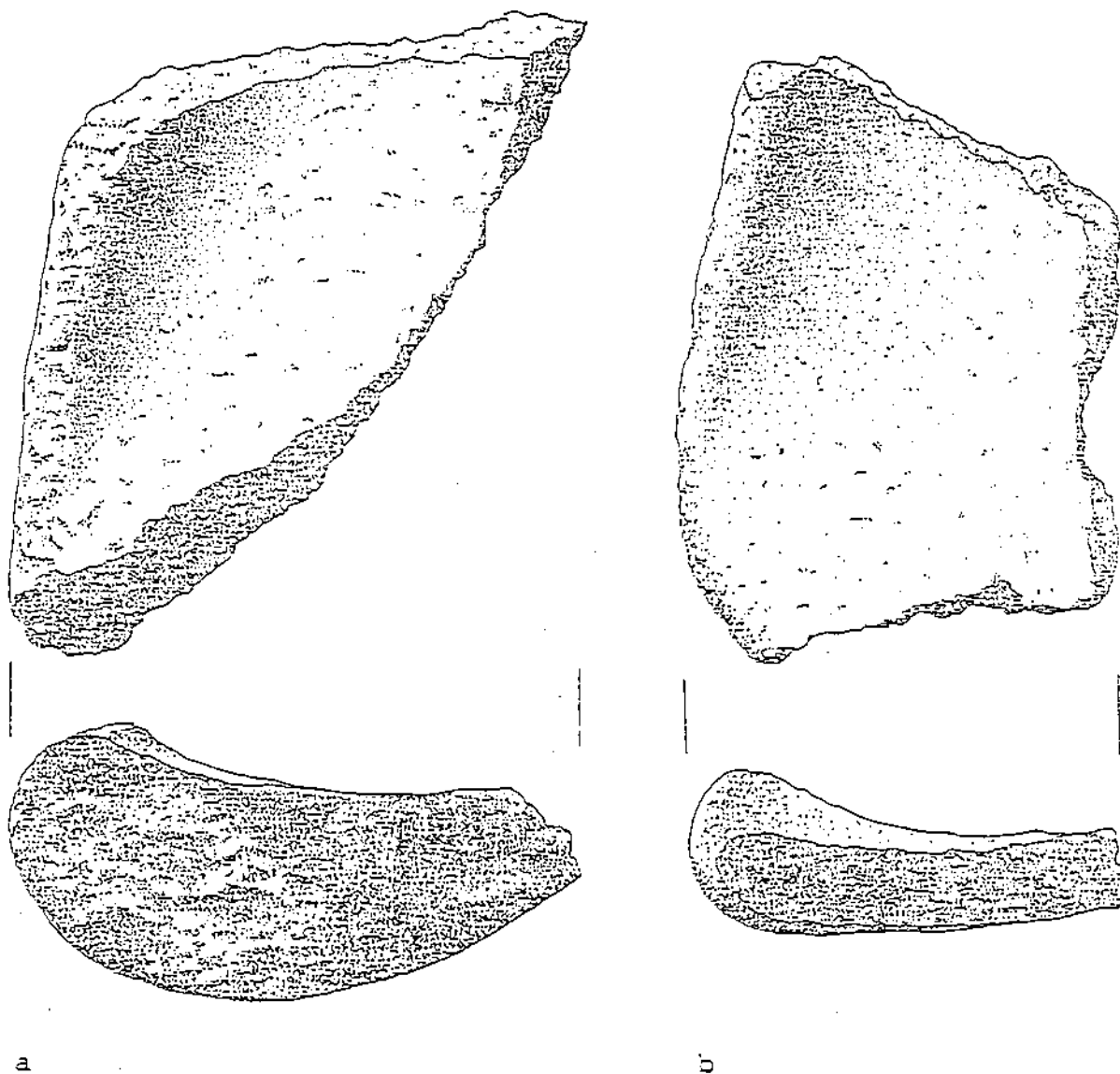


Figure 35: Metate fragments: large basin-shaped variety (a);
small basin-shaped variety (b)

and Zinic (J. Conlon, personal communication, 1990).

The Polished Stone Industry

There are ten objects included in this category made from slate, andesite, and greenstone/jadeite, which have intentionally polished surfaces (Table 5). The different forms include pendants, adornos, celts, and a miscellaneous type. All of these artifacts have been found in Formative period contexts with the slate objects being the most representative of the polished stone industry in PU-2. In fact, slate objects, albeit mostly fragmentary, were the most abundant polished artifact type found at the Tolok Group, particularly in burials (see Powis 1993a:100, 111; Powis and Hohmann 1995:76). Some of the polished slate objects (n=4) have been biconically drilled for suspension holes and were probably worn as pendants or adornos (Figure 36a-d). The remaining specimens (n=3) may be broken bits of adornos or they may have been used as "mirror" backs (see Awe 1992:Fig.91a, e; Healy et al. 1995: Figure 2; Sunahara and Awe 1994: Fig.4; Willey et al. 1965:Fig.265).

Several pieces of greenstone/jadeite were found in PU-2. Most of them were grave goods associated with burials interred in the fill of the round structures and, therefore, will be discussed in the Burial Data section of Appendix B. The two pieces found in the fill of PF1 appear to have been swept off the end of the enclosed patio of Structure 15 and, to date, represent the only greenstone material

contemporaneous with this structure. Morphologically, they both look like chunks, or pebbles, of greenstone. Both pieces are highly polished, yet they appear to be unworked, raw jadeite pebbles(?) (see Bill 1987:236-239, Fig. 31a, b, d; Cheetham 1995:34, Fig. 10c; Smith 1982:246-247). Further analysis is needed to determine whether these pieces were cut by string-sawing and utilized as decorative or symbolic objects (see Fig. 36f, g). One highly polished celt, made of andesite, was discovered in a Late Formative (early Xakal phase) trash deposit located on the northeast side of Structure 14. The celt was broken in half, measured 5 cm wide x 6 cm long, and exhibited use wear on its tapered end (Figure 36e). It is very similar to the small varieties found at Uaxactun (Kidder 1947:78k-q) and at Barton Ramie (Willey et al. 1965: Fig.296.a-g; Fig.297o).

The Worked Shell Industry

The modified shells of both freshwater and marine shellfish are represented in this category. A complete analysis of the worked shell industry is presently being conducted by the BVAR zooarchaeologist, Norbert Stanchly (University of Toronto) and, therefore, only a brief description of the specimens found in PU-2 will be discussed. This assemblage, however, does not include several thousand *jute* (*Pachychilus indiorum* and *Pachychilus glaphyrus*), *Pomacea flagellata*, and freshwater clam (*Nephronaias ortmanni*) shells which demonstrate evidence of

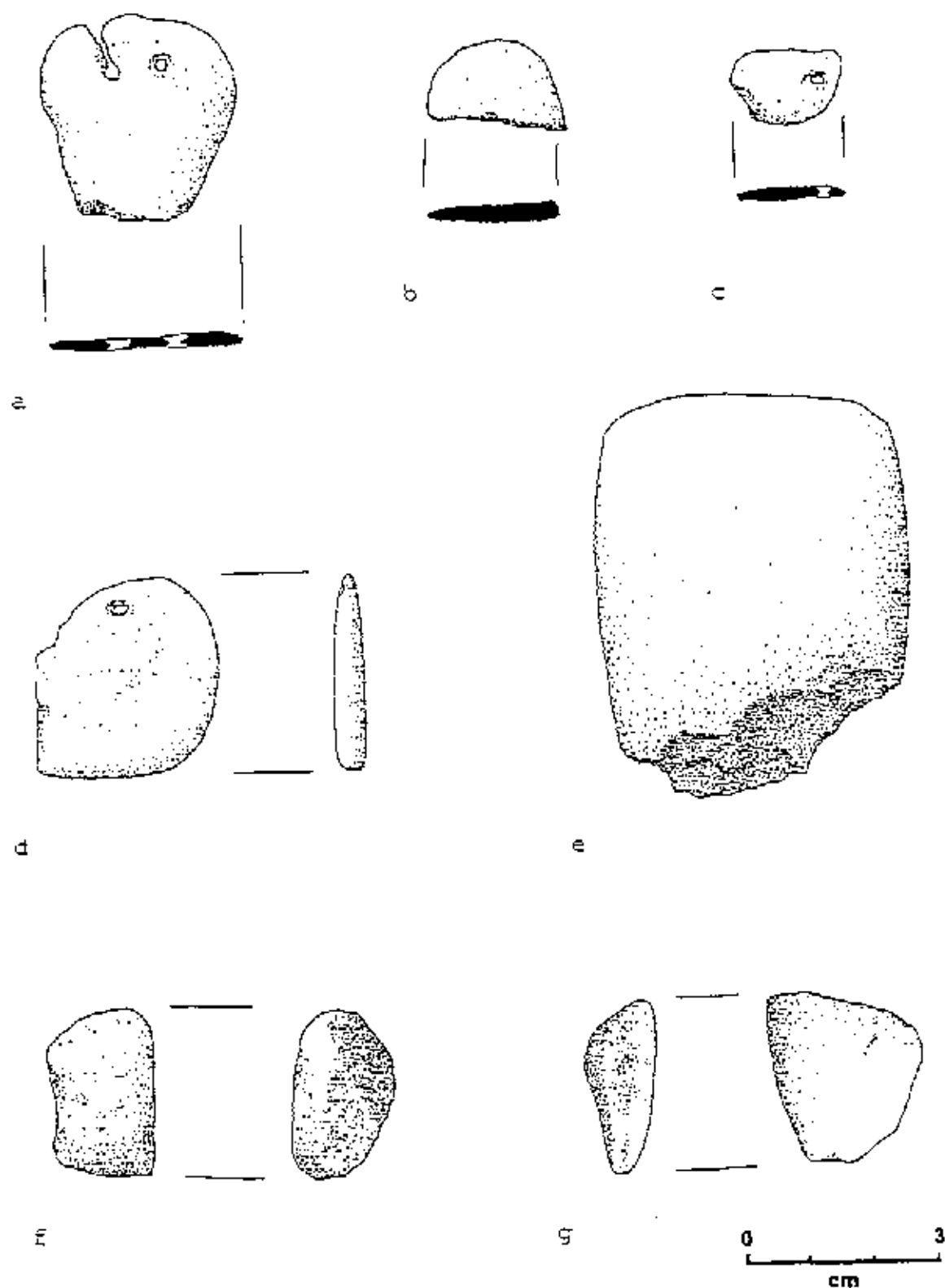


Figure 36: Polished stone artifacts: slate pendants or adornos (a-d); andesite celt fragment (e); and greenstone/jadeite pebbles (f, g)

alteration for consumption (see Appendix C). Also, it should be noted that several shell artifacts were found in burials, intrusive to both round structures and, will be discussed in more detail in the Burial Data section of Appendix B.

During the 1992-94 investigations in PU-2, a total of fourteen worked shell artifacts were found. Following Awe (1992:323), this assemblage does not include the large number (NISP's) of freshwater snails which have demonstrated evidence for consumption, such as the jute snail [*Pachychilus indiorum* (n=1,523), *Pachychilus glaphyrus* (n=330), and *Pachychilus sp.* (n=80)], the apple snail [*Pomacea flagellata* (n=104)], and the freshwater clam [*Nephronaias ortmanni* (n=936)]. (For a more detailed discussion regarding the use of these freshwater invertebrate remains as a food source see Healy et al. 1990; Moholy-Nagy 1978:71; Stanchly 1992:391-392, 1993:133, 1995:131; and Willey et al. 1965:504).

The majority of the artifacts represented in this industry were made from marine shell and consisted of beads, rings, pendants, and adornos. Fragments of marine shell were found with each construction phase in PU-2 with queen conch [*Strombus gigas* (n=7)] being the most common species represented. Of the seven conch fragments, three are biconically drilled and one was conically drilled on the exterior surface, producing round-to-oval shaped pendants/adornos (Figure 37a-c). The other three worked conch pieces were represented by two irregularly-shaped

tubular beads or rings and a highly polished miscellaneous fragment (Figure 37d-f). Similar specimens made of *Strombidae* have been found in the Structure 1 midden at Tolok (Powis and Hohmann 1995:60); Structure B-4 at Cahal Pech (Awe 1992:324, Fig.95); subplaza deposits in Group E at Uaxactun (Ricketson and Ricketson 1937:Pl. 68a); and BR-154 and BR-225 at Barton Ramie (Willey et al. 1965:508, Fig.309o-q).

Additional marine shell artifacts, made from *Spondylus princeps* (n=1), *Prunum* sp. (n=1), *Dentalium* sp. (n=1), Venus Clam or Tiger Lucine(?) (n=1), and one unidentified fragment, have been found in PU-2. Of these five, only the *Spondylus* shell represented a biconically drilled, flat disk (Figure 37g). The other four examples exhibited some modification. However, further identification regarding shell type (i.e. species) is needed. Of interest, the marginella shell (*Prunum* sp.), found in the fill of PF1, exhibited evidence of a punctured spire, possibly an attempt to perforate and use as a bead (Figure 37j) (N. Stanchly, personal communication, 1994). Similar specimens have been found in Formative period contexts at Dzibilchaltun, Yucatan, Mexico (Andrews 1969:19-20, 47), where these tiny shells were sometimes broken during an attempt to drill for perforation (also see Hammond 1991:187; Healy 1990:259).

Two freshwater clams (*Nephroniaias ortmanni*) were modified. They represent the only bivalves in this category, except for similar grave goods associated with Burials 2 and

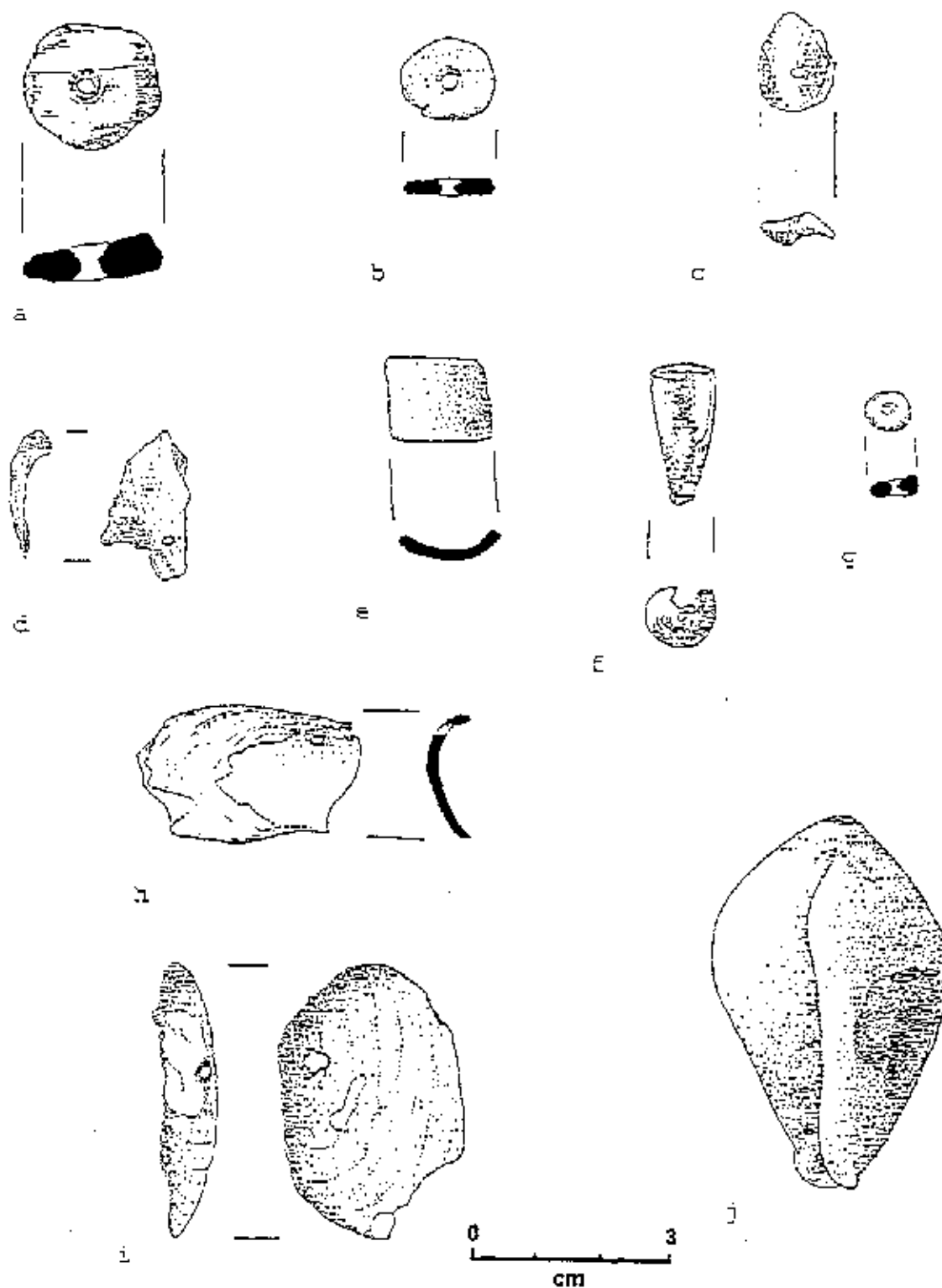


Figure 37: Worked shell artifacts: circular conch pendants (a-c); perforated conch shell (d); tubular conch bead fragments (e, f); small circular Spondylus bead (g); perforated *Nephronaias* shells (h, i); a punctured *marginella* shell (scale 1:5 cm) (j)

10 (see Appendix B). Both examples are fragmented, occur in both Formative and Classic period contexts and, exhibited small perforations near the hinge (Figure 37h, i). Each manifested a single hole for suspension, measuring 2 mm to 4 mm in diameter and, appeared to be biconically drilled with some smoothing or polishing on the exterior surface (see Hammond 1991:186:Fig.8.43). Perforated *Nephronaias ortmanni* shells are widely distributed, both temporally and geographically, in the Belize Valley, and have been found in Classic period burials at Tolok (Powis 1993a:111; Appendix B), Zotz (Aimers 1992:7), Zubin (Stanchly 1994:117), and at Barton Ramie (Willey et al. 1965:504-505, Fig. 3091, m).

Miscellaneous Objects

One miscellaneous artifact, an ovoid piece of pumice, was found in the fill of PF2 (Figure 38c). To date, there are no other Late Formative period examples recorded at Cahal Pech. This artifact, made of volcanic stone found only in the Highlands, was likely used as either an abrader or a fishnet float, since its sides were well-smoothed. Similar pieces have been identified at Cerros (Garber 1989:29-31, Fig.12f).

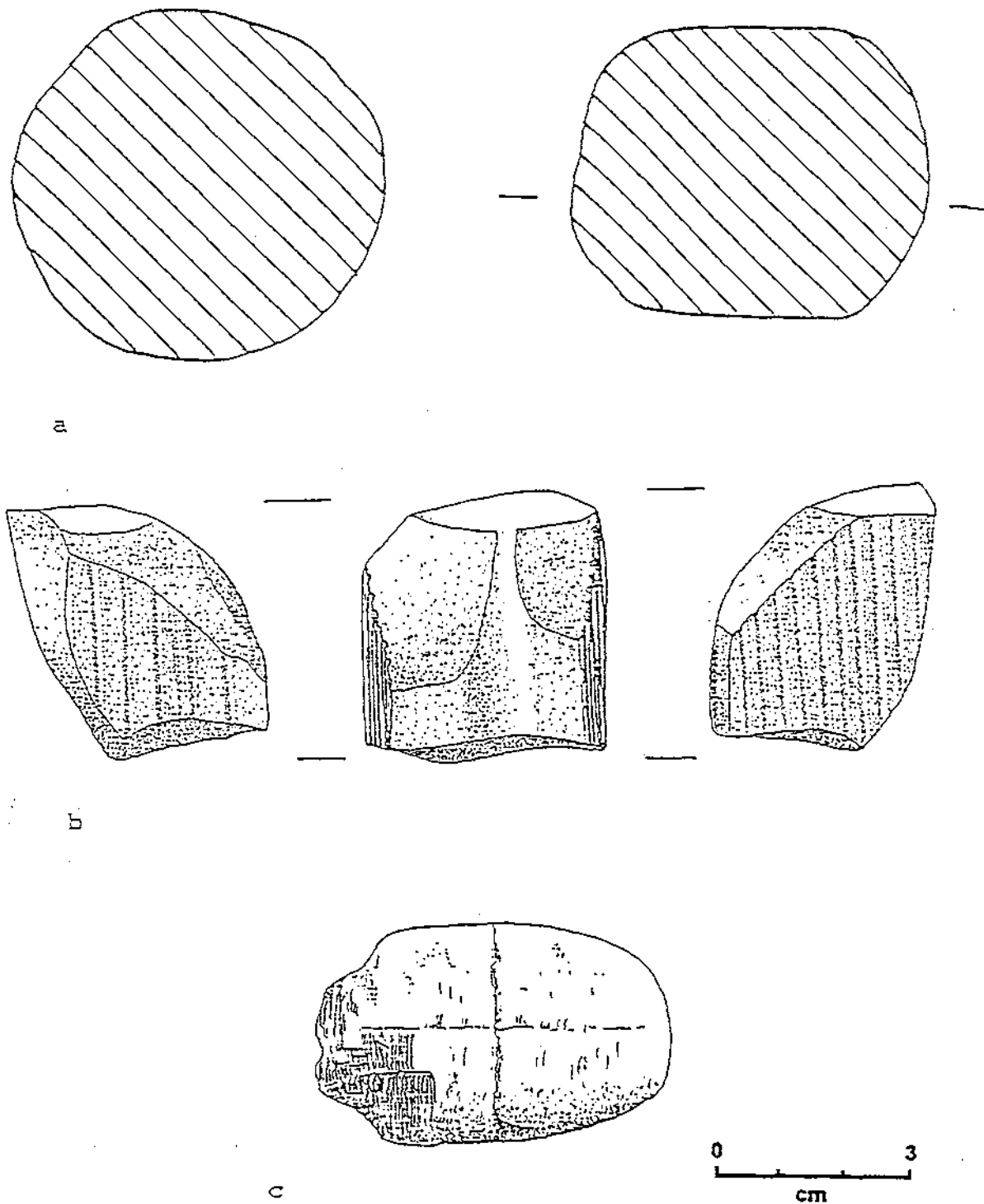


Figure 38: Miscellaneous ground stone artifacts: circular hammer-grinding stone (a); bark beater fragment (b); and an ovoid-shaped piece of pumice

CHAPTER 4

DISTRIBUTION AND CLASSIFICATION OF FORMATIVE MAYA ROUND STRUCTURES

Introduction

This chapter provides an overview of the architectural information of known Formative period round structures in the Maya area. The first section describes each round structure, both temporally and spatially, detailing its overall morphology, associated architectural features, and context of special deposits (i.e. burials and caches). The second section attempts a classification of Formative period round structures in the Maya lowlands. This two-tiered classification is based primarily on a variety of architectural attributes discussed throughout the first section of the chapter.

Before a detailed description of Maya round structures is presented, it may be useful to highlight some of their architectural attributes and associated features. The most important architectural features of round structures to compare are their: (1) location; (2) diameter; (3) height (i.e. the number of courses of cut-stone); (4) presence of a superstructure; (5) orientation of a stairway and/or subsidiary platform(s); (6) presence of a lime-plastered floor surface and stuccoed walls; and (7) any contemporaneous features such as hearths, middens, and stone- and sherd-lined pits. Furthermore, the presence of contemporaneous special deposits (i.e. burials and caches)

is useful to study both mortuary behaviour and the level of social complexity associated with these round structures.

About fifty round structures are now known among the Maya and have been dated to both the Middle and the Late Formative periods (Table 6). These excavated structures, both partially and completely exposed platforms, are unevenly distributed throughout the Maya area. A greater density of these structures are clustered within the Southern Maya Lowlands (Figure 39). In the Southern Lowlands, for example, round structures appear to be clustered in areas where extensive archaeological investigations have concentrated on the Formative Maya, such as in northern Belize, in Peten, Guatemala, and in the Upper Belize Valley, Belize. In the following section, the geographical distribution of round structures from each of these three subregions will be described in detail. Each subregion will be described under the general temporal heading of the Middle Formative Period (900-350 B.C.) and the Late Formative Period (350 B.C.- A.D. 250).

The Middle Formative Period (900-350 B.C.)

Northern Lowlands

There are few documented round structures from the Northern Maya Lowlands dating to this time period. At Dzibilchaltun, in particular, these round platforms were associated with Structure 605 in the Mirador Group, which was "one of many relatively small ruin groups surrounding

Table 6. Archaeological Information on Middle and Late Formative Period Round Structures from the Maya Lowlands

Archaeological Site/ Structure Number	Diameter	Height	Comments
Dzibilchaltun Str. 605	N/A	N/A	domestic
Dzibilchaltun 2A Platform	4 m	40+ cm	no doorway found
Luisville round structure	N/A	1.0 m	inset stairway, tapered upper diameter
Colha Op. 2012	N/A	N/A	partially exposed
Colha Op. 2031 Str. I	5 m	30 cm	perishable superstr., 4 burials
Colha Op. 2031 Str. II	3 m	N/A	perishable superstr.
Colha Op. 2031 Str. III	6 m	N/A	perishable superstr., fire pits
Colha Op. 2031 Str. A	N/A	N/A	perishable superstr., 1 burial
K'axob Str. 1	N/A	N/A	perishable superstr., fire pits
K'axob Str. 1-D	N/A	N/A	2 burials
Altun Ha Str. C-13/4th	8 m-8.5 m	46 cm	14 burials, 2 caches, postholes
Cuello Str. 327	5.9m x 5.3m	20-30cm	perishable superstr., fire pits
Cuello Str. 322	6.2 m	15 cm	small plastered niche, fire pits
Uaxactun Str. E	5.9 m	30 cm	keyhole-shaped, subsidiary platform
Uaxactun Str. F	5.79 m	30-45cm	keyhole-shaped, subsidiary platform
Uaxactun Str. G	5.5 m	N/A	dumb-bell shaped
Cahal Pech Str. B-4/7th	N/A	2-3 m	stairway on north side
Zotz Str. 2/2nd	3.6 m	1.2 m	18 burials, stairway, open platform

Table 6. Continued.

Tolok Str. 14	9.5 m	60+ cm	subsidiary platform, special deposits
Tolok Str. 15	5+ m	50 cm	assoc. courtyard, 2 burials
Xculul Str. 226 (Wall 9)	4.5 m	N/A	child urn burial
Komchen Str. 18J-3	N/A	25 cm	located beneath rectangular platform
Komchen Str. 22N 1	N/A	35 cm	round masonry superstructure (tower)
Oxkintok Str. DZ 12	N/A	N/A	subsidiary platform
Becan small platform	N/A	N/A	fully exposed platform
Becan Str. 7E 346	3 m	80 cm	crude foundation wall
Becan round structure #1	4.5 m	15 cm	capped with thick coat of plaster
Becan round structure #2	N/A	1.5 m	polychrome painted walls
Altun Ha Str. C-13 3rd A	10 m	1.3 m	two-step stair, 3 burials, 3 caches
Chan Chen Str. F	10.2 x 10.9m	1.8 m	circular masonry wall, postholes
Cuello Str. 311	6m x 5.4 m	N/A	domestic, step
Cuello Str. 309	8.2m x 7.2m	N/A	domestic, step
Cuello Str. 306	5 m	50 cm	step, perishable superstr., 4 burials
Cuello Str. 305	5.5 m	50 cm	step, open platform, special deposits
Cuello Str. 304	5 m x 6 m	N/A	step, open platform, special deposits
Cuello Str. 301	5.3 m	N/A	step, 1 burial
Colha Op. 2011	N/A	N/A	perishable superstr.
Colha Op. 2031 Str. I	N/A	N/A	fire pit, 1 burial
Colha Op. 2031 Str. J	N/A	N/A	step, 2 burials

Table 6. Continued.

Dos Hombres round structure	8 m	60+ cm	assoc. courtyard, partially exposed, assoc. midden
Río Azul BA-20 Str. 2	5-6 m	20 cm	possible perishable superstr.
Ixac round structure	7.7 m	50 cm	step
Chakantun circular structures	N/A	N/A	well-preserved building platforms
Altar de Sacrificios Op. 83 Mound 20	2.6 m	N/A	partially exposed
El Mirador Op. 21H Plaza Unit 2	N/A	N/A	partially exposed
Nakbe Str. 70	N/A	N/A	painted walls, dates to c. 300 B.C.
Nakbe round structure	N/A	N/A	dates to c. 200 B.C.
Nakbe round structure	N/A	N/A	dates to C. 100 B.C.
Barton Ramie BR-44 Cut 4	N/A	N/A	built on top of midden

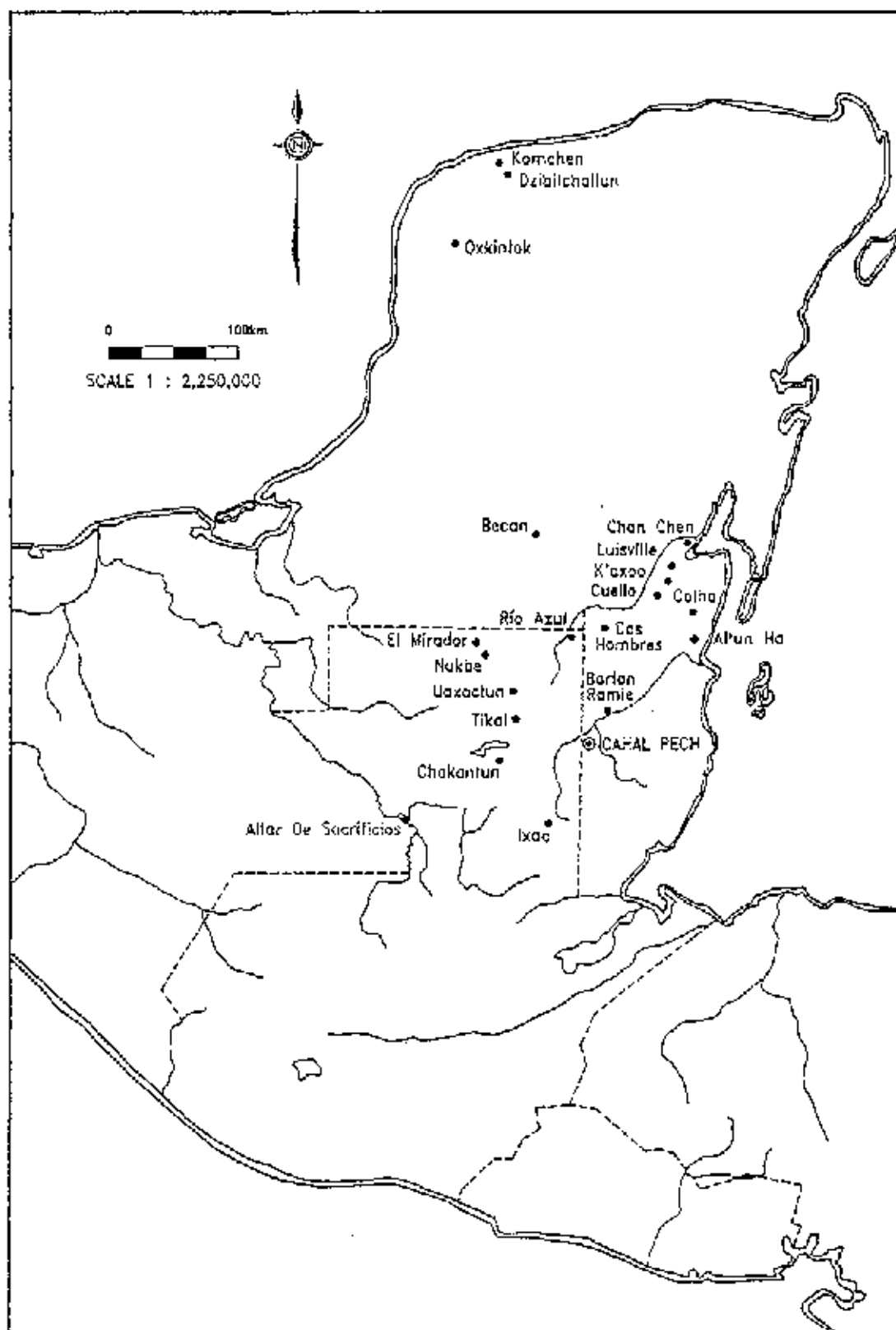


Figure 39: Map of Formative period round structures in the Maya Lowlands

the nineteen square kilometre mapped zone of Dzibilchaltun, Yucatan, Mexico" (Andrews and Andrews 1980:21). Structure 605 was excavated by William E. Moore (Tulane University) during the 1961-62 field season at Dzibilchaltun. It consisted of a large, low platform on the south side of the central plaza (cf. Andrews and Andrews 1980:21). In fact, four other building platforms (Structures 601-604) were located in this central plaza area and all of these structures, including Structure 605, exhibited:

an unbroken sequence of architectural and ceramic development in the Formative period, extending from the beginning of the Nabanche phase (800 B.C.) into the Xculul phase (post A.D. 1) (Andrews and Andrews 1980:21).

Based on ceramic chronology, five distinct construction stages were associated with Structure 605. During the earliest stage, it consisted of simple platforms with stuccoed mud walls, and small round houses with mud walls and thatched roofs (cf. Andrews 1965:294; also see Moore 1975:29-30). In addition to the round houses identified in the earliest phase in Structure 605, there was also a later, second phase (Nabanche 2 - approximately 650-450 B.C.) exhibiting:

a small platform with rounded corners ("the 2A platform"), added at the southeast corner of the Period 1 complex, which bore a small, rounded, masonry-wall house. Only the northern and western walls of this new platform were preserved. Built of rough boulders up to three courses high, they were probably plastered with lime...and a single course of small stones formed the top of the walls and presumably marked the floor level (Andrews and Andrews 1980:28-29, Figure 12).

Northern Belize

Several sites in northern Belize have exhibited archaeological evidence of Middle Formative round structures. One of the earliest round structures to be exposed, albeit with the aid of a bulldozer, was reported to both the first Archaeological Commissioner, A.H. Anderson, and to Wolfgang Haberland (1958:128). The discovery of this Middle Formative (Mamom phase) round structure at Luisville (or Louisville) has an interesting history behind it. The structure was found during one of the earliest salvage operations conducted by the Commissioner during a visit with Wolfgang Haberland to northern Belize in 1954. A local resident was bulldozing a shallow housemound to plant sugarcane when he uncovered some "archaeological objects" and, subsequently, contacted the Archaeology Commissioner. Anderson and Haberland excavated some of the exposed platforms inside the mound, as well as unearthing a round structure, approximately 1 m in height, with an inset stairway consisting of five steps (cf. Haberland 1958:128). It is believed, based on the ceramics recovered from inside the structure, that it dated to the Middle Formative period. This circular platform represented the earliest known example of architecture from the Mamom period in northern Belize (Haberland 1958:128). Unfortunately, Haberland (1958:128) stated that:

shortly afterwards and well before anything by the way of scientific excavation could be done, a hurricane destroyed the pyramid.

Round structures have also been partially uncovered in two separate operations (Operation 2012 and 2031) at Colha. According to Potter (1982:103), a "semicircular alignment of soft limestone rocks" was found adjacent to Floor 1 in Suboperation 5 of the 2012 structure. The 2012 structure was a stepped pyramid and platform on the western edge of Colha's monumental center. Unfortunately, not enough of this Middle Formative structure was exposed in order to determine whether its exact ground plan was either round or apsidal (Dan Potter, personal communication, 1994).

Both Anthony (1987:15, 24-27, Figs.5 and 6) and Sullivan (1991:13-16, 37-39, Fig.3) have reported the architectural remains of four Middle Formative (Bolay phase 900-600 B.C.) round structures in Operation 2031, located in the main plaza of Colha. Round Structure I consisted of two building stages with the terminal phase architecture measuring 5 m in diameter, 30 cm high, and supporting a perishable superstructure (Anthony 1987:15). Four burials were discovered within a midden deposit located outside of, and to the east of, the retaining wall associated with the earliest circular construction of Structure I (Anthony 1987:17-18; also see Potter et al. 1984:629). Structures II and III are contemporaneous in date and are part of a small plazuela group. Structure II was built directly on top of Structure I and measured approximately 3 m in diameter (Anthony 1987:27). The platform of Structure III was larger, measuring 6 m in diameter and, supported a perishable

building akin to Structure II (Anthony 1987:27). No burials or caches were contemporaneous with either of these two structures. However, a few fire pits were exposed to the southwest of Structure III.

Sullivan (1991:13-16, 37-40) has reported on the other circular platform (Structure A) in Operation 2031 at Colha. Structure A dated to the Middle Formative and consisted of three building stages. Each construction was represented by a low circular platform which supported a perishable superstructure (Sullivan 1991:37). A number of cultural features (i.e. fire hearths, middens, external cooking activity areas), including a burial, have been found contemporaneous with the three construction events of Structure A (Sullivan 1991:13-16).

Two Middle Formative period round structures, Structure 1 and Structure 1-D, have been excavated at K'axob, located between the New River and the southern arm of Pulltrouser Swamp, in northern Belize. Both round structures were found within the deepest stratigraphic levels (ca. 800-300 B.C.) of Operation 1, which was sunk in front of pyramidal Structure 18 on the western side of Plaza B (McAnany 1995a:8). Structure 1 was composed of a low, round-to-apsidal shaped platform (retained by a single course of stones), which supported a perishable structure, made of both pole and thatch (McAnany 1995a:9). Several features, including a number of sherd- and stone-lined pits, and an ephemeral structure (possibly a cooking structure), were

found contemporaneous with Structure 1 (McAnany 1995a:8-9). The other round structure, Structure 1-D, was dated to the late Middle Formative period, and consisted of:

a small circular platform into which two burials were intruded, one with a deep, red dish inverted over a spouted vessel (McAnany 1995a:9).

Archaeological investigations are to continue during the 1995 field season and, hopefully, more of these two circular platforms, particularly Structure 1-D, will be uncovered (Patricia McAnany, personal communication, 1994).

Two additional round structures (C-13/4th and 3rd) were excavated at Altun Ha, in north-central Belize (Pendergast 1982:177-178, 186-188). Each of the circular platforms associated with Structure C-13 is dated to a different time period (C-13/4th is dated to the Middle Formative; and C-13/3rd is dated to the Late Formative). Therefore, only C-13/4th will be discussed in this section. According to Pendergast (1982:177), C-13/4th was approximately 46 cm in height with a diameter of roughly 8.0 to 8.5 m. This structure showed evidence of at least two storage pits, as well as four postholes, cut into the floor surface. The postholes found contemporaneous with C-13/4th suggest the presence of a thatched structure on top of the floor of 4th. According to Pendergast (1982:177):

they do not provide any information on the form of such a structure, and clearly do not make existence of a Building on 4th anything like a certainty.

Based on the fourteen burials and the two caches recovered from C-13/4th, there is "ample data on temporal placement" for this circular platform to be dated to the late Middle Formative period (Xul phase - 450-300 B.C.) (Pendergast 1982:202).

Cuello, located between the Río Hondo and the New River in northern Belize, has produced evidence of at least two round structures (Structures 327 and 322) dating to the Middle Formative period. The majority of the Middle Formative deposits at Cuello were derived from the excavation of a massive trench (47 m long x 4 m deep) beneath Platform 34 (see Hammond et al. 1992:956). The two Middle Formative round structures were never completely uncovered in the trench. Enough of them was exposed, however, to determine that they were circular in plan.

The earliest round structure, Structure 327 [F108], excavated at Cuello is dated to the Swasey Phase (Phase II - 1000-900 B.C.). This round structure consisted of a low platform measuring 5.9 m x 5.3 m in size and was raised from 20 to 30 cm in height, with one successive reflooring (Gerhardt 1988:15). Evidence for postholes running along the inside walls were found in both building stages (a and b) indicating they supported perishable superstructures (Gerhardt 1988:15; also see Hammond et al. 1991:32-33). In addition to the postholes found inside Structure 327, there were a number of firepits located around the outside perimeter of the platform (Hammond et al. 1991:33).

The other Middle Formative round structure, Structure 322 [F55], was tested during two different field seasons. Together, both excavations (the southern portion in 1979 and the northern in 1992) revealed that this structure measured 6.2 m x 5.5 m in plan and was 15 cm high (Hammond et al. 1992:958). Structure 322 was located in the northwestern corner of the Middle Formative courtyard and had two building stages (a and b). The initial construction of Structure 322 dated to the Bladen Phase (Phase IIIA - 800-700 B.C.), while a slightly smaller successor of this earlier circular platform dated to the later Lopez-Mamom Phase (Phase IV - 700-600 B.C.) (Hammond et al. 1991:36-37). Numerous fire pits and a "small plastered niche" were found inside this low circular platform. The charcoal recovered from inside the niche yielded a date of 590 B.C. (Hammond et al. 1991:35; also see Gerhardt 1988:33). The niche was made of large stones set on a base of smaller stones and lined with plaster, but its purpose, decorative or functional, is unknown (Gerhardt 1988:33). Several postholes were found cutting into both building stages of Structure 322, which suggested that each building stage was supported by a perishable structure (Hammond et al. 1992:958).

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Three round structures (Structures E, F, and G), dating to the Mamom phase, were uncovered during the archaeological investigations in the northeast corner of Plaza E at

Uaxactun (Ricketson and Ricketson 1937:114-117). These structures were unearthed during the expansion of the Main Trench, which lay on the other side of the plaza from Pyramid E-VII sub (Figure 40). Structure E was made of earth and stone, similar to Structures F and G, and measured 5.79 m in diameter with a maximum observed height of 30 cm; although there was evidence that the Maya may have removed a smaller circle of stones on top of the round structure's plaster surface (Ricketson and Ricketson 1937:115). Archaeological evidence to support the destruction of the interior hearting of this structure is derived from the architectural remains of a "semi-circular plastered wall". This wall opened to the east and may have served as the base for a round superstructure, forming a tower-like temple (Ricketson and Ricketson 1937:115).

Another noteworthy architectural feature associated with Structure E was the presence of a rectangular-shaped subsidiary platform. This platform was found off the west side of the round structure, measuring 1.2 m deep and 3.9 m wide, from north to south (Ricketson and Ricketson 1937:115). The subsidiary platform gave Structure E a "keyhole-shape".

Structure F at Uxacatun is located about 7 m west of Structure E. Structure F was found in a corner, formed by two low retaining walls, which joined each other at a slightly obtuse angle, at the southwestern edge of the plaza. Morphologically, Structure F was almost identical,

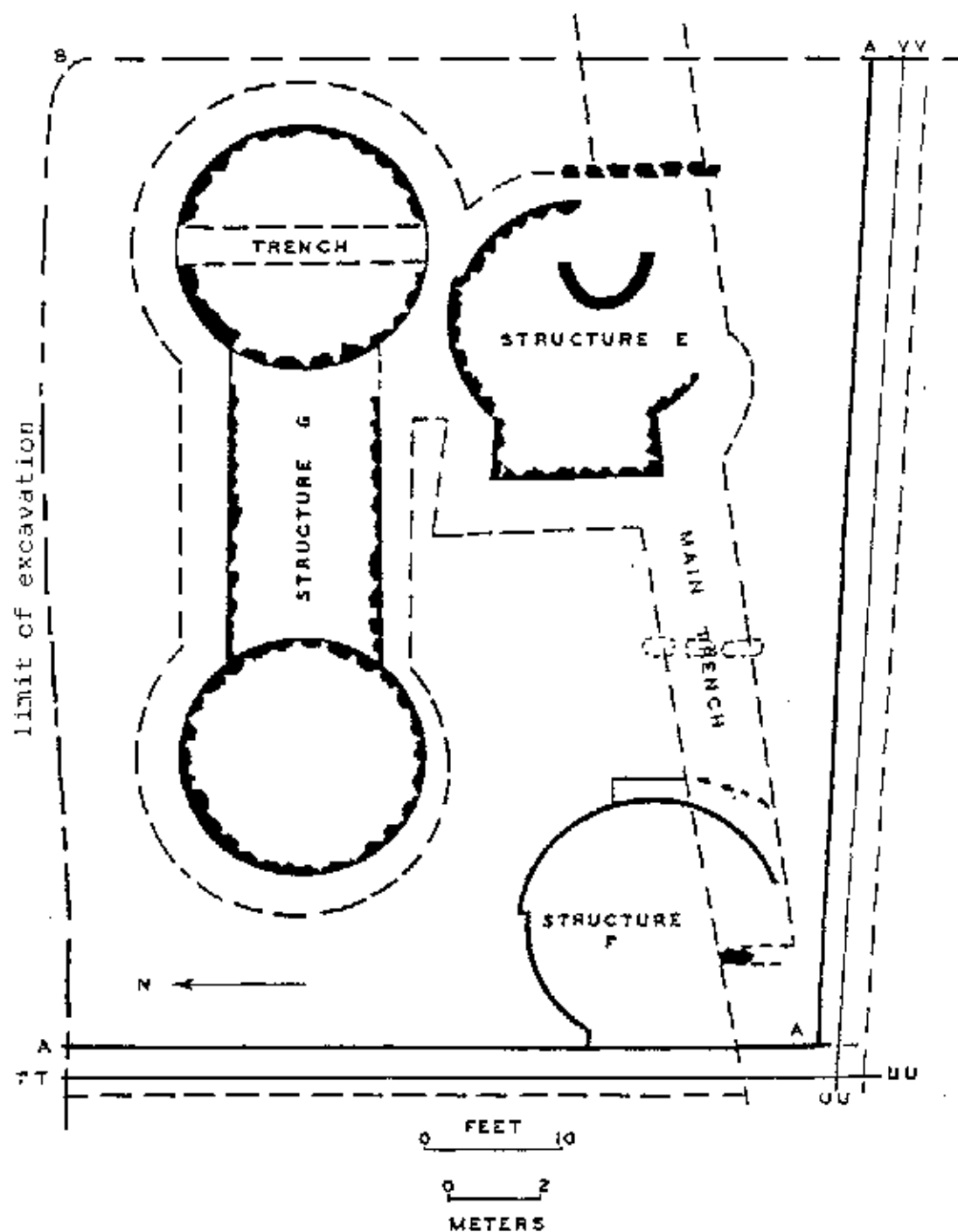


Figure 40: Plan view of Structures E, F, and G, Group E Plaza, Uaxactun (after Ricketson and Ricketson 1937:Fig.37)

both in form and in dimensions (measuring 5.79 m in diameter and a height of 30 to 45 cm) to Structure E, including the addition of an subsidiary platform (Ricketson and Ricketson 1937:117). However, the subsidiary platform was located on the east side of Structure F and measured 3.5 m in length and 50 cm in width, and faced toward both Structures E and G (Ricketson and Ricketson 1937:117). In addition to the subsidiary platform on the east side, there may have been another similar architectural feature located on the west side, but it was likely demolished during the construction of a low, single-course retaining wall.

Structure G, the most interesting of the three round structures uncovered at Uaxactun, is contemporaneous with the others, but it manifested:

two stone circles, 5.48 m and 5.79 m in diameter, respectively, joined by a bar 3.35 m wide, running east-west across the 6.09 m wide interval which separated them. The easternmost circle lay only 60 cm away from the nearest point of Structure E. A trench through this circle revealed nothing but earth fill, while its outline comprised a single row of cut stones. The floor extended beneath both circles (Ricketson and Ricketson 1937:117).

At present, Structure G is the only excavated Middle Formative round structure in the Maya lowlands which exhibited an architectural form similar in shape to a "dumb-bell". It should be noted, however, that a Late Formative circular construction akin to Structure G was found at Chakantun, located in the Central Peten Savannas (Rice and Rice 1979:17-19). Nonetheless, both of these structures,

albeit different in both time and in space, are most unusual among round architecture in the Maya lowlands.

Additionally, the presence of a low, single-course retaining wall (33 to 43 cm high) found adjacent to both Structures E and F marks the spatial separation between them, as well as with Structure G, from the rest other platforms in Group E. The separation of Structures E, F, and G from other structures in the group may have also included Pyramid E-VII sub, which would have been visible during this phase of occupation (late Middle Formative period) in Group E (Hendon 1993:6-7; also see Ricketson and Ricketson 1937:134-135). Finally, according to Hendon (1993:6):

Strs. E and F provide the most striking example of restricted access due to the construction of an enclosing wall that separated them from the more central part of Group E where Strs. A, B, and D, as well as an unknown number of other platforms and pits, were located.

Upper Belize River Valley

Four Middle Formative (650-350 B.C.) round structures have been excavated at Cahal Pech, located in the Upper Belize River Valley, Belize. One round structure (Str. B-4/7th) was discovered in the site core, while the other three circular platforms have been found in peripheral settlement clusters (i.e. Str. 2/2nd in the the Zotz Group; and Structures 14 and 15 in the Tolok Group).

The earliest evidence for occupation at Cahal Pech (dated to the terminal Early Formative period c. 1200 B.C.)

was found during the excavation of a small pyramidal structure (Structure B-4), located on the southeast corner of Plaza B in the site core (Awe 1992; Healy and Awe 1995b). During the excavation of deep, vertical units placed into the hearting of this structure, the architectural remains of a late Middle Formative round structure (B-4/7th) were unearthed (Awe 1992:211). Structure B-4/7th was erected above a raised, lime-plastered, platform accessed by a stairway on its north face (Figure 41). Some portions of the retaining wall of this circular platform were partially demolished during the construction of B-4/8th (B-4 Floor 6). However, the excavations revealed that the stairway, which probably dropped 2-3 m from the summit of the platform to ground level, had rounded contours and was constructed of large cut-stones covered by a thick coat of lime plaster (cf. Awe 1992:211; also see Awe 1993:8). Furthermore, Awe (1992:212) has stated that:

the partial destruction of the architecture also made it impossible to ascertain whether the round structure supported a perishable building, but it was noted that the retaining wall was made of several courses of cut limestone blocks which were mortared together.

For several years, archaeological investigations in the periphery of Cahal Pech have been conducted under the auspices of the BVAR Project (1990-93) and, more recently, by the Trent University - Belize Valley Preclassic Maya Project (1994-95). A total of three round structures were completely uncovered (full horizontal exposure) during

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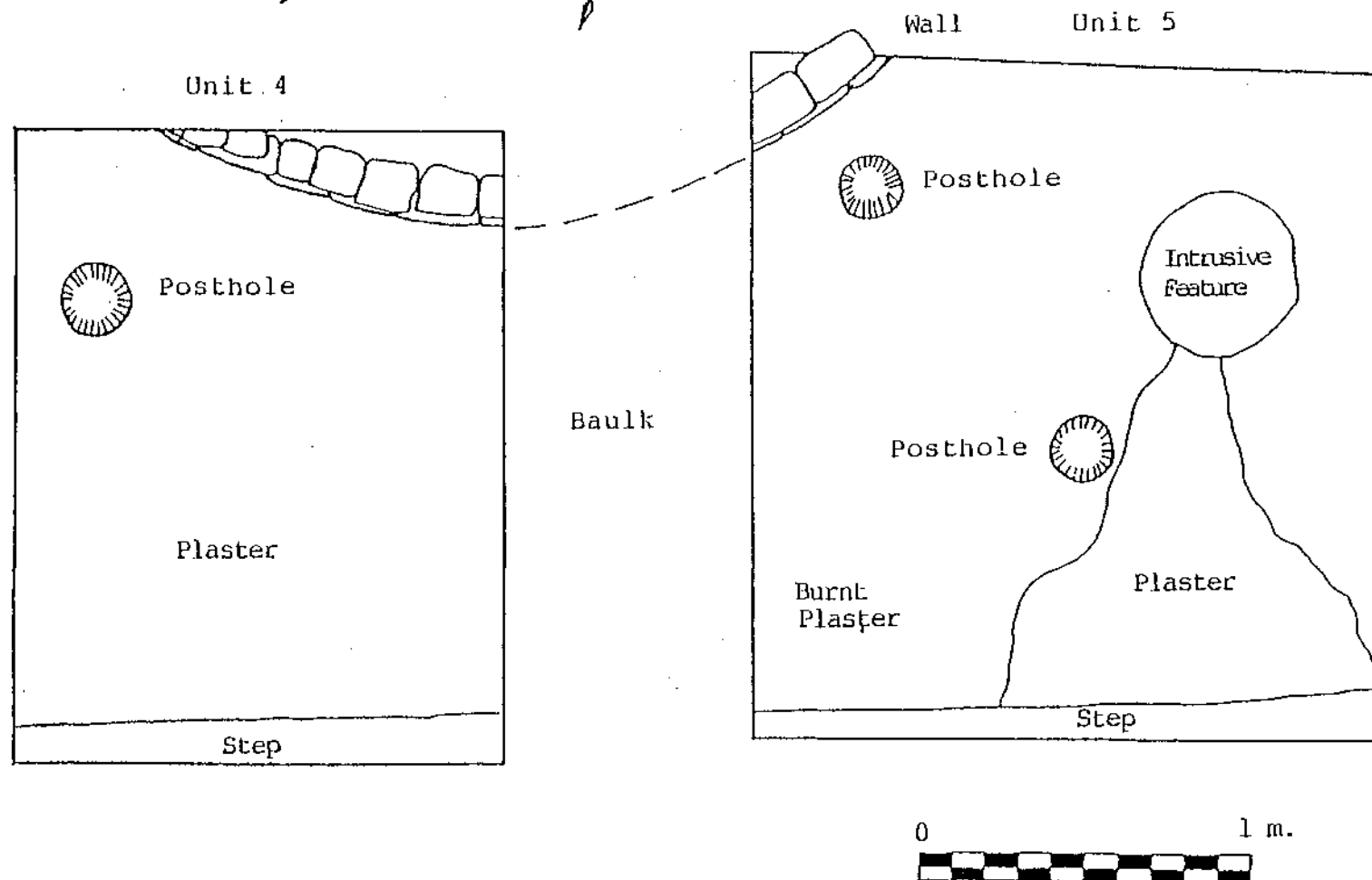


Figure 41: Plan view of Structure B-4/7th, Cahal Pech,
Belize, (after Awe 1992:Fig.30)

excavations at two of these peripheral settlement clusters, the Zotz and Tolok groups. Only the circular platform from the Zotz Group (Str. 2/2nd) will be discussed below. The two circular platforms (Structures 14 and 15) excavated at the Tolok Group will be described in detail in Chapter 2 of this thesis.

The Zotz Group is a formal or homogeneous patio cluster (see Ashmore 1981:51-52), consisting of four mounds which sit on a raised platform 22 m long x 21 m wide. This group of mounds is located approximately 100 m south of Cahal Pech (Awe et al. 1992:119; also see Awe et al. 1990:12-14). The round structure (Str. 2/2nd) was discovered above the second earliest building platform (Floor 5) in the eastern mound and was subsequently replaced by three later, rectilinear Classic period construction phases.

The round structure at Zotz was an exposed platform measuring 1.2 m in height, and tapered slightly to an upper diameter of 3.6 m (Figure 42). According to Awe et al. (1992:120):

Its walls had been constructed of cut limestone blocks (six courses high) set in mortar, and then stuccoed with a thick layer of plaster on the outside face. On the west side, the structure had an elliptical outset stairway, and the summit of the circular platform was capped by a thick plaster floor.

Based on ceramic cross-dating, the Zotz round structure is dated to the transitional period between the late Middle and the early Late Formative period (approximately 650-350

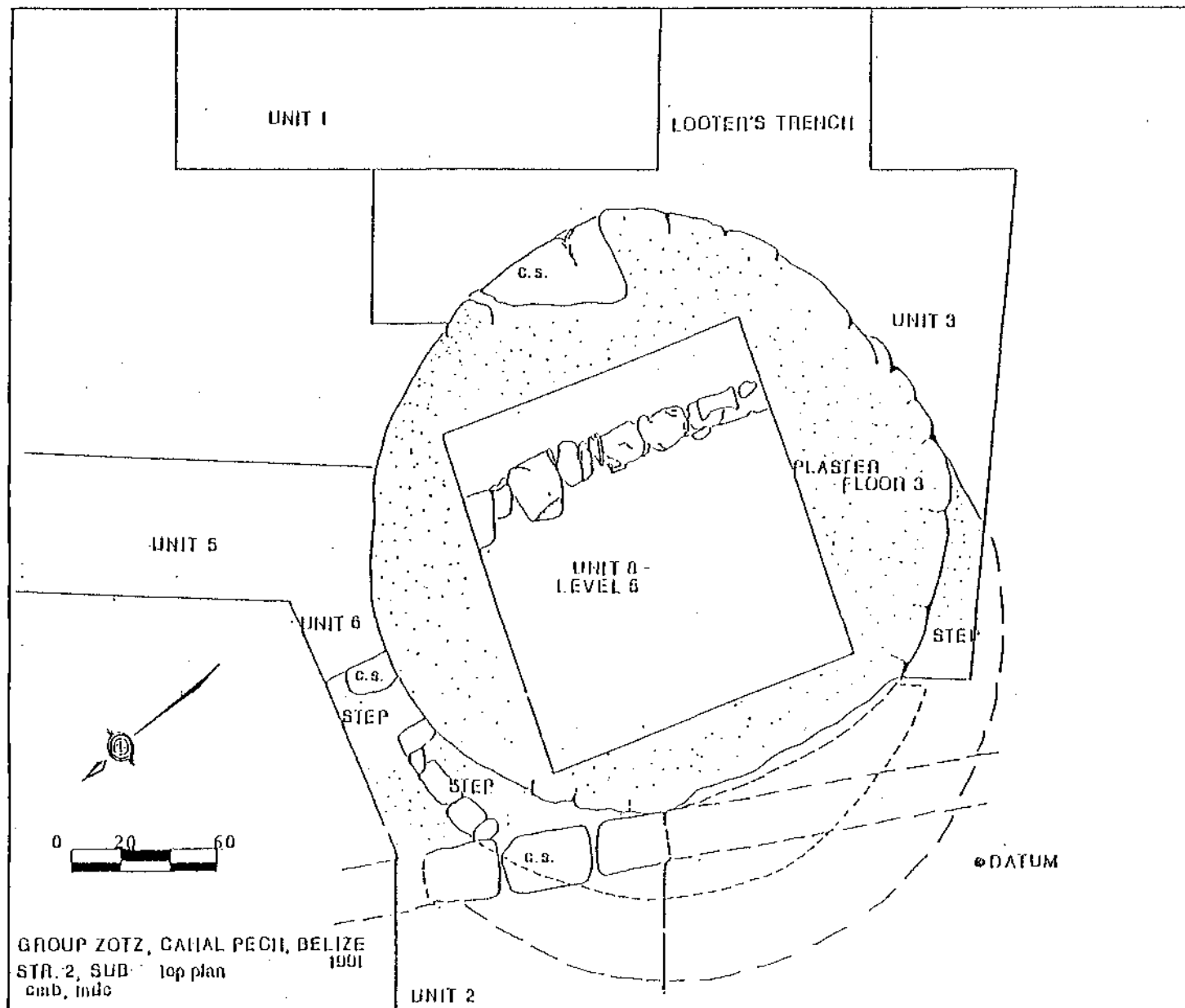


Figure 42: Plan view of Structure 2/2nd, Zotz Group, Cahal Pech, Belize (after Awe et al. 1992: Fig.2)

R.C.). This structure is interesting both for its early date and its unusual morphology, since no postholes nor remains of a masonry superstructure were detected. The architectural data indicated Str. 2/2nd at Zolz was an exposed platform (cf. Awe et al. 1992:124). A total of 18 burials were found inside this structure, of which most were intrusive and Late Classic in date, but at least two were contemporaneous with the construction of the circular platform (Aimers 1992; Aimers and Awe 1993:1, 4-5; Awe 1993:12; Awe et al. 1992:120, 123).

The Late Formative Period (350 B.C. - A.D. 250)

Northern Lowlands

There are more examples of Maya round structures dating to this time period than the preceding phase, yet they are much more widely distributed across the Yucatan Peninsula. The search for Formative period mounds in the periphery of Dzibilchaltun led to the Xculul Group, located about two kilometres west of the site core (Andrews and Andrews 1980:58). A circle of stones, probably the foundation for a perishable room 4.5 m in diameter (Wall 9), was found associated with Structure 226 in the Xculul Group (cf. Andrews and Andrews 1980:63). The incomplete wall of this round structure was one course high, crudely shaped, and has been dated to the latter half of the Late Formative period (Xculul 2 phase A.D.150-250) (Andrews and Andrews 1980:63). Also, the round structure was abandoned and its

foundation covered about the time an urn burial (Burial 4) of a newborn child was placed within its boundaries (cf. Andrews and Andrews 1980:63-64).

Round structures have been identified at Komchen, located in the western periphery of Dzibilchaltun, Yucatan, Mexico. Excavations of several Type 3 basal platforms at the site have yielded a variety of shapes, including at least three round structures (Ringle and Andrews 1988:187). Structure 18J-3, a large, rectangular platform, contained the remains of earlier, lower platforms, at least two of which were rounded. One was round, and the other was probably mostly round but with nonround additions. These platforms were built one stone high, perhaps 20-25 cm. Structure 22N-1 was a round platform with walls two courses high, ca. 35 cm, not buried inside a later, rectangular platform. It also had a badly ruined smaller circle of stones on top, probably the base for a round superstructure (E. Wyllys Andrews V, personal communication, 1995).

Another example of a Late Formative round structure was found at Oxkintok, located to the north of the Puuc Hills in the Yucatan Peninsula, Mexico (Morales 1992:316). This round structure, Structure DZ 12, was keyhole-shaped and exhibited a subsidiary platform, which was oriented to the west. Furthermore, it should be noted that recent archaeological investigations at Oxkintok have revealed additional round structures (William Folan, personal communication, 1994).

Four round structures have been excavated at Becan, located in the Río Bec region of the Yucatan Peninsula, Mexico. In addition to these four circular platforms, others may have existed, but they were not detailed in any archaeological report, except for the assertion that round corners and circular structures were popular in the Río Bec region. Unfortunately, Thomas (1975:140) does not say whether these were Formative or Classic period in date. He did describe one such structure as:

a small platform in the plaza southeast of Structure IV, mapped in 1934 as a flat-topped rectangular platform oriented precisely north-south, was excavated in 1969 and found to be perfectly circular in plan.

In a more detailed report of the settlement patterns at Becan, Thomas (1981:79-80) described a Late Formative (Pakluum phase) circular platform located in Structure 7E-346 (Operation 100). This structure represented the remains of a small circular platform consisting of a crude foundation wall (of unshaped limestone slabs approximately 20-30 cm in length), one course high, and measuring about 80 cm in height and 3 m in diameter (cf. Thomas 1981:79).

Two other circular structures were found in plazuela groups in the periphery of Becan (see Adams 1977:82). These structures were more complex in form and style than the round structure, Structure 7E-346, reported by Thomas (1981:140). Only scant information about the context of these two round structures has been documented. However,

Ball and Andrews (1978:12) have provided a detailed architectural description of both:

The first, a circular structure 15 cm high and about 4.5 m in diameter, contained loose, dry-laid rubble. A single-course retaining wall of blocks pecked on their exterior surface bore a coat of thick, smooth lime plaster. The second, a well-preserved substructure of the first or second century A.D., had vertical walls almost 1.5 m high of blocks set in lime mortar. The lower 40 cm of these walls were painted, but the upper meter was decorated by polychrome curvilinear and geometric designs in red, black, yellow, and green. The painting was badly eroded, and the remaining traces were not recorded.

Northern Belize

A second round structure (C-13/3rd A) was found at Altun Ha. This structure was "modelled along the lines of its immediate predecessor (C-13/4th)" (Pendergast 1982:186). This slightly larger circular platform (approximately 10 m in diameter) was well-preserved (retaining its upper surface) and had escaped the fate of both earlier and later buildings in the architectural sequence of Structure C-13 (Figure 43). Pendergast (1982:186-187) has stated that:

The main body of 3rd A consisted of a rather irregular circular platform, with a maximum height of 130 cm (Platform 2), to which access was provided at the west by a two-step stair (Stair 1), which led to a low subsidiary platform (Platform 1). Excellent preservation of almost all of the upper surface of Platform 2 left no doubt that 3rd A was complete as found; no building, either of masonry or of perishable materials, ever stood atop the structure.

Three burials and three caches, including a mass of burnt stone, soil, and charcoal, with a diameter of 36 cm,

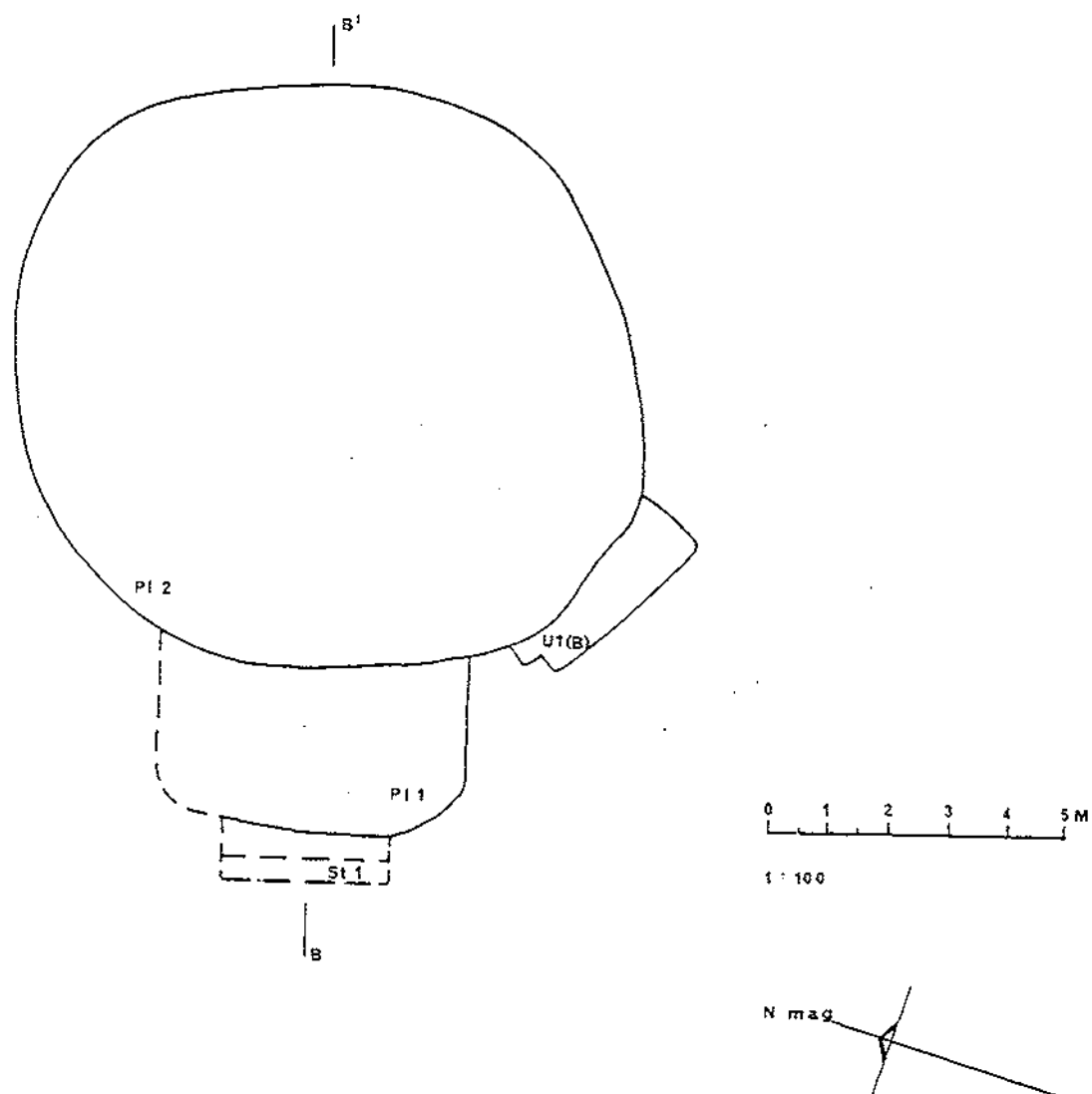


Figure 43: Plan view of Structure C-13 3rd A, Altun Ha, Belize (after Pendergast 1982:Fig.97)

which was located in the core, just north of the junction of Platforms 1 and 2, were contemporaneous with Structure C-13/3rd A (cf. Pendergast 1982:187-189). The dedicatory material (particularly Cache 9), as well as the large quantity of ceramics, recovered from inside the platform suggested a Late Formative period (Xul phase - approximately 100 B.C. to A.D. 40) date (Pendergast 1982:200).

A large Late Formative round structure was found in 1974 at Chan Chen, by the UCLA-Corozal Archaeological Survey. Chan Chen is located about 7 km northwest of Corozal Town in northern Belize. This round structure (Structure F-2) was found buried within the construction fill (at the south end) of a very large platform, designated as Structure F-1 (Figure 44) (Sidrys and Andresen 1978:641; also see Sidrys 1983:92). The temporal placement of Structure F-2 was "ascertained by means of stratigraphic context, associated ceramics, and a radiocarbon date" to sometime around A.D. 100 (Sidrys and Andresen 1978:641).

As mentioned above, the round structure at Chan Chen was completely buried with rubble overburden (measuring from 30 to 70 cm thick in some areas). Consequently, most of the circular platform was well-preserved. The excavation of Structure F-2 revealed that the upper diameter ranged from 10.2 m to 10.9 m, had a maximum observed height of 1.8 m on the eastern side, and exhibited both a small outset stairway on the southwest side and a high subsidiary platform abutting the northwest wall (cf. Sidrys and Andresen

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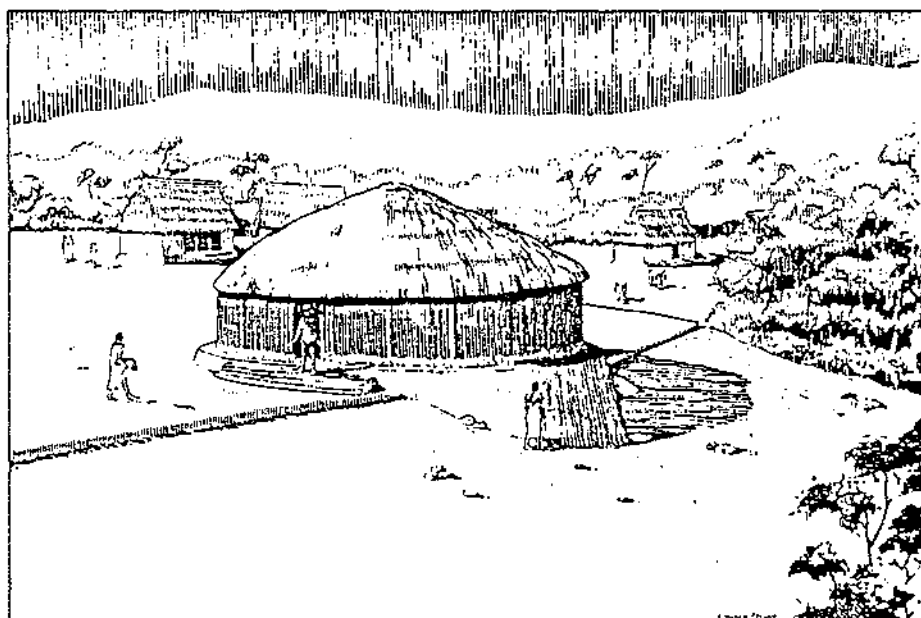
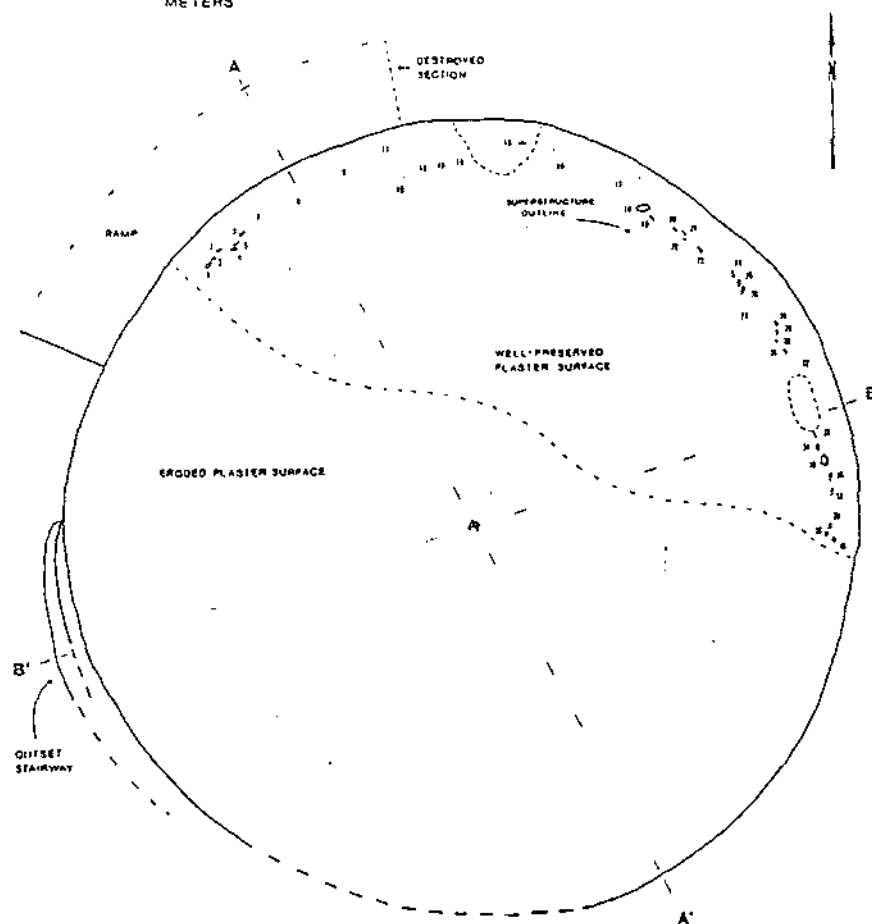


Figure 44: Plan view and artist's reconstruction of Structure F-2, Group F, Chan Chen, Belize (after Sidrys and Andresen 1978:Figs. 5 and 11, respectively)

1978:642-643). Further investigation into the round structure showed that:

The walls of the platform were nearly vertical and were comprised of uncut rectangular blocks set in mortar. The blocks were covered with a thick plaster (5 to 10 cm) that formed a remarkably smoothed surface...A striking feature of the Str. F-2 surface was the presence of twenty-eight small stones that formed a semi-circular pattern in the original plaster floor. Some of these were set upright into the plaster and could be differentiated from eroded fill stones (Sidrys and Andresen 1978:643, 645).

These vertical cut-stones were the architectural remains of a low masonry wall set into the plaster floor and were interspersed by a number of postholes. The presence of a circular masonry wall and postholes was indicative of a large perishable superstructure (about 9 m in diameter and enclosing an area of 65 square meters) built on the floor surface of Structure F-2 (cf. Sidrys and Andresen 1978:648). No dedicatory materials (either burials or caches) were associated with the round structure. However, one *in situ* artifact, a shattered Late Formative gutter-spout beaker, was found on the floor surface. The principal investigators speculated that this was evidence for a termination ritual (see Sidrys and Andresen 1978:645, 649; also see Sidrys 1983:98).

In addition to the two Middle Formative examples at Cuello, a total of six Late Formative period (Cocos Chicanel phase) round structures (Strs. 311, 309, 306, 305, 304, and 301) were excavated. Structure 311 [F235] and Structure 309

[F242] were both dated to the early facet of the Late Formative period (Phase VI). They had replaced a rectangular platform (Structure 312), which occupied the northern end of Platform 34 (Gerhardt 1988:59). Both of these round structures were architecturally linked. Gerhardt (1988:58) has stated that:

Structure 311 was linked to, but set back from, Structure 309. Structure 311, the smaller platform approximately 5.4 m by 6.0 m - was built northwest of Structure 309 and was joined to it by a retaining wall, two courses in height, forming a step down to the rear of the platforms.

Structure 309 was larger than Structure 311, approximately 8.2 m x 7.2 m in diameter, yet they both shared the same architectural destruction of their upper plaster surfaces. Overall, little archaeological information pertaining to both their overall height and/or associated features can be gleaned (Gerhardt 1988:58; also see Hammond et al. 1991:44-45).

Structure 306 [F270], located at the northern end of Platform 34 and nearly abutting Structure 308, consisted of three building stages (an initial construction of two courses of cut-stone during Phase VIII with two successive refloorings). Each of these successive buildings was circular in plan and manifested perishable superstructures (based on the number of postholes found around the perimeter of each structure) (Gerhardt 1988:64). Structure 306 was approximately 5 m in diameter, 50 cm in height, had an

entrance step facing south, and contained four hearths which cut into the floor during its final construction event (Gerhardt 1988:64; Hammond et al. 1991:47).

The paired buildings of Structure 305 [F150] and Structure 304 [F149] stood side by side at the northern end of Platform 34. Each round structure had a couple of building stages that were continuously occupied throughout the late facet of the Late Formative period (Phase XI) (Hammond et al. 1991:50-51). A sealed single-chambered chultun, possibly contemporaneous with a Middle Formative building (ca. 400 B.C.), was found beneath Plaza Floor VII. The chultun was located directly under the earliest construction of Structures 304 and 305 (Hammond 1980:179; also see Hammond et al. 1981:10).

Structure 305 was a round platform, 5.5 m in diameter and 50 cm in height, with a square frontage measuring 6.2 m long x 80 cm wide (Gerhardt 1988:73). Morphologically, Structure 305 and Structure 304 were very similar, except that the former structure was slightly larger and was earlier in date. Structure 304, had three construction stages, expanding from 4.7 m x 5.0 m to 6.0 m x 5 m, and, like Structure 305, manifested a large square frontage which faced south-southwest (Figure 45) (Gerhardt 1988:74). No postholes were found cut into the floors of either of these two platforms. This architectural information has led both Gerhardt (1988:75) and Hammond et al. (1991:51) to entertain the possibility that "these were open air platforms".

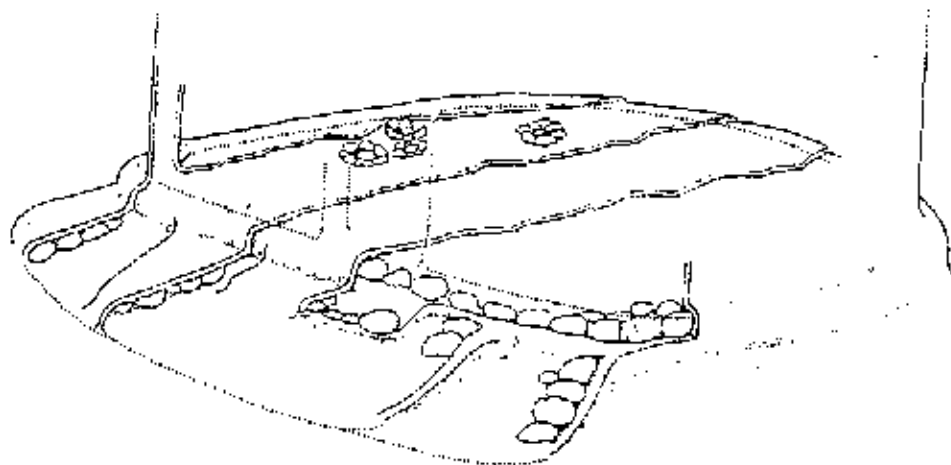
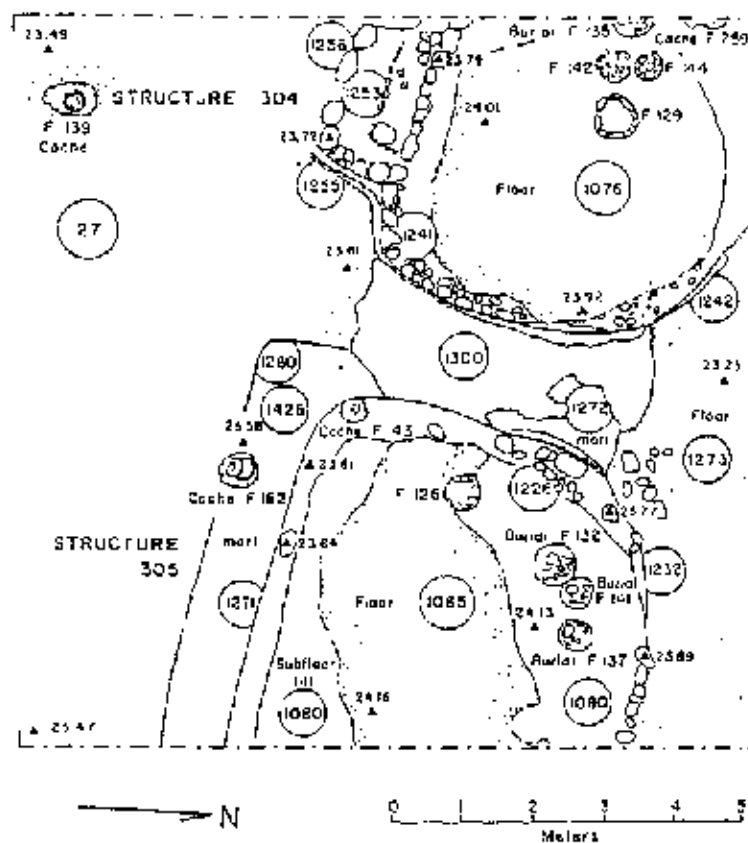


Figure 45: Plan view and artist's reconstruction of Structure 304 beneath Platform 34, Cuello, Belize (after Hammond et al. 1991:Fig.3.16)

Structures 305 and 304 had several contemporaneous cultural deposits. For example, a total of eight fire pits, four caches, and five burials were contemporaneous with Structure 305, while three fire pits, and four burials were cut into the plaster floor surface of Structure 304 (Gerhardt 1988:73-74; also see Gerhardt and Hammond 1991:108-109, Figure 5.23).

Structure 301 [F159], the most recently documented and dated round structure at Cuello, was located at the north end of Platform 34. According to Gerhardt (1988:81), this Terminal Formative period (Phase XIII) round platform had a single course stone retaining wall, 5.3 m in diameter, with a small projecting front step (2.0 m wide x 80 cm deep). This projecting step faced southeast on an alignment of 162 degrees azimuth. No postholes nor traces of a plaster floor survived (and, therefore, no observed maximum height), but one burial [F123] was contemporaneous with this circular platform.

The partial architectural remains of three Late Formative circular platforms have been uncovered in the main plaza of the monumental center at Colha. One round structure was found, during the test excavations of the main plaza, in Suboperation 1, of Operation 2011 (Eaton 1980:145). Archaeological investigations in Suboperation 1 have revealed simple house constructions, supporting perishable structures, contemporaneous with Late Formative midden deposits. One of these house structures exhibited "a curved

line of large stones partly outlining a simple structure that was either round in plan or round-ended (apsidal)" (Eaton 1980:145, 148, Figure 1). The other two round structures (Structures I and J) dating to the Late Formative period were found in Operation 2031 (Sullivan 1991:29-31, 39). Structure I was located in the southwest corner of Operation 2031 and consisted of a rough, circular alignment of marl blocks capped by a plaster floor (Sullivan 1991:29, Fig.4). Cultural features contemporaneous with this structure included a fire hearth, midden, and a burial. Structure J was built on top of a midden and, based on ceramics recovered from this feature, appears to be contemporaneous with Structure I. The architectural remains of a possible porch or entryway, several exterior cooking areas, and two burials were associated with this circular platform (Sullivan 1991:39).

A Late Formative period round structure has been found at the large site of Dos Hombres, located on the Programme for Belize Lands in northern Belize. The round structure was located buried beneath an elite residential courtyard (A-2) in the site core. Testpitting revealed that the round structure was approximately 8 m in diameter, 60+ cm high, and erected directly on top of bedrock (Kathy Brown, personal communication, 1995). This round structure was partially destroyed in antiquity and was replaced by at least two, possibly three, Late Classic construction phases, judging from plaza floor surfaces identified during the 1993

field season. A courtyard floor was found contemporaneous with the circular platform and testing beneath it revealed a midden deposit dating to the Middle Formative period (Kathy Brown, personal communication, 1995).

Department of Peten, Guatemala

A Late Formative keyhole-shaped round structure has been reported from the BA-20 Group (El Pedernal), a peripheral group of mounds, located to the northwest of the main site of Río Azul (Hendon 1989:96-100). In fact, two round structures (Structures 1 and 2), with a similar morphology, were found superimposed in Op.206 at the BA 20 Group. Structure 1, the later version, dates to the Early Classic period while Structure 2, the earlier version, dates to the Late Formative period (Chicanel phase) (Julia Hendon, personal communication, 1993; also see Hendon 1989:128-130). Structure 2 was only partially uncovered, but the platform was estimated to be about 5-6 m in diameter, 20 cm high, and was covered with plaster on its vertical exterior surface (Figure 46) (Hendon 1989:100; and Hendon 1993:6). Only one posthole was found in Op.206, but it was likely associated with the Early Classic round structure. Therefore, it is not certain if Structure 2 supported a perishable superstructure (Hendon 1989:129). During two field seasons (1985 and 1986) of excavating in Op.206 at the BA-20 Group, no burials or caches were found contemporaneous with either of the two round structures (Julia Hendon,

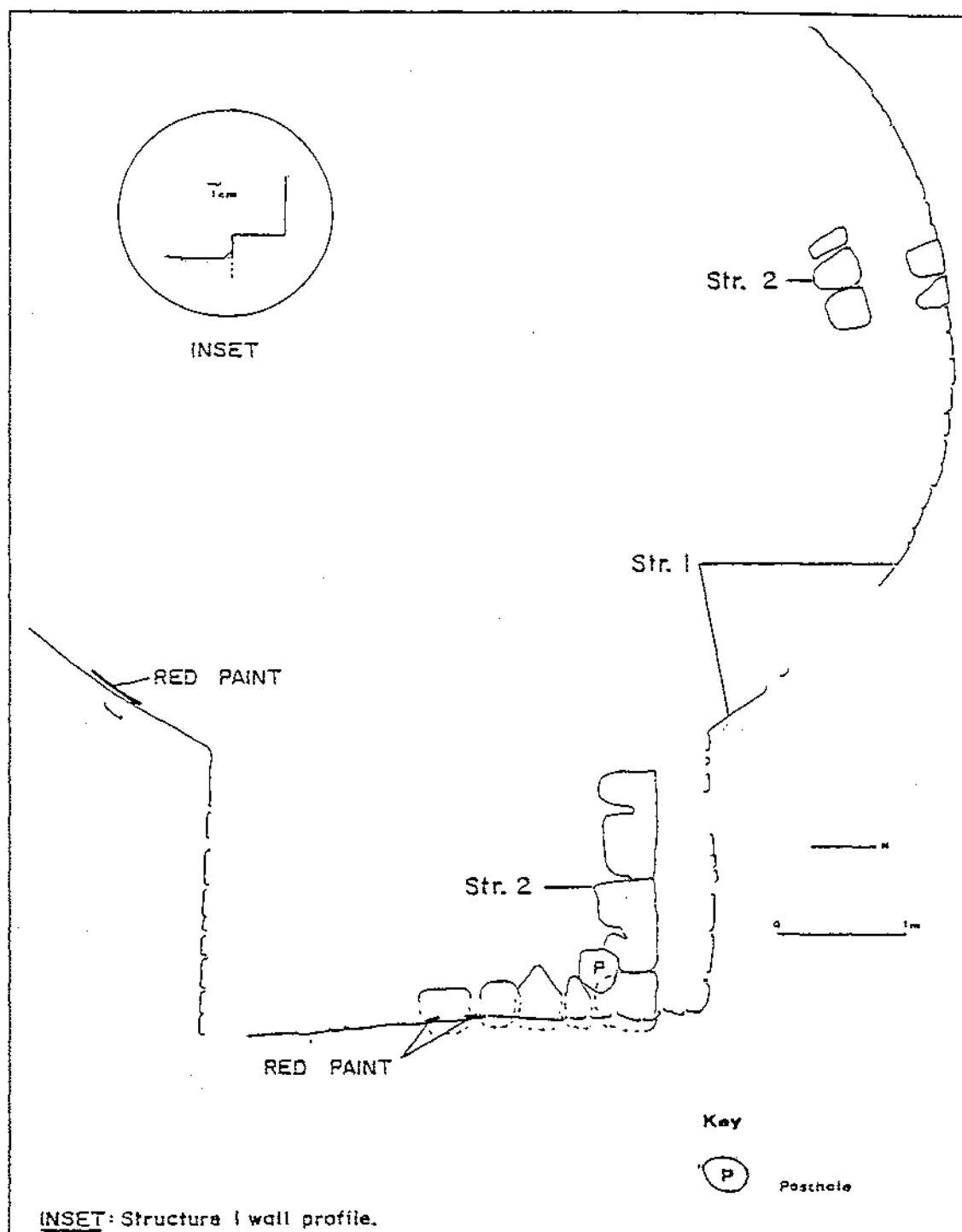


Figure 46: Plan view of keyhole-shaped Structures 1 (Early Classic) and 2 (Late Formative), Op. 206, BA-20 Group, Río Azul, Peten, Guatemala (after Hendon 1989:Fig.7)

personal communication, 1994).

Morales (1993:312, Figure 7) has documented one Late Formative period round structure from the site of Ixac, in the Valley of Dolores, located in the Upper Mopan River region of the southeastern Peten (also see Laporte 1991:34). The site of Ixac is located in the southern area of the Valley of Dolores and resembles a Plaza Plan 9 spatial configuration. The round structure is located in the interior of a basal platform in Group C, which is situated approximately 200 m west of the ceremonial centre of Ixac (Figure 47). According to Morales (1993:312), the circular platform:

presenta un muro vertical de 0.50 m de alto, de 7.7 m de diámetro y una escalinata saliente en su lado oeste. Apparently la sección norte de la estructura fue mutilada al construirse a 0.80 m sobre su plataforma superior, la plataforma basal que sostuvo un grupo de montículos del Clásico Tardío.

A number of round structures have been described by Rice and Rice (1979:19) at Chakantun, located in the Central Peten Savannas. The round structures were first reported by Lundell (1934:175), during a biological expedition in 1933 by the Carnegie Institution of Washington. Chakantun covers an area of approximately 3 square kilometres, and these round structural remains were scattered throughout the grassland of this savanna region. During the survey of Chakantun, Rice and Rice (1979:19) observed about twenty out of eighty stone scatters to have recognizable structural plans. According to them:

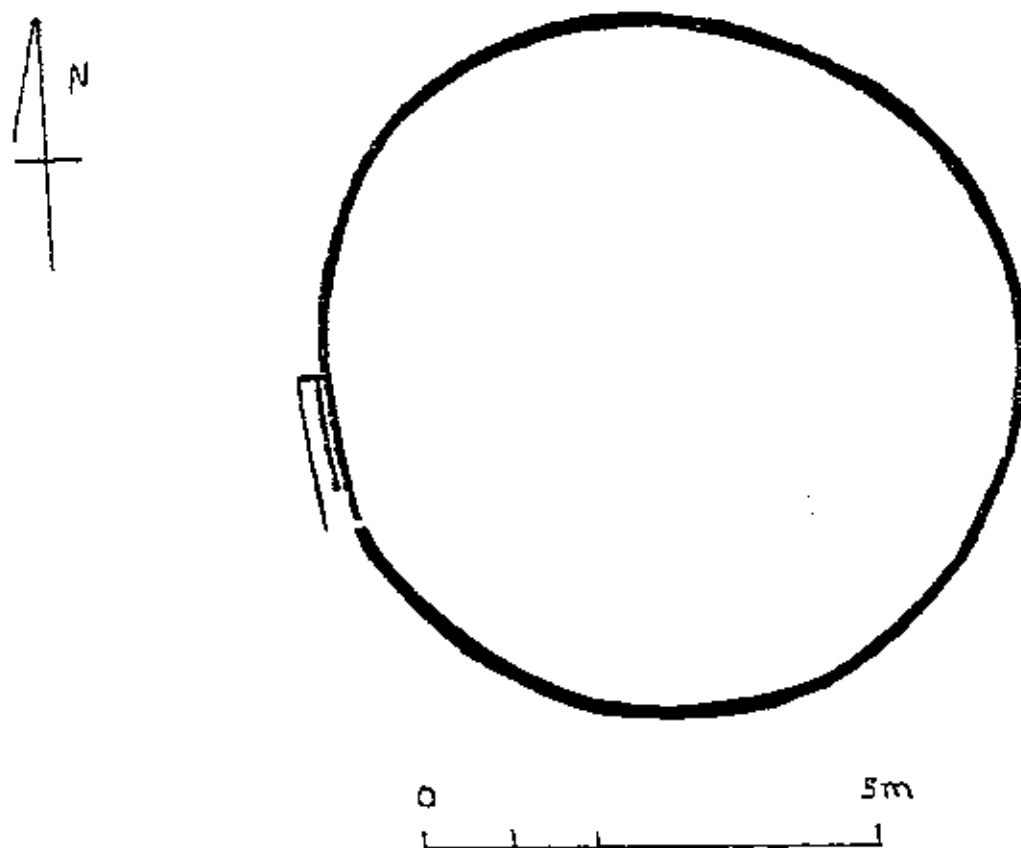


Figure 47: Plan view of round structure at Ixac, Group C, Valley of Dolores, Peten, Guatemala (after Morales 1993:Fig.3)

Some of the few relatively well-preserved examples had apsidal to circular plans: rings of stones, round masses of stones, two circles joined in a dumb-bell shape or circular bases for superstructures that rested on rectangular platforms (Rice and Rice 1979:19).

These circular constructions at Chakantun, based on excavations, have revealed that they were primarily Late Formative (300 B.C.- A.D. 275) and Early Classic (A.D. 275 -600) in date. Unfortunately, there is not enough comparative archaeological information pertaining either to architectural data or to dedicatory material (i.e. contemporaneous burials and/or caches) to know how many of these structures were dated specifically to the Late Formative period.

At Altar de Sacrificios, Smith (1972:162) reported the architectural remains of a Terminal Formative period (Salinas Phase) circular platform, located in an L-shaped low platform, Mound 20. The circular platform was the second phase of construction identified in Op.83 of Mound 20, and was represented by a semicircular wall (one course high) of limestone and redstone blocks, about 2.6 m in diameter (Smith 1972:118, 162, and Figures 85c, d). This semicircular alignment of cut-stone is dated to the Late Formative period (A.D. 200-300) and was largely destroyed by a later, Early Classic building phase.

In 1979, the New World Archaeological Foundation (NWAf) conducted salvage operations in low-profile mounds at El Mirador. During the course of investigations, they

discovered the architectural remains of a circular structure (Nielsen 1980:25). This Late Formative period (Cascabel phase) circular structure was located in a plaza unit compound (designated as "Plaza Unit 2"), approximately 300 m south of the massive Tigre Complex in the site core (Nielsen 1980:28). The circular stone structure was found at the base of a public building (Op.21H) in a residential compound, and was capped by a plaza floor (Nielsen 1980:32, Figure 28). The plastered floor surface of the round structure appeared to be eroded and/or destroyed. The platform was constructed of three courses of cut-stone and was erected on top of an earlier plaza floor. No measurements detailing the overall size and height were available.

Archaeological investigations at Nakbe, located in the northern portion of the Department of Peten, Guatemala, have revealed three Late Formative period circular platforms. All three round structures date to the early facet of the Kan phase (ca. 300-100 B.C.) (R. Hansen, personal communication, 1995). The excavation results of one circular platform, Structure 70, found in Complex 70 have been reported (Velasquez 1993:126; also see Morales 1993:316). The preservation of the plaster floor surface and of the stucco on the walls of the platform of Structure 70 was very good compared to the other Late Formative architectural remains at the site. In addition, traces of both red and blue paint were found on the stuccoed walls of Structure 70. This round structure excavated at Nakbe was similar in form, and

contemporaneous in date, with the round structures uncovered at Dzibilchaltun, Uaxactun, and Río Azul (Velasquez 1993:126).

Upper Belize River Valley, Belize

Two round structures have been excavated at the site of Barton Ramie, located in the alluvial valley, on the north side of the Belize River. The earliest example of a horizontally excavated round structure from the Maya lowlands, Structure F in BR-1 at Barton Ramie, was investigated by Glass (Willey et al. 1965:51-59), and dated to the Early Classic period (late Hermitage phase) (Figure 48).

The other round structure at Barton Ramie, albeit only partially exposed, was found in Cut 4 (a road cut) in BR-44 (Willey et al. 1965:179-181, Figure 86). This Late Formative period (Floral Park phase) round structure was made of partially-dressed limestone blocks, which lay on top of a dark refuse stratum (cf. Willey et al. 1965:181). According to Willey et al. (1965:181):

The stones appeared very similar in quality and in rough shaping to those observed in the circular foundation of Structure F in mound BR-1. The stones were fully exposed by us at a below mound surface depth of 2.6 meters... The blocks had been laid in one or two courses without mortar. The width of the wall averaged 30 to 40 cms.

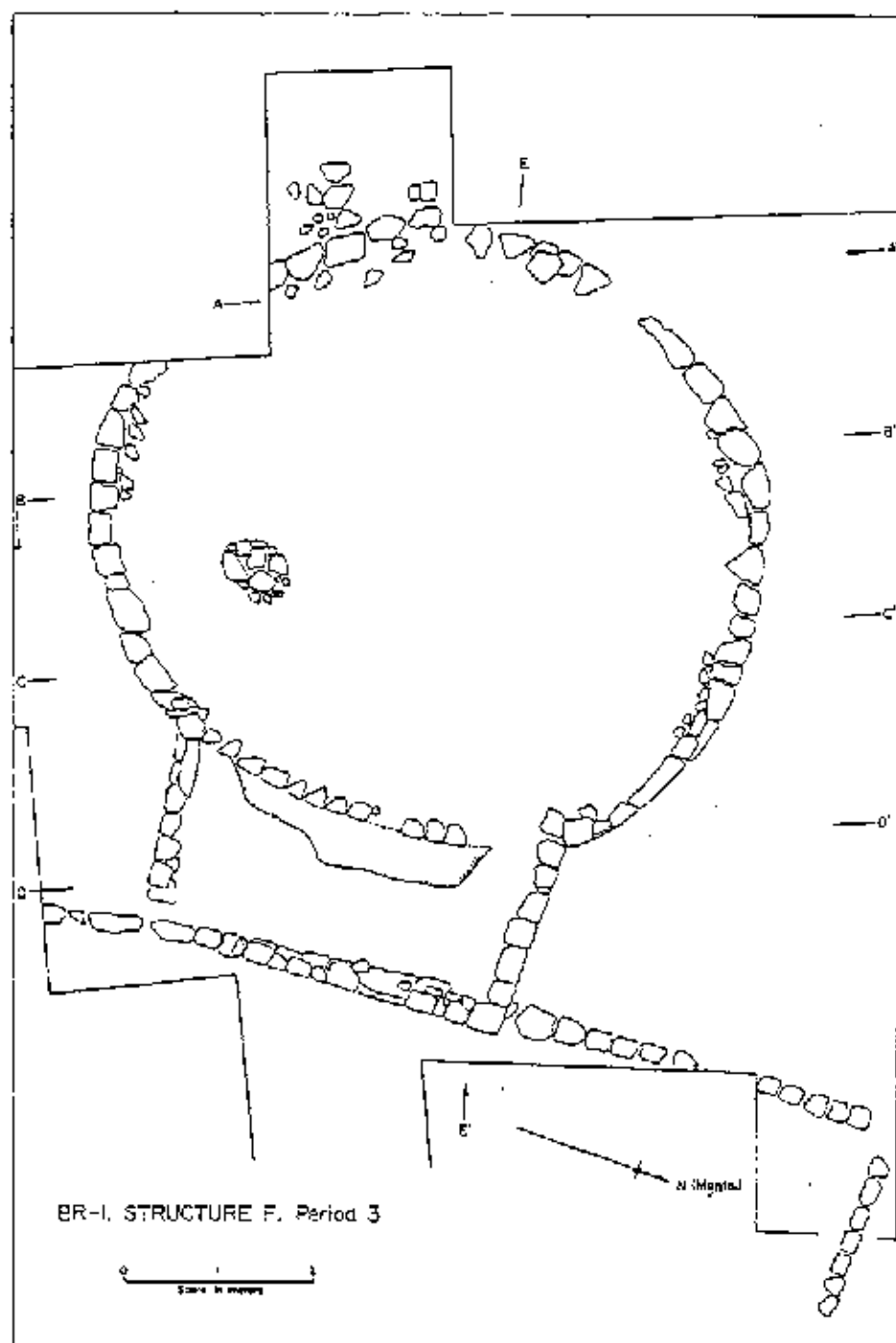


Figure 48: Plan view of Structure F (Period 3) in BR-1 at Barton Ramie, Upper Belize Valley, Belize (after Willey et al. 1965:Fig.20)

Classification of Formative Round Structures
in the Maya Lowlands

The two circular platforms at the Tolok Group have been compared with other Formative round structures in the Maya lowlands. At present, the number of Formative period round structures that have been excavated in the Maya lowlands are relatively few in number (n=50) compared to other architectural types (i.e. rectangular-shaped building platforms). However, far more are known today than six decades ago when Pollock (1936) published his seminal work on the distribution and architectural significance of round structures in Mesoamerica.

Since 1988, four morphologically different Middle Formative period round structures have been found at Cahal Pech. These include Structures 14 and 15 in the Tolok Group, Structure 2/2nd in the Zotz Group, and Structure B-4/7th in the site core. The four circular platforms at Cahal Pech alone suggests that round structures are more widespread (at least within the Belize Valley) than previously believed. Given their distribution, it may also be beneficial to classify the different types of Middle and Late Formative round architecture found in the Maya area. In order to do this a broad, descriptive classificatory system based on architectural traits is a necessary step, because it provides an organizational framework and information on distribution patterns (both spatially and temporally).

There appear to be two basic types of Formative period round structures that have been identified in the Maya lowlands. The first type may be classified as "keyhole-shaped" exhibiting a low, stone circular platform (less than 50 cm in height), with a low subsidiary platform, and capped with either a tamped or a plastered floor surface (also see Awe 1992:214). In addition to these architectural features, this type of circular platform may have supported either a masonry and/or a perishable superstructure on top of the floor surface.

Based on the above description, there are a number of Formative period structures which conform to this type. They include: Structures E and F of Group E at Uaxactun (Ricketson and Ricketson 1937:115-117); Structure 2 of the BA-20 Group at Río Azul (Hendon 1989:96-109, 129-132); Structures 304-306 in Platform 34 at Cuello (Gerhardt 1988:74; Hammond et al. 1991:49-51); the round structure found in Group C at Ixac, located in the Valley of Dolores, Peten, Guatemala (Morales 1993:312); Structures A and J in Operation 2031 at Colha (Sullivan 1991:16, 30; Potter et al. 1984:629); the round structure found in a plazuela group at Becan (Ball and Andrews 1978:12); and possibly some of the circular constructions at Chakantun in the Central Peten of Guatemala (Rice and Rice 1979:19).

The second type of round structure may be considered a more complex form of architecture exhibiting a higher building platform (over 50 cm in height), with either an

inset or an outset stairway, and a subsidiary platform. In addition, this type of structure is capped with a plastered floor surface and generally lacks a superstructure (also see Powis 1994:140). There are almost an equal number of these Type 2 structures compared to Type 1 and they include: Structure C-13/4th and 3rd A at Altun Ha (Pendergast 1982:177-189); Structure 2/2nd in the Zotz Group at Cahal Pech (Awe et al. 1992); Structure B-4/7th in the site core of Cahal Pech (Awe 1992:136-138); Structure F-2 of Group F at Chan Chen (Sidrys and Andresen 1978); the round structure at Luisville (Haberland 1958:128); and the second round structure found in a plazuela group at Becan (Ball and Andrews 1978:12).

The number of round structures listed as Types 1 and 2 above represent only a sample of the total number of circular platforms noted in the available literature. Some round structures were omitted from the classification because many were not completely (horizontally) exposed to determine the extent of contemporaneous architectural features (i.e. a stairway or a subsidiary platform).

CHAPTER 5

THEORETICAL DISCUSSION AND INTERPRETATION OF FORMATIVE PERIOD MAYA ROUND STRUCTURES

Introduction

This chapter is divided into three sections. The first section presents a broad theoretical discussion concerning the advantages and/or disadvantages (i.e. practicalities) of constructing round vs. rectangular structures. This discussion on architectural form is not meant to be exhaustive but it includes some cross-cultural comparisons from the established archaeological database and from ethnographic accounts. The second section examines various hypotheses regarding the function of Maya round structures. Many of these interpretations pertain to Formative period round structures but it will be necessary, at times, to include discussion of Classic and Postclassic examples. Fourth, and most speculatively, an attempt is made to determine the function or role (i.e. domestic vs. non-domestic) of Structures 14 and 15 at Tolok within this Formative Maya community.

Comparative Analysis of Architectural Forms

Several researchers have attempted to theorize, in a general way, about the correlations between spatial analysis, architectural design, and social interaction (Abrams 1994; Flannery 1972; Hodges 1972; Lawrence and Low 1990; McGuire and Schiffer 1983; Pollock 1936:149-152;

Rapoport 1969, 1980; Whiting and Ayres 1968). More specifically, these discussions have focused on the number, or combination, of social factors influencing architectural design. These factors or variables include: population growth, sedentism, social inequality, and social differentiation (cf. McGuire and Schiffer 1983:288-289).

Utilizing ethnographic information and the archaeological record, some of these investigators have tried to draw certain cultural inferences from the shape of structures. In addition to a structure's context, it is also important to employ cross-cultural studies to explain the architectural drawbacks, or inherent construction problems, associated with particular architectural forms (i.e. round structures). Certainly, local resource availability of construction materials and technology constrain architectural design (see Abrams 1994:24; McGuire and Schiffer 1983:278; Pollock 1936:150; Rapoport 1969:24-25). Therefore, it is necessary to examine these factors since they provide important archaeological information regarding the social organization of prehistoric cultures. According to Whiting and Ayres (1968:117):

certain practical and aesthetic considerations are inherent in a given culture related to the type of dwelling characteristically built in that society.

The characteristics of whether a culture is sedentary or nomadic, along with the size and form of the family unit, and the presence or absence of status distinctions, can be

related to its house type. House types can, in turn and to a large extent, be inferred from the floor plan (Whiting and Ayres 1968:117). Using information from the Ethnographic Atlas (Ethnology, Vols. 1-4), Whiting and Ayres (1968) set out to determine the relationship between the floor plan and associated features of two different house types: round and rectangular. In their findings, they concluded that: 1) round dwellings tend to correlate with nomadic and semi-nomadic societies; 2) rectangular dwellings tend to correlate with fully sedentary societies; 3) rectangular structures replace circular ones through time in many areas of the world - although reversals of this may also happen; and 4) while round structures may be easier to construct (often being portable), it is much easier to add units to rectangular structures.

Whiting and Ayres (1968:124-126) also concluded that for the construction of round houses, it was more practical to use a more flexible or pliable material for the roofing and the siding (i.e. grass or hide coverings). In contrast, they stated that houses with a rectangular floor plan were more likely to be framed with heavier materials (i.e. wood). So, the weight of the materials used for house construction suggests that light, circular houses may be preferred by nomads and, the heavy rectangular houses by peoples with permanent settlement (Whiting and Ayres 1968:124).

Finally, Whiting and Ayres (1968:126) suggest that there is a relationship between the floor plan of a dwelling

and social organization (also see Lawrence and Low 1990:462). A heavy rectangular house is easier to expand or to enlarge (i.e. to create a multi-roomed house). The advent of large and multi-roomed rectangular houses can indicate the development of either status distinctions or extended families (or both). Therefore, Whiting and Ayres (1968:126) state that "given a rectangular house of any size or type, one can be reasonably certain the society is sedentary".

More recently, other researchers have supported the Whiting and Ayres (1968) suggestion that round houses are associated with nomadism. McGuire and Schiffer (1983:284), for example, have stated that:

the more nomadic the society, the more likely it is to construct domed dwellings with round or oval floor plans. Such structures tend to be less substantial and have less stringent requirements for building materials than rectangular structures that usually typify long-lived settlements.

In their discussion of the shift from pithouses to pueblo dwellings in the American Southwest, McGuire and Schiffer (1983:284) argue that changes in architectural design are based primarily on compromises between production use and maintenance costs. In other words, if people contemplate using a structure for a long time (possibly a generation or more), then it is more cost effective to erect structures with low maintenance costs. Domed structures, by contrast, tend to have higher maintenance costs, because they are less substantial and are often constructed of perishable materials (McGuire and Schiffer 1983:284-285).

The use of perishable materials in the construction of round houses can create a number of other problems for the builder. For instance, lateral construction may cause various roofing problems (i.e. leaks), and partitioning may restrict the number of activities performed inside the structure. However, as noted above, construction problems are not the only disadvantage to building a round house. Round structures are also not very conducive to changes in social organization. This is an important consideration, because when the size of a social unit changes (i.e. the addition of family members), the activities of that social unit will likely change as well.

According to McGuire and Schiffer (1983:285), architectural design "must reflect and adapt to these variations in social units and their architectural needs". Can round structures adapt to the needs of the social unit? Architecturally, they cannot respond as well to these types of changes, whereas rectangular structures can more easily accomodate expansion.

Therefore, it can be surmised that the presence of rectangular structures may be reliable indicators of larger social groupings or nucleated settlements. Because of the inherent flexibility of rectilinear structures, previous researchers have further stated that there is a tendency for rectangular dwellings to replace circular ones with increasing social complexity (Guidoni 1987; Lawrence and Low 1990:162; Whiting and Ayres 1968:129).

Form and Function: Previous Archaeological Interpretations

Round structures have been traditionally considered rare forms of architecture in the Maya lowlands. The initial scarcity of Maya round structures led to a number of interpretations regarding their function. Researchers have suggested that they were used variously as astronomical observatories, ceremonial or public buildings, dwellings or ancillary platforms, or as references to Quetzalcoatl or Kukulcan in the Maya area.

In his archaeological synthesis of round structures in Mesoamerica, Pollock (1936) ascribed the development (i.e. origin and spread) of circular platforms to central Mexico and argued that these structures were associated with Quetzalcoatl, god of wind and air (known as Kukulcan in the Maya area). Pollock (1936:161) hypothesized that:

the circular character of these structures is readily explained by the conception of that deity as god of the wind...It is rather the idea that the builder associated the round dwelling with the East, the home of the deity, and built the temple in that form, at the same time rationalizing his conception of the wind god. It was actually a religious concept that determined the shape of the structure, but the material manifestation of this idea may have been based partially upon the house type.

Chase and Chase (1982:607) have recently supported Pollock's (1936) theory on the origin and spread of round structures in Mesoamerica (also see Sabloff 1973:128; Sidrys 1983:103; Morales 1993:318). Following their excavation of circular Structure 9 at Nohmul, Belize, they stated that present knowledge of round structures in the Maya lowlands

indicate:

(1) they become more prominent in Terminal Classic to Late Postclassic times, and (2) they appear to be, at least initially, associated with an exterior influence (Chase and Chase 1982:607).

In his study, Pollock (1936) also determined that, although the majority of these types were dedicated to Quetzalcoatl, there were a few round buildings that may have served other purposes. Pollock (1936:147) noted, for example, that among the Nahua and Huastecan cultures round structures were used for sacrifice and other ceremonies. Furthermore, he claimed these round structures were part of an "indigenous growth" and were likely not affected by external (Mexican) cultural influences (Pollock 1936:161). It must be recalled that at the time of Pollock's (1936) study no Formative period round structures were known from the Maya area.

In addition to external cultural influences, others have suggested that round structures were utilized as astronomical observatories throughout the Maya area (Aveni 1981:164; Aveni et al. 1975; Aveni and Hartung 1986:8-9, 16; Hartung 1977:193, 197). Aveni (1980:258-267), for instance, has suggested that the Caracol (3C15-1st A, dating to ca. A.D. 1000) at Chichen Itza was a calendar in stone, crucial to timekeeping in the flat terrain of the Yucatan. Unfortunately, he does not state whether the earliest construction of the Caracol (3C15-2nd) was also used as an

astronomical observatory. Nevertheless, based on archaeological excavation, Structure 3C15-2nd was determined to be a simple round platform measuring approximately 3 m in height and 11 m in diameter. This simple round platform is similar to other Terminal Classic/Early Postclassic examples, such as Structure 9 at Nohmul (Chase and Chase 1982:601-607), Structure 79 at Seibal (Willey et al. 1975:36), and several small round structures at Mayapan (Shook 1954).

Today, many investigators argue that round structures functioned either as dwellings or as public buildings. Interestingly, the majority of the fifty Formative period round structures excavated in the Maya area have speculatively been interpreted as ceremonial or public buildings.

What are the archaeological indicators used to determine whether a round structure served either a domestic or a non-domestic function? Generally, the criteria employed by researchers to determine domestic activity are the presence of: low substructural platforms, burnt floor surfaces, hearths, stone- and sherd-lined pits, activity areas focusing on food processing (i.e. presence of grinding implements), middens, abundance of utilitarian artifacts, and simple burials. The examples in the sample of Formative period round structures which exhibit a number of these traits include: Structure 605 (the "2A Platform") at Dzibilchatun (Andrews and Andrews 1980:28); Structures 1-3,

A, I, J at Colha (Anthony 1987:19; Sullivan 1991:16; Potter et al. 1984:628); Structures 327, 322, 306, 305, 304, and 301 at Cuello (Gerhardt 1988:113-115; Hammond et al. 1991: Table 5.1; Hammond et al. 1992:958); Structure 1 and 1-D at K'axob (McAnany 1995a:8); and Structure 7E-346 at Becan (Thomas 1981:79). Additionally, Structure F in BR-1 at Barton Ramie, albeit dating to the Early Classic period (late Hermitage phase), was also identified as a dwelling based on the above traits (Willey et al. 1965:47, 51-59).

Although some of the round structures mentioned above have been identified as residential, a few were also interpreted as ancillary platforms serving as "kitchens" or outbuildings (see Gerhardt 1988: Table 2; Hammond et al. 1991: Table 5.1; and Sheets 1992:52-56). At Cuello, for example, six of the eight circular platforms identified were designated as ancillary platforms. Gerhardt (1988:115) has stated that:

these were platform substructures built in the same manner as the house platforms, only they were generally smaller and lower...In four cases where there were evidence of pole and thatch superstructures, two held buildings of very small dimensions on otherwise open platforms. These buildings were kitchens, storage shelters, or otherwise domestic-related outbuildings. The surfaces of these platforms were cut by one or more, usually lined, pits and, occasionally, simple graves.

One of the best examples of a round structure (Structure 11) serving as a kitchen for a household was found at the site of Ceren, located in El Salvador. This

keyhole-shaped structure was well-preserved by tephra deposited over the site during a volcanic eruption in the Classic period (Sheets 1992: Fig.1-4). Structure 11 was approximately 3.5 m in diameter, 20 cm in height, and exhibited a perishable superstructure. Of interest, the structure was internally partitioned into four activity areas with the porch area swept clean of artifacts (Sheets 1992:52). According to Sheets (1992:56), Structure 11 probably was:

a female activity area focusing on food processing...The kitchen was constructed with practicality in mind, and it was internally well-organized. It was amply stocked with cooking, storage, and food processing vessels and implements. And, those implements often went beyond the minimal requirements for function, as decoration of them was common and sometimes quite elaborate.

Despite these domestic functions, there is substantial information suggesting that the majority of Formative period round structures served non-domestic or public purposes. Round structures have been categorized, according to Cohodas (1985:51), as public architectural forms along with the radial pyramid, portal arch, ball court, and causeway. Furthermore, Cohodas (1985:51) has stated that round structures are "specialized forms created to serve distinct ritual functions."

Several investigators (Awe et al. 1992:124; Hendon 1989:131; Pendergast 1982:187; Sidrys and Andresen 1978:649) have also made strong arguments for circular platforms

serving as special function structures. What, then, are the archaeological indicators used to imply whether public or ceremonial activities were being performed atop these round structures?

The criteria employed by investigators to determine that Formative round structures were used for public activities are based primarily on: location, size and form, volume or mass, quality of construction, associated architectural features (i.e. stairway and subsidiary platform), quality of artifacts, and special deposits (i.e. caches and burials). From an architectural viewpoint, Structure F-2 at Chan Chen provides an excellent example. Sidrys and Andresen (1978:649) have demonstrated that:

Both the size and elevation of the platform, as well as the presence of the ramp and large stairway, suggest that the perishable super-structure had a public or ceremonial function.

Additionally, Hendon (1989:131) has suggested that the Late Formative keyhole-shaped round structure (Structure 2) in the BA-20 Group at Río Azul is representative of a sophisticated and time-consuming architecture. Several architectural traits provide important information regarding function for Structure 2 in the BA-20 Group. According to Hendon (1989:131):

The use of an outset basal molding, wall plaster, and red paint is not widespread in the Maya area at this time. Furthermore, the shape of the building is distinctive and unusual. A ceremonial use might help explain why no later structures were ever built on the location of the structure.

The two round structures (Structures C-13/4th and 3rd A) at Altun Ha provide further evidence that architectural traits were important considerations for the principal investigator to ascribe function. According to Pendergast (1982:187), the absence of a building on Structure C-13 3rd A is:

an indication of the general nature of the structure's use, in that it rules out identification of the platform as a residence. We are surely on secure ground in classifying 3rd A as a ceremonial structure, and the extension of this classification to earlier similar construction in 4th and Floor 1 is probably equally secure.

At Cahal Pech, similar architectural features on Structure 2/2nd at the Zotz Group have led Awe et al. (1992:124) to suggest a public function. According to Awe et al. (1992:124), the round structure is:

interesting both for its early date and its unusual morphology. Neither postholes or the remains of a masonry superstructure were detected above its floor, clearly indicating that the structure was an exposed platform. Dating to at least the first half of the Late Formative, this structure represents one of the earliest, apparently non-domestic, architectural forms currently known at the site.

Although many investigators have speculated that round structures were used for public rituals, few have attempted to describe the kind of activities performed on top of them. Based on the literature, there are two popular theories for the kind(s) of activities conducted atop these special function structures. These activities include ritual

performances (i.e. dancing) and ancestor worship (i.e. family or household shrine). A combination of both has also been hypothesized (see below). In their reference to Structure 2/2nd in the Zotz Group, Cahal Pech, Aimers and Awe (1993:6) have suggested that the symbolic significance of an open air circular platform would:

seem to be necessarily linked to the performance of individual living agents. Two manifestations of such "performance" might be the oratory of charismatic village-level political leaders, or some form of ritual performance, perhaps by shamans. Finally, we think of this building in the context of the Middle Preclassic in the Maya area, the structure, as a meeting place for ceremonial performance, would have given visible expression to the communal aspirations of the local group.

Others have also postulated that dances may have been part of ceremonial performances conducted on top of circular platforms (see Pollock 1936:160-162). Using cross-cultural information, Marcus has suggested, based on architectural information, that the Middle Formative (ca. 600 B.C.) round Structure 31 at San José Mogote, Oaxaca, Mexico, served as a locus for ritual performance, including such public activities as dancing (J. Marcus, personal communication, 1995; also see Marcus 1993:2-5).

Another suggestion of researchers is the use of round structures as family or household shrines. Much has been written on the function of "family shrines" in the Maya lowlands (Becker 1971; Coggins 1975; Haviland 1985; Leventhal 1983; Powis 1993b; Welsh 1988). In particular, Becker (1971:143-181) devised a model for family shrines

called "Plaza Plan 2" based on architectural form. He stated that these Classic period structures were the smallest buildings within a plazuela group and located on the eastern side of the plaza (Becker 1971:149). According to Welsh (1988:189-190), the term "household shrine" similarly refers to structures located:

adjacent to the household groups of plaza dwellings and their primary purpose seems to have been to house most of the burials of the respective communities living round each plaza. Though burials may be found in adjacent residences, the better furnished ones are certainly found in the household shrines...and were probably used to bury the more important members of each residential plaza regardless of their relationship. The altars, benches...and special platforms would be suitable for conducting rituals to the individuals important enough to be buried in them. The buildings would then become identified with the burials and the dead ancestors of those buried.

There are some examples in the literature demonstrating that Formative period round structures served as family shrines. The large number of burials (n=18) and the quality of grave goods (see Aimers 1992) found in association with the round Structure 2/2nd in the Zotz Group, Cahal Pech has led Awe et al. (1992:131-132) to state that:

this mound provides convincing evidence that the structure may have served as a family shrine from its initial construction in the late Middle Formative to its abandonment during the Late Classic period.

Awe et al. (1992) have provided both architectural and cultural information (refer to the first section of Chapter 4) to reinforce the conclusion that the uncovered Zotz round

structure was used for both performative and venerative purposes (also see Hendon 1993:5; Pendergast 1982:177-184, 186-189).

The San Pablo Pantheon Mound at the site of La Juana-San Pablo, Morelos, Mexico, provides a good cross-cultural example. This early Middle Formative round structure (ca. 900-500 B.C.) measured approximately 30 m in diameter, 1.6 m in height, and was extensively looted (Grove 1970:63, 67). Several burials, including cremated human remains, were uncovered during the course of excavation. It was hypothesized that about 150-200 burials were interred within this mound (Grove 1970:67). It has been suggested that this was a burial mound representative of "a striking example of social stratification with burials of a particular group or social class being interred" (Grove 1970:69).

It is interesting to note that this tradition of ancestor worship associated with round structures (at least in the Maya area) appears to have persisted into the Early Classic period. Two examples include: the round structure in Group C at Ixac, Valley of Dolores, Guatemala (Morales 1993:319; J.P. Laporte, personal communication, 1995) and Structure 2/1st in the Bedran Group, Baking Pot, Belize (Powis 1993b:220-222).

Interpretation of the Tolok Round Structures

The functional interpretation of the Tolok round structures is based primarily on architectural, mortuary,

and settlement data. Based on the excavations conducted in PU-2, two inferences can be drawn regarding the role both round structures played in the community at Tolok. In this section of Chapter 5 both the architectural and settlement information will be employed to provide evidence, albeit speculative, that Structures 14 and 15 were used for family- and, perhaps, community-oriented rituals. Furthermore, there is some mortuary evidence demonstrating the notion that after both round structures were abandoned and concealed by successive plaza floors, this locale (the plaza area) continued to be an important focal point for the later Maya inhabitants of the Tolok Group. That a number of Late Formative and Late Classic period burials and caches were placed into both the construction fill of Structures 14 and 15 and onto adjacent areas, such as PF1, supports the contention that they used the same (plaza) area for ritual purposes.

Architecturally, Structure 14 exhibits morphologic characteristics similar to the Type 2 architectural form presented in Chapter 4. It exhibited some of the criteria for the Type 2 classification, yet lacks a central stairway. Nonetheless, Structure 14 may be best considered as a Type 2 round structure with a minor variation; this being the addition of a very large subsidiary platform with four projections. This architectural configuration is slightly different from other Type 2 round structures such as Structure 2/2nd in the Zotz Group, Cahal Pech (Awe et al.

1992:120, Figure 2), and Structure F-2 of Group F at Chan Chen (Sidrys and Andresen 1978:642-643), which have outset stairways.

The function(s) served by the four rectangular-shaped projections on the subsidiary platform at the south end of Structure 14 at Tolok need to be addressed. In his analysis of Structure F in BR-1 at Barton Ramie, Glass (Willey et al. 1965:51) referred to the appended rectangular platform associated with the round structure as a "ramp". Glass stated that this "ramp" served as an "access to the top of the platform from a large rectangular terrace on the east" (Willey et al. 1965:51). If the appended rectangular platforms found contemporaneous with round structures are indeed "ramps", then Structure 14 at Tolok may have been accessed from four different loci on the south side of the structure.

Why was the subsidiary platform with its four projections positioned on this part of the round structure? The original reasons for the choice of this location are probably impossible to reconstruct but, perhaps, upon ascending the round structure from the south end the inhabitants of the Tolok Group were then able to view better the site core directly in front (to the north) of them. If the site core of Cahal Pech was emerging as the focus of local elite activity during the Middle Formative (Awe 1992, 1993, 1994), is it possible that the peripheral settlement clusters, such as Tolok, would have been expected to focus

on the activities being performed by the inhabitants living in the site core? Further study of both the socio-religious and the socio-political relationships between the site core and its peripheral settlements during the Middle Formative period are necessary before the function and all aspects of directionality of specific structures can be better understood.

Apart from the subsidiary platform providing a clue as to the possible function of Structure 14 at Tolok, a number of possible postholes were also found encircling the circular platform (see Powis 1994:130). Of the nine recorded postholes found during our 1992-93 investigations of Structure 14, only two of them can be considered as genuine. The others were likely the result of root disturbance. In addition, three secondary postholes (after Loten and Pendergast 1984:12) were found near a section of burnt plaster on the second (later) plaza floor contemporaneous with Structure 15 (Powis 1994:130, Figure 2). The two postholes associated with Structure 14 were actually found off the summit of the structure on PF1 near the eastern projection. From this, it is likely that no perishable structure was ever erected on top of this platform. It must be reiterated that only two square metres (out of the total 70.1 m²) of original floor surface was actually preserved on Structure 14. However, given the amount of original floor space (two square metres) remaining on Structure 14, no postholes were found. It seems plausible to assume that if

posts were uniformly set, at regular intervals into the floor of Structure 14 and, given the size of this structure, that some evidence would have survived to indicate a perishable structure once stood atop it. Excavation of the floor surface of Structure 14 provided contrary evidence. It is possible, then, that Structure 14 at Tolok was an exposed platform and, as such, reflects a similar architectural tradition manifested by other circular structures at Cahal Pech (Figures 49 and 50).

Aside from the exposed platform surface, the location, size, and elevation of both round structures at Tolok further reflect the ceremonial/ritual function these platforms served during the Middle Formative period. In 1992, tests were conducted in the southern patio group to determine both the diachronic and spatial relationships between each of the four mounds (Structures 4-7) in the group and between them and the round structure (Powis 1993a:98-102). These investigations revealed that the earliest construction phase (PF1) found in Structures 5 and 7 (and possibly Structures 4 and 6), dated to the late Middle Formative period. Both Structures 5 and 7 demonstrated clear evidence of a rectangular platform associated with the plaza floor (and Structure 14). It is significant from both an architectural and spatial standpoint that Structure 14 was centrally located within the plaza between these structures. This information is important because it suggests that during the late Middle

Formative period (500-350 B.C.), an informal patio group at Tolok developed with a particular architectural focus toward the central plaza area.

Other surrounding architectural features served to highlight the ritual importance of this structure's location. The earliest construction phases of Structures 5 and 7 were erected directly on bedrock (the retaining walls were approximately 5-10 cm in height), whereas Structure 14 was raised above bedrock by a height of 55 cm. This difference in elevation can be important, because as Hendon (1993:7) has stated:

elevation separates the residential and ritual structures...and that difference in location may reflect a desire to give greater physical prominence to the building where ritual practices related to the creation of a group identity for the residents of the compound took place.

Together, the location, elevation, complexity, and large size of Structure 14 at Tolok provides support for the contention that this circular platform was an important focal point for the inhabitants of the patio group, if not for the entire Tolok community, during the late Middle Formative period. The magnitude of this circular platform (9.5 m in diameter and 55 cm high), compared to the much lower rectangular-shaped residential dwellings around the perimeter of it, was also surely culturally significant. Therefore, it is stated, albeit speculatively, that Structure 14 was part of a planned sacred space where

various public ritual performances, such as dancing, were performed on top of it.

The suggestion that late Middle Formative period architecture embodied cultural significance to its builders and users is an important matter to consider. The idea that the round structures at Tolok symbolized significant social/religious institutions is supported, in part, by their similar stage-like qualities to those of Structure 2/2nd in the Zotz Group and of Structure B-4/7th in the site core of Cahal Pech. It is possible that the symbolic significance of an open air platform, centrally located in a patio group such as at Tolok, would be linked to family- and/or community-oriented ritual performances. The ceremonial/ritual significance of Middle Formative special-function structures has led Drennan (1976:356) to state that:

such buildings reflect institutions that must have involved the participation not only of whole villages but also of neighboring communities without public buildings.

What evidence supports the notion that public ritual activities may have been performed on top of the Tolok round structures, particularly Structure 14? The evidence is based on the fact that it was: (1) centrally located in the patio group; (2) raised higher off the ground than the surrounding rectangular platforms; (3) lacked a superstructure; (4) accessed by the four separate projections of the subsidiary platform; and (5) large enough to hold a gathering of

residents from the patio group or the entire community at Tolok.

Structure 14 was 9.5 m in diameter and was certainly large enough to accomodate many people (possibly 20 or more) involved in various activities. There was also a considerable amount of space between the rectangular structures and Structure 14 for a larger number of people to congregate and watch one or more family or community members perform ritual activities, including dancing.

In a recent article entitled "Classic Maya Dance", Grube (1992:201) acknowledges that few studies have attempted to address the issue of dance in ancient Maya society. He states that:

...dance is often the main event of modern Maya religious celebration; and costume, musical instruments, and the material components employed often go back to at least Early Colonial roots. While it is obvious that the themes of many dances have been introduced by Europeans, dance as a medium and public performance certainly goes back to Prehispanic times (Grube 1992:201).

Are there ethnohistoric accounts to support the premise that during Prehispanic times round structures were used for public performances (i.e. dancing)? Using ethnohistoric information from the *Relación* of Landa, Tozzer (1966:93-94) has noted that a number of Yucatec dances were performed on top of round towers which exhibited a pulpit. These structures were ascended by costumed dancers who played musical instruments, performed dances in a circular motion,

and burned copal (Tozzer 1966:94). Furthermore, Pollock (1936:11) cites Sahagún's account of an Aztec performance on top of a round structure situated near the centre of Tenochtitlan where the three great causeways from the mainland converged. In his account, Sahagún describes a performance by a baffoon or *mumuztli* dressed in a squirrel costume and dancing on top of a small round platform or *Cú* (Pollock 1936:11). Additionally, Sahagún's account of ritual performance and sacrifice on top of the same small round *Cú* in Tenochtitlan is described as follows:

In this (*Cú*) the Satrapa of Titlacaoan each day burned incense toward the four parts of the world. Also to this building ascended that youth that was reared over the space of a year in order to kill at the festival of Titlacaoan. There he played on his flute by night or by day, at any time he cared to come, and having played...went to his home or apartment (Pollock 1936:10).

To date, the evidence for round structures, specifically Structures 14 and 15 at Tolok, serving as loci of public ritual activities, such as dancing, is speculative. However, the architectural and settlement data, as well as ethnohistoric accounts, indicate that these circular platforms were important foci for a small group of people (i.e. the family members of the southern patio group), or, perhaps, for all of the inhabitants of the Tolok community.

Following abandonment (ca. 350-300 B.C.), Structure 14 was covered by construction fill and concealed beneath successive plaza floors. However, the later Maya inhabitants

continued to use the same (plaza) area for ritual purposes with the placement of a number of intrusive burials and caches into both the construction fill of Structures 14 and 15 and onto adjacent areas, such as PF1. At this time, it is uncertain what role these intrusive special deposits played, if any, with the earlier circular platforms, Structures 14 and 15, buried beneath later plaza floors. However, the presence of several special deposits (nine burials and four caches) placed in the general plaza area of the southern patio group strongly suggests that this area remained an important foci for the inhabitants even after both round structures were abandoned. Although these special deposits post-date the round structures, their concentration provide the most intriguing insights regarding the cultural activities conducted in this locale by the Late Formative and Classic period Maya at Tolok. To date, the burials found in the plaza area constitute the only excavated graves at the site. Despite the intensive sampling strategy employed at Tolok (twelve of the seventeen mounds in the group have been tested), no other burials (or caches) have been found below a platform floor, adjacent to a house wall, or in a midden.

The eastern structure of a patio or plazuela group in Classic period Maya society was generally regarded as the family or household shrine (Becker 1971; Welsh 1988). It was anticipated that excavation in the eastern mound (Structure 7) of the southern patio group would also reveal this

structure's use as an ancestral shrine. Interestingly, no burials or caches were discovered by the excavation (Powis 1993a:102). The absence of burials in Structure 7 may simply be a result of sampling strategy which was affected by a bulldozer cut that destroyed the north side of the mound. However, the size of the unit (2 m x 2 m) that tested the primary axis of Structure 7 was sufficiently large to record some evidence of mortuary practices on the mound if these had existed. Indeed, it is along the primary axis that the majority of burials and caches have typically been recovered from eastern shrines in the Belize Valley (Awe et al. 1992:130-132; Aimers and Awe 1993; Conlon et al. 1994:239-253, Tables 1 and 2; Conlon et al. 1995:41-62; Driver et al. 1992; Hohmann and Hartnett 1995:11-32; Iannone 1994:37-78; Powis 1993b). The absence of burials and caches in the eastern structure of the southern patio group at Tolok indicates that the Classic period inhabitants were buried elsewhere.

Where were these individuals buried? The preferred location for burials and caches for the majority of ancient Maya living in patio/plazuela groups was beneath house platforms. It is interesting to note that during the abandonment, renovation, or successive rebuilding(s) of their houses in the southern patio group, the inhabitants of the Tolok Group favoured, instead, the central plaza area for burials and other dedicatory materials. Admittedly, the burial sample is small, both in frequency and time, but it

clearly reflects a practice of interment of bodies in this central plaza area. It is suggested here that the tradition of ancestor worship may have been a determining factor in the sequential placement of the dead in this specific locale, and that after the abandonment of the round structures at Tolok this area (the plaza) continued to have ritual importance to the community throughout the later history of the group (Powis and Hohmann 1995:85). In support of this premise, McAnany (1995a:12) has suggested that a:

subfloor burial was not simply an ancient Maya custom, rather it was a selective social practice that (1) created ancestors, (2) stressed continuity between the generations through the ritual observance of the places of the ancestors, and (3) facilitated the transgenerational conveyance of resources.

The discovery of Burials 8 and 9, as well as Caches 2 and 3, certainly reinforces the ritual activities conducted at this locale throughout the Formative and into the Classic period. The nature of these offerings are also intriguing for they represent the secondary mutilation of an adult female and several juveniles and, according to Robin (1989:129) and Welsh (1988:167-171), skeletal mutilation demonstrates evidence for sacrifice. If the mutilated bodies of Burials 8 and 9 and Caches 2 and 3 indicate sacrifice, then they likely represented dedicatory sacrifices. Both Robin (1989:136-138) and Welsh (1988:253-337) have suggested that dedicatory sacrifices were often found in public contexts (i.e. ceremonial architecture and plazas) and

associated with ancestor worship. Driver et al. (1992:5) have also noted that dedicatory material (i.e. caches) and human sacrifice are ritual activities that are particularly associated with public architecture and sacred space. It is possible then that the primary act of skeletal mutilation of the females and children interred in the plaza area at Tolok served as a reaffirmation of this ideology.

McAnany's (1995b:63) viewpoint on skeletal mutilation differs from Robin (1989) and Welsh (1988), but her argument does lend credence to the idea that the plaza area served as a proper burial place for ancestors. She has suggested that missing skeletal elements, such as headless bodies, bodies without femurs, skulls without bodies, and legs without bodies do not necessarily indicate human sacrifice. Instead, she argues that these partially or totally disarticulated skeletons are best explained by "sacralization" or protracted burial rituals associated with ancestor veneration (McAnany 1995b:63).

The grave goods associated with the Late Formative period deposits in the plaza area at Tolok may also shed light on the issue of sacrifice, skeletal mutilation, and ancestor worship. The grave goods found associated with Burials 8 and 9, as well as in Caches 2 and 3, are comparably furnished with others interred at Cahal Pech during the same time period (see Aimers 1992; Awe 1992; Lee and Awe 1995; Iannone 1994; Powis 1993a, 1994; Powis and Hohmann 1995; Song et al. 1994). It is difficult to examine

the sex group relationships of the numbers of grave goods found within the graves of this small burial sample. However, the mutilated female and juvenile skeletons placed in Burials 8 and 9 and Caches 2 and 3 contained a number of exotic items, such as jade, *Spondylus* shell, and obsidian, as well as whole ceramic vessels. Whether the grave goods associated with these mutilated bodies represent individual wealth or the importance of the public ritual burial rite itself is uncertain. It may be possible that these individuals who were mutilated and placed beside the other graves in the plaza area were important family members of the patio group. Unfortunately, it has not been determined whether these interred in the plaza area were related (no chemical or genetic testing has been done to recognize familial descent by observing discrete traits in human dentition like Carabelli's cusp) or that the patio group was occupied by an extended family.

In summary, it is unclear at the present time whether the inhabitants of the Tolok Group knew the precise location of both platforms centuries later, during the Late Formative and Classic periods, as they were then covered by three sequential plaza floors. Despite the fact they may or may not have known the exact former whereabouts of these two special-function structures, their actions are strongly suggestive that they continued to revere the space within the plaza as sacred, judging from the placement of burials and caches long after the abandonment of both Structures.

More round structures are being found buried beneath plazas at a number of other sites (i.e. Chan Chen, Colha, Cuello, Dos Hombres, El Mirador, K'axob, Tolok, and Uaxactun) and these too demonstrate the importance of the creation, and maintenance, of ritual sacred spaces among the ancient Maya during the Middle and Late Formative periods. With the formalization of patio groups from at least the late Middle Formative period onwards at Cahal Pech (Awe 1993:9), it is possible that the inhabitants of the Tolok Group constructed their houses knowing the whereabouts of these special-function structures below the plaza area.

In this regard, the practice of ancestor reverence almost certainly influenced the subsequent spatial configuration of the patio group at Tolok. It further implies that, with the passage of time, the inhabitants of the Tolok Group revered this locale as sacred space and purposely erected, and maintained, their dwellings around the perimeter of the now buried (sub-surface) circular platforms. If the practice of ancestor worship is seen through the interment of bodies, and placement of dedicatory caches in the plaza area, then it is reasonable to suggest that the sacredness of this space was also maintained through subsequent centuries.

CHAPTER 6

Conclusions

The research presented in this thesis focused on the Formative period (650 B.C.- A.D. 250) occupation phases of the Tolok Group, located 500 m to the southeast of the medium-sized Maya centre of Cahal Pech, Belize. The proximity of stratified Formative period deposits to the present-day ground surface at Cahal Pech, and at the Tolok Group, have facilitated large scale horizontal exposure of early Maya architecture. The discovery, and subsequent excavation, of two Middle Formative period circular platforms in the southern patio group at Tolok has provided valuable insights concerning Formative Maya settlement patterns, architectural practices, artifactual assemblages, mortuary practices, and ritual and religion.

Based on the current literature, there are about fifty known Middle and Late Formative period round structures that have been excavated in the Maya subarea. These circular platforms, both partially and completely exposed, have a broad temporal and spatial distribution. Within the Upper Belize River Valley, a total of four morphologically different Middle Formative period round structures have been excavated at Cahal Pech, including Structures 14 and 15 at the Tolok Group. The coeval construction of several round structures, in both the site core and the periphery of Cahal Pech, indicates that this was a popular architectural form

during the late Middle Formative period. Furthermore, it suggests that the Maya living in and around Cahal Pech shared a similar architectural tradition but with minor variances on the standard circular form (i.e. the Zotz round structure had an elliptical outset stairway and Structure 14 at Tolok exhibited a subsidiary platform with four separate projections).

Artifactually, the majority of the material recovered from the 13 m x 13 m excavation unit (Plaza Unit-2 or PU-2) at Tolok was derived from construction fill. The industries represented in the artifact assemblage recovered from PU-2 at Tolok included: ceramic, modified ceramic sherd, modeled clay, ground stone, polished stone, chipped stone, worked shell, and miscellaneous objects. The ceramic assemblage was the most abundant artifact class represented and was used to date the construction phases in PU-2, including round Structures 14 and 15. In addition to ceramic cross-dating, a single radiocarbon determination (Beta-77201), calibrated between 485-465 B.C. or alternatively 425-385 B.C., was obtained from beneath the earliest plaza floor (PF1), in Unit 10, confirming the temporal assignation of Structure 14 to the late Middle Formative period.

Aside from the artifactual assemblage recovered from PU-2, the architectural, settlement, and mortuary data provide the most significant insights, and contributions, to the study of Formative period Maya round structures. Investigations in PU-2 have revealed evidence that Structure

14 was, originally, centrally located within an informally-organized patio group consisting of two to four low, rectangular building platforms. To date, this kind of spatial configuration identified in the southern patio group at Tolok is a unique occurrence in Middle Formative Maya settlement archaeology.

Excavations in PU-2 at Tolok have also revealed evidence that these two round structures were large (up to 9.5 m in diameter), partially superimposed, and complex in form (i.e. a subsidiary platform with four separate projections positioned at the south end of Structure 14). In addition to this architectural information, no postholes were found on top of either round structure. From this, it is speculated that no perishable structures were ever erected on top of these platforms.

The large size, complexity, and lack of evidence for a superstructure on Structure 14 suggests that this platform was employed for public rituals and was a focal point for the Middle Formative community at Tolok. It has been speculated that the symbolic meaning of Structure 14 embodied cultural significance to its builders and users. Furthermore, it has been suggested that the round structures at Tolok, and elsewhere at Cahal Pech, were viewed not as an expression of wealth and power, but that they helped to establish, and maintain, social solidarity for both family and community members living in and around the site core.

It is uncertain how many other round structures, if any, may have been built during this time period at Cahal Pech. Therefore, it has been speculated that neighbouring communities without their own special-function structures may have gathered at places like the site core, as well as Tolok and Zotz, to participate in community-oriented ritual activities, such as dancing and other public performances.

By early Late Formative times (ca. 350-300 B.C.), Structure 14 was abandoned, ritually burned, covered by construction fill, and concealed beneath successive plaza floors. However, the later Maya inhabitants of the southern patio group at Tolok continued to use the same (plaza) area for the placement of burials and caches. Such use suggests that this area was still considered sacred and likely was designated for ritualized activities, presumably ancestor worship, by the Late Formative and Late Classic period Maya.

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APPENDIX A

THE HUMAN SKELETAL REMAINS FROM TOLOK, CAHAL PECH, BELIZE

by

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During the course of four seasons' excavations at Tolok, ten burials have been recovered from this peripheral settlement, predominantly from the plaza area associated with Structures 14 and 15. A total of fourteen individuals were retrieved from the interments, which varied from a simple chultun burial (Burial 1), to cist graves (Burials 2-6, 9, 10), and simple crypts (7, 8). Burials 1 through 6 were Late Classic in date, while Burials 7 to 10 were all Late Formative. Artifactual accompaniments varied between the individuals, and cross-cut age and sex groups (see Appendix B).

Skeletal preservation from the ten Tolok burials varied from very poor, in the case of Burial 1, to very good preservation. Specifically, Individual 1 of Burial 4, and Burials 6 and 7 were characterized by poor to fair preservation, while the status of bones from Burials 8, 9, and 10 were mediocre to good. The remains from Burials 2, 3, 4 (Individual 2) and 5 were considered to be very well preserved.

Due to poor weather conditions that never failed to develop when burials were discovered, recovery proved difficult for some individuals, and oftentimes, bones fragmented during retrieval. In addition, the placement of large cut stones in all of the cist and crypt graves resulted in skeletal damage prior to excavation, especially in the case of the skulls. In addition, regardless of overall preservation, most individuals lacked well preserved rib and vertebral bones, and this could be attributed to the low preservation potential of such cancellous bones, especially in the subtropical environment; the nature of the cist graves; as well as possible insect and rodent activity.

Of the fourteen individuals, nine individuals were adults, consisting of two males, five females, and two of indeterminate sex. They ranged in age from 17 to 23 years, up to 40+ years. For the five Tolok children, skeletal ages ranged from 0-6 months to 4-6 years. In total, the skeletal sample for Tolok, though small, and representing different time periods, can be said to represent most of the expected age groups for the population, except for the period between older childhood and adolescence.

The following report will outline the basic skeletal analyses for each burial at Tolok, and elaborate on the nature of individual and population health status, as could be inferred from the

skeletal remains. (Burial 1 from Chultun B was initially examined by Tamara Varney (University of Guelph) in 1992). The human remains recovered from two caches (Caches 2 and 3) will also be discussed. For additional information regarding the implications for prehistoric Maya mortuary behavior, one is directed to the reports by Song (1993, 1995) and Song et al. (1994).

BURIAL 1

This very fragmentary burial was discovered in 1991 within Chultun B at Tolok. Thought to represent an adult individual, the only preserved remains consisted of two cranial fragments; several fragments of a humerus and tibia; left patella; pisiform; five phalanges; and ten teeth. The long bone fragments exhibited evidence of severe diagenic alteration, which was initially (incorrectly) interpreted as pathological. All teeth exhibited extensive attrition and could not accurately be assessed, although they were determined to be single rooted teeth (i.e. incisors, canines and/or premolars).

Sex: Due to the nature of skeletal preservation, sex could not be determined.

Age: Only a general older adult range could be attributed to this individual.

Health: Possible evidence of arthritis was initially observed in the knee and phalange joints, although this has not yet been confirmed.

BURIAL 2

This burial consisted of a capped cist grave (cf. Welsh 1988) and contained one fully extended individual, positioned face down. Head orientation was to the south, facing eastward and both arms were slightly flexed, with hands under the pelvis. As with all of the Tolok skeletons, approximate stature was determined by *in situ* measurements of the bregma region of the skull to the inferior surface of the left calcaneus (or any existing tarsal bone). In this individual, skeletal length was approximately 134 cm.

Preservation of the long bones was generally very good and included epiphyses which were well articulated in their joints. However, cranial, vertebral, sacral, pelvic and rib bones were very fragmented and/or poorly preserved. In the case of the pelvic and rib/vertebral bones, poor preservation may have resulted from rodent and other animal activity. Opportunities for rodent burrowing would have arisen from the creation of air pockets by placement of large stones in the cist, and in this case the depth of the cist would have been appropriate. It must be noted, however, that close inspection of the bones to determine the presence of rodent gnawing has not

been done. Other recovered bones included maxillae fragments, mandible, hands, feet and patellae.

Preliminary examination of the remains indicated an individual of adult age, and probable female sex. A more narrow age range has not yet been determined, and likewise, assessments of skeletal pathologies have not yet been undertaken by the author.

BURIAL 3

This burial consisted of a simple cist grave containing one fully extended individual. Like all Tolok interments, the individual was lying face and stomach down, with head oriented to the south. Preservation of this individual was good, although rib, vertebral, sacral and pelvic bones were very fragmented and incomplete, and the skull was flattened and compressed width-wise. Most facial bones were present, as were the mandible and teeth, and most long bones were well preserved. What remained of the vertebral column appeared shifted to the right, and this could be attributed to the positioning of the skeleton in the extremely narrow cut stone cist.

Approximate *in situ* body length of this individual was measured to be 148 cm. However, for more accurate height estimates of all Tolok individuals, one should refer to Glassman (in prep.) for stature determinations based on long bone lengths.

Cranial remains: most cranial bones present, though interior maxillary bones were very fragmented; most of palate present and appeared fully fused; orbits square in shape; prominent supraorbital ridges; large mastoids and overall robust skull; mandible-robust, square chin, flared ramus at right angle.

Dentition:

UPPER:	Left								Right							
	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
			X	X	X	X	X	X	X	X	X	X	X	X	X	X
LOWER:	Left								Right							
	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
	X		X	X	X	X	X	X	X	X	X	X	X	X		X

(X = secondary teeth present)

Alveolar and mandibular remains indicated that the left M_2^1 , and both mandibular M_2 's were lost some time antemortem, as there was complete alveolar bone resorption over the sockets. The crown of the right M_1 was partially missing due to carious destruction.

Also evident in this individual was dental modification. Both medial maxillary incisors

were filed, and appeared notched along the lateral occlusal edges. Lateral incisors and canines also appeared to be filed. Regarding the notching of both medial maxillary incisors, according to Romero (1970), this individual exhibits a B4 type of modification. Dental modification, both in the form of filing and inlays, has been found to be a common Mesoamerican cultural practice evident in both sexes (Romero 1970). In the Maya area, dental filing is thought to have been practised as early as the Middle Formative period, for example, at Uaxactun (Ricketson & Ricketson 1937).

At Tolok, this is the second case, thus far, of dental modification, in the form of filing. Previously at Tolok, Individual 2 from Burial 4 (1992) was found to have a left mandibular canine that seemingly was intentionally filed to accentuate a more pointed tooth (Glassman, pers comm.). Elsewhere at Cahal Pech, the presence of filed teeth have been found in a Late Classic burial (Burial 1) in Str. B-4 of the site core (J.Awe, pers comm.). The type of modification was Romero's (1970) C5 variety. In addition, jadeite and pyrite dental inlays have been observed in individuals from the site core of Cahal Pech (Burial B2-1 and B4-1), and the Zotz group (2-B/3) (Awe, pers comm.), as well as at Zopilote (Str. A-1/6th) (Cheetham et al., 1994).

According to Romero (1970), the depictions of modified teeth in (non-Maya) ritual objects, such as god effigies, masks and (Zapotec) funerary urns, suggests a possible religious basis for the practice. For the Maya, its popularity probably only reflected Maya ideals of personal adornment and attractiveness.

Lastly, examination of dental modifications in Mesoamerica have led to the conclusion that such cultural practices were not necessarily indicative of social status (Fastlicht and Romero 1951; Romero 1970).

Post-Cranial Skeleton:

Clavicles:	no sternal ends
Scapulae:	mainly consist of blades, though fragmented
Humeri:	no epiphyses present
Ulnae and Radii:	all bones missing epiphyses
Metacarpals and Hand Phalanges:	some fragments
Vertebrae:	half or less of entire vertebral column present and mainly consisting of transverse processes (no bodies)
Ribs:	only about half present, and very fragmented
Sacrum:	missing lower half of body, left superior articular process present, missing auricular surfaces and most of pelvic surface
Innominates:	both acetabulums present and are smooth, no aburnation or pitting; narrow sciatic

notch (between 60 and 90 degrees); right and left ischium both present and are fused to body; most of main ilia is present but only extending to beginning of pubes, with only a fragment of the right pubic symphysis present; about 1/2 to 3/4 of both auricular surfaces present—right auricular surface appears slightly billowy on more inferior end and pitted, while left surface is also billowy on inferior end; no remains of iliac crest.

Femorae: robust, with pronounced linea aspera of both, and all epiphyses present and fused; no pitting or eburnation on acetabulum or femoral heads

Patellae: left one found, right one not yet accounted for at this time

Tibiae: both lack distal epiphyses and right tibia is fragmented

Fibulae: left—missing both epiphyses; right—missing proximal epiphysis (head)

Tarsals and Metatarsals: half or less accounted for

Foot Phalanges: three accounted for at time of excavation

Bones absent, or not accounted for at this time: Sternum, Carpals, and Sacrum.

Sex: Based on the overall robustness of the skeleton, specifically the femorae and traits of the skull (pronounced brow ridges, large mastoids, robust mandible with large teeth), and the pelvis (narrow sciatic notch), a male sex can tentatively be assigned to Individual 3.

Age: Evidence used to determine approximate age included dental remains, a portion of pubic symphysis, fusion of femoral and ischial epiphyses, and the overall state of the skeleton with respect to activity related stress. Specifically, the presence of the epiphyseal fusion of the femoral head indicated a minimum age range of 15–20 years, while the fusion of the distal medial epicondyle and lateral condyles suggested a minimum range of 16–23 years (cf. Brothwell 1981). Likewise, fusion of the ischial tuberosity indicated an age of at least 17 years, to 25 years for complete fusion.

Next, examination of a portion of the right pubic symphysis, and ectocranial suture closure of the right midlambdoidal region gave an age range of 22–32 years. With respect to dental remains, molar wear (cf. Brothwell 1981) was typical of an age range of 25–35 years, but following Lovejoy (1985), wear pattern of all teeth suggested 35–40 or 40–45 years. However, a lower age range will be accepted, since one must consider the gritty diet of the Maya, and the fact that other skeletal remains show no evidence indicative of older age. For instance, activity-related evidence of old age, such as osteophytic lipping (i.e. on vertebrae, pelvis or femoral head), bone pitting or eburnation, were not evident in the remains of this individual. With this evidence, a preliminary age range of 25–35 years can be suggested for Individual 3.

Health:

Enamel Hypoplasia: This dental pathology was apparent on all canines and appeared as depressed bands, one on each tooth. The most prominent bands, in terms of depth and size, were noted on the lower right canine and both upper canines. The presence of hypoplastic lesions on the canines is consistent with the preponderance for more severe and numerous bands or pits to be found on these very long and slow developing teeth, as well as on maxillary central incisors (Skinner & Goodman 1992).

In general, the presence of hypoplastic bands may indicate some sort of childhood nutritional, or pathological stress in the individual's past. Age of such stresses can be determined based on the relative position of the band on the crown (see Massler et al. 1941), but such assessments have not yet been done for these teeth, nor for the hypoplastic teeth from Burials 2, 4 (Individual 1) and 8 from Tolok.

However, it should be noted that examination of other Maya dental remains seem to indicate a consistent age of occurrence at around two to four years (Saul 1972; Saul & Saul 1991; White 1986). Similarly, at Cahal Pech, Maar and Varney (1993) have determined an age of occurrence between 2 and 3 years for dental remains from the Zubin group (Burial 2-B/7). This age of occurrence is associated with periods of nutritional and health stress during the weaning time, which corresponds to Landa's observations of Maya weaning age at the time of the Conquest (Landa 1566, in Tozzer 1941: 125).

Caries:

Maxillary teeth: There was extensive carious destruction apparent on the left M¹, which was absent of lingual cusps, and had a large pit that extended into the lateral root. Carious destruction was also present on this tooth's medial surface (adjacent to Premolar 2). On the right M¹, an intercusp cavity was apparent between the lingual cusps on the occlusal surface of the tooth.

Mandibular teeth: An intercusp cavity was evident between the labial cusps of the left M₁, while the right PM₄, which lacked its crown, had a deep pit inside its root. In the right M₁, there was extensive destruction, in the form of a large carious pit throughout more than 3/4 of the crown, and only the posterior cusps were present.

BURIAL 4 - Individual 1

This individual was found atop Individual 2 in a simple cist grave and with a head cist evident around Individual 2. Interment of both individuals within the cist grave suggested burial

at the same time, and in this case, both were fully extended, positioned face down, and with heads oriented southwards. Approximate length of this individual was 134 cm.

In the case of individual 1, overall skeletal preservation was mediocre to good. This individual was represented by several calvarium fragments (no facial bones), a mandible, poorly preserved rib and vertebral fragments, fragmented long bone shafts (lacking preserved epiphyses), hand and foot bones, and poorly preserved innominate fragments. The sex of the individual could not be determined from the state of preserved remains.

Of particular interest was the mandible which consisted of the body minus the ramus portions, the right coronoid process, and partial right mandibular condyle. Only three incisor sockets were present and they were later associated with their teeth. However, the rest of the mandible had undergone alveolar resorption. This would suggest that tooth loss occurred a long time prior to death, perhaps as a result of poor dental health and disease. In the case of poor dental hygiene, the pattern of tooth loss usually involves the loss of molar teeth first. Canines and incisors are usually the last teeth to be lost and this is characteristic of Individual 1.

With such substantial tooth loss, proper mastication in this individual would have been greatly affected. One result of this cessation in chewing ability would be bone resorption, and in this individual it seems to have taken place over many years. This would account for the reduced size and thickness of the mandible. Importantly, this pattern of tooth loss and mandibular bone resorption can be used to suggest an old age for this individual. This could be interpreted to represent any age older than 40/45 years. However, as cranial and post-cranial bones from this individual were poorly preserved, specific age ranges cannot be given at this time.

Lastly, to support the conclusion of poor dental health in Individual 1, one can examine the few teeth recovered from the burial. In total, at least six teeth, all permanent incisors, could be associated with this individual. Two incisors only had partial crowns, and there was evidence of major carious destruction in most, or all, of the teeth.

BURIAL 4 Individual 2

Unlike Individual 1, this skeleton's completeness allowed for the recognition of head direction, which was facing west. The left arm was slightly flexed at the elbow and its left hand was placed under the pelvis. Length of this individual was 147 cm.

Overall, this skeleton proved to be an interesting contrast to its gravemate, Individual 1. Other than differences in preservation, which can be attributed to differential positioning in the grave, distinct disparities in skeletal health were observed. In the case of Individual 2, very well-preserved skeletal remains included all long bones and most of their epiphyses (tightly articulated in their joints), both innominates, which unfortunately lacked pubic symphyses,

scapulae, clavicles, most or all of the vertebral column, fragmented ribs, patellae, hands and feet. The mandible was complete except for the tip of the right mandibular condyle, and it seemed that the right coronoid process was thinner and less rounded (more pointy) than the left process.

Teeth and Dental Health: Examination of Individual 2 revealed a complete dentition. This included the mandibular right M3, which was fully erupted, and would, according to Schour and Massler (1941) indicate an age from 21-35 years or older. This molar had a small carious lesion in the centre of the crown surface between cusps, and appeared as a small pit. However, the lower left M3 was impacted horizontally within the mandible, with its crown pointing medially toward M2. Similarly, all maxillary teeth were present and fully erupted, including both third molars, and there was slight to medium shovelling in the central incisors. One lateral incisor (side undetermined) could not, however, be positively associated with Individual 2. With this tooth, a half to three quarters of the root portion from the cemento-enamel junction was totally destroyed by carious destruction through the nerve and pulp. As a result, the root of this tooth only had a lingual surface.

Dentition:

Upper:	Left		Right
	8 7 6 5 4 3 2 1		1 2 3 4 5 6 7 8
	X X X X X X X X		X X X X X X X X
Lower:	Left		Right
	8 7 6 5 4 3 2 1		1 2 3 4 5 6 7 8
	X X X X X X X X		X X X X X X X X

(X = secondary teeth present)

With respect to dental calculus, examination of Individual 2 revealed deposits on all teeth, ranging from slight to medium (cf. Brothwell 1981: Fig. 6.14). Specifically, it was noted that there were slightly more lingual deposits on the crown-root lines of the left M1 and M2, than the right lower molars. This could possibly be related to the impacted left M3.

While the degree of calculus deposits on teeth can be used to infer subsistence, it is often not representative of overall dental health and hygiene. In fact, calculus deposits on dental remains are often times only associated with illnesses just prior to death (P. Stuart-Macadam, pers comm. 1993). Specifically, they would be indicative of changes in hygiene and subsistence resulting from the state of being ill, rather than the result of diet or poor hygiene throughout one's lifetime. Calculus deposits associated with illnesses causing death might result from a failure to maintain proper hygiene due to lack of strength or ability, lack of proper food intake, or improper mastication. Overall, a statement of good dental health can be applied to Individual 2.

Dental attrition of Individual 2's teeth was also examined. Enamel on all cusps were still present and there was generally very little wear on all teeth. This lack of much wear could suggest a relatively young adult age, since the gritty nature of the Maya diet (from food processing on stone manos and metates) tends to readily wear away dental surfaces. One would expect enamel wear to be more extensive in an older individual.

Sex: Based primarily on innominate evidence, a male sex can be assigned to Individual 2.

Age: Considering the pattern of tooth eruption, and epiphyseal fusion times of the femoral head and ischial tuberosity (cf. Brothwell 1981: Fig. 3.4), an age range of 25-35 years can be inferred for this individual. With the little amount of dental wear present, one could further suggest an age in the lower end of the scale (i.e. 25-30 years)

Health: Other than the dental irregularities noted above, no skeletal pathologies were recognized in this individual at the time of examination.

BURIAL 5

This burial consisted of a simple cist grave containing one fully extended individual lying face down, with the head to the south. The lower arms of this individual were slightly flexed with the left hand placed under the pelvis. Skeletal length of this individual was measured to be approximately 149 cm.

Skeletal preservation of this individual was generally quite good. All of the major long bones were present and included epiphyses in most cases. The cranial bones were highly fragmented, as were the sacral and vertebral bones. The body of the ilium and a portion of the ischium were present, but the pubes and pubic symphyses were missing. The vertebral column was also poorly preserved, with few thoracic and lumbar vertebrae present. The mandible, however, was completely intact and well preserved, allowing it to be used in age determination of this individual.

Cranial Remains: overall, the cranium was very fragmented. Recovered remains include small portion of left frontal, including part of orbit and temporal line; left parietal; left mastoid process and most of right temporal; and fragmented occipital bone, with small nuchal crest noticeable. The only accounted viscerocranial remains was a fragmented right zygomatic. Based on B. Hohmann's observations in the field (1993), there may have been cranial deformation in this individual. The occipital region of the skull appeared flattened, and was perhaps the result of

purposeful manipulation. However, the determination of this type of deformation may be hindered by the nature of the skull remains, which were crushed postmortem and prior to excavation.

Mandible and Teeth: no teeth were recovered from this individual, but the mandible was complete, with extensive alveolar resorption. The loss of teeth and reduced chewing activity would have led to the reduced height and thickness of the mandibular body and ramus evident in this individual. Gonial angle is concurrently very obtuse.

Post-cranial Skeleton:

- Clavicles: both only missing sternal epiphyses
- Scapula: only remains of left one found—with glenoid cavity, fragment of acromion and portion of lateral border present
- Humeri: R—fragmented head and one third of shaft present; most of distal end not preserved, although trochlea is intact; L—epiphyses not present, but septal aperture is evident
- Radii: all epiphyses missing
- Ulnae: all epiphyses missing
- Carpals: right lunate, scaphoid and capitate present only
- Metacarpals: right and left remains highly fragmented
- Hand and Foot Phalanges: most present
- Vertebrae: some fragmented cervicals with bodies; fragmented thoracics lacking bodies; some lumbar vertebrae with transverse processes, no bodies
- Innominate: R—body of ilium with acetabulum and small portions of auricular surface and ischium present; L—body of ilium (minus iliac crest), and portions of the ischium and auricular surface present; large sciatic notch is evident; No pubes were found with either innominate
- Sacrum: very fragmented
- Femorae: both proximal heads are present and fused to shafts; diaphyses preserved; and distal epiphyses are fragmented
- Tibiae: both diaphyses present, as are epiphyses (though fragmented); left distal epiphysis is in good condition
- Fibulae: both mostly preserved, except for left distal end
- Tarsals: most preserved and in good condition
- Metatarsals: all five right ones present and in good condition

Bones absent, or not accounted for at this time: right scapula, sternum, left carpals, patellae, and left metatarsals.

Sex: Based on the overall gracility of the skeleton (small mastoids and mandible, less pronounced nuchal crest), as well as the wide sciatic notch and pronounced pre-auricular sulcus, a female sex can be assigned to this individual.

Age: Age estimation of this individual was somewhat problematic as many of the more reliable indicators of age were not present, for example, pubic symphyses, sternal end of the clavicle, cranial sutures, and dentition. Nevertheless, a preliminary age range was established based on the complete fusion of the left ischial bone. According to Brothwell (1981), this would suggest a minimum age of 25 years.

It is possible that an older age could be assigned to this individual based on substantial alveolar resorption of the mandible. All mandibular teeth seem to have been lost antemortem, although one or more incisors may have possibly been lost postmortem. The extent of bone resorption is indicative of tooth loss over a considerable period of time prior to death. The state of this mandible, with respect to tooth loss, is very similar to the mandible of Individual 1 from Burial 4 (Song 1993: 117). For both cases, the extent of alveolar resorption suggested an older age range (i.e. 40+ years), but for Burial 5, one would put the age range at between 25 and 40 years. This is due to the fact that there appeared to be no evidence of any age-related bone degeneration such as osteoporosis, or osteophytic lipping, present on the postcranial skeleton. But, the lack of such degenerative evidence may simply be a result of the poor preservation of the remains, rather than a true absence. Importantly, with regards to age determination, the dietary and cultural practices of the Maya, like many other prehistoric populations, were conducive to poor dental health and early tooth loss. A high carbohydrate maize diet would have encouraged increased cariogenic activity and tooth destruction, while grit incurred from maize processing could easily damage tooth surfaces and affect structural integrity. Loss of molar teeth and consequent mandibular resorption has been found in individuals as young as 20 years from prehistoric Texas populations (Hartnady & Rose 1991). These authors found that by age 30 years, the dentition of most Lower Pecos individuals was virtually edentulous. Thus, the lack of teeth, and resulting edentulous mandible of Individual 5 can still comfortably be attributed to a "middle-aged" adult of 25-40 years.

Health: Examination of Individual 5 revealed evidence of possible periostitis on the right tibia, as well as possible infection on the left side of the inner occipital surface, adjacent to the internal occipital crest. Such evidence cannot conclusively be correlated to cause of death. Dental

health could not be determined due to lack of dental remains, and no other evidence of pathology or trauma was observed.

BURIAL 6

Burial 6 consisted of a simple cist grave containing one fully extended individual. This individual was lying face down with the head to the south, and both lower arms and hands were placed beneath the pelvis. Skeletal length was approximately 150 cm.

Overall skeletal preservation of this individual was fair to poor. As a result of the placement of the large cut stones, many of the long bones were highly fragmented. A large portion of the skull remained intact, including the frontal bone and portions of the parietal and temporal bones. Notably, there were practically no ribs or vertebrae found in this burial, and much of the remaining skeleton was fragmented and incomplete.

Cranial Remains: while most of the larger skull bones were present, the maxilla was poorly preserved, with very few fragments present. Only one tooth was recovered from this individual. Regarding the mandible, some bone resorption was evident but could not be assessed, as most of the body and ramus was missing. Only a portion of the right ramus, without condyles, was well preserved. A significant pathological lesion was present on portions of both parietals and will be discussed shortly.

Post-Cranial Skeleton:

Humeri: both missing proximal and distal epiphyses; right one highly fragmented
 Ulnas and Radii: all missing proximal and distal epiphyses
 Ribs: few present but highly fragmented
 Innominates: highly fragmented with only portions of the ischium and ilium present (no iliac crest or pubes); wide sciatic notch evident; small acetabulum
 Femorae: left femur head present and missing only distal epiphyses; right-missing proximal and distal epiphyses
 Tibiae: both missing proximal and distal epiphyses and highly fragmented
 Fibulae: both missing proximal and distal epiphyses and highly fragmented

Bones absent, or not accounted for at this time: clavicle, scapula, sternum, vertebrae, carpals, metacarpals, hand phalanges, sacrum, patellae, tarsals, metatarsals and foot phalanges.

Sex: Sex of this individual was determined primarily from observations of the innominate and skull. The overall gracility of the skeleton, particularly the small brow ridges and virtually non-existent nuchal crest, as well as the wide sciatic notch, suggest that this individual was female.

Age: Aging this individual was somewhat difficult due to the highly fragmented nature of the skeletal remains, as well as the lack of dentition. Only one permanent incisor with a carious pit on one side (lateral?) of the tooth was found associated with this individual, and there was attrition present, although it was not assessed. Evidence used to determine approximate age of this individual came primarily from the fusion of femoral and ischial epiphyses, and cranial suture closure. Complete epiphyseal fusion of the left femoral head indicated a minimum age range of 15-20 years, while the fusion of the left ischial bone suggested an older minimum range of 17-25 years (*cf.* Brothwell 1981). Cranially, the closing of the sagittal and coronal sutures suggested an age range of 22-38 years (*cf.* Montagu 1960). Specifically, complete union and obliteration of the cranial sutures was indicative of an older age in this range.

Lastly, mandibular remains also pointed to an age older than 35 years. The fragment appeared highly obtuse, with some bone resorption also evident. This sort of remodelling and bone resorption suggests extensive antemortem loss of teeth, and is usually associated with older individuals.

Health: Significantly, for Individual 6, a pathological lesion suggestive of infection and trauma was evident on the skull. It appeared as a region of thickened, raised bone, which terminated in a missing fragment (hole) in both parietals (see Song et al. 1994: fig. 1). The hole was located in the most superior region of the parietals at the sagittal suture, and measured 4.3 cm transversely from the left to right parietal, and approximately 6.4 cm sagittally from the bregma region toward the dorsal aspect. However, the posterior extent of the hole was not present, so the exact length is not known.

Both compact and cancellous bone were affected and the evident thickening of the diploe, and porosity on the outer table is suggestive of porotic hyperostosis. Thickening of this bone has resulted in deformation of the superior parietal region, which has protruded superiorly. There is bone growth evident on the edges of the hole, and along the right edge, it extends approximately 2 cm outward (towards the sagittal suture), over the hole. The edge of this new bone appears to be smooth. The right inner, original edge of the hole also appears to be smooth, but elsewhere, the bone is still jagged. On the left edge, bone growth extends 1 cm over the hole, but on the most ventral edge, no bone growth is evident.

The presence of some bone growth suggests healing in this individual, but it cannot be confirmed that this pathological condition was not the cause of death. At this time, the exact

cause of the hole cannot be attributed to anything more specific than trauma. Interestingly, a straight line (cut?) was evident along the ventral edge, which extended beyond the hole, and measured approximately 1 cm long. The smooth nature of this cut indicates that the bone healed, and that it occurred some time prior to death. It may be the result of an intentional act, but it is also likely to be a remnant of the original fracture line that contributed to the hole.

BURIAL 7

This cist grave contained one fully extended individual lying face down, with skull to the south. Preservation of this sub-adult was poor to mediocre, and consisted of fragmented skull bones, right clavicle, rib fragments, some vertebral remains (minus bodies), highly fragmented long bones (minus epiphyses), few cancellous bone fragments of the pelvis and small portions of right iliac blade, and two metatarsal fragments. No mandible, scapulae, sternum, patellae, hand or foot bones were identified at the time of excavation. Measurement of this individual in the field, minus the tarsals, metatarsals and foot phalanges, revealed an approximate length of 95 cm.

Cranial Remains: very fragmentary

Dentition;

Upper: Left
 5 4 3 2 1

Right
1 2 3 4 5
x

Lower: Left
 5 4 3 2 1

Right
1 2 3 4 5

(x = deciduous teeth present)

[illegible]

Right
1 2 3 4 5 6 7 8
X

LOWER:

Left		Right
8 7 6 5 4 3 2 1		1 2 3 4 5 6 7 8
		x

Right
1 2 3 4 5 6 7 8
X

(X = secondary teeth present)

Sex: Due to the fragmentary nature of the remains, and the difficulty involved with sexing juvenile skeletons, a sex could not be assigned to this individual.

Age: Dental remains associated with this individual indicated a juvenile aged 4-5 years (*cf.* Ubelaker 1989: fig. 71).

Health: No skeletal evidence of pathology, or trauma, was noted for this individual, but slight porosity on the exterior surface of several long bones could possibly indicate anemia, or periostitis.

BURIAL 8

Burial 8 consisted of a simple cist grave containing one extended individual lying face down. Skeletal length was approximately 134 cm from superior cranial remains to the left tarsal region. Head orientation of this individual was to the south and the left hand was placed slightly beneath the pelvis, similar to the second individual from Burial 4, as well as Burial 5. Overall skeletal preservation of this individual was mediocre to good, due primarily to the onset of the rainy season during excavation of this individual. All long bones were present, missing only their proximal and distal epiphyses. Other bones preserved included fragmented portions of the skull, ribs, vertebrae and pelvis.

Unlike most burials excavated at the Tolok group during both field seasons, (two) intact vessels were found associated with this individual. One vessel (V1) was located adjacent to the skull, on its right (west) side, and contained highly fragmented cranial bones, as well as an almost complete compliment of teeth. All teeth were found inside this vessel, but a few cranial fragments were also found outside the vessel. It appears as if this individual's viscerocranium (face and mandible) had been intentionally placed inside the vessel at the time the individual was buried. Due to poor preservation of the cranium and cervical vertebrae, it cannot be determined whether this individual had been decapitated prior to death, or whether the viscerocranium was removed post-mortem.

Cranial Remains: few fragmented cranial bones present

Dentition:

UPPER:	Left								Right							
	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
LOWER:	Left								Right							
	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

(X = secondary teeth present)

*All teeth found loose inside associated vessel. No dental caries identified during initial observation.

Post-Cranial Skeleton:

Scapulae: highly fragmented with no side determination
 Humeri: both missing proximal and distal epiphyses
 Ulnae and Radii: missing all epiphyses
 Carpals: some fragments present
 Metacarpals and Hand Phalanges: some fragments of both present
 Ribs: few extremely fragmented ribs
 Vertebrae: less than half present; atlas also preserved
 Innominates: portions of ischium and body of ilium present; no sciatic notch or iliac crest present.
 Femorae: both femoral heads present; condyles missing
 Tibiae: both missing proximal and distal epiphyses
 Tarsals: some fragments present
 Metatarsals and Foot Phalanges: some fragments present

Bones absent, or not accounted for at this time: clavicle, sternum, sacrum, patellae.

Age, Sex and Health: Examination of the skeletal remains from Burial 8 indicated a young adult female of approximately 17 to 26 years. This was based on complete eruption of the permanent dentition; the open state of endocranial sutures; and the lack of age-related dental attrition, or skeletal degeneration. No evidence of skeletal pathology, trauma, or infection was observed, but dental remains were found to have enamel hypoplasia. In this individual, most teeth exhibited minor lesions, but there was extensive hypoplasia on the right mandibular third molar. At this time, the age of stress has not yet been determined.

BURIAL 9

As the eighth burial discovered within the round structure (Str. 14) at Tolok, this interment increased the total sample of juvenile individuals to five. The remains of at least four juvenile individuals were likely interred in the single stone-lined cist grave. Typical of burials at Tolok, as well as other localities throughout Cahal Pech, the primary individual was fully extended, prone, and arranged along a north-south axis, with the head to the south. Partial

remains of the second individual were found concentrated around the upper torso and shoulder areas, while the third was concentrated in the cranial region, and the fourth was discovered around the right shoulder.

Interestingly, the primary individual was lacking both legs and feet, and appeared severed at the waist. Measurement of this individual in the field, from the superior cranial region to the distal pelvic extent, gave a length of approximately 47 cm. In looking at the stratigraphic context of this burial, it seems that the burial was intrusive to Floor 3 of Structure 14, and, as such, was later in date than the retaining wall found practically at the feet (if they existed) of this individual (Powis, pers comm.). The absence of this individual's lower body, which was nonetheless capped with stones where the legs should have been (thus almost reaching the wall), suggests that some sort of skeletal mutilation occurred. However, it cannot be confirmed as to whether the individual's legs were defleshed prior to burial (when the body was still "fresh"), or plundered and dismembered afterward, when skeletalization had already occurred.

Overall, preservation of most skeletal elements for the primary individual was good to very good, although fragmentary. Field observations indicated that most of the cranium was represented. Mainly because of its young age, long bones that were preserved consisted of the diaphyses only. Recovered long bones included both humeri (the right being very fragmented), and both ulnae and radii. Partial remains of both clavicles were also recovered. Fortunately, most ribs and cervical vertebrae were preserved, since rib samples were required for future chemical analysis. The innominates were represented by poorly preserved fragments of the iliac blades only, as the skeleton was mutilated at this junction.

Due to time constraints, the cranial remains of Burial 9 were primarily examined. *In situ* appearance of the primary individual's skull indicated that it was slightly modified. The cranial modification involved vertical occipital deformation, as well as frontal flattening (sloping), which resulted in bulging parietal regions. The evidence suggests that skull deformation was antemortem, as opposed to disfigurement due to postmortem interment pressure. As such, one could state that the child exhibited "typical" Maya cranial deformation. Such deformation could have been formed by binding padded boards to the skull during early childhood growth (Stewart 1974: 223). In the Maya region, several different types of cranial modification have been observed (see Romero 1970; Saul 1972; Stewart 1974), predominantly consisting of occipital and/or frontal flattening, and vertical elongation. Elsewhere at Cahal Pech, cranial modification was apparent in individuals from Burial 5 at Tolok; Burials 2-B/2 and 2-B/3 at Zotz (Maar and Varney 1993: 128); and Str. B-4 Burial 1 in the site core (J. Awe, pers. comm 1995). According to Romero (1970) and Stewart (1974), such cultural practices were common in Maya society and cross-cut age, sex and social status.

Cranial Remains: Other than fragmentary remains of the calvaria (frontal, parietals, occipital), remains of the cranium also included fragments of alveolar maxillae and some mandibular fragments, all with associated teeth, as well as numerous loose teeth.

The following Deciduous & Secondary Dentitions were determined to belong to the primary individual (as indicated by maxillary and mandibular fragments) :

Upper:	Left	Right
	5 4 3 2 1	1 2 3 4 5
	x x x x x	x x x x x
Lower:	Left	Right
	5 4 3 2 1	1 2 3 4 5
	x x x x x	x x x x

(x = deciduous teeth present)

UPPER:	Left	Right
	8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8
	X X X X X	X X X X X X
LOWER:	Left	Right
	8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8
	X X X X X X X	X X X X X X

(X = secondary teeth present)

Dental development of these teeth suggested an age range of 3-5 years [3-4 (\pm 12 mths)] (cf. Ubelaker 1989: fig. 71). However, in examining the fragmented arm bones, estimated total lengths suggested a younger age (i.e. 2 years) (cf. Ubelaker 1989: Table 14). After considering the fact that teeth often develop at an advanced rate, and in particular, develop earlier among native North American "Indians" (Ubelaker 1989: 64), the age range for this child was placed at between 2-4 years.

The following Deciduous & Secondary Dentitions were present for the second individual, which was primarily found in a clump on the east (left) shoulder of the primary individual (with some associated cranial remains):

Upper:	Left	Right
	5 4 3 2 1	1 2 3 4 5
	x	

Lower:	Left		Right
	5 4 3 2 1		1 2 3 4 5

(x = deciduous teeth present)

UPPER:	Left		Right
	8 7 6 5 4 3 2 1		1 2 3 4 5 6 7 8
		X X X	

LOWER:	Left		Right
	8 7 6 5 4 3 2 1		1 2 3 4 5 6 7 8

(X = secondary teeth present)

(A deciduous lower left canine was also found outside of the south wall associated with this burial, and may possibly belong to this individual.)

For this second individual, levels of crown and root development of the permanent dentition suggested a mean age of 6 years (from 5-7 years) (cf. Ubelaker 1989: fig. 71). However, like Individual 1, estimated total long bone lengths indicated a slightly younger age (i.e. 4 years). Consequently, this individual was aged at between 4-6 years.

Post-Cranial Remains: except for the few dental remains above, Individual 2 was also represented by both humeri, one ulna, both femurs, and a left tibia. The relative sizes of the leg bones suggested that they could not belong to the younger primary individual. These bones were placed along the corresponding sides of the main child's upper torso and arm region (i.e. child 2's left arms and legs were placed alongside child 1's left arm). From the *in situ* appearance, it can be tentatively suggested that the second child's arms and legs were disarticulated from its body prior to deposition on the main child. At this time, no other identified bones support a complete skeletal state for this second child.

Next, a third individual was represented by the following dentition, which was recovered scattered among, and south of ("above"), the primary individual's cranium:

Upper:	Left		Right
	5 4 3 2 1		1 2 3 4 5
	x x		x x x x
Lower:	Left		Right
	5 4 3 2 1		1 2 3 4 5
	x x		x x

(x = deciduous teeth present)

The age of this juvenile was approximately 1 year (*cf.* Ubelaker 1989: fig. 71), and since most teeth were only unerupted crowns, it is suggested that this child was originally represented by at least a cranium. Low preservation potential of infant remains would explain the lack of cranial bones.

In addition, four (non-duplicated) teeth were also recovered scattered among the skull and upper chest which could possibly belong to this individual. (Levels of crown development and tooth duplication implied that they could not have belonged to the first two children). In this case, development of the teeth, a deciduous right i_1 , deciduous left i_2 , and the crown cusps of a secondary right PM^3 and left upper C, would suggest an older age of 18 months to 2 years. Cautiously, one could propose that either these three teeth represent an additional individual aged 2 years, or they represent faster developing teeth within the dental arch of the 1 year old child. If they belonged to the same individual, an age range of 1-2 years would be appropriate.

At this time, due to the fragmentary state of miscellaneous bones found within the burial, no long bones can confidently be attributed to this individual. Consequently, the nature of this child being either a complete (deteriorated) interment, or a deposit (grave offering) cannot be confirmed.

Lastly, a fourth child was identified by the presence of two deciduous mandibular molars (m_2), and a left femur which were found atop the primary juvenile's right shoulder. Both molar teeth and the estimated femoral length were indicative of an infant aged from birth to 6 months (*cf.* Ubelaker 1989: fig. 71, Table 14). Notably, several fragments of this femur exhibited evidence of periostitis. Specifically, the bone infection appeared as areas of hypervascular (inflamed) periosteal bone, and surface plaque buildup. Additional long bones may be present for this child, but their very fragmentary state has hindered reconstruction.

Health: With respect to dental health, all teeth were relatively free of caries and calculus, but several teeth belonging to the primary and second individuals exhibited evidence of linear enamel hypoplasia.

In the primary juvenile, hypoplastic lesions on permanent incisors and canines indicated that minor stresses occurred at approximately 3.5 years, 4 years, and 4.5 years. However, due to the incompleteness of crowns and roots, accurate measurements of the lesions to the true cemento-enamel junction are not known, so that ages could only be extrapolated by comparisons to mean unworn crown heights gathered by Wright (1994) for Pasion Maya. Consequently, the three distinct ages of occurrence may actually only represent two real periods (i.e. 3.5 years and 4-4.5 years).

For the second individual, aged 5-7 years, lesions on the permanent upper left i_1 and i_2

indicated that a minor stress period occurred at around 3.7 years, while a significant health or dietary stress occurred at the age of 4 years.

Thus, it could be determined that the remains of at least four juvenile individuals were interred together in this cist burial, one aged between 2-4 years, and three secondary individuals between the ages of birth and 6 months, 1-2 years and 4-6 years.

BURIAL 10

This fourth Formative period burial at Tolok was, unsurprisingly, a cut-stone cist grave containing an individual placed along a north-south axis. Once again, the individual was fully extended, positioned face and stomach down, and with the head to the south.

Overall skeletal preservation was good, with most bones present. Specifically, most cranial bones were preserved, as were all long bones, most of the innominates, sacrum, hands, and feet. Ribs and vertebrae were fragmentary and very incomplete. *In situ* measurement of this individual in the field was approximately 153 cm, from the superior cranial region to the most distal point on the left tibia (since feet remains were disturbed).

Dentition:

UPPER:	Left		Right
	8 7 6 5 4 3 2 1		1 2 3 4 5 6 7 8
	X X X X X X X X		X X X X X X X X
LOWER:	Left		Right
	8 7 6 5 4 3 2 1		1 2 3 4 5 6 7 8
	X X X X X X X		X X X X X X X

(X = secondary teeth present)

Accompanying the teeth, most of the maxillary alveolar region was well preserved, as was the intact mandible. From the appearance of alveolar bone in the mandibular right M₁ and left M₂ regions, it seems that bone resorption, and possibly infection (around right M₁), had taken place some time antemortem, when the teeth were lost. In particular, the reactive bone growth that had partially filled the socket of the right mandibular M₁ appeared lumpy and porous. This mass of bone spicules filled 1/2 to 2/3 of the socket depth. On the other hand, the socket of the absent left M₂ appeared relatively free of bone resorption, except for minimal bone spicule formation and some porosity. The comparative socket bone growth suggests that the right M₁ was lost earlier in life than the left M₂. Outside of these alveolar portions, alveolar resorption (and periodontitis?) also seemed apparent along the rest of the labial border of the mandible. This was evident as eroded areas of porous bone surrounding the sockets.

Thus, from the mandibular remains, early antemortem tooth loss was not unheard of for prehistoric Maya. As also demonstrated by other remains at Tolok, tooth loss often afflicted relatively young individuals, and can be considered characteristic of the population. As such, resorbed mandibles suggesting advanced age often conflict with non-dental indicators of younger age (see Song et al. 1994: 153).

Examination of dental calculus revealed slight deposits on most teeth (molars, premolars, canines, some incisors), while the maxillary right I¹ and I² had moderate, or medium, deposits (cf. Brothwell 1981: fig. 6.14).

Post-Cranial Remains:

Scapula: left one fragmented
 Humeri: left element mostly present, but right humerus lacks both epiphyses
 Ulnae and Radii: fragmentary
 Carpals/Metacarpals/Hand Phalanges: most recovered, although not yet individually identified
 Ribs: right and left fragmentary
 Vertebrae: most preserved, though fragmented
 Innominates: both elements in good shape
 Sacrum: mostly present, though fragmented
 Femorae: both mostly preserved, though fragmented
 Patella: right one recovered
 Tibiae: both mostly present, but lacking distal epiphyses
 Fibulae: both mostly preserved, though lacking well preserved epiphyses
 Tarsals/Metatarsals/Foot Phalanges: 12 or more fragments so far recognized
 Bones absent, or not accounted for at this time: both clavicles, right scapula, left patella

Sex: The appearance of the cranial remains and innominates suggested that the individual in Burial 10 was female. In particular, the gracility of the skull, as well as other (long) bones, and the obtuse angle of the sciatic notch of the innominates pointed to a female sex.

Age: Several skeletal features were examined for this individual. Firstly, the dentition indicated that the individual was a young adult. This was based on the eruption and crown/root development of the third molar, which was present for all four quadrants of the dental arch. Importantly, it should be noted that the third molar is an extremely variable tooth when it comes to eruption age. According to Ubelaker (1989: fig. 71), the period of M3 development and eruption

is usually between 15-21 years. Following Ubelaker, this individual's age was placed closer to 21 years.

Also, with respect to dental indicators, attrition was assessed to determine relative age. Although attrition is known to be variable between and within populations, it can be examined comparatively with other skeletal age markers to suggest youth, or old age. In this case, the minimal wear on the mandibular molars, which exhibited attrition of the cuspal tips only, suggested the third stage of wear for M_1 , according to Brothwell (1981: fig. 3.9). This stage of wear characterized an age range of 17-25 years (Brothwell 1981). Keeping in mind that the maize diets of prehistoric Maya readily eroded enamel surfaces, the minimal wear of this individual's teeth corresponds well with a young adult age.

Similarly, in examining the iliac crest of the left innominate, the stage of epiphyseal fusion suggested a latter age of the 16-23 year range of fusion times (*cf.* Brothwell 1981: fig. 3.4). Thus, with the limited evidence, an age range of approximately 17-23 years is suggested for Individual 10, with 21 years being a reasonable estimate.

Dental Health: Significantly, linear enamel hypoplasias were evident on most teeth, and appeared as a single prominent (narrow) groove per tooth. Specifically, the enamel defects were apparent on mandibular left I_1 , I_2 , C, M_1 ; mandibular right I_1 , I_2 , C; maxillary left I_1 , I_2 , C, M_1 ; and maxillary right I_1 , I_2 , M_1 .

Like results from other studies of hypoplasia incidence (Goodman and Armelagos 1985; Skinner and Goodman 1992), prominent grooves appeared on the canines, particularly the mandibular canines. Using Wright's (1994) regression equations, a significant period of stress was determined to have occurred between the age of 2.5 to 3 years.

CACHE 2

In addition to the four cist burials excavated during the 1993 field season, a tooth cache similar to that excavated at Yakalche in northern Belize (Pendergast et al. 1968) was found associated with Burial 7. The cache consisted of one small jadeite bead and fourteen teeth of mixed dentition, which were all concentrated in a small scatter.

The following teeth (12) have been identified from Cache 2:

Upper:	Left		Right
	5 4 3 2 1		1 2 3 4 5
			x x
Lower:	Left		Right
	5 4 3 2 1		1 2 3 4 5
			x x x

(x = deciduous teeth present)

UPPER:	Left									Right							
	8	7	6	5	4	3	2	1		1	2	3	4	5	6	7	8
									X	X		X					
LOWER:	Left									Right							
	8	7	6	5	4	3	2	1		1	2	3	4	5	6	7	8
											X				X		

(X = secondary teeth present)

Crown and root development of these teeth indicated an age of approximately 3-4 years (*cf.* Ubelaker 1989: fig. 71), and at least ten teeth may also be associated with the juvenile in Burial 7. If these teeth are indeed associated with Burial 7, which has been dated to the terminal Formative (Powis, this volume), this cache could represent one of the earliest tooth caches recorded thus far for the Maya region.

The tooth cache at Yakalche was dated to the late Post-Classic period (thirteenth to fifteenth centuries A.D.) and consisted of 379 teeth and a "small, irregular subglobular jadeite bead" (Pendergast et al. 1968:638). The only other tooth cache known to the authors was found at Lubaantun and dated to the Classic period (Hammond 1975). A total of 56 teeth were found in a house mound at this site, and were "within an area so small as to suggest that they were buried in a container of some perishable material" (Hammond, pers comm. to Saul 1970, in Saul 1975: 389). This may possibly be the case for the Tolok tooth cache as well.

In explaining the significance of the tooth cache, one can look to interpretations of the tooth cache at Yakalche (Pendergast et al. 1968) for possible relevance to the Tolok situation. Thompson (pers comm. to Pendergast et al. 1968: 642) associated the tooth offering at Yakalche with evidence of child sacrifice to Itzamna, or God D. This god, like the other two Old Gods (Gods L and N), was represented as toothless except for a single molar at each corner of the mouth. The Old Gods are thought to have presided over Xibalba in Maya cosmology (Schele and Miller 1986:54), and were well-observed religious figures in the Maya area (Awe, pers comm.). Pendergast et al. (1968: 642) have suggested that children's teeth were removed in order to give them a greater resemblance to Itzamna, prior to their sacrifice in his name. The teeth may have served as a secondary offering to the deity, or as an offering to any one of the Old Gods, considering their similar toothless depictions.

The circumstances of Burial 7 are significant, in light of Pendergast et al.'s interpretation, because the interred individual was a child, and was associated with unique grave goods. These goods included a smashed miniature vessel on top of the cut stones at the head region, another broken ceramic vessel (miniature?) above the left shoulder (east side), a

biconically drilled *Spondylus* shell in the fill above the pelvis, and a shell offering consisting of one non-modified freshwater snail (*Pachychilus indiorum*) placed within a worked marine shell (*Spondylus*). This shell offering was found directly on the pelvis, and considering the prone position of the skeleton, it would have been placed on the individual's back.

This particular shell offering, in addition to the tooth cache, distinguishes Burial 7 from the other burials at Tolok. Firstly, shells are ritually significant in Maya customs, and have been shown to be associated with death and the underworld (Andrews IV 1969). In turn, two of the Old Gods, Gods D (Itzamna) and N, are often depicted wearing shell pectorals or ornaments, of either conch or turtle (Andrews IV 1969; Schele and Miller 1986). Specifically, God N, or Pauah tun, is often depicted as carrying a large shell on his back, or emerging from the shell (Andrews IV 1969:48). The fact that the shell offering in Burial 7 was placed on the back of a child, and associated with a tooth cache, may be evidence of ritual activity associated with the Old Gods as early as the Late Formative period.

CACHE 3

Dated to the Terminal Formative period (Powis, pers comm.), this cache consisted of the cranial remains of a juvenile individual placed within a ceramic vessel. *In situ* observations indicated that the skull was placed in the vessel as an intact whole. The evidence suggests that decapitation of the individual took place while flesh was still present, but it is curious that no remains of a mandible have yet been identified. However, the remains of mandibular dentition do indicate its inclusion with the skull.

Cranial Remains: after cleaning, it appeared that the crown (superior surface) of the skull rested on the bottom of the vessel. Generally, cranial remains were fragmentary. While the frontal and parietals were well preserved, occipital and temporal remains were very fragmented. All observable sutures were fully open.

The following teeth were recovered from the vessel, and indicate that they all likely belonged to the same individual:

Upper:	Left		Right
	5 4 3 2 1		1 2 3 4 5
	x x x x		x x x x x
Lower:	Left		Right
	5 4 3 2 1		1 2 3 4 5
	x x x x		x x x x

(x = deciduous teeth present)

UPPER:	Left								Right							
	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
		X	X	X	X		X	X	X	X	X	X	X	X	X	X
LOWER:	Left								Right							
	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
		X	X	X			X	X				X			X	

(X = secondary teeth present)

Sex: Due to the juvenile age of this individual, sex was indeterminate.

Age: From the heights of the secondary tooth crowns, and some partial root development, the age of this individual could be placed at between 4-5 years (*cf.* Ubelaker 1989: fig. 71).

Health: Since this individual's dentition were the remains most amenable to analysis, it was the only cranial component examined for pathology. Other than a small carious pit found on the mesial crown surface of the upper left deciduous m^1 , the only apparent irregularities were the hypoplastic bands present on six secondary tooth crowns. Measurements of these bands relative to the occlusal edge (since CEJ's were not yet developed) indicate that moderate stresses afflicted this individual at around 3 years (3.18), and 4.5-5 years, while a more minor disturbance occurred at around 3.7 years (using Table 10.1 Regression Equations, Wright 1994).

Conclusions

In terms of burial practices, a consistent pattern of interment has so far been observed for individuals associated with Structure 14. All burials were on a north-south axis, with heads to the south, and were deposited in simple cists or crypts. In addition, all individuals were fully extended and placed face and stomach down, often with hands under the pelvis. This pattern of head orientation to the south and extended, prone skeletal position is consistent with common interment practices at the nearby sites of Baking Pot, Xunantunich, and Barton Ramie (see Welsh 1988), Pacbitun (Campbell-Trithart 1990: 259), as well as throughout the Cahal Pech sustaining area (see Song 1995).

With respect to the skeletal material, the fourteen individuals from Tolok represent relatively healthy men and women, and five children. Most pathologies were of an acute nature, and can be considered to reflect the every day stresses of living in a subtropical environment. Evidence of such stresses include porotic hyperostosis, probably due to anemia (Burial 6); possible cranial infection (Burial 5); periostitis (Burials 5, 7?, 9d); periodontitis? (Burial 10); caries (Burials 3, 4-Individuals 1 and 2; Cache 3); and enamel hypoplasia (Burials 3, 8, 9a, 9b, 10,

Cache 3).

Lastly, with respect to health, the only other notable case of skeletal pathology was the trauma inflicted on the individual of Burial 6. Some sort of traumatic event resulted in the removal of bone in this individual's cranium, and it resulted in significant deformation of the superior region. The association of hyperostotic lesions in this area suggests that either anemia was the cause of the bone's susceptibility to traumatic injury, or that the infection resulted from the trauma. At this time, no definite conclusions can be made on the exact cause of the hole, nor of its relationship to the cut mark.

As a small farming community in the periphery of Cahal Pech, the findings at Toiok have provided valuable information on the health status and ritual activity of Formative and Classic period Maya of the Belize Valley.

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APPENDIX B

BURIAL AND CACHE DATA FROM ROUND STRUCTURES 14 AND 15
AT THE TOLOK GROUP

by

TERRY G. POWIS

LATE CLASSIC PERIOD BURIALS (A.D. 700-900)BURIAL 2

Grave Type: Cist

Grave Context: Interred within construction fill of
Structure 14, and placed on top of Plaza
Floor 1.

Grave Goods: 2 quadrangular-shaped shell (*Strombidae?*)
adornos (Fig. 1a)
1 small, polished jadeite tubular disk
(Fig. 1b)
1 intact *Nephronaias ortmanni* shell, both
valves are perforated at hinge (Fig. 1c)
1 obsidian blade fragment (medial section)

Inter-site Comparisons: Quadrangular-shaped shell adornos
have been found in Burial 130 at Cuello (Hammond 1991:186),
however, these shell artifacts were produced from the
nacreous interior of the freshwater bivalve *Nephronaias*

ortmanni. Similar specimens to the intact *Nephronaias ortmanni* bivalve, which was perforated at the hinges, have been found in Burials A1-B/2 and A1-B/12 in the Zubin Group, Cahal Pech (Iannone 1994:57; Stanchly 1994:117); Burial 34 at Cuello (Hammond 1991:186); and at Barton Ramie (Willey et al. 1965:Fig. 3091, m).

Comments: This primary burial was intrusive to PF1. It is dated to the Spanish Lookout phase (A.D. 700-900) based on the ceramics recovered from inside the cist and its association with Late Classic Burials 3-6. Information regarding general health, stature, and the skeletal inventory of this individual are found in Appendix A by Rhan-Ju Song.

BURIAL 3

Grave Type: Cist

Grave Context: Interred within construction fill of Structure 14, and placed on top of Plaza Floor 1.

Grave Goods: 1 obsidian blade fragment (Fig. 1d)

Inter-site Comparisons: None

Comments: This primary burial was intrusive to PF1. It is

dated to the Spanish Lookout phase (A.D. 700-900) based on the ceramics recovered from inside the cist and its association with Late Classic Burials 2, 4, 5, and 6. Information regarding general health, stature, dental decoration, and the skeletal inventory of this individual are found in Appendix A by Rhan-Ju Song.

BURIAL 4

Individual 1

Grave Type: Cist

Grave Context: Interred on top of Plaza Floor 1 and adjacent to the eastern side of the building platform of Structure 14.

Grave Goods: 1 obsidian blade fragment
1 piece of obsidian debitage (Fig. 1e)
1 piece of modified slate (mace?)

Inter-site Comparisons: None

Comments: Burial 4 was actually comprised of two individuals (Individual 1 and Individual 2) interred on top of each other. Individual 1 was placed on top of the primary burial (Individual 2). Interment of both individuals within the cist suggests burial at the same time. Information regarding general health, stature, and the skeletal

inventory of this individual are found in Appendix A by Rhan-Ju Song.

Individual 2

Grave Type: Cist with a separate head cist

Grave Context: Interred on top of Plaza Floor 1 and adjacent to the eastern side of the building platform of Structure 14.

Grave Goods: 2 miniature ceramic vessels of the Belize Red Variety (one with a human effigy figure appliqued to the side of the vessel) (Figs. 2a-b)
1 obsidian blade fragment (medial section)

Inter-site Comparisons: Miniature ceramic vessels have also been found in Burial 7 at Tolok. They are also common in Classic period contexts within the Belize Valley (Cheetham et al. 1994:170-172; Conlon et al. 1994: Table 2).

Similarly, many of these miniature vessel types were found in Tepeu 3 contexts at Uaxactun (Smith 1955: Fig. 66a-2; Fig. 67a-4, b-2, b-3, b-4, b-5, b-6, c-2, c-3, c-4, d-1, d-2, d-3).

Comments: This primary individual was interred beneath Individual 1 with a separate head cist. Interestingly, few

burials with this particularly unique grave type morphology (cist and a head cist) have been identified in the Maya lowlands (W.B.M. Welsh, personal communication, 1993). Based on ceramic comparison, the date of interment for both individuals in Burial 4 is the Spanish Lookout phase (A.D. 700-900). Information regarding general health, stature, and the skeletal inventory of this individual are found in Appendix A by Rhan-Ju Song.

BURIAL 5

Grave Type: Cist

Grave Context: Interred on top of Plaza Floor 1 and placed (sequentially) to east of Burial 4.

Grave Goods: 1 small, flat, biconically-drilled slate pendant (Fig. 3a)

Inter-site Comparisons: The slate pendant is similar in style and form to two other slate pendant fragments found in the structural fill of Structure 1 and Structure 5 at Tolok (Powis 1993a:100).

Comments: This primary burial was intrusive to PF1 and, based on its association (placed sequentially) with Burials 2-4, is also dated to the Spanish Lookout phase (A.D. 700-900). Information regarding general health, stature, and the

skeletal inventory of this individual are found in Appendix A by Rhan-Ju Song.

BURIAL 6

Grave Type: Cist

Grave Context: Interred on top of Plaza Floor 1 and located on the east side (running along the north-south axis) of the eastern projection of the subsidiary platform.

Grave Goods: 2 sherd clusters (possibly broken vessels)
1 chert drill (distal end) (Fig. 3b)

Inter-site Comparisons: These two sherd clusters were found immediately to the north (at the feet) of this burial and may (or may not) be associated with this interment. Similar types of sherd clusters, associated with both burials and termination rituals, have been found in Structure 2 at the Bedran Group, Baking Pot (Powis 1993b; Conlon et al. 1994; Tables 1 and 2).

Comments: The broken vessels in these sherd clusters have not been identified but, based on the ceramics recovered from inside the cist, a Spanish Lookout phase (A.D. 700-900) date has been assigned to Burial 6. Information regarding general health, stature, and the skeletal inventory of this

individual are found in Appendix A by Rhan-Ju Song.

LATE FORMATIVE PERIOD BURIALS (350 B.C. - A.D. 250)

BURIAL 7

Grave Type: Simple crypt

Grave Context: Located on top of the northern wall of the building platform of Structure 15.

Grave Goods: 2 miniature ceramic vessels (not reconstructed)

- 1 worked marine shell (*Spondylus princeps*) with four suspension holes (Fig. 3c)
- 1 modified freshwater snail (*Pachychilus indiorum*) (Fig. 3d)
- 1 small, flat, biconically-drilled shell (*Spondylus* sp.) disk (Fig. 3e)

Inter-site Comparisons: Miniature ceramic vessels have been found associated with Individual 2 of Burial 4 at Tolok and elsewhere in the Maya lowlands (see Burial 4). Small perforated *Spondylus* disks are also commonly found in Formative and Classic period contexts and they have been found in a number of burials (i.e. Burial A1-B1, A1-B/5) at the Zubin Group, Cahal Pech (Stanchly 1994:118-119). Few specimens of a *Spondylus* shell with four holes used for

suspension have been found in Formative period contexts, but Robin (1989:105) has suggested that this shell artifact may have been used as a pubic shield. The inclusion of jute snails in burials at Cahal Pech is a common practice, including Burial 10 at Tolok (see below) and Burial 7 at the Zotz Group (Aimers 1992:7).

Comments: The broken ceramic vessels associated with this burial have been tentatively identified and are dated to the terminal Late Formative (late Xakal phase c. A.D. 100-350). Information regarding general health, stature, and the skeletal inventory of this individual are found in Appendix A by Rhan Ju Song.

BURIAL 8

Grave Type: Simple crypt

Grave Context: Located on top of the northern wall of the building platform of Structure 15.

Grave Goods: 1 intact Aguacate Orange: Aguacate Variety bowl with tetrapodal supports (Vessel #1) (Fig. 4)

1 intact Aguacate Orange: Aguacate Variety bowl exhibiting a ring base (Vessel #2) (Fig. 5)

Inter-site Comparisons: Only a few intact Aguacate Orange vessels have been found in ritual contexts at Cahal Pech, including Cache 3 at Tolok and a terminal Late Formative burial in the Central Platform at Cas Pek (Song 1995: Table 1; Vinuales 1992).

Comments: This primary burial is dated to the terminal Late Formative period (late Xakal phase). Furthermore, the shared spine wall of the simple crypt of Burial 8 with that of Burial 7 suggests burial at the same time. This skull-in-bowl burial is similar to Burial 10 at Tolok, Burial 94-1 at the Cas Pek Group (Lee and Awe 1995:106), and Burial 7 at the Zotz Group, Cahal Pech (Aimers 1992:7). Information regarding general health, stature, and the skeletal inventory of this individual are found in Appendix A by Rhan-Ju Song.

BURIAL 9

Grave Type: Cist

Grave Context: Intrusive through Plaza Floor 2 and was found abutting an L-shaped retaining wall (located at the south end of the building platform) used in the construction of Structure 14.

Grave Goods: 3 individuals (partial human remains of one child [4-6 yrs.] and two infants [1-2 yrs.

- and 0-6 mths.])
- 2 auditory bullae of white-tailed deer
(*Odocoileus virginianus*)
- 1 parrotfish (Family *Scaridae*) dentary
- 1 jute snail (*Pachychilus indiorum*) with
evidence of heat alteration
- 1 medial fragment of a highly polished
greenstone celt (Fig. 6a)
- 1 unmodified piece of slate (Fig. 6b)
- 1 figurine fragment (torso)

Inter-site Comparisons: The presence of parrotfish dentary and jute snails in this early Xakal phase burial are relatively uncommon grave goods in Formative period ritual contexts (see Stanchly 1995:138). Similarly, the inclusion of deer skull remains have only been reported from two Formative period caches at Cuello (Wing and Scudder 1991:85).

Comments: The individual was interred, based on the ceramics recovered from inside the cist, during the early Xakal phase (c. 300 B.C.) of the early Late Formative period. The general health, stature, cranial deformation, and the skeletal inventory of the primary interment, as well as the partial remains of the three accompanying children, are found in Appendix A by Rhan-Ju Song (also see Song 1995:179-

183).

BURIAL 10

Grave Type: Cist

Grave Context: Located on top of Plaza Floor 1 adjacent to the southern projection of the subsidiary platform of Structure 14.

Grave Goods: 1 intact Sierra Red: Variety Unspecified bowl (Fig. 7a)
1 intact Sierra Red: Variety Unspecified tecomate (Fig. 7b)
1 partially reconstructed Laguna Verde Incised: Variety Unspecified (Fig. 8a)
1 small, highly polished jadeite/greenstone bead (Fig. 8b)
1 modified, immature jute snail (*Pachychilus indiorum*) (Fig. 8c)

Inter-site Comparisons: The intact Sierra Red bowl is akin to the vessel found in Burial 94-1 at the Cas Pek Group, Cahal Pech (Lee and Awe 1995:106). This vessel in Burial 10 at Tolok may represent a transitional type between the Joventud Red Group and the Sierra Red Group. To date, there are no known examples of intact tecomates of the Sierra Red variety found at Cahal Pech or elsewhere in the Belize

Valley. The Laguna Verde Incised vessel is also similar to the Sierra Red vessel found in Burial 2 at the Cas Pek Group (Awe 1992:338). The location and shape of the jadeite/greenstone in Burial 10 is very analogous to the oblong jade bead found in Burial #1 at Group 1, Blackman Eddy (Goldsmith 1993:119). It should be noted that a similar shell offering of a large, perforated bivalve was placed in the mouth of a skull-under-dish burial (Burial 2-B/7) located inside the round structure (Structure 2/2nd) at the Zotz Group, Cahal Pech (Aimers 1992:7).

Comments: This burial is dated to the transitional period between the late Middle and the early Late Formative periods (early Xakal phase c. 500-350 B.C.). Also, it may be more closely associated with Structure 15 based on its location to the south of Structure 14. This skull-in-bowl burial represents a similar practice to that observed in both Burial 8 and Cache 3 at Tolok. Information regarding general health, stature, and the skeletal inventory of this individual are found in Appendix A by Rhan-Ju Song.

LATE FORMATIVE PERIOD CACHES (350 B.C. - A.D. 250)

CACHE 1

Type: Non-dedicatory

Context: Located within the construction fill of Structure

14 and placed near the middle, and on the south side, of an intrusive, diagonally aligned retaining wall.

Date: Late Formative (early Xakal phase c. 100 B.C. - A.D. 250)

Contents: 1 partial vessel (lower body and base only) of an Old River Unslipped: Old River Variety (not illustrated)

Inter-site Comparisons: None

Comments: Like Cache 4, this non-dedicatory cache was placed adjacent to an intrusive retaining wall. Cache 1 may have been deposited c. 100 B.C., because of its association with Cache 4, which has been dated to the early Xakal phase (350-100 B.C.).

CACHE 2

Type: Non-dedicatory, Tooth Cache

Context: Located approximately 50 to 70 cm to the south of Burials 7 and 8 and was placed on the top course of the building platform of Structure 14.

Date: Late Formative period (late Xakal phase c. A.D. 100-

250)

Contents: 14 human teeth of mixed dentition
1 small, biconically-drilled, tubular jadeite
bead (Fig. 8d)

Inter-site Comparisons: Only two other known tooth caches have been reported in the Eastern Maya Lowlands prior to the excavation of Cache 2 in PU-2 at Tolok. Pendergast et al. (1968) reported the findings of a Late Postclassic tooth cache containing 379 teeth and an irregular subglobular jadeite bead from Str. A-1 at Yakalche in northern Belize. The other tooth cache was reported by Saul (1975), and contained the dentition of two adult individuals recovered from a Late Classic period housemound at the site of Lubaantun in southern Belize.

Comments: In addition to the ceramics recovered around the cache, the possible association of Cache 2 with Burial 7 (see Chapter 3) suggests they were part of the same offering, deposited during the late Xakal phase. The dental inventory of Tooth Cache 2 consisted of several deciduous and unerupted permanent teeth (see Appendix A; Song et al. 1994:158).

CACHE 3

Type: Non-dedicatory, skull-in-bowl

Context: Intrusive through Plaza Floor 2 and located near the northern end of a retaining wall associated with Structure 14

Date: terminal Late Formative period (late Xakal phase A.D. 100-250)

Contents: 1 intact Aguacate Orange: Aguacate Variety tetrapodal bowl (Fig. 9)
1 intact human skull (cranial remains of a decapitated juvenile individual aged 4-5 yrs.)

Inter-site Comparisons: To date, this is the only Late Formative skull-in-bowl cache found at Cahal Pech. However, a number of Xakal phase skull-in-bowl burials have been found in the periphery of Cahal Pech, including Burial 94-1 at Cas Pek (Lee and Awe 1995:106), Burials 8 and 10 at Tolok (Powis 1994: 138-139; Song et al. 1994:157-158; Song 1995:183-185), and Burial 7 at Zotz (Aimers 1992:7).

Comments: It is possible, based on vessel type, that Burials 7 and 8, and Caches 2 and 3, were deposited at the roughly the same time period (c. A.D. 100-250). Information

regarding the general health of this individual is found in Appendix A by Rhan-Ju Song (also see Song 1995:185-186).

CACHE 4

Type: Non-dedicatory

Context: Located at the end of an intrusive, diagonally aligned retaining wall

Date: early Xakal phase (c. 350-100 B.C.) of the Late Formative period

Contents: 1 Paila Unslipped: Variety Unspecified jar (including the rim, but no lower body or basal sherds were found in association with this vessel) (Fig. 10)

Inter-site Comparisons: During the Formative period, only a few ollas have been ritually deposited at Cahal Pech, particularly Cache 1 at Tolok. This type of non-dedicatory cache is, however, common in the Classic period construction phases of Structure 2 at the Bedran Group, Baking Pot (Powis 1993a; Conlon et al. 1994: Table 1).

Comments: This offering was deposited at the same time as Cache 1 (see above).

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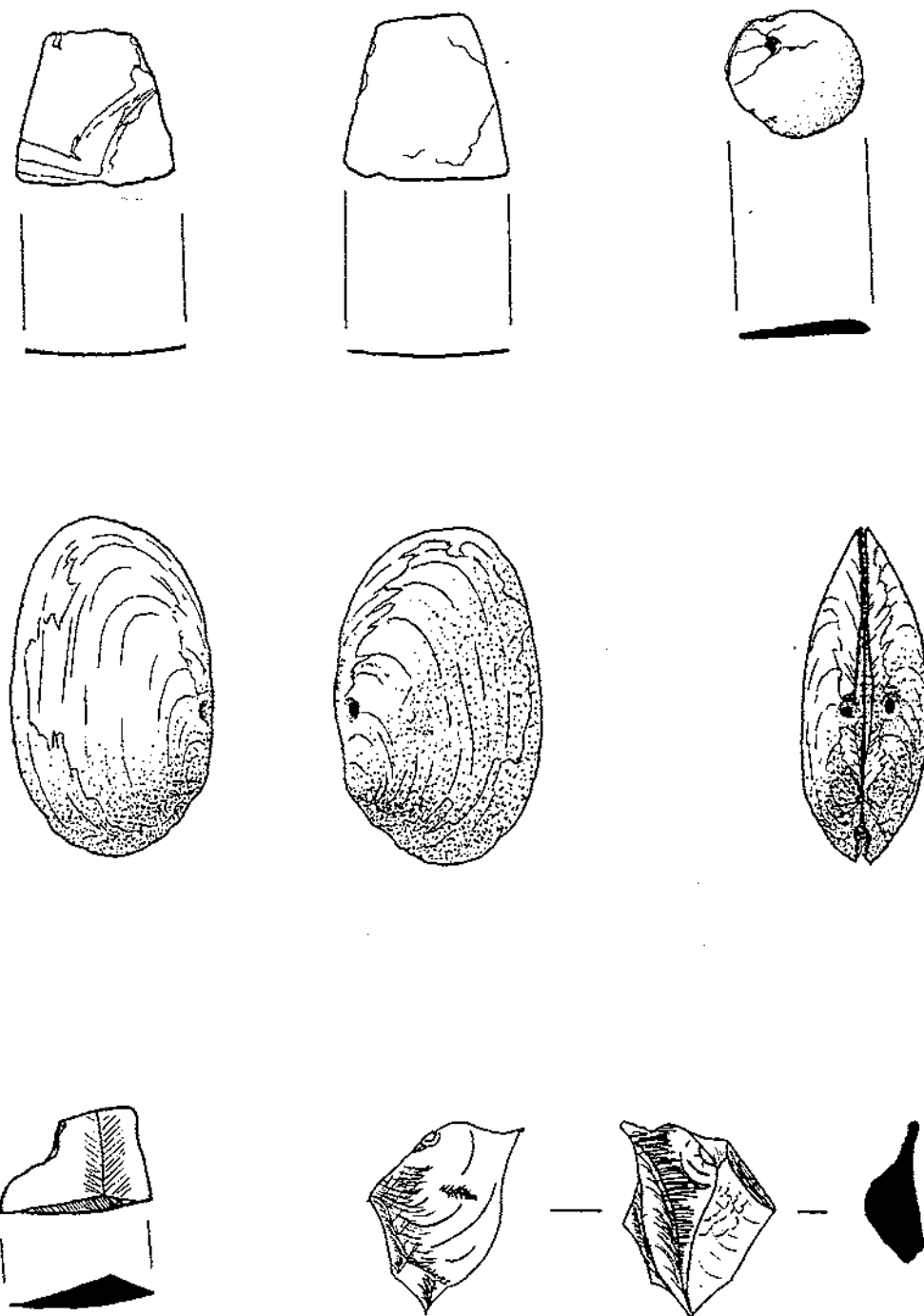


Figure 1: Artifacts recovered from Burials 2-4, PU-2, Tolok Group. (a) Two quadrangular-shaped shell (*Strombidae?*) adornos; (b) Small, polished jadeite disk; (c) *Nephronaias ortmanni* shell with valves perforated at the hinge; (d) Obsidian blade fragment; (e) Obsidian debitage (scale 2:1).

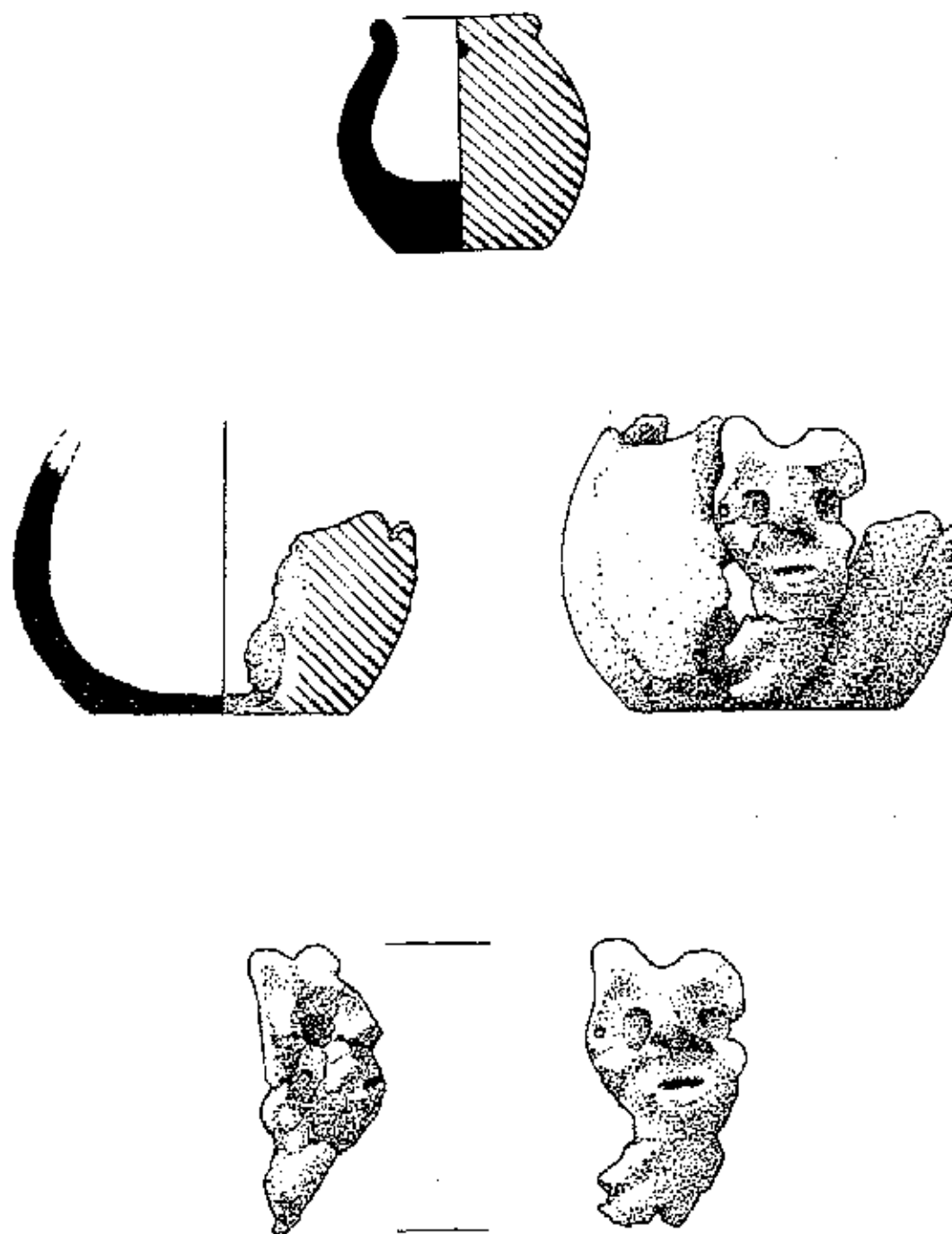


Figure 2: Artifacts recovered from Burial 4, PU-2, Tolok Group. (a) Miniature vessel (Belize Red: Variety Unspecified) with a drill hole located below the rim; (b) Miniature vessel (Belize Red: Variety Unspecified) with a human effigy figure modeled to exterior of vessel.

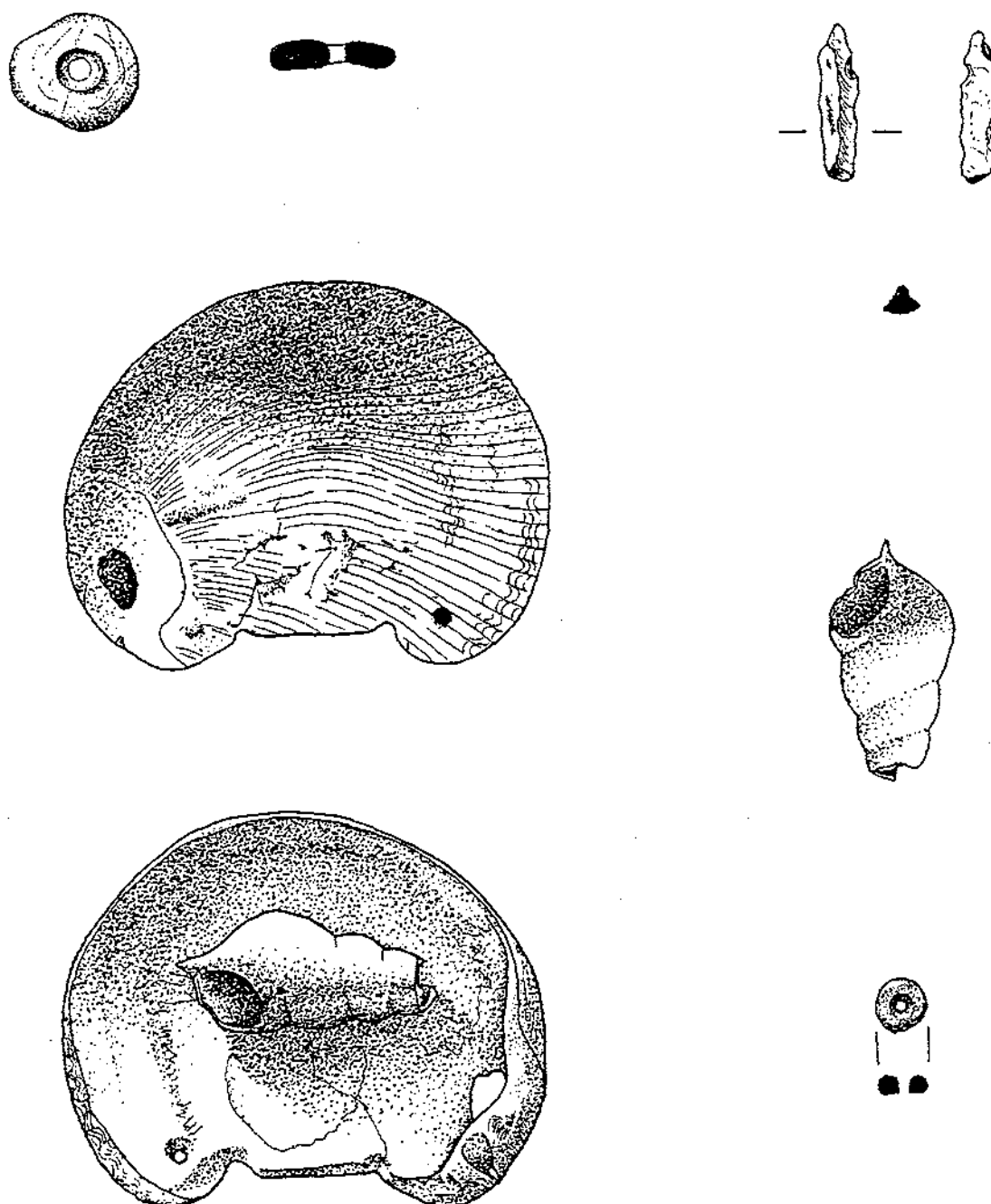


Figure 3: Artifacts recovered from Burials 5-7, PU-2, Tolok Group. (a) Small, biconically-drilled slate pendant; (b) Chert drill fragment; (c) Modified marine shell (*Spondylus princeps*) with four drill holes for suspension (pubic shield?); (d) Modified freshwater snail (*Pachychilus indiorum*) with broken apex; (e) Small, biconically-drilled marine shell (*Spondylus* sp.) disk

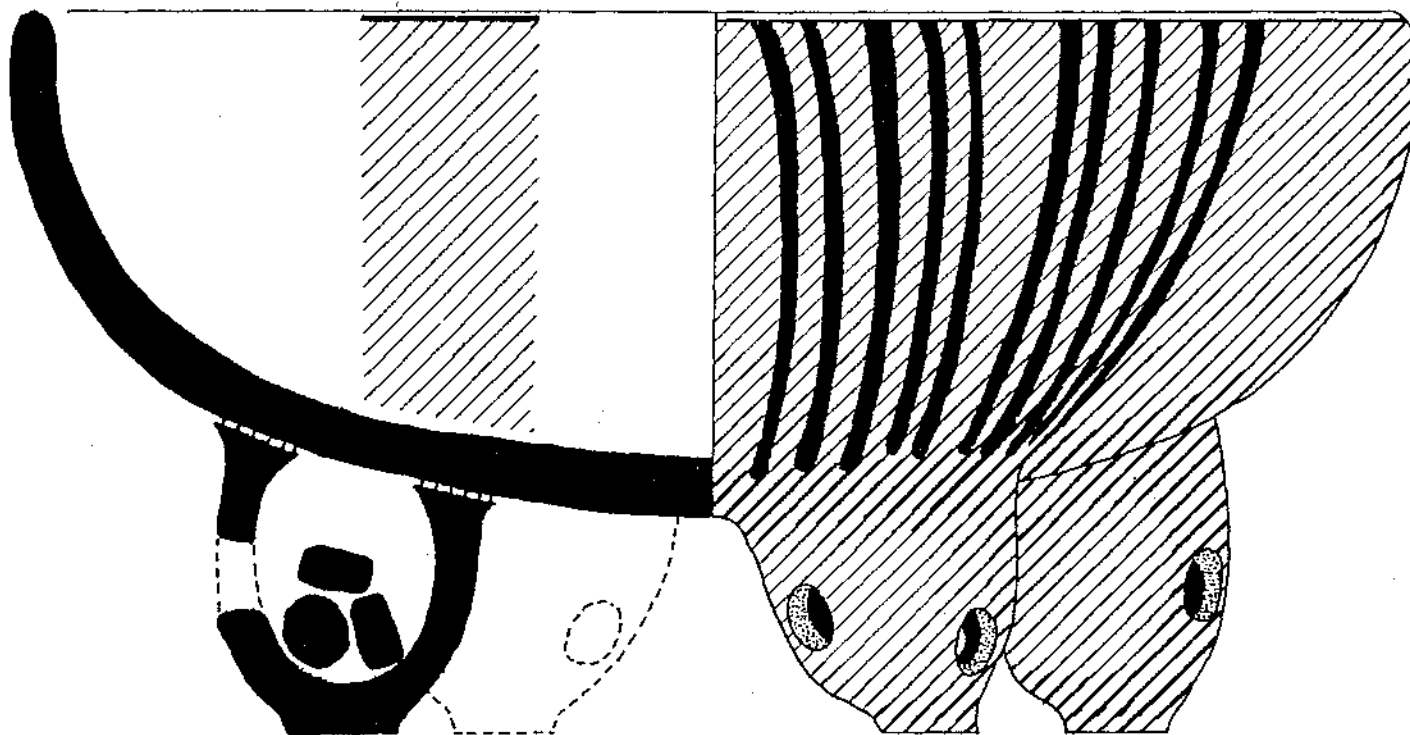


Figure 4: Aguacate Orange: Aguacate Variety bowl (Vessel #1)
with tetrapodal supports recovered from Burial 8,
PU-2, Tolok Group (77% actual size).

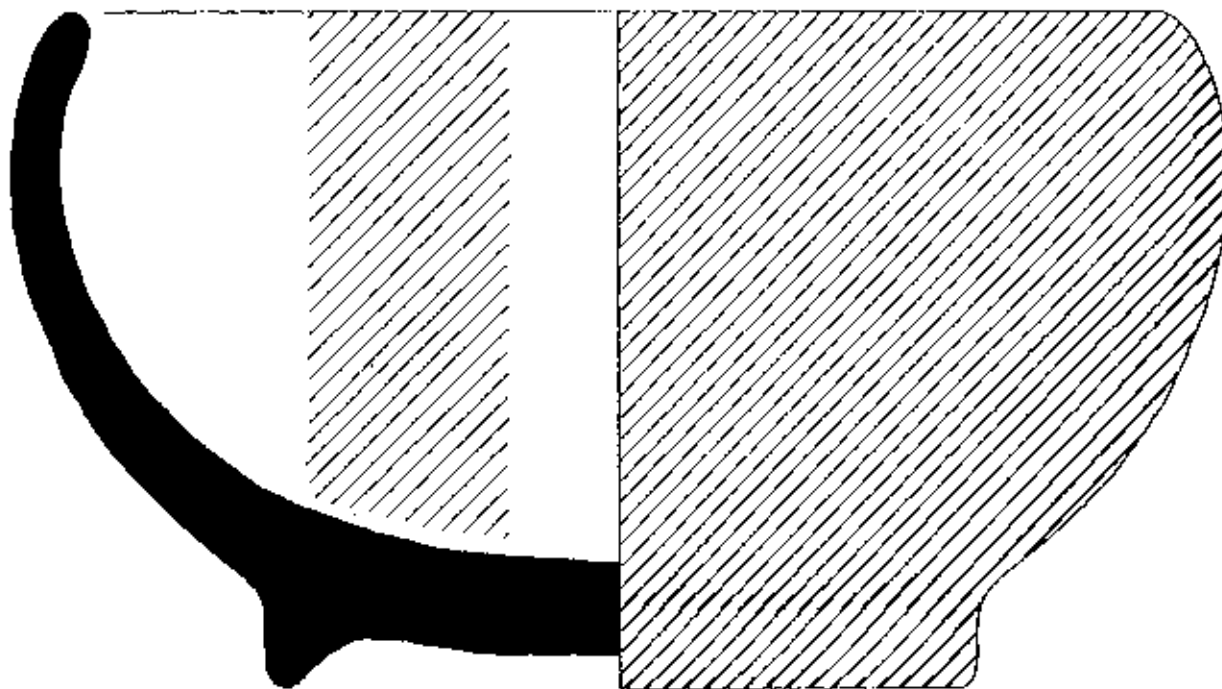


Figure 5: Aguacate Orange: Aguacate Variety bowl (Vessel #2)
with ring base recovered from Burial 8, PU-2,
Tolok Group (77% actual size).

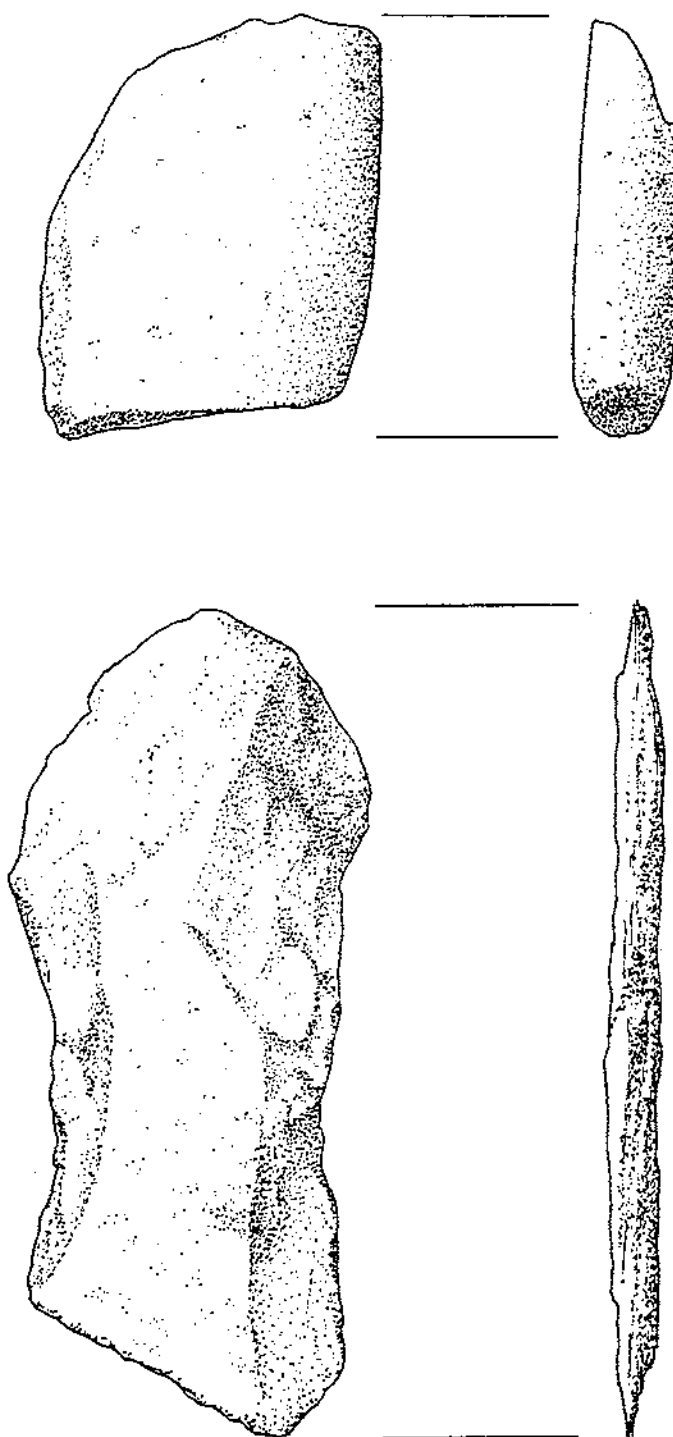


Figure 6: Artifacts recovered from Burial 9. (a) Worked piece of greenstone (celt?); (b) Unmodified piece of slate.

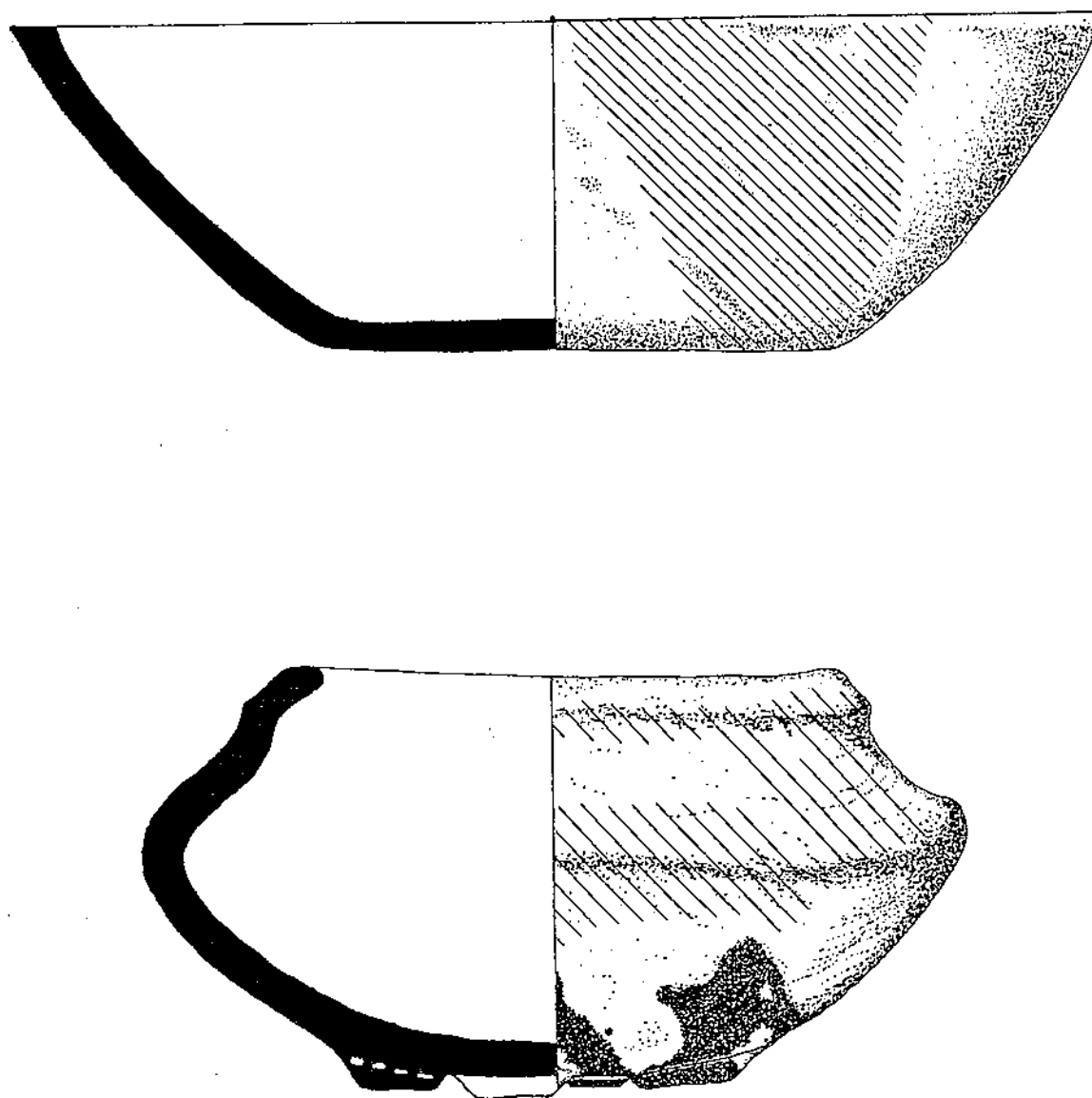


Figure 7: Pottery vessels recovered from Burial 10, PU-2, Tolok Group. (a) Sierra Red: Variety Unspecified bowl (77% actual size); (b) Sierra Red: Variety Unspecified tecomate (77% actual size).

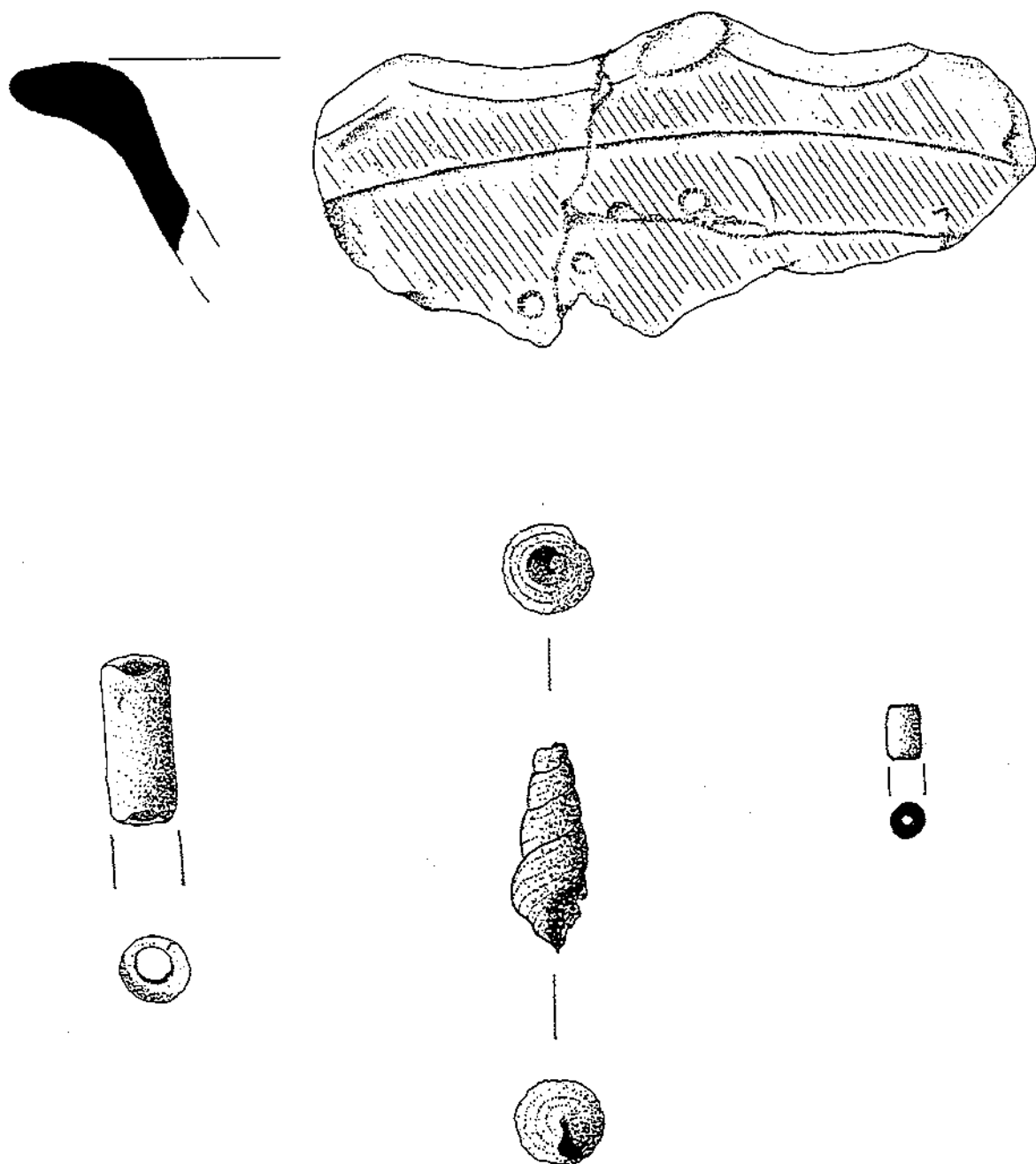


Figure 8: Artifacts recovered from Burial 10 and Cache 2, PU-2, Tolok Group. (a) Rim sherd of a Laguna Verde Incised vessel (77% actual size); (b) Small, polished jadeite tubular bead (scale 2:1); (c) Modified freshwater snail (*Pachychilus indiorum*) with broken apex; (d) Small, jadeite tubular bead.

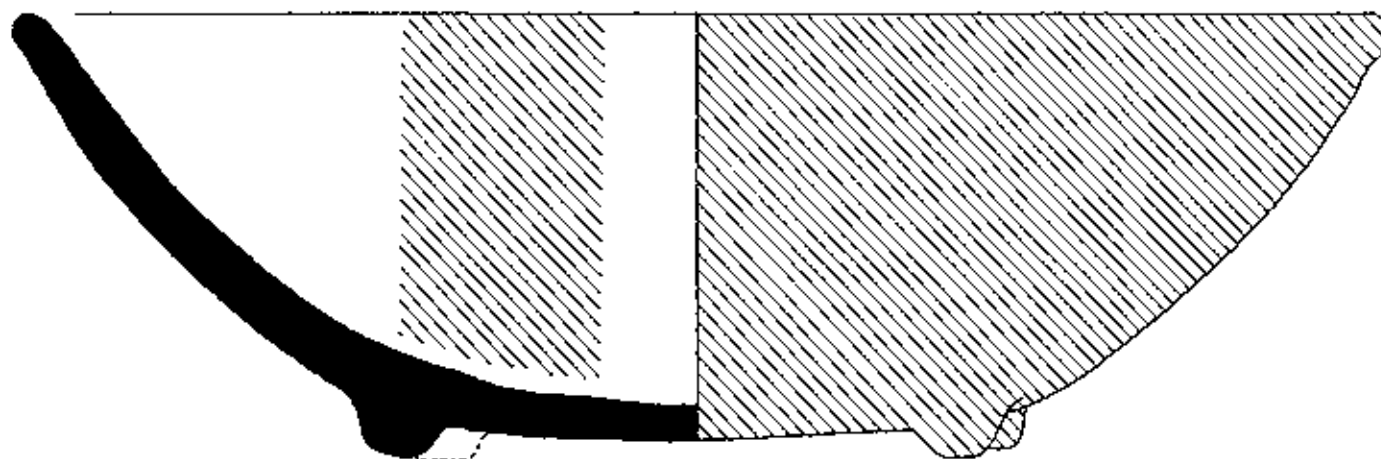


Figure 9: Aguacate Orange: Aguacate Variety bowl with
tetrapodal supports recovered from Cache 3, PU-2,
Tolok Group (77% actual size)

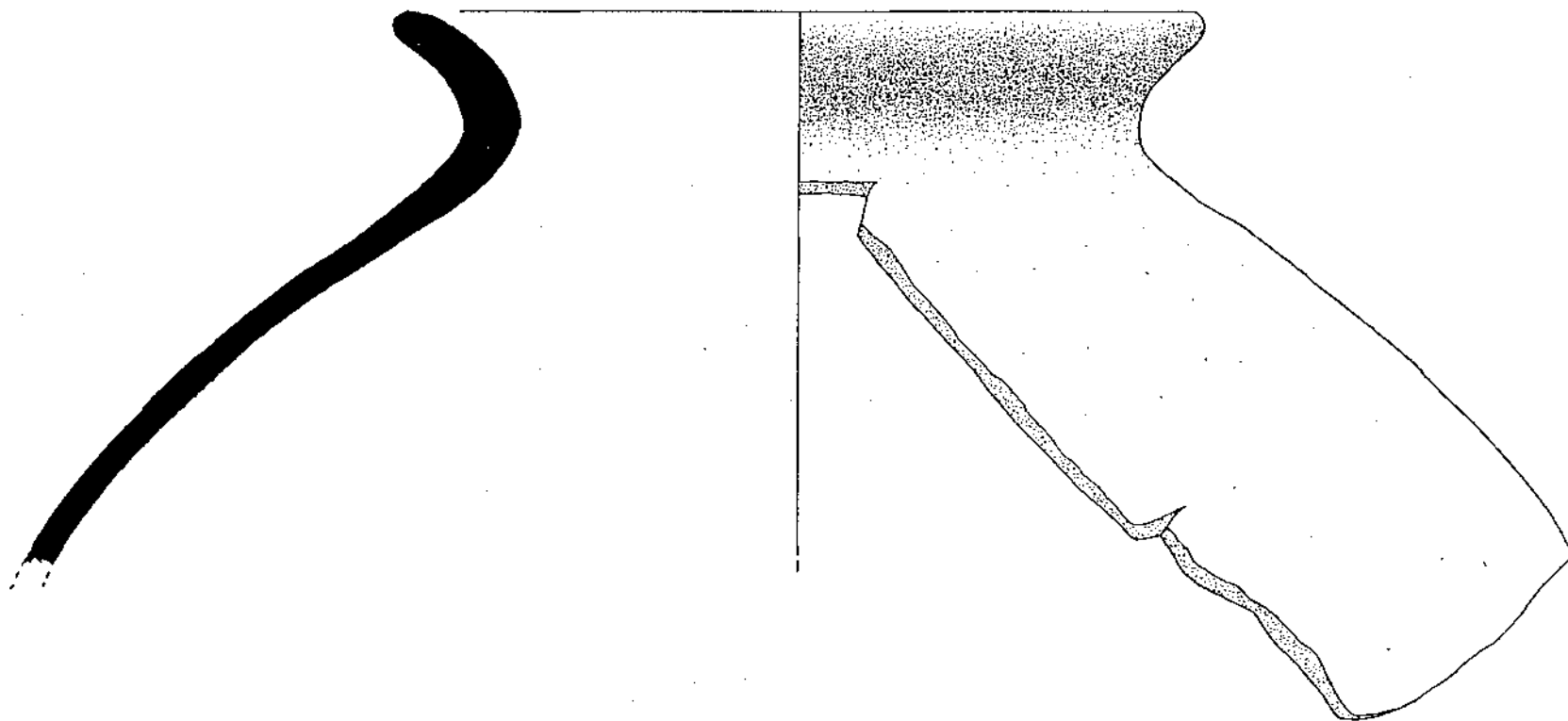


Figure 10: Paila Unslipped: Variety Unspecified jar
recovered from Cache 4, PU-2, Tolok Group (65%
actual size).

THE FAUNAL REMAINS RECOVERED FROM STRUCTURES 14 AND 15,
TOLOK GROUP, CAHAL PECH, BELIZE

by

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Introduction

This report summarizes the analysis of the faunal remains recovered during excavations at the Tolok group, Cahal Pech. More specifically, this report discusses only those remains recovered from two Middle Formative circular structures (Structures 14 and 15) found during plaza excavations, and investigated between 1992-1994 (Powis 1993, 1994; Powis and Hohmann 1995). Although faunal remains were recovered from several structures at Tolok, including several thousand from a late Middle Formative midden located at the base of Str. 1 (Stanchly 1995), the results of the analysis of these remains are not included in the context of this report (see also Stanchly 1993).

The majority of the faunal sample comes from secondary construction fill contexts. As such, little can be said regarding the utilization of the remains by the Tolok inhabitants in respect to specific patterns of food consumption and ritual use. It is valid to assume that the remains (excluding those from primary burial contexts) were once consumed as food items. The modification seen in almost all of the freshwater snail remains is typical of that associated with intentional breakage in order to extract the meat, and supports their identification as food refuse. No discernible patterns are evident which might suggest the inclusion of these remains as anything but food refuse and subsequent use as construction fill material. Although several circular structures have been reported in the Maya lowlands (see Powis, Chapter 2), the author is unaware of any complete listing of faunal remains, or analysis of any such material associated with these structures. Inter-site comparisons are therefore not made.

Shell remains constitute the vast majority of the assemblage. This is most likely an artifact of preservation. Faunal remains recovered from within burial contexts are not reported on detail (see Powis 1993, 1994, and Powis and Hohmann 1995 for a discussion of these remains).

Faunal remains were recovered from contexts dating to the Middle Formative through Late Classic periods. For the purposes of this report, these remains are treated as a single assemblage. Faunal remains are listed only by number of identifiable specimens (NISP).

The Faunal Remains

A total of 3597 faunal remains were recovered during the course of three field seasons from within Str. 14 and 15. The majority of the sample comes from Structure 14. These included several thousand land snails which are not discussed within this report, as their collection was undertaken to gain an understanding of landscape disturbance and habitat preference of these snails. They are not culturally significant.

The faunal sample presented for analysis, excluding most land snails, included remains of the local freshwater snail *jute* (*Pachychilus* sp.) and the bivalve *Nephronaias ortmanni*. Specimens of *Pomacea flagellata* (the apple snail) were also identified. Two local snails, *Orthalicus* sp. and *Euglandina* sp., were also identified. Although these may be intrusive, their presence is noted and reported on since their size suggests that their inclusion in the assemblage may be noteworthy. This, however, remains to be investigated.

Coastal shell remains were also present, including specimens of queen conch (*Strombus gigas*) and some identified only to the family level (Strombidae). One marginella shell (*Prunum apicinum*) and tusk shell remains (*Dentalium* sp.) were also identified. Some shells, believed to be marine, have yet to be identified and include specimens of what, tentatively, may be a yellow mussel (*Brachidontes citrinus*), and either a tiger lucine (*Codakia orbicularis*), or venus clam (*Chione cancellata*). These shells have been recovered from several sites in varying contexts (see Andrews 1969). Worked shell remains will not be discussed here.

Vertebrate remains were few and included specimens of white-tailed deer (*Odocoileus virginianus*), rat and/or mouse bones (Family Cricetidae), parrotfish (Family Scaridae) and specimens believed to represent red brocket deer (*Mazama americana*). Other specimens could only be identified to the class level. All except the Cricetidae remains were consumed by the Maya. The presence of parrotfish suggests access to coastal resources, although the exact nature of this access is unknown (see Powis and Hohmann 1995 and Stanchly 1995 for discussion). The parrotfish element (a dentary) and fragments of a white-tailed deer auditory bulla, were associated with Burial 9 in Structure 15.

Table 1: List of Taxa

<u>Taxa</u>	<u>NISP</u>
<i>Pachychilus indiorum</i>	1517
<i>Nephronaias</i>	739
<i>Nephronaias ortmanni</i>	509
<i>Pachychilus glaphyrus</i>	328
<i>Euglandina</i> sp.	141
<i>Orthalicus</i> sp.	99
<i>Pomacea flagellata</i>	92
<i>Pachychilus</i> sp.	78
Strombidae	46
<i>Pomacea</i> ?	12
Mammalia	7
Strombidae?	6
Other Shell	4
<i>Dentalium</i> sp.	3
<i>Euglandina</i> ?	3
Cervidae	2
<i>Orthalicus</i> ?	2
<i>Strombus gigas</i>	2
<i>Nephronaias</i> ?	1
<i>Odocoileus virginianus</i>	1
<i>Pachychilus</i> ?	1
<i>Prunum apicinum</i>	1
Rodentia	1
Scaridae	1
<i>Strombus</i> ?	1
TOTAL	3597

Remains of the freshwater snail *jute* included both individuals of the species *Pachychilus indiorum*, and *Pachychilus glaphyrus*, as well as some only identifiable to the genus level (*Pachychilus*). The majority of the sample were members of *P. indiorum*. Almost all of the *jute* were modified for meat extraction and were either snapped along the apex, or simply punctured. Both of these methods facilitated extraction of the snail. A complete and thorough quantification of *jute* modification remains to be undertaken. It is hoped that this will be carried out in the near future.

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APPENDIX D

TECHNOLOGICAL ANALYSIS OF PRECLASSIC MAYA OBSIDIAN ARTIFACTS
FROM THE TOLOK GROUP, CAHAL PECH, BELIZE

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Table 1. Contextual Distribution and Description of Preclassic Maya Obsidian Artifacts from Structures 14 and 15, PU-2, Tolok Group, Cahal Pech, Belize.

Artifact	Level	Length	Width	Thick	Color	Post-Det	Description
CP-940-058	3	0.83	1.1	0.22	1	None	Medial fragment
CP-940-061	3	0.99	0.96	0.21	1	None	Medial fragment; trapezoid cross
CP-940-062	3	2.34	1.13	0.26	1	None	Medial fragment; trapezoid cross
CP-940-063	3	0.56	1.35	0.27	5	Yes	Medial fragment; transverse flake removal lateral edge
CP-940-064	3	1.19	0.93	0.35	2	Yes	Medial fragment; transverse flake removal lateral edge
CP-940-065	3	0.8	1.04	0.18	1	None	Debris
CP-940-066	3	1.28	0.71	0.32	1	Yes	Medial fragment; burin removal; bipolar battering prox. & dist. ends
CP-940-067	3	1.18	0.77	0.18	1	None	Distal fragment; trapezoid cross

Table 1. Continued.

CP-940-068	3	0.88	1.0	0.23	1	Yes	Medial fragment; notch on lateral edge with transverse flake removal
CP-940-069	4	1.49	0.79	0.19	1	None	Proximal fragment; plain platform with lipping; trapezoid cross
CP-940-106	3	2.88	1.05	0.23	1	None	Medial fragment; trapezoid cross
CP-940-109	3	0.63	1.0	0.23	4	Yes	Medial fragment; transverse flake removal lateral edge
CP-940-120	3	0.59	1.25	0.15	2	None	Medial fragment
CP-940-121	3	0.91	0.85	0.26	4	None	Bipolar debris
CP-940-122	3	2.12	1.03	0.24	1	None	Medial fragment; trapezoid cross
CP-940-126	3	0.86	1.04	0.36	1	Yes	Medial fragment; burin removal lateral edge; bipolar battering
CP-940-127	3	3.26	0.95	0.27	2	None	Medial fragment; trapezoid cross
CP-940-128	3	1.77	1.11	0.32	5	None	Distal fragment; triangular cross
CP-940-129	3	1.26	0.91	0.27	2	None	Medial fragment; trapezoid cross
CP-940-130	3	2.79	1.29	0.31	1	None	Medial fragment; trapezoid cross
CP-940-131	3	1.11	1.0	0.16	1	None	Medial fragment; trapezoid cross
CP-940-132	3	7.81	1.16	0.27	1	None	Proximal fragment; trapezoid cross; platform lipping
CP-940-168	4	4.38	1.19	0.26	1	None	Proximal fragment; plain platform and lipping; trapezoid cross
CP-940-169	4	2.05	0.97	0.23	4	None	Distal fragment; trapezoid cross
CP-940-170	4	1.57	1.0	0.3	1	None	Proximal fragment; plain platform with lipping; trapezoid cross
CP-940-171	4	2.3	1.15	0.37	4	None	Medial fragment; triangular cross

Table 1. Continued.

CP-940-184	2	0.94	0.52	0.1	1	None	Small bipolar debris; heavy rippling
CP-940-236	3	1.54	1.21	0.24	5	None	Distal fragment; trapezoid cross; some cortex present
CP-940-237	3	1.81	1.06	0.3	5	Yes	Distal fragment; burin removed prox. end; transverse flake removal
CP-940-238	3	2.29	1.17	0.29	1	Yes	Medial fragment; transverse flake removal from lateral edge
CP-940-239	3	1.27	1.32	0.32	4	Yes	Distal fragment; retouch on extreme distal end
CP-940-240	4	2.74	1.09	0.28	4	None	Medial fragment; trapezoid cross
CP-940-241	4	1.12	1.31	0.42	5	None	Distal fragment; triangular cross; crazing from burning
CP-940-242	4	1.32	0.66	0.15	1	None	Debris; possibly bipolar debris
CP-940-243	4	0.28	1.03	0.29	5	Yes	Medial fragment; transverse flake removal lateral edge; battering
CP-940-251	4	1.15	1.17	0.14	1	None	Small non-blade flake; possibly initial blade
CP-940-252	3	0.35	0.59	0.18	5	Yes	Medial fragment; transverse flake removal lateral edge
CP-940-254	3	1.91	1.02	0.23	5	Yes	Medial fragment; transverse flake removal lateral edge
CP-940-255	4	1.84	1.19	0.24	1	None	Medial fragment; trapezoid cross
CP-940-269	3	1.28	1.49	0.27	4	Yes	Proximal fragment; plain platform with lipping; transverse flake lateral edge
CP-940-274	3	2.21	1.33	0.3	4	None	Medial fragment

Table 1. Continued.

CP 940-289	2	2.55	1.35	0.3	1	None	Proximal fragment; plain platform with lipping; trapezoid cross
CP-940-294	4	1.37	1.01	0.25	1	None	Medial fragment; trapezoid cross
CP-940-310	4	2.21	1.04	0.26	4	None	Medial fragment; trapezoid cross
CP-940-312	4	1.39	0.34	0.19	2	None	Bipolar debris
CP 940-313	4	1.3	0.8	0.22	4	None	Medial fragment; three dorsal ridges
CP 940-317	4	1.85	0.78	0.21	1	None	Medial fragment; triangular cross; great deal of wear on lateral edges
CP-940-324	2	1.86	1.46	0.31	5	None	Medial fragment; trapezoid cross
CP 940-325	4	3.01	1.21	0.17	1	Yes	Medial fragment; burin break both edges
CP-940-331	4	2.32	0.88	0.27	1	None	Proximal fragment; crushed platform; trapezoid cross
CP-940-332	4	1.18	0.93	0.21	1	Yes	Medial fragment; burin removal lateral edge; battering prox. end
CP-940-333	4	0.91	0.92	0.31	5	Yes	Medial fragment; 2 transverse flakes removed from lateral edges
CP-940-334	4	0.65	1.0	0.37	4	Yes	Medial fragment; transverse flake removal from lateral edge
CP-940-335	4	0.62	1.02	0.3	5	Yes	Medial fragment; 2 transverse flakes removed from lateral edges
CP-940-336	4	1.48	0.76	0.13	2	None	Medial fragment; trapezoid cross
CP-940-337	4	1.31	0.75	0.27	1	Yes	Proximal fragment; triangular cross; plain platform with lipping
CP-940-338	4	1.21	0.58	0.21	1	None	Bipolar debris; heavy rippling and battering on both ends

Table 1. Continued.

CP-940-339	4	0.96	1.2	0.27	4	None	Proximal fragment; plain platform with lipping; trapezoid cross
CP-940-341	4	0.79	1.02	0.21	4	None	Medial fragment; trapezoid cross
CP-940-352	4	2.78	1.4	0.27	4	None	Proximal fragment; crushed platform; trapezoid cross
CP-940-353	4	2.06	0.23	0.26	4	Yes	Burin spall from blade
CP-940-358	4	2.05	1.25	0.26	2	None	Medial fragment; trapezoid cross
TK-93-20	5	1.35	0.74	0.19	2	None	Medial fragment; trapezoid cross
TK-93-13	3	1.14	0.82	0.23	5	Yes	Medial fragment; 2 transverse flakes removed lateral edges
TK-93-18	4	2.21	1.15	0.22	1	None	Proximal fragment; plain platform with lipping; trapezoid cross
TK-93-25	4	2.08	0.6	0.2	5	None	Distal fragment
TK-93-26	4	1.78	0.96	0.25	5	None	Medial fragment; triangular cross
TK-93-7	4	0.88	1.11	0.21	1	Yes	Medial fragment; trapezoid cross; transverse flake removal; burin removed
TK-93-14	3	1.26	1.21	0.35	5	Yes	Medial fragment; transverse flake removal lateral; burin removed; trapezoid cross
TK-93-4	4	3.76	1.45	0.34	5	None	Proximal fragment; triangular cross; plain platform; cortex on lateral edge
TK-93-16	4	1.52	1.19	0.33	1	None	Medial fragment; triangular cross
TK-93-9	3	2.16	1.28	0.29	1	Yes	Distal fragment; transverse flake removal lateral edge

Table 1. Continued.

TK-93-15	4	0.97	0.47	0.25	5	Yes	Medial fragment; burin removed from lateral edge
TK-93-3	4	1.16	1.09	0.21	1	None	Debris
TK-93-6	4	3.27	1.05	0.19	5	Yes	Blade; triangular cross
TK-93-MID	4	3.08	0.65	0.25	1	None	Distal fragment
TK-93-2	2	1.21	1.05	0.26	5	Yes	Medial fragment; transverse blade removal lateral edge
TK-93-5	2	1.05	1.4	0.36	1	Yes	Proximal fragment; plain platform with lipping; transverse flake removal lateral edge
TK-93-8	2	3.1	1.76	0.44	1	None	Distal fragment; dorsal flake scars bidirectional
TK-93-12	2	0.96	0.76	0.16	1	None	Medial fragment; trapezoid cross
TK-93-3	2	3.6	1.26	0.22	2	None	Proximal fragment; plain platform with lipping

Note: Post-Det = Post-Detachment; all measurements are in centimeters (cm)

Color Categories:

1. Banded Clear
2. Speckled Clear
3. Hazy Banded Clear
4. Cloudy Clear
5. Clear