

**BELIZE VALLEY  
ARCHAEOLOGICAL RECONNAISSANCE  
PROJECT**



**PROGRESS REPORT  
OF THE 1996 FIELD SEASON**

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## **Introduction: The Ninth Season of Investigations**

**By Jaime J. Awe**

The 1996 field season of the Belize Valley Archaeological Reconnaissance (BVAR) Project was conducted under the auspices of Trent University of Peterborough, Ontario, Canada, and funded by a research grant from the Social Sciences Research Council of Canada administered by the Trent Committee on Research. Permission to conduct the archaeological investigations outlined below was provided by Acting Commissioner of Archaeology Mr. Brian Woodeye and the Minister of Tourism and the Environment of the Government of Belize. We are grateful to all these individuals and institutions for their assistance, encouragement and financial support.

In 1996 the BVAR Project focused research attention at three major loci in the Cayo District of western Belize: Baking Pot, Pacbitun, and Actun Tunichil Muknal.

### **BAKING POT:**

Investigations at Baking Pot concentrated within Group 1 of the site core, on a formal patio cluster, or plazuela, to the south of Group II, and in the sustaining area of the center. Investigations within the site core at Plaza 2 of Group I were supervised by Jim Aimers and Jennifer Piehl of Tulane University. Excavations of the formal patio were directed by Allan Moore (Belize Department of Archaeology and University of London) and focused on the Atalaya Group. Investigations of the settlement and sustaining area were conducted by Jim Conlon (University of London).

The research conducted by Aimers was directed towards understanding the nature of abandonment processes in the site core, to ascertain the form and function of terminal phase architecture, and to confirm that the southern extensions of Strs. E and F represented a third ballcourt at the site. Previous observations by J.Awe had noted that, contrary to Ricketson's (1931) map of Group 1, the southern extensions of these two structures appeared to be separate but adjoining architecture to Strs. E and F and that they probably formed a ballcourt. Research by Jim Conlon in 1995 had tested Awe's hypothesis and provided tentative confirmation of his observation. It was thus hoped that more extensive excavations by Aimers would provide conclusive evidence that the southern extensions of Structures E and F did indeed represent a third ballcourt at the site.

Piehl's research focused on the excavation and analysis of all burials exposed by the 1996 operations. Her contribution to this volume describes and discusses the interments discovered during the season. Two of the burials she describes were discovered at the base of Str. E in Plaza II of Group 1 and were assigned to the Early Classic period of occupation at the site. Two other burials were recovered in Str. 4 of the Atalaya Group and were dated to the Terminal Classic period. A fifth burial was salvaged from a small mound that had been partially destroyed by road construction along the Central Farm - Spanish Lookout road.

In 1996 Conlon continued recording settlement density in the periphery of the Baking Pot

site core, he began to assess the relationship between population density and consumption requirements within the present survey limits, and to demarcate an area for declaration as a future archaeological reserve.

In the Atalaya Group, A. Moore tested all four mounds of the formal patio and conducted extensive excavations of Str. 4. The primary focus of his research was, and continues to be, to determine structure form and function, to compare wealth, status, and access to material goods between patio clusters in the periphery of Baking Pot, and to determine whether distance from the site core may have influenced the latter characteristics.

## **PACBITUN**

Research at Pacbitun sought to complete investigations of the previous Preclassic Maya Project under the direction of Paul Healy and Jaime Awe. The research in 1996 was supervised by Bobbi Hohmann and Terry Powis and concentrated on the recording of Middle Formative architecture and the level of craft specialization during the Preclassic period. The latter was concerned particularly with the production of marine (conch) shell beads at the site.

## **ACTUN TUNICHIL MUKNAL**

The investigations at Actun Tunichil Muknal were preliminary in nature and were directed towards the assessment of the logistics concerned with a long term archaeological project in the upper Roaring Creek valley. Despite the exploratory nature of this research, the project did manage to survey and map several areas with cultural materials in the cave. These areas included the stela chamber and a much larger passage that was designated the burial chamber. The former contained two slate monuments supported by several large and small speleothems, a fragmented modeled carved vase, a carved slate tablet, and approximately five ceramic vessels. The burial chamber contained more than 100 ceramic vessel, several artifacts, and approximately 12 burials.

During investigations of Actun Tunichil Muknal, two previously unrecorded cave sites were discovered and reconnoitered. The first was located approximately three kilometers to the northeast of Tunichil Muknal and given the name of Tarantula Cave. This small cavern contained a slate stela similar in size to the two discovered in Actun Tunichil Muknal. Although Tarantula Cave had been fairly sacked (by looters) prior to our visit, ceramic remains observed at the site indicated that it was used predominantly during the Late Classic period. The second cave site was discovered approximately 500 meters south of Tunichil Muknal.

The second cave site discovered in 1996 was given the name of Actun Uayazba Kab (Handprint Cave) following the discovery of four, negatively painted, hand prints within a small chamber. Beside the hand prints and a few other painted designs, Uayazba Kab also contains several carved and partly sculpted anthropomorphic faces, carved footprints, and petroglyphs. The corpus of art in Actun Uayazba Kab is unique in Belize (there has been no previous report of negatively painted handprints in Belizean caves) and future research at the site will concentrate on the recording of this and other data within the cave.

The following papers provide a preliminary but detailed description of the investigations outlined above. It is also important to note that while the assistance of several institutions has been

acknowledged above, the contributions of several other individuals were crucial to the successful operation of the 1996 season of the Belize Valley Archaeological Reconnaissance Project. We are particularly grateful to Mr. Daniel Silva, the Venus Store and the staff of the Cahal Pech Village for providing us with first rate accommodations and a headquarters for our operations. Mrs. Ada Awe Wood continued to assist with logistical concerns, and Mark Bejos and Mr. Orlando (Chief) Habet kept project vehicles on the road. Our Belizean students, Laura Sierra and Mark August, were exceptional in their professionalism and gave our foreign students a rare opportunity to interact with their local peers. Mr. Michael Waight and the staff of the Snooty Fox prepared our daily lunches and Mrs. Lucky Kameka continued to be my kind and understanding landlord. Finally we are particularly grateful to the staff at the Ministry of Agriculture research station in Central Farm for allowing us access into the site and for regular logistical support.

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# **An Analysis of Ancient Maya Consumption Requirements and Agricultural Production Potential at Baking Pot, Belize**

**By**

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## **Introduction**

In 1994 the anticipated large scale survey of Baking Pot by BVAR was commenced (Conlon 1995). Ideally, the compilation of a substantial survey database would elucidate morphological variation in the surface features that could aid in formulating a research strategy for comparatively analyzing social, political and economic factors that could account for any organizational variability (Conlon 1993:206, and 1995:83, see also Ashmore et al. 1993:18; Ashmore 1994:10). The 1994 survey program was further augmented by operations in 1996. Since the survey program at Baking Pot continues to be an ongoing process, continually requiring reassessment of site organizational variability, several notes need to be made concerning the original survey report on the 1994 field season before commencing with the specific focus of this paper.

First, the results suggesting diminishing mound density radiating out from the core of Baking Pot (Conlon and Awe 1995:69, Conlon 1995:92) contrasts with the initial reports of sustained to increased mound density patterning at Xunantunich (Yaeger and Connell 1993:190). This difference may be a reflection of the locales, riverine versus acropoline, that Baking Pot and Xunantunich respectively occupy. Future survey at Baking Pot from North Caracol Farm (NCF) in the east (Conlon 1995:97; Golden and Conlon 1996), to Esperanza in the west, should provide a more comprehensive database to better compare and assess settlement differentiation between Baking Pot, Xunantunich, and other sites in the Belize Valley.

Second, it was suggested that the western limit of survey for Baking Pot be set at the town of Esperanza, some three kilometers west of the site core, owing to the probability that ancient settlement may have been severely obscured by modern construction (Conlon 1995:83). Reconnaissance in 1996, primarily by Mark August, indicates that substantial clusters of mounds, many looted to one degree or another, exist in the presently less densely inhabited strip of land between Esperanza and the Belize River north of town. While the original intent of the survey program at Baking Pot was to capture and present a continuous picture of settlement emanating from the site core, a section, or zone survey conducted along this strip in future could provide a significant complement to the settlement database of Baking Pot.

Finally, a plazuela similar to the Bedran Group (e.g., Conlon et al. 1995) was reconnoitered on a ridge top in the southwest section of Esperanza, on the lands of Senor Herbert Rubotuh. A single GPS reading indicates this group, the Esperanza Group, is located roughly 48 degrees east

of north, and 4.5 kilometers distant from Cahal Pech, placing it on a direct line roughly equidistant between Cahal Pech and Baking Pot. This heretofore unknown settlement component underscores the predictive power of Garber et al.'s (1993:21) cosmological settlement system of the upper Belize Valley. These types of sites, such as Warrie Head (Willey et al. 1965:312), Floral Park (Glassman et al. 1995; Willey et al. 1965:310), and Nohoch Ek (Coe and Coe 1956; Willey et al. 1965:315), need to be more intensively explored through excavation to understand their social, political, and economic roles within the evolution and organization of the upper Belize Valley's ancient settlement system (Conlon et al. 1994:224).

The augmentation of previous researchers settlement survey in 1994 and 1996 is represented by the most recently prepared plan of Baking Pot (Figure 1). The BVAR survey program needs to address questions concerning small discrepancies between the surveys of the 1920's (Ricketson 1931: Plate 1) and 1950's (Willey et al. 1965:302, Figure 177), in regards to both orientation and size of some mounds within Group I and II. These discrepancies should be dealt with during the 1997 field season. Still, the plan presented here should not change drastically from this initial form. Any changes may merely be the degree to which the rectification of distorted surface features of the present day mounds can be expected to accurately reflect orientation of the ancient subsurface features (i.e. structures). Since discrepancies center upon the monumental architecture of the core of Baking Pot the present plan is arguably sufficient to initially address factors such as mound and population density, and the concomitant relationship of subsistence.

## **Settlement**

### *Introduction*

The survey extent of Baking Pot to date has been divided into a number of Zones (A - E) for a more discerning look into potential variability of settlement (see Figure 1). These zones are defined by a number of different criteria including creeks, and the ridges that bound these waters (e.g., B from C, C from E, C from D, and D from E), cultural physical boundaries such as the main sacbe connecting Groups I and II (e.g., A from B), the southern limits of the 1950's survey (e.g., A from E), and the proximity to the two main centers of civic proportions (e.g., A and B, and A, B, and E). All five zones (A - E) together generate a total for the extent of ancient settlement at the site of Baking Pot surveyed to date.

Total mound count in all zones is utilized to generate both mound density and population estimates. No consideration for non-residential function, nor non-contemporaneity of occupation, has been accounted for in these calculations. Furthermore, although estimates of ancient Maya household members are commonly considered to range from 4 to 5.6 people (e.g., Rice and Culbert 1990:18), a single factor of 5 persons per mound is employed in generating population estimates for simplicities sake. Estimates from Cahal Pech (Figure 2), core excluded, are included in the table for intersite comparative purposes. Fortunately, the areal extent of the Cahal Pech data presented here (156.15 hectares) closely approximates the survey to date at Baking Pot (154.86), so that intersite comparison of neighboring civic centers is readily facilitated over a similar areal extent.

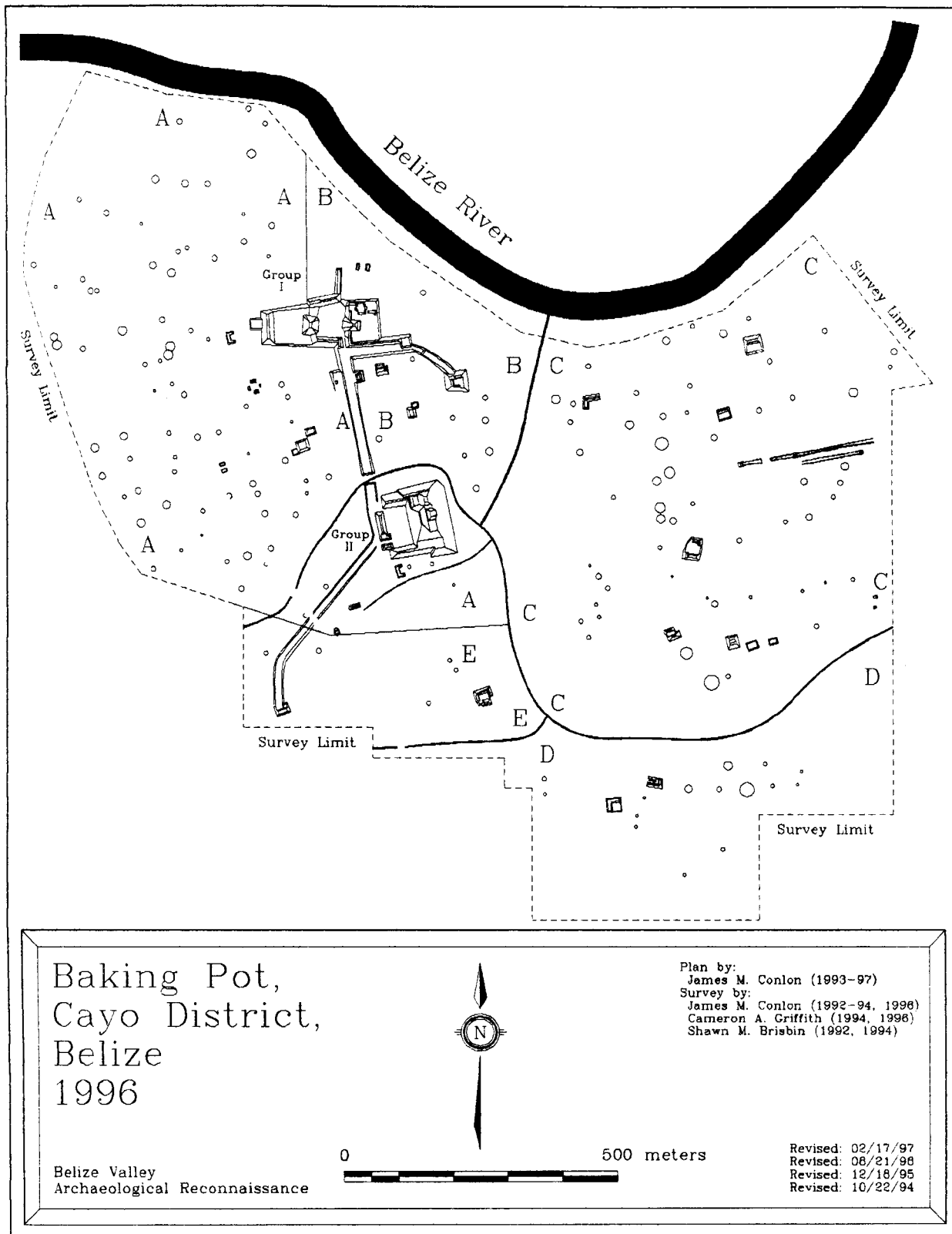


Figure 1: Plan of Baking Pot showing zone divisions.



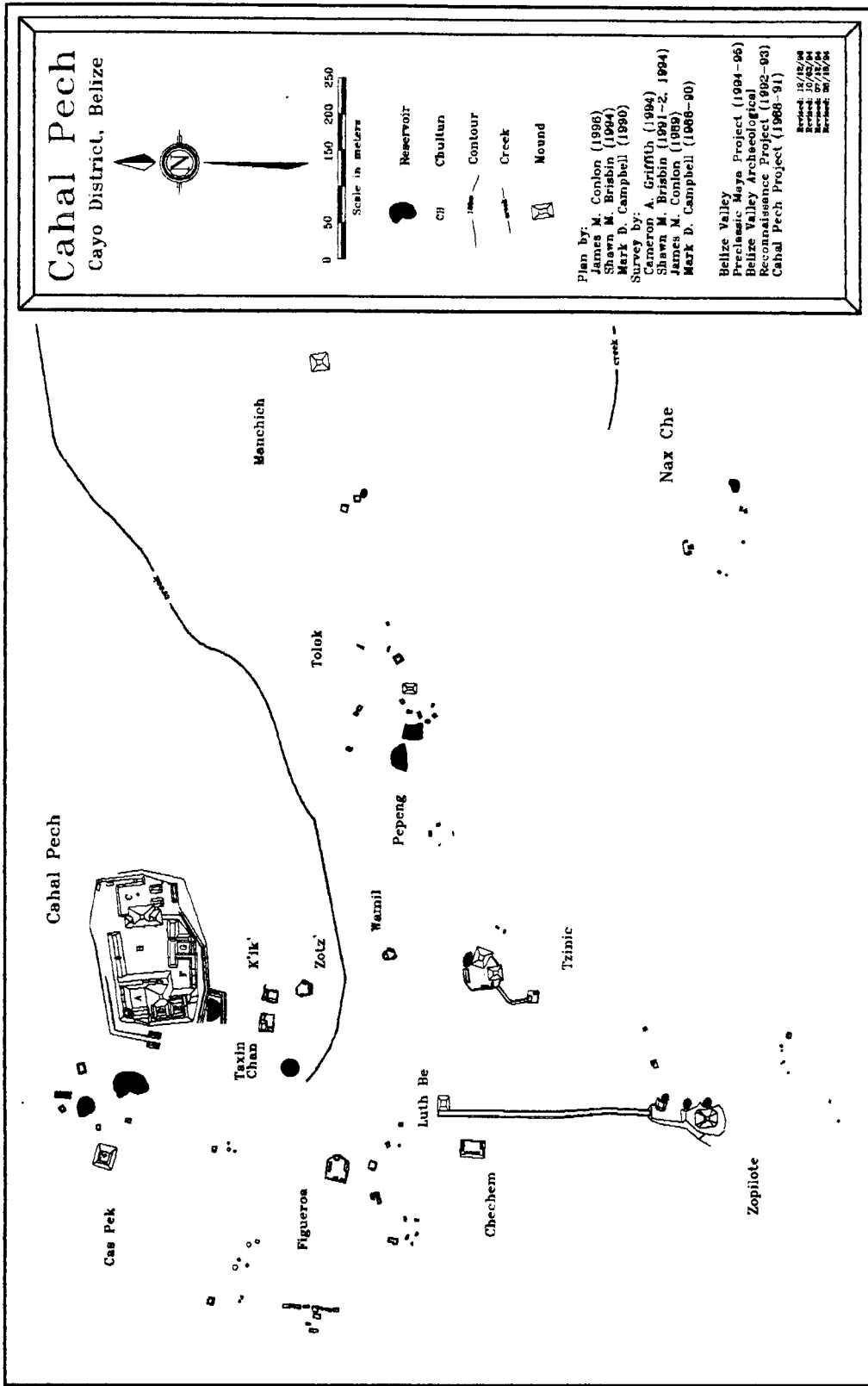


Figure 2: Plan of Cahal Pech, Belize (revised 12/12/96).

## Results

Individual zone breakdown shows Zone A at Baking Pot possess both the highest number of mounds (107) and mound density (1.98/hectare) (Table 1). Together with the less dense Zones B (1.07/hectare) and E (1.09/hectare), considered to form the larger "urban" center by their proximal association to Groups I and II, this larger zone (A, B, E) still displays an above average mound density for the site overall (1.70/hectare versus 1.47/hectare). The reason for below average mound densities in Zones B and E are not readily apparent. However, it seems reasonable to suggest that Zone A, and even those of B and E, may represent an urban settlement component at Baking Pot (see Conlon and Awe 1995:72). Interestingly, Zone C, at 1.41 mounds/hectare, almost exactly duplicates the average mound density for the surveyed extent of Baking Pot (1.47/hectare). Zone D, in comparison, displays a well below average mound density (0.89/hectare), possibly representing the limit in areal extent of the civic center and the transition to a more rural settlement component.

Zone	Area	Mounds	Population	Mound Density	Population Density
<i>A</i>	53.98	107	535	1.98	9.91
<i>B</i>	14.93	16	80	1.07	5.36
<i>A, B</i>	68.91	123	615	1.79	8.93
<i>A, B, E</i>	78.97	134	670	1.70	8.48
<i>C</i>	52.52	74	370	1.41	7.05
<i>D</i>	22.39	20	100	0.89	4.47
<i>E</i>	10.06	11	55	1.09	5.47
<i>A, B, C, D, E</i>	154.86	228	1,140	1.47	7.36
<i>Cahal Pech</i>	156.15	112	560	0.72	3.60

Table 1: Mound and Population Densities, Baking Pot (by zone) and Cahal Pech (total), Belize

Area = hectares

Population = Mounds X 5

Mound Density = Mounds/Area

Population Density = Population/Area

In regards to diminishing mound densities this zone (D) may be more representative of a drop in settlement that correlates more closely with increased distance from the Belize River than from increased distance from the site core itself. In other words, rather than a radial diminishment of settlement density from the core of Baking Pot there is a tendency for settlement to cluster more closely to the Belize River (Willey 1956:110; Bullard 1960:370; Willey et al. 1965:24 and 571). Continued survey to the eastward along the Belize River towards North Caracol Farm may reveal

an extended, sustained, mound density figure closer to the average (1.47 mounds/hectare) for the entire site of Baking Pot.

## **Subsistence**

### *Introduction*

Mound densities and population estimates provide primary data that can prove useful for preliminary comparative analysis between sites within the region of the Belize Valley. The generation of agrarian potential estimates and sustenance requirements provide further evidence for 1) examining the ability of any group of people to provide for themselves as a measure of self sufficiency and 2) as a cross check upon population estimates themselves.

As with population estimates of the previous section there has not been any adjustment made for factors which may affect estimates of both agricultural production and food requirements. Ideally, estimating agricultural production is enhanced with the identification of suitable arable land, such that soil analysis, and where hillside modification is evidenced, indicates, as well as the availability of such land. Factors affecting availability of arable land relate most often to accessibility and include physical and cultural barriers, such as proximity and ownership respectively.

It is assumed, based on the mound density of Zone D, that the areal extent of the civic center of Baking Pot, or site center limits of the greater "metropolitan" area, has been reached by the BVAR survey, at least in the south. That is to say, based upon reconnaissance beyond the survey limits, there is as near complete a picture of Baking Pot "proper" as will be attained, barring minor updates vis a vis the expected future survey of NCF to the east. To maintain simplicity, and for the purposes of this study, total areal extent of all zones at Baking Pot are considered as potentially "arable" for growing solely maize, even that which is occupied by mounds.

Two agricultural production estimates, the Kirkby and Roosevelt productivity estimates, employed by Spencer et al. (1994), are similarly employed in the analysis presented here. The Roosevelt factor of 1,800 kilograms/hectare, hereafter referred to as maximum production or Yield B, represents both modern milpa maize production observances (Spencer et al. 1994:135), and similar sized La Betania phase (A.D. 650-1,200) maize cobs recovered from archaeological investigations, in Venezuela. The Kirkby factor, a minimum production estimate (Yield A), accounts for the potentially smaller (63%) maize cobs grown around the Late Classic period in the Valley of Oaxaca (Kirkby 1973:126; Spencer et al. 1994:135; also see Flannery 1976:94-95). These production values are multiplied by the area of each zone defined at Baking Pot to generate potential yields for one crop in one year.

Factors affecting estimates of sustenance requirements factors can also be quite involved. The affect a mixed farming strategy that may have been employed at Baking Pot has on estimates of consumption is not as well understood (e.g., Spencer et al. 1994:122). Neither are the practices of hunting, fishing and gathering as a supplement (or complement) to ancient dietary habits. However, maize consumption estimation of individual requirements is better understood, and, as employed in the analysis presented here, corresponds to roughly 220 kilograms of maize per person, per year (Spencer et al. 1994:135; see also Coe and Diehl 1980:78; Flannery 1976:106). When consumption estimates are divided into the agricultural production potential (Yield A and Yield B) there are generated results of an estimated population (Population A and B) able to be

sustained within the area available to be farmed. These results can be compared with the original population estimates based upon the settlement data (i.e., actual mounds surveyed).

*Results*

The results indicate that at conservative production (Yield A) the areal extent of both Zone B (77:80) and E (52:55) come close to potentially meeting their individual associated population but, when considered with Zone A (A, B, and E), fall well short of their total estimated population (407:670) (Table 2). In other words, even combined with the relatively less densely inhabited Zones B and E, the immediate civic center population is not able to be sustained by farming in this area, and thus, should be considered representative of a highly populated "urban" zone. Zone C is similarly unable to feasibly maintain its inhabitants through farming in this zone (271:370), though apparently not as severely stressed as the immediate urban population of Zones A, B, E (27%:39%). To this end, Zone C is at least "suburban." Only Zone D is potentially capable of sustaining its estimated inhabitants (115:100). In comparison, Zone D appears to be more on the limits, or margin, of greater Baking Pot, and likely represents, as indicated earlier, a "rural" population segment of Baking Pot.

Zone	Area	Yield A	Yield B	Population A	Population B	Population
A	53.98	61,213	97,164	278	442	535
B	14.93	16,931	26,874	77	122	80
A, B	68.91	78,144	124,038	355	564	615
A, B, E	78.97	89,552	142,146	407	646	670
C	52.52	59,558	94,536	271	430	370
D	22.39	25,390	40,302	115	183	100
E	10.06	11,408	18,108	52	82	55
A,B,C,D,E	154.86	175,611	278,748	798	1,267	1,140
Cahal Pech	156.15	177,074	281,070	805	1,278	560

Table 2: Estimates of Potential Agricultural Yields and Sustainable Population

- Yield A = Area X 1,134 kilograms
- Yield B = Area X 1,800 kilograms
- Population A = Yield A/220 kilograms
- Population B = Yield B/220 kilograms
- Population = Mounds X 5

Maximum production potential (Yield B) paints a much different picture of Baking Pot. Both Zone A (442:535) and Zones A, B (564:615) appear to be somewhat overpopulated in

relation to agricultural production. However, the estimated population of the previously identified urban zone (Zones A, B, and E) would seem to be nearly manageable at maximum production (646:670). Even in this light it is still reasonable to identify at least Zone A as an urban settlement component at Baking Pot. Overall, the appearance is one whereby the totality of land could support the total estimated population (1,267:1,140), with Zones B, C and E possibly able to provide a tiny surplus of foodstuffs, but Zone D still appears to be able to muster a higher production potential, or greater surplus, than any other zone.

The contrast of an overpopulated Baking Pot versus a surplus producer is best revealed in the summary provided in Table 3. Minimum production indicates that Baking Pot may have been overpopulated by as much as 43 percent (342/798) in its terminal phase of occupation, and underpopulated by 10 percent (127/1267) at maximum production. Even with a population correction downwards to 4 people per mound (Population 2 = 912), Baking Pot is still in a production shortage position of 13 percent at minimum production (114/912). Again, it is unclear to what degree hunting, fishing and gathering may have alleviated agricultural food shortages so the question remains, was Baking Pot potentially overpopulated in its terminal occupation phase?

	<b>BP A</b>	<b>BP B</b>	<b>BP A</b>	<b>BP B</b>	<b>CP A</b>	<b>CP B</b>
<i>Population 1</i>	798	1,267	798	1,267	805	1,278
<i>Population 2</i>	1,140	1,140	912	912	560	560
<i>Shortage (-)</i>	342	-	114	-	-	-
<i>Surplus (+)</i>	-	127	-	355	245	718
<i>Percentage (%)</i>	-30	11	-13	39	44	128

Table 3: Summary of Estimated Yields and Population for Baking Pot and Cahal Pech, Belize.

BP A and CP A = Kirkby estimates

BP B and CP B - Roosevelt estimates

Population 1 = estimated population based on yield potential

Population 2 = estimated population based on 5 (1,140 and 560) or 4 (912) per mound

Shortage (-) = population unable to be supported by estimated yield

Surplus (+) = additional population able to be supported by estimated yield

Percentage (%) = percent of Population 2 able(+) or unable(-) to be supported by yield

## Discussion

On its own the Baking Pot data would seem not to satisfactorily address the question

concerning its agricultural self-sufficiency. One could likely argue as many pros as cons for accepting one data set over the other (i.e., Yield A or B and Population A or B). To clarify questions concerning Baking Pot's self-sufficiency in food production a lengthy and complicated analysis would include attempts at factoring in more and more progressively complex sets of variables to try and develop a more precise picture of the relationship between population, food production, food procurement, and consumption. It is not within the scope of this preliminary analysis to proceed with such an analysis, however, an initial clarification of Baking Pot's sustenance self-sufficiency may be revealed in a comparison with similar data from Cahal Pech.

Even at minimum production (805:560) Cahal Pech appears to be underpopulated by 245 persons in its terminal phase of settlement. It may appear as though Cahal Pech was in a position to supply surplus foodstuffs to its eastern neighbor, Baking Pot. Still, Cahal Pech would have been able to only partially alleviate the stress of the 342 people not able to be sustained by minimum production within the limits of Baking Pot. Additional surplus production may have been available from Cahal Pech when one considers its areal extent was much larger than presented in Table 2. The 156.15 hectares used to define Cahal Pech falls mainly within the southern limits of the civic center of Cahal Pech. Survey to the south indicates sporadic settlement until reaching Zubin (e.g., Iannone 1996), some 2.15 kilometers to the south, near the Macal River. Progressing a similar distance north from the Cahal Pech civic center there is evidence for sporadic settlement until reaching the banks of the Mopan River where the Melhado Group (Willey and Bullard 1956), and nearby Ch'um Group (Powis et al. 1996), supply evidence for denser settlement. These areas, and a similarly less densely inhabited western zone, indicate considerable tracts of land were available for growing crops that could provide surplus foodstuffs at Cahal Pech, and adequately meet shortfalls at Baking Pot. But was supplying foodstuffs to Baking Pot a function of the ancient inhabitants of Cahal Pech?

A more extensive examination of Baking Pot would indicate the answer is "no" to the last question. The lower population density at Cahal Pech may represent the inability to farm lands nearer the civic center here, and the necessity to grow and transport crops from slightly more distant zones. The inhabitants of Cahal Pech, while likely self-sufficient foodwise, may have had to exploit a larger region to support their needs. Similarly, Baking Pot may also have exploited a much larger region than presently surveyed. Reconnaissance immediately to the west of Zone A of Baking Pot indicates a declining mound density (Conlon 1995:96), and Zone D similarly represents the beginnings of a rural area. Thus, areas just west and south of the survey limits may have been available for growing crops. More significantly, at nearly two kilometers southwest of Baking Pot, the Bedran Group likely represents a zone where considerable effort was expended to produce surplus foodstuffs during the Late Classic (A.D. 700-900), possibly as much as would be required by 435 people, that could easily offset the maximum deficiency (302) for all of Baking Pot surveyed to date (Conlon and Awe 1995:72). Such surplus resources have typically been considered destined for civic center use (e.g., Spence et al. 1994:137; Harrison 1990:110; Freidel and Scarborough 1882:149). Thus, as at Cahal Pech, farming outfields from one to three kilometers distant from the civic center was likely a significant strategy where suitable arable land was in short supply in the immediate environs of the civic center. Outfield farming at Baking Pot, where a densely populated urban and suburban zone clusters in the arable lands nearest the civic

center, was likely a crucial strategy employed to support inhabitants at this site.

## **Conclusions**

The preliminary analysis presented here demonstrates the necessity for cross checking intrasite data against intersite comparisons, and the significance of adequately defining a variety of different settlement zones to aid in discerning not only site limits but also various zones of differential resource use. Reconnaissance beyond the survey limits of Baking Pot was beneficial in understanding its probable site limits, urban-rural zones, and zones of potential agricultural production. Comparison with the more widely surveyed site of Cahal Pech suggested the high density, potentially overpopulated, center of Baking Pot was likely supported by a strategy of extensive use of lands beyond the presently surveyed limits of settlement.

At Baking Pot, where dense urban and suburban zones near the civic center can be identified, outfield farming undertaken in the alluvial plain on its outskirts, and further out in the hinterlands of Bedran, and possibly even in the foothills a kilometer south of Zone D, indicates Baking Pot was potentially self-sufficient with regards to meeting the sustenance requirements of its terminal phase occupants. Outfields likely enabled inhabitants of the immediate civic center to cultivate small garden plots immediately adjacent to their houses that produced important foodstuffs other than maize (see Spencer et al. 1994:122). Furthermore, outfield farming would enable a portion of the population to engage in specialist pursuits, such that may have been undertaken by the inhabitants of the urban settlement zone (Zone A) immediately west of the civic center.

The extensive survey program employed at Cahal Pech (Awe and Brisbin 1993; Brisbin 1995), and also at Xunantunich (Ashmore et al. 1993:19), provide a much broader and clearer picture of the variability in settlement surrounding the major centers of the Belize Valley. While intersite comparison is difficult, owing to the differing research objectives and strategies employed at various sites in the Belize Valley (Ashmore 1994:12), the growing abundance of data from sites in this region should eventually comprise an extensive database for compiling a comprehensive regional synthesis of ancient Maya settlement organization. The example provided here, however rudimentary, provides a modicum of comparability between Baking Pot and Cahal Pech, and clues as to which direction research strategies should evolve at the aforementioned site.

## **Acknowledgments**

My gratitude is extended to Commissioner Brian Woodeye, and all the members of the Belize Department of Archaeology, for their continued support of our project. I must also recognize the staff of the Central Farm Agricultural Station for their cooperation in enduring our disruptive presence, and Senor Herbert Rubotuh for permitting us access to the Esperanza Group. Mark August, mostly on his own time, was responsible for the majority of reconnaissance undertaken during this past field season, which broadened the settlement picture in and around Esperanza, and provided new survey objectives. Drs. James Garber and David Glassman, of the Belize Valley Archaeological Project, provided invaluable assistance at the Esperanza Group for which I am appreciative. Survey at Baking Pot this season was facilitated by project members Cameron Griffith, Jim Aimers, and Alan Moore, and, most generously, by our colleague from the

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# **Preliminary Investigations of Architecture in Plaza 2 of Group 1 at Baking Pot, Belize**

**By**

**James J. Aimers  
Tulane University**

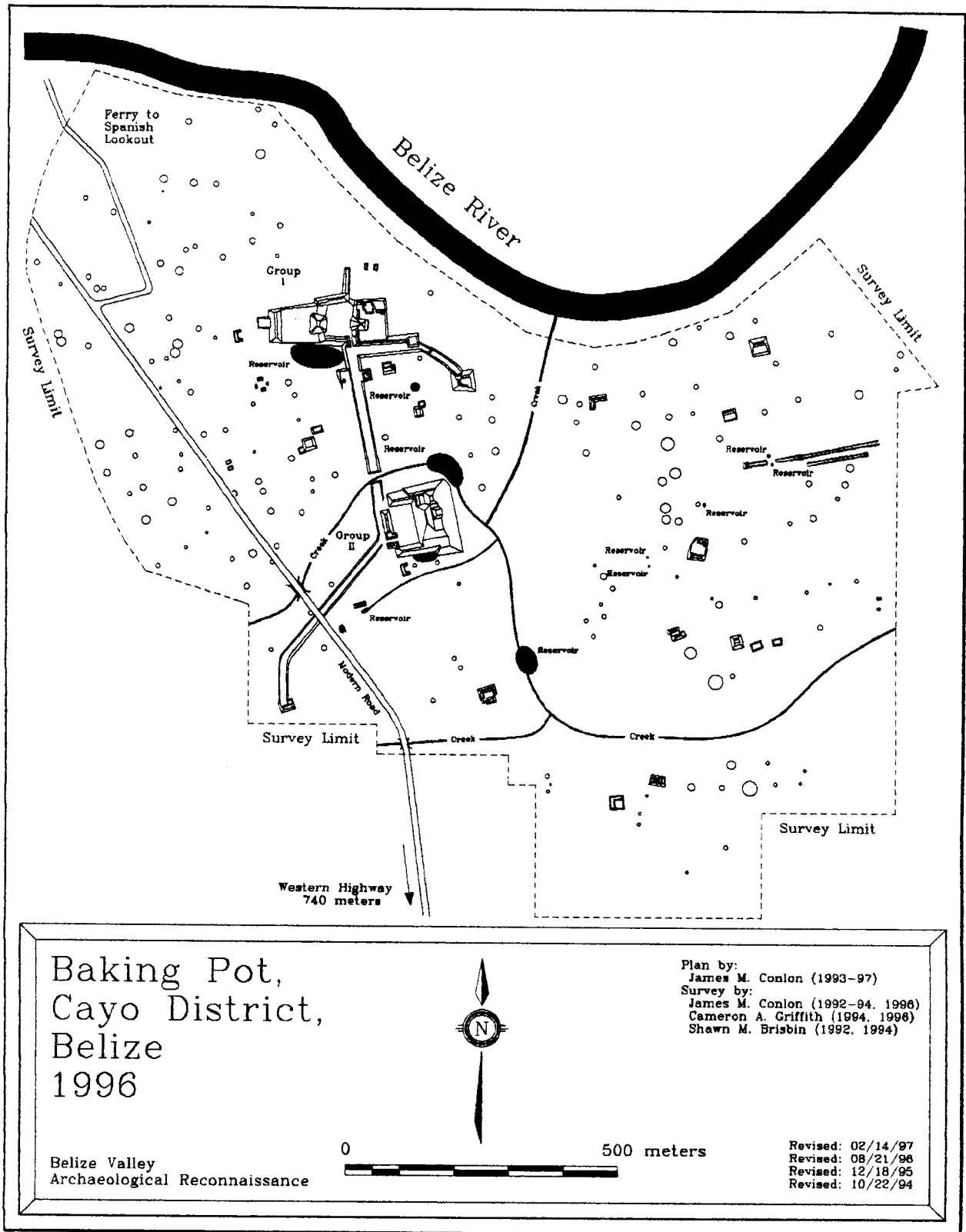
## **Introduction**

Since 1988, members of the BVAR project have excavated at a major hilltop center (Cahal Pech) a small hilltop center (Zubin) and numerous small sites on the periphery of Cahal Pech and Baking Pot (e.g. Aimers 1993; Cheetham et al. 1995; Cheetham et al. 1994; Conlon 1993a, 1993b; Conlon et al. 1995; Hohmann and Hartnett 1995; Iannone 1993; Lee and Awe 1995; Powis and Hohmann 1995). Recently, the project has begun to synthesize data collected at these sites into hypotheses regarding the function and interaction of Upper Belize Valley sites in the context of regional settlement hierarchy (e.g., Awe 1992; Healy and Awe 1995). As part of this regional approach, BVAR undertook investigations in Plaza 2, Group I at Baking Pot in 1996. Two questions were isolated regarding the function and meaning of Plaza 2: First, was the south entrance of Plaza 2 formed by a ballcourt? Secondly, do structures E and B constitute an example of the "E-Group" architectural form found throughout the Maya area? A concomitant objective was to determine the state of preservation of the terminal architecture in order to assess the potential for both further research and consolidation.

## **Previous Research at Baking Pot**

The two distinct groupings that form the Baking Pot site core follow the familiar Maya pattern of large temple-pyramids and range structures defining interconnected plazas (Figure 1). Group I consists of three relatively open plazas and comprises roughly the northern half of the site, nearest the Belize River. Plaza 2 of this group is the focus of these investigations, defined on its north-south axis by two range structures, and on its east-west axis by structures E and B, which resemble an E-Group. E-Groups are monumental architectural assemblages in which a tripartite eastern structure faces a single structure to the west (see Aveni and Hartung 1989). Group II is connected to Group I to the south by a causeway. Group II is more imposing than Group I and consists of a single suite of buildings arranged around a comparatively enclosed plaza.

The first significant work at Baking Pot was Ricketson's 1924 investigations in Group 1, which included trenching of Str. G, clearing around the adjacent buildings J and M, investigation of a small house mound, and small exploratory excavations of Structures B and E (the western and eastern structures of Plaza 2). Ricketson (1931:5) noted that although he trenched Str. B to a depth of two meters, he encountered no masonry or worked stone and the excavations were discontinued. Similarly, a trench placed on the central axis of Str. E revealed "no trace of a floor or of a building" (Ricketson 1931:5), concluding that "apparently neither Mound B nor Mound E



Baking Pot,  
Cayo District,  
Belize  
1996

Belize Valley  
Archaeological Reconnaissance



0 500 meters



Plan by:  
James M. Conlon (1993-97)  
Survey by:  
James M. Conlon (1992-94, 1996)  
Cameron A. Griffith (1994, 1996)  
Shawn M. Brisbin (1992, 1994)

Revised: 02/14/97  
Revised: 08/21/96  
Revised: 12/18/95  
Revised: 10/22/94

Figure 1: Plan of Baking Pot survey up to 1996.

ever served as substructures for stone buildings, and there is scarcely room on the conical top of either for even a wooden or 'bush' house" .

The bulk of Ricketson's report deals with detailed descriptions of the skeletal material removed from Mound G in Plaza 3 of Group 1. Fifteen burials were removed from trenches that totaled less than five square meters and Ricketson (1931:7) concluded that "the mound was intended primarily for burial and not a substructure for a building." Later, Willey et al. (1965:303) noted a "suspicion that Mound G actually was a substructure platform" based on their work at other sites in the area.

As part of a larger regional study, Willey et al. (1965) analyzed ceramics from Ricketson's investigations, and placed excavation units in the centre of Plaza 1 of Group I and in three house mounds 100 to 200 meters west of Group I (Willey et al. 1965:305). This analysis revealed that the site was occupied from at least the Late Preclassic until the early Postclassic (Willey et al. 1965:308; Bullard and Bullard 1965:9). The long occupation history of the site is generally attributed to its riverine location and the fertility of alluvial soils. There were some New Town types collected during excavations in Group I, suggesting that the plaza was in use into the Postclassic, possibly as a pilgrimage site after abandonment (Bullard and Bullard 1965:21). The latest ceramics collected in the relatively extensive excavations at Group II were Late Classic Spanish Lookout types, suggesting that this group was abandoned earlier than Group I.

The next project at Baking Pot was Bullard and Bullard's 1961 investigations in Group II. The goals of these excavations were the "collection of exhibitable artifacts" and the excavation of Str. A, which at 17 meters in height, and 40 by 50 meters at its base, is the largest pyramid at the site (Bullard and Bullard 1965:11). Excavation revealed a complex substructure built up in masonry-faced terraces with cornices and basal moldings. There was evidence of a central stairway, two small frontal rooms, and a collapsed, unvaulted superstructure. Remains of an earlier, buried structure were also found in summit excavation. The Maya remodelled Str. A frequently, and the dates for these modifications and the earlier structure were exclusively Late Classic.

More recent research by Conlon (e.g. 1993a, 1993b) has concentrated at the peripheral Bedran Group at Baking Pot. In 1994, Cheetham tested the causeway which connects Group I and II, concluding that it was likely constructed in the Spanish Lookout Phase (A.D. 680-880) (Cheetham 1995:36). In the summer of 1995, Conlon opened two excavation units in the alley between Mounds E and F which flank the entrance to Plaza 2 of Group I to determine if they form a ballcourt. One unit was placed in the possible alley area, and the other was placed near the west face of Str. E-South, suspected to be the east side of this ballcourt. Conlon (1996:50) concluded that the entrance to Group 1 was formed by a ballcourt, but the limited excavations provided few clues as to its design.

### **Research Design and Organization**

Prior to excavation in 1996 Structures E and B in Group I were recognized to resemble an E-Group. E-Groups have been defined primarily on the basis of morphology since the first assemblage was excavated at Uaxactun in the 1920's (see e.g. Aimers 1993; Aveni and Hartung 1989; Blom 1924; Chase 1983; Cohodas 1980; Laporte and Fialko 1990; Ricketson 1928a,

1928b; Ruppert 1940). A single pyramidal structure, often quadrilaterally symmetrical, faces a tripartite structure to the east. The orientation of the assemblages is hypothesized to be such that the sun rises behind the southeastern structure on the winter solstice, behind the northeastern structure on the winter solstice, and behind the central eastern structure on the summer solstice (e.g., Ricketson 1928a; Coggins 1988). These characteristics have been the crux of discussions on the E-Group, but they have also been problematic.

Most importantly, the accuracy of these assemblages in marking solar positions cannot be determined by plans and maps for the following reasons: 1) Site plans are often conventionalized and rectified representations of surface features rather than excavated architecture, 2) True north is often not explicitly differentiated from magnetic north on site plans, 3) Parallax makes the position of the observer a key element in establishing the accuracy of alignments (observation from a meter up-down or north-south on the eastern face of the western structure of an E-Group visually alters the position of the sun significantly), 4) The altitude of the horizon must be taken into account, since in some cases the horizon is high enough in relation to the eastern structures to nullify any astronomical marking the buildings might have provided. For these reasons, determining the accuracy of an E-Group to mark solstices and equinoxes has until recently only been possible through on-site observation (Aimers 1992), or, by using astronomical data collected at excavated sites.

The tripartite Str. E was selected as a focus for the first season of excavations to answer questions concerning its potential role as an indicator of important astronomical events. In particular, we wanted to determine the overall design of the tripartite structure, whether superstructures were present, and the exact orientation of these structures for accurately modelling in a Computer Assisted Drafting (CAD) program. The research design developed was an attempt to reconcile the need for fairly extensive lateral exposure of the terminal architecture with the practical constraints of limited time and labor pool. Because full exposure of these buildings was impossible given these constraints, a program of test-pitting was planned for key areas of the building.

The three parts of Str. E were termed Str. E-North, E-Central, and E-South. Because funding for consolidation has not yet been acquired, and preservation of the buildings was an important consideration, relatively non-destructive excavations were made only to the latest recognizable architecture, mostly near the base of the structure. Deeper excavations were made directly in front on Str. E, rather than into it. This strategy limited diachronic investigations but was successful in providing a good sense of the preservation of the buildings and in assessing their design concerning E-Groups and ballcourts.

Excavation units were numbered consecutively from 1 regardless of the building on which each was located (Figure 2). Extensions to units were given separate unit numbers as well. Using this system, 29 units were created ranging in size from 0.5 X 0.5 m to 2 x 5 m. Each level within each excavation unit, as well as significant deposits (i.e., caches), were assigned a Lot number, running consecutively from the first day of excavations. Using this system, each level in the 29 units

Excavation Units,  
1996 Field Season,  
Baking Pot,  
Belize



Plan by:  
James M. Conlon (1993-97)  
Survey by:  
James M. Conlon (1992-94, 1996)  
Cameron A. Griffith (1994, 1996)  
Sean M. Brisbin (1992, 1994)

Revised: 01/29/97  
Revised: 06/21/98  
Revised: 12/18/95  
Revised: 10/22/94

Belize Valley  
Archaeological Reconnaissance

0 25 meters

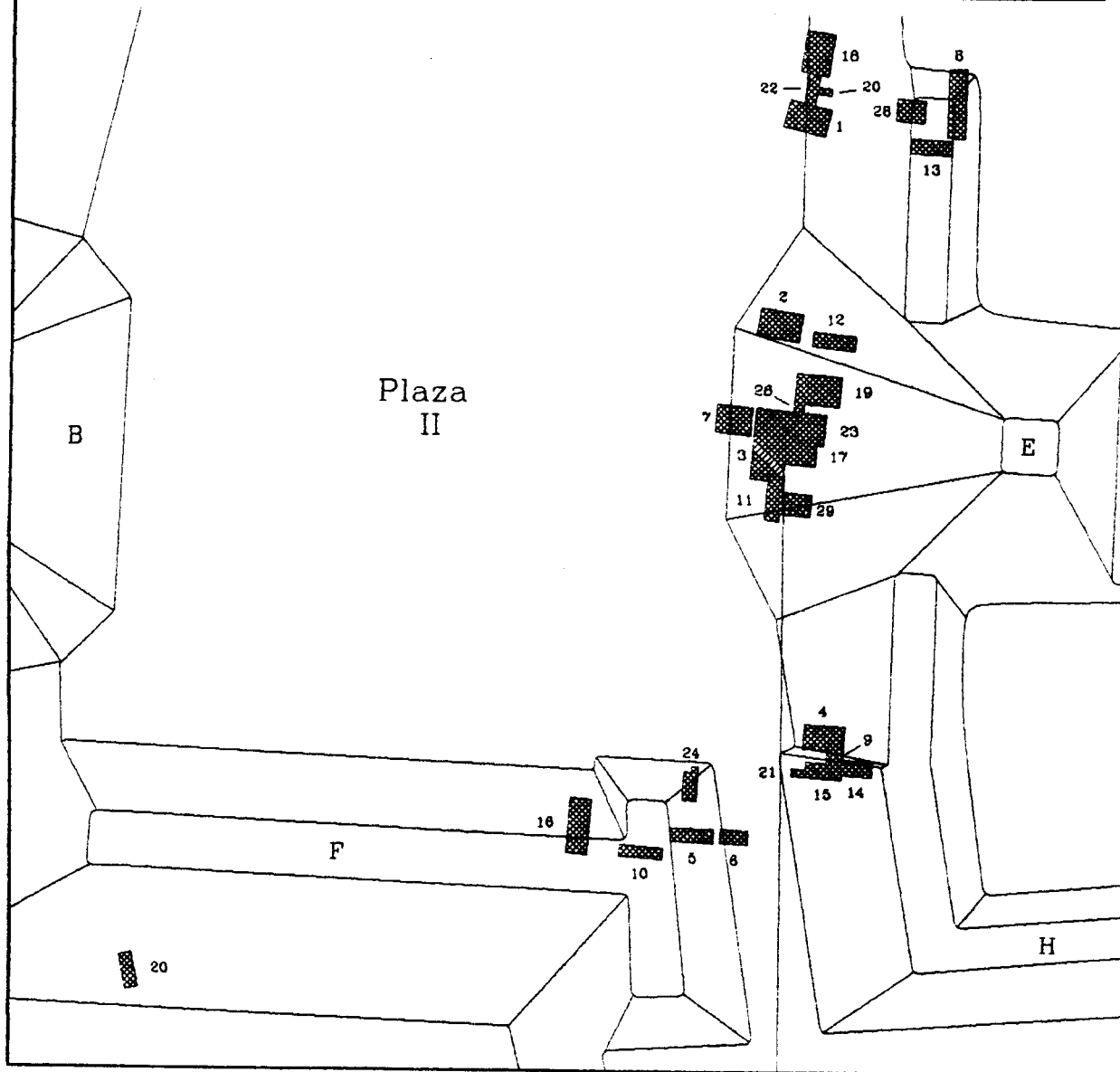


Figure 2: The 1996 excavation units of Group 1, Plaza 2, Baking Pot.



was assigned a unique identifying lot number from 1 to 81. This proved indispensable as a cross check in recording.

## **Structure E Investigations**

### *E-North*

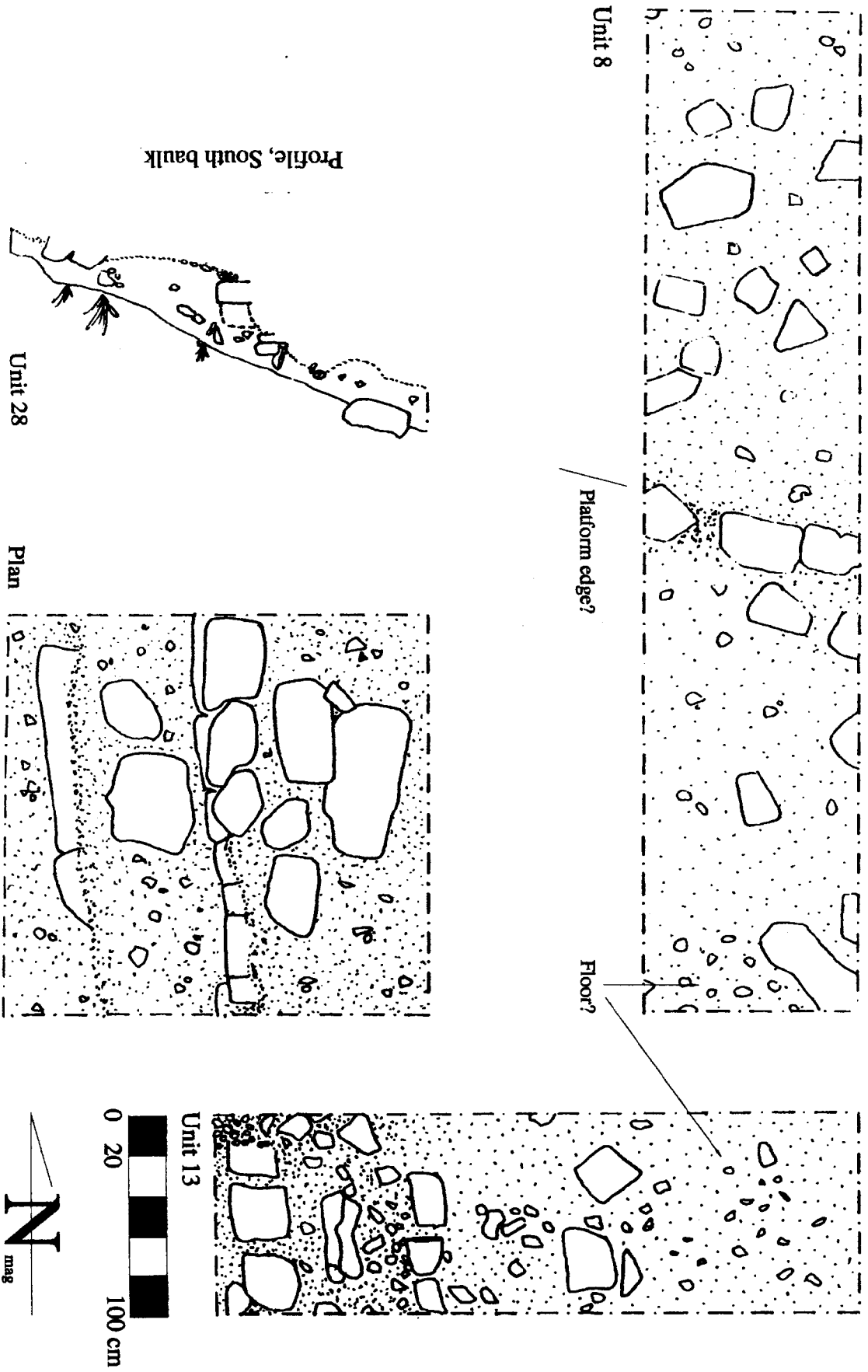
Units were placed at the base, central axis and the summit of Str. E-North. Unit 1 (2 X 3 m) at the base of the structure revealed a basal step of well-dressed cut limestone blocks. As one moves up the building the stairs were of poorer quality stone and in a more collapsed state, making the staircase almost unrecognizable as a whole. From the two recognizable steps, however, the rise of the stairs can be estimated at 44 cm, while the run was about 77 cm. Only one course remains of the first step, but the heel of a cut stone which appears to have slid off this course suggests that the step rose in two courses. Although the second step was in very poor condition, it did sit atop the poorly preserved plaster surface of the previous step. The staircase fill, like most of the fill encountered in 1996, consisted of a fine reddish alluvial mud with ceramic and lithic inclusions.

Unit 18 (1 X 3 m) was created 2 meters north of Unit 1 in a search for the northern edge of the staircase uncovered in Unit 1. This unit did not reveal the staircase and Unit 22 was opened, spanning the two meters between Unit 18 and Unit 1. This unit revealed what appeared to be the edge of the central staircase. To confirm this, Unit 27 (0.75 X 2 m) was set up extending east from roughly the centre of Unit 22. This unit revealed the very deteriorated edge of the staircase. Thus, the basal units of E-North confirmed the presence of a central staircase and gave some indication of its dimensions.

Investigations on the summit of E-North produced ambiguous results owing to the poor preservation of the structure here (Figure 3). Unit 8, a 1 X 5 m unit that extended south from the approximate central point of E-North's summit, is indicative of the poor preservation. Despite careful excavation over several weeks we were unable to positively identify any architectural features in this location, a result which makes similar problems described by Ricketson (1931:5) more comprehensible. The precise nature of the architecture in Unit 8 is speculative at best, but appears to consist of a rough east-west alignment of cut stones that may represent the northern edge of the platform summit. To the south of this, a section of ballast-like rubble in a dusty, whitish matrix may have been the deteriorated floor of the platform summit. In the unit profile, only a change from overburden to fine, reddish, alluvial matrix suggested the change from surface to structural fill. The entire summit of E-North may possibly have eroded away.

After the failure of Unit 8 to reveal any useful architectural information, we opened Unit 13 (1 X 3 m) on the central axis of the structure, extending west (down the front of the building) from the summit. This unit again suggests that the terminal architecture of E-North deteriorated badly at abandonment, and that the frontal staircase may have slumped forward. Again, near the summit of the structure, there was a surface that may have been a deteriorated plaster floor. We also found what may be the remains of a terminal step on the central axis of the building. Deeper in the unit another well-preserved step was uncovered. The elevation and good condition of this second step, as well as the fact that it was covered with what appears to be construction fill similar to the fill

Figure 3: Structure E-North Summit, Units 8, 13, and 28



found in other areas of the excavations suggests that this was penultimate-phase architecture.

Unit 28 (2 X 2 m) was placed just to the north of Unit 13 near the structure summit to further investigate the remains uncovered in Unit 13. This unit was placed in an area where large cut stones visible on the surface seemed to be in step-like alignment. The cut stones uncovered here can be interpreted as three steps of the terminal stair (see Unit 28, Figure 3). This section of the stair differs from those at the base of the structure in terms of rise and run. We estimate that the rise here was roughly 25 to 30 cm while the run was between 20 and 30 cm.

In general, excavations of Str. E-North gave us some indication of the elevation and height of the building and its central stair. The absence of vault stones or other substantial cut stones suggests that Str. E-North did not have a masonry superstructure, while fragments of daub (SF #, 83, 236) indicate that there was a perishable superstructure at the summit. The fill at the summit of the structure in Unit 8 was notable in that there was very little cultural material included in it. This suggests that fill at the summit if the structure was taken directly from alluvial deposits rather than middens. Given the proximity of the river, this is not surprising. Unit 8 produced a great deal of burned limestone, and while some of these pieces were close enough to the surface to suggest contemporary burning (e.g. by milpa or natural fires), some fragments were found at a depth of 75 cm below surface, suggesting burning in antiquity.

#### *Interface of E-North and E-Central*

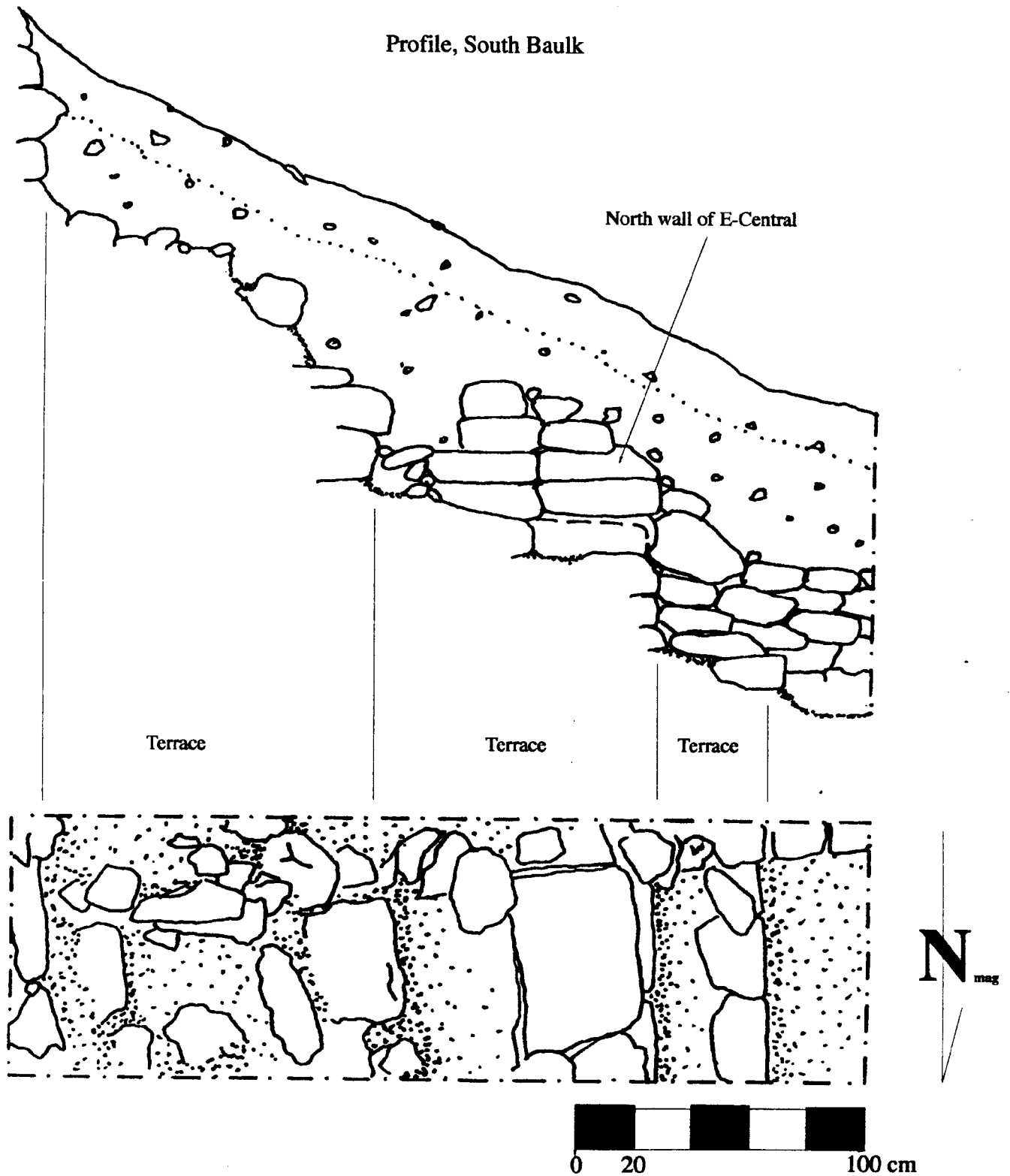
Unit 2 was created to expose the northern edge of E-Central. A well-preserved plaster floor was uncovered at 16 cm below modern plaza level (102 m); this floor had been resurfaced to an elevation of 6 cm below plaza level as indicated by portions of floor in the northwest corner and eastern edge of the unit (the plan of this unit is included in Figure 5). Chunks of burned limestone were uncovered in this unit 80 cm below surface, and the floor showed evidence of burning. The northwest corner on E-Central was also revealed in this excavation.

In order to more clearly understand the interface between E-North and E-Central, Unit 12 (1 X 3 m) was opened one meter directly east (above) Unit 2. This informative unit revealed three terraces adjacent to E-Central (Figure 4). Given that the terminal floor uncovered in Unit 2 was at approximately 6-10 cm below plaza level, and that the top of the lowest terrace in Unit 12 was at 56 cm above plaza level, the height of this first terrace was approximately 60 cm. The distance to the second terrace was approximately 56 cm. From the second to the third terrace was approximately another 56 cm. This consistency suggests that the terraces rose about 60 cm each, but the run is much less comprehensible, being somewhere between 44 cm and 90 cm. The lowest terrace may have been a moulding with a run of only 44 cm, while the upper terraces were consistently about 90 cm wide. Only further excavation can confirm this observation. Finally, Unit 12 produced more evidence of burned limestone about one meter below surface.

#### *E-Central*

Unit 3 (2 X 5 m) was the first unit excavated on E-Central. Dr. Awe's advice on placement was vindicated when we discovered that the reddish dolomitic limestone uncovered in the centre

Figure 4: Structure E-North/ E-Central, Unit 12



of the unit was the fragmented tip of a stela. Excavations in this area were among the most informative of the season, revealing the uncarved stela, details of the design of Str. E (Figures 5, 6, 7), and evidence of burning on the floor at the inset to the south of the stela. Notable artifact finds include a primary deposit of potsherds and charcoal (Lot 57; Carbon Sample #1) on the floor directly in front of the stela. Incense burner fragments were also found in this level (SF #50). A cache (Lot 23) was uncovered in Level 2 of Unit 3 directly west (in front) of the stela. It was 10 cm above plaza level, and 87 cm from the northwest corner of Unit 3. This cache consisted of at least two and probably three vessels, all red-slipped. These finds are all indicative of ritual associated with this important axial location.

Unit 25 was created within Unit 3 in front of the stela to determine its relation to the plaza floors. This unit extended approximately 1 meter from the western baulk of Unit 3 to the stela and 2 meters from the northern baulk of Unit 3. We found that the stela extended below the terminal floor in this area. We also determined that the terminal floor exposed throughout Unit 3 and Unit 11 was a 6.5 cm resurfacing, and that the plaza floor was resurfaced here a total of four times. The terminal floor was extensively burned. While excavation revealed the stela butt, exploratory probing for a cache in this area brought no satisfaction. The relationship of the stela to the architecture and floors is best understood through Figure 6. Notably, the stela sits on what appears to be the deteriorated remains of another floor. Also, the stela was most likely set in position after the floors were constructed, since the plaster floors did not lip up to the stela. There was approximately a 17 cm gap between the stela and the plaster floors and a Late Classic date is therefore likely for the stela. During excavation of level 6 of Unit 25 we discovered an axial cache designated as Lot 79. This consisted of two large inverted dishes (Hewlett Bank Unslipped), one atop the other. The remains of at least two children were found in this deposit (see Piehl, this volume).

After the discovery of the stela in Unit 3, Unit 7, a 2 by 2 m unit, was set directly in front of the stela, since burials and caches are often found on the central axis of Maya buildings. This unit eventually reached level 8, about 1.74 m below the plaza level, and produced 2 caches (designated as Lot 18 and Lot 29) and two cist burials (Cist 1 and 2). Level 1 in Unit 7 was humus, while Level 2 consisted of collapse debris from Str. E-Central. Some of the limestone found here was burned. A cache of broken pottery (perhaps a termination ritual on the terminal plaza floor) (Lot 18) was uncovered at the base of Level 2 on Floor A directly west (in front) of the stela. This cache consisted of a number of unreconstructable sherds and a piece of worked shell (SF #65). A burned section of the plaza floor was identified at the base of Level 2, under collapse. As in Unit 25, the terminal floor was a resurfacing, since a partially deteriorated floor was found immediately below this. Level 3 consisted of reddish alluvial fill below Floor A in which were found incensario fragments (SF #133). In Level 4 the matrix became noticeably more yellow at 16 cm below plaza level. Level 4 was closed and Level 5 begun when we exposed Floor B and its cobbles at 45 cm below the plaza. The central portion of Floor B was missing, suggesting that a burial had been cut through it. The matrix below the floor portions of Floor B which remained (Level 5) contained abundant remains of burned limestone. An axial cache (Lot 29) was uncovered at the base of Level 5 west (in front) of the stela, but slightly off axis (to the south). This had been deposited by

Figure 5: Structure E-Central, Plan

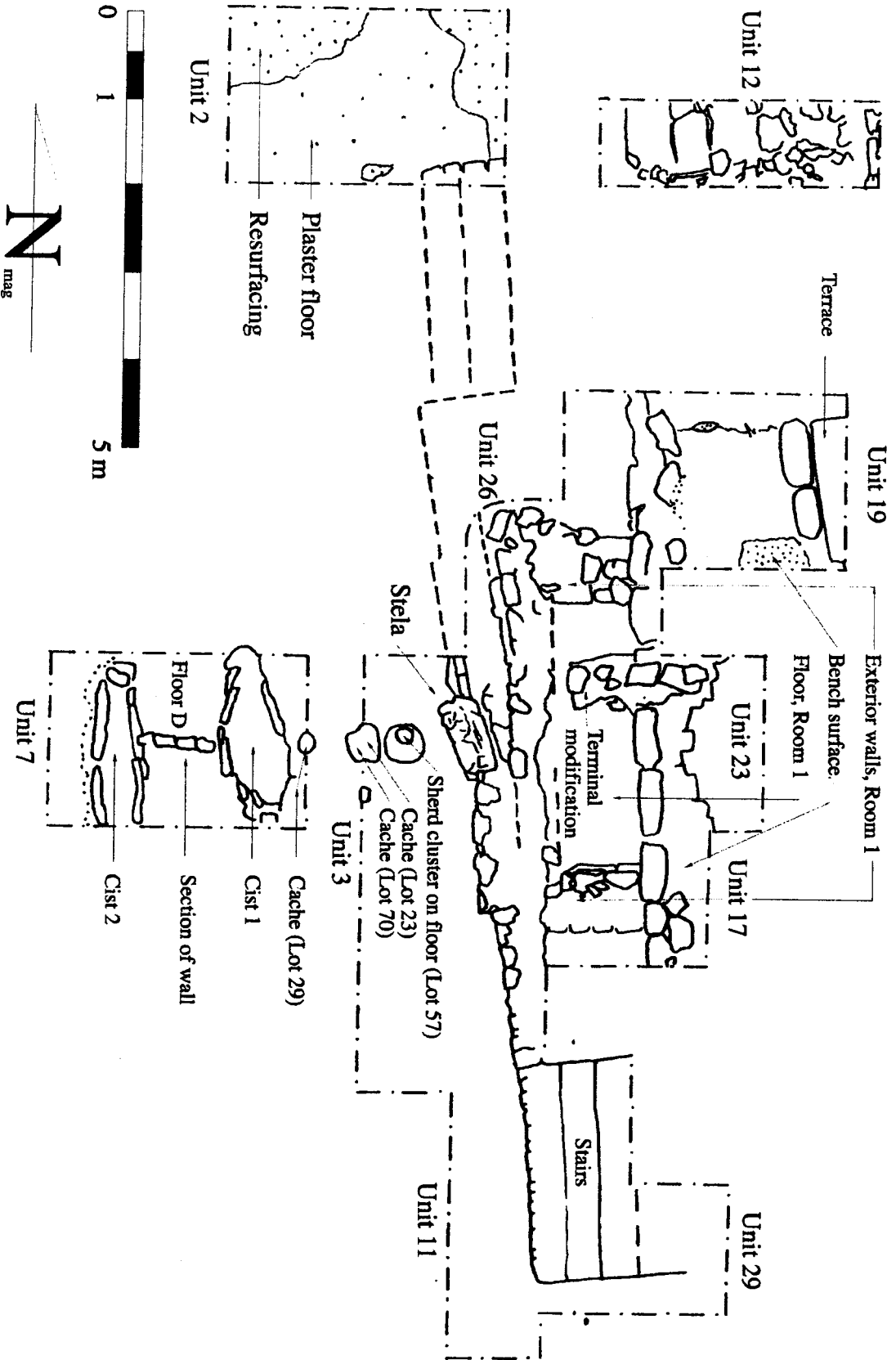


Figure 6: Structure E-Central, West-East Section

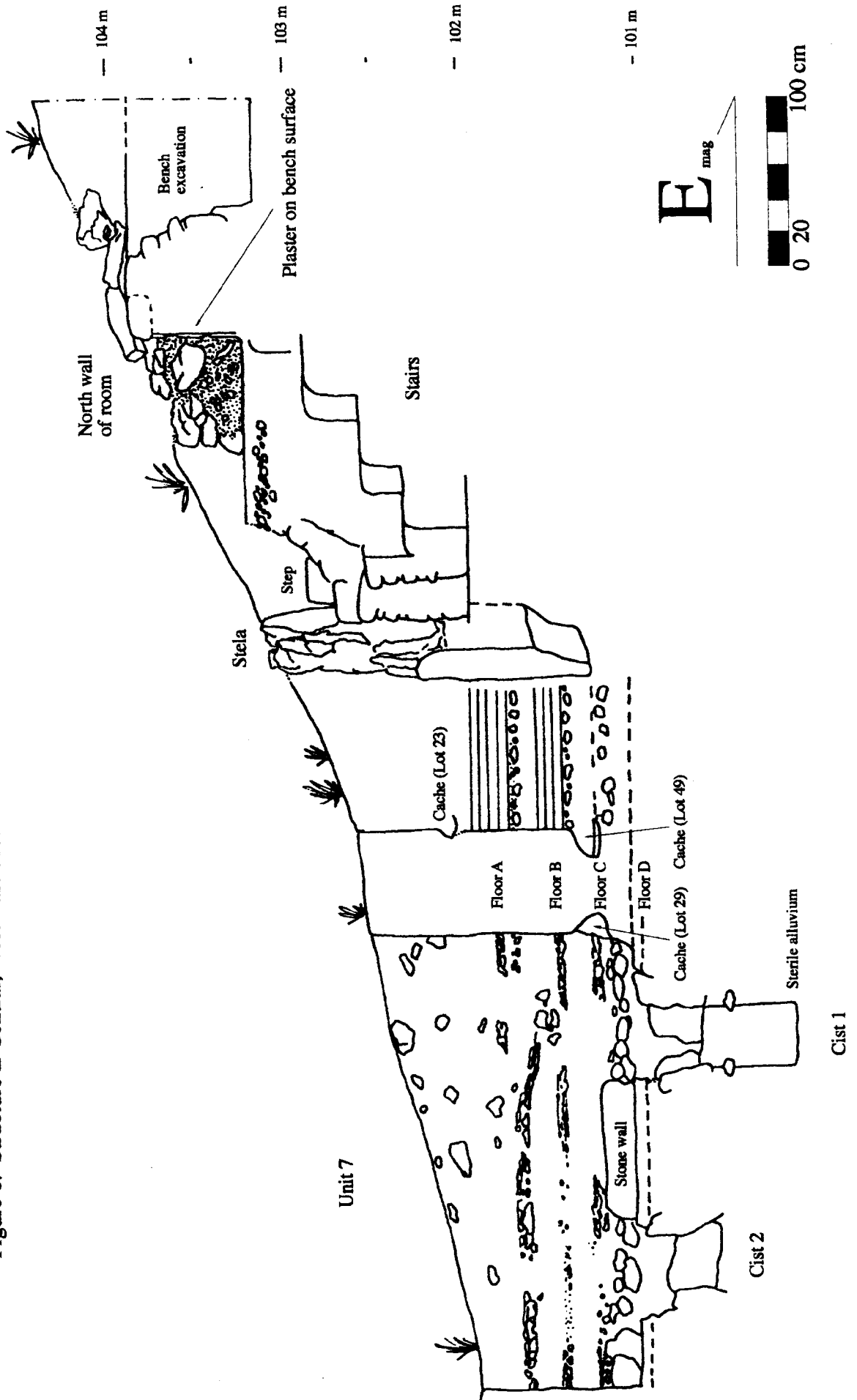
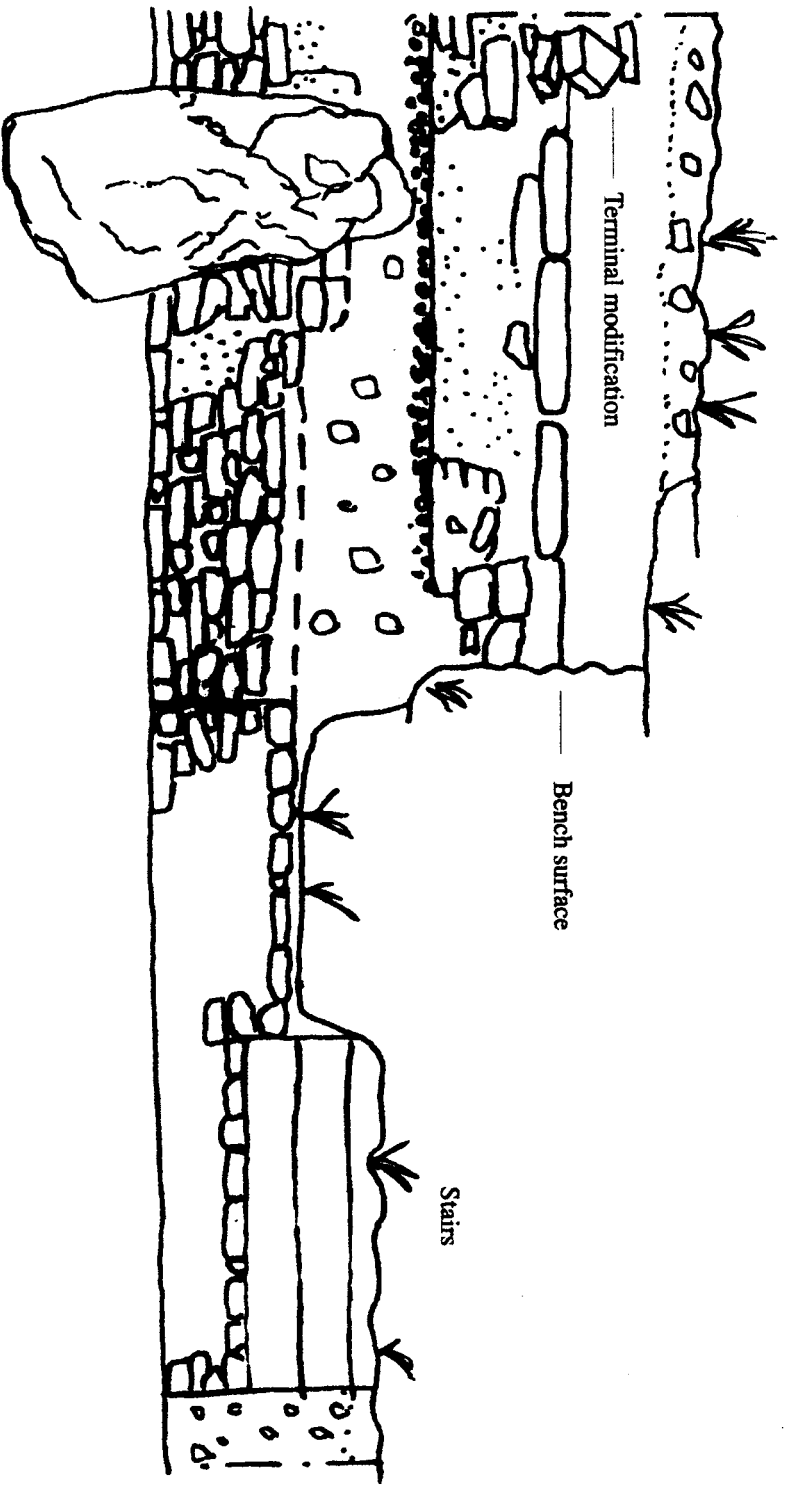


Figure 7: Structure E-Central, Profile East Baulk Units 3 and 11





cutting into Floors B and C. The cache was at an elevation of approximately 75 cm below the plaza and consisted of two partial Mountain Pine Red vessels and a cluster of sherds including types of Uaxactun Unslipped and Dos Hermanos Red (Spanish Lookout phase).

Level 6 began with the removal of Floor C, 54 cm below the plaza. As with Floor B, part of Floor C was missing, suggesting the presence of a burial or cache below. During the excavation of Level 6 on the final day of the first field school session of 1996 the capstones of a cist were revealed. The cist had been constructed by cutting through Floor D. Clean-up excavations to the west of this cist revealed the capstones of a second burial, also deposited through Floor D. The north baulk of Unit 7 showed that Cist 1 (east) and Cist 2 (west) had been deposited through Floor B and C. The male in Cist 1 was buried with a jade necklace with pendant, while the female in Cist 2 was buried with two Central Mexican style vessels and a delicate shell necklace. For full descriptions of the burial remains see Piehl (this volume).

A partial wall extended east-west between the two cists. This appears to have been the northern edge of an earlier building or building platform, the ends of which were removed when the cists were constructed. The remaining wall consists of two courses, each approximately 8 cm high. It sits directly on the floor through which the cists were deposited (Floor C). Only four cut stones from the 71 cm long wall remain. A small unit of approximately 50 cm by 50 cm was excavated through the bottom of Cist 1 after the removal of the skeletal material and artifacts. We excavated this to sterile alluvium at 1.74 m below plaza level (see Figure 6). In order to follow the wall uncovered in Unit 3, Unit 11 (1 X 3 m) was opened at the southeast edge of Unit 3. Excavation of this area eventually revealed the stairs on the south edge of E-Central.

Unit 17 (1.5 X 2 m) was created directly east of Unit 3 where it was expected to find terracing or stairs on the central axis of the building behind the stela. This unit revealed that there was a small room with a bench on the axis of Str. E. The evidence indicated that the floor and the bench were constructed first, with the surrounding walls constructed afterward.

Unit 19 (2 X 3 m) had also been laid out on the northern edge of E-Central in an area where we expected to find stairs. Removal of the humus layer revealed a jumble of well shaped cut stones. Careful clearing of this area revealed no patterning and these stones were removed to continue down. The profile indicated there may have been a badly damaged terminal staircase here. An important clue was the fine reddish alluvial matrix associated with construction fill in Plaza 2. The final feature to be uncovered in Unit 19 was the edge of a terrace.

The surface of the bench revealed in Unit 17 had a circular depression on axis with the stela that may indicate the locale of a burial or cache. The placement of Unit 23 here did not reveal either. Explanations of the depression include looting of a burial or cache late in the site's history, indicated by fragments of marine shell found through the area (SF # 146; #206, 212, 216, 229) a shell disc (SF #189) and a single human fibula fragment found on the northern half of the bench near the west baulk. Excavations inside the bench continued down below the level of the floor in front of the bench, indicating that either the bench and the room were built contemporaneously (i.e. the bench was not added after the room was built), or that the floor inside the bench had been removed with the deposition of a cache or burial, later looted. The second scenario is unlikely given that we found no evidence at all for a floor, including in the profile. Two pieces of plaster painted

brick red (SF #187, #194) were found in the collapse level of this unit, suggesting that the bench or its surrounding walls were painted. Burned daub (SF # 195) was also found at this location and the floor in front of the bench showed evidence of burning.

Unit 26 was a small unit extended between Unit 19 and Unit 17 to reveal more architectural detail in the important area between the bench and terracing. The results of the excavations are best understood with reference to Figure 5, in which the deteriorated remains of the corner of E-Central's room can be seen.

### *Interface of E-Central and E-South (Terracing)*

Like excavations at the opposite end of Str. E, investigations at this locus were among the most frustrating undertaken during 1996 investigations. After the discovery of a well-shaped notched arrowhead (SF # 1) in the humus level of Unit 4 during the first day of the season, excavations in the area were an exercise in delayed gratification. Initially, Unit 4 (2 X 3 m) was excavated to plaza level in the hope of revealing the interface between E-Central and E-South. The jumble of cut stones uncovered on the plaza-level plaster floor in the southeast corner of this unit appeared to have collapsed from the east-west wall of E-South, suggesting that Unit 4 was placed a matter of centimeters too far north. Unit 9 (1 m X 2 m) was opened adjacent to the southeast edge of Unit 4 and revealed more collapse debris, more of the plaza floor and a portion of wall, one course high, extending roughly west-east. Adding Unit 14 (1 X 2 m) to the east edge of Unit 9 helped to follow this east-west wall to its eastern limit. This unit revealed the interface between E-Central and E-South, with well preserved indications of terracing.

E-Central abutted E-North in a series of terraces. The lowest terrace is probably more accurately referred to as a moulding, with a rise of 14 cm and a run of 54 cm. The next level is terracing has a run of 28 cm and a rise of 64 cm from the top of the moulding. It is unclear how high the terracing originally reached. The cut stones of which these walls were composed averaged 10 cm high and 20 cm wide. Fairly extensive amounts of burned limestone were found in this unit, and a fragment of red painted plaster was found near the basal moulding.

Because the wall uncovered in Unit 9 and 14 appeared to form the northern edge of the ballcourt, Unit 15 (1 X 1.5 m) was created to follow this wall to a corner. The northeast corner of this wall (i.e. the intersection of the north and eastern ballcourt face) was eventually located by a final unit, Unit 21 (0.5 X 1 m) added to the southwestern edge of Unit 15. Burned limestone was found in this unit. The fine, homogenous alluvial fill and small amounts of pottery or lithics suggest that this part of the ballcourt was erected relatively quickly, in one episode. More extensive excavations were conducted on the eastern edge of Str. F to address the construction history of the ballcourt.

### **Structure F Investigations**

Investigations at Str. F were initiated to reveal the characteristic ballcourt profile. Unit 5 (1 X 3 m), Unit 6 (1 X 2 m), and Unit 10 (1 X 2 m) revealed that this was indeed the western edge of a ballcourt forming the entrance to Group 1 from the causeway. Investigations showed that the slope of the ballcourt was surfaced with irregularly shaped slabs of limestone veneer. The fill below

this veneer was a fine, reddish alluvial material with few artifacts compared to the fill in other areas (except the units on the ballcourt edge of E-South). In profile, the ballcourt seems to be similar to the one excavated in Group 2 by Bullard and Bullard (1965:48, Fig. 7).

At the lowest levels of our excavations in this locus we uncovered earlier phases of architecture, composed of finely dressed cut stones (Figure 9). We found an isolated portion of floor which, judging from its elevation may have been the plaza floor before Range Str. F was renovated into a ballcourt. The overall appearance was of a single construction event which changed the eastern edge of range Str. F into a ballcourt. One of the most interesting finds of the season was a substantial portion of a limestone stalagmite or stalactite. This had been laid east-west on a cobble surface at an elevation of 102.2 m, roughly the elevation of the plaza.

Unit 16 (1.5 X 4 m) was opened on Str. F, extending from roughly the long axis of the building down its front face. Near the southern end of the unit (the top of the structure) there was an alignment of cobbles and roughly cut stones which may have been the base of a superstructure. Given this alignment was only a few centimeters from the surface, and stones of the size or quality usually associated with masonry architecture in Plaza 2 were not found here, it is suspected that a perishable superstructure was erected on this foundation. Daub found in this unit (SF# 117, 127, 142) as well as fragments of daub found in Unit 6 to the east (SF #4, 10, 97, 222, 231) reinforce this interpretation.

This unit revealed construction pens used in creating the building. These interior walls are used in the construction of large Maya buildings, and would have been entirely within the building fill at completion of construction (see comments in Coe 1996:878-880 regarding nuclear assembly, and Jamison and Wolff 1994: 26 on construction bins). The examples excavated here were comprised of wet-laid mud-mortared cobbles and a few cut stones, likely re-used. The fill in the pens is that same as that found elsewhere during the excavations, a fine red alluvial material with some artifact content.

Unit 20 (1 X 3 m) was placed off the southwest corner of Str. F (i.e. its "back") in a misguided attempt to uncover a midden. As we have been unable to locate a midden in Plaza 2, and since these are a valuable source of information regarding the activities occurring in the area and the people who used the plaza, we will redouble our efforts in 1997 including experimentation with a post-hole digger.

Unit 24 revealed the northeast corner of the western half of the ballcourt. Very near the surface in this excavation was a small figurine fragment which may be associated with Postclassic activity at the site. A sherd which had been incised post-firing was found near the surface in Unit 6, also suggesting late use of the locus. Unit 24 also revealed more daub (SF# 204).

## **Discussion**

Excavations in Plaza 2 during the 1996 season confirmed that Plaza 2 was entered on its south side through a ball court. This building was created through renovation of the eastern edge of range Str. F and a similar modification of E-South. Dates from ceramics and the relative scarcity of artifact material in its fine alluvial fill implies that this renovation happened relatively quickly, late

in the history of the site. The quality of the cut stone used in the ballcourt varied considerably, and there is a possibility that some of the finely dressed stones were scavenged from buildings elsewhere. The addition of the ballcourt would have significantly narrowed the south entrance to Plaza 2. Restriction of access is characteristic of the late history of many Maya sites, and may be associated with an increasing exclusivity of site cores (see e.g. Awe et al. 1991). Given the significance of ball courts in Maya myth, art, and iconography (e.g. in the Popol Vuh, see Tedlock 1985), the use of a ballcourt as a transitional space is particularly evocative (see Conlon 1996:49-50 and Conlon et al. 1994:227). Interpretation of the significance of the ballcourt will follow in later reports.

Confirmation of structures E and B as an E-Group assemblage is more problematic. Generally, our excavations revealed a structure which little resembles known E-Groups in terms of its overall morphology, at least in its terminal phase. However, before the ballcourt modification Str. E would have resembled more closely the symmetrical E-Group form (Figure 8). No artifacts which can be easily related to solar based ritual were uncovered in the 1996 excavations, and the sacrificial burials often associated with E-Groups were not uncovered in 1996 (but see comments by Piehl on Lot 79, the cache with human remains). Solar observations at the site in 1991 showed that E-North marks the position of the rising sun on the summer solstice with acceptable accuracy (Aimers 1992). Replication of the experiment in 1996 was far less successful since the day was overcast, but the assemblage "works" astronomically. Reconstructions which model the entire assemblage in relation to the sun's movement will have to wait until the excavation and precise mapping of Str. B.

Although the chronological placement of Plaza 2 by earlier investigators is not in question, an important limitation of this report is that a formal ceramic analysis has not been completed for the Plaza 2 material. A brief examination of the ceramics from levels one through five of Unit 7, the best sequence excavated in Plaza 2 in 1996, indicated that the period of construction for the locus is in line with earlier estimations, beginning sometime in the Early Classic and continuing into the Late and Terminal Classic. Ceramics in Level 5 date from as early as the Late Preclassic Barton Creek phase (Sierra Red) to the Late Classic Spanish Lookout Phase (Roaring Creek). The two vessels associated with Cist 2 (Pucte Orange Brown and Balanza Black) date this burial to the Early Classic Hermitage phase, suggesting that the locus was well established by this period. A collection of Belize Red sherds found on the floor in Unit 2 (Lot 13) may date the terminal plaza floor to the Spanish Lookout phase, in line with generally accepted models of the site's terminal occupation. Intensive analysis of the ceramic remains will begin in 1997.

Published reports and an informal survey of archaeologists familiar with the broken, fist-sized grooved groundstone artifacts (n=55) found throughout our excavations suggests that they may have functioned as net weights (Willey et al. 1965:466-469), anchors, weapons, curtain weights, construction weights (Fitchen 1992:112), or hammer stones. Investigation of their function

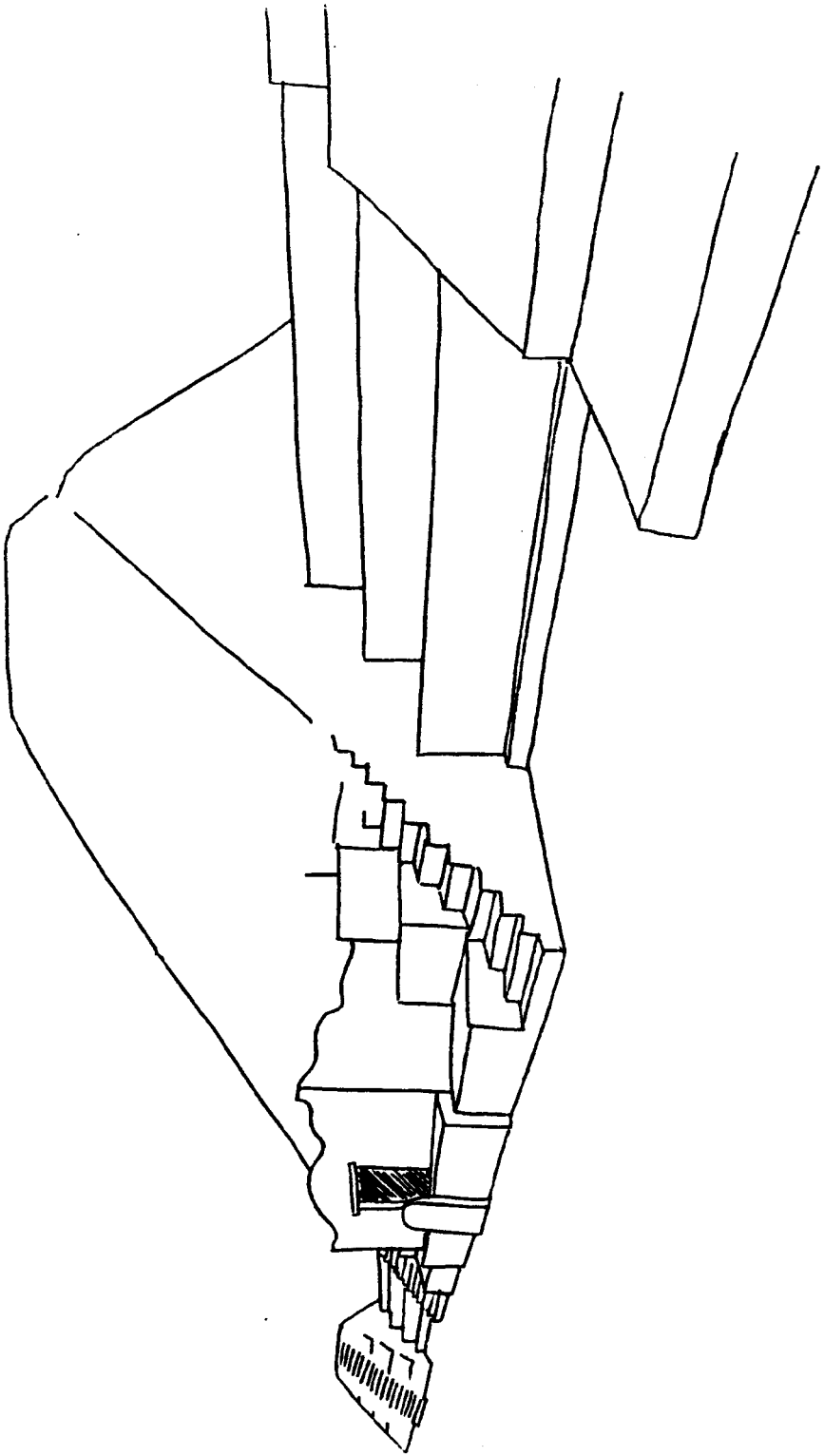


Figure 8: Reconstruction of terminal phase architecture of Mound E, Plaza 2, Baking Pot.

is ongoing. If their function can be determined, an analysis of their distribution may help to assess activities that occurred in Plaza 2. Only three were found (in surface debris) in Bullard's fairly extensive excavations in Group II (Bullard and Bullard 1965:30), so these artifacts seem to relate to activities occurring predominantly in Group I.

Throughout the 1996 season the preservation of architecture uncovered varied considerably and this raised an important question: Was terminal architecture being exposed, or architecture which had been protected by now-deteriorated and slumped terminal architecture? A possible clue was the very powdery matrix above the floor in Unit 3 and 11 on the central axis of E-Central, likely as a result of plaster which had deteriorated gradually from the building's walls. Plaster would not have been able to accumulate in this important location in front of a building which was in everyday use, so this plaster may indicate the final deterioration of the building during abandonment. The fact that plaster dust was allowed to accumulate in this location suggests the cessation of basic architectural maintenance important to the survival of limestone and mortar architecture in a tropical climate. It seems unlikely that major renovations continued after basic maintenance had ceased.

However, the situation is probably even more complex since there is evidence that certain areas of the building were indeed covered with later additions. Further, some parts of the building may have been undergoing renovation at abandonment. The excavations in Unit 17 and 19 lead us to believe that most of E-Central was covered with a broad staircase in its final form. An anomalous feature near the central axis of E-Central on the bench may be part of this terminal modification. If it existed, this staircase slumped badly after abandonment, and is no longer recognizable. Excavation in Unit 29 in a similar location to Unit 19 (but on the southern side of the building's central axis) also revealed a substantial number of cut stones in no perceptible order at almost surface level. Prior to the construction of this terminal staircase, the building would have had terraces up its middle section, interrupted by at least one room. At that time two narrow staircases would have flanked the terracing. Later, the room would have been razed to clear the building for the terminal stairway.

Daub was found in most excavation units in 1996. Given that not a single stone large enough to have served as a vault stone or capstone (aside from those on the cists) were uncovered in our excavations, the buildings on these mounds appear to have been of wattle and daub, probably with thatched roofs.

Painted plaster was also found in Units 7, 14, and 23, associated with Str. E-Central and E-South. At Tikal, Coe (1990:907) speculates that the pigment used in red paint at Maya sites is a non-specular hematite or cinnabar, and notes that red...:

"accented or reinforced the sanctity of some chambers, even entire structures, as opposed to others. Red complemented sites subjected to intensive ritual based on fire and smoke. Maybe solar-imbued red (alternatively orange) directly served to hallow and dedicate as the need arose."

No indications of other colors of plaster was uncovered.

In 1997 we plan to investigate the abandonment history of Plaza 2 in greater detail. To date we have found evidence of the gradual deterioration of E-Central, extensive evidence of burning, and indications of looting (the burial removed from the bench in Room 1 of Str. E-Central). Together, these clues seem to suggest a dramatic end to Plaza 2 occupation, involving looting and fire. However, Maya monumental buildings can be extensively burned during normal ritual use since the offering of copal incense was (and is) an important form of Maya ritual expression. The significance of the burning and Plaza 2 will be an important concern in 1997 excavations.

Although looting is often cited as the reason for the disturbance of caches and burials in antiquity, looting does not in itself suggest a violent end to occupation. Coe (1990: 867-870) suggests that the looting of selected materials from tombs at Tikal reflects a shortage of prestige-enhancing elite goods by newly impoverished elites, and this may very well be paralleled by the disturbed bench burial in Str. E-Central. Since tombs in the Belize Valley tend to be located near the summits of structures, and the Baking Pot mounds appear not to have been looted in modern times, excavation in 1997 at the summits of structures E and B may provide valuable evidence for the nature of the site's decline and abandonment.

Other evidence for the site's abandonment is similarly ambiguous. During clearing of the floor in Unit 3, numerous fragments of the pink dolomitic limestone of the stela were found, and 22 of the 55 grooved stone fragments found at Baking Pot in 1996 came from Unit 3. Was the stela damaged during the collapse of the building, or was it purposely destroyed (perhaps with the grooved stones)? Similarly, a high concentration of artifacts including several conjoinable sherds and several cores found on the bench surface may be evidence of lithic manufacturing or waste disposal in this locus late in the site's history. Fragments of deer bone found on the floor in Unit 2 also suggest that food remains may have been dumped off the edge of E-Central during its final use. The accumulation of garbage in or around this elaborate plaza may reflect changes in the urban infrastructure, changes in the labor force, and possible status decline amongst the people using Plaza 2, as at Copán's South Acropolis (Andrews 1996). The processes involved in the abandonment of the buildings surrounding Plaza 2 will be a central consideration in the 1997 excavations at Plaza 2.

## **Conclusion**

The comments above are primarily descriptive in intent, with interpretations to follow as data accumulates. However, some conclusions have been drawn regarding the plaza's design, and hypotheses about its abandonment developed. We are now certain that Plaza 2 was entered through a ballcourt on its south side, and have much of the data necessary to further investigate the possibility that structures E and B form an E-Group. Investigations planned for 1996 will continue to investigate the resemblance of structures E and B to an E-Group, and the rate and nature of the abandonment of Plaza 2.

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Despite the rigors of the Belizean climate, killer bees and stampeding cows, students on the BVAR project in 1996 completed most of the excavation and lab analysis, and should be both thanked for their work and congratulated for it. I would particularly like to thank Chris Helmke for the original pencil drawings of many of the plans and profiles in this report. Virtually every member of the BVAR staff played a role in the 1996 Plaza 2 excavations, and I am greatly indebted to them. Barrie Brown (Florida Atlantic University) was essential to the smooth operation of excavations in Plaza 2 on a daily basis, and Jennifer Piehl (Tulane University) also contributed greatly. Yvonne Broeder (Simon Fraser University), and David Lee (Trent University) also contributed to supervision at Plaza 2. Melissa Johnson, Cameron Griffith (University of Arizona), and Jim Conlon (University College London) supervised the survey. I am appreciative of Dr. E. Wyllys Andrews and the Middle American Research Institute (Tulane) for providing partial funding for my 1996 season. Finally, I would like to thank Dr. Awe for allowing me to participate in the excavation of this beautiful site, and for his help in shaping my dissertation research.

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# **Intragroup Comparative Study of the Ancient Maya in the Periphery of Baking Pot: Report on the First Season of Investigations at the Atalaya Group**

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## **Introduction**

This paper presents a preliminary report on the 1996 archaeological investigation of the Atalaya Group at the site of Baking Pot in western Belize. The field season was three months in duration and, was directed by Dr. Jaime Awe of Trent University and the author, under the auspices of the Belize Valley Archaeological Reconnaissance Project (BVAR). Prior to 1996, BVAR was involved with archaeological investigation in the foothills of the Upper Belize Valley at the neighbouring site of Cahal Pech (e.g., Awe 1992, 1993, 1994; Awe and Campbell 1991, 1992; Conlon and Awe 1995; Goldsmith 1993; Iannone 1996; Iannone and Conlon 1993). Research objectives at Cahal Pech included the examination of settlement distribution, architectural form and function, intra-community social relationships, and the evolution of complex society. Subsequent investigations by the Trent Preclassic Maya Project during the 1994 and 1995 field seasons (Healy and Awe 1995, 1996)) focussed particular attention on the Formative period development of this area.

Preliminary investigations at Baking Pot by BVAR were incepted in 1992 (Conlon 1993a and 1993b; Powis 1993 ) but it was not until 1996, having concluded research at Cahal Pech in 1995, that BVAR shifted its full attention to questions concerning ancient Maya settlement along the alluvial flood plains of the Upper Belize Valley. As opposed to other sites in the Belize Valley, mostly located in the limestone foothills, Baking Pot sits conspicuously on the flat and fertile alluvial flood plains of the Belize River. From an archaeological perspective, Baking Pot is one of the few remaining sites along the upper Belize Valley yet to undergo extensive and intensive archaeological investigation that has characterized research in this region over the past decade (Conlon 1995a:99). While sites such as Xunantunich (Leventhal and Ashmore 1995), Buena Vista (Ball and Taschek 1986), Pacbitun (Healy 1990), Blackman Eddy (Garber et al. 1993), and Cahal Pech (Awe 1992) have been more thoroughly investigated, Baking Pot has been only briefly examined (Ricketson 1931; Bullard and Bullard 1965:7; Conlon 1993a:173; Conlon and Awe 1995:63), and, as such, is rarely mentioned in the archaeological realm as it is still largely uninvestigated.

The site of Baking Pot was ideal for research from a logistical point of view. The ancient centre is located approximately five kilometres east of the modern town of San Ignacio in western Belize. By river, Baking Pot is some 20 kilometres downstream from Cahal Pech, and approximately 170 kilometres from the site of Moho Caye (downstream), near Belize City, where the river empties into the Caribbean sea. From a scientific point of view, the research interests and

objectives remain similar to those of the Cahal Pech investigations, including documenting settlement distribution, recording and recognizing organizational variability and complexity, determining and distinguishing socio-political interrelationships within and between settlements in the foothills and those in the alluvial river bottom area, all within a developmental framework of site evolution. This paper shall focus on the results from the initial season of investigations at the Atalaya Group plazuela. The broad research objectives being pursued here include both intragroup (Atalaya) and intrasite (Baking Pot) community organization.

### **History of Archaeological Research at Baking Pot**

The history of archaeological research at Baking Pot has been sporadic and cursory in nature. The first investigations were conducted over a three month period in 1924 and focussed on Group I of the site core (Ricketson 1931). In 1949, Structure A of Group II, the southern complex of monumental architecture, was partially bull-dozed by the Public Works Department as part of a road fill exercise. A.H. Anderson, then Archaeological Commissioner of Belize, intervened and stopped further destruction of the site and conducted some salvage excavations. In 1956, a series of small test excavations were undertaken in Plaza 1 of Group I, and several mounds in the immediate periphery were investigated by members of the Belize River Valley settlement survey (Willey et al. 1965:309). Though materials from all major periods (Preclassic to Postclassic) were recovered, the majority seem to indicate a more dominant Late/Terminal Classic period of occupation (Tiger Run and Spanish Lookout phases material) at the site. In 1961, William Bullard of The Royal Ontario Museum conducted a series of excavations on Structure A and the ball court in Group II, again, recovering predominantly Late Classic period ceramic artifacts (Bullard 1965).

Following Bullard's brief work at Group II in 1961, no archaeological investigation was carried out at Baking Pot until 1992. At this time the Belize Valley Archaeological Reconnaissance Project (BVAR), directed by Dr. Jaime Awe (Conlon 1993a, 1993b; Powis 1993), conducted excavations for three field seasons at a small plazuela (the Bedran Group) located approximately two kilometres southwest from the site core. Results of these investigations provided information on settlement distribution, chronology, and intra-group comparison of the mounds (Conlon 1993b; Powis 1993; Awe 1994; Conlon, Powis and Hohmann 1994; Conlon, Finlayson and Powis 1995). A series of "linear indentations" (see Kirke 1980) that encompasses the Bedran Group was also documented and scrutinized for its agricultural potential in the sustaining area of the Bedran Settlement Cluster and Baking Pot (Conlon 1995b; Conlon and Awe 1995).

Recently, work in the immediate core area of Baking Pot has been undertaken in 1994 and 1995 by BVAR. One small test excavation in the sacbe connecting Group I to Group II produced only Late Classic evidence for construction (Cheetham 1995:40). Other excavations between Mounds E and F, confirmed the presence of a third ballcourt at Baking Pot and suggested that the court was constructed and later modified during the Early and Late Classic periods respectively (Conlon 1996).

## **The Atalaya Group: Setting and Research Objectives**

The 1996 operations at Baking Pot were divided into two interest areas: 1) the examination and investigation of Terminal Phase occupation in the core area (see Aimers, this volume), and 2) to investigate and understand settlement, particularly mound groupings, in the sustaining area, or immediate periphery, of Baking Pot. The latter is the focus of this report and includes preliminary findings of the first season of work at a small "plazuela", designated the Atalaya Group, located south of the site's core.

Atalaya is situated on the edge of the naturally elevated terrace of an old river bank that, to the east of the group, drops off into a *bajo*, while to the south gently slopes to a small stream (running east-west) that eventually drains towards, and connects with, the aforementioned *bajo* (Figure 1). To the north and south of the group the terrain consists of virtually flat alluvial flood plain.

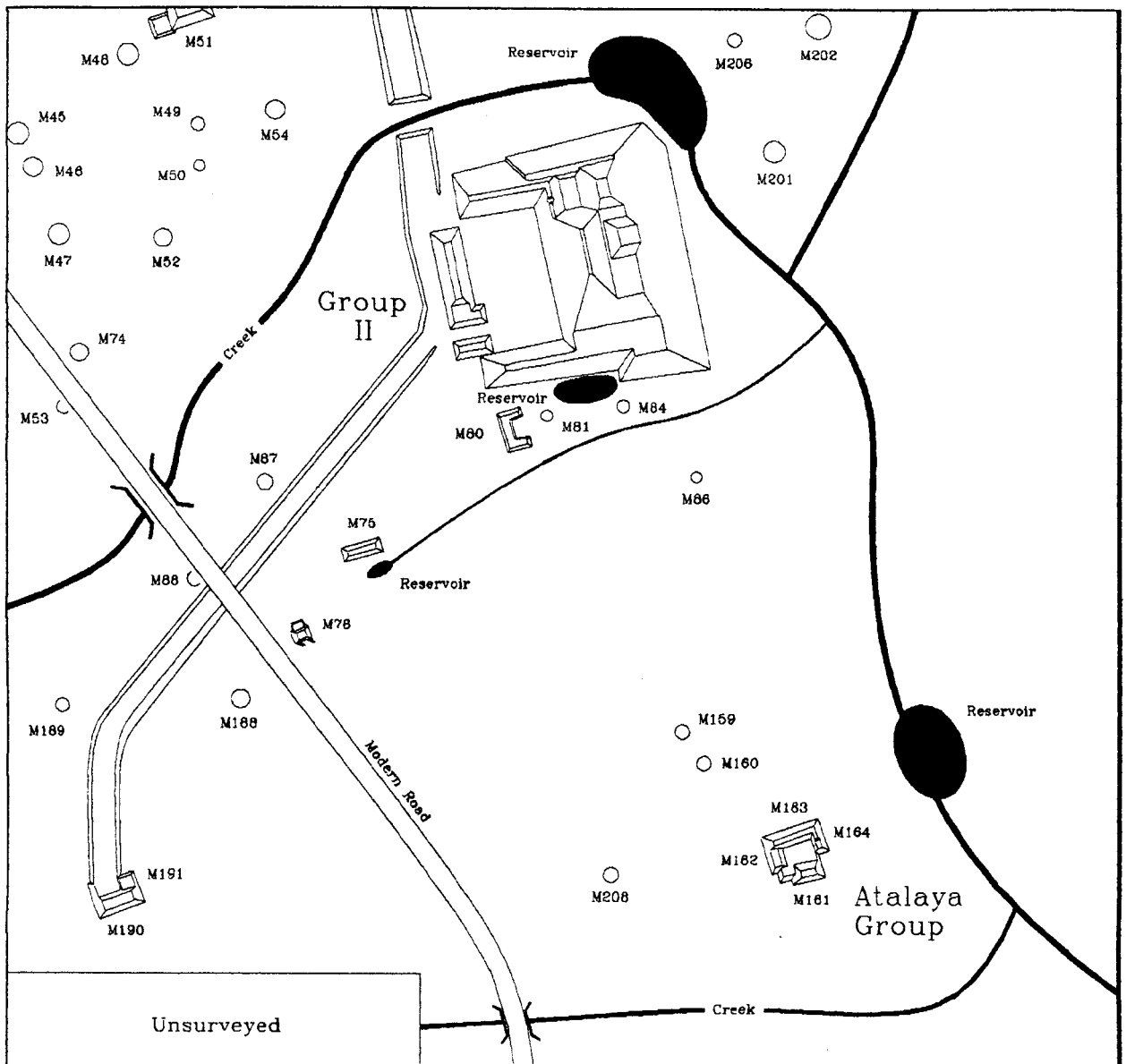
The Atalaya Group consist of four mounds, approximately aligned on the cardinal points, located about two hundred meters south of Group II. In configuration, the mounds are geometrical and conform to those described by Thompson (1931) as "plazuela" in his Mountain Cow report. This configuration is somewhat similar to the Bedran Group mentioned previously (e.g., Conlon 1993a, 1993b) (Figure 2). Over the course of the settlement survey in 1994 the four mounds in the Atalaya Group were designated 161 through 164. For identification purposes during archaeological investigation the southernmost mound was designated as Structure 1 (161), the highest in elevation (1.1 m above the modern surface of the courtyard) of all four mounds. The western (1.1 m) and northern (1.1 m) mounds were referred to as Structures 2 (162) and 3 (163) respectively. Both are noticeably lower than Structure 1. The eastern mound was designated as Structure 4 (164) and, from the surface of the courtyard, is approximately 0.50 m in height.

While the overall objectives of the BVAR project are to gather data that will aid in understanding complexity, morphology, evolution, and interaction at the site of Baking Pot, and regionally within the Belize Valley, work at the Atalaya Group had specific objectives. These objectives included the intensive and extensive excavation of this small plazuela group to retrieve information concerning three major topics: 1) culture history and chronology, 2) form and function of individual structures within the mounds of the group, and 3) deducing intrasite relations. The data retrieved in 1996 is detailed below.

## **Excavation Results**

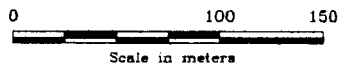
Excavation occurred over a two month period in 1996 and the strategy formulated included the recovery of the maximum amount of information pertaining to research objectives, outlined above. In the first season it was considered important that all major architectural features be tested, at least in a preliminary manner. Therefore, all four structures were targeted or tested with at least one excavation unit. This allowed us to obtain not only indications of architecture style, but also chronology. Concomitantly, it was hoped that some information of status differentiation within the plazuela group could be determined from the architecture and artifacts recovered by these operations.

In most cases, placement of excavation units was determined by existing architectural



Atalaya Group,  
Baking Pot,  
Belize  
1996

Belize Valley  
Archaeological Reconnaissance



Plan by:  
James M. Conlon (1995-1997)  
Survey by:  
James M. Conlon (1994, 1996)  
Cameron A. Griffith (1996)

Revised: 02/07/97  
Revised: 08/21/96



features as most structures had portions of exposed walls or stairs. In other cases, excavation was conducted using arbitrary levels until a subsequent cultural feature, such as a wall or floor, was found. Since analysis has not been completed only a brief note on the artifacts is included here, followed by a more detailed description of architecture.

### *Artifacts*

Only preliminary ceramic analysis has been undertaken, but, the majority of ceramics collected from the Atalaya group are ash tempered, mainly of the Belize Ceramic Group. Other artefacts excavated at the plazuela group include stone implements, such as bifaces, celts, adzes, mano and metate fragments, obsidian blade fragments, faunal remains (yet to be analysed), shell beads, and two jadeite beads. Artifact distribution is commented upon in the Structure excavation summary section which follows.

### *Structure 1*

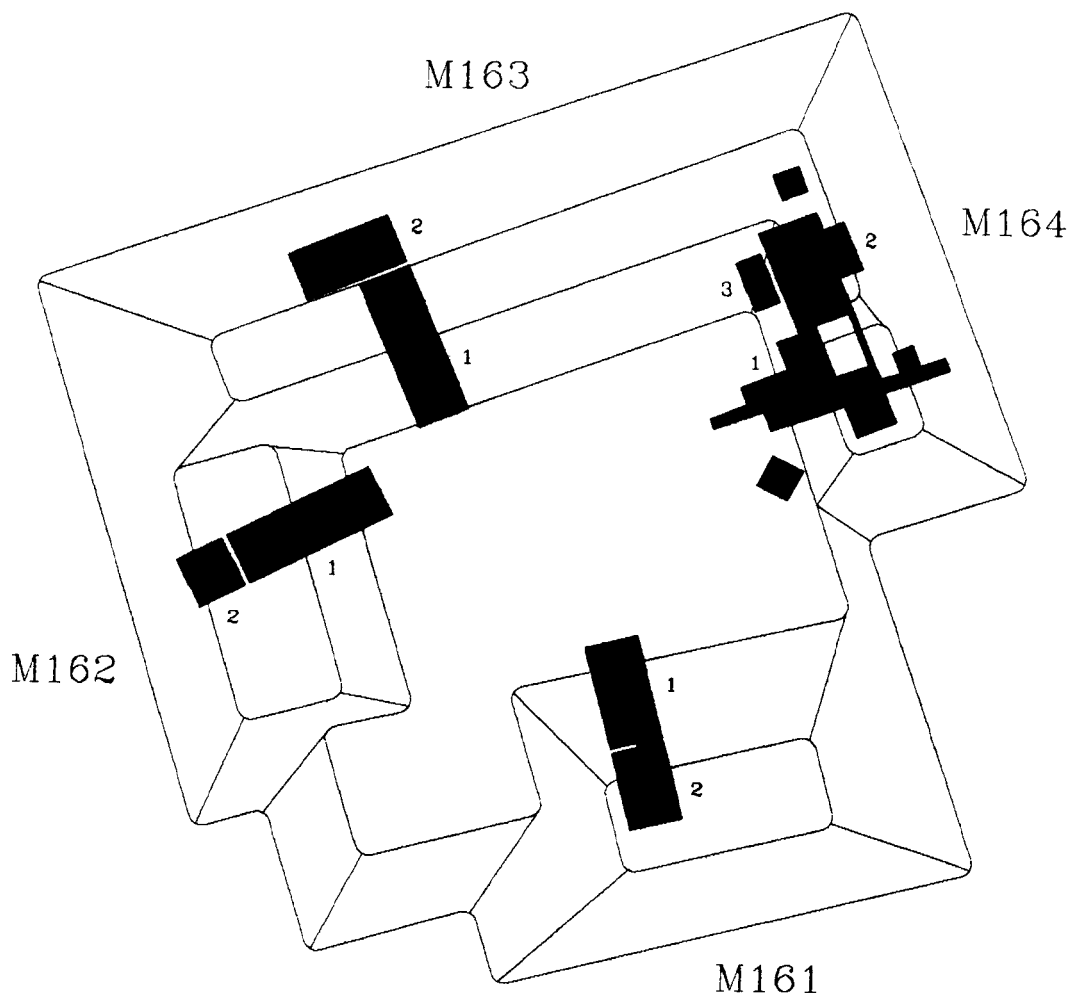
Excavations on Structure 1 were initiated with Unit 1 (2m X 6m) which was placed at the hypothesised centre front access of the structure, and which extended from plaza level to the summit (see Figure 2). This unit incorporated several lines of horizontal cut stones which protruded through the modern surface at various intervals along the north face of the mound. Excavation of unit 1 exposed the terminal architecture of the front of Structure 1. This consisted of three terraces of which the floor of the third uppermost abuts a short stone wall containing a fairly large gap. This gap is believed to have been a doorway leading into a building platform at the top of the mound. Further conformation of this entrance area was made when Unit 2 (2m X 2m) was placed across the top of the structure. Immediately behind the entrance area, at approximately ten centimeters below surface, a rubble floor was exposed (floor 1), which may have been plastered at one point. Approximately one meter below floor 1 was exposed two other floors, floor 2 and 3, both with sections of well preserved plaster floors. Excavations continued for approximately twenty centimeters below floor 3 but were terminated due to closure of the field season.

Excavations at the base of Structure 1 revealed a line of finely cut granite and limestone blocks constituting the facing (front) of the lowermost stair, or the base of the mound. Immediately below this lower stair or wall were dress stones, or basal moulding, which may have served as some decorative function to the architecture. Further below, approximately ten centimeters, rubble construction fill of the plaza floor was encountered.

Structure 1, which is the biggest mound in the Atalaya Group, produced the least artefacts in general. It should be noted, however, that while the quantity of sherds recovered were limited, excavations in this structure did produce some of the few fragments of polychrome pottery recovered at the plazuela.

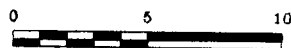
### *Structure 2*

Excavations at Structure included two units. Unit 1 (2m X 6m) was placed along the



Excavation Units,  
 1996 Field Season,  
 Atalaya Group,  
 Baking Pot,  
 Belize

Plan by:  
 James M. Conlon (1995-1997)  
 Survey by:  
 James M. Conlon (1994, 1998)  
 Cameron A. Griffith (1996)



Scale in meters

Belize Valley  
 Archaeological Reconnaissance

Revised: 02/07/97  
 Revised: 08/21/96

central axis and Unit 2 (2m X 2m) was placed atop the mound along the same axis. In Unit 1, excavations exposed the cut stone layers of two terraces. The upper terrace culminated at what may be a portion of the outer top wall. The terminal phase architecture here is very disturbed and sometimes exhibited disjointed stone patterning, making it difficult at times to interpret. Behind this disjointed stone wall, there was a layer of fine rubble fill which may have been the remains of a plastered floor some thirty centimeters below surface. Work at the base of Structure 2, in Unit 1, exposed portions of the terminal plaza floor at approximately ten centimetres below modern surface. Excavations in Units 1 and 2 were terminated before a complete assessment of structure development could be accomplished.

While Structure 2 produced a bulk of utilitarian pottery, amidst the tumbled terrace debris of unit 1, there was also recovered several obsidian blade fragments, a complete ceramic ocarina, and one small, apple green, tubular jadeite bead.

### *Structure 3*

Excavations at Structure 3 included two units, similarly placed as in Structure 2. Both Unit 1 (2m X 6m) and Unit 2 (2m X 2m) revealed a roughly similar architectural layout to Structure 2. After removing a large quantity of collapse debris and tumbled cut stones, we were able to clearly identify a sequence of two terraces in Unit 1. The architecture exposed by Unit 2 was less clear owing to the disturbed and confused nature of the terminal architecture but, as mentioned, it appears to have a similar form to that atop Structure 2.

The terminal phase architecture of Structure 3 was littered with utilitarian pottery fragments, bifaces, chert debitage, celts, and mano and metate fragments. It too, like Structure 2, produced many obsidian blade fragments and a small, green jadeite pendant.

### *Structure 4*

Excavation at this eastern mound entailed greater areal coverage than in any of the other three mounds previously detailed above. A total of five units were placed into this structure. Coverage was greater here because the architectural features were much better preserved.

This structure is composed of two construction phases, a terminal and a penultimate phase. In the terminal phase of construction a long wall of primarily cut limestone blocks extended almost the entire length of the mound in a general north south alignment. This wall rose approximately fifteen centimetres above the surface of the first floor. Excavations concentrated on the western face (facing into the courtyard), but a test was conducted behind the wall, in an easterly direction, to see if the floor continued in this direction. In an effort to find Floor 1, two burials (both extended) were uncovered in the southeastern corner of the structure (see Piehl, this volume) in what appeared to have been a bench within the building. Proceeding below these burials Floor 1 was uncovered, and appeared to be finely plastered, unlike its extension on the western side of the wall.

Continued vertical excavation in these units, following along the existing exposed wall, disclosed a second wall which was better preserved than the first wall. Wall 2, or the penultimate phase of architecture, consisted of a line of smaller, dressed cut stones, protruding at its base. This wall sits on a well preserved plastered floor (floor 2). Test excavations below floor 2 eventually

revealed sterile alluvial deposit. Other units on the northern side of the mound were placed to confirm the two-phase construction sequence and to test for any other architectural features. The northern end of this structure is peculiar because the western side of the long north/south wall contained floor fill, while the eastern side had a sterile alluvial clay matrix. This disparity needs to be further investigated in subsequent seasons of investigation.

Operations at Structure 4 produced mostly utilitarian pottery sherds, very few stone implements, but a good quantity of obsidian blade fragments. It should be noted that this is the only structure, so far, in which burials were uncovered.

## **Discussion**

When analyzing and interpreting the status of those who inhabited the Atalaya group, it should be noted that while the inhabitants of the plazuela were certainly not of high elite standing, they were definitely not "poor". Evidence from excavation also suggest that even though there were limited quantities of some exotic items, the residents of Atalaya were still able to obtain them. Furthermore, their dwellings seem to be superior, (in size, quality of architecture and formality of layout) to many of those located within the Baking Pot sustaining area. Indeed, the formal configuration of the plazuela (with enclosed plaza or private courtyard) seems to suggest that, at Atalaya, the inhabitants were probably an extended family who had the privilege, or wealth, to live in nicely plastered, elevated houses, made of worked limestones which had to be procured from the foothills a few kilometers away.

The amount of utilitarian artifacts found in Structures 2 and 3, and to some degree in Structure 4, strongly indicate an intensive use of those structures for domestic purposes, thus they most likely functioned as dwellings. The function of Structure 1 is a little more difficult to determine. Judging from its artifact assemblage, the presence of burials, and its location on the east side of the plaza, it is possible that rather than being used for domestic purposes, it may have served as a family shrine, or some other special use. Previous research by the BVAR Project at Cahal Pech and Baking Pot have noted that the eastern mounds of most formal patio groups at these sites appear to have served ritual (shrines) purposes, thus it may be possible that Structure 4 at Atalaya follows a similar functional pattern.

Other questions that remain to be addressed at Atalaya include: why is it that mounds, such as Structure 1, are always largest structure in the group, and more often than not, positioned in the souther perimeter of the group? Interestingly, the southern structures in many formal patio groups in the Belize Valley often appear to be the largest structures within the plazuelas and it is important that we attempt to determine if this pattern is consistent at Baking Pot, and to ascertain the precise nature of their function.

Artefacts collected from the excavations at Atalaya, particularly the ceramics, suggest a strong Late Classic occupation of the settlement. A few sherds were identified as pertaining to the New Town phase of the Early Postclassic period, however, the limited quantity of this material indicates that occupation of the group during time was at best ephemeral. Future investigations will certainly help to clarify this chronology, and will also help to determine whether construction or occupation preceded the Late Classic period.

## Conclusion

It is still too early in the investigative process to make definitive statements concerning comparisons between formal patio groups at Baking Pot. However, preliminary intra-site comparisons can be made between the Atalaya Group (which is located near to the site core) and the Bedran Group in the outer periphery of Baking Pot. As indicated previously, both groups seem to be roughly similar in configuration. The Bedran Group, however, seems to have had greater access to exotica, and its inhabitants appear to have been wealthier than those living nearer to the core such as at Atalaya. Could it be that because Bedran was further away from the site core, and competition for land resources may have been less in the periphery, that the Bedran inhabitants were more prosperous than those of the Atalaya Group? Does close proximity to the site core restrict access to certain resources because autonomy is usurped? In other words, to what degree does differential proximity to the site core affect the micro-settlement activities of "plazuela" groups in the peripheral areas? While we may not be able to adequately address these questions with the limited work to date at the Atalaya Group, this paper, though limited in its contribution, is a beginning to the search for answers to some of these difficult questions.

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# The Burial Complexes of Baking Pot: Preliminary Report on the 1996 Field Season

By

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## Introduction

This paper presents the results of preliminary analysis of the burial complexes, including the human skeletal remains, recovered at Baking Pot during the 1996 field season. Burials were recovered in three areas of the site, including Plaza 2 of Group I, the plazuela group Atalaya, and Structure 88. Detailed discussions of the architectural and artifactual analysis of these structures is presented in other papers in this report (Aimers, this volume; Moore, this volume), and the following report will be limited to consideration of the elements of the burial complexes.

The fragmentary nature of the skeletal remains has limited the data recovered at this stage of analysis. Further analysis of the remains will include microscopic, radiographic, and stable isotopic analyses, that will augment the scope and detail of the information derived from the individuals buried at Baking Pot. Likewise, the artifacts interred with the deceased await more detailed analysis.

## Periphery

### STRUCTURE 88

This structure appears to be a housemound, and is located on the southwestern side of the modern road approximately 240 meters from the center of the Group II plaza. A salvage operation aimed at recovering human skeletal remains exposed by the erosion of the roadcut (which bisected the mound) was the only excavation undertaken at this structure. Detailed contextual and in situ assessment is not possible owing to the condition of the mound and the nature of the salvage operation, but, the two burials recovered appear to have been simple subfloor graves. The surrounding matrix is typical construction fill, including small pieces of carbon, shell, lithic flakes and debitage, and small potsherds. No grave goods were found with either burial.

#### *Burial 1*

Burial 1 consists of the partial remains of 2-3 individuals. Individual A is represented by a fragmentary cranial vault and a small portion of the first cervical vertebra, as well as left metatarsal and phalange fragments. All cranial sutures present remain unfused, but the remains are too fragmentary to make an age estimate.

Small fragments of a subadult mandible and associated teeth were also recovered, as follows:

	M3	M2		P4	P3	C	I2	I1	I1	I2	C	P3	P4		M2
		dm2	dm1									dm1	dm2		
R		dm2	dm1		dc					dc		dm1			L
	M3	M2		P4	P3	C	I2	I1	I1		C	P3		M2	M3

Of the mandibular teeth, both third molars, the left third premolar, and the left canine remained in their bony crypts. The maxillary and mandibular teeth are in a stage of development indicating that the individual was 9 years  $\pm$  24 months of age at death (Ubelaker 1989: Figure 71). Caries is present in the form of a medium-sized lesion on the distal surface of the lower second right deciduous molar, and as a large lesion at the distal cervicoenamel junction of the upper left first deciduous molar (Lukacs 1989:267). The distal cervicoenamel junction of the upper left second deciduous molar shows a small area of pitting. Moderate enamel hypoplasia affects the labial surfaces of all permanent first incisors, the lower right second incisor, both maxillary canines and lower right canine, suggesting that the individual suffered growth-disruptive stress at some time during the formation of these teeth (6 months to 3 years) (Goodman and Armelagos 1985:481; Lukacs 1989:267). In the absence of secure provenience information, it is unclear whether these remains are from the same individual as the cranial, metatarsal, and phalange fragments reported above. Further microscopic analysis may solve this problem.

Several long bone fragments of another subadult individual, designated Individual B, were also recovered from Burial 1. These include portions of the right radius, right humerus, and proximal diaphysis of the right femur. No epiphyses or metaphyseal surfaces that would aid in an age estimate are present in the remains.

### *Burial 2*

The skeletal material recovered as Burial 2 is the lower portion of a primary interment destroyed by construction of the modern road. Both tibiae, fibulae, and right and left tarsal and metatarsals were preserved in fragmentary condition but retained their anatomical order. The individual was adult, but a more specific age estimate is not possible. The right tibia and metatarsals lay directly below the left fibula, indicating that the individual was buried on the right side, probably in a flexed position. The head would have lain to the south. No pathology was observed on the skeletal material.

### **Atalaya Group**

#### **STRUCTURE 164**

As detailed in Moore (this volume), this plazuela group consists of four structures, oriented roughly to the cardinal directions. Structure 164 (Structure 4 of the mound group), the only structure of the group in which a burial was recovered during the 1996 field season, lies on the eastern side of the plaza. The 1996 excavations revealed evidence of two construction phases, the

most recent of which included the interment of the two individuals in Burial 1. The fill of this terminal construction phase includes a high proportion of Belize Red ceramics, dating the last construction activity to the Late Classic (A.D. 700-900) (Moore, this volume).

### *Burial 1*

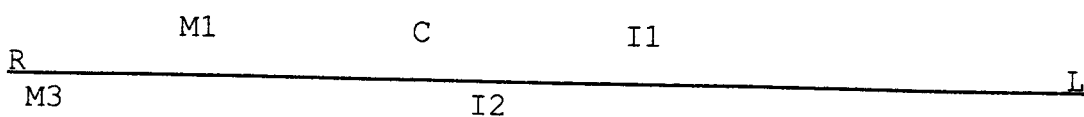
This burial is a typical domestic interment in construction fill in the southeast corner of the structure. The fill is characterized by a medium-high density of small lithic and ceramic fragments, a medium density of charcoal, and occasional daub fragments. Sherds of Xunantunich Black-on-Orange (1976:268-269) appear in the fill and confirm the dating of the structure to the Late/Terminal Classic (A.D. 700-900).

Two adult individuals were deposited in the simple grave, and five large white limestone cobbles, distinctive among the rest of the small stones in the construction fill, were placed in the fill directly above them. A scatter of potsherds large in relation to other sherds in the fill underlay this cobble layer. No grave goods were included in the burial. The base of the burial rests upon the penultimate floor of the structure. The construction sequence and the lack of evidence of intrusion indicate that the burial was included at the time of last construction, a refurbishment undertaken in conjunction with the laying of the final floor.

Both individuals were interred in extended prone positions, with the heads to the south. Individual A was deposited directly above Individual B, and moderate intermingling of the skeletal remains occurred. Postdepositional disturbance in the form of intrusive tree roots, rodent activity, and trampling associated with the modern use of the land as cattle and horse pasture have resulted in considerable vertical displacement of the skeletal material. The uppermost portions of the burial are clusters of small fragments, disassociated from their position of interment, grouped in small hollows among the cobbles in the construction fill and the tree roots.

Individual A is represented by fragmentary remains of most skeletal elements. Cortical attrition ranges from slight to severe, and the most fragile skeletal material (such as the trabecular bone of epiphyses and vertebral bodies) has been destroyed by the hard-packed, highly clayey matrix. Despite the fact that the cranium has been smashed by intensive root activity, several cranial features useful in estimating sex of the individual were preserved. These include the nuchal crest, which scored in the range of indeterminate sex according to the system designed by Ascadi and Nemeskeri (1970); the mastoid processes, which scored as probable female; and the mental eminence, which indicates an individual of probable male sex. The left sciatic notch of the os coxa is also preserved, and scores as probable female. Thus, the sex of Individual A remains indeterminate at this time; further analysis of the dentition (Ditch and Rose 1972; Owsley 1982; Owsley and Webb 1983) and long bones (Ruff 1977; Black 1978; Dittrick and Suchey 1986; McCormick et al. 1991) may provide further data that speak to this problem.

The matrix did not favor preservation of tooth enamel; though mandibular and maxillary bone alveoli indicate that the individual retained a complete set of teeth at time of death, few were recovered (chart follows) and surviving enamel tended to be soft.

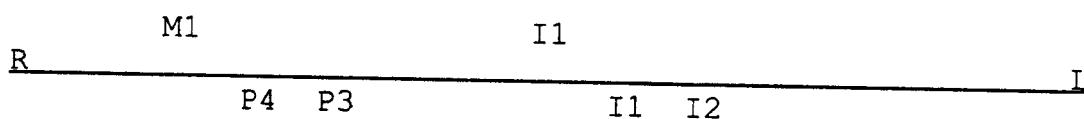


A large carious lesion covers the labial cervicoenamel junction of the left upper first incisor. Caries in the form of medium-sized lesions is also present at the cervicoenamel junction of the lower right second incisor, and at the buccal cervicoenamel junction of the lower right third molar. This third molar also shows moderate pitting of the enamel on the distal surface. Hypoplastic irregularities occur on the upper third of the upper right canine and upper left first incisor crowns. The extent of attrition suggests an age of 20 to 30 years (Lovejoy 1985), although this must be a tentative estimate due to the dental sample size.

The only bony pathology found in the skeletal material representing Individual A is arthritic lipping on a first distal foot phalanx. The lipping occurs at the margins of the articular facet, and around the base of the head, particularly on the medial side. Since this is the only distal phalanx recovered, and the heads of all possibly corresponding metatarsals are absent due to decomposition, the original extent of the pathology is unknown. It should be mentioned that fragments of vertebral bodies and arches showed no marginal lipping or other degenerative changes associated with the aging process (Rogers et al. 1987:192), an observation consistent with the age estimate suggested by the dental analysis.

As mentioned above, Individual B was interred directly below Individual A, in a prone position with the right arm flexed so the hand extended near the face. Preservation conditions are of course very similar to those affecting Individual A; namely, moderate to severe abrasion of the cortex due to the high clay content of the matrix. Like those of Individual A, the remains of Individual B constitute a fragmentary and decomposed but primary adult interment. No diagnostic features useful in an estimate of sex from preliminary analysis were preserved.

Again, the character of the matrix was unfavorable for the preservation of tooth enamel. Of the teeth recovered (see chart below), all display at least one form of dental pathology.



Carious lesions occur at the cervicoenamel junctions of the mesial upper right first molar, labial upper right first incisor, distal lower right third and fourth premolars. Enamel hypoplasia is visible in bands on all incisors recovered. Moderate calculus, following the standard of grading established by Brothwell (1981:Figure 6.14), occurs on both left lower incisors. Wear patterns on those teeth present suggest an age at death between 25 and 35 years.

The fragmentary remains of at least four thoracic vertebrae, and 3 cervical vertebrae including the atlas and axis, show no signs of lipping or other degenerative changes associated with

spinal osteophytosis (Ortner and Putschar 198 : 420-422). However, the third cervical vertebra shows severe lipping on the inferior posterior margin of the body, accompanied by osteoclastic activity and increased porosity of the vertebral body. These abnormalities are consistent with marginal degenerative arthritis resulting from the herniation and subsequent degeneration of the intervertebral disc (Ortner and Putschar 198 :430). A very small fragment of another cervical vertebral body, possibly the fourth, shows the same marginal lipping and porosity.

### *Bone Scatters*

Excavation beneath the floor ballast in the western portion of Structure 4 revealed five small clusters of human skeletal material within a 0.5 x 1m area. The high clay content of the fill soil has contributed to the moderate cortical erosion observed on the skeletal fragments. The clusters have been numbered roughly from south to north.

The first cluster contains small metacarpal fragments. No lipping or other signs of activity or age are present. The second cluster, the largest in area, includes many long bone fragments too small to be assigned to a specific element. Just northwest of cluster two, the third cluster includes some of the largest, most diagnostic long bone fragments, including femoral, radial, and ulnar. Slight root etching is present on some fragments. The fourth cluster includes two probable humeral fragments. These and other small fragments in the cluster show evidence of rodent gnawing. The fifth cluster contains metatarsal fragments and a small portion of the anterior articular surface of a cuboid. Root etching is visible on these fragments. All skeletal material represents (an) adult individual(s), though age and sex cannot be determined from the material recovered.

This skeletal material is not arranged in a manner that would indicate that it was ever in clear anatomical order, nor is it clear after preliminary analysis how many individuals are represented. While axial skeletal elements are often not as well preserved as the appendicular skeleton, the state of preservation of the long bones present is not consistent with the complete absence of axial elements, including the cranium. The evidence suggests that this skeletal material does not represent a burial beneath the floor of Structure 4, but was incorporated in the fill soil, perhaps as fragments of a burial interred at the source of the fill.

### *Isolated Bone*

Two adult cranial fragments, one a portion of frontal and one a portion of parietal, were recovered from the floor ballast in the western portion of Structure 4. They were not associated with any feature or artifacts. A radial fragment was also found in the same floor ballast, south of the cranial fragments. After preliminary analysis it is not possible to determine whether these isolated finds are related to the skeletal material of the bone scatter, although their stratigraphic positions would require a great deal of displacement if they were.

## **Group I, Plaza 2**

### **STRUCTURE E**

Plaza 2 is the central plaza of Group I, formed by Structures B, C, E, and F. The 1996 excavations focused on Structure E, on the eastern side of the plaza, as detailed by Aimers (this

volume). The two cist burials and cache containing human skeletal remains were located on the central axis in the plaza directly in front of Structure E (see Aimers, this volume, Figure 6).

*Burial 1*

This burial is one of a pair of cists found set into the plaza floor on the axial line of the plaza and Structure E, west of the base of Stela 1. The cists were constructed on a north-south line, and were intrusive into Floor D, the fourth plaster plaza floor below modern ground level. Floors B and C were also cut through in order to construct the cists. Cist 1, in which Burial 1 was interred, consists of 8 limestone slabs set upright around the burial, and was capped with 3 larger limestone slabs. The cist measured 172cm in length and 61 cm in width at its greatest extents, and narrowed to the north.

Grave goods interred with the individual were all items of personal adornment. These included several greenstone inlay chips found in the matrix surrounding the scapulae. A ceramic disk, 25mm in diameter, was also found in this area; the greenstone chips may have once adhered to this. 60 cylindrical greenstone beads, averaging 8mm in diameter, were found in the region of the mandible and cervical vertebrae. They were accompanied by 8 irregular kernel-shaped greenstone beads, averaging 6mm by 11mm, and one 15mm-long cylindrical greenstone bead with a diameter of 7mm. A greenstone pendant depicting the head of a bird, with the hooked beak and ringed eyes of a parrot or macaw, was recovered from the chest area. One crumbling ceramic bead was found near the pendant; its state of preservation suggests that there may have been more ceramic beads that have since disintegrated.

The individual was interred in a supine extended position, with the head to the south. The left arm extended under the appendicular skeleton, so that the bones of the hand rested in the upper region of the pelvic cavity. The bones lay in 10-12 cm of loose, damp soil, leading to softening of the bone and heavy cortical attrition, but fragments of most elements were present. Some minor root and rodent disturbance was noted, but only the smallest bone fragments had been displaced from their primary position.

The mastoid processes of the temporals fall in the center of the range of adult variation (Ascardi and Nemeskri 1970), and thus do not aid in sex determination. Similarly, the sciatic notches of the os coxae fall within the range of indeterminate sex. The ilia are very fragmented, but it is possible to observe that the preauricular sulcus is absent on the left os coxa, suggesting that the individual may be male. The length and robusticity of the femur and tibia, observed in situ, lend weight to this suggestion, although a definite determination of sex is not possible at this point. Further metrical analysis may provide resolution to this problem.

Teeth were recovered both from the matrix surrounding the cranium and intact in mandibular fragments. Recovered teeth include the following:

P4	P3	C		I1	I1		C	P3	P4		L	
M2	M1							C	P3	P4	M1	M2

Small fragments of a maxillary incisor, molar, and third molar were also recovered. The lower left second molar shows caries on the distal portion of the occlusal surface. No other dental pathologies are present. Wear patterns on the teeth indicate an age of 18 to 24 years. No other macroscopic age indicators were preserved.

Pathological changes are present on the fragments of two cervical vertebral bodies, in the form of osteophytes and compression of the superior and especially inferior anterior margins of the bodies. The pathology is most likely premature degenerative arthritis resulting from a compression fracture of the vertebral bodies and/or herniation of the intervertebral disc (Ortner and Putschar 198:69, 430). Fragments of one other cervical vertebrae were recovered, on which these changes are not present.

### *Burial 2*

Cist 2 is located 97cm to the west of cist 1. It was constructed in the same manner as cist 1, with 7 upright limestone slabs capped by 3 larger slabs set with their long axis north-south. These capstones were covered with a cobble ballast layer. The cist measured 188cm in length and 56cm in width at its greatest extents.

Artifacts interred with the individual as grave goods include two cylindrical tripod vessels with basal flanges, one Balanza Black and one Pucte Brown (Gifford 1976: 161-162). The Balanza Black vessel is 14.4 cm high, with a rim diameter of 12.6cm and a vessel wall thickness of .5cm. The Pucte Brown vessel, which displays a mottled orange and brown surface, is 11.2 cm high, with a rim diameter of 13.4 cm and a thickness of .5cm. Both vessels are from the Hermitage Ceramic Complex (300-600 AD). They were placed in and to the east of the pelvic region of the individual.

A marine-shell bead necklace was recovered from the neck and mandibular area. The necklace consists of 842 circular beads averaging 0.4cm in diameter and ranging from 0.03cm to .3cm in thickness. Two larger circular beads included in the necklace are redrilled fragments of cylindrical beads. Fourteen semi-lunate marine-shell beads, 1.02cm to 2.38cm in length, were also part of the necklace.

As in cist 1, the individual was interred in a supine extended position, with the head to the south. The matrix in the cist was damper than in cist 1, such that most of the axial skeleton and all of the teeth had disintegrated. The appendicular skeleton was represented by small bone fragments, many of which had fallen into pockets in the soil caused by root disturbance. All bone fragments present show heavy cortical attrition.

Elements useful in the determination of the individual's sex or age at death are mostly absent due to the fragmentary nature of the remains. A mandible fragment includes enough of the mental eminence to suggest that its expression is minimal, but not enough to confidently evaluate the sex of the individual. The overall gracility of the skeleton, as observed in situ, combines with the slight mental eminence to provide a tentative identification of the individual as female.

Small cranial fragments including small pieces of sutures are the only remaining possible indicators of the individual's age at death. While a much more systematic assessment of cranial

suture closure at specific osteometric points is required to obtain a reasonably accurate age at death, the suture fragments preserved consistently show significant closure, suggesting that the individual was of middle adult age (35 - 49 years) (Buikstra and Ubelaker 1994:32-36).

*Cached Human Skeletal Material*

This cache was located 64cm west of and 4cm above the level of the base of stela 1, 71cm east of cist 1 on the central axis of the plaza. It was set into Floor D like the cists, but is not intrusive as the cists are. Thus, it represents an earlier event than the interment of the individuals in the two cists. The skeletal material forming the base of the cache rests upon the cobble ballast layer of floor D, and the cache was included within the plaster layer of the floor. The cache consists of two Hewlett Bank Unslipped bowls (Gifford 1976:190-191), dating the cache to the Tiger Run Ceramic Complex (600-700AD). Both vessels are crushed but complete, approximately 39 cm in diameter. The upper bowl was inverted, lip-to-lip, over the lower.

A subadult cranium was placed atop the uppermost, inverted vessel. Unfortunately, the skeletal material and even the tooth crowns were in a state of severe decomposition, and very little data was recoverable. The size and bone thickness (as well as these could be observed in situ) suggest that the individual was between a neonate and one year old, although this can only be an approximation. The only dental material remaining is a fragment of the buccal portion of an upper first deciduous molar.

A second subadult cranium rested between the vessels. The cranial bones were found in similar condition to those forming the top of the cache, and no diagnostic fragments were recovered. However, an almost complete set of teeth were recovered. The following chart lists all teeth recovered, in various stages of formation and eruption.

M3	M1	P4	P3	I2	I1	I1	I2	C	P3	P4	M1	M3		
dm2											dm2			
R												L		
M3	M2	M1		P3	C	I2	I1	I1	I2	C	P3	P4	M1	M2

Based on the dental information recovered, the individual represented by this cranium was 11 years of age  $\pm$  2 years. Pitting and caries are present on the occlusal surface of the upper right deciduous second molar.

Postcranial elements representing the secondary interment of a juvenile individual were found below the vessels. These included a fragmentary left arm and hand, represented by humeral, ulnar, and radial shaft fragments, as well as three metacarpal shaft fragments and one crushed phalanx. Soil conditions have adversely affected the cortical surfaces of the bones in small patches on the fragments. The arm was deposited in a flexed position in the northwestern portion of the cache.

A second cluster of skeletal material was deposited in the easternmost portion of the cache.



This included the fragmentary right leg and foot of a juvenile, very likely the same individual as represented by the left arm, on the basis of similarities in the metacarpal and metatarsal shafts, and the phalanges as well as gross size similarity of all skeletal elements present. The shafts of the femur, tibia, and fibula are present though fragmentary and suffering from cortical erosion in patches. Fragmentary metatarsal shafts and one intermediate phalanx shaft were also preserved. Like the arm, the leg was deposited in a tightly flexed position.

A third cluster, placed west of the leg and south of the arm, consists of a group of very decomposed right rib fragments, and a lateral shaft fragment of the right clavicle. The bones were tightly clustered on top of one another, and kept distinct from the other clusters, as evidenced by the absence of skeletal material or any kind of soil staining between the three clusters. This, as well as the tight grouping of the clusters, suggests that they may have been interred in three bundles.

#### *Isolated Bone*

The only isolated fragment of human skeletal material found during the 1996 season in Plaza 2 occurred in debris from the collapse of Structure E over the central bench east of the stela. The small, extremely weathered shaft fragment is from a fibula of undetermined side. It was not found in intended association with any other skeletal material or artifacts.

#### **Conclusion**

While the remains presented in this report form a small and fragmentary sample, the burial complexes display patterns consistent with many sites throughout the Maya area. The contrast of simple residential interments in construction fill and interments in cists, with the corresponding disparity in occurrence of grave goods, is common in the Maya area and may point to differences in status and/or mortuary practice among different factions of the Baking Pot community. More specific assessments of the status of the individuals interred or of their role in the community await a larger and more representative sample.

Similarly, the osteological analysis suggests a typical Maya population of moderate health status. The frequency of carious lesions, particularly on the dentition of individuals interred in the Atalaya Group, indicates a heavy dietary reliance on maize. Severe dental attrition in adults, as seen in this sample, is also common in the Maya area, and is at least in part related to food preparation methods (use of groundstone manos and metates to grind corn). Enamel hypoplasias reflecting childhood stress are common in agricultural populations (Martin et al. 1985), and may represent weaning age (Huss-Ashmore et al. 1982).

The only skeletal lesions observed in this sample are due to degenerative arthritic changes, induced by trauma or stress to the element in question. When considered alone, it is very difficult (and likely inaccurate) to assign meanings of occupation, activity, or bone porosity to these lesions, and thus arrive at a statement about the relative status of the individuals in the sample. Such interpretations will be made following further analysis and the excavation of more burials at Baking Pot. What can be said now is that preliminary analysis of the current sample has provided data consistent with other mortuary and osteological studies in the Maya area.

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**Middle Formative Occupation at Pacbitun, Belize:  
Report on the 1996 Field Season**

by

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**Introduction**

Archaeological investigations conducted at the Maya center of Pacbitun have revealed a long stratigraphic sequence of occupation extending from at least the early Middle Formative (ca. 900 B.C.) to the Late Classic (A.D. 900). Excavations conducted at Pacbitun between 1995-1996 have focused on gaining a more comprehensive understanding of the Formative period occupation and the position of the site within the larger regional community of the upper Belize River Valley. Limited excavations in Plaza B of the central precinct have revealed substantial architectural and artifactual remains dating to the early Middle Formative (900-650 B.C.) and late Middle Formative (650-300 B.C.) periods. The presence of over 3,000 pieces of marine shell ornaments and production by-products associated with Middle Formative structures suggests that the early inhabitants of the site were involved in specialized production of shell ornaments beginning as early as 900 B.C. This paper will briefly describe the architectural and artifactual findings of the 1996 field season and discuss their implications for the development of socio-political complexity in the Belize Valley during the Formative period.

**Location**

The site of Pacbitun is a medium-sized Maya center located in the foothills of the Maya Mountains of the Cayo District of western Belize, approximately 3 km east of the modern Maya community of San Antonio. The central precinct sits atop an elevated limestone plateau that runs in an east-west fashion. Like the plateau on which it sits, the central precinct is also oriented in an east-west direction and consists of at least 40 masonry structures covering an area of about 14.5 hectares (Healy 1990:250). The site core consists of three major plazas (A, B, and C) with two additional plazas (D and E) located to the north of the main site axis.

Pacbitun is situated at the juncture of two ecozones: the lowland tropical rainforest and the Mountain Pine Ridge (Healy 1990:247). The terrain surrounding the site is hilly with naturally fertile soils trapped in the low-lying catchment basins and valley-like depressions of the foothills. There are several secondary and tertiary streams within 5-10 kilometers from the site, providing abundant riverine resources and access to a major transportation network.

## **Previous Research**

Archaeological excavations were first conducted at Pacbitun between 1984 and 1987 by the Trent University-Pacbitun Archaeological Project, directed by Dr. Paul F. Healy. These investigations involved a number of large-scale excavations in the central precinct as well as a settlement survey and testing of a 1 square kilometer area surrounding the central zone (Bill 1987; Campbell-Trithart 1990; Healy 1990; Richie 1990; Sunahara 1994). These excavations produced a lengthy stratigraphic sequence of occupation extending from the early Middle Formative (900 B.C.) to the Late Classic (A.D. 900) period.

The 1995 excavations were primarily conducted in Plaza B of the central precinct (Hohmann and Powis 1996). Plaza B is the largest plaza at the site, measuring 3,150 m<sup>2</sup>. It is bordered on the east by a temple-pyramid (Structure 2) and by a long range structure (Structure 8) to the north, while both the southern and western edges of the plaza are bordered by multi-chambered range structures enclosing restricted courtyards. During the 1987 field season, an excavation unit was placed along the primary axis of Structure 8. These investigations revealed a substantial Middle Formative midden on the plaza side of this structure; however, additional testing was not undertaken to define the limits of this deposit or to identify any associated features.

During the 1995 field season, a 3 x 3 meter excavation unit was opened on the north side of Plaza B, just south of the base of Structure 8. These excavations revealed the architectural remains of four platforms (Structures 1-4) and a substantial midden deposit dating to the Middle Formative period (900-300 B.C.). The earliest architectural remains consisted of the retaining walls of two partially exposed platforms (Structures 1 and 4). Both structures were constructed of two courses of roughly-cut limestone blocks and ran parallel to one another in a northeast-southwest direction. The dressed face of Structure 1 was to the north while that of Structure 4 was to the south, indicating that these were two separate structures rather than a building modification. The presence of a tamped marl floor between these two structures provided additional evidence that these two structures were occupied simultaneously. Since no corners were encountered, it was impossible to determine the overall dimensions of these early structures and their directionality. Ceramics recovered from test units placed within each of these structures indicated that they were both constructed during the early facet of the Middle Formative period (900-650 B.C.).

Around 650 B.C., Structures 1 and 4 were covered over providing a stable foundation for the construction of Structures 2 and 3. Like Structures 1 and 4, these two structures were placed approximately one meter apart and were separated by a tamped marl floor. Structure 2 was at least three courses high and two courses wide. The dimensions of Structure 2 were determined to be 8.25 m east/west x 5.56 m north/south. Structure 3 runs parallel to Structure 2 and appeared to be very similar architecturally. The eastern wall of Structure 3 was also two courses wide and at least three courses high. This structure cornered at the same location as its neighbour; however only a small portion of the southern wall was exposed. There was not sufficient time to determine the overall size of this structure. The ceramics recovered from Structures 2 and 3 indicated that they were constructed during the late facet of the Middle Formative period (650-300 B.C.).

The midden deposit that was identified during the 1987 excavations was again encountered in 1995. The midden was found overlying Structures 2 and 3 and contained a wide variety of artifacts, including ceramics, lithics, obsidian, shell, and greenstone. No associated features were found with this deposit, but the ceramic evidence indicates that the midden was probably used

throughout the late Middle Formative (650-300 B.C.) period. The presence of over 2,000 pieces of marine shell ornaments and by-products from their manufacture in this midden suggests that the early inhabitants of the site were involved in specialized production of shell ornaments and long-distance exchange at an early date (Hohmann and Powis 1996:121-122).

### **Current Excavations**

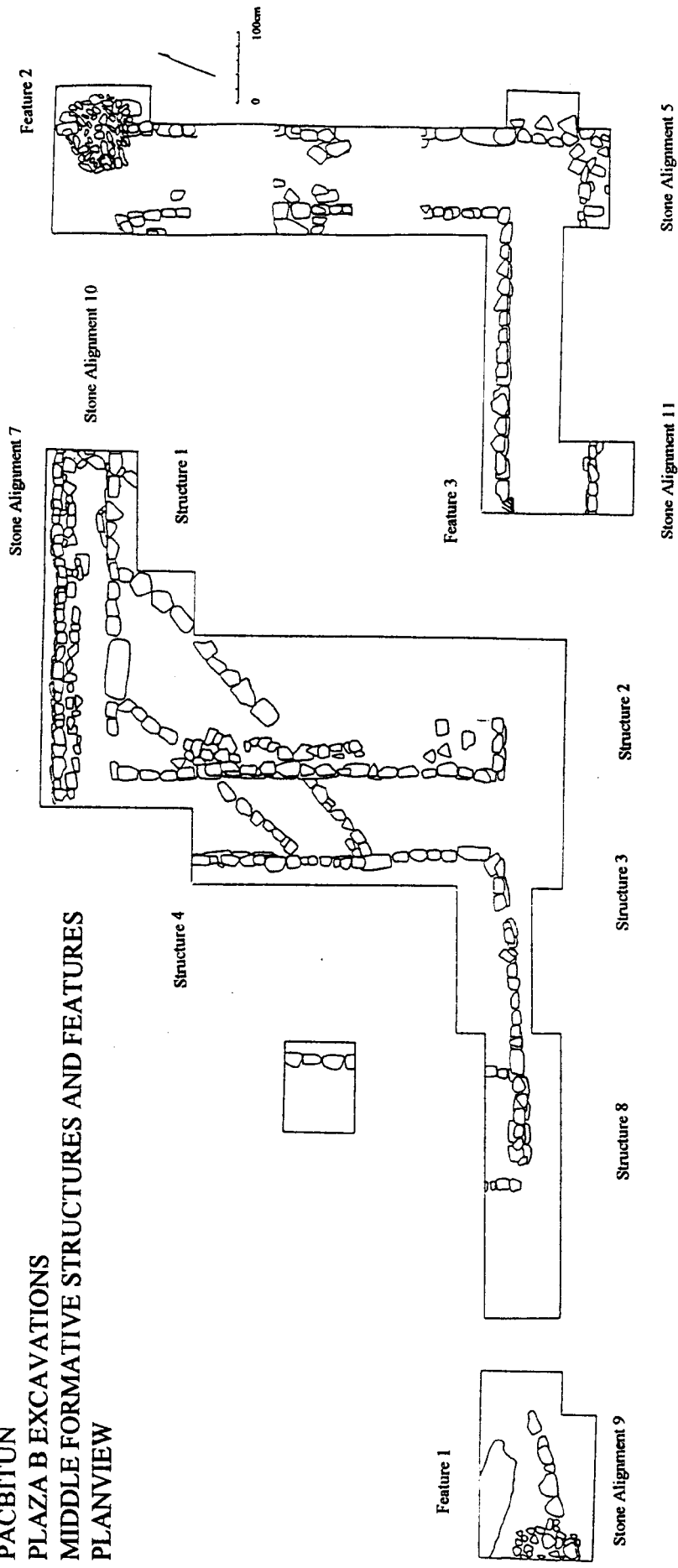
During the 1996 field season excavations in Plaza B were extended. It was hoped that by exposing a larger area we might encounter additional Formative structures and extramural refuse dumps containing artifactual materials associated with individual structures. These excavations were also undertaken to further investigate the specialized shell production at the site in terms of the mode or organization of production, scale of production, and the distribution of shell artifacts across the landscape.

Structures 1 and 4 continued to be the earliest architectural remains exposed in Plaza B (Figure 1). Only a small portion of these structures was exposed during the 1995 season, so every effort was made to increase the artifactual sample from these structures and expose additional architectural remains. A large excavation unit (Unit 8) was placed just north of the 1995 excavation unit (Unit 1) in an attempt to determine the size of these two structures and expose any associated deposits. Both walls continued into the northern unit, but they were ultimately covered by several later construction phases, inhibiting further attempts to determine their overall dimensions. Further excavations revealed the presence of a stone alignment (SA 10) running parallel to the western wall of Structure 1. Preliminary evidence indicates that the western wall of Structure 1 may corner and abutt this stone alignment. If this were the case, then there may have been a patio or porch to the north of Structure 1 facing a northeasterly direction. It is also possible that this may be another structure dating to the early Middle Formative period. The ceramics recovered from inside Structure 1 confirmed the early Middle Formative date tentatively assigned to this structure in 1995.

Additional portions of Structure 4 were also exposed in Unit 8. Structure 4 continued heading in a northeasterly direction; unfortunately, we were not able to define its dimensions. Like Structure 1, Structure 4 was covered by two subsequent construction phases, making it difficult to follow the wall further north. A small test unit was placed inside Structure 4 to increase the early Middle Formative sample. This unit penetrated a tamped marl floor and was taken to bedrock, a distance of only 10-15 centimeters. It appears that both Structure 4 and 1 were built on the ancient paleosol or ground surface with little or no modification beforehand. Beneath the row of cut stones was a pocket of darker soil containing 51 marine shell beads. Based on the shape of this feature in cross-section, it was most likely a posthole. Substantial amounts of shell beads, production by-products, and chert drills were also recovered from the structural fill inside Structure 4. At the level of decomposed bedrock, several other circular features were identified running parallel to the wall of Structure 4. Given the size, shape, and placement of these features, it is likely that these were postholes for a perishable superstructure. Ceramic material recovered from inside Structure 4 also confirm the early Middle Formative construction date.

Excavation units were also placed to the north, east and south of Structure 2 to provide additional information on Middle Formative architectural practices as well as to look for associated midden deposits and activity areas. Excavations along the southern portion of the structure revealed

**PACBITUN  
PLAZA B EXCAVATIONS  
MIDDLE FORMATIVE STRUCTURES AND FEATURES  
PLANVIEW**



**Figure 1: Plan map of Middle Formative Architecture in Plaza B, Pacbitun, Belize, 1996.**

the presence of a tamped marl floor extending to the south of the wall, much like that found between Structures 2 and 3 to the west. A feature (Feature 3) was also encountered approximately mid-way between the southeast and southwest corners of Structure 2. At roughly the midpoint of the southern wall, the cut stones ended and the soil turned a very dark-brown colour. In profile this feature appeared to be a step; however, at the base of the step there was a slight depression filled with the same soil. On the opposite side of this feature the tamped marl floor continued. It is possible that this feature represents a doorway into this structure. Additional excavations will be needed to determine whether this feature is in fact a doorway and which direction the structure may have faced during the late Middle Formative period.

A 1 m x 1 m excavation unit was placed to the south of this feature to determine whether the tamped marl floor continued southward into an open patio/plaza area. At the base of this unit (Unit 12) an additional stone alignment (SA 11) was encountered. The wall runs parallel to the southern wall of Structure 2 and was three courses high. The north face of the wall is dressed indicating that the wall faced that of Structure 2. With such a small area uncovered however, this cannot be determined definitively. Based on a small sample size, the ceramics recovered from inside the alignment (south) indicate a late Middle Formative construction date.

Excavations to the north of Structure 2 also revealed a tamped marl floor running to the north. We were unable to expose much of this floor due to a substantial amount of later construction north of Structure 2 (see SA 7 below). At present, it appears that Structure 2 was surrounded by a tamped marl floor to the north, south, and west. There has been no evidence of any tamped floors to the east of Structure 2.

Another stone alignment (SA 5) was exposed approximately one meter east of Structure 2. This alignment was parallel to Structure 2 and ran for a length of 5 meters in a north-south direction. The wall continued into both the northern and southern baulks, thus it was not possible to determine exact dimensions. This alignment was constructed at the same level as Structure 2 indicating that they were built at or near the same time. Due to the positioning of the excavation trench, part of the cut stones were in the eastern baulk making it difficult to define the width of the wall. Based on preliminary investigations it appears that the western side of the stones was dressed indicating that this may be another late Middle Formative structure. It is also possible that this alignment may be a boundary wall or property divider.

To determine the dimensions of Structure 3, an excavation trench oriented east-west was placed along the southern wall (Units 4-7). Approximately 3.5 meters from the southeast corner of Structure 3, a stone alignment (SA 6) was found running diagonally across the unit (over the top of Structure 3) in a northeasterly direction. This wall ran 40° east of north and consisted of two courses of large cut stones. The ceramics surrounding this wall have not been analyzed, so a construction date cannot be determined. Given the stratigraphic position of this wall, it likely dates to the late Middle Formative or early Late Formative period. Further excavations are needed to clarify this issue.

The southern wall of Structure 3 continued beneath SA 6. Excavations revealed the size of Structure 3 to be considerably smaller than Structure 2 located to the east. The maximum length of the structure was determined to be 4.7 meters. Due to time constraints we were unable to define the width (north-south) of the structure. To obtain a larger sample from Structure 3 a 1 m x 1 m unit was placed to the north of the southern wall. While excavating this unit we encountered a row



of cut stones running north-south along the eastern balk (designated as Structure 8). Further investigation revealed that this alignment was located at a depth below that of Structures 2 and 3 and ran perpendicular to the southern wall of Structure 3. The eastern wall of Structure 8 connected to the southern wall of Structure 3. It appears then that the western half of Structure 3 was built directly on top of the Structure 8 wall providing a foundation from which to build on. Although Structure 8 was constructed earlier than Structure 3, at present it cannot be determined whether Structure 8 was constructed at the same time as Structure 2.

Sometime during the late Middle Formative period (650-300 B.C.), Structures 2, 3, and 5 were covered by a thick midden deposit (Levels 3-5). This deposit consisted of a black, organic soil with substantial quantities of charcoal, freshwater snails, marine shells, and other material types. As mentioned, this deposit overlies Structures 2, 3, and Stone Alignment 5, but does not appear to cover Stone Alignment 11 to the south. This extensive midden deposit may be associated with this wall, but this cannot be determined without further excavations. The deposit may have also been brought in from another area at the site specifically for construction fill to level off the plaza before later structures were erected.

On the north side of Structure 2 another Stone Alignment (SA 7) was encountered. This alignment consisted of 4 courses of cut stones and ran for a length of 4.8 meters. This alignment is of better construction than the previous structures and was built directly on top of the midden deposit that covered Structures 2, 3, and Stone Alignment 5. It was parallel to the north wall of Structure 2 and is also oriented approximately 65° east of north. Ceramics recovered from the south side (inside) of the wall were primarily of the Jocote and Savana Groups: specifically Jocote Orange-Brown: Variety Unspecified (n=42); Savana Orange: Rejolla (n=14); Savana Orange: Reforma (n=7) suggesting a late Middle Formative date for its construction.

During excavation of the eastern trench, we exposed a circular burned-rock feature at the same level as SA 7 (labelled as Feature 2) (Figure 1). This feature was located in the northernmost unit of this trench and was situated directly on top of Stone Alignment 5. This feature was circular in plan (approximately 1 m in diameter) and contained an abundant quantity of burned limestone blocks. Excavation of this feature showed that the basin portion of the feature had been dug into earlier levels. Several of the cut-stones from SA 5 had apparently been removed in the process. Beneath the level of the burned stones was 25 cm of ash deposits. Only a few diagnostic sherds were found in association with this feature. Of particular interest was the discovery of six intact, mature freshwater snails known locally as *jute* (*Pachychilus glaphyrus*) within the burned rocks which exhibited some evidence of heat alteration. Although SA 7 was not encountered in this unit, it is likely that this feature was located in a patio/plaza area adjacent to the structure. Future excavations will attempt to define this relationship and locate any additional features and/or activity areas associated with these structures.

Given the known dimensions of Structure 2, we decided to place a 1.5 m x 1 m excavation unit approximately 8 meters west of Structure 3 in an attempt to locate its southwest corner. A small portion of another Stone Alignment (SA 9) and an interesting marl feature (Feature 1) were exposed in this unit (see Figure 1). This alignment ran in a northeasterly direction (almost curvilinear in plan) and consisted of three courses of roughly shaped limestone blocks. Due to time constraints, Feature 1 was not excavated. It is hoped that it will be excavated during the 1997 field season.

## Artifacts

Artifactual remains recovered from the 1996 excavations in Plaza B were numerous and diverse providing an excellent opportunity to evaluate Formative period material culture. Material types identified include ceramics, shell (marine and freshwater), greenstone, chert, obsidian, slate, and granite. Many of these materials could have been obtained locally from areas surrounding the site while other materials were only available outside the lowlands.

### *Shell*

During the 1995 field season a total of 1,061 shell artifacts were recovered from the Plaza B excavations at Pacbitun. The majority of the shell artifacts were found in Formative deposits (Levels 3-5) and were manufactured from marine species such as *Spondylus*, *Strombus*, *Marginella*, *Dentalium*, and *Oliva*. A small proportion of these artifacts were also manufactured from local freshwater species such as *Nephronaias ortmanni* and *Pachychilus glaphyrus*. The 1996 excavations produced similar findings, with a total of 1,301 Formative shell artifacts recovered. In addition to the shell artifacts exhibiting some form of human modification (drilling, cutting, and grinding), a large quantity of shell detritus or production by-products were also found. These finds indicate that the early inhabitants of Pacbitun were producing the final shell products themselves rather than being imported into the site in final form.

Similar artifacts have been found at the Cas Pek Group at Cahal Pech, approximately 15 km to the north (Sunahara and Awe 1994; Lee and Awe 1995; Lee 1996). At Cas Pek numerous marine shell fragments representing production by-products have been recovered; however, the number of final products is small in comparison to those at Pacbitun. The absence of many finished products at Cas Pek suggests that the final products may have been produced at another loci. At Pacbitun, the presence of columella, lip, and spine fragments indicate that the marine shells, at least conch, were entering the site whole and being reduced at the site. Additional analyses will be conducted on the shell artifacts during the 1997 field season.

### *Chipped Stone*

The chipped stone assemblage recovered during the 1996 season consisted of obsidian (n=24) and chert (n=121) tools. The chert tools consisted primarily of burin spalls that had been retouched to form microdrills (n=112), although a small number of bifaces and flakes were recovered. Of particular interest were the burin spalls recovered from both early and late Middle Formative contexts. These artifacts were found in association with large amounts of worked marine shell, indicating that these microdrills were being used to drill holes into the shell fragments for suspension. Little in the way of lithic reduction debris has been encountered in the Formative deposits in Plaza B suggesting that the burin spalls were being produced at a separate locality. A large quantity (n=349) of burin spalls or microdrills were also recovered during the 1995-1996 excavations at Cas Pek, suggesting that similar activities were occurring at these two sites.

## Conclusion

The excavations at Pacbitun have contributed to our understanding of the Formative occupation at the site and in the Belize Valley in general. Investigations conducted between 1984-1987 indicated that the central precinct was occupied during the Middle Formative period (900-

300 B.C.) (Healy 1990:256), while the 1 km<sup>2</sup> area surrounding the core zone was not occupied until the early Late Formative period (300-100 B.C.) (Campbell-Trithart 1990:313). Although no additional excavations have been undertaken in the peripheral zones of Pacbitun to confirm these dates, excavations in Plaza B have allowed us to refine the developmental sequence at the site.

The 1995-1996 excavations have provided firm evidence, both architectural and artifactual, that the site was settled as early as the early Middle Formative period (900-650 B.C.). The exposure of five structures and six stone alignments dating to the early and late Middle Formative supports the claim that the central precinct was the first area occupied at Pacbitun. Since no Middle Formative architectural features were detected during the 1984-1987 excavations, the recent discovery of a number of cultural features and their associated artifactual remains in Plaza B can provide us with a much clearer picture of how the early inhabitants at the site were living.

### **Acknowledgements**

We would like to extend our thanks to all of the staff of the Trent University-Preclassic Maya Project. In particular, we want to express our appreciation to Drs. Paul Healy and Jaime Awe for allowing us the opportunity to continue excavating at Pacbitun. A hearty thanks is also extended to the Belize Department of Archaeology and its Commissioner, Brian Woodeye, for his help and support during the 1996 field season. Our research was made possible by Mr. Alfonso Tzul of the village of San Antonio, Cayo, who graciously allowed us to excavate on his property. Indeed, the entire Tzul family should be thanked for their hospitality and active interest in our work. Lastly, we were fortunate enough to have worked with an energetic, hard working, and good humoured local field crew: John Mai, Javier Mai, Tarcicio Coc, Rolando Gonzalez, and Alberto "John" Mai.

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# **Stelae and Megalithic Monuments in the Caves of Western Belize**

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## **Introduction**

Investigations by the Belize Valley Archaeological Reconnaissance Project (BVAR) recently documented three caves in western Belize that contain vertically standing megalithic monuments. Because these monuments resemble stelae in Maya centers, the term stela is being applied, although it is recognized that the cave examples are shorter than most Classic Maya stelae and bear no inscriptions. Furthermore, and unlike speleothems which were purposefully broken off from stalagmitic and stalactitic formations and rarely modified, the stelae in these caves were produced from either slate or limestone and generally display evidence of modification. The monuments were also erected within recessed cave chambers and were accompanied by cultural materials that are predominantly associated with ritual activity. Because actual stelae have not been explicitly documented within caves; because they are predominantly discovered within the central courtyards of major surface sites; and because they are traditionally associated with ancient Maya rulership, the occurrence of these monuments in subterranean contexts represents intriguing new data on Prehispanic Maya cave activity, and has important implications for elite Maya cave rituals.

## **Archaeological Context**

Between 1990 and 1996 B.V.A.R. Project archaeologists recorded a total of four stelae in three caves in the Cayo District, Belize. Two of the monuments were found in Actun Tunichil Muknal, one in Tarantula Cave, and the other in Actun Che Chem Ha (a.k.a. Vaca Falls Cave) (Awe 1994a; 1994b). Actun Tunichil Muknal and Tarantula Cave are among several cave sites in the upper Roaring Creek valley, and are approximately 3 km from each other (Figure 1). Che Chem Ha Cave lies approximately 20 km to the west of Tunichil Muknal, and is on the western bank of the Macal River, just upstream from San Ignacio Town (see Figure 1).

## **Actun Tunichil Muknal**

Actun Tunichil Muknal (Cave of the Stone Sepulchre) was first discovered, explored, and named by geomorphologist Dr. Thomas Miller in 1986 (Miller 1989, 1990). A British Speleological expedition (Roberts 1990; Marochov and Williams 1991) subsequently visited the site in 1989 and published the first

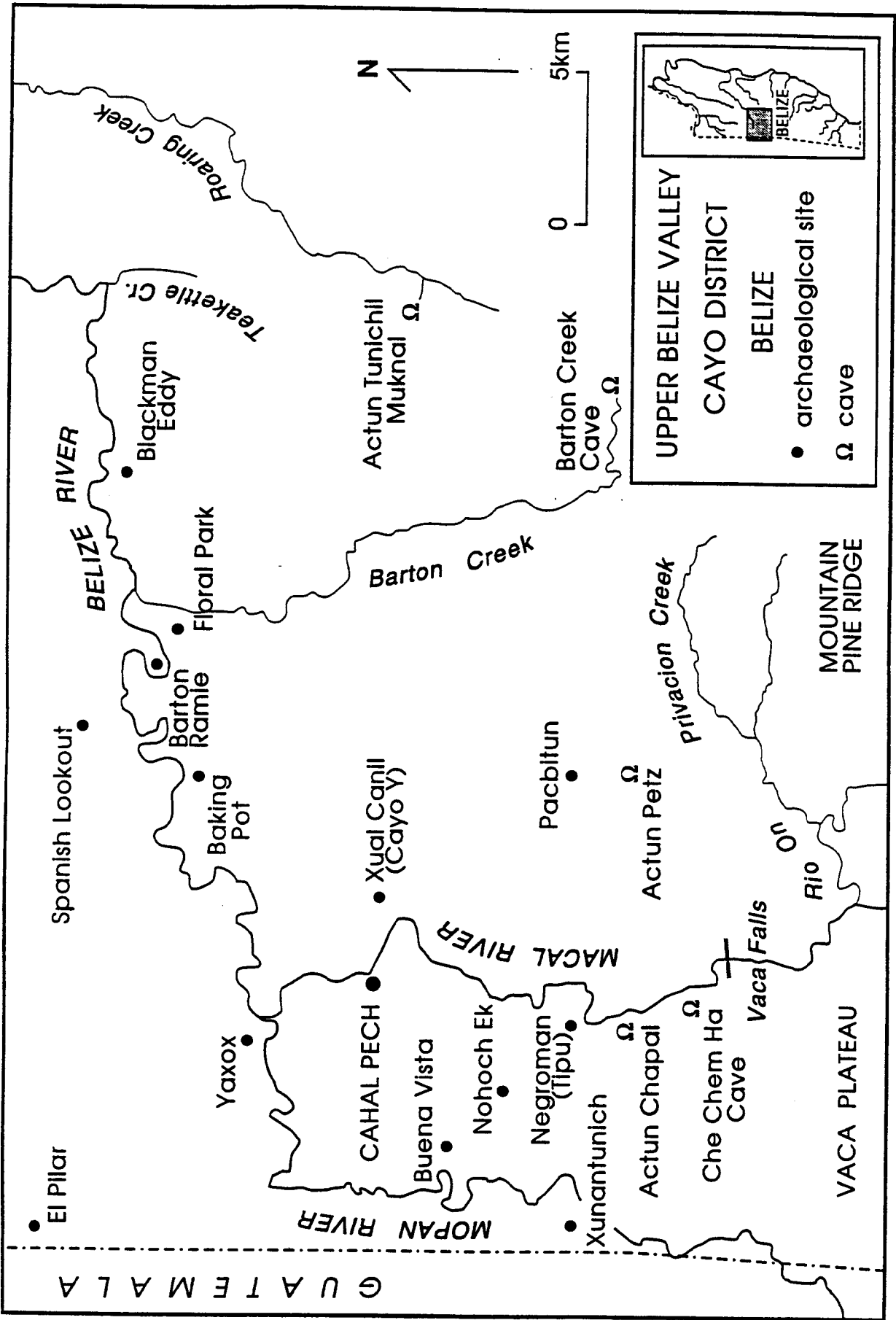


Fig. 1: Map of the upper Belize River Valley indicating location of sites

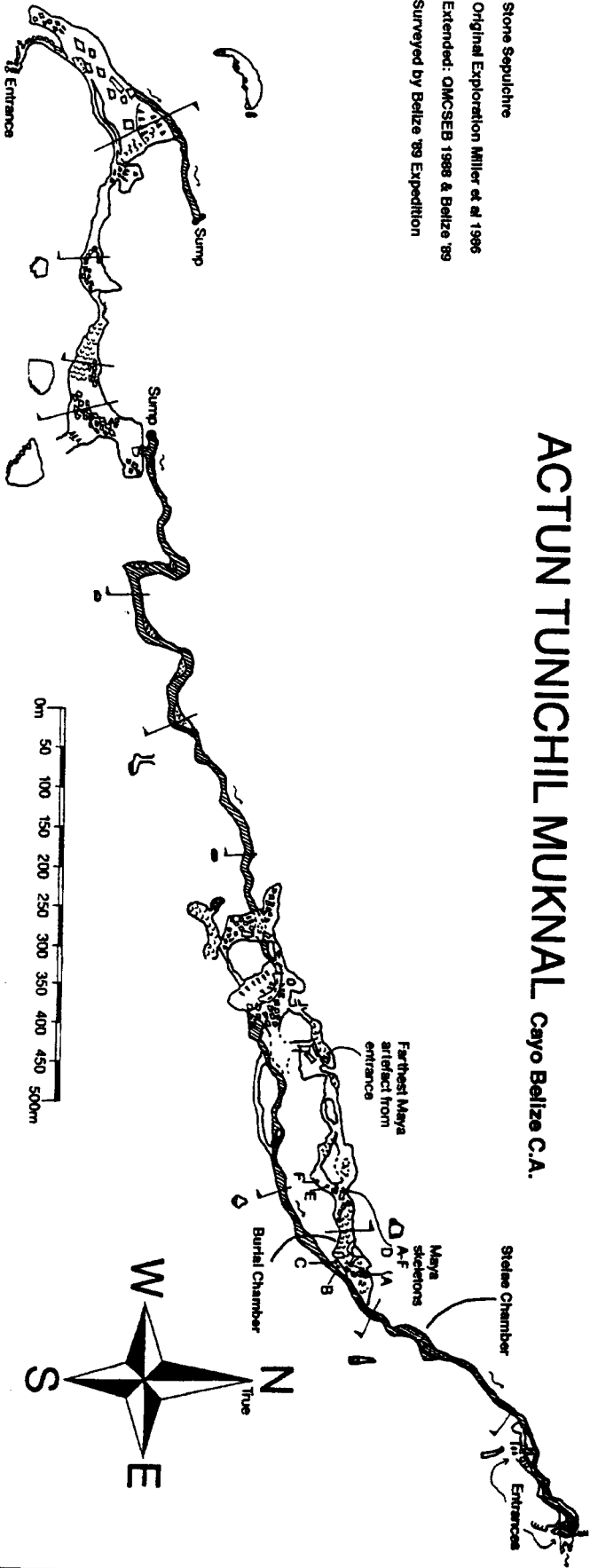
# ACTUN TUNICHIL MUKNAL Cayo Belize C.A.

Stone Sepulchre

Original Exploration Miller et al 1966

Extended: OMCSEB 1988 & Belize '89

Surveyed by Belize '89 Expedition



SK'89

complete map of the cave system in 1991 (Figure 2). The investigations conducted by the authors began in 1993 and continued during the summer of 1996.

Actun Tunichil Muknal is approximately 5 kilometers in length and has a perennially active stream which flows through the major cave passage. The main, or downstream, entrance has a deep blue pool below a Gothic-like archway and contains relatively little evidence of ancient Maya activity. Indeed, the first area with substantial evidence of prehistoric Maya use is the stela chamber which lies approximately 450 m from the entrance. The second major area of archaeological interest is a large room that was designated the burial chamber. The latter lies about 500 m from the main entrance within a high-level passage that splits off from the main tunnel upstream and rejoins the tunnel about 50 m to the southwest of the stela chamber.

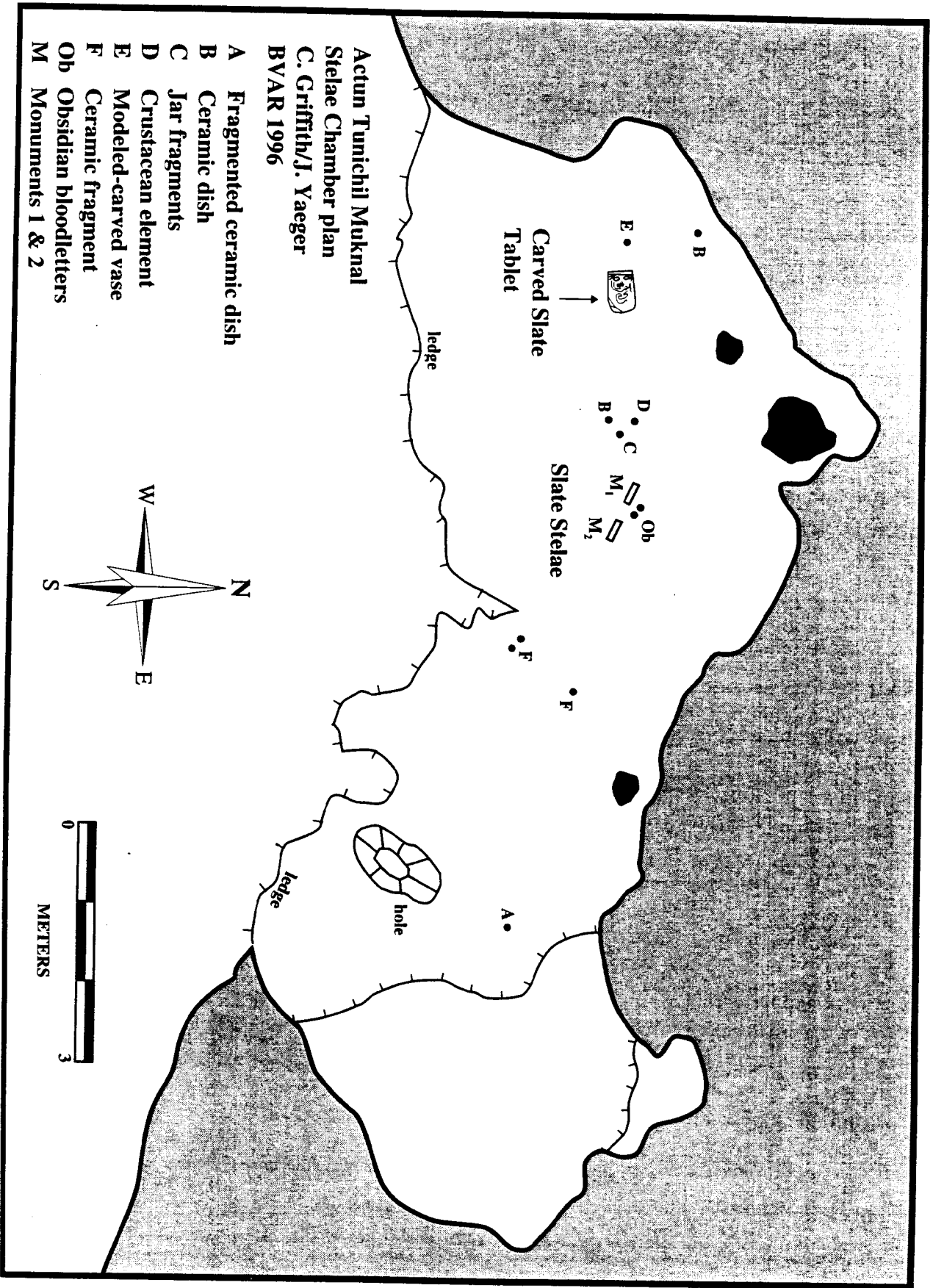
The burial chamber is approximately 350 m long and about 50 m at its widest point. The chamber floor consists of a series of travertine dams that descend gradually toward the eastern entrance of the chamber. The northwestern section of the room also has some active cave formations amidst a series of massive columns. Cultural remains within the burial chamber include more than 70 whole and fragmented Late Classic period pottery vessels, several metate and mano fragments, and eight burials (mostly infant and young adults). Except for a few large jars, a couple metate fragments and a shoe-shaped pot that were cached high up between the columns, the cultural materials were predominantly deposited along the sides and on the floor of the room. One of the burials was also discovered in a presently dry gour pool within a small alcove overlooking the southwestern end of the large burial chamber (Awe et al. 1997; Marochov and Williams 1991:41). The skeletal remains of the young adult individual in the burial was covered by a thin, sparkling layer of calcite. On a ledge next to the burial there was a single large greenstone adze.

Located approximately 50 m northeast of the burial room, the stela chamber in Actun Tunichil Muknal is actually a small shelf or alcove perched high (approximately 10 m) above the north face of the main passage. The chamber is between 4-5 m wide and 15.3 m long. Except for a slight rise in elevation to the east, the floor is relatively level (Figure 3). Because the eastern edge of the chamber descends almost vertically toward a deep pool below, the most feasible access is a 70 degree climb to the western end of the alcove. Interestingly, most cultural remains in the stela chamber were also discovered within the western half of the alcove.

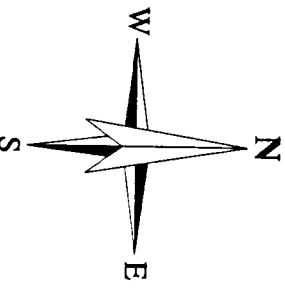
The monuments are located adjacent to each other, along the central axis of the chamber. They are held in place, in a vertical position, by several broken stalagmites and stalactites placed around their base (Figure 4). Both stelae were produced from slate that was probably acquired from along the "Slate Face" stream bed in the main tunnel (see Marochov and Williams 1991:4). Stela 1 is 1.22 m high, 22 cm wide at base, 30 cm wide at center and tapers to about 11 cm at the top (Figure 5). The average thickness of the monument is 8 cm. Nine carved scallops on either side of the stela give it a form that strongly resembles that of a stingray spine. Stela 2 (Figure 6) is 1.10 m high, 21 cm wide at base, 19.5 cm wide at center and tapers to 6 cm at the top. Thickness varies between 6-8 cm on average. Unlike Stela 1, Stela 2 was not scalloped along the sides, but the top was carved to a point, possibly as an attempt to render the monument in a form akin to that of an obsidian bloodletter. Lending some validity to this interpretation was the presence of two sharp and very thin obsidian points (bloodletters) at the base of the monuments (Figure 3-Ob).

In addition to the obsidian bloodletters, several other cultural remains were found on the floor of the small chamber. These included a small slate tablet, a crustacean element (Figure 3-D), and fragments of five, possibly six, pottery vessels (Fig. 3- A,B,C,F). The slate tablet (Figure 7) was located 2.33 m west

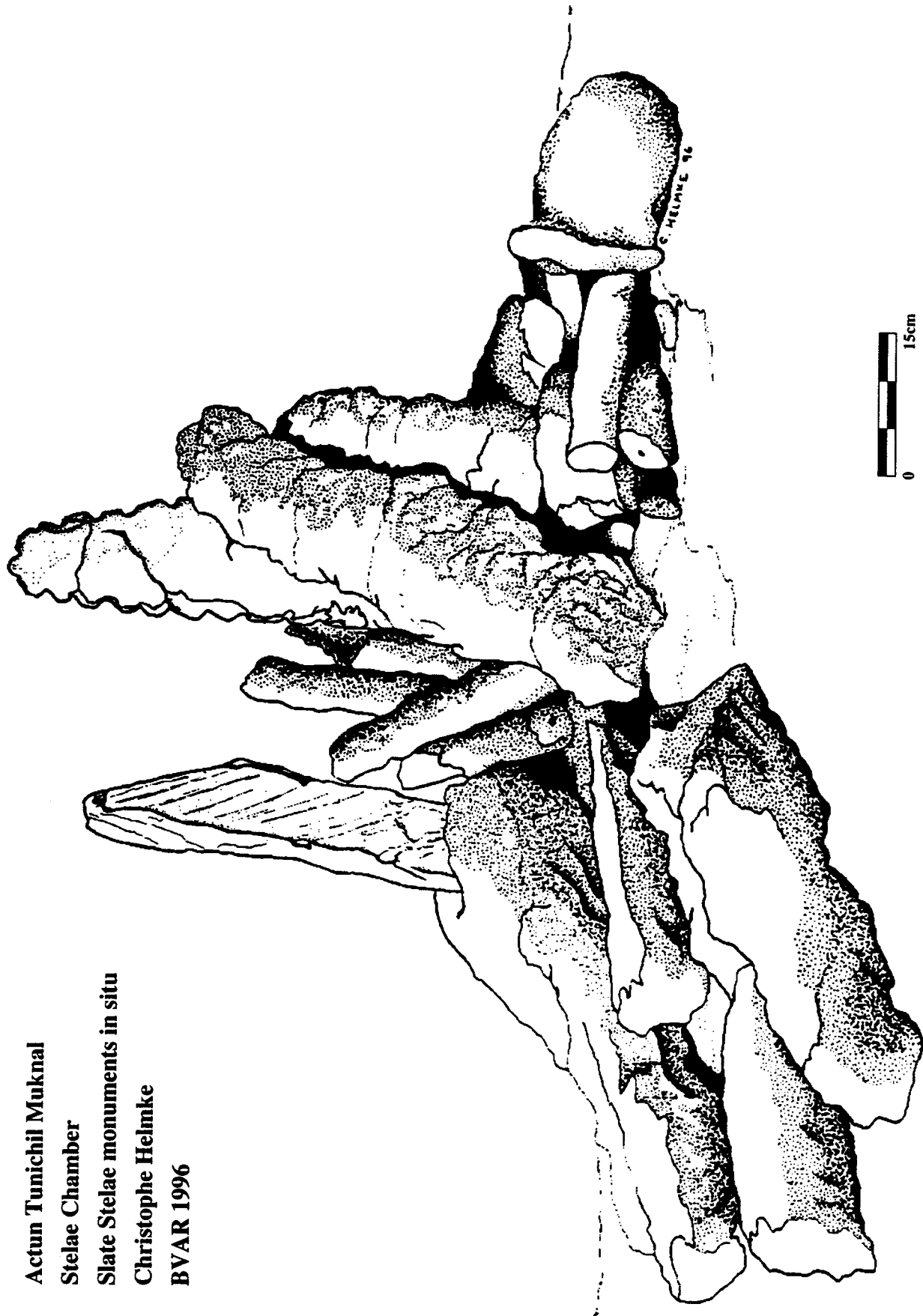




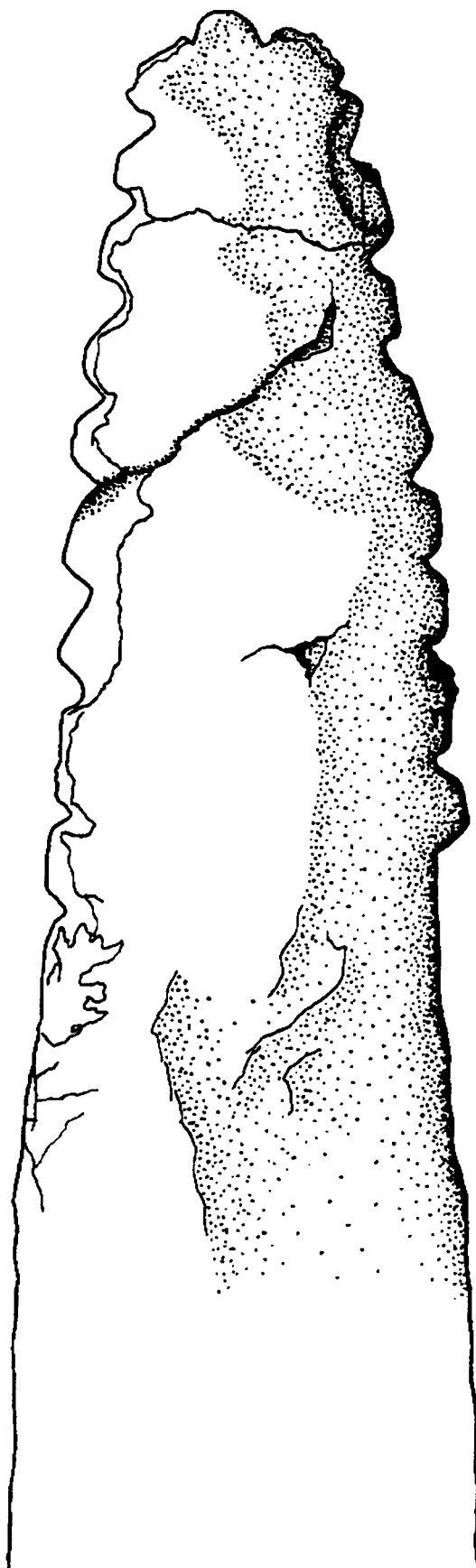
- A Fragmented ceramic dish
- B Ceramic dish
- C Jar fragments
- D Crustacean element
- E Modeled-carved vase
- F Ceramic fragment
- Ob Obsidian bloodletters
- M Monuments 1 & 2



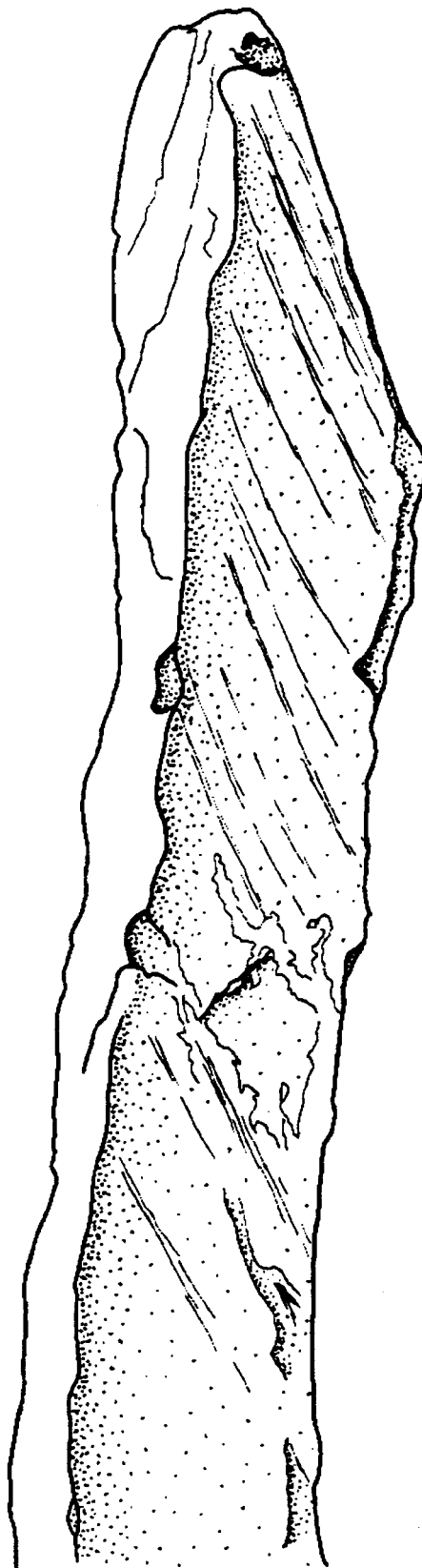
**Actun Tunichil Muknal  
Stelae Chamber  
Slate Stelae monuments in situ  
Christophe Helmke  
BVAR 1996**



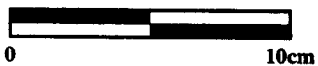
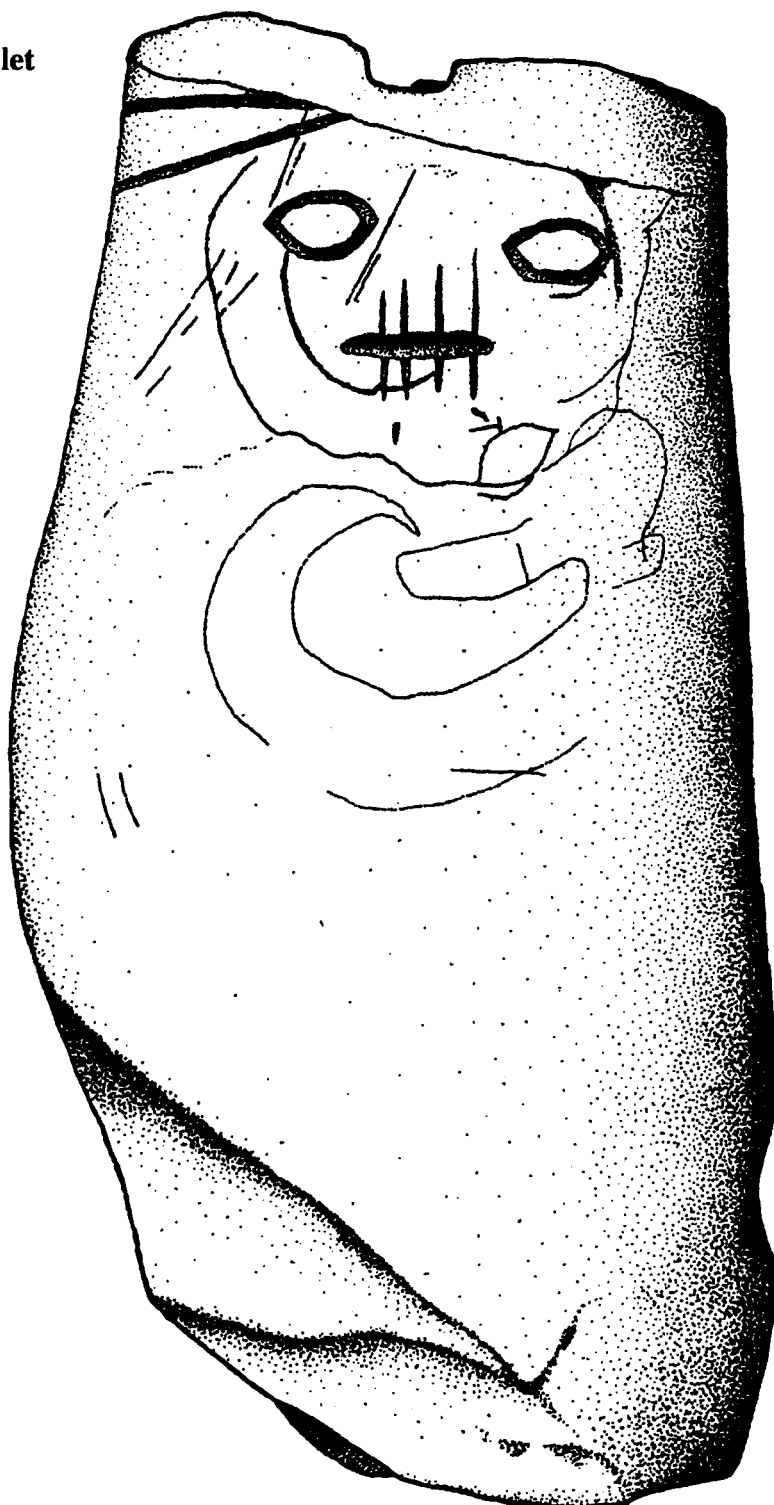
**Actun Tunichil Muknal  
Stelae Chamber  
Slate Stela Monument One  
Christophe Helmke  
BVAR 1996**



**Actun Tunichil Muknal  
Stelae Chamber  
Slate Stela Monument Two  
Christophe Helmke  
BVAR 1996**



**Actun Tunichil Muknal  
Stelae Chamber  
Carved Slate Tablet  
Yvonne Broder  
BVAR 1996**



of Stela 1. It is 25 cm wide, 52 cm long and averages between 3-5 cm in thickness. The top end of one side of the tablet is crudely carved in the form of a face but no appendages are depicted. According to Andrea Stone (personal communication 1996) it is possible that the lower end of the tablet represents the body of the figure.

Three of the fragmented ceramic vessels (Figure 3-A, B, C) in the stela chamber are red ware dishes with basal breaks and everted rims. All three were identified as Roaring Creek Red: Roaring Creek Variety (Vaca Falls Ceramic Group) of the Late Classic Spanish Lookout Complex in the Belize Valley (cf. Gifford 1976). The other pottery included sherds of an unslipped jar (Figure 3-F), and fragments of a nearly complete Modelled-carved vase (Figure 3-E) with close affinities to vessels from Waterfall and Chanona Caves (see Graham et al. 1980) and bearing general similarities to Terminal Classic, Pabellon Modelled-carved pottery from the Peten (Adams 1971:49-51; Sabloff 1975:195-204).

### **Tarantula Cave**

Tarantula Cave is located within a very large hill about 1 km east of Roaring Creek and approximately 3 km downstream from Actun Tunichil Muknal. The presence of the site was first brought to the attention of the authors by a local *milpa* farmer in May 1996 and exploration proceeded shortly thereafter. During the initial reconnaissance hundreds of arachnids of varying size were encountered in the winding cave passages, hence the name of the site.

In comparison to other caverns in Belize, Tarantula Cave is relatively small. Entrance into the cave is gained via a small opening of about 90 cm high by 1.2 m wide. This opening leads into a low domed chamber that is approximately 5 m in diameter and 3 m at its highest point. The floor of this entrance room is littered with Late Classic pottery fragments, and displays substantial evidence of recent human (looting) activity.

At the southern corner of the entrance room there is a narrow crevice that drops sharply downward to a narrow passageway below. This passageway then gradually spirals upward till it reaches the stela chamber which is situated above the level of the entrance room. The stela chamber is small, somewhat oval in shape and measures approximately 4 m by 6 m. The stela was found lying on its side almost at the centre of the small chamber. It is quite possible that the monument was originally set in a vertical position and was only recently dislodged by looters. This is suggested by the presence of a small pile of boulders encircling a depression at the centre of the room, by several chips and flakes of slate that appear to have been recently broken off the monument, and by widespread evidence of looting throughout the cave.

The stela is 1.06 m in length, 27 cm wide at its base, 36 cm wide at centre, and tapers slightly to 23.2 cm at the top (Figure 8). Its average thickness is 3 cm and this is fairly uniform from top to bottom. Like the Tunichil Muknal monuments, the Tarantula Cave stela was produced from slate, and displays clear evidence of having been cut and dressed along the sides.

Cultural remains in association with the stela were minimal, but this pattern may likely reflect the result of rampant looting activity rather than the original situation. Indeed, several potsherds, many with fresh breaks, were found around the perimeter of the room. This small ceramic assemblage included Roaring Creek Red: Roaring Creek Variety and Cayo Unslipped types; both dating to the Late Classic, Spanish Lookout Complex in the Belize Valley. In front of the pile of rocks that may have originally held the stela in a vertical position, there were small flecks of charcoal and some ash.

**Laberinto De Las Tarantulas Cave**

**Stela Chamber**

**Slate Stela Monument**

**Adapted from videotape**

**Jaime Awe**

**BVAR 1996**

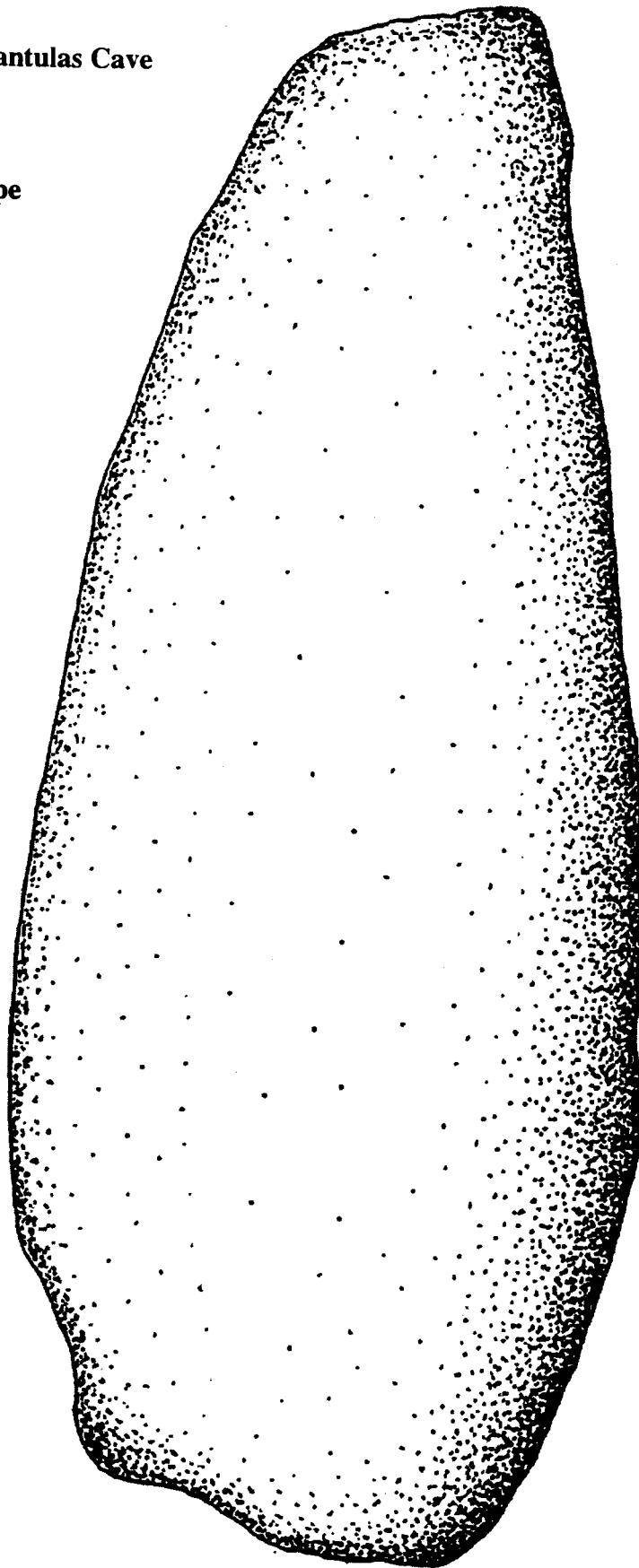




Fig. 9: Limestone Stela from Che Chem Ha Cave



## Che Chem Ha Cave

Actun Che Chem Ha is a relatively small but complex cave system located on a large steep hill the western bank of the Macal River. With only a small area in the main tunnel that has active drip water formations, Che Chem Ha is also best described as a dry cave. The site was first discovered by a local farmer in 1991 and was initially explored by members of the Belize Department of Archaeology and mapped by British spelunkers (Williams 1992) that same year. Investigations by the B.V.A.R. Project began in 1996 and are scheduled to continue in 1997.

The entrance to Che Chem Ha is a small, 1.5 m high by 2.5 m wide, opening high up on the western face of the hill. Beyond the entrance a high narrow passage gradually descends into the cave interior until it eventually sumps (about 300 m from entrance) into an impassable tunnel. Along the main passage there are several alcoves and small chambers located at different altitudes above the floor of the passageway. The stela room is at the end of a low tunnel that extends from one of these chambers. This tunnel is initially low and narrow but then widens in size before dropping sharply towards the stela room. The latter is approximately 20 m below the level of, and about 275 m away from, the main entrance.

The recessed stela chamber is 9 m wide by 15 m long and more than 20 m in height. The stela is set in a vertical position at the center of the room and is encircled by a low wall or ring of stones consisting of 32 roughly-hewn limestone blocks (Figure 9). Although no excavation was conducted in the room, close examination of the ring of stones revealed that it may be at least two courses high. If planned excavations confirm this, it could mean that the stela actually rests on a small, low, circular (1.9 m in diameter) platform. In front and along the east side of the stela there is an upright speleothem that is approximately 40 cm in height. A small cavity at the top of the speleothem contains ashes and flecks of charcoal. Unlike the monuments at Tarantula Cave and Tunichil Muknal which were, and are, held in place by rocks or broken stalagmites/stalactites respectively, both the stela and speleothem at Che Chem Ha are freestanding.

The Che Chem Ha stela is 0.78 m in height, and between 8 to 10 cm in thickness. It is 40 cm wide at base, 47 cm wide at center, and tapers to 22 cm at the top. Its raw material is limestone that may have been broken off from the brecciated walls of the stela chamber or cave passage. Presently, only a few potsherds, several animal bones, a large jar containing several annatto (*Bixa orellana*) seeds, and a near complete but fragmented censer have been recorded within the stela chamber. The animal remains are concentrated in a small niche about 3.5 m from the stela. Future analysis of these remains is expected to provide information regarding the species and genera of the animals represented.

Ceramic remains in the chamber are concentrated along the sides of the room and are predominantly represented by jar forms that are Late Classic in date. The large jar with the annatto seeds was discovered on a small ledge high above the floor of the room and is also of Late Classic date. The censer was found beside the eastern wall of the chamber, approximately 2 m from the stela. The vessel is hollow, cylindrical in form, and has projecting wings or flanges on either side. The front of the censer is modelled into a face with large rounded eyes, a wide mouth, a crooked projecting nose and an applied cruller design above the nose at the center of the forehead. These decorative elements are typical of Terminal Classic (A.D. 700-900) censers depicting the jaguar god of the underworld and are generally classified as Pedregal Modelled in the Peten and Belize (Adams 1971:57; Awe 1985:263-267; Sabloff 1975:114-116).

In addition to the materials in the stela chamber, cultural remains were discovered in practically all

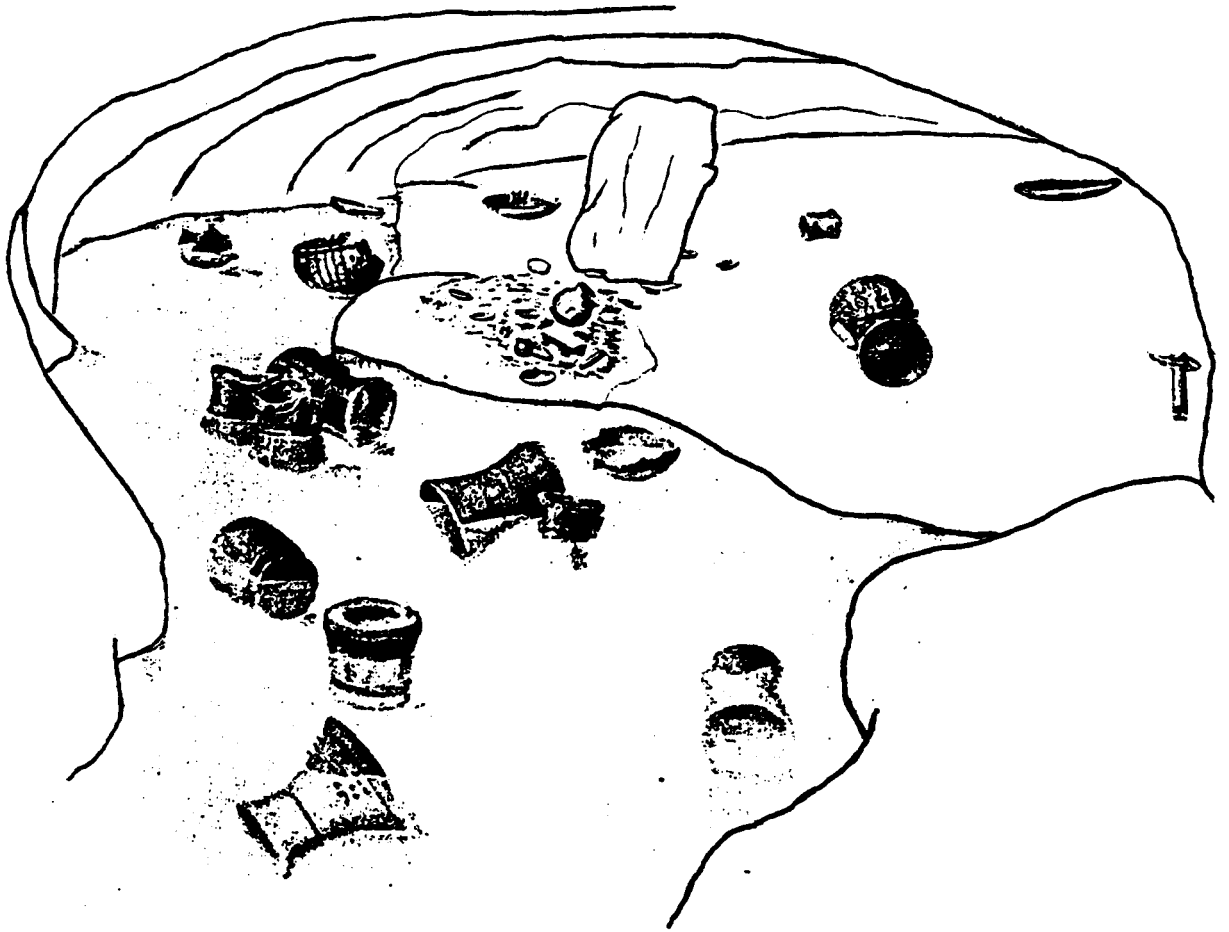


Fig. 10: Plan of Group IV Chamber with stela,  
Balankanche Cave, Yucatan (after Andrews 1970)

other areas of Che Chem Ha Cave. Most of these remains, however, are concentrated in high, difficult access, alcoves and chambers. Along the main passage, about 10 m beyond the entrance, there are also several fragments of Savana Orange and Reforma Incised sherds. The latter suggest that prehistoric use of Actun Che Chem Ha may extend as far back as the Middle Formative period (600-300 B.C.). Further along the main passage there are a few fragmented, basal flanged vessels of the Early Classic (A.D. 300-600), Dos Arroyos Orange Polychrome type, and Late Classic (A.D. 700-900) Mount Maloney Black bowls. In a small alcove, high above the tunnel, there is a large unslipped jar containing several preserved cobs of corn. Unfortunately, due to the fragility of the plant remains no genetic study of the maize has been conducted. Two other chambers in the cave contain several large jars (Cayo Unslipped), many of which are covered by inverted Mount Maloney Black bowls. Other vessels in these rooms include shallow dishes that have been identified as Benque Viejo Polychrome and Platon Punctated Incised, both of Late Classic date.

### Comparisons

Prior to this report, there have only been two cursory accounts of possible stelae in caves. The earliest account was published by Samuel K. Lothrop in 1924. According to Andrews and Andrews (1975:70; also Bonor 1989:154), Lothrop (1924:132-33) "described a cave at Tancha which had a large number of petroglyphs and a crude stela." Unfortunately, none of these authors provide a detailed description of the actual monument and they present limited information of the context within which the stela was discovered. Consequently we have no information on the size of the stela, its raw material, location within the chamber, or the nature of associated cultural remains.

The second account is considerably more informative, but the presence of an actual cave stela may be debatable since it derives from our interpretation of data previously recorded by E. Wyllys Andrews IV. In his description of Balankanche Cave in the Yucatan, Andrews (1970:12) reported discovering several artifacts in a section of the site designated as Group IV. The latter was a small domed chamber which represented the "limit of human penetration in this direction." Andrews (1970:12) noted that the offerings in Group IV were:

...scattered around a large slab of rock, which was propped up perpendicularly, apparently to imitate a stalagmite (figs. 7; 47,b). In front of this central slab of stone was a hearth, with several centimeters of charcoal from burnt offerings, including a number of shell and jade beads.

While Andrews' interpretation of the cultural remains in the chamber may be valid, a close examination of his Figure 7 indicates that the "slab of rock" in the room may be more accurately described as a megalithic monument, and that rather than imitating "a stalagmite", the monument more likely represents a stela (Fig. 10). The form of the monument, its erect position at the center of the room, and the contextual distribution of the associated remains in the Group IV chamber strongly supports this interpretation.

Apart from these two specimens, the available literature contains only one other possible example of a (stone) stela or megalithic monument in a lowland Maya cave. Deep within Naj Tunich, in a passage of extremely difficult access referred to as K'u Multun, Stone (1995:128; Figs. 5-45, 5-46) reports that explorers discovered:

“...a stone structure, which appears to have functioned as an altar, accompanied by votive offerings and a painted inscription (fig. 5-45).

The altar consists of a meter-high heap of rocks shoved up against the wall (fig. 5-46). A flat rock lay at the top of the pile, though nothing was on it. Propped up by this mass of rocks is a vertical stone seventy centimeters high. The vertical rock bends and tapers nearly to a point over which the Maya had hung two olla rims... The stones comprising the altar were in all likelihood laboriously hauled up from the North Passage.”

Based on the description provided by Stone, we propose that the K'u Multun feature in Naj Tunich most likely represents a stela/altar complex. It is also important to note that like other examples of this possible cave stela/altar complex, the K'u Multun feature was accompanied by evidence of burning and was associated with votive offerings.

Despite the apparent limited distribution of cave stelae, several other investigators (cf. Brady et al. n.d.) have recorded a number of subterranean caverns (in western Belize and the Peten) where speleothems could have been purposely erected in a manner very similar to that of the monuments described above. At Petroglyph Cave (about 5 km southeast of Tunichil Muknal) for example, Reents (1980:18) reported the discovery of a 1.6 m long stalagmite that was held in place in an upright position by numerous small rocks at its base. “Much pottery, obsidian, carved shell, and ash” were found in the fill around the stalagmite (Reents 1980:18). In Te Tun Cave, (approximately 3 km east of Petroglyph Cave) Bonor and Martinez (1995) discovered a column carved with crude faces above a formation that was modified to resemble an altar. They (Bonor and Martinez 1995:257) further suggest that the carved column strongly resembles a stela and that the altar could very likely represent a “Cauac monster”.

At Actun Kabal (about 10 km south of Che Chem Ha) McNatt (1996:90) reports the discovery of “two upright stones about 0.5 m tall and 0.2 m apart, supported by rock rubble. One of these stones was a broken stalagmite. Immediately in front of the uprights was a meter-square area of flat stones.” In a chamber deep within this same cave, Stone (1995:130; Fig. 5.48) noted that there is a ring of stones that join an “altar like structure” upon which there are three speleothems set in vertical positions. A similar arrangement of three vertically set speleothems in association with an altar has been reported in a cave in the Bladen area of southern Belize (Prufer 1995).

In closer proximity to Tunichil Muknal and Che Chem Ha, Rio Frio Cave E also contains evidence of a speleothem monument. In his publication of Anderson’s excavations at Rio Frio, Pendergast (1970:8) reported that:

“The principal feature in Rio Frio E apart from the pottery mass is a huge stalagmite of unusual shape, almost certainly moved to its present position presumably from its original growth spot in the cave. The body of the stalagmite is a somewhat irregular hemisphere, with the flat surface resting on the cave floor; atop this is a small spherical section, giving the object the appearance of a seated human figure (Plates 3 and 4). Anderson examined this unusual object closely during his first visit, and found that there was a row of eight small circular depressions down the front, accentuating the effect of a cape covering the body.

He also recovered burnt wood, charcoal and sherds coated with carbonised material from a roughly circular shallow depression in front of the "head".

Although Anderson interpreted the above speleothem as an idol, it is our opinion that the figure more likely represents an altar with a monument at its summit. It is also suggested that the eight circular depressions at the front of the figure have little to do with a "cape," but actually represent crude steps that lead up the altar to the small "spherical" monument above. That the spherical section identified by Anderson as the "head" of the figure more likely represents a monument is further supported by the discovery of "burnt wood, charcoal and sherds coated with carbonized material from a roughly circular depression in front of the "head"" (Pendergast 1970:8). The association of altar/stela/burnt offerings appears to be a typical characteristic of the apparent lowland Maya cave stela tradition, and although many idols (mostly wooden) have been discovered in caves, it is possible that the Rio Frio Cave E figure more likely represents a stela/altar complex.

As in western Belize, several caves containing speleothem "monuments" have been discovered in the eastern region of the Peten Province of Guatemala. At Naj Tunich, Brady et al. (1992:78, Fig. 3; also Brady et al. n.d.) and Stone (1995:130) report the discovery of a restricted access chamber containing an altar with six stalactites set in vertical positions above it. Furthermore, "The open space south of the altar is dominated by a large stalagmite, 1.82 m in height" (Brady et al. 1992:78). West of Naj Tunich, at the Cueva del Rio El Duende near Dos Pilas, the Petexbatun Regional Cave survey:

"...found a segment of stalagmitic column, approximately 3 m long and 0.5 m in diameter, lying on its side near the middle of the passage. A search of the area failed to find the place from which the shaft had originally come, and the weight of the piece ensure that it could not have been moved any great distance by natural forces. It was concluded that the shaft had been moved to that location by the Maya and could have been set vertically at one time, although there is no evidence for the latter." (Brady et al. n.d.).

Brady et al. (n.d.) also report that in Xetish Cave, which is "One of the most sacred locations for the Ixil Maya", there is "a large stalactite set in the center of a great stone altar six feet high and 10 feet long."

While it may be argued that the assumed use of speleothems as monuments or stelae is questionable, it is important to note that the association is not without precedence. This is particularly true when we consider that at Yaxchilan a large speleothem was, in fact, carved and used as a stela (Tate 1992:132), and several other uncarved speleothems are believed to have served as monuments at the site (Maler 1903:154, 157-158, 179,183). Despite the Yaxchilan examples, however, the use of speleothems as monuments or stelae at either subterranean or surface sites is rare. In contrast, their use for practical and non-monumental purposes is relatively common in the Maya lowlands (cf. Brady et al. n.d.).

## Discussion

The recent discovery of the stelae at Actun Tunichil Muknal, Tarantula Cave, and Actun Che Chem Ha, the presence of similar monuments in Yucatecan caves, and the possibility that speleothems may have been occasionally erected as monuments within some caverns in the Peten and Belize, provide intriguing

new information on ancient Maya cave activity. In order to fully appreciate the significance of these discoveries, however, there are several crucial questions that need to be addressed. For example, was the erection of cave stelae temporally sensitive? Are there similarities in the spatial/contextual distribution of these monuments from one site to the other? What kind of rituals were associated with them and why did the ancient Maya begin to erect these monuments in caves?

In regard to the first question, the data from western Belize suggest that the apparent cave/stela tradition in this sub-region of the Maya lowlands spans between the Late Classic to Terminal Classic periods (A.D. 700-900). In the Yucatan, specifically at Balankanche, cultural remains associated with the monuments suggest a Terminal Classic to Early Postclassic date (A.D. 900-1200). Interestingly, the placement of vertically set speleothems in caves is a contemporaneous (Late Classic) activity in both the Peten and Belize, and the stalactite stela (Stela 31) at Yaxchilan is also believed to be of Late Classic date (Tate 1992:132). The available data, therefore, suggest that the practice of erecting stone and speleothem monuments in caves was a Late Classic to Early Postclassic tradition in the eastern Maya lowlands. It must be noted, however, that the present data base is limited, and future investigations could very well extend the time frame for this cultural activity.

The contextual distribution of these monuments also seem to share a similar pattern from one cave to the other. At Balankanche, the small Group IV chamber which contains the stela is very difficult of access, and is one of the two furthest rooms from the entrance (See Andrews 1970: Fig. 2). The same is true for the stela rooms in Actun Che Chem Ha and Tarantula Cave. At Actun Tunichil Muknal the stela chamber is not the furthest room from the entrance, but the fact that several deep pools of water must be traversed before reaching the alcove containing the monuments, and the location of the chamber high above the main passage clearly demonstrate that accessibility to the stelae chamber was both limited and challenging. Difficulty of access and distant location away from the entrance are characteristics that are also shared by the rooms with the stone monument in the K'u Multun chamber in Naj Tunich (Stone 1995:128), by the room with the six vertically set speleothems in the same cave (Brady et al. 1992), and by the chamber with the altar and speleothems in Actun Kabal (Stone 1995:130).

What kind of rituals were associated with these monuments? While this question is difficult to address, a careful examination of the artifacts associated with the monuments can provide important clues to the activities that were conducted around them. In front of the monument at Balankanche, Andrews (1970:12) found "...a hearth, with several centimeters of charcoal from burnt offerings, including a number of shell and jade beads." Within the small room there were also about 10 large "Tlaloc effigies, hour-glass censers... a few miniature metates and manos, and a dozen miniature pottery censers." Additional offerings included "a variety of Chichen Slate vessels", other unslipped ceramics, and a "censer bowl with long hollow handle." At Che Chem Ha Cave there is a small speleothem, with a hollowed section containing ashes, directly in front of the stela. A couple meters away there are several animal bones and a large censer depicting the jaguar god of the underworld. The Tunichil Muknal chamber had two obsidian bloodletters and fragments of charcoal at the base of the stela, a Modelled Carved vase, a carved slate slab, and at least five ceramic dishes. At Rio Frio Cave E, Anderson (in Pendergast 1970:8) found "burnt wood, charcoal and sherds coated with carbonized material" in the circular depression in front of the upper portion of the speleothem. The stone monument in the K'u Multun chamber in Naj Tunich was associated with a large amount of charcoal, several pottery fragments, a piece of unworked jade, two fragmented ceramic vessels, and a painted Calendar Round date of A.D. 692 (Stone 1992:128-129). According to Stone (192:128-129):

“That the Maya performed ceremonies at this altar is evidenced by eight piles of charcoal found in interstices and depressions within the mass of rocks. Most of the burning took place toward the top of the heap. The front surface of the tapered vertical stone was smoke-blackened from a fire set behind a small rock resting on the top of the rock pile... All available evidence points to the idea that a ceremony was performed at the altar that included smashing the plate, painting the inscription, and burning small fires on the altar.”

The presence of charcoal within all the chambers containing monuments thus suggest that the burning of fires and/or organic materials was an activity that accompanied most of the ceremonies conducted before these monuments. Given the large number of censers at Balankanche and the censer at Che Chem Ha, it is further safe to assume that one of the primary organic materials burnt may have been incense.

Animal sacrifice and human autosacrifice may have also accompanied the burning of incense. This is suggested by the animal remains from Che Chem Ha, by the obsidian blades recovered at the base of the stelae at Tunichil Muknal and at the base of the Petroglyph speleothem monument, and by the forms of the Tunichil Muknal stelae. It is equally possible that the smashed ceramic bowls at Tunichil Muknal may have been used for holding bark paper upon which blood was collected. Iconography depicting this practice is widespread in the Maya lowlands (Schele and Miller 1986:175-184) and is believed to have accompanied most elite rituals. Coincidentally, the carved stalactite stela at Yaxchilan depicts “three figures, two of them standing facing each other, wearing the pointed hipcloth and letting blood with inserted penis perforators” (Tate 1992:132).

Finally, why did the ancient Maya erect these monuments in caves? In a recent volume that examines the relationship between Maya iconography and cave ideology, Bassie-Sweet (1991:119-121) suggested that:

“Classic Maya stelae that record Period Ending events were erected to commemorate publicly the private or semiprivate cave rituals of the Period Ending ceremony after this ceremony had occurred.”

She (Bassie-Sweet 1991:119) proposed that “the shape of the the stela echoes the shape of the stalagmite found in the cave where the ceremony was performed.” Thus, she argued that the erection of stelae at surface sites “... may have been a memorialization of an earlier ceremony in which the completion of a calendrical period was marked by the setting up of a speleothem in a cave” (Brady et al. n.d.). While Bassie-Sweet’s (1991) proposition is certainly intriguing, there are inherent problems with her hypothesis. If, for example, the erection of Late Classic stelae at surface sites indeed followed the previous erection of speleothems in caves, we should expect the frequency of vertically set speleothems in cave sites to be relatively high. Unfortunately, this does not appear to be the case for there are far more caves reported without vertically set speleothems than those with them. Given this limited distribution, Bassie-Sweet’s proposition would perhaps have greater validity if the practice of erecting these monuments began in the late stages of the Classic period, not too long before many of the sites in the central lowlands were

abandoned. This could account for the relatively low frequency of stela and speleothem monuments in the caves from this area. The stelae reported in this paper further call into question Bassie-Sweet's proposed close connection between stelae and speleothems since the Maya clearly eschewed the use of speleothems immediately available for slabs of slate and limestone that had to be modified and transported to particular chambers (J. Brady, personal communication, 1997). Hopefully, future investigations will provide additional data that will allow us to address these problems.

In contrast to Bassie-Sweet, and in reference to the speleothems in Naj Tunich, Actun Kabal, and the possible stela in the K'u Multun chamber in Naj Tunich, Andrea Stone (1995:130) suggests that the vertical thrust of these monuments was significant because "the ancient Maya attached notions of sanctity and status to verticality, evident even in the form of Maya Temples and stelae." Stone adds that "Maya art usually associates the highest figure in a composition with the highest rank or with supernatural status" and that even the contemporary Maya "associate vertically elevated piles of stone with notions of sacredness."

Thus the vertical stone of the Naj Tunich altar might be understood as a marker of sacred space; the *olla* rims placed at the summit certainly emphasize the altar's vertical thrust."

We concur with Stone (1992), but given that caves in general were considered sacred places by the Maya, we suggest that in addition to demarcating sacred space, stelae and megalithic monuments may have been erected in particular chambers and caves that were reserved for elite ritual activity.

## **Conclusion**

It was previously assumed that the stela cult and the practice of erecting megalithic monuments was an ancient lowland Maya tradition that was limited to important surface sites. The discovery of monuments in Actun Tunichil Muknal, Tarantula Cave, and Actun Che Chem Ha in Belize, possibly at Balankanche, a cave near Tancha in the Yucatan, and at Naj Tunich, Peten, dispels this notion and suggests and that in the eastern sub-region of the Maya lowlands this tradition may have been extended to important subterranean sites. The data from these caverns further suggest that the practice of erecting stelae/monuments in caves very likely began in the Late Classic period and, at least in the Yucatan, continued into the Postclassic period. The ceremonies conducted before these monuments may have included the burning of incense, animal sacrifice and blood letting rituals. Furthermore, it is hypothesised that the ancient Maya may have erected these monuments and speleothems in caves as a means for marking sacred space and for demarcating chambers that were exclusively reserved for elite rituals. Hopefully, future investigations will add to the presently limited number of cave sites with megalithic monuments, and provide information that will allow us to better understand the nature of the ceremonies that were conducted in these sacred places by the ancient Maya.

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# **Those Laid to Rest in Xibalba: Skeletal Remains from Actun Tunichil Muknal Cave, Belize**

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## **Introduction**

Actun Tunichil Muknal was first discovered and explored by speleologist Thomas Miller in 1986. A British speleological expedition subsequently visited the site in 1989 (Roberts 1990) and reported on the human remains identified and, subsequently (1991), produced the first complete map of the cave system. Investigations at Actun Tunichil Muknal by the Belize Valley Archaeological Reconnaissance (BVAR) Project were first conducted in 1990 and continued during the summer of 1996. During the 1996 field season a preliminary study of the human remains located in the burial chamber of Actun Tunichil Muknal was conducted. Four of the burials had been previously identified (see Roberts 1990) and an additional three were discovered in 1996. There are 10 individuals in total, varying in age from infant (four individuals) to adult (six individuals). At least three of the individuals had cranial deformation of the tabular oblique type and two of the individuals had dental modification. A description and discussion of these burials is provided.

## **Cave Description**

Actun Tunichil Muknal is a large cave reaching approximately 5 kilometers in length with a perennially active stream flowing through the major passage. Approximately half a kilometer inside the cave there are two chambers exhibiting extensive use by the Ancient Maya. The first is known as the Stela Chamber, which lies roughly 450 meters from the entrance (see Awe et al., this volume). The second chamber of archaeological interest, of which this paper is the focus, is the Burial Chamber. It lies roughly 500 meters from the main entrance within a high level passage. The floor of this chamber consists of a series of travertine dams that descend toward the lower main passage to the east, indicating there was water once flowing in this chamber. Cultural remains within the Burial Chamber were predominantly deposited along the sides and on the floor of the main chamber, which measures 200 meters long and 50 meters wide (Awe et al. 1997a, 1997b).

## **Burial Chamber**

Based upon past and present investigations there were eight burial locales within this chamber dating to the Late Classic. The skeletal remains were found throughout the chamber in often inconspicuous areas. Only seven were identified during the 1996 field season, two of which contain the remains of two individuals (see Awe et al. 1997a, 1997b). The skeletal remains vary in degrees of preservation and visibility. There is a thick layer of calcite covering the floor of this chamber indicating water flowed through this area at one time. In a number of areas the water flow had enough force to actually 'mix' the skeletal remains, thereby leaving them in a fragmentary state.

Only two of the burials were articulated, while the remaining six burials were rather "jumbled" together, presumably due to water action. All of the remains are covered, to one degree or another, with a layer of calcite. This layer ranged in thickness from only a slight encrustation a few millimeters thick to proportions which totally distort and exaggerate the bones. It is probable the individuals would have been laid down in the water which ran through this cave at one time (Awe, personal communication 1997; Roberts 1990), flooding up to a height of 10 centimeters, covering the bones in layers of calcite, as commonly found in other caves (see Blom 1954; Brady et al. 1995; Butler 1934; Healy et al. 1996). The calcitic encrustation made it extremely difficult, in some circumstances, to be definitive regarding the examination of sex and age for these individuals. However, notable traits indicating artificial cranial deformation and culturally modified dentition were identified on some of the skeletal remains and the eight burial locales are represented by ten individuals ranging in age from infant to adult.

### **Human Remains**

**Burial One** (see Roberts 1990, skeleton 4) is located in the central southeastern part of the chamber. It contains parts of one individual covered with calcite, except for the cranium embedded in the calcified flow up to the posterior portion of the parietal, which exhibits cranial deformation and dental modification. The style of cranial deformation is tabular oblique, or parallelo-fronto-occipital deformation, a near circular style of deformation (Buikstra and Ubelaker 1994:160; Stewart 1975:212). The four maxillary incisors have been filed, indicative of Romero type A-2 style (Romero 1958, 1970).

Very few traits could be used to confidently sex this individual. The pelvis was not present and only limited cranial data could be observed. From qualitative morphognostic traits of the cranium a robusticity was apparent. The length of the left clavicle (148 mm), and the bicondylar width of the femur (80 mm), indicate this individual is probably a male (Bass 1987; Brothwell 1981:60; Buikstra and Ubelaker 1994; Roberts 1990:128).

Only the cranial suture closures could be used to estimate an age for this individual. The sagittal suture is completely obliterated, and the coronal suture is fused with complete obliteration at the midcoronal region. It is estimated that this individual would have been, at least, between the ages of 30 and 40 years at death (Buikstra and Ubelaker 1994:32-38).

**Burial Two** (see Roberts 1990, skeleton A and B), located south-west from Burial One, has the intermingled and partial remains of two individuals, based on the two visible crania, 2 sets of femora, and 2 sacra. There is some confusion as to which of the remains Roberts (1990:127) had identified. Due to contradictory findings this burial requires further analyzing during the 1997 field season, however, preliminary observations are detailed here. Although some of the bones are encrusted in the calcite, most are still visible and exposed. The two crania, while exposed, are embedded in the calcite flow stone. The base of one is facing up with the frontal region embedded, exposing the right canine which had been culturally modified in the same manner as in burial 1, comparable to Romero type A-2. The second cranium, which is laying on its left side in the calcite flow stone, exhibits cranial deformation, similar to tabular oblique type also found in burial one.

Since it was not known which remains belonged to which individual, and removal for further examination was, and is, not an option, the sex of only one individual can confidently be presented at this time, although it is highly possible that both individuals might be represented. In

reaching this present conclusion both crania and a sacrum were used. The cranium that was positioned with the frontal region down was analyzed qualitatively for any distinguishing traits, such as the large protruding mastoid process and a strong nuchal crest. This cranium was rather large and robust, indicating a male. A partially exposed pubic bone, and a sacrum, also indicate the probability of a male.

The right pubic symphysis was exposed and undamaged, suggestive of an approximate age range of 30-40 years of age at death (see Buikstra and Ubelaker 1994:22 re Todd's Pubic symphysis scoring system). The lambdoidal suture closure for the cranium that is positioned face down indicates the individual would have been at least 20 years of age, and probably older.

The measurements taken from the right tibia (33.7cm) give an estimated stature of 159.8 cm +/- 2.8 (see Ubelaker 1989:62 re Genoves 1967:76 stature-calculation formulae). When employing the formula for Mexican populations (see Bass 1987:238 re Trotter and Gleser 1952) a stature of 160.15 cm +/-3.37 is obtained. The fibula was also included in calculating the stature using Trotter and Gleser (1952) (since Genoves does not provide a formula for the fibula). The results of the fibula (33.65cm) produce a stature of 159.56 cm +/-3.5. Therefore, the stature for at least one of the individuals (based on the fact that these two bones were located in direct association with each other, separate from the rest of the remains) was approximately 160 cm.

Burial Three is located to the north of Burial Two, on the opposite side of the chamber, in a small sunken alcove. This alcove contains the intermingled and fragmented remains of at least two individuals. This area is lower than the main floor and water disturbance of the skeletal material must have been severe, resulting in the bones being mixed and wedged in the floor. Based on long bone measurements and the presence of the maxillary deciduous molars (m1 and m2) two ages have been estimated. One individual was approximately between 1 and 1.5 years of age at death, based on the femoral length of 107 mm (after Johnson 1962 in Bass 1987:217), and the humeral length of 119 mm (after Johnson 1962 in Bass 1987:149). An estimated stature between 67 and 70 cm is estimated based on the femoral length (Olivier 1969:284).

The second individual was approximately between 2 and 3 years of age at death, based on the femoral length of 124.5 mm (Bass 1987:217) and the presence of all maxillary molars (Ubelaker 1989, Figure 71). An approximate stature of 70 cm is estimated based on femoral length (Olivier 1969:284). All possible long bones were measured, and, while they were covered with calcite, it was thin enough to get fairly accurate measurements. Despite the thin encrustation on the bones it was not possible to confidently sex either of the two due to their very young age.

Burial Four was located in a tiny alcove within a small room in the north-east of the main chamber. Concealed behind stalagmites were the remains of an infant, extended and, apparently prone, with the cranium to the south-west. Based on the long bone measurements (humerus 80mm, left tibia 80mm, left femur 97.5mm, and right femur 95-100mm), it is estimated that this individual was approximately 1 year of age at death (see Johnston 1962 in Bass 1987:149, 217, 235). The stature of this infant is estimated to have been approximately 50cm (cf. Olivier 1969:283) and, due to the very young age, no sex identification was appraised.

Burial Five was located to the east of Burial Four in the same small room, however, this individual's sex and age are unknown since the calcite buildup in this area is very thick. At present there is observable only one fragmented individual as represented by two femora, 1 tibia, 1 humerus, a possible radius, a number of ribs, pelvis fragments, and some cranial fragments.

**Burial Six** (see Roberts 1990, skeleton 2) is located in a secluded region of the far southwest end of the chamber in a high alcove that once had water covering the floor. It can be found in a small depression, very fragmented, and heavily encrusted in the calcite flow stone. Like burial five, very little can be said concerning sex or age at this time.

**Burial Seven** (see Roberts 1990, skeleton 1) is located to the west of Burial Six, is articulated and supine, with the right arm raised and the legs flexed (sprawled or opened) with the cranium to the southwest. It is covered with a relatively thin layer of calcite but no actual bone is exposed. This individual is believed to be a young adult, perhaps late teens or early twenties, based on the incomplete fusion of the distal end of the right femur (Schmaltz 1995:130; Roberts 1990:126). The stature of this young adult would have ranged between 1.38m and 1.55m, with a mean of 1.49m (based on measurements from all long bones including the humerus, radius, ulna, femur, tibia and fibula), with the femora providing the shortest stature (see Ubelaker 1989:62 re Genoves 1967). These measurements conflict with Roberts (1990:126) estimates that range between 1.43m +/- 3.82cm and 1.54m +/- 3.51cm and, thus, requires further examination in a future field season. The sex at present is uncertain and will also need to be closely examined during a subsequent field season. However, Roberts (1990:126) reported that this young individual was a female that exhibited signs of cribra orbitalia on the left orbit and porotic hyperostosis on the frontal bone, which she indicates is a result of anaemia. This individual also exhibits the tabular oblique form of cranial deformation, as seen from two other individuals in this chamber.

**Burial Eight**, as identified by Roberts (1990:126) during the 1989 British Speleological Expedition, was not located during the most recent investigations in Actun Tunichil Muknal (1996). The remains were identified as being those of a juvenile aged 6 to 12 years. This age range was based on the dentition and epiphyseal fusion of the long bones. This individual should have been found towards the stream of the main passage on some boulders covered with calcite. It is unclear at this time whether this description was accurate but a future search during the 1997 field season should clarify the presence or absence of this individual.

### **Skeletal Modification**

Cranial deformation was commonly practice among the ancient Maya (Stewart 1975). It has been noted that although Landa (1978:52) identified only one form of deformation, referred to as fronto-occipital (or anterior-posterior), there have actually been numerous forms identified on the ancient Maya (Brothwell 1981:49; Buikstra and Ubelaker 1994:161; Ortner and Putschar 1981:90; Stewart 1975). The form that was identified on the three individuals from Actun Tunichil Muknal (Burials 1, 2, and 7) is referred to as tabular oblique. This form has also been identified at Dzibilchultun (Stewart 1975), Seibal (Tourtellot 1990), Tikal (Haviland 1985), and Colha (Massey 1989), and has been generally referred to as pseudocircular. Blom (1954:131) also reported this tabular oblique form in Moxviquil Cave in Chiapas, Mexico. Stewart (1975:224) notes both temporal and spacial differences in the distribution of the tabular oblique deformity, occurring primarily during Late Classic and Postclassic periods at certain lowland sites. As some have noted (e.g., Coe 1959:138; Haviland 1971 in Chase and Chase 1992:6), cranial deformation was more likely practice by the Maya 'upper class', or 'elite'.

## **Dental Modification**

Dental Modification, which includes filing and drilling with inlays, was commonly practiced by the ancient Maya, and found at such sites as Altar de Sacrificios (Smith 1972:228), Piedras Negras (Coe 1959), Uaxactun and Tikal (Haviland 1985), Holmuhl and Colha (Massey 1989), and at San Jose, Cahal Pech and Zubin (Schwabe 1995). The practice of filing began during the Middle Preclassic, and continued up to at least the time when documented by Landa, while dental inlaying first appeared during the early Classic period and then ceased to appear around the beginning of the early Postclassic (Smith 1972:229).

The type of dental modification found on these samples is categorized as surface modification involving filing (Buikstra and Ubelaker 1994:58; Ortner & Putschar 1981:453), which resembles Romero's (1958, 1970) type A-2. This type of modification usually takes place on the anterior teeth (incisors and canines) and can have a variety of forms (Buikstra and Ubelaker 1994:58; Brothwell 1981:117).

Contrary to Landa's (1978:53) ethnohistoric report that only women filed their teeth, Smith (1972:222) noted that at Altar de Sacrificios dental 'decoration' was found among both females and males, as did Massey (1989) at Colha. Both indicated that there was no preference for one sex over another.

The association of dental modification with a particular social status is not clear. Some suggest that only dental inlays were indicative of a higher status (Becker 1973:401; Chase and Chase 1992:6; Sharer 1978:57; Schwabe 1995; Smith 1972:231; Thompson 1975:xxxiii), while filing may have been practiced among all groups (Smith 1972), however, if this were so one might expect to find dental filing more often.

## **Discussion**

The circumstances surrounding the burials at Actun Tunichil Muknal have been proposed to be those of sacrificial victims. It has been suggested that some cave burials are associated with rituals, however, there is no comment that they may have been sacrificial burials (Butler 1934; Thompson 1975). That burials in caves were not a common practice among the Maya is supported by the fact that very few burials have been identified, compared to surface site burials (Ricketson 1925). This suggests that only a selected few were buried in caves. That there were rituals being conducted in Actun Tunichil Muknal (Awe et al. 1997a, 1997b) seems to further support the idea that these ten individuals were sacrificial victims. They were found laying on the surface, presumably laid down in water.

Given the nature of cave deposition it is difficult to determine whether any of the burial goods are directly associated with these nine individuals. However as Brady (1989:362) noted, an adult from Naj Tunich is believed to have been a sacrificial victim based on the nature of the burial, which had a lack of "grave offerings" and is described as "wet and muddy.... on a spot where water was dripping from the ceiling so that the bones were cemented together with calcite." Hence, Brady (1989:362) notes that this individual was probably a sacrificial victim rather than a "deliberate interment." This description matches the conditions at Actun Tunichil Muknal in which all of the individuals were found.

Evidence for infant or child burials in caves is not uncommon in the Maya area as they have been reported in other caves such as Naj Tunich in Guatemala (Brady 1989; Brady & Stone



1986), Petroglyph Cave (Reents 1980), Actun Yaxteel Ahau and Eduardo Quiroz (Pendergast 1971), and Actun Petz (Healy et al. 1996) in Belize. As Brady and Stone (1986:22) noted for Naj Tunich, "the grave goods and the haphazard nature" of one of the graves lead them to believe that the child discovered was a sacrificial victim.

According to Thompson (1975:xx), the Maya insisted that everything used in their ceremonies had to be *zuhuy*, that which is considered "pure", free of contamination and associated with the gods (Redfield 1941:121). "The same idea probably lies behind the sacrifice of children, particularly to the rain god" (Mercer 1975:xx), which has been noted to have been conducted by the Maya (Brady 1989:361; Brady and Stone 1986; Hooton 1940; Scholes and Roys 1938:611; Thompson 1975: xxvii; Tozzer 1941:117n). Thompson (1975:xxiii) also noted that "miniature implements were associated in ancient Mexico with the cult of Tlaloc, and probably for their size and *zuhuy* nature, small children were regularly sacrificed to both the Mexican and Maya rain gods."

The question of who the adults may have been is a more complex question. Hypothetically the sacrificed adults, and possibly the children found in Actun Tunichil Muknal, were of elite status. Chase and Chase (1992:6) have reported that "biological evidence or skeletal modification has been utilized to identify elites." As noted above, dental modification and cranial deformation was likely characteristic of those with higher status.

## **Conclusion**

There are still many questions surrounding the burials at Actun Tunichil Muknal that need further investigations in future field seasons. Presently there are ten individuals of Late Classic Maya origin, four infants and six adults. Sexing is hampered by postdepositional processes and requires greater scrutiny than could be afforded this past season. Due to the richness of ritual associated with this cave it is believed that these individuals were sacrificial victims, and some may even have been members of the elite spectrum of ancient Maya society.

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