

**AN INTERPRETATION OF THE SIGNIFICANCE  
OF HUMAN REMAINS FROM THE CAVES OF  
THE SOUTHERN MAYA LOWLANDS**

A Thesis Submitted to the Committee on Graduate Studies  
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## ABSTRACT

### An Interpretation of the Significance of Human Remains from the Caves of the Southern Maya Lowlands

Sheryl Ann Gibbs

Caves in the Maya area have long been known to contain human remains. Unfortunately, very little has been offered in the way of interpretation. This analysis is aimed at shedding light on the questions surrounding the occurrence of human remains in caves of the Southern Maya lowlands. Caves were vital to the Classic Maya, and it is argued that the placement of individuals in such places must have had tremendous importance. Research includes data from two caves (*Aktun Tunichil Muknal* and *Aktun Uayazba Kab*) in Western Belize where human remains from very different contexts have been examined. This research will be tied to evidence from historical documents, ethnographic accounts, and other archaeologically documented caves from the Maya area. Why these individuals were placed in these caves, and who they may have been, are two questions which are discussed. It is proposed that some individuals were sacrificial offerings, while others may have been buried as part of a lineage, or order (such as the high priests, or shamans), that had ties with a particular cave.

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This thesis is really dedicated to the people of Belize and to the people called Maya. I had the great opportunity to learn about you and I thank you.

## **Chapter 1**

### **Introduction**

This thesis provides an interpretation of the significance of human remains encountered within caves used by the ancient Maya. It constitutes an introduction to ancient Maya cave interments, with a history of how they have been interpreted and discussed. Previous interpretations concerning Maya mortuary practices, and Maya cave ‘uses’ will be discussed, followed by an interpretation of ancient Maya concepts of the cave, and the people they were interring inside. In light of recent archaeological theory, I will present my interpretation of ancient Maya ‘reality’ as it pertains to the idea of caves, the entrance to their Underworld (Hodder 1991; Hodder and Shanks 1995; Schele and Freidel 1990:64).

The idea that there are as many “realities” as there are societies may be a novelty to many of us. Yet whether or not we are aware that we see our world through a filter, our own version of reality guides our actions just as surely as other, different versions have guided other societies around the world in both the present and the past. We in the West live as we do in part because our cultural reality constrains our ability to imagine different ways of doing things. In our world, for example, we could not imagine letting blood from our bodies, as the Maya did, in order to communicate with our ancestors. Such violence seems crazy and “uncivilized” to us.

Schele and Freidel 1990:64

Using not only archaeological and biological data, but ethnohistoric and ethnographic data, I will present my thoughts of how the ancient Maya may have regarded those whom they left in the caves.

A main thrust of this thesis is the concept of caves as a spatial context for the interment or placement of individuals. Caves have not previously been discussed as such, even though cave interments have been widely cited. It will become apparent that,

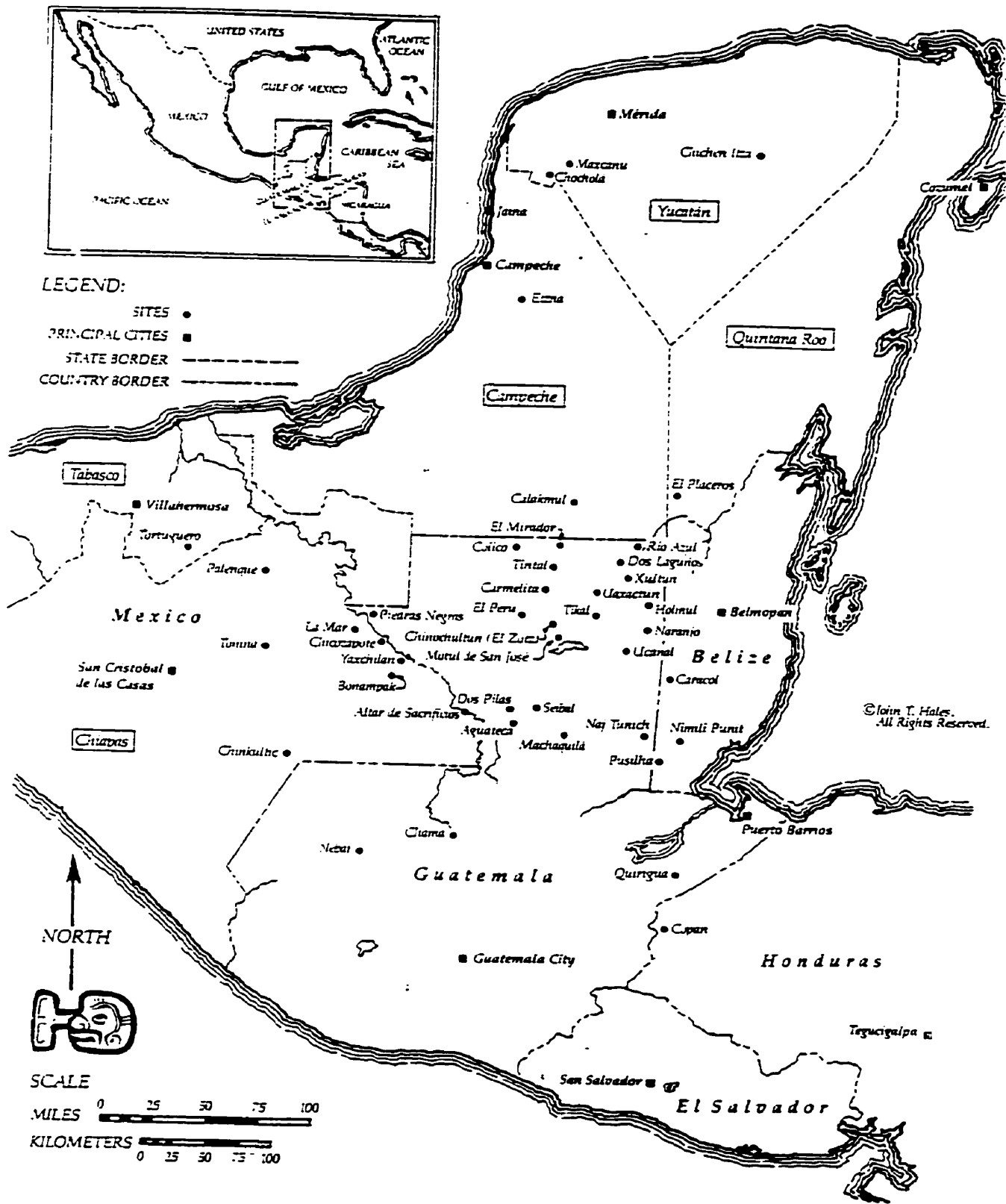


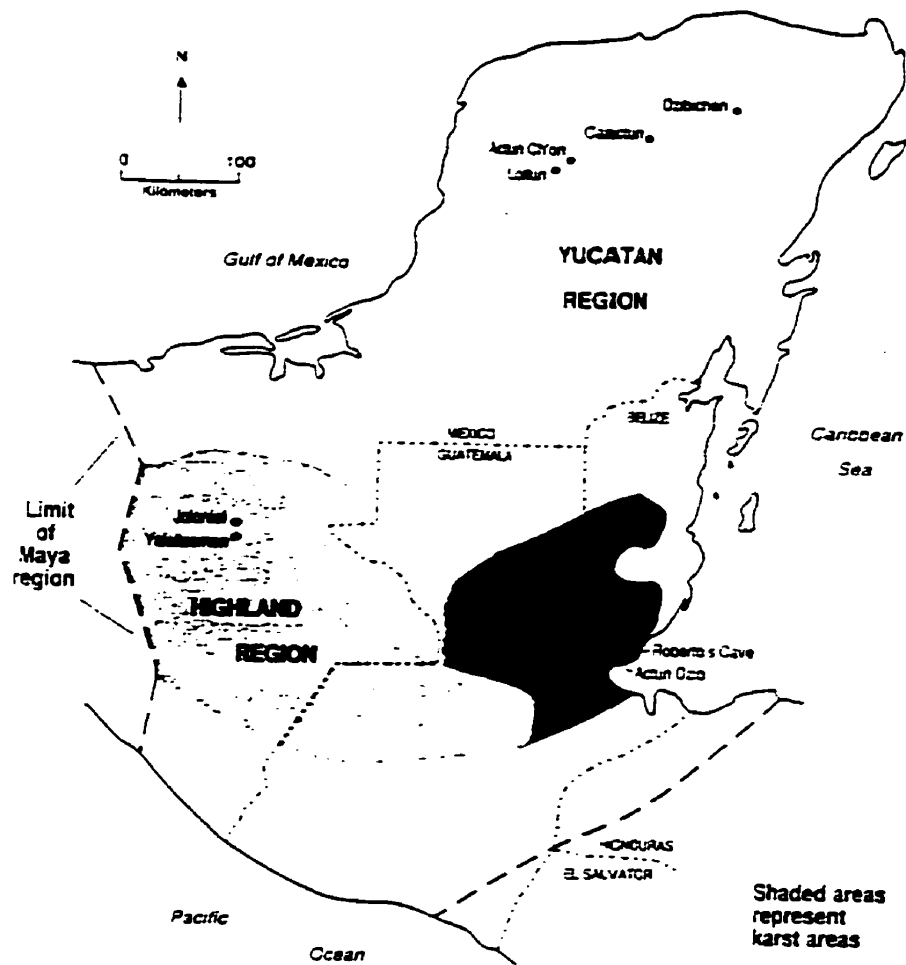
Fig. 1: Map of the Maya Subarea (from Robicsek 1981)

while others have noted that caves are a very sacred place to the Maya, very little importance has been placed on the fact that the Maya were interring, or placing people, inside. The Maya actively chose to either sacrifice or bury individuals within these sacred places in the landscape, or under a household shrine, a temple-pyramid, or under a stela or altar. The questions being primarily addressed in this thesis are 'why' did the Maya chose caves for this activity, and 'who' were these individuals?

### ***Region***

Due to time and space constraints, and the fact that this is a new area of research, the main focus for this thesis is on the southern lowland Maya of the Classic period (from approximately A.D. 250 - 900) (Coe 1993). Spatially, this area includes Belize, northern Guatemala and Chiapas, Mexico (see Fig 1). While there are additional data available on caves in the rest of the Maya subarea it will be left for future discussions. A macro view of the lowlands will be provided followed by a micro analysis to provide an example of lowland Maya cave use.

In terms of setting, the topography of the Maya lowlands is rather flat with some karst hills in the north and the Maya mountains in the south (Culbert and Rice 1990:2-3). There is a limestone shelf under this region which is characteristic of caves and sinkholes. Karstic landscape is "developed by solution of the bedrock" (such as limestone, dolomite or gypsum) "and the loss of water to the subsurface (Veni 1995:243)" (see Fig. 2). It is estimated that the population living in the central Maya lowlands during the Late Classic period was approximately 4,000,000 people (Turner 1990:324).



**Fig. 2: Map of Karst Areas of Maya Mesoamerica (from Stone 1995)**

**Taphonomy**

An important aspect in this analysis is taphonomic pressures that exert themselves on the interments within the cave. The taphonomy of human remains is the “study of the processes [environmental, individual and cultural] that cause sampling bias or differential preservation in bone assemblages” (Nawrocki 1995:49). There are three main types of taphonomic pressures (individual, cultural and environmental) which can make analysis, cataloguing, classification and a discussion of the remains a daunting task.



Nonetheless, through perseverance, an analysis of the “human mortuary activity” can be produced (Nawrocki 1995:49).

The subterranean environment is very different from that found at surface sites, especially if the cave is, or was, a wet cave. While this unique environment can pose problems for the investigator, such as poor preservation of remains, it can also leave clues to Maya activity, such as the occurrence of individuals in gour pools (i.e., pool formations made by water activity in the calcium carbonate flowstone). Individual factors, such as age at death, sex, health, and social rank, could have played a part in who was placed in the cave, and possibly why. Cultural taphonomic factors can be those processes placed on the remains by the Maya themselves, at different times, by looters, and/or by excavators. The “human mortuary activity” being sought requires the inclusion of a thorough analysis of the context in which the individuals were interred (Braun 1984; Nawrocki 1995:49).

### *Individual*

Taphonomic pressures begin with the individual, or the biological processes involved. Who the individual was in terms of age, sex, and even status, can play an important part in how she/he was treated upon death, as well as how their remains are preserved (Braun 1984; Nawrocki 1995:49). Not only can the biological characteristics of an individual affect the process of decomposition, so too can the sociological characteristics. For example, the bones of a diseased adult can be poorly preserved compared to those of a healthy adult; likewise the remains of an elite individual placed in a tomb may be better preserved than the remains of a slave that were left exposed for a

period of time as an offering.

### *Cultural*

Cultural, or social/organizational, processes can be linked with individual processes. However, they include the impact which people, as well as social interactions, have had on the remains. An individual's social position can affect the way she/he are treated upon death, which in turn has an affect on the preservation of the individual's remains and the associated grave context. Ritual and symbolic processes also fall under this category. The beliefs which certain groups have can affect how an individual is treated upon death (e.g., whether or not the individual is cremated). Site formation processes can be a result of cultural pressures as well. Where and how the individual is interred can vary "according to how social relations were organized across the physical landscape of the larger society" (Braun 1984:192). The types of questions asked under this category can help us to understand why the Maya were placing individuals in places such as caves (Braun 1984:192; Nawrocki 1995:49).

### *Environmental*

Environmental processes can greatly affect the preservation of human remains. Caves are very unique environments which present an array of processes that more often than not adversely affect human remains. In one sense, caves can be seen as great deterrents to looting and disturbance by animals. However, just as damaging is the fluvial activity which occurs in some caves. Water flowing through karst limestone caves contains high amounts of calcium carbonate which can accumulate on those materials which are submerged. Thus, not only can the water activity displace objects and bones,

but it can also cover them with calcium carbonate.

The taphonomic pressures do not end there, but continue to the actual completion of analysis. The archaeological recovery and analytical processes can also have a tremendous impact on human remains and must be taken into consideration (Braun 1984). Making sure that information available from the interment context is carefully collected and well documented is important when attempting to reconstruct the past.

### *Theory*

This thesis is an attempt at being interpretive in approach (see Hodder 1991; Shanks and Hodder 1995). The interpretations presented in this thesis are concerned with trying to making sense or understand things that had previously been unknown (Shanks and Hodder 1995:5). The interpretations within this thesis are those presented by myself from the information available. Interpreting the past “places archaeology in symmetry with those in the past who are studied...they, too, interpreted and interpret their world...” (Shanks and Hodder 1995:28)

I do not believe that caves were simply functional localities to the Maya. By this, I mean that the cave did not function solely as a place for ceremonies, or solely as a reservoir for water. Instead, I follow the hypothesis that they symbolized the cosmology of the Maya. Symbolically, caves were viewed as the entrance to the Underworld. They were also thought to be houses for Maya ancestors and gods (Bassie-Sweet 1991; Brady and Stone 1986; MacLeod and Puleston 1978; Pohl and Pohl 1983). Caves did not merely ‘function’ as a mausoleum of sorts. They were a place that bridged the gap between the sacred and profane. They were the liminal place between life and death and

possibly other rites of passage. Caves are like a threshold upon which a transformation was made.

For the purpose of this thesis, death as a rite of passage will be the focus. According to Pearson (1993), there are three stages which the dead undergo. The first stage is physical in that a living being is transformed into the corpse. The corpse then enters the liminal stage which involves the ritual of a funeral. Physically, this liminal stage is sacred. For example, a temple, graveyard or ancestor shrine, which has boundaries separating the sacred from the profane is created. The third stage involves the passage of the deceased into the “other” world, or Underworld, which is anywhere but “here and now” (Pearson 1993:204).

“The dead may be a legitimization of the social order, embodiments of land rights, martyrs to a holy cause, guardians of ancestral traditions...” (Pearson 1993:203). It is obvious that the dead do not bury themselves, but this is an important point in illustrating that the deceased are “manipulated for the purposes of the survivors”, such that funeral ceremonies are the results of “political decisions” (Pearson 1993:203).

Pearson (1993:206) identifies two types of analysis that can be pursued in examining mortuary behaviour. The first is the “analysis of spatial and topographic relationships between the abodes of the living and the dead”. The much discussed Goldstein/Saxe hypothesis (Morris 1991) does not fit the pattern that has emerged from Maya mortuary studies. The Goldstein/Saxe hypothesis is actually a modification to Saxe's (1970:119) 'Hypothesis 8' . After a re-analysis and finding shortcomings, Goldstein (1981) provided three sub-hypothesis (Morris 1991). This 'revised' version is

well summarized by Pearson (1993:206):

If a formal, bounded disposal area exists and if it is used exclusively for the dead, the society is very likely to have corporate groups organized by lineal descent. The maintenance of this exclusive, bounded and separated area is one means of attaining or legitimating lineal descent from the dead, to control crucial but restricted resources.

Specifically, the Maya did not tend to use a “formal, bounded disposal area” as described by Pearson (1993:206). Instead, they buried their dead with them, thereby making their presence felt, or at least noticeably visible, everyday. They buried their dead under house floors, in nearby shrines of varying size and status, or under local plazas. This is not to say that the Maya did not have “corporate groups which were organized by lineal descent (Pearson 1993, 206)” as proposed by Saxe and Goldstein (see Goldstein 1981; Saxe 1971). According to Pearson (1993:206) it is possible that the influence of the dead was stronger the closer they were “physically integrated within society”. As already mentioned, the living continued to live with their dead, thus, there was not always a distinction between grave sites and living sites. This emphasizes the power of the ancestors. The funerary structures, such as the funerary temple-pyramids, and the household shrines, seemed to have been the focus of not only ancestor worship but were sacred spaces where ritual activities and ceremonies were conducted. However, these practices do not fully explain the interment of individuals within caves.

The second analysis concerns the “intra-site organization within the abodes of living and dead” (Pearson 1993:206). Pearson notes that just as there are differences between the contexts of the living, in terms of social status, gender and kinship, there will also be differences evident in grave contexts. This may be an obvious assumption, but

one that may not be considered often enough. There is a symbolic association with the fact that the Maya also interred individuals within caves. In some cases this resulted in a physical removal of the dead from the living and communing spaces to a sacred place in the landscape. Perhaps the dead placed within caves had certain social values that resulted in the decision to separate them from the other dead?

Death is a social event, not just a physical transition, because it effects not only the deceased individual, but the whole social group as well. It forces others into a transition, or passage. For instance, a surviving member's social status or position can change due to a death, resulting in the individual going through her/his own rite of passage. "Death instigates reorganization of all social actors and their relationships", and funerals become that occasion where the "social roles are renewed, reinforced, and reclassified" (Damm 1991:130). "Mortuary symbolism is employed by mourners concerned not simply with the proper treatment of the dead, but also with the reallocation of rights and duties amongst themselves" (Barrett 1990:182).

### ***Method***

The methods employed for this thesis are a combination of archaeological and osteological. Two cave sites have been employed as case studies, *Aktun Tunichil Muknal* and *Aktun Uayazba Kab*, which provide excellent examples of the different treatment and placement of individuals in caves used by the ancient Maya. These two sites are located approximately 700 metres apart along a limestone ridge in the Roaring Creek river valley in Western Belize. The activities conducted within *Aktun Tunichil Muknal* would have been far removed from any spectators, while many of the activities conducted at *Aktun*

*Uayazba Kab* were probably public spectacles. The activities connected with the handprints are suggested to have been conducted in secrecy. However, it is only in the public place where the burials were located, which is quite the opposite from *Tunichil Muknal*, where the remains are located up to 500 metres inside.

The individuals located within the Main Chamber of *Aktun Tunichil Muknal* have been dated to the Late Classic period (based on ceramic dating). Unfortunately, the sequence and occurrence of the placement of the individuals is not known and will probably never be known. It should also be noted that the individuals in *Aktun Tunichil Muknal* were originally referred to as 'burials'. However, this seemed a problematic identification, especially as it became apparent that the individuals within these 'burials' (which were all on the surface) likely had been sacrificial victims. As a result, the term 'burials' was changed to 'individuals'. Distinguishing between burials and the occurrence of sacrificed individuals became a necessary distinction for this thesis and will be addressed in the following chapter.

The human remains collected and excavated from *Aktun Uayazba Kab* were analysed following the same procedures as for the remains from *Tunichil Muknal*. However, in this case many of the remains were actually excavated from a burial alcove in Entrance 1, while some were collected from the surface after the looting activities. The first season of excavations (1997) attempted to locate undisturbed burials (much of the area in the burial alcove was extensively looted). Excavations during the second season (1998) were directed at salvaging any data/evidence that the looters had left behind. In the process, five burials with limited disturbance were located.

The formulas for achieving status estimates and age estimates, as well as the references used for sexing, aging and identifying any pathological conditions include those from Bass (1987), Brothwell (1981), Olivier (1969), Ortner and Putschar (1981), Romero (1958, 1970), Schwartz (1995), *Standards* (Buikstra and Ubelaker 1994), Steele and Bramblett (1988) and Ubelaker (1989), among others. The ages of the individuals from these two caves have been divided into three categories as established by Acsadi and Nemeskeri (1970): childhood (from birth to approximately 15 years), juvenile age (at roughly 15 years to the early 20's) and adulthood (Schwartz 1995:185).

### ***Summary***

The goal of this thesis is to present a comprehensive view of human remains and the surrounding context which is encountered within caves in the Maya area, more specifically in the region of the southern lowlands. Caves have been viewed as sacred points on the landscape for the Maya over thousands of years, yet only recently have they been investigated with the same fervour and attention to detail as surface sites. In particular, the human remains that are encountered deep within the recesses of these caves can provide important information to heighten our understanding of how the ancient Maya perceived such points on the landscape, and why they entered these dark, and sometimes watery, subterranean chasms.



## **Chapter 2 Maya Cosmology**

Every society has a logic to its thinking - so too, there was an Old Empire Maya logic. In the elaboration of their art style, I feel the Maya ceremonial center populations were literally trying to talk to their gods, attempting to compel the gods through the sheer power of Maya beauty and perfection to be kind to the real Maya world, soften the burdens of life, and bestow favour upon the Maya people.

Gifford (1972) 1978:205

This chapter is dedicated to trying to understand what the Maya believed in and how it affected their life; for, in order to understand a people, it is essential we understand their religion (Thompson 1970:159). It is also important to appreciate that the “Maya codified their shared model of reality through religion and ritual...”, which is very different from the way ‘we’ exist today (Schele and Freidel 1990:65). The Maya have provided us with a wealth of information in their art, texts, pottery, architecture, even their bones, which tell us about their lives and how they lived them (Iskan and Kennedy 1989; Saul and Saul 1989).

In an attempt to understand ancient Maya cosmology, this chapter will discuss the hero twins myth from the *Popul Vuh*, historical reports, and various ethnographic accounts collected from present day Maya. This will provide some context for what will become the focus of discussion for the remainder of this thesis. As will be illustrated, the importance of caves as described in these resources will support the archaeological and biological information that has been recovered from caves throughout the Maya area. While it is not assumed that Maya culture has remained static over hundreds of years, there are some constants, such as their belief in a sacred landscape.

***Historical Documents:***  
*Popul Vuh*

The Popul Vuh, or “Council Book”, tells the story of Maya creation, from a time when there was no light to a time when light shone everywhere (Tedlock 1996). The Popul Vuh, written in alphabetic script, is thought to have allowed the authors to ‘see again’, to see “the four sides, the four corners in the sky, on the earth” (from Tedlock 1996:29). The sixteenth century authors belonged to lordly lineages that once reigned over the Quiche kingdom. They describe how their people were created, which is set around the myth of the ‘hero twins’ (Tedlock 1996).

There are actually two sets of twins that meet with the lords of the Underworld (*Xibalba*). The first set, *One Hunahpu* and *Seven Hunahpu*, were great ball players and created loud rackets in *Xibalba* each time they played. As a result, the lords summoned them to the Underworld. In order for the two brothers to access the Underworld they needed to enter a cave, the entrance to *Xibalba*. Once there, the lords put them through a test in the Dark House. However, they failed this test and were sacrificed. The head of *One Hunahpu* was removed and hung in a calabash tree. The daughter (*Blood Moon*) of one of the lords went to the tree and the head spit into her hand, thereby making her pregnant. She managed to escape from the Underworld in the face of punishment by death, and travelled to live with her new mother-in-law. She gave birth to a second set of twins, *Hunahpu* and *Xbalanque*, who, after discovering their father's ball playing gear, also turned out to be very good ball players. The gods once again were disrupted by the sound of the ball game and summoned these twins to the underworld. Again, the twins

had to enter the cave. They were put through a number of tests and passed all except for the Bat House, in which *Hunahpu* lost his head. *Xbalanque* gave his brother a carved squash as a replacement for his head and they emerged to play ball with the Xibalbans. They began to play with Hunahpu's head, but after it was played out of the court, *Xbalanque* fetched it and gave it back to his brother. They then continued to play with the squash. Following the game the lords were still intent on killing the twins and tried to trick them again. However, the twins out-tricked the lords and jumped directly into a fire and killed themselves. It was requested that their remains be ground up and thrown into the river, and the lords obliged. It turned out that through such an act the twins were reborn, but as magicians. They travelled the Underworld as magicians and would kill individuals, and then bring them back to life. This was of great interest to the gods and they wanted to see it for themselves. The two magicians agreed to kill the gods to show them this magic. However, this time they did not bring them back to life. This was their revenge. The twins later became the sun and the moon.

The last creation to have taken place, according to the authors of the *Popul Vuh*, is recounted following the myth of the hero twins. The gods find out that there is a mountain full of yellow and white corn, so they gathered the corn, ground it very fine and mixed it with water to create human flesh. A similarity is found during the myth of the 'hero twins'. Their bones were ground up and thrown into the river which resulted in them being brought back to life even more powerful. The gods then modelled people out of the corn mixture, and they became just as the gods had hoped. They prayed to the gods and they had perfect knowledge and perfect vision. However, this concerned the gods

somewhat so they decided to put a fog over their eyes. The Maya are the result of this third creation since the gods saw no need to kill them as in previous creations.

From this myth, one can see the involvement of the cave acting as the portal to the Underworld (Pickands 1986:122). The Maya have always believed that they came from corn and this is nicely described in the story of the third creation. Since this corn came from a mountain it could be assumed that the only way of accessing it would have been from a cave.

### *Diego de Landa*

Friar Diego de Landa was the third Bishop of the Yucatan Peninsula. While attempting to force the Maya into Christianity he was responsible for two actions, both of which have left a tremendous impact. Landa was responsible for the burning of approximately 5000 idols, dozens of scrolls, or books of hieroglyphic text, and any Maya he caught practising their 'pagan' religion (Tozzer 1941:78). He is also responsible for keeping detailed records about the Maya, the people among whom he was living. He put these records together in the *Relacion de las Cosas de Yucatan* (Tozzer 1941) as part of his defence when he was put on trial for his atrocities. Ironically, much of what we know today concerning the Maya has come from Landa's notes, just as much of what we do not know today is because Landa burned so many of their texts.

Historical documents, as well as ethnographic analogies, must be used with caution, especially when written by those trying to conquer the people being described, in this case the Maya. Nonetheless, this information is very useful when used in addition to all other sources of information.

Landa provides accounts of an individual discovering a cave with the scent of incense coming from it. Inside the cave he found altars and idols with sacrificed deer blood. This 'event' seemed to spur a mass 'witch-hunt', and leaders of the Church found out that such practices were widespread among the Maya. This resulted in mass punishment, torture, and the burning of any books they could find (Tozzer 1941:78).

Landa (Tozzer 1941:180) noted that in times of drought the Maya made human sacrifices at the Cenote of Sacrifice at Chichen Itza. He noted that the victims were sometimes paid for with beads, while others were 'donated' by the devout. The victims were often orphans, although it is noted that families often gave up their own children in return for honour (Tozzer 1941:117).

Other historical accounts include those by Lopez and Herrera (Tozzer 1941). Lopez (1612) noted that some of the victims actually volunteered because of the perceived honour of being sacrificed in times of need, while Herrera (1601) stated that devout parents would offer their nephews or sons. Other victims included highly ranked prisoners, for it was believed that the gods looked favourably upon such offerings (Tozzer 1941:231). Offerings were said to have been sacrificed during times of drought, presumably to the rain god (Tozzer 1957:200). Human sacrifices were also said to have been made when it was believed that the gods were angry with them (Tozzer 1941:184)

***Ethnographic Accounts:***  
*Tzotzil*

The Tzotzil Maya believe there were three creations of their world (Thompson 1970:346), which corresponds closely to the Popul Vuh. Following the first creation the

gods were unhappy because the people would not die. The gods finally killed them by sending a flood which washed away everyone. Again, during the second creation, the people would not die, but kept coming back to life and this displeased 'God'. So 'God' decided to destroy the earth by pouring hot water on the people. Some of the people took refuge in caves, but they all eventually died. Human bones found in caves today are said by some modern Maya to be the remains of those people who died trying to take refuge there. (Attention should be made to the changing of 'gods' to God in the second creation, indicating the penetration of Christianity, particularly Catholicism, into Maya cosmology.) The third creation is the one from which the current day Maya derive. (Laughlin 1969:175; Thompson 1970).

Regardless of their coercion into Catholicism, the Tzotzil have managed to keep alive many traditional, and even ancient, Maya beliefs (Thompson 1970:346). They have transformed many of the saints into their gods, and vice versa, many of their gods have become 'saints'. They also made the symbol of the Christian cross into their sacred tree, which appears to correspond to the ancient Maya world tree.

The Maya believe their ancestral gods live in the mountains. One such god is *Manohel-Tohel*, the creator and maker, who led the people out of the caves and gave them a body and soul. They believe in a rain god named *Chauc*, who is lord of the thunderbolt, the mountain, the giver of corn, the god of waters and controller of the wind and rain. *Chauc* resides in caves which are guarded by frogs (Laughlin 1969:177; Thompson 1970:268). Other such deities include *Chauc's* daughter, *X'ob*, the maize mother, and the earth god who also resides in the cave. Such deities should be honoured

and thanked for “human survival is thought to depend entirely on the preservation of harmonious relations with the deities” (Laughlin 1969:178).

There is a continual regard for mountains as being of special interest. Many, if not all Tzotzil Maya today, believe that deities and spirits, as well as their ancestors, live in the mountains (Vogt 1969).

The Tzotzil go to the caves to pray for a happy issue out of all their afflictions at sowing and harvesting and particularly on May 3, Day of the Holy Cross, associated with the coming of the rains over most of the Maya area. Then the people go in procession with incense and pine branches to make altars in front of the crosses of the deep cave. Fireworks are set off and *arguardiente* is drunk. If San Antonio is satisfied with the offerings, rains will be abundant and crops bountiful.

Thompson 1970:268

Another similarity that the Tzotzil share with their ancestors, as well as other linguistic groups, is their belief in the 13 levels, or steps, that the sun takes throughout the day. This is likened to the 13 levels of the heavens conceived by the ancient Maya. At night, the sun must then move through 9 levels of night, which corresponds with the nine levels of the ancient Maya Underworld.

In the village of Zinacantan, the most important deities to the Zinacantecos are their ancestor gods who live inside the sacred mountains which surround Zinacantan, Chiapas. The ancestors are believed to have moved into the mountains in the “mythological past” (Vogt 1969:298). Just as their ancestors, they believe that clouds and lightening come from caves, and that caves house the rain. It is believed that the clouds “travel to the tops of mountains where they talk to the ancestral gods about their “work”, for example, where they should travel and where they should take the rain each day”

(Vogt 1969:298). Just as the ancient Maya are thought to have believed in an earth monster/deity, so too do the Zinacantecos. “Any opening in the form of a cave or limestone sink or waterhole constitutes a means of communication with him [the earth deity]” (Vogt 1969:302). This deity must be compensated for providing the rain, the land, and the corn, on which the Maya depend for survival. Ceremonies are often conducted at waterholes or caves by shamans who offer prayers, candles, rum and incense in hopes of rain and a bountiful crop.

The Zinacantecos' “visible sacred world...is characterized by strong emphasis upon two features of the natural topography of highland Chiapas: *vits* (mountain) and *ch'en* (cave). A *vits* is often the home of an ancestral god and a *ch'en* is a means of communication with the earth god” (Vogt 1969:375). All openings in the earth are used as means of communication with the earth lord, hence this is where one would go to either make a request or to give thanks, or for lineage ceremonies and year renewal ceremonies. The water from important waterholes is believed to be used by the ancestral gods for bathing which makes it valuable for rituals and bathing patients (Vogt 1969:387).

An interesting point is that some of the Maya gods are thought to be able to “see” into the profane world through mirrors or windows. It is also believed that shamans are “seers” who can see into the mountains, which usually happens during communication ceremonies with the gods. Vogt (1969:304) astutely points out that this concept may have originally been applied to pyrite mirrors. This could be likened to the vision quests that the high priests or rulers of the ancient Maya would have taken to commune with



their ancestors. He also notes that crystals may hold a similar purpose, in that they may give the saint/deity the power to speak.

Shamans in Zinacantan today have dreams three times before they actually become shamans. This is like their calling (Vogt 1976:27). In these dreams they are called before the ancestral gods in the Senior Large Mountain. The first dream occurs when the individual is around twelve years old, and the “innate soul of a supernatural... appears and directs the innate soul of the novice to accompany him...within the mountain” (Vogt 1976:27). Before the novice can become, or reveal himself as, a ‘shaman’ he must go to the highest-ranking shaman and this individual will pray to the ancestral gods in the sacred mountains. This is another example of ‘rites of passages’ that have to do with the sacred mountain.

### *Quiche*

Mountains, according to beliefs of the present, and past, Quiche Maya, are places the ancestors and deities live and meet (Tedlock 1986:128). Sometimes the mountains are themselves referred to as gods, which emphasises the sacredness of such places on the landscape.

Only men who have been initiated into the top two levels of the priestly hierarchy and the most powerful local shamans...may visit the directional mountains...having asked permission to do so at other lower shrines.

Tedlock 1986:128

This corresponds with the concept the ‘Traditional Maya’ (see below) whereby men are initiated by entering a cave (Scotchmer 1986). Once they complete this ‘right of passage’ they are then able to approach the mountain. Mountain top shrines are, and have been,

used for sun, crop, illness and lineage rituals.

Caves in the mountains are sites for rain ceremonies which relate to the deities of the Underworld. Momostecan (Quiche living in the municipality of Momostenengo, Guatemala) believe mountains, with their subterranean rivers and caves, and their external height, are the major sources of clouds, and thus rain (Tedlock 1986:128; Vogt 1969:387). It is noted by Heyden (1973 in Tedlock 1986:128) and Tedlock (1986:128) that such caves are also often ‘ossuaries’ for human skulls and bones. This idea will be addressed in subsequent chapters.

The Quiche are animists for whom the supernatural is immanent, not transcendent. They live in an inherited world which it is their job to maintain...Religious practice...revolves around the making of offerings to supernaturals...Fines and bribes are paid to end misfortune or to ask for favours or protection, and the land and its resources are rented from *mundos* ‘worlds’, powerful beings who live inside the earth.

Cook 1986:139

The modern Quiche Maya also believe in three creations. The first creation involved humans made of mud, but they were too soft and could not hold their form, nor could they think. The gods were not happy with this type of creation so they destroyed their work. The gods then made humans out of wood and reeds. However, even though they appeared to ‘look’ like humans, they had neither minds nor souls. Not only were they lifeless, they did not honour their makers, so the gods had them killed. The third creation corresponds with that described in the Popul Vuh, and of the ancient Quiche beliefs. Humans were made from the dough of white and yellow maize. They were gracious in honouring their creators, and this pleased the gods. The only modification the gods made was to make them less wise by putting a fog in their eye (Thompson

1970:334).

### *Kekchi*

The Kekchi Maya believe in a god of the mountain and valley, who lives in a cave. Each mountain has one of these gods residing within, and these gods are considered benevolent (Rojas 1969:241). The Kekchi believe that maize was given to them by the mountain-valley gods, who are also the thunder gods who bring the rain. One of the god's thunderbolts was able to crack the rock under which maize was hiding, and they gave some of it to the Kekchi.

It is interesting to note the Kekchi explanation for skeletal remains found in caves. It is said that a Kekchi woman believed that the skulls in a cave near Coban belonged to a people who lived before the sun. When the sun eventually appeared it was too bright for them so they stayed inside the cave. During the day they stayed inside and made pots, at night they were able to emerge (Thompson 1970:344).

### *Lacandon*

The Lacandon (Thompson 1970:266) believe that one of the creation gods lives in a cave. They share with the rest of Mesoamerican cultures the association of rain gods with hills, caves and bodies of water. One group of the Lacandon purposefully lived near a cave in order to be near their sun god, who travels to the underworld at night (Duby and Blom 1969:292). They also believe in a god of lightning, thunder and rain.

According to one of the creation myths believed by the Lacandon, the gods inhabited the earth prior to humans and are responsible for the 'ruins' that were once great structures (Baer and Baer 1952 in Thompson 1970:344). The Lacandon travel to

Yaxchilan to pray at the “sacred stone”, which is also where their most important gods live.

### ***Summary***

Ethnographic work has revealed much concerning modern day Maya beliefs, most notably the fact that their life is still very entrenched in ceremony (Gifford 1978:206; Sanmiguel 1994). Whether the ceremony is Christian or Maya, they have managed to meld the two in such a way that traditional beliefs are still upheld. Christian saints were adopted and incorporated into their own deities. The cross as a sacred symbol was familiar because they already had similar iconography in their own ‘foliated cross’. Sanmiguel (1994:170) suggests that the “Catholic church is a substitute for the cave”. Metaphorically and symbolically, there are similar parallels between the concept of the cave and the practices that took place within them and the concepts and practices of the church today . Another example of the adoption of Christian concepts is the previously mentioned creation myth where the first creation is destroyed by the gods, and the second creation is the work of God. There is also a tie to the Christian belief in a malevolent God destroying earth with a flood because the beings it created would not pay homage or obey.

All aspects of Maya life were, and still are, immersed in that which is terrestrial (Brady 1997:602). Combined with this terrestrial focus is the concept of animism, in which all things have a soul (Cook 1986:202; Thompson 1970:165). In order to stay on good terms with their gods the Maya must hold ceremonies and rituals. Such deities include a god of the mountain and the rain god to whom they pray, and who is held in the

utmost esteem. The Maya living in the Guatemala highlands today believe in a variety of deities, now disguised as saints, some of which represent, or symbolize, the earth, sun, moon, and owners of hills. In northwest Guatemala there are “owners of the mountains” who live in their respective mountains. These local deities have mountainside shrines where offerings and prayers are made to them (Wagley 1969:62). The Yucatec Maya hold *ch'achac* ceremonies in hope that *Chac* (rain god) will bring rain (Redfield 1941:95; Rojas 1969:271). Just prior to and during the rains frogs begin to croak. In order to mimic this, they create the illusion that the rain is about to come with boys croaking in hopes that *Chac* will hear them and ‘think’ that it is indeed time for rain (Thompson 1970:166).

Traditional Maya, as described by Scotchmer (1986:202), have initiation rituals for novitiates in which they are taken into a cave. This will correspond well with the brief discussion in chapter three regarding ‘rites of passages’. These young novitiates are in a state of liminality until they exit the cave and become ‘new’ members of Maya society, with a new identity. It is believed that:

a young man is reborn into a totally new world demanding the purification of his very soul....It is an introduction into the very Underworld itself, through a cave in which he must die to the patterns and limits of his previous knowledge, beliefs and assumptions. He will never again be the same. The water must have pounded for most of the day as he sat in dark wetness or moved around the murky innards doing precisely what any beginner might be expected to do - sweep the dirt of the gods. Surely this was as much a tomb for him as he would ever personally be conscious of. This marks a beginning on the road to a new authority, a new participation in the seemingly timeless cycle of movement in the space of the cosmos itself.

Scotchmer 1986:202

The experience such individuals must have felt would surely change them. From a phenomenological point of view (Tilley 1994), one venturing within these caves can have an awe-inspiring experience. Scotchmer (1986) notes that a boy going through such a ritual will no longer be the same. He has gone through a profound religious experience. It is suggested that the ancient Maya would have conducted similar ceremonies, or rites of passages, within caves and undoubtedly would have had similar, if not more profound, experiences. Caves would not have been a place that the Maya entered into lightly.

The above accounts of ethnographic and historic events were presented in order to 'set the stage' for a discussion of ancient Maya beliefs. Again, it is realized that analogies can be misleading or imply a stagnant and passive people. Nevertheless, many Maya-speaking groups live similar lives to their ancestors, regardless of the influx of heavy Western influences.

The myth of the 'hero twins' was presented to illustrate the belief in an Underworld. Both sets of twins had to enter a cave in order to reach Xibalba. It also explained how the sun and moon came to be. It is important to note that the Maya believed that the sun emerges, each day, from the Underworld and travels across the sky until dusk when it again enters the Underworld. At this time the moon emerges. The Popul Vuh also explains creation, by presenting the two failed attempts and the final creation of the human race. It reaffirms the Maya belief that they were made of maize.

Bishop Landa's *Relacion* describes the Maya at the time of conquest (Tozzer 1941). While condemning the Maya for everything in which they believed, he described their life in great detail, in attempt to illustrate how 'barbaric' and pagan they were. He

was greatly disturbed by the fact that the Maya believed in multiple gods and conducted rituals to such beings. There was also the shock of discovering that the Maya practised human sacrifices.

The ethnographic accounts mention different segments of present day Maya cosmology. The creation myths show some continuity, including the fact that present day Maya believe they were made from maize which originated from underground. This is very important to the Maya and thus, they place much emphasis on maize. It has also been shown that the different linguistic groups believe in a rain god who, for the most part, resides in a cave, or mountain. In addition, there is also much emphasis placed on the role of their ancestors, which they must acknowledge.

Equally important to note is the constant referral to features on the landscape, such as mountains, which are a major focal point. The appearance of storm clouds coming from mountains where there are caves is a phenomenon easily observed every rainy season (MacLeod and Puleston 1980; Steele 1997; Stone 1995:41).

It has been shown that the Maya believe that they were created from maize, which is thought to have come from a cave (Tedlock 1985:47). These occurrences place caves directly within a “fertility complex”. This idea of fertility extends to agriculture as well as life itself. Symbolically, the cave can be seen to represent a womb from which life emerged. Thus, caves and mountains are important in different levels of Maya ideology.

### ***Ancient Maya***

Now it is necessary to project back to the people who built the foundations of modern Maya cosmology. Perhaps more so than their successors, the ancient Maya were

very ritualistic. This is seen from the depictions of themselves on ceramics, murals, and codices involved in ritualistic practices. Stone (1995:41) notes that “the quintessentially Mesoamerican notion that rain gods live in caves...is so widespread and the character of the rain gods is so consistent that the rain god-cave complex must have great antiquity.”

The ancient Maya believed in an underworld called *Xibalba*, or *Muknal*. This underworld was believed to be home to several important deities, including the earth monster, the rain god, the jaguar god, and the maize god. This was also the place where souls travelled upon their death. The entrance to such an Underworld was usually through a cave, often in a mountain, or hill-side. The fact that caves are considered the entrance to *Xibalba* indicates the great importance that such spots would have had for the ancient Maya.

Caves were viewed as a passageway of communication with the gods. There is an eerie phenomenon that can occur in caves, which can be easily confirmed by most individuals who have spent time within them. This is the sound of voices which are explained as being caused by the movement of water and air through a cave. Nevertheless, such sounds cannot be dismissed when discussing how the Maya believed these were the places where they could communicate with their gods (Pohl and Pohl 1983:31). Caves were also the juncture, or portal, between the profane existence on earth and the Underworld. They were pathways for the souls of the dead and the home for their ancestors (Bassie-Sweet 1991:5; Brady and Stone 1986; MacLeod and Puleston 1978; Pohl and Pohl 1983).

These sacred spaces on the landscape were likely recreated in their above ground



architecture. It is thought that temple-pyramids of ancient Maya centres represented the sacred mountain while the doorway leading into a temple room, or inside the structure, represented the cave (Bonor 1997; Bower 1998; Brady 1997; Brady and Stone 1986:23; Brown 1997:15; Schele and Freidel 1990:71-2, 427; Stone 1992). Such built structures might have been very important for Maya communities living in areas with no natural caves. However, this is not to say centres surrounded by caves would not have constructed such monuments. It has been suggested that perhaps all Maya centres had a mountain and a cave, whether it be natural or constructed (Brady 1997). Bonor (1997) notes that “caves are always present” in some form or another, whether it be iconographically or architecturally.

“Spaces are ultimately related to the formation of biographies and social relationships” (Tilley 1994:11). The landscape, itself a space, has been shown to have clear relationships to ancient Maya beliefs. First, the contemporary Maya believe in animism in which all objects and living beings have a soul. In this regard, as has been illustrated, mountains, in a sense, are alive. The belief that their ancestors and deities reside inside of mountains and caves also lends credence to this concept. In addition, the Maya recreated such formations on the ancient landscape in their architecture. Thus, it should be no surprise that the early Maya either settled near one or more caves, or constructed one. The same may have been true for mountains. If there were no mountains nearby, they built one in the form of their temple-pyramids.

Stone (1992:112) proposes that “Mesoamerican ceremonial architecture drew its initial inspiration from a ritual setting located outside the built environment. This ritual

setting was synonymous with “forest” or “wilderness”. Such wilderness space is believed to be associated with “dramatic topographic features, of which some of the most important were caves and mountains (Stone 1992:112). These points on the landscape were considered sacred and acted as what Stone (1992:112) refers to as a “topographic shrine”. Such topographic shrines would have “served as portals of communication with supernatural beings”, recognizing their inherent role in Mesoamerican ritual (Stone 1992:113).

This fits with the idea of geomancy, which is the “the practice of locating a site according to natural geographic features” (Heyden 1981:4). Carlson (1981:144) also discusses geomancy, but stresses the Chinese usage known as *feng shui*, or ‘winds and waters’ (also known as ‘mystical ecology’). According to Carlson (1981:164) it is a “conceptual framework and technique designed to place all of the dwellings and constructs of [humans] in harmony with the forces of nature, the *chhi*, or local currents of the cosmic breath”. If we think of the ebb and flow of ‘winds and water’ it is possible to align this with the idea of wind and rain, or water, coming from the cave. The landscape can seem alive with “supernatural beings, ancestral ghosts, deities, and ritual *chhi* forces” (Carlson 1981:165).

Carlson (1981:170) mentions a “geomancy cave”, that which connects the sacred with the profane, or those living with the ancestors and deities. He states that “the geomancy cave”, as the most favourable ancestral burial site, is the ‘place of emergence’, of vital chthonic [relating to the underworld] forces into the world of the living and a conduit for ancestral spirit and influence” (Carlson 1981:171). The cave here is symbolic

for the site “where the power of the surrounding land can be available to [humans]’ (Yoon 1976:31). While Carlson is speaking metaphorically, it can be taken quite literally when applied to the Maya.

Brady (1997) addresses the role of caves at Dos Pilas, Guatemala, in relation to settlement configuration. Settlement studies are slowly and cautiously beginning to take ideology and cosmology into consideration . “The location of a settlement is a matter of great importance to the inhabitants, and the reason for the placement are recorded and celebrated in local mythology” (Vogt 1976:25). Bassie-Sweet (1991:180) claims that “each Classic town or area had its own set of ritual caves that represented the mythological caves...” Brady (1997:614) also states that he expects “every Maya centre will have a cave, whether natural or man-made”. It has been found that in areas that are non-karstic, where caves do not naturally occur, there are reports of man-made caves at sites in these areas. Structures “became an extension of the natural landscape incorporated into the urban landscape” (Stone 1992:117). “Thus ritual was brought into the built environment where it could be directed and manipulated by the elite” (Stone 1992:116).

From ethnographic sources it was found that “caves are one of the most important elements in this system (of modern Maya sacred geography) and ones likely to produce artifactual evidence of utilization” (Brady 1997:603). As Brady (1997) notes, the earth was such a central focus of Maya religion and thus, features like mountains and caves can be expected to be so important in the Maya landscape.

One fine example is in regard to Maya structures built over caverns. For instance,

the High Priest's Grave at Chichen Itza, which had burned bones, worked jade, pearls, and onyx, all seem to have been thrown into this cavern before it was closed (Thompson 1938). At Palenque, one could argue that the great site ruler, Pacal, was buried in a symbolic, or artificial, cave within the funerary temple-pyramid (Bonor 1997).

### *Sacrifices*

“To the Maya, human beings were created to nourish and sustain the gods through sacrifice” (Schele and Miller 1986:110). Such a sacrifice need not always be one of death, but would have also included auto-sacrifice, where either sex would have let blood (Culbert 1974:82; Thompson 1970:175). As Thompson (1970:170) states, “Maya religion is a matter of contract between man and his gods.” Such a contract stipulates that the gods be ‘paid’ prior to aiding the people or providing food. As noted by Schele and Miller (1986:110), such ‘payment’ could have been blood. However, human life would have been the ultimate homage for the Maya to offer to their gods.

There is ample evidence from ancient Maya iconography that they did indeed practice sacrifice (Boone 1984; Schele 1984; Schele and Miller 1986; Miller 1986). Auto-sacrifice would have involved the drawing of blood from one's tongue, ears or (in the case of males) penis through the use of an obsidian blood-letter, or a sting-ray spine (Culbert 1974:82). The blood would have been collected in a dish with bark paper (Thompson 1970:176). This paper would then have been burned and through the smoke their ancestors would speak to them. Evidence for such sacrifice in the archaeological record includes the presence of obsidian blood-letters and sting-ray spines. Often the presence of shallow dishes and accompanying vessels with sacrificial depictions can also

indicate the practice of blood-letting, telling us who may have practised such rituals.

One of the most vivid blood-letting scenes is on a lintel from Yaxchilan. Lady *Xoc*, wife to Shield Jaguar, rulers of Yaxchilan, is depicted pulling a cord set with thorns through her tongue. In the next scene she is communicating with her ancestor. It is very interesting to note that while the blood-letting is happening, Shield Jaguar is holding a torch indicating that it is either night, or the place is dark (Schele and Miller 1986:186-187). Such a place is suggested to be either the darkened room atop the temple, or perhaps the inner rooms of a cave.

Human sacrifice was also prevalent among the Maya. It is believed that the victim actually cooperated with the sacrificers, for she/he was guaranteed a place in heaven (Thompson 1970:180). Out of devotion many gave up their sons (Tozzer 1941:48). As well, it would have been an honour for a family if one of their children was sacrificed to the gods. Other sacrificial victims might have included those captured in battle, such as the site lord, or a member of an elite family. It is also thought that “in times when the worship of the old gods was attended with so much danger, only those who were most important to the welfare of the people would receive sacrifices. These may have been the rain and wind gods and the tutelary divinities of the lineages” (Scholes and Roys 1938:610).

The most common form of sacrifice was to place the individual on their back with the arms and legs usually spread apart and the heart then cut out. Other victims were thrown into cenotes and drowned. There are historical accounts of victims being shot to death in the chest numerous times with arrows (Tozzer 1941:118). Beheading was also

practised, an act which was depicted at Chichen Itza. Decapitation is usually identifiable in the archaeological record by the presence of a cranium and the first two or three cervical vertebrae, or the individual's body is identified, with no cranium (Massey 1989; Massey and Steele 1997; Thompson 1970: 178). Unfortunately, it is not possible to tell whether decapitation took place at death, or post-mortem.

Just as auto-sacrifice can only be inferred, so to is the case for many human sacrifices. That such an act took place may be inferred from the haphazard nature of an interment, the location of the remains or, as mentioned above, the presence, or lack of, a cranium and the first two or three cervical vertebrae (Brady and Stone 1986; Massey 1989; Massey and Steele 1997). Other possible cases might include the inclusion of one or more additional individuals with the burial of a lord or elite. Often the presence of partial skeletal remains can also infer a sacrifice (Welsh 1988a:167). There have been no known cases at this time of a sacrifice being indicated on complete skeletal remains. It seems that those responsible for removing the heart of a victim knew about anatomy and made clean cuts between the ribs, or below the rib cage (Robicsek and Hales 1984).

Becker (1992:190) suggests that while children are found in caches, as part of the assemblage, it may have been a "function of size rather than of religious belief." Contrary to Becker's statement it is thought that the Maya believed that the rain gods had a penchant for children (Thompson 1970:181), since any offering made to the gods had to be *zuhuy*, or pure, and uncontaminated (Thompson 1970:183).

As mentioned in chapter two, sacrifices resulted in the individual, or victim, becoming votive. The Maya would recognize the soul of the individual going to the gods

as an offering, rather than becoming an ancestor. The blood and soul were being offered, which was not necessarily identical to the case when an individual died and was buried.

Tozzer (1957:200) gives two purposes for the Maya conducting sacrifices at the cenote at Chichen Itza: for the intercession of rain, and the divination of future crops. If the rain god and the maize god both reside in caves, it would make sense for offerings to be made there.

### ***Ancestor Veneration***

For the Highland Maya, ancestors make up one-third of those that affect their existence; the other two-thirds are made up of God, ghosts, angels and saints, since the adoption of Christianity (Welsh 1988a:193). Prior to Christianity, it can be assumed that the two-thirds would have been made up of their own gods and deities. An emphasis was placed on their ancestors who were believed to act as go-betweens with the living descendants and the gods (deities). Thus, the ancestors had to be praised to prevent bad things from happening and to encourage good things to occur (Welsh 1988a:193).

McAnany's (1995) research on ancestor veneration presented two basic principles concerning ancestor veneration. First, is the idea that an ancestor is a "...cultural construct and, therefore a product of a selective process...", which means this is "...reserved for leaders and prominent lineage members" (McAnany 1995:60). Therefore, not every individual is viewed as a potential ancestor upon death. Second, bones of such an ancestor are "generally part of a protracted series of rituals that do not always terminate in the placement of a full skeleton at the final burial site" (McAnany 1995:60). Routines involving any communication with the ancestors would involve the

continued handling of the remains and the possession of certain bones, such as the crania and long bones, after burial.

To reiterate, for the Classic Maya “venerated ancestors were interred principally in two locations: in a residential/ritual contexts (be it elite or commoner), or in a non-residential and exclusively ritual context such as a funerary pyramid” (McAnany 1995:50). Regardless, remains stayed within the city or settlement. McAnany (1995:50) emphasizes the physical places where ancestral remains and residential remains came together. However, there is no discussion of “places such as caves that were evocative of the link between the living and the ‘other’ world of forebears”, as being a context for such remains (McAnany 1995:50).

The fact that the Maya chose to ‘live with their ancestors’ indicates the importance their ancestors had for them. The Maya buried their dead in very close proximity to themselves, presumably so as to maintain the lines of communication. Ancestors were interred under house floors, in shrines, referred to as residential shrines or eastern shrine structures, and in large pyramidal temples, which served as a funerary structures to publicly revere and facilitate offerings to the deified ancestor (McAnany 1995:1). Both shrine structures were the site of ceremonies and rituals in which offerings would have been made to the ancestor who, it was believed, would in turn communicate with the gods. Keeping such lines open was “a practice grounded in pragmatism that drew power from the past, legitimized the current state of affairs, and charted a course for the future” (McAnany 1995:1).

It has been noted that many Mayanists believe ancestor veneration was really only



practised in the city centres (Becker 1992; Carlson 1981; Welsh 1988a). However, as evidenced in this thesis quite the opposite is suggested. McAnany (1995:8) presents the idea that ancestor worship was important for both sides of the social and economic spectrum, where it was an “organizing force”. She poses three “themes of action” that support this view. The first suggests that ancestor veneration, which is organized through lineages, established and “legitimized resource rights” through, among other mechanisms, the actual “physical presence of buried ancestors in domestic complexes” (McAnany 1995:8). Second, the emergence of social inequality had a rationale in descent. And third, lineage leaderships where “politically powerful heads of kin-organized groups” engaged in “dynamic conflictive as well as accommodative relations” (McAnany 1995:9). Thus, it would have been important for both commoners and elites to venerate their ancestors in order to use their descent.

It is interesting to note that McAnany (1995) does not discuss caves as being a context in which this ancestor veneration would have occurred. Ancestor veneration occurs usually where the ancestor is located. But what if ancestors were being interred in caves, as a way to maintain ownership of a cave or to continue the lineage? One could expect ceremonies to be conducted at such a place. As will be discussed in Chapter 4, there were numerous rituals conducted at the mouth of, and within, caves. Perhaps part of the rituals were directed toward the ancestors buried there, while others were directed toward the lords of the Underworld.

Ancestors were, and still are, believed by the Maya to live within caves. It makes sense if the cave is accepted to be the entrance to *Xibalba*, then all souls go there upon

death. Could it be that particular individuals were actually interred within such caves because of a close association to the cave? Perhaps the deceased was the priest who, while alive, prayed and conducted rituals at the cave. This is a point that will be explored further. However, its association with ancestor worship is of importance and warrants mention here.

There is enough ethnographic evidence to state that the Maya believed they came from caves and returned to caves. Hence, there may have been lineages that may have claimed 'ownership', if you will, to a particular cave (Bassie-Sweet 1991:81). Not only would the priest enter a cave to communicate with the lords of the Underworld, but maybe they could also communicate with their ancestors. There are also accounts from Spanish colonial period chroniclers which describe "ancestor cults centered in caves where human skeletal remains, said to be those of ancestors, were venerated" (Stone 1995:44).

### ***Summary***

This chapter has been an introduction, albeit brief, to Maya cosmology. Through historical documents and ethnographic data some basic themes have been illustrated. The Maya believed they were created from maize; they believed in a rain god which was very important in their agricultural practices; they also believed that they had to make offerings to the gods to appease them, and such offerings sometimes included human blood and lives, or souls. It was necessary to explain how the Maya saw themselves in relation to the landscape that was, and is, so sacred to them. It was also important to explain in whom the Maya believed, who their gods were, and where such venerating ceremonies

were normally held. Now it is possible to move into a comprehensive discussion of caves, in order to gain a better understanding and appreciation of how much caves meant to the Maya.

It has been illustrated that Maya society was, and still is, deeply entrenched in ritual. All of the ritual ceremonies, or rites, played a cohesive part by reaffirming roles and obligations within their society (Molleson 1981:17). While a community, or society, may share common beliefs, it is the rituals that really bind the communities together over time (Lee 1998). For the Maya, it is rituals, and in this case Maya cave rituals, which gives their religion, their beliefs, deeper meaning. In a way, the rituals can be viewed as “sources of social solidarity” (Lee 1998). Illustrating the importance of ritual in Maya society can lend credence to the significance of caves and rituals in caves, to the Maya.

In the next chapter, there will be an analysis of proposed ‘uses’ of caves as presented by other researchers. The focus on human remains found in caves can then be examined and compared with examples drawn from the two case studies, *Aktun Tunichil Muknal* and *Aktun Uayazba Kab*.

### **Chapter 3 Ancient Maya Burial Customs**

Before examining the occurrence and significance of ancient Maya human remains within caves, a discussion of Maya mortuary practices is needed. Contrary to the considerable knowledge we have of the Maya, and description of their burials, little attention has been given to the interpretation of such practices, or the associated ritual behaviours (Becker 1992:185, 193; Webster 1997:10). Even less attention has been paid to mortuary practices conducted in caves. While caves were a location of interments, they were not a common place for the Maya to bury the deceased. This raises a number of questions: why were some individuals buried in caves? Who were these individuals buried in caves? Do we find differential treatment of the individuals in caves and, if so, why? In order to address these and other questions it is important to try to understand not just how the ancient Maya treated their dead, but also how they viewed them.

Maya mortuary practices have not tended to be the main focus of archaeological research projects. This may be because the Maya did not, as a general rule, bury their dead in cemeteries or necropolises (Becker 1992:185; Brady et al. 1992; McAnany 1995; Webster 1997; Welsh 1988a).

Perhaps it is not surprising that mortuary customs among the Maya have *not* been a special concern as they have been in other parts of North America since burials are generally recovered in the course of exploration targeted at other aspects of sites, such as architecture or monuments. The lack of cemeteries or necropolis among the Maya means that burials are recovered in a random, if not chance manner.

Becker 1988:117 (my emphasis)

Consequently, while there is a pattern or a sense of where burials may occur at sites, they

have been relatively small in numbers, considering the population estimates for the ancient Maya, and they are not always located where one would expect. As a result, human remains, in the form of burials or offerings, have often been found accidentally and while other problems were being investigated.

According to earlier archaeological theorists (Binford 1971; Tainter 1978), a burial should provide information about two criteria, the “corporate group differentiation” and energy expenditure. These, in turn, may provide insights into the ‘rank’, or status, of the deceased in the society (Tainter 1978:136). Tainter (1973; 1978) and Binford (1971:17, 21) have observed that in mortuary rituals there will be a certain amount of energy expended, and ‘corporate’ involvement, in correspondence with the status, or rank of the deceased. This expenditure of energy would be reflected in the “size and elaborateness” of the burial, the “method of handling and disposal of the corpse”, and in the associated grave goods (Tainter 1978:125).

While part of the intent here is to distinguish between possible sacrificial offerings and burials, delineating sex, status and age may not always clarify such questions regarding an interment. Within cave settings both males and females of varying ages and status occur. The question being addressed here is “why” were the Maya placing such individuals within the cave? If we want to understand the world of the ancient Maya, an interpretation of what caves and their activities may have meant is a necessary contribution.

Unfortunately, researchers who have addressed the issue of Maya mortuary practices have not agreed on a standard typology (e.g. Becker 1988, 1992; Coe 1959;

Smith 1972; Welsh 1988a). This has resulted in some discrepancy in classifications. Often, typologies are site specific and, therefore, not easily transferable to other sites or regions. There is also confusion with terminology as to what constitutes a grave, a burial, or an offering. These terms have often been combined or completely confused. The existence of different typologies, and lack of clarity with terms, creates problems for discussion, especially between burials and offerings. For this *etic* interpretation it is assumed that the Maya (*emic*) did not view the two as the same. Should any deposit which includes human bone automatically be considered a burial? Or can a line be drawn to delineate between actual burials and offerings? What constitutes, or signals, the difference between a grave and a burial?

### ***Mortuary Terminology***

Some definitions need to be presented to illustrate how others have perceived such concepts. It must first be recognized that there is a difference between 'method of disposal' and morphology. Burials and offerings are different 'methods of disposal'. A grave is the morphology, or type of 'excavation', pit, or repository in which the remains are laid (Welsh 1988a:14). The terms grave and burial have been used interchangeably by some Mayanists (Andrews and Andrews 1980; Coe 1959; Ruz 1965; Smith 1972; Smith 1937), though they do not mean the same thing.

### ***Burials***

A commonly accepted definition for a Maya 'burial' is a grave in which human remains are interred, with or without associated grave goods (Smith 1972:212; Tourtellot 1990:85). The term does not indicate the quantity or quality of the remains, nor does it

address any intent. Welsh (1988a:15) expands on this stating that a burial is that which has human bone, no matter the quantity, because “regardless of whether they are dedicatory offerings or not, their presence does inform us of one of the methods of interment or disposal of the dead by the lowland Maya.” Here we have an idea of quantity, and to some extent quality. However, there are still problems with this definition. The idea of identifying a burial based on the presence of any amount of human bone is problematic. It leaves no room for discussing the possibility of offerings as an alternative method of interment. Should the inclusion of phalanges in small ‘finger’ bowls, or the placement of a cranium in a bowl be categorized simply as a burial? As well, there is no regard for intent on the part of the community, family or individual.

Becker (1992:185), on the other hand, states that “burials are clearly a means by which the members of a society embody their beliefs about the transition between life and death, thereby affording us a view of both realms”. This idea of a burial draws on the concept of death as a ‘rite of passage’. Both the deceased and the mourners are in a state of liminality. The mourners not only recognize that the deceased needs to move to the Underworld, but the community itself needs to heal. Practices that let societies move from the liminal to the ‘incorporated’ must be conducted (Turner 1992; van Gennep 1960).

Burials represent a deliberate interment of an individual from the community in which the deceased was a family and community member. They are a place to put the dead, and deposit offerings which the members of the society believe may be needed on the journey to the Underworld, to be incorporated into this other realm. A burial is also a

place which symbolizes the community's loss. Becker (1992:187) elaborates by stating "the burial...is conducted in a manner that fulfills all the postmortem requirements of both the deceased and the people with whom the deceased was involved during his or her life".

Such requirements may vary depending on the individual's social and biological criteria (Becker 1992:185; Binford 1971; Chapman and Randsborg 1981; van Gennep 1960:146). The death of a family or community member results, in some degree or other, in a need for the preparation of the body, and a grave, as well as a ceremony. What type of grave and the extent of grave goods, if any, often depends on the person's gender, status or position she/he held during her/his life (Jacobsen and Cullen 1981; Tainter 1978). Regardless, the remains of the deceased are prepared to some degree for the journey into the afterlife:

The requirements of the soul or spirit of a deceased Maya are important for us to understand because of the continued relationship which the dead had with the work of the living (Becker 1992:187-188).

### ***Cache/Offering***

An offering can be defined as being a cultural deposit which has one or more artifacts interred together "as an offering and not associated with a burial" (Smith 1972:205). In this thesis, I am concerned with the votive 'type' of cache, or offering. According to Coe (1959:120) an offering can have components which include artifacts, faunal remains, as well as human remains. Welsh (1988a) and Smith (1972) would consider such an offering with human remains to be a burial. The difference, however, is that the individual may have been viewed as a mere votive offering by the ancient Maya



(Coe 1959:120). I believe the Maya attempted to establish a difference in the perception of the individuals involved, sacrificed, or offered, versus those buried. Thus it is proposed that one may be able to distinguish between a burial and an offering since they may imply very different concepts which can have serious implications for interpretation (Coe 1959:120).

In the case of a sacrifice, the sacrificed individual(s) take(s) on a different role. In ancient Mesoamerica, individuals were often offered to the gods in request for something such as, perhaps, a bountiful harvest, or a drought-relieving rain. The sacrificial individual would have been selected from slaves, captives, or from the community (Welsh 1988a,b). There are historic accounts of children being offered by their devoted parents because it would be deemed a family honour (Gates 1978:48). In other historic accounts, the victim was thought to have cooperated as, again, they would have been performing a great service, and such service would likely have been viewed as a guarantee for a place in 'heaven' (Thompson 1970:180). Captives of rank were also favoured as sacrificial victims by the Maya because of their high status and assumed greatness, whether as warriors or leaders. The Maya believed that the gods would have been very appreciative of such sacrifices (Tozzer 1941:231).

Thus, a different relationship was created between the deceased and the community from which they came. The individuals themselves were not asked to protect the community in their afterlife, nor were they being provided with anything they needed for their journey. Their journey could very well have been viewed as a short trip, especially if it began within a cave, viewed by some to be the entrance to the Underworld.

The individual was presented as an offering to the gods. And, since the Maya believed that humans were food for the gods (Becker 1992:193; Schele and Miller 1986:110), such an act of sacrifice might have been seen as necessary in order to sustain the gods.

***Cache or Burial; Burial or Cache?***

The use of the term “burial” to account for all human remains fails to take into consideration the original intent of the interment. If the mourning community placed the deceased in a constructed tomb, painted with the individual’s name and dates, and included food, ceramic vessels, jade jewelry and *jute* shells, was the intent the same as with a sacrificial victim thrown into a cenote? Was it intended as an offering to the gods, or as a repository, or portal, in which the deceased and her/his possessions are provided for her/his journey to the Underworld?

Becker (1992:186; 1988:117) postulates that offerings/caches and burials could simply be different means to the same end. Both may have been viewed as different ways of guaranteeing the community’s, and their descendant’s, success. While there may be different characteristics between the two, they “may reflect Maya cosmological concerns with using human remains to feed the gods, in order to bring forth renewed life and to continue the cycle of being” (Becker 1992:193). Hence, the greater ‘end’ was to ensure the gods were fed, or satisfied. An offering may be more of a direct ‘means’, while the burial allows the deceased to be an operator for the portal of communication between the living and the gods. In one instance, the living attempt to communicate with the supernatural themselves (offering), while in other instances they are attempting to ensure there will be a line of communication open, and this line is maintained by the deceased

ancestor (burial). A possibility is that those individuals buried within caves had a special relationship with the cave during their life.

Why was there a need for two methods of interment (offering and burial)? The discussion surrounding these concepts suggests there is enough of a difference to distinguish between the two. It implies that at some point in time the ancient Maya felt the need to go directly to the gods. In such instances they may have by-passed communicating with their ancestors altogether, who were the usual liaisons between the gods and the living. The Maya believed that through their ancestors they could communicate with the gods (Welsh 1988a). Ancestor shrines, which housed the remains of past relatives, were a place for offerings and rituals. Such might have been held during particular calendrical celebrations, during 'thanksgivings', or appeals. The ancestors were the link with the spiritual realm (Becker 1992:187-188; McAnany 1995)

### ***Grave Typology***

With the two different methods of deposition examined, the different grave types of the ancient Maya can be discussed. Welsh (1988a) attempted to address this issue with his analysis of lowland Maya burials. He gives a thorough discussion of the various researchers who have studied Classic Maya mortuary practices and points out how they are often site specific. A re-analysis of the different types would be redundant. However, an overview of the classification is appropriate. Welsh was able to synthesize the various grave typologies and present a more concise typology which has become, more or less, the standard.

In contrast to the site specific typologies, Welsh (1988a:16-18) compiled data on

over 1100 graves from 16 different sites in order to assemble a type-variety typology. The six types are based on specific morphological attributes, and sixteen varieties are based on minor attribute differences within each type. The six grave types are: simple; chultun; cist; crypt; tomb; and unclassified or unknown.

As extensive a classification as this is, there is one main problem that should be pointed out. Welsh classifies chultun as a type of grave, which was an earlier oversight made by Ruz (1965). Ruz (1965, 1968) also classified caves as a grave type. Neither caves, nor chultuns, should be classified as a 'type' of grave since many different 'types' of graves can occur within them (Gibbs 1998b). A chultun is not a grave (Nadine Gray, personal communication 1999), but is understood to have ritual connotations, or to have been an underground storage facility for food and/or water (Sharer 1994). Occasionally, human remains in a variety of different grave types are found in chultuns. Clearly, chultuns cannot constitute a type of grave. The same is very true for a cave, just as it is for a temple. There are many different 'types' of graves found within caves. Hence, how can the cave itself be considered a grave, especially when human remains are only occasionally found within them? It is unclear why such a classification could be made after Welsh deliberates over the confusion some have had between burials and graves. Caves and chultuns are, like pyramids or house mounds, different spatial contexts in which the Maya placed their dead (Gibbs 1998b). Hence, for the remainder of this paper, neither caves, nor chultuns, shall be referred to as a grave type.

*A simple* interment is described as being "an unlined hole or pit in the ground or structural fill, or inclusion of a body in fill during construction (Welsh 1988a:16)."

Within this first type are five varieties: simple, pit, ceiling slab, blocked up room, and that which appears to be stone lined, when the body was simply placed between an already stone-lined structure, such as a bench, within a room.

A *cist* is usually only partially lined with stones. At least one of the sidewalls, the floor or the cap, may be lined. While the placement of the stone is often haphazard, it is intentional, unlike the simple grave. There are five varieties of cist graves: haphazard cist, partial cist, head cist, capped cist and uncapped cist (Welsh 1988a:17).

A *crypt* is similar to the cist, except that a crypt is always capped, with the walls being completely or partially lined. There are three varieties of crypts: unspecified crypt, simple crypt, and elaborate crypt. The elaborate crypt is more complex than the others, with the walls more defined and often having stone floors, niches, or benches along the walls (Welsh 1988a:17).

A *tomb* is an “elaborate stone lined or rock-cut chamber” which is usually high enough to stand in with some having vaulted ceilings. The floors, walls and ceilings are often plastered and painted. Such tombs often have a shaft leading to the tomb, occasionally with an antechamber. There are three varieties of tombs: unspecified tomb, rock-cut tomb, and stone lined tomb (Welsh 1988a:18).

The last type of grave is identified as *unclassified*, or unknown, due to a lack of information. It may have been either poorly constructed, with little effort afforded to the grave, or it was too disturbed for archaeologists to identify defining features (Welsh 1988a:18).

***Context: Where did the Maya inter their dead?***

One must consider the enormous number of people who would have been living in the Maya area during the Classic period. This area extends from western Honduras in the east, the Yucatan Peninsula to the north, coastal Guatemala to the south, and Chiapas, Mexico to the west. Culbert and Rice (1990) estimate that the Classic Maya population was one of the highest ever achieved by a pre-industrial culture. This prompts the question: where did the Maya bury their dead? The number of interments thus far discovered by archaeologists, and looters, represents only a fraction of the population.

Knowing the context, or location of a burial, is extremely important when archaeologists try to understand who an individual may have been, and what their position was in the community. It might appear that the Maya were randomly placing their dead around them. However, as more and more burials have been excavated, patterns arise. For example, it is recognized today that the eastern structures of ancient Maya patio groups are often repositories of burials (McAnany 1995; Welsh 1988a).

Welsh (1988a:25) has divided such contexts into six groups. The first two groups are residential in nature, being divided by their economic status. House mounds, or house platforms, are very numerous throughout the Maya area. These would have been the residences of those living in the outlying areas of the larger centres, usually farmers. Elite residences are the second group which, as implied, were inhabited by the elite. Palaces, the third group, could be categorized with the previous two, since palaces can be considered both administrative and residential.

The next group mentioned by Welsh (1988a:26) contains religious and ceremonial

buildings. Such structures include household shrines, ceremonial platforms and temple-pyramids. This group extends the economic social strata from commoners to the elites or royals. Household shrines are also referred to as the 'eastern shrine structure' of a patio group, although there is some variation. Both the shrine and temple were built to house the dead, as well as to be a commemorative structure to the dead. The last of the building-type structures is the plaza of which there would have been a number within a major centre, compared to perhaps only a few in a village.

Ceremonial structures were typically used to house not just the dead, but the ancestors. Ancestor veneration is reflected in such ancient Maya mortuary behaviour. It has a history of approximately 2500 years among the Maya. From as early as 1000 B.C. to the time of Spanish contact in the 16<sup>th</sup> Century A.D., the Maya have been interring those deemed as ancestors in shrines and large temples, usually situated in the centre of the village or town (McAnany 1995:1).

Worshipping ancestors was very important to the Maya, especially to those living in rural areas. Here they could contact their ancestors in hope that they would in turn contact the gods. The ancestors were considered a type of 'go-between' for the villagers and the gods. This indicates the Maya had a particular view concerning their dead with regard to how and where they should be buried. The fact that they wanted their deceased physically with them and constructed grand structures within their communities within which to house the remains indicates their importance. According to Pearson (1993:206) "it is likely that the role of influence of the dead is greater the more closely they are physically integrated within society". This is precisely what the ancient Maya

did with their ancestors. A more thorough discussion of ancient Maya ancestor veneration and how it is related to cave interments will be provided in the following chapters.

The last group mentioned by Welsh (1988a) contains two types of monuments, stelae and altars. Welsh (1988a:26) considers the burials from such contexts to be dedicatory in nature. As a result he refers to them as “dedicatory cache burials”. In many cases the remains of the individual, or individuals, are not complete, often indicating a sacrifice by decapitation, or an amputation. Such offerings have also been located at the base of staircases leading up temple-pyramids and in the alley of ball courts (Ferguson et al. 1996; Massey 1989). Ritual architecture can also be found to contain votive offerings.

Unfortunately, there has been a general lack of discussion with regard to caves as a spatial context for the deposition of human remains. While descriptions of human skeletal remains from caves have been made by many researchers (see Awe et al. 1997a, b; Blom 1954; Bonor 1989 ; Brady 1995, 1997; Brady et al. 1992; Brady et al. 1995; Brady and Stone 1986; Gibbs 1997, 1998a, b, 1999; Gordon 1898; Graham et al. 1980; Healy et al. 1996; MacLeod and Puleston 1978; Miller 1989, 1990; Owen and Gibbs 1999; Pendergast 1971, Pohl and Pohl 1983, Reents-Budet and MacLeod 1997; Ricketson 1925; Roberts 1990; Rushin-Bell 1982; Thompson 1897), there has been no discussion of the importance of the cave as a spatial context for interments (Gibbs 1998b). Most unfortunate is the lack of such discussions in general Maya mortuary studies. Welsh (1988a:3), in his analysis of Maya lowland burials, intentionally omitted caves from his research explaining that, while there is very little information available, “burials [in



caves] may have had a different role and purpose from site burials and should therefore be considered separately.” Nearly every type of grave has been identified within one cave or another. However, in many instances, no graves occur at all. This alone is reason enough to suggest that caves are not a type of grave. Just as patterns have emerged from surface sites in regard to location of graves, it is anticipated that with continuing research within caves a clearer picture will also emerge here.

Archaeological research has identified caves and rock shelters as being the only ‘distant’ context in which the Maya interred people. Thus, they are not in close proximity as per the discussion by Pearson (1993). Instead they appear to follow the theories proposed by Goldstein (1981) and Saxe (1971) (see Chapter 1).

### ***Disposal Methods***

Methods of disposing of the dead is another area that needs to be addressed when understanding ancient Maya mortuary practices. As gathered from the above discussion, the Maya appear to have preferred inhumation over cremation (Webster 1997:4), although there has been no evidence to argue for or against this statement. Single interments were thought to be the most common type of burial (Welsh 1988a:36); however, there have been numerous multiple burials recently revealed which challenge this assumption (D. Chase and A. Chase 1996; Hammond et al. 1975; Healy et al. 1998). Some of the multiple burials may be family crypts used by the ancient Maya elite, which could have initially contained a primary single interment with subsequent interments of descendants (Chase and Chase 1996; Healy et al. 1998:261). Others may have included an elite individual with possible sacrificial victims (Welsh 1988a:37).

Skeletal position and head orientation are also important pieces of data that should be examined (Golden 1997). Position of the skeleton is generally extended or flexed, with variations in terms of whether the individual was laid out supine or prone. Orientation has to do with the cardinal direction in which the head is pointed. Also recorded is the direction in which the face is oriented. For example, the head orientation may have been north, with the head facing west. In addition to the grave type, spatial context and position of the body, one must also take into consideration the grave goods that might, or might not, be associated with the individual.

Such data provide information concerning the individual's rank, or position, in the society. However, the simple possession of 'luxury' goods, or the occurrence of a special burial context do not alone necessarily indicate higher status (Chase and Chase 1992:3; Golden 1997).

### *Summary*

The discourse on Maya mortuary studies has resulted in differing opinions regarding what constitutes a burial and an offering. The focus of this thesis is concerned with the intent of the Maya when they prepared each individual, grave and cache. While this is an etic opinion of the emic actions, it is still suggested that there was a difference between the two. A burial represents a deliberate interment of a deceased community member. It is a method of disposal that can range from a simple grave to an elaborate tomb, depending on the individual's perceived status within the community.

From this discussion, an offering or cache is prepared with the intent of being offered to the gods, a deceased individual (of assumed importance), or the ancestors. It

can include any artifacts or faunal remains deemed as important for such a role. It can also include human remains, which have presumably been the result of a sacrifice. In some cases only parts of an individual are included while other situations contain the remains of a complete individual.

The issue of context is important because so much information can be obtained from where the individual has been interred and from the associated grave goods, or offerings. Caves have mistakenly been regarded as a type of grave. In fact, they are a spatial context for the placement of individuals. As discussed, any type of grave, or disposal method, can be found within a cave.

In the following chapters it will be suggested that perhaps there was a lineage of ancestors whose shrine was a cave, metaphorically and physically. According to Brady (1997), it is possible that every site may have had a cave within its boundaries. This could have been in the form of a funerary temple, with the pyramid representing the mountain and the room atop representing the cave. Or the ancient Maya may have constructed caves within the pyramid, or conversely, constructed the pyramid atop a cave. Either way, the importance of the cave will be explored to illustrate how it could have been a place for important individuals to have been buried, as well as places where offerings could have been laid.

## Chapter 4

### Caves and the Maya

The Maya have been speleologists for the past 2700-3000 years  
Thompson 1975: ix

Based on recent archaeological evidence (Awe 1998; Awe and Conlon 1997; Awe and Lee 1999; Stone 1992) it is clear that the Maya managed to utilize nearly every inch and crevice of the caves they accessed. This is all too evident when finding complete *ollas* and large granite metates that were carried deep into caves, presumably with the flickering light of torches or ceramic oil lamps. Why were they climbing and squeezing themselves through tiny or tight crevices? And, why were they taking in ceramics and lithic artifacts, as well as people, and leaving these there?

Caves had originally been analysed by archaeologists in purely functional terms. Caves were described as utilitarian or ritualistic, of which there are numerous proposed functions to be later discussed in this chapter (Pendergast 1971; Ricketson 1925; Thompson 1897; Thompson 1970, 1975 ). However, in recent years, as cave research has been growing, the cave has become recognized more often as a sacred place. There has been some exciting new work conducted which has helped to shed more light on this perplexing issue (see Awe 1998; Awe and Conlon 1997; Awe and Lee 1999; Brady 1997; Rissolo 1997; Stone 1995). In addition, the question of why the Maya were conducting rituals in such remote places is being more closely addressed. It is now obvious that some type of rituals took place in caves. However, understanding why this occurred is an interpretive challenge.

Researchers are looking for a 'symbolism in the pattern' when dealing with caves. As Massey and Steele (1997:76) note "symbolic behaviour is an essential aspect of religious ceremony and would be expected in a sacrifice." This can be directly applied to the ritual use of caves. From what has been discussed thus far, caves are such an important part of Maya culture that any activity would be entrenched in some symbolism, even if it is simply collecting water. It can be illustrated that, in a sense, the Maya world relied on cave ritual, for many Maya believe they were created from the maize found in a cave. Thus, looking at the cave from purely functional aspects can be very limiting, for the Maya relied on the cave for much more than simply its utilitarian function. As noted in Chapter 3, the landscape may have played a very important part in where to locate a new Maya settlement. Recent investigations aim to show that all Maya settlements have a cave, whether natural or artificial (Brady 1997). This means that caves, along with mountains, would have been a very important aspect of Maya ideology and cosmology.

Many of the 'uses' for caves have been presented by Thompson (1975) in his Introduction to Mercer's *The Hill-Caves of Yucatan*. All of the proposed 'uses' will be discussed in order to set the stage for where researchers are looking today. The 'uses' have been separated into 'utilitarian functions' and 'ritual functions'. However, the symbolic importance of the cave and all it has to offer should be remembered throughout this discussion, keeping in mind that the Maya believed the cave was/is the entrance to the Underworld, and was a place where their ancestors and a number of their deities resided.

### ***Utilitarian Functions of the Cave***

Perhaps the most commonly mentioned use of caves in the Maya subarea, is as sources of drinking water (Pendergast 1971; Thompson 1975:xiv). This is especially true for the Yucatan Peninsula, where there is very little surface water available. The main water source there is the series of underground rivers, which are exposed by 'holes' in the earth's surface. Such features are referred to as cenotes, and they are very numerous in this area (Thompson 1975:x). While there are some dry caves, many caves have areas of surface water. There are historical accounts of the Yucatan Maya acquiring water from these cenotes or caves. Landa (Tozzer 1941:187) noted that the Maya used the cenotes for drinking water and would sometimes travel deep within caves to retrieve water. Stephens (1843 in Thompson 1975:x-xiii) describes at length a cave he explored which was used by the Maya to obtain water. Bonor and Sanchez y Pinto (1991) have suggested that rock carvings depicting ladders may actually be providing directions to the water source within caves.

In addition to water collection, it has been suggested that the ancient Maya used caves as places of refuge (Thompson 1975). It was thought that during times of attack from invading armies, whether Maya or Spanish, people would take shelter and hide in caves.

There are also some other minor uses for caves that have been proposed. One suggests that caves were used in hunting, especially for birds (Thompson 1975:xlii). This is based on the occurrence of 'blinds' that were constructed. However, it seems more plausible that they would have been the remnants of walls that served another purpose.

Caves sometimes have outcrops of clay and gypsum, materials which may have been mined and used in pottery production (MacLeod and Puleston 1978:72; Thompson 1975:xlii).

### ***Ritual Functions of the Cave***

Some of the ritual functions of caves can actually be combined in that they overlap with possible utilitarian activities that may have taken place. Many of the ceremonies conducted in caves are believed to have been part of a 'fertility complex' as mentioned by Stone (1995:41). This fertility complex would have included ceremonies within, or at the entrance, of caves dedicated to the rain god and the earth god. As previously discussed, both such deities were, and still are, believed to reside in a cave. Other possible rituals that may have been performed within caves were calendrical and accession rituals (Pohl and Pohl 1983; Stone 1992:113).

Caves have long been considered sites for religious ceremonies. These can be supported through archaeological evidence. Nearly every cave which was a site for Maya activity can be said to have some traces of religious activities. Such evidence for ritual ceremonies includes artwork (petroglyphs and paintings) (see Griffith 1998; Stone 1989, 1995), stelae (see Awe et al. 1997b), architecture (see Awe 1994; Brady et al. 1992; Owen and Gibbs 1999), ritual artifacts such as ceramics, incensarios, miniature manos and metates, jade, obsidian, pyrite and ocarinas (see Awe 1994, 1998; Awe et al. 1997a, b; Brady and Stone 1986; Graham et al. 1980; Pendergast 1971; Pohl and Pohl 1983), and human skeletal material (see Awe et al. 1997a, Brady 1995; Brady and Stone 1986; Butler 1934; Gibbs 1997, 1998a, b; Owen and Gibbs 1999; Pendergast 1971; Pohl and Pohl

1983).

Art galleries, as mentioned above, are included in the ritual aspect of cave uses (Thompson 1975:xxxvi). While not all caves have artwork visible today, this is not to say that they did not in the past. It is highly possible that areas of caves may have been once painted but over time the paint has worn away. The same can be true regarding carvings, since not all renderings may still be visible. Nonetheless, there are numerous caves with such artwork. Some examples of the type of artwork includes hand prints, carved anthropomorphic faces (usually just eyes and nose), and hieroglyphic writing. Such artistic remnants may have marked a 'rite of passage' for a young shaman or priest. It has been suggested that hand prints may have been like a signature left by those undertaking an important journey, or going through an accession rite (Owens and Heyden 1997).

Using caves as depositories of ceremonially discarded utensils, such as ceramics, has also been included by Thompson (1975:xxxix) as one of the uses for caves which can be classified under ritual ceremonies. Ceramic artifacts are often found smashed within caves which may represent the ritual killing of such vessels. Sometimes vessels are found with actual 'kill-holes' from the intent to release the spirit. As will be mentioned below, all objects that are used in ceremonies dedicated to the gods needed to be *zuhuy*, 'pure'. Perhaps such artifacts are discarded (or killed) after just one use, because they are no longer 'uncontaminated'.

It is believed that the Maya conducted another 'type' of water collection, in addition to the collection of regular drinking water. The Maya were known to collect



virgin water, or *zuhuy ha*, water which is pure, uncontaminated (*zuhuy* meaning virgin and *ha* meaning water). Such water would have been used in ritual ceremonies in or out of the cave. As presented in the previous chapter, the Maya could only offer those things which were *zuhuy* to the gods. It was believed that the water collected from dripping stalactites was of the purest form (Thompson 1970:183; 1975:xv). *Zuhuy ha* rites have been documented ethnographically in Yucatan where the Maya were using “virgin water” from cenotes in their rain-making rites (Redfield and Villa Rojas 1934:139).

This water was probably collected in either *haltuns*, which are limestone, or stalagmite carved water troughs, or vessels placed strategically below actively dripping stalactites. However, both collection vessels have been found in areas with no present active drip water and no stalactites (Thompson 1975). Not all *haltuns* may have been used in water collection. Their depth has sometimes been found to be rather shallow and not suitable for water collection. Thus, it is suggested that they may have been used as *metates*, as their shape implies, perhaps for the symbolic grinding of maize or bone. This may have also been the case for the granite *metates* and *manos* encountered in caves.

Other containers used in the collection of *zuhuy ha* are *ollas*. Pendergast (1971) discusses *ollas*, complete and broken, from Eduardo Quiroz Cave, Belize. He suggests that the sherds scattered over the floor and in crevices are evidence of the Maya custom of ceremonially destroying pottery and other artifacts of the community at set periods (Pendergast 1971:112). The Maya believed that all objects were animate and, upon breaking, or killing, the object the spirit was released. Just as the water needed to be *zuhuy*, so too did the utensils, vessels and sacrificial victims. It can be assumed that the

vessels themselves had to be *zuhuy*, or not previously used, and were made specifically, and solely for this collection. After their use in collecting the pure water they would then have been ‘sacrificed’ or ritually killed. They could no longer be used to collect water, because they were no longer pure.

It is also suggested by Awe (1994) that the strategic placement of ceramic vessels beneath dripping stalactites may not have been simply to collect *zuhuy ha*. According to Awe (1994), such vessels may have contained grains, or seeds, waiting to be germinated by the *zuhuy ha* dripping from the cave. If accurate, this may be another example of the Maya, the cave, and maize, being part of a ritual fertility complex.

All of the above mentioned ‘ritual uses’ of the cave lend credence to the larger belief that the ancient Maya conducted rituals/ceremonies within many caves. While rituals directed towards agricultural fertility have been suggested to be perhaps the most important activity, there is also evidence to support calendrical and accession ceremonies. It is not that the cave itself was ‘used’ simply as a venue, but rather it was the source of all that the Maya believed and incorporated and all that the Maya required to exist.

#### ***Caves as a Depository for Human Remains***

It is logical to assume that just as vessels and other artifacts were ritually killed during ceremonies within caves, so too were humans. Regardless of the intent of the placement of individuals within caves, it is presumed that it would have included a ceremony of some type, whether it be a sacrifice or a funeral.

As Thompson (1970:184) notes “sometimes, too, they [caves] served as depositories of human remains” (Thompson 1975:xxxix). Such an ‘occurrence’ has been

mentioned by a number of researchers (see Blom 1954; Gordon 1898; Pendergast 1971; Ricketson 1925; Smith 1953, 1954; Thompson 1897), however, there is very little elaboration on the subject. It is treated as though the remains are simply part of the artifact assemblage. From the evidence gathered thus far, it does not appear that caves were used as a type of ossuary, as sometimes thought (Blom 1954).

As discussed in Chapter two, putting together a standard typology for graves at surface sites has been difficult for researchers. What makes things even more interesting is the research carried out underground. Caves can no longer be considered part of the grave typology. Instead, they are part of the context, or location, in which graves and offerings are found. This is an issue not previously addressed, and like any new territory it can be both difficult and exciting.

### ***Summary***

There are two main categories of proposed 'functions' for caves used by the ancient Maya: utilitarian and ritual functions. As mentioned in previous chapters, caves were considered sacred due, in part, to their physical appearance, nature, and presence on the landscape. It is known that caves were viewed by the Maya as the entrance to the Underworld, and as home to a number of important deities. The fact that many of the caves used by the ancient Maya were repositories for the dead also lends credence to their importance and likely sacred nature.

In the balance of this thesis, emphasis is placed on the ritual functions and symbolic ideas that caves had. While caves were used as places to retrieve much needed water, and possibly served as a place of refuge, most notably from the Spanish, it is

believed that their primary purposes were as a place to worship certain deities, to hold initiations (or rites of passage), to bury certain individuals, and to offer certain individuals. This idea is expanded upon in subsequent chapters.

## **Chapter 5**

### **Human Remains and Caves**

A brief summary of what has been discussed in the past few chapters is in order to 'set the stage' for a thorough discussion of human remains from caves. Caves are believed to be one of the most important sacred spaces to the Maya, past and present. To the Maya, the cave was not merely a container or space in which events occurred. Instead, it was a point of extreme sacredness in the landscape which structured ritual activities around it. A cave was believed to be the entrance of the Underworld and thus a place where supernatural power could be accessed. The cave can be viewed as the liminal place for a number of rites. It is also liminal in that it physically separates the sacred from the profane, the Underworld and all of its deities, from the secular world and the living. According to Leach (1976:33-36), such a liminal place in the landscape is considered sacred.

Caves are thought of as passageways of communication with the Maya ancestors and gods, as well as the juncture, or portal, between the profane existence and the underworld that the souls of the dead must travel. Due to such religious importance many sacred rituals are believed to have been performed at such 'junctures' by the Maya (Bassie-Sweet 1991:5; Brady and Stone 1986; MacLeod and Puleston 1978; Pohl and Pohl 1983; Smith 1954; Stone 1989). It is this emphasis which the Maya have placed on caves that makes the occurrence of human remains so important, for it suggests that the Maya would not have buried just anyone there.

## ***History***

The practice of placing humans inside caves, as either offerings, or burials has been noted since Spanish contact (Tozzer 1941). Landa (Tozzer 1941:188) recorded that the Maya buried individuals in caves, and others noted that there were human bones within some of the caves frequented by the Maya (Sanmiguel 1994; Thompson 1975:xxxiii; Tozzer 1941:220). It was believed that the bones were of the ancestors who were the founders, the 'forefathers and mothers' (Thompson 1975:xxxiii). Francisco Antonio Fuentes y Guzman, in the late seventeenth century, reported that a chamber of a nearby cave was an *adoratorio*, where children were sacrificed to the cave deity (Pohl and Pohl 1983:31). There are also accounts of victims being thrown into cenotes as sacrifices to the gods (Tozzer 1941:115, 180, 185, 206, 221-223)

Human remains were recorded by a few Mayanists at the turn of the twentieth century. Between 1890 and 1891, Thompson (1897) excavated fragments of human bone from Loltun Cave, but these were not accorded any great importance by Thompson, perhaps because he could not identify evidence for the practice of cannibalism. Later, in 1904, Thompson also discovered human bones in Oxkutzcab. Mercer (1975:161), in 1895, noted the presence of human bone in a number of caves in Yucatan. He suggested that perhaps the Maya practised cannibalism because of the presence of bone "split as if for marrow" (Mercer 1975:161). Gordon (1898:146), suggested that Cave #3 at Copan, with the cremated remains, was the site of Nagualist (which refers to the worship of guardian spirits, or Wayobs, located in caves) cult ceremonies. It was said that such Nagualists buried their deceased priests in the same caves that they held their "sacred

mysteries” (Gordon 1898:146).

During the early part of the twentieth century, Butler (1934:223) noted that skeletal remains in caves had been reported frequently throughout the Maya area. Like Gordon, Butler (1934) discussed the idea of Nagualism as it related to the cave interments. However, Butler dismisses such a claim by stating that she could see no continuum between the pre-contact Maya and post-contact Maya. From discussions in previous chapters, this description of Maya veneration of such individuals seems to represent possible ancestor veneration rather than Nagualism. Satterthwaite (in Butler 1934:223) discovered a “cave burial” near Piedras Negras which, due to the circumstances surrounding it, suggested a “religious association with the place”.

At Mayapan, Smith (1953) also indicated the probable ceremonial use of cenote X-Coton and the caves within it. He recorded that:

the principal indications of its ceremonial use are the platform, the levelled eastern section with its plaster floor, the possibility that a considerable part of the cenote floor at the south was levelled, the masonry stairway leading to water, the presence of carved stone objects, especially an idol, and the use of caves for burial.

Smith 1953:73

Smith (1953) noted the significance of the burials in relation to the surrounding architecture and artifacts. Blom (1954), on the other hand, failed to offer any suggestion as to why skeletal remains have been found in caves, aside from identifying them as functioning as ossuaries.

Another example of how human remains in caves are noted, but not discussed, is in Tozzer’s (1957:19) description of a dry cenote at Mayapan, explored by Smith (1953 in

Tozzer 1957). It is noted that “there were two niches in the cenote wall, in one of which were the remains of incensarios and a crude stone idol. Two of the four caves running from the main opening contained burials” (Tozzer 1957:199). This was all that was mentioned on the human remains from this cenote, and no further elaboration was offered by Tozzer (1957:199). In his monograph of burials, caches and artifacts from Piedras Negras, Coe (1959:125) describes a burial (Burial 6) which was located in a small “natural cave on a hillside” (this could have been the same cave mentioned by Satterthwaite). A brief description of the grave furniture and the skeletal material is provided, but no interpretation is offered as to who the adult male was, or why he was placed there.

In his introduction to Mercer’s *Hill-Caves of Yucatan*, Thompson (1975) discusses ‘burials, ossuaries and cremations’ as a type of function of caves. He (Thompson 1975:xxxiii) notes that while interments are fairly common, there is no pattern to “govern their relationships to the other contents of the cave”. He suggested that since such interments appear to be so ‘casual’ they may have been the result of priests, or shamans, who were in a cave conducting a ritual but died “while on duty” (ibid 1975:xxxiii). Mercer (1975: 116,156, 159), on the other hand, suggests that they were not burials at all, but the remains of cannibalistic activity.

It has only been recently that research projects (see Awe et al. 1997; Brady 1989, 1995; Brady and Stone 1986; Gibbs 1997, 1998a, b; Marquez et al. 1982; Pendergast 1971; Reents-Budet and MacLeod 1997) have been focussing more attention on human remains from caves. Welsh (1988:3) omitted human remains in caves from his lowland



Maya report because “few descriptions of such burials were available”, although he noted that more are being discovered, citing Naj Tunich (Brady and Stone 1986). The primary reason for his omission of discussion is that he is “of the opinion that burials may have had a different role and purpose from site burials and should therefore be considered separately” (Welsh 1988a:3). Unfortunately, Welsh does not provide any suggestions as to what this role or purpose might have been. This is where this thesis really begins.

Within the past twenty years, there have been three main papers which suggest that the human remains from caves had an actual ceremonial value. MacLeod and Puleston (1978) argued that the skeletal remains from caves in the Caves Branch area of Belize might have been the result of sacrificial rites. They noted that such remains, many of which are young children, lack any grave goods, although there are caches located within the chambers. Pohl and Pohl (1983) suggest that the skeletal remains from Petroglyph Cave, Belize, were those of sacrificial victims as well. They link the sacrifices and other activities of either fertility, calendrical, and/or accession ritual (Pohl and Pohl 1983:31). This is one of the first interpretive explanations for the presence of human material in caves. The third major publication was by Brady and Stone (1986), regarding Naj Tunich, perhaps the most impressive cave with Maya usage discovered thus far. The authors actually distinguish between ‘burials’, such as tombs, which they state probably contain the remains of elite, on the one hand, and offerings of sacrificial victims, based on the lack of grave goods and context, which is described as “haphazard” (Brady and Stone 1986). This is contrary to Pendergast (1971:18) who stated that “no identification of sacrifices can be made in the absence of clear signs of violent death”,

thereby not allowing for the context to suggest mortuary behaviour.

***Caves with Interments***

As previously mentioned, the focus of this thesis is on caves of the Southern Lowlands of the Maya subarea. This area includes Belize, northern Guatemala (the Peten province), and the eastern part of Chiapas, Mexico (Fig. 3). Each cave in this subarea will be discussed as to the associated artifacts, if any, the location of the remains, and any other points of information that have been provided by the researchers. We begin with caves located in Mexico.

***Table 1 - Caves in Chiapas, Mexico***

CAVE NAME	PERIOD	NO. OF INTERMENTS	TYPE OF GRAVE	AGE	SEX	LOCATION	REFERENCE
Zopo Cave	NA	1	surface	NA	NA	NA	Blom & LaFarge 1926-27
Huxjal	NA	many	surface	NA	NA	crevice	Blom 1954
Moxviquil Cave	Classic	8+	surface 3 tombs	all?	NA	NA	Blom 1954
Cave at San Felipe	NA	3+	surface	NA	NA	NA	Blom 1954
Caves at Lake Lacandon	NA	many	surface	NA	NA	NA	Blom 1954
Cieneguilla Cave	Term Classic	many	cremations in urn	NA	NA	rock shelter walled in	Blom 1954
Chiptic Cave	Post?	NA	cremations in urn	NA	NA	NA	Blom 1954
Cave at Colonia Vitorico	Post?	NA	cremations in urn	NA	NA	NA	Blom 1954
Grajales							
Rosario Trabajo Cave	Contact?	NA	cremations in urn	NA	NA	NA	Blom 1954

Investigations by Blom (1954) have shown there are a number of caves in Chiapas, Mexico, that have human remains or, as Blom notes, ossuaries. Any sort of time frame for such caves is very tenuous at best. From descriptions it seems that those

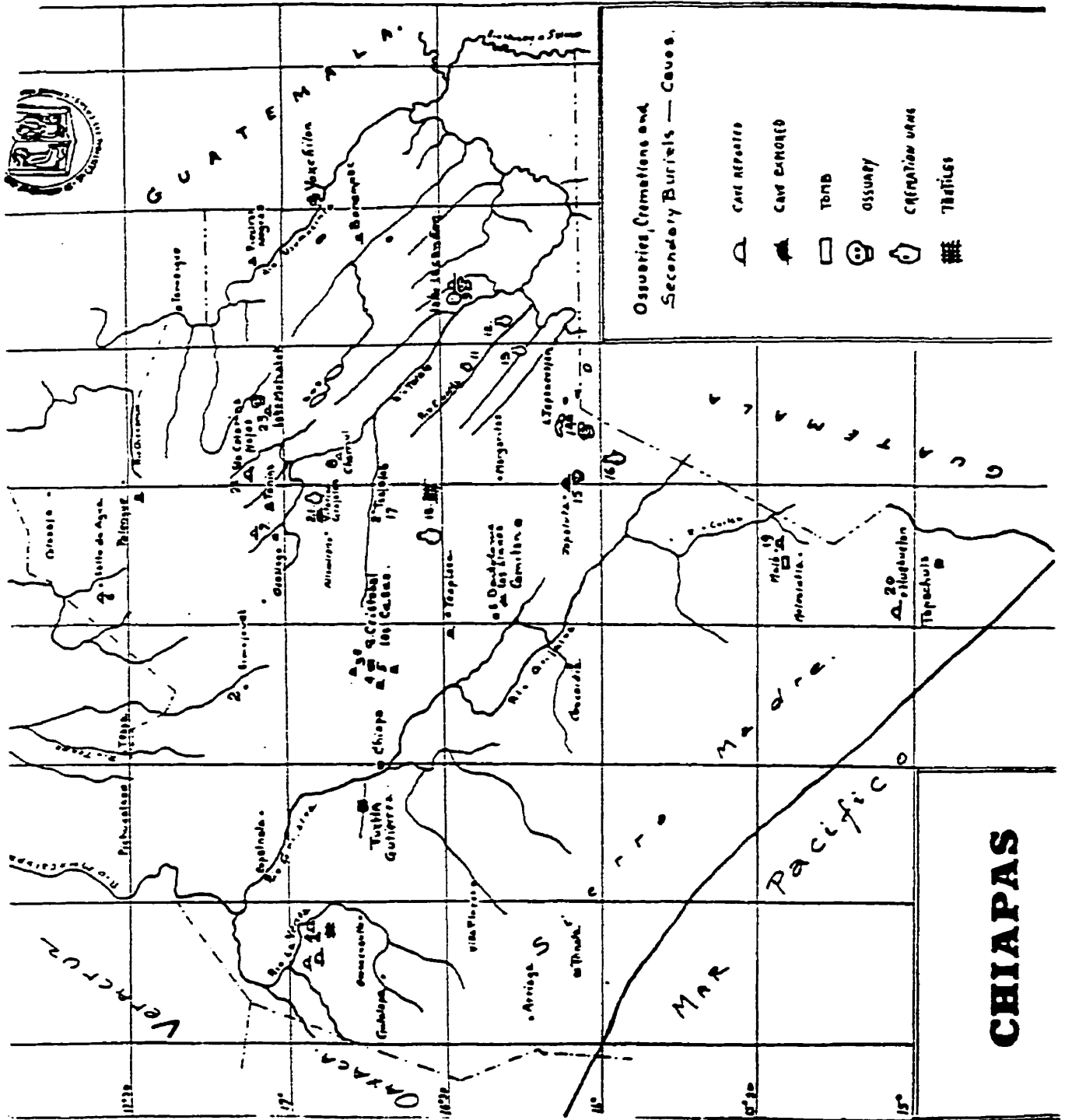


Fig. 3: Map of Chiapas, Mexico (from Blom 1954)

caves with cremations might date to the Post-Classic period. Cremations during the Classic period were either very infrequent, or nonexistent (Webster 1997:4).

*Zopo Cave* had the fragmented remains of probably only one individual who had a jade inlay in one tooth (Blom and LaFarge 1926-27). The remains were accompanied by incensarios, pottery and a ceramic tube representing the jaguar god of the underworld, which could possibly have been an enema tube. Thompson (1975:xxxiii) proposes that this cave is an example of ancestor worship.

*Huxjal Cave* is a large cave with many branching crevices. One such crevice was filled with human bone, including crania and long bones. It was noted that the crania had been modified in the anterior-posterior type which, as Blom (1954:124) indicated, was how they 'knew' the bones were of 'Maya origin'. Another bit of information offered by Blom is his mention of the haphazard nature of the remains, that were "piled up helter skelter". There is no date for use of this cave. Due to the nature of the remains, however, it is suggested use could have been during the Classic period (Blom 1954).

In *Moxviquil Cave* there were two culturally modified crania in addition to other bones lying on the surface of the cave floor (Blom 1954:131). As is seen in most wet caves, the remains were cemented to the floor as a result of the calcium carbonate in the water dripping from the ceiling. There were four tombs found within this cave that had been constructed using large stone slabs. It was noted that the remains from these tombs were those of secondary burials. Tomb #4 was 15 feet long with the remains of at least five individuals of varying age. Blom (1954:131) identified two types of cranial modification from this cave, as well as others that were subsequently visited. Type A

crania (anterior-posterior flattening) were (usually) associated with “crude pottery”. Type B crania (circumferential binding) were associated with Classic period pottery (Blom 1954:131). Only individuals with the ‘type B’ style of modification were identified in the tombs of Moxviquil Cave.

The *Cave at San Felipe* had three crania with Type B modifications. By the time Blom (1954:132) investigated this cave it had been badly looted and the three crania were in the possession of someone in San Cristobal las Casas.

The *Lake Lacandon Caves* that were investigated by Blom (1954:132) had human remains at the respective entrances. There was also exposed bone encountered far within the caves. Here, again, Blom mentions the haphazard nature of the bones as if there was no plan for their interment. There were also places where water was dripping down and this had presumable cemented the bones in place.

*Cieneguilla Cave* is actually a rock shelter that was walled-off leaving only a very small space inside. There was a jar with not only cremated human remains but some textiles inside. Based on the textiles, it is believed that the cremation dates to the Terminal Classic.

Blom (1954:127) fails to provide any information regarding the human remains from *Chiptic Cave*, aside from mentioning the presence of cremation urns. Thus, one could assume that within this cave there were cremated human remains within urns. Much of the cave had been looted. It is suggested that the remains from this cave may date to the Postclassic period (Healy, personal communication 1999).

The *Cave at Colonia Vitorico Grajales* is not actually a cave, but another rock

shelter from which several large 'urn' jars were removed. The jars seem very unique suggesting this was a Postclassic characteristic (Blom 1954:129). One is left to assume there were cremated remains within each urn.

*Rosario Trabajo Cave* also had several jars which contained human ashes. It is interesting to note that mixed with some of the ashes of one jar was a small Venetian glass bead which dates the activity here to at least the contact period (Blom 1954:129).

Blom (1954) does not provide any suggestions regarding the activities that might have been conducted within the caves, aside from noting the caves as being places for cremations and ossuaries. Very often the number of individuals is not provided, nor their location within the cave.

A very large number of caves used by the ancient Maya have been identified from Belize (Fig. 4). Included in Table 2 are identified caves from Belize as well as two documented caves from Guatemala.

*Aktun Tunichil Muknal* and *Aktun Uayazba Kab* will be discussed at length in the following chapter. These two caves are located along the Roaring Creek River Valley, in Western Belize, approximately 500 metres apart from each other.

*Petroglyph Cave* (Fig. 5) is located in the Caves Branch River Valley in Central Belize, east of the Roaring Creek Valley. Investigations led by Reents-Budet and MacLeod (1997) have shown that the 'ritual use' of the cave spanned most of the Classic period (A.D. 250 through approximately A.D. 900). The human remains were found in three main areas of the cave, Burial Chamber I, Burial Chamber II and Sa'atabe. In total, the remains of nine adults and at least thirteen infants have been identified.

**Table 2 - Caves of Belize and Guatemala**

CAVE NAME	PERIOD	NO. OF INTERMENTS	TYPE OF GRAVE	AGE	SEX	LOCATION	REFERENCE
<b>BELIZE</b>							
Aktun Tunichil	Classic	15	1 burial	7 - J	3 - male	entrance and	Awe et al. 1997
Muknal			14 surface	8 - A	2 - female	500 m inside	Gibbs 1997, 1998a,b
Aktun Uayazba	Classic	12	burials	6 - J	1 - male	just off of	Gibbs 1998a,b
Kab			simple	6 - A	2 - female	entrance	
Petroglyph Cave	Classic	23	surface	13 - J	4 - male	3 different	Reents-Budet &
				10 - A	3 - female	locations	MacLeod 1997
Aktun Yaxtecl	late to term	13	surface	5 - J	2 - female	Ledge 2	Owen & Gibbs
Ahau	Classic			8 - A			1999
Aktun Chapat	NA	many	surface	NA	NA	NA	Jaime Awe, personal communication
Barton Creek	NA	16	surface	3 - J	3 - male	2 bridges	Mirro & Gibbs
Cave				8 - A	3 - female		1998
Aktun Petz	late Pre to Term	6	surface	2 - J	2 - male	eastern most	Healy et al. 1996
				4 - A	2 - female	chamber	
Eduardo Quiroz	late Pre to Post	6	simple burials	3 - J	2 male	Chamber	Pendergast 1971
				2 - A		1 and 5	
Skeleton Cave	NA	1+	surface	NA	NA	40 m	Flavell et al. 1994
						down	
Cueva de los Muertos	NA	many	surface, crevices	all	NA	NA	Rushin-Bell 1982
Perdido Cave	NA	many	surface	NA	NA	NA	Rushin-Bell 1982
Bone Cave	NA	2+	surface	NA	NA	NA	Doughery 1985
Caves Branch	NA	NA	NA	NA	NA	NA	Bonor 1989
Pusilha	NA	NA	NA	NA	NA	NA	Bonor 1989
Rubbish	NA	NA	NA	NA	NA	NA	Bonor 1989
Tzimin Kax	NA	NA	NA	NA	NA	NA	Bonor 1989
Aktun Kabal	NA	1	surface	1 - A	NA	NA	McNatt 1986
Nighthouse Cave	NA	1	surface	NA	NA	sinkhole	McNatt 1986
						entrance	
Cactus Cave	Late to Term.	23	surface	1 - J	NA	NA	Walters &
				22 - A			Weller 1990
Honey Bear Cave	Late to Term.	many?	surface	NA	NA	NA	Walters &
							Weller 1990
<b>GUATEMALA</b>							
Piedras Negras	NA	1	burial	1 - A	1 - male?	NA	Coe 1959
Naj Tunich	Late Pre-Cl to Late Classic	21	3-6 tombs and surface	9 - J	NA	various	Brady et al. 1992
				12 - A			Brady & Stone 1986
							Stone 1989, 92, 95

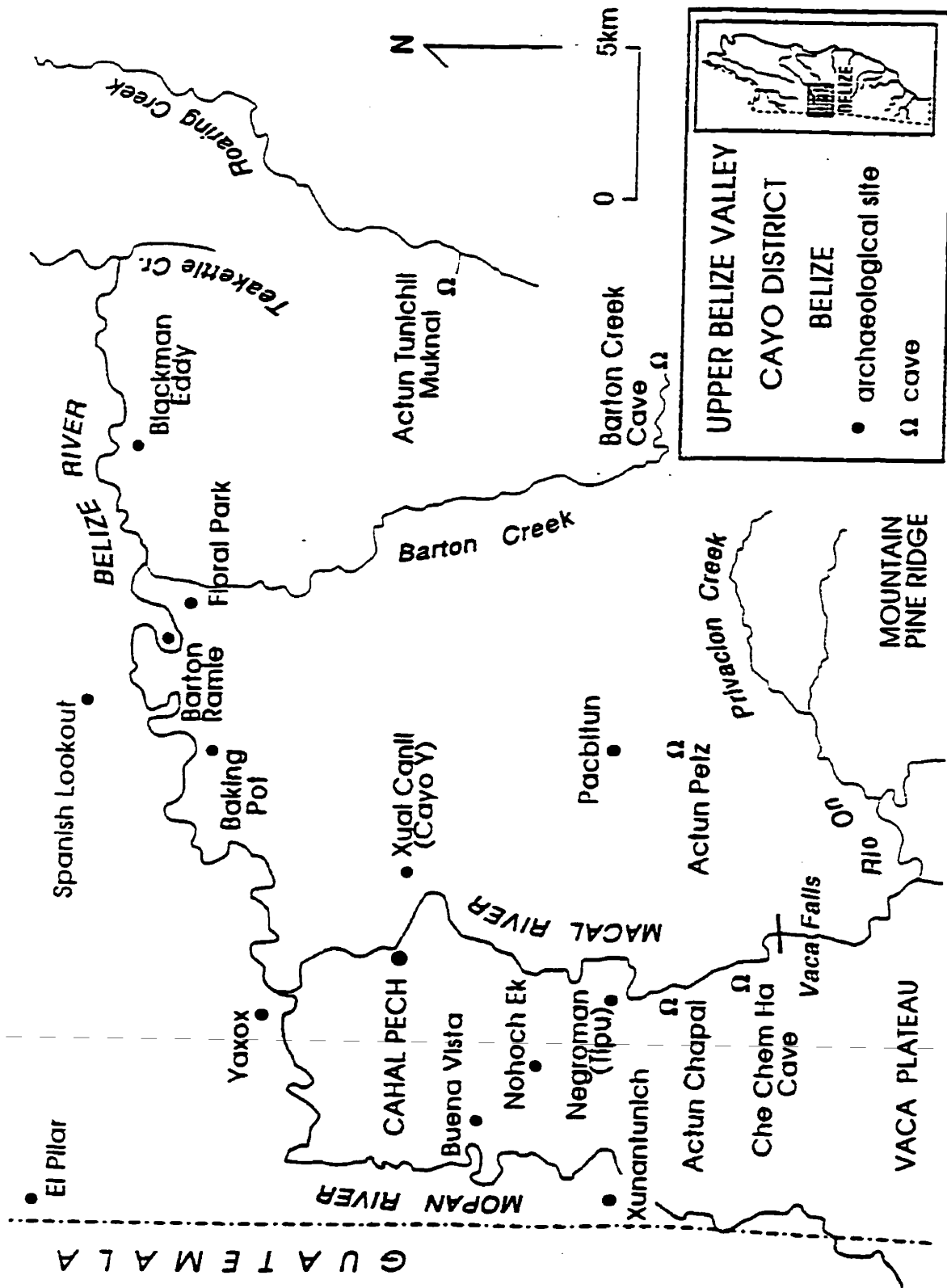


Fig. 4: Map of Western Belize (from Awe et al. 1997)



Burial Chamber I is located approximately 325 metres downstream from the Main Entrance Room, six metres above the stream passage. It is a large room with at least seven adults and eight infants located among the breakdown boulders. The chamber is roughly 200 metres long and 10 metres high, and the floor is flowstone. The breakdown boulders take up much of the floor. Above the flowstone is a layer of mud which covers ceramic and bone, as revealed through drip holes. The remains below this surface were not excavated, so the human remains identified and analysed are those found on the cave surface. There were three identified cache areas and the human remains that were distributed here appear to be “independent of the caches” (Reents-Budet and Reents 1997:37).

Burial Chamber II is located just off of the Main Entrance Room and has three chambers which contain the remains of five to six infants and one adult. As was found in Burial Chamber I, there were also caches of vessels and ‘ritual implements’.

*Sa'atabe* is located approximately 800 metres downstream from the Main Entrance Room, and is fifteen metres above the stream. This ledge can also be reached from a sinkhole above. The authors concluded that the Maya must have accessed this ledge/chamber through the sinkhole, due to the lack of evidence for the stream passage as an access route. They propose that this area was likely used as a ‘ceremonial dump’, which is evident from the high number and variety of Early Classic pottery. From the ceramic assemblage it is suggested that there was a change in the ritual activities carried out in the cave, or that this area of the cave saw a different type of ritual. The remains of one adult were found on the ledge of this chamber, however, they were poorly preserved (Reents-Budet and MacLeod 1997).

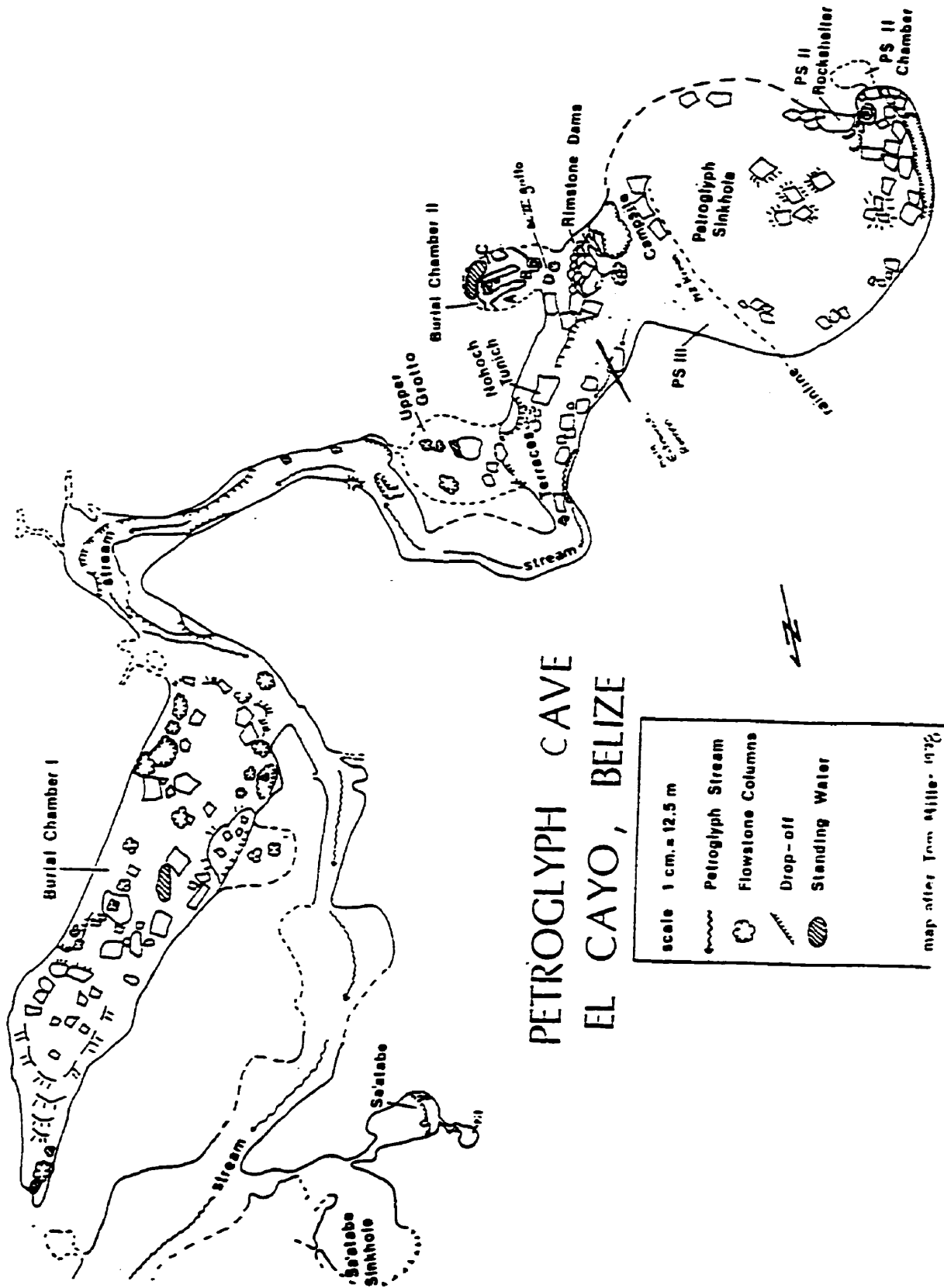


Fig. 5: Map of Petroglyph Cave (from Reents-Budet and MacLeod 1997: fig 3)

Except for the *Sa'atabe* individual, the rest of the individuals within this cave were placed in “niches among natural cave formations, under breakdown blocks or were laid on the cave floor” (Reents-Budet and MacLeod 1997:78). All of the individuals were found in ‘surface’ graves. Similar to human remains from other caves (see *Aktun Tunichil Muknal* and *Aktun Uayazba Kab*), these remains are poorly preserved due to the wet conditions and the encrustation of crystalline calcite. Such taphonomic pressures hinder attempts to determine the age and sex of the individuals.

It is interesting to point out that while Reents-Budet and MacLeod (1997) concluded that the individuals found within this cave were most likely sacrificed, they still refer to them as ‘burials’. They also argue against the possibility of secondary burials for some of the remains which appear to be piled up. They suggest that these individuals may have been placed in a sitting position circum-mortem and, upon decomposition, the bones collapsed into the present ‘pile’ of bones (Reents-Budet and MacLeod 1997:80).

*Aktun Yaxteel Ahau*, Cave of the Ceiba Tree Lord (Fig. 6), was investigated by the Western Belize Regional Cave Project. It is also located along the Roaring Creek River Valley, approximately one kilometre north of *Aktun Tunichil Muknal*. Research began during the 1998 field season in two main areas, one of which contained the remains of at least thirteen individuals. Of these, eight are in the adult mean age (20 years of age at death and over), of which two are female, and five are juveniles (14 to 20 years of age). These individuals are located on Ledge 2, approximately 300 metres within the cave, high above the north side of the perennially active river. The remains are co-mingled with a large number of ceramic sherds, some lithic artifacts and only a small number of jade and shell beads. It is believed this area was looted due to the absence of a number of

previously reported artifacts. There are also carved stairs leading from the main ledge up what has been termed the upper ledge and passage. The latter leads through a tunnel to a small room. The ancient Maya probably utilized this area of the cave during the Late to Terminal Classic Maya period based on ceramics (V. Owen personal communication, 1999). The remains, themselves, were literally scattered over the floor of this entire region. Many individuals were co-mingled and the remains are very fragmented. Unfortunately, a number of taphonomic processes had adverse affects on these remains.

*Aktun Chapat* has yet to be formally investigated, but is known to contain a number of broken, and presumably co-mingled human remains (Awe, personal communication, 1999). It is located in Western Belize along the Macal River. While very little can be said at this time, it is known that infants were placed in the cave. The remains of an infant, between six months and a year old at death, were collected from the cave floor.

*Barton Creek Cave* is located to the east of Barton Creek in Western Belize. It contains the remains of sixteen individuals, including three adult females, three adult males, and 3 subadults. The remains are located on two separate 'bridges', which do actually bridge both sides of the cave over a perennially active river. The remains are co-mingled with ceramic sherds. Only a very preliminary investigation has been conducted within this cave, which did not allow for the indication of chronology, although Classic Maya use is suspected (Owen, personal communication, 1999). This cave has also been heavily looted, and is currently part of a tourist route.

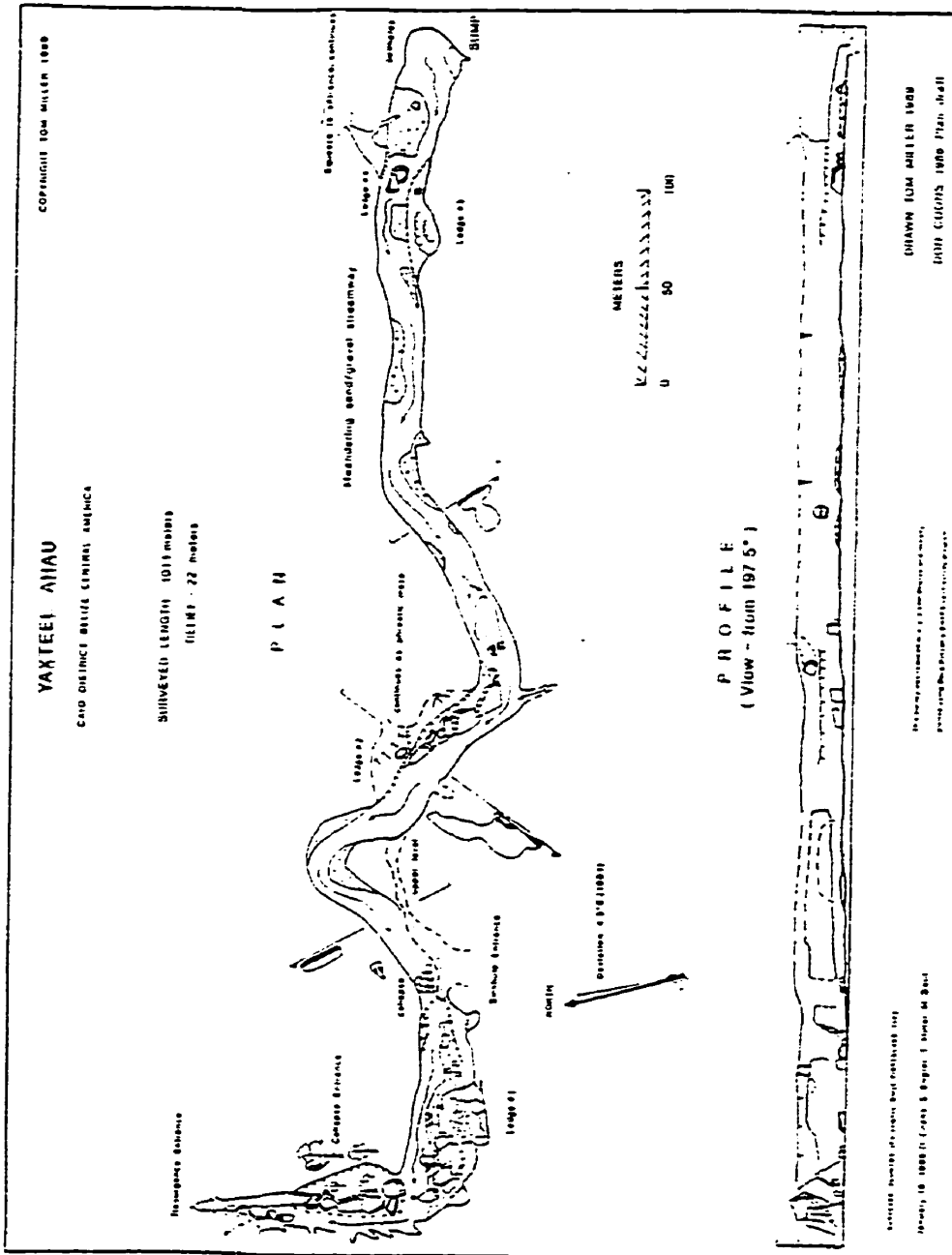
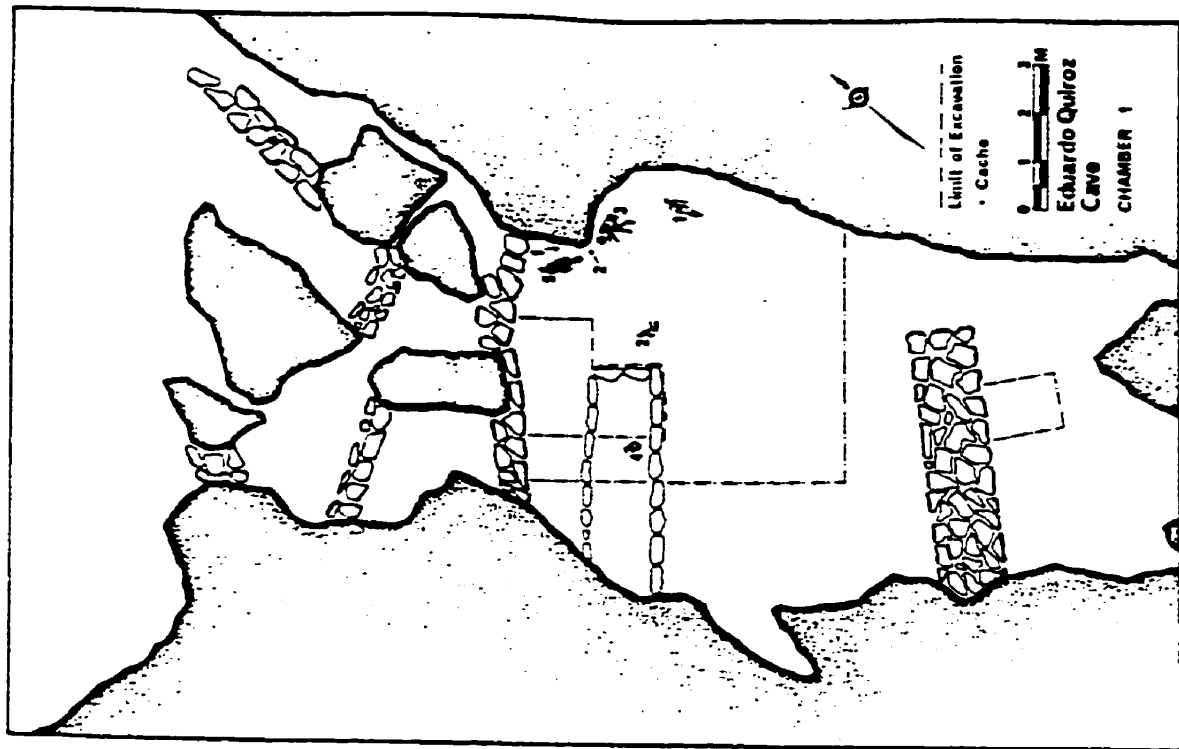


Fig. 6: Map of Aktun Yaxteel Ahau (from Miller 1990:34)

*Aktun Petz* is also located in Western Belize near the Classic Maya site of Pacbitun (Healy et al. 1996). There were no excavations done during the preliminary investigations, however, all human remains were located on the cave floor. The remains are co-mingled with ceramic sherds, some of which date to the Early Classic period (AD 300-550). It is noted that there was a lack of lithic and faunal remains (Healy et al. 1996:144). It is suggested that some of the remains may have been the result of secondary interments, based on the lack of certain bones (Healy et al. 1996:146).

*Eduardo Quiroz Cave* (Fig. 7) is located in the Chiquibul Forest in Western Belize. Five of the six interments were located in Chamber 1 and the sixth was located previously in Chamber 5. The burials in Chamber 1, except for Burial 4, were void of any associated artifacts and were all in very poor condition not allowing for anthropometric data. The estimates made of the age and sex for four of the five burials were conducted *in situ*, and thus may be inaccurate (Pendergast 1971:15). As seen with some of the other interments there is no apparent stratigraphy with which to date the remains. Interestingly, Pendergast notes that the individuals, except for Burial 4, do not appear to have been sacrificial victims, since there are no artifacts associated with them. Burial 4, seemingly unique in that it is the only burial located beneath the floor in Chamber 1, is the only burial accompanied by artifacts (five beads laying near the hands, which are near the cranium) and is suggested to have been a sacrifice due to its location. Interestingly, the cranium of this subadult appears to have been smashed. There was also a ceramic cache located in this chamber as well as a constructed wall which would have controlled movement through the cave.



**Fig. 7: Map of Eduardo Quiroz Cave (from Pendergast 1971:14)**

The following summaries of caves which contain human remains have been retrieved mainly from speleological reports. As a result, some archaeological information is missing, such as possible dates for and context of the remains. The caves are all located in western Belize in proximity to the previous caves.

*Skeleton Cave* had human remains scattered over the lower level chamber. These were heavily calcified due to water activity. It is suggested that the remains originated from levels above but had been washed down to the lower level. There was no bone identified from the upper levels to support this suggestion.

*Cueva de los Muertos* has been interpreted by Rushin-Bell (1982:12) to have functioned as a tomb due to the presence of human remains. In addition to the remains were ceramic sherds and vessels, jade beads, which were found among the human

remains (however it is curious to note that they were not covered with the calcium carbonate) and a constructed wall. Past the wall was another room containing a number of crania. It is mentioned that there was a carved bone, a stone point and a circular slate-pyrite plaque (or mirror) found with a child burial. It is not clear from the report if this was an actual burial, or whether the remains were simply lying on the cave floor (Rushin-Bell 1982:13).

*Perdido Cave* was found to contain a number of 'burials'. However, from what could be discerned from the text they were actually found lying on the surface. These remains were also coated with the calcium carbonate that seems to encrust much of the human remains encountered. In addition to the remains there were also numerous vessels, some with kill holes, obsidian blades and a pyrite mirror (Rushin-Bell 1982:16).

*Bone Cave* is near Aktun Chapat in western Belize and contains the remains of potentially numerous individuals. A number of crania and cranial fragments, as well as other bone fragments, covered one cave shelf. It is described as being a 'ceremonial' burial rather than a sacrifice (or accident) due to the bone fragments, the lack of associated artifacts, and the arrangement of the bones (Dougherty 1985).

*Caves Branch Cave, Pusilha Cave, Rubbish Cave* and *Tzimin Kax* are noted to contain human remains as well as ceramic artifacts, except for *Tzimin Kax* which is lacking any artifacts (Bonor 1989). There is very little else that can be noted at this time. *Aktun Kabal* has amongst its ceramic and lithic artifacts two human femora which exhibit tool marks. *Nighthouse Cave* has a cranium located in a small sinkhole just outside the entrance. No other details regarding these caves are available. Both were presumably visited by the same researchers at about the same time (McNatt 1986).



*Cactus Cave*, located in the Laguna area of the Toledo district in Belize, contained the remains of approximately 23 individuals, one of whom was a child. Artifacts from the cave included a jade pendant, beads, an obsidian blade, earspools, and a carved bone. Unfortunately, it is not known where the human remains were discovered in relation to the artifacts.

*Honey Bear Cave*, also in the same region, was noted to have contained a “substantial quantity of burned bone and may have been an ossuary” (Walters and Weller n.d.: 2). It is not even noted if all of the bone is human or animal, nor are there any indications of the quantity and quality of the remains.

*Piedras Negras*, in Guatemala, has a cave on a hill-side just to the north-east of one of the structures. This cave contains what has been termed Burial 6 which is a simple grave in a pocket in the bedrock. The remains are of a possible adult male who is missing the right radius and ulna. There are only two types of artifacts located in association with the remains, two bone tubes and two speleothems (stalagmites and stalactites do not occur in this cave) (Coe 1959).

*Naj Tunich* (Fig. 8 and 9) is located in the southeast maizeer of the department of El Peten of Guatemala, five kilometres from the Belizean boarder. It is touted as being the “chief” lowland Maya cave which served as a place of worship for the elite (Brady and Stone 1986:20) It contains not only human remains, but extensive artwork, artifacts, monumental architecture, and six probable tombs. Naj Tunich is believed to have been in use by the ancient Maya from the Late Preclassic through to the Late Classic period (100 B.C. to A.D. 900), although it was found that the period of greatest use was during the Early Classic period (A.D. 250-550) (Brady and Stone 1986; Brady et al 1992; Stone

1995).

Of the twenty-one individuals, nine were children and twelve were adults. From the evidence gathered from Naj Tunich, Brady and Stone (1986) suggest that the children were sacrificed. One small child, aged five to six years, has three holes in the skull, which probably were inflicted circum-mortem (see also Eduardo Quiroz Cave (Pendergast 1971)). Further evidence to support the claim of sacrifice for this five to six year old includes the “lack of grave goods and the haphazard nature of the grave” (Brady and Stone 1986:22). It is suggested that those buried in the tombs were of royalty or elite status (Brady and Stone 1986).

### *Summary*

This chapter finally takes a look at caves which contain human remains within caves in the southern Maya lowlands. Prior to analysing available reports it was necessary to take an historical look such previous investigations and the theories that have been presented. As discussed, the presence of human remains within caves is not a new discovery, but has been 'formally' investigated since the late 19<sup>th</sup> Century. However, there has been a serious lack of such research since that time.

A number of caves from the southern Maya lowlands, which contain human remains, have been described in order to provide a feel for the context and location of such remains. There are a number of points that need to be mentioned. First, as evident from Tables 1 and 2, there is still a substantial amount of pertinent information missing, such as the number of interments, the age and sex of the individuals and the time period such remains may date. The next point is that various ages, including infants, juveniles and adults, and both males and females are present in such caves. Ten is the average

number of individuals with the caves of Belize (which actually have a recorded number). This point is important because it shows how many individuals the Maya placed within such places. The last point to mention is that a majority of the individuals located within these caves were found to be lying on the surface and not actually 'buried' in any sort of grave.

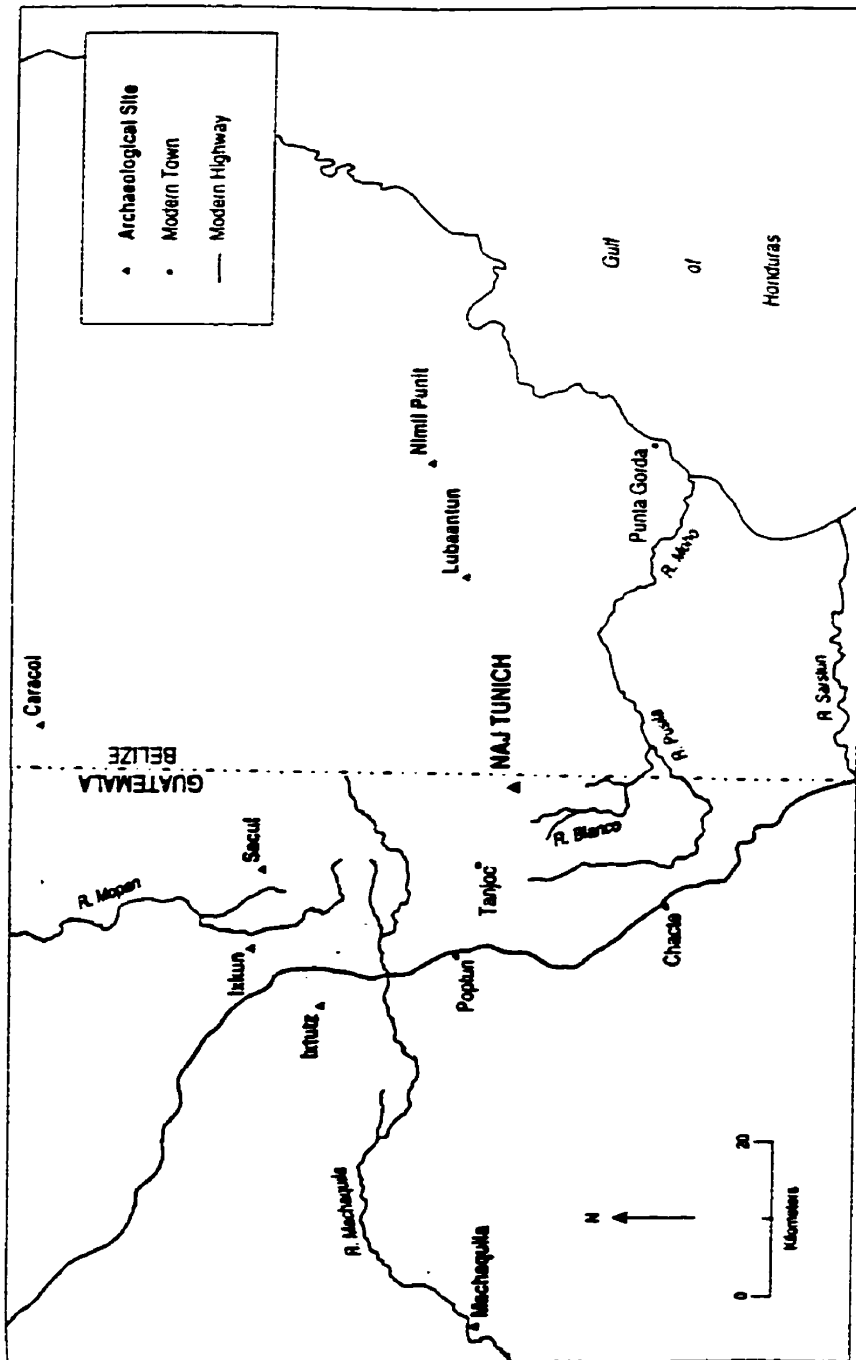
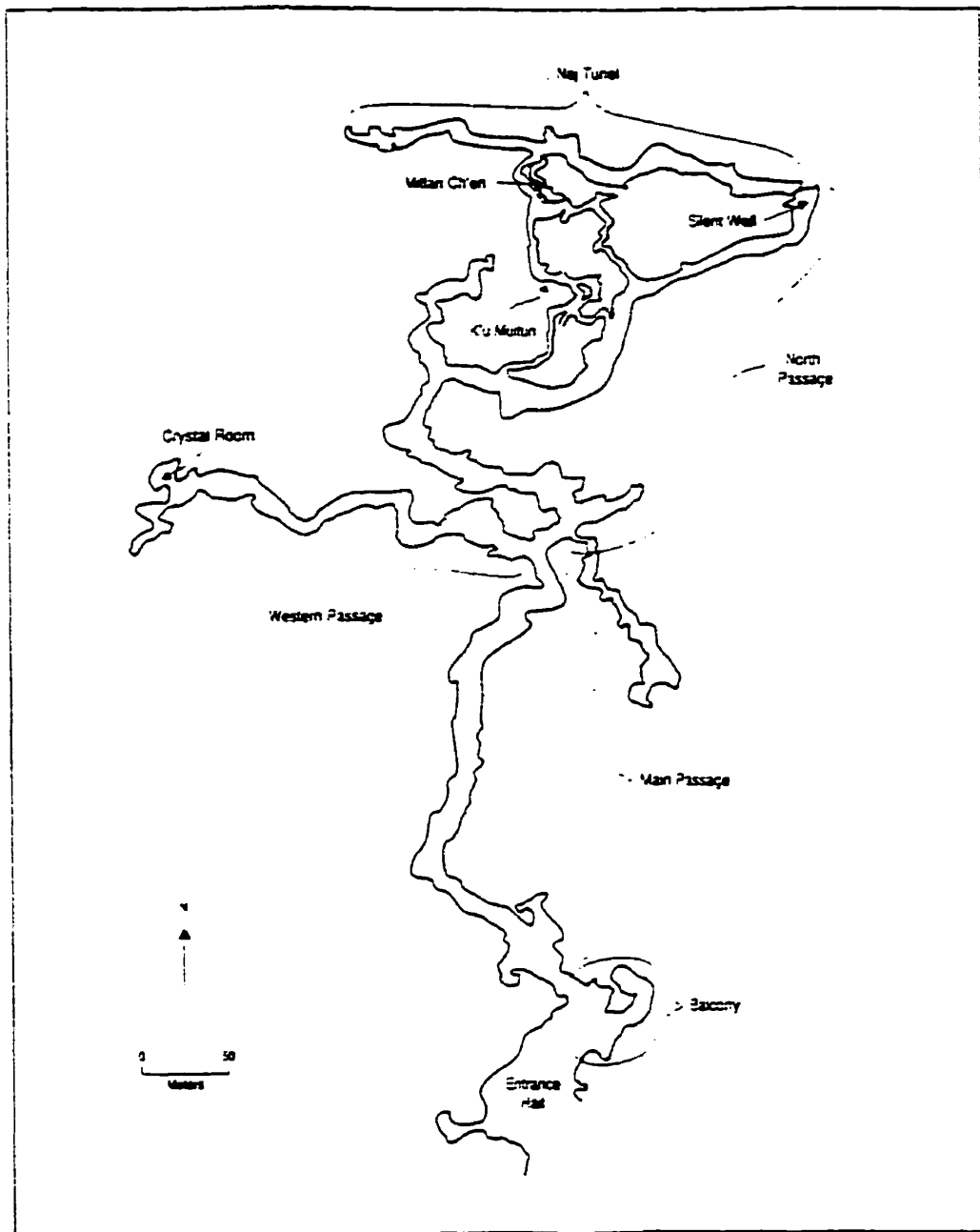


Fig. 8: Map of Naj Tunich Region (from Stone 1995:101)



**Fig. 9: Map of Naj Tunich (from Stone 1995:107)**

**Chapter 6**  
**Bioarchaeology of**  
***Aktun Tunichil Muknal and Aktun Uayazba Kab***

*Aktun Tunichil Muknal* and *Aktun Uayazba Kab* are two very different caves, not only in their respective geomorphology, but also in the activities carried out in them. The ritual activities may have been conducted under the same premise, however it is likely the intent, or practices, were different. One example of such differences is how the individuals found within each cave were perceived and treated.

*Aktun Uayazba Kab* (Fig. 10) is located approximately 700 metres south of *Aktun Tunichil Muknal* along the Roaring Creek. It is believed (Awe, personal communication 1998) that they were contemporaneous with each other during the Classic period, most notably the Late Classic (AD. 700-900) (based on ceramic analysis), as well as with the surface site, *Cahal Witz Na* (Place of the Mountain Houses), located east, and approximately 800 metres across the river.

***Aktun Tunichil Muknal (Cave of the Stone Sepulchre)***

*Aktun Tunichil Muknal* was first discovered and explored by Tom Miller in 1986 (Miller 1989, 1990). A subsequent visit by a British Speleological expedition in 1989, resulted in the first complete map of the cave system (Roberts 1990). Archaeological investigations within *Aktun Tunichil Muknal* were begun in 1993 by Jaime Awe, and then continued by the Western Belize Regional Cave Project (under the direction of Awe) during the summers of 1996 through to 1998 (see Awe 1998; Awe and Conlon 1997; Awe and Lee 1999).

*Aktun Tunichil Muknal* is approximately 5 kilometres long with a perennially active stream flowing through the main cave passage (Awe et al. 1997). The main

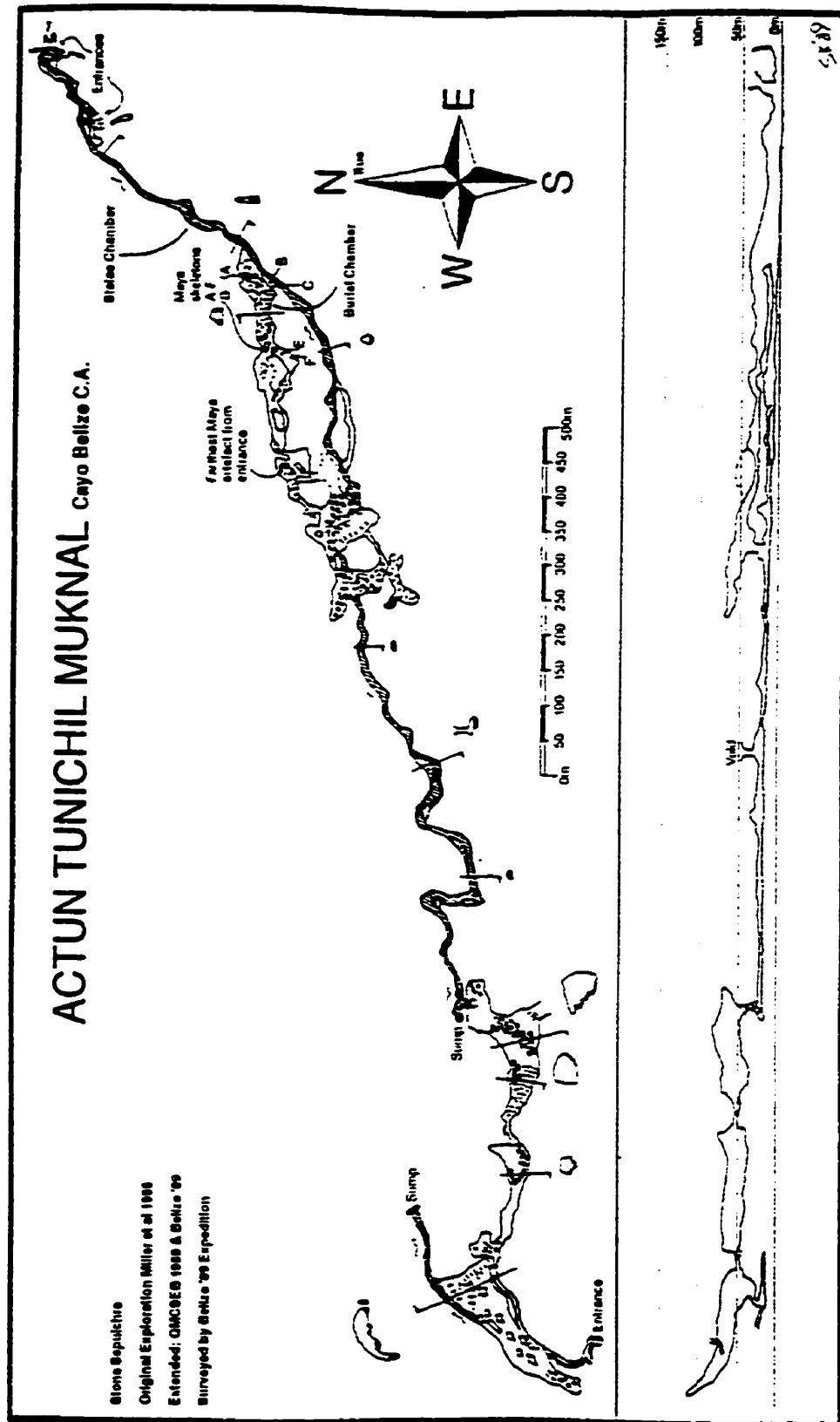


Fig. 10: Map of Aktun Tunichil Muknal (from Awe et al 1997:83)

entrance resembles a double Gothic archway with a deep blue pool of water below. The stream flows from this pool (Awe et al. 1997). Four culture areas have been identified within this deep cave. The first is referred to as the Upper Entrance Chamber, just to the north of the main entrance. The remains of a low masonry platform have been identified as well as a *jute* shell cache. In the southeastern part of the chamber was a burial which contained the remains of at least one adult individual. Unfortunately, this chamber had been looted exposing the human remains and numerous ceramic sherds. This is the only section of the cave which dates to the Early Classic period (Awe et al. 1997).

The second area with evidence of ancient Maya activity is the Sinkhole Entrance and Tunnels. Ceramics from this area date to the Late Classic period. The third area is the Stela Chamber, which is approximately 450 metres from the entrance. This chamber is actually a small ledge roughly ten metres above the stream which has two carved slate monuments, or stelae, a smaller carved slate slab, ceramic sherds and two obsidian blood-letters. The monuments are located side-by-side and are held in place by several broken speleothems. Stela 1 is 1.2 metres in height and approximately 30 centimetres wide with nine scallops on either side. It has been interpreted as representing either a string-ray spine, used in blood-letting (Awe et al. 1997), or a cob of maize (Griffith 1999). Stela 2 is 1.1 metres high and 19.5 centimetres wide and has been carved to form a point at the top which has been interpreted as representing an obsidian blood-letter (Awe et al 1997). This is supported by the two obsidian blood-letters found at the base. In addition to the two monuments, there were at least five pottery vessels, one of which is a Pabellon-modelled carved vase which depicts the offering of a captive to the lord. It is assumed that the individual in this representation is to be sacrificed (Helmke 1998).



The next chamber high above the main passageway is the Main Chamber, which is actually comprised of a large chamber with small adjoining rooms and alcoves and measures approximately 200 metres long and 50 metres wide. (Awe et al. 1997a, b). Within this complex of rooms we encountered the skeletal remains of fourteen individuals. They are located in various regions within this chamber, often in inconspicuous areas. The fourteen individuals represent males and females, ranging in age from one year to middle-aged adult. These remains also vary in degrees of preservation and visibility due to the thick layer of calcite covering the floor of this chamber.

There are over two hundred vessels within this area of the Main Chamber, with only four complete and the rest fragmented. Based on this plethora of ceramic vessels used to date this chamber, it suggests this chamber was utilized primarily during the Late Classic period. There are also a lesser number of other artifacts, including 6 manos and metates, 3 celts, and several fragments of ocarinas (Moyes 1998).

The surface of this chamber is covered with a thick layer of calcium carbonate resulting in the floor consisting of a series of travertine dams that descend toward the lower main passage to the east. This is indicative of water that periodically flows or collects in this chamber. The northwestern section of the chamber has some active cave formations amidst a series of massive columns. As a result of this apparent long term water activity and cave formation process, many ceramic vessels, as well as some human bone, are actually imbedded in the floor. During the 1997 field season the Western Belize Regional Cave Project crew had the opportunity to actually encounter water in this chamber. During the rainy season the cave river flooded for a short period and, in the

Main Chamber water had seeped down through the limestone rock and rose to the highest marked water line.

None of the 14 individuals discovered in this area were 'buried', instead, they were found lying on the cave floor. The remains are primarily located on the floor with no clearly distinguishable or associated grave goods. Some skeletons were heavily encrusted with flowstone indicating they were laid down in areas of periodically active water flow. In some instances the accretion of calcium carbonate on the skeletal remains has, unfortunately, exaggerated the size and shape of the individual bones making any attempt at sexing and aging next to impossible. Other skeletons had only a thin coating of calcium carbonate, which did allow for identification and measurements to be conducted.

Of the 14 individuals, six are infants under the age of three years, one is a child of roughly seven years of age, and the remaining seven are adults ranging in age from their early 20s to approximately 40 years old. Of the adults, it is believed that two are female and three are male. The remaining two could not be sexed nor properly aged due to the extensive calcium carbonate build-up.

Only four of the individuals, two infants and two adult, appear to be in anatomical position. One appears as though it might have been bound in a flexed position while the rest are fragmented, with two sets being co-mingled. One set, with three infants, is in a small sunken alcove, and the other set of two adults appears to have been washed down a small dam by water flowing from a ledge above. Of the remaining four individuals it is possible the one child fell circum-mortem from above to the present location on and under some boulders. The other three are believed to have been disturbed by water flow.

Five of the seven adults show evidence for cranial shaping in the tabular oblique style ("Type A"), or parallelo-fronto-occipital, which refers to a near circular style of modification (Buikstra and Ubelaker 1994:160; Stewart 1975:212). The other two appear to have had their crania broken and are either poorly preserved or heavily encrusted with flowstone. The child also exhibited evidence for cranial shaping of the frontal-lambdoidal style. Only two adults have culturally decorated teeth, the first individual, whose cranium is also modified, has all four maxillary incisors filed representing Romero's Type A-2 (Romero 1958, 1970), and the second individual has the right maxillary canine also filed as type A-2. It should be noted that this is the only remaining tooth in the maxilla and, unfortunately, neither mandible is present. From those individuals that can be closely examined, only one, the young adult female, shows signs of cribra orbitalia on the left orbit and porotic hyperostosis on the frontal bone. The child and all of the infants show evidence for trauma to their crania and are located in natural depressions and travertine pools which could have served as natural graves. While there are over 1400 artifacts within the Main Chamber (Moyes 1998), there are no apparent artifacts directly associated with any of the individuals.

While it is not known if some of the individuals were laid down in the water, or travertine pools, it is suggested that the Maya may have done so. Due to the occasional flooding most of the bones are covered in layers of calcite, as commonly found in other caves (see Blom 1954; Brady et al. 1995; Butler 1934; Healy et al. 1996). This calcite layer ranged in thickness of total exaggeration of the long bones to only a slight encrustation, millimetres thick. Thus, it was extremely difficult during examination to establish sex and age for these 14 individuals. It was possible, however, to note artificial

cranial and dental modification, as well as, the dentition on the skeletal remains.

Due to taphonomic pressures a number of the individuals appear to have been commingled and fragmentary. However, it is possible that the appearance may have been due to the secondary placement of the individuals. Of the 14, only four of the individuals are in anatomical position, while the remaining ten are disarticulated, presumably due to water action.

### ***Detailed Analysis***

#### ***Upper Entrance Chamber***

The presence of a burial was indicated by human bone exposed on the surface as a result of looting activity. While units were excavated here, they did not reveal any additional human bone. A surface collection of bones conducted prior to excavating indicated there was at least one individual present. The identifiable bones include 2 joining cranial fragments, 4 phalanges, 1 scapula fragment with the glenoid fossa present, some humerus fragments and a 4<sup>th</sup> cervical vertebra, with some arthritic lipping on the inferior dorsal margin. The sex is indeterminable and the only indicator of age is the evidence for arthritis on the cervical vertebra, suggesting an older individual.

#### ***Main Chamber***

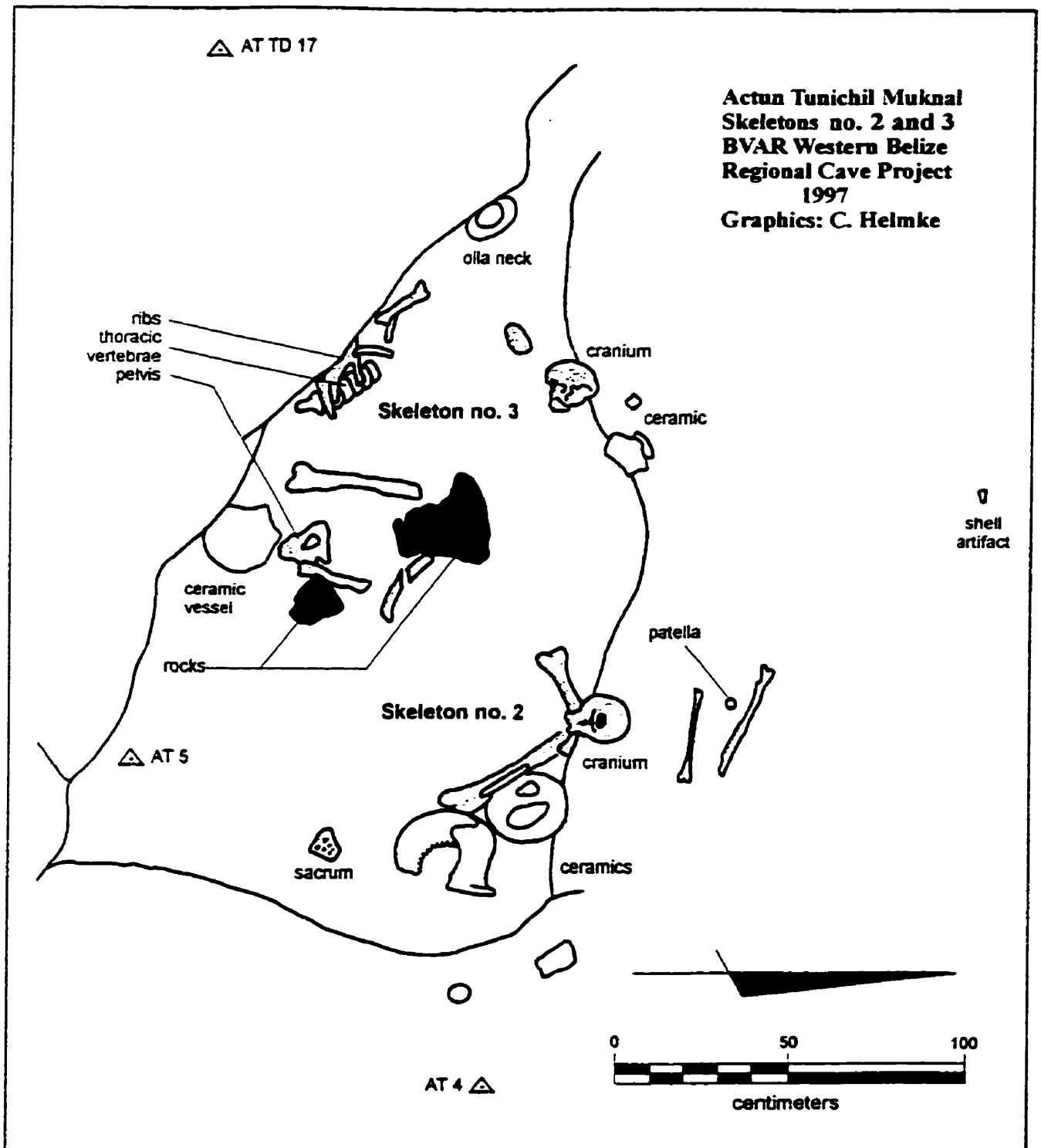
*Individual One* (see also Roberts 1990 (skeleton 4)) is located in the central southeastern part of the chamber. It contains the fragmented remains of one individual who is covered with calcite, with the exception of the cranium. The cranium is well preserved and exhibits cranial and dental modification. This cranium is embedded in the calcified flow stone up to the posterior portion of the parietal. The style of cranial modification is tabular oblique. The four maxillary incisors have been filed representing

Romero Type A-2 (Romero 1958, 1970). It was also noted that the upper right first premolar had a large cavity on the buccal side near the neck.

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

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

*Individuals 2 & 3* (see Roberts 1990 (skeleton A & B)) (Fig. 11) are located approximately 7 metres south-west from Individual 1. There are the co-mingled fragmented remains of two individuals based on the presence of two visible crania, two sets of femora, and two sacra. 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 exposed with the frontal region embedded, exposing the right canine which had been culturally modified in the same manner as individual one (comparable to Romero Type A-2). The second cranium, which is laying



*Fig. 11: Plan View of Individuals 2 & 3*

on its left side in the calcite flow stone, exhibits cranial modification, similar to the tabular oblique type also found in individual one.

Because removal of the remains for further examination was not an option it is not known which remains belonged to which individual. Thus, the sex of only one of the individuals can be discussed. In reaching this conclusion, one of the crania, a pubic bone and a sacrum were used. The cranium, positioned with the frontal region down, was analysed qualitatively for any distinguishing sex traits, and it was found that there was a large protruding mastoid process and a strong nuchal crest indicating a possible male. The partially exposed pubic bone and a sacrum support this conclusion.

The right pubic symphysis was exposed and undamaged, which allowed us to get an approximate age range of 30-40 years of age at death (from Todd's Pubic symphysis scoring system (Buikstra & Ubelaker 1994:22)). The other age estimate was based on the lambdoidal suture closure for the cranium that is positioned face down. It was found that the individual would have been at least 20 years of age, but probably older.

The measurements taken from the right tibia (33.7 cm) give an estimated stature [using the stature-calculation formulae for males provided by Genoves [(1967:76) in Ubelaker (1989:62)] of 159.8 cm +/- 2.8. When using the formula for Mexicans from Trotter and Gleser (1952, in Bass 1987:238) a stature of 160.15 cm +/-3.37 was calculated. In order to substantiate this finding, the fibula was included in calculating the stature using Trotter and Gleser [as Genoves does not provide a formula for the fibula]. The results of the fibula (33.65 cm) give a stature of 159.56 cm +/-3.5. Therefore, the stature for one individual [based on the fact that these two bones were located in direct association with each other, separate from the rest of the remains] is approximately 160

cm, which is just slightly lower than average (Saul and Saul 1997:48).

*Individuals 4, 5, & 6* (Fig. 12) are located to the north of the first three individuals on the opposite side of the chamber in a small sunken alcove. The skeletal remains in this area are mixed up and wedged in the floor, most likely a result of fast water activity. It should be noted that prior to the 1997 field season it was believed there were only two individuals. However, after viewing the remains while they were submerged in water during the flooding, it was realized that there were actually three.

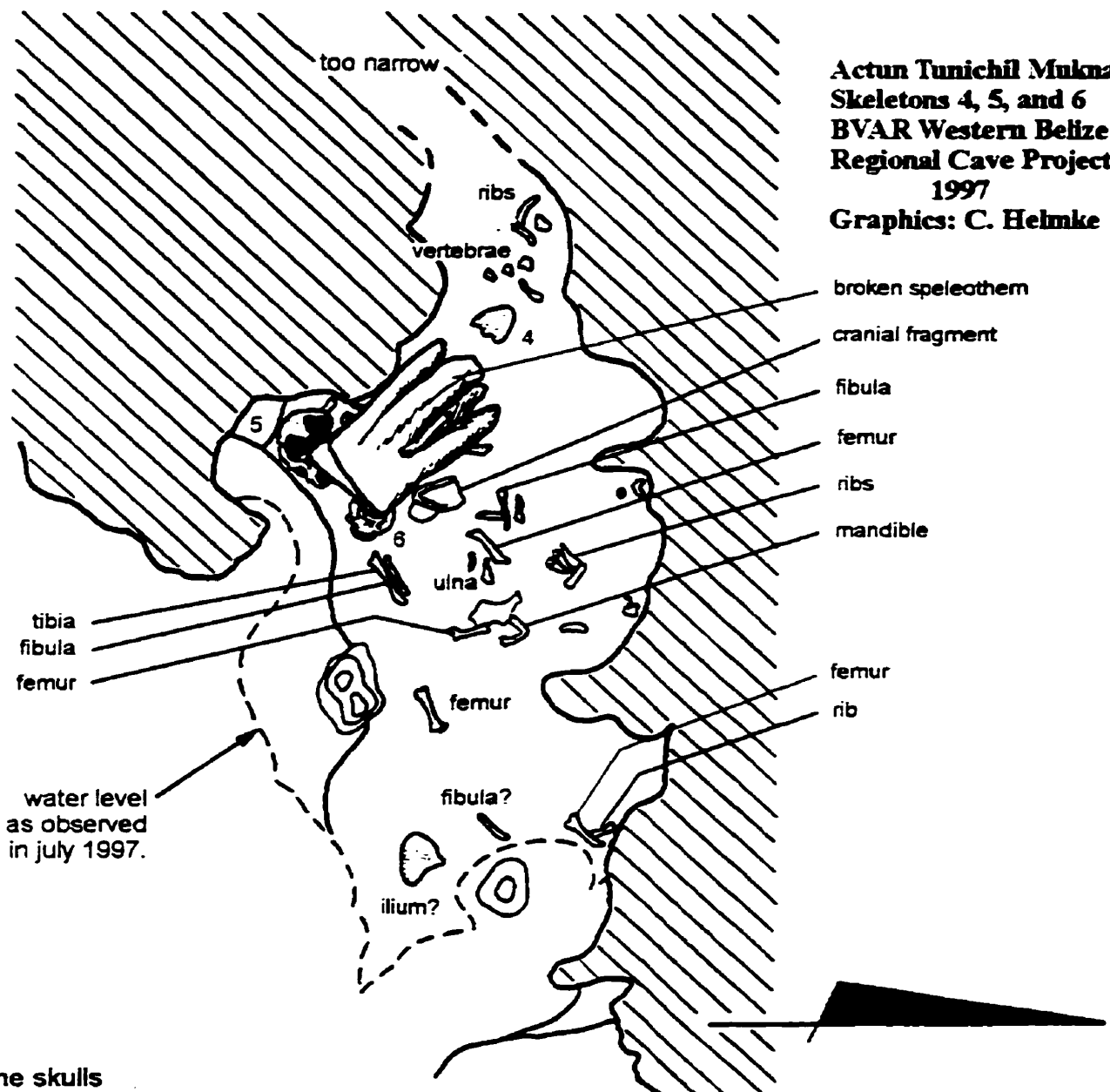
Based on long bone measurements and the presence of the first and second maxillary deciduous molars, two ages have been estimated. Two of the individuals were between 1 and 1.5 years of age at death [based on the femoral length of 107 mm (after Johnson 1962 in Bass 1987: 217), and the humeral length of 119 mm (after Johnson 1962 in Bass 1987:149)] and had an estimated stature between 67 and 70 cm [based on the femoral length (Olivier 1969:284)].

The second individual was between 2 and 2.5 years of age at death [based on the femoral length of 124.5 mm (Bass 1987:217) and the presence of all deciduous maxillary molars (Ubelaker 1989, Figure 71)], and had an approximate stature of 79 cm [based on femoral length (Olivier 1969:284)]. As expected the sex of either two could not be determined (due to their very young age, and their condition).

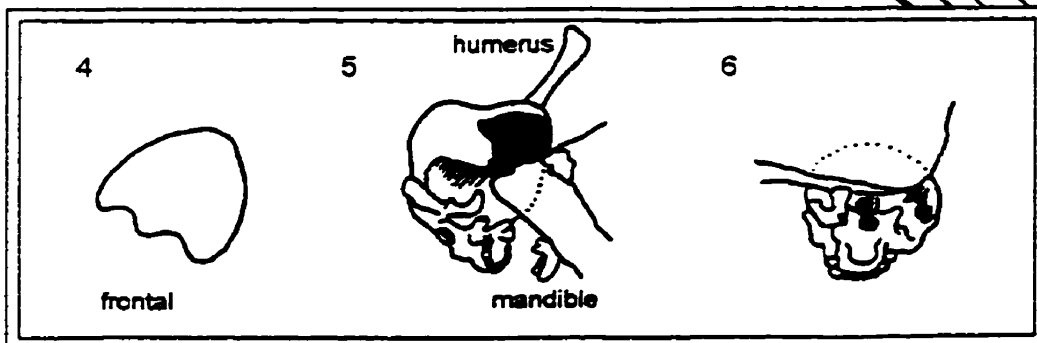
*Individual 7* (Fig. 13) was located in a small niche within a small room whose access is restricted by a very low opening, 80 centimetres high and wide, in the north east wall of the main chamber. The remains were concealed behind stalagmites and consisted of an anatomically extended infant, with the cranium to the south-west. Based on the long bone measurements it is estimated that this individual was approximately 1 year of



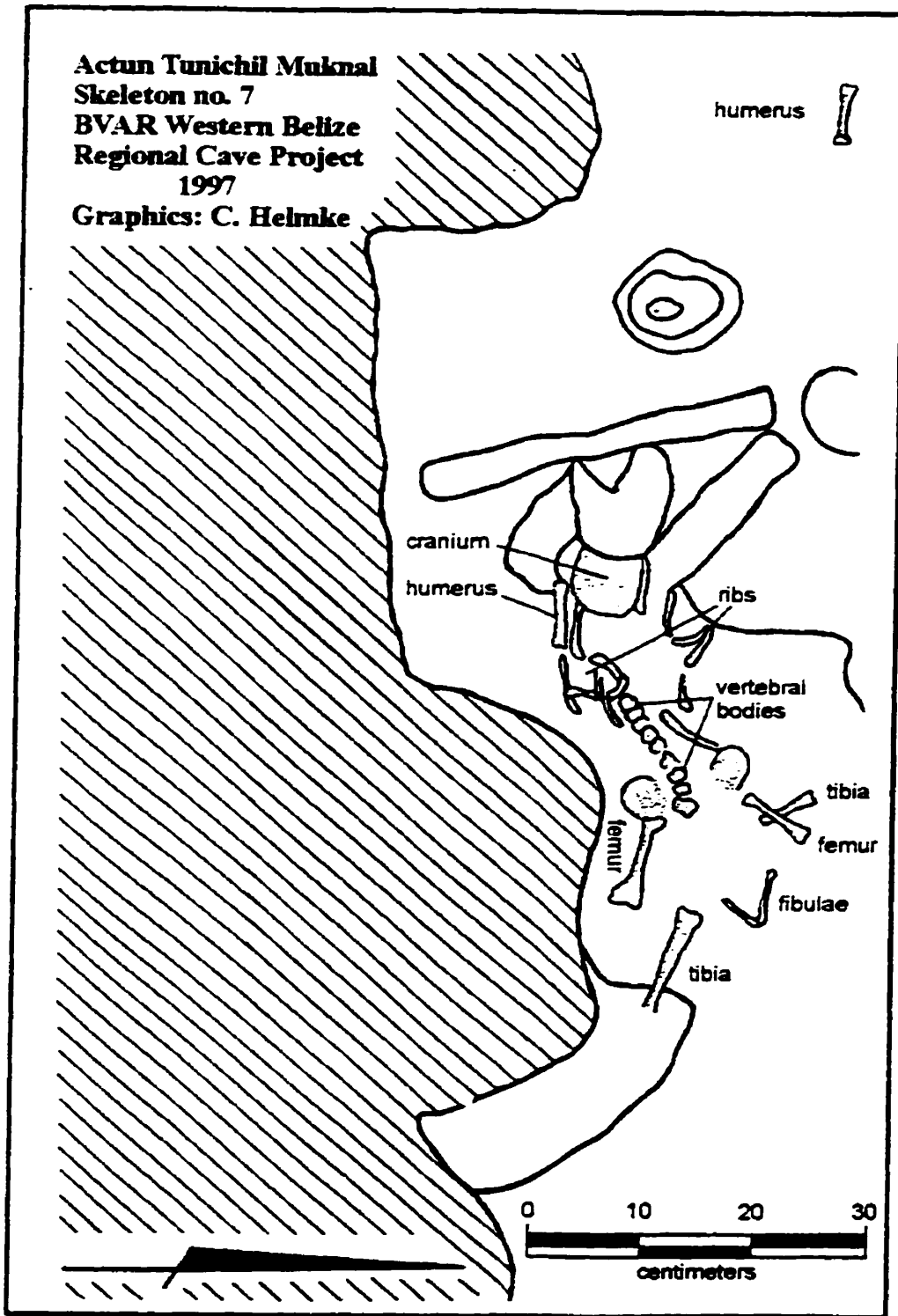
**Actun Tunichil Muknal  
Skeletons 4, 5, and 6  
BVAR Western Belize  
Regional Cave Project  
1997  
Graphics: C. Helmke**



**detail of the skulls**



*Fig. 12: Plan View of Individuals 4, 5 & 6*



*Fig. 13: Plan View of Individual 7*

age at death (after Johnston 1962 in Bass 1987:149,217,235). [These long bone measurements include the lengths of: the humerus (80 mm), left tibia (80 mm), left femur (97.5 mm) and right femur (95-100 mm)]. The stature of this infant is estimated to have been approximately 62 cm (Olivier 1969:283). Again, due to the very young age no sex can be estimated.

*Individual 8* was located to the east of Individual 7 in another section of the same small room. Because the bones are heavily encrusted with calcite, up to 2 cm in places, no sex traits were retrieved. One comment that can be made about the age of this individual is that she/he was an adult when they died. The disarticulated remains included two femora, 1 tibia, 1 humerus, a possible radius, a number of ribs, pelvis fragments, and some cranial fragments.

*Individual 9* (Fig. 14) is located in the breakdown near the back of this chamber and west of the first eight individuals. This individual appears to be lying in a possible natural grave. It is in very poor condition and extremely fragile due in part to the damp conditions. Most of the bones had actually been crushed and only the rough outline of the bone was present. It is also interesting to note that this individual has nearly no calcite coating on the bones, although the ground and bone are very wet. Based on the pubic symphysis still present it is suggested that this individual is female and was approximately 40 years old at death.

*Individual 10* (Fig. 15) is located amongst fallen boulders of the breakdown. As a result of the location many of the bones have fallen amongst the boulders, although the general position of the individual is still evident. It is unclear whether the individual was placed on these boulders or whether he or she may have been thrown, or dropped,

Actun Tunichil Muknal  
 Skeleton no. 9  
 BVAR Western Belize  
 Regional Cave Project  
 1997  
 Graphics: C. Helmke

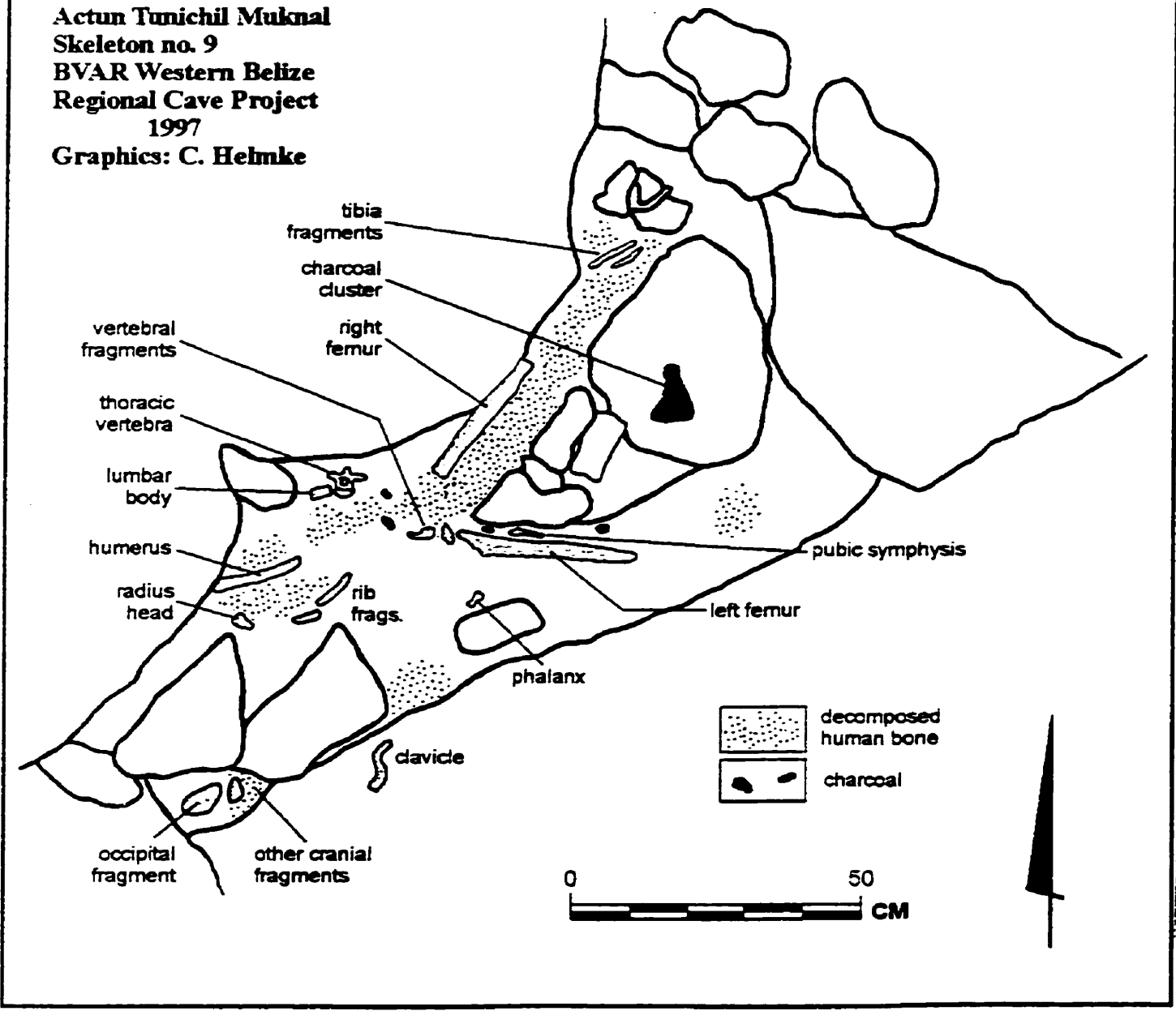
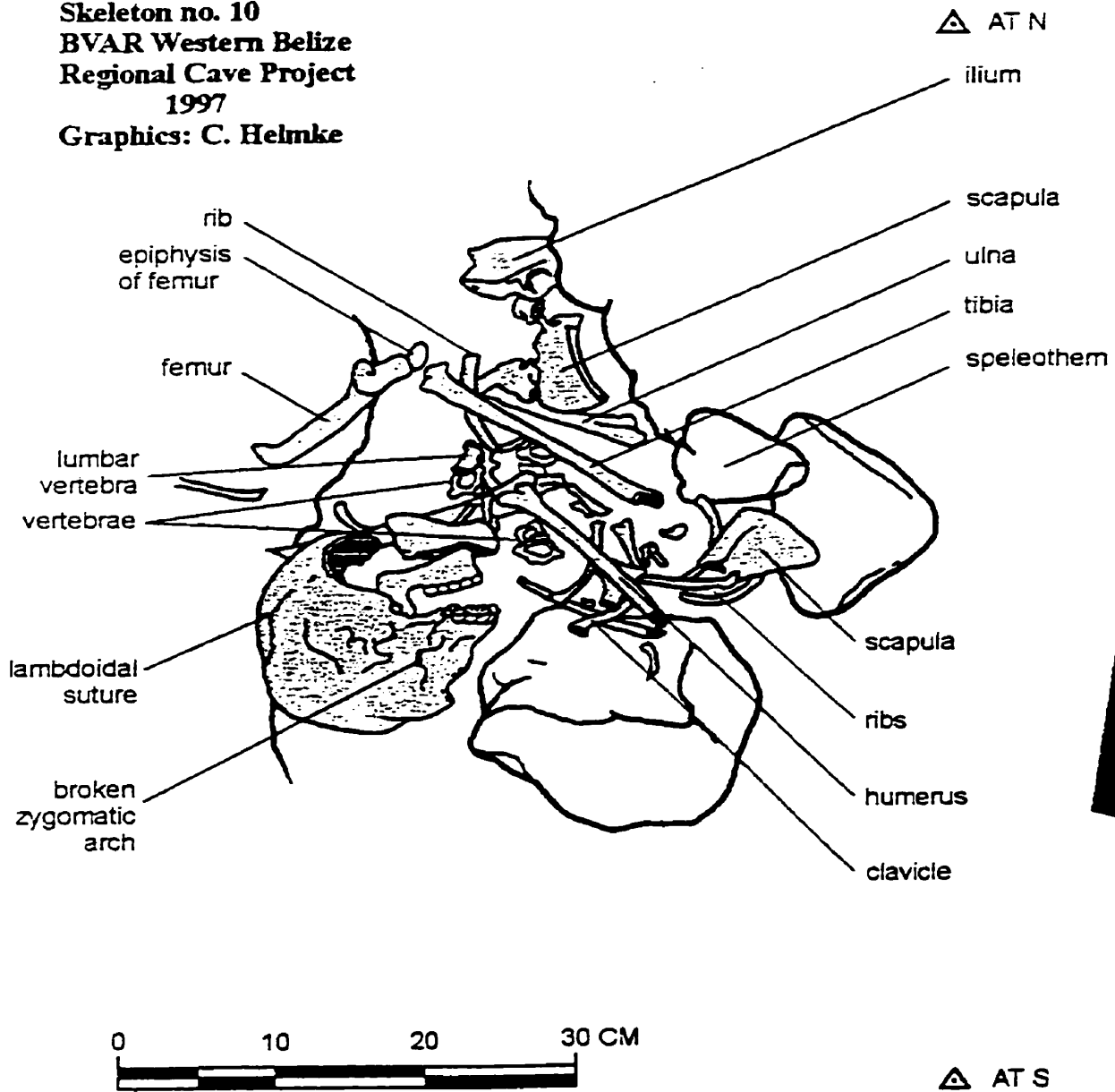


Fig. 14: Plan View of Individual 9

Actun Tunichil Muknal  
 Skeleton no. 10  
 BVAR Western Belize  
 Regional Cave Project  
 1997  
 Graphics: C. Helmke



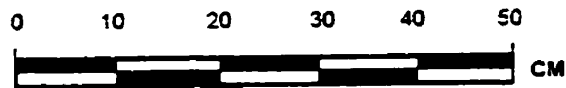
*Fig. 15: Plan View of Individual 10*

from an area above. Due to the elevation, there is no collection of water, although this area is very damp, with water frequently dripping from the ceiling. Hence, most of the bones are relatively free of any calcite coating, with the exception of where the bone touches the rock. In some places the bones are actually 'cemented'. Based on the dentition and long bone length (right femur - 217.5 mm, left clavicle - 83.5 mm) this individual was approximately 6.5 to 7 years of age at death (Stewart 1968 in Bass 1987:216; Ubelaker 1989: Figure 71).

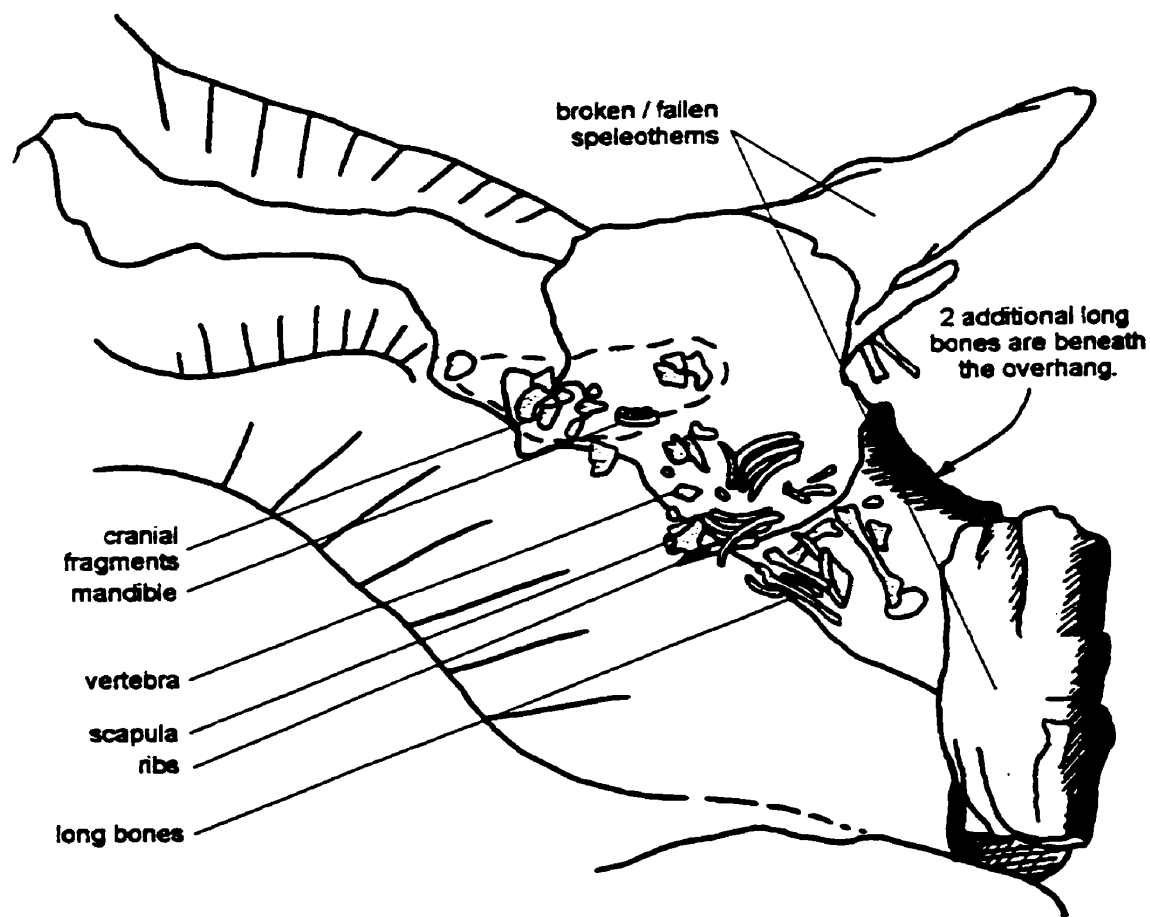
*Individual 11* (Fig. 16) is located at the back of the main chamber in a small room (the A-8 Chamber). The individual is an infant laid in a small trench with its head smashed. Again the bone is not covered in any calcite coating, but is very wet and fragile and actually has some blue mould growing on it. Based on dentition and long bone measurements (right femur - 111 mm, right radius - 68 mm, right ulna - 78.5 mm) this individual was approximately 1.5 years of age at death (Bass 1987; Ubelaker 1989, Figure 71).

*Individual 12* (see also Roberts 1990) (Fig. 17) is located in a secluded region of the far south-west end of the Main Chamber in a high alcove called the Sepulchre, which has seasonal water covering the floor. Access to this alcove is difficult without the use of a ladder. This young individual, located in a small depression, appears to be fragmented and is heavily encrusted with up to 1 cm of calcite. It is possible, however, that this individual was actually bound in a flexed position with the hands tied behind the back and in a kneeling position facing the wall. This likely resulted in the fragmented appearance following decomposition. The cranium, modified in the tabular oblique style, gives the appearance of a 'bulbous' form. No comments can be made about the

Actun Tunichil Muknal  
Skeleton no. 11  
BVAR Western Belize  
Regional Cave Project  
1997  
Graphics: C. Helmke



△  
AT 78



*Fig. 16: Plan View of Individual 11*

Due to the thick calcium carbonate coating (up to 11 mm), identification of the bones was very limited.

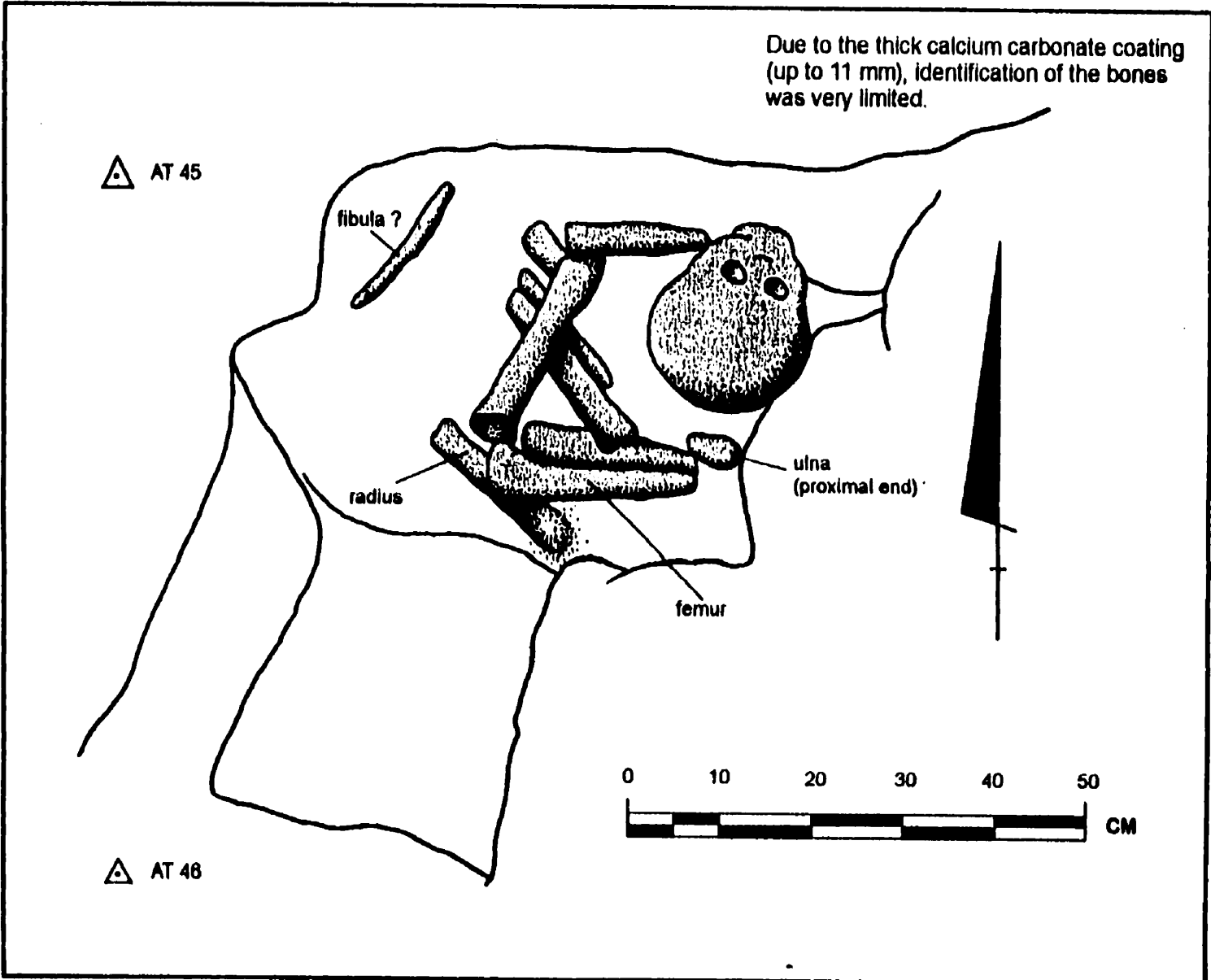


Fig. 17: Plan View of Individual 12

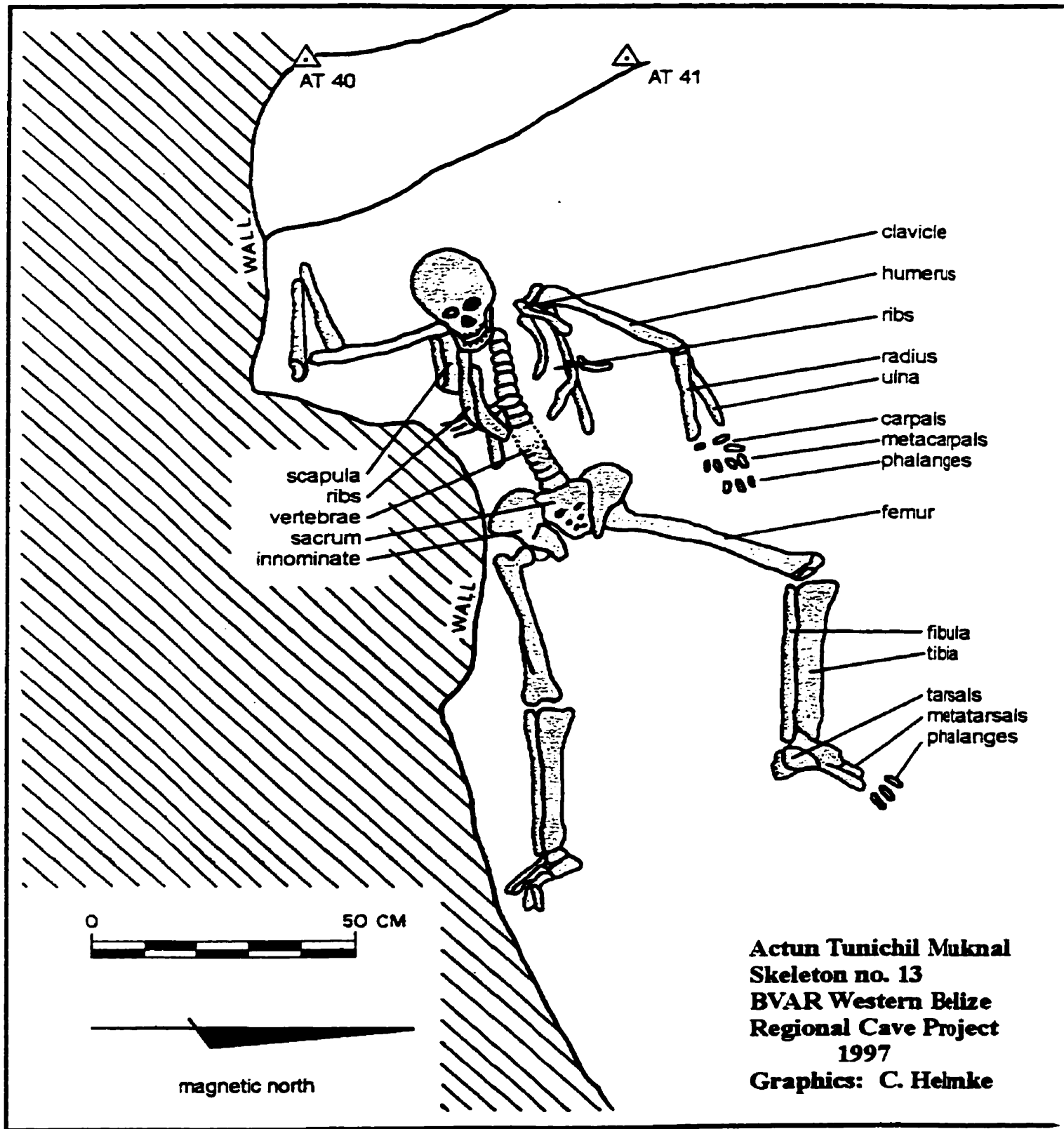
Actun Tunichil Muknal  
Skeleton no. 12  
BVAR Western Belize  
Regional Cave Project  
1997  
Graphics: C. Helmke



sex of the individual due to the excessive accumulation of calcium-carbonate. The femur, although also encrusted, is the only bone that could be positively identified, and it appears that the distal epiphysis is absent. Since this epiphysis begins to fuse around the age of 15 years (Schwartz 1995: table 7-6), it is suggested that this could be the oldest age limit for this individual. While the youngest limit is not known, a more accurate age range cannot be provided.

*Individual 13* (see also Roberts 1990 (skeleton 1)) (Fig. 18) is located to the west of Individual 12, lying in a supine anatomical position with the cranium to the southwest, the right arm raised and the legs sprawled. It is covered with a thin sparkling layer of calcite with no actual bone exposed. This individual also exhibits the tabular oblique form of cranial deformation, as seen from two other individuals in this chamber.

This individual is believed to be a young adult, perhaps in their early 20s, based on the fact that the distal end of the right femur had not yet fused [which usually occurs between 20 and 23 years of age (Schwartz, 1995:130)] (Roberts 1990:126). The stature of this young adult would have ranged between 1.38 m and 1.549 m, with a mean of 1.4865 m, which about average for the Southern Lowlands (Saul and Saul 1997:48). This is based on the measurements from all long bones [humerus, radius, ulna, femur, tibia and fibula], both left and right, with the femora providing the shortest stature (from Genoves 1967 in Ubelaker 1989:62)]. There is a slight discrepancy between these figures and those reached by Roberts (1990:126) who estimated the stature of this individual to be between 1.4298 m +/-3.816 cm and 1.5354 m +/-3.513 cm. It is suggested from the traits and measurements taken during this research, as well as by Roberts (1990:126), that this young individual is female. It is also noted, by Roberts (1990:126) as well,



*Fig. 18: Plan View of Individual 13*

that there is the presence of cribra orbitalia on the left orbit and porotic hyperostosis on the frontal bone, which is usually a result of anemia (Ortner and Putschar 1981).

*Individual 14* is located in the main chamber west of Individuals 1, 2 and 3, and is comprised only of a humerus (111 mm) and some broken cranial fragments, located a metre apart. It is not entirely sure whether all fragments belong to the same individual, however they do appear to be around the same age, which was approximately 2 years of age (Bass 1987). The humerus is coated with a very thin layer of calcite, however, not enough to grossly overestimate the age. The cranial fragments were exposed as a result of the calcite being broken away. The fragments are very fragile and broken, however, due to the size and thickness of the cranial bones it suggests this individual was very young.

***Aktun Uayazba Kab (Handprint Cave)***

Investigations at *Aktun Uayazba Kab* began during the 1997 field season, after being first identified the previous summer (1996). It was not known prior to investigations in 1997 that there were any human remains associated with this cave. However, upon arrival at the cave that summer, it was found to be extensively looted (probably just shortly before our arrival). As a result, the cave floor was littered with ceramic sherds; faunal remains, including shell (*jute*, *oliva* and conch); some lithic material, including mano and metate fragments, and obsidian flakes; and human bone. The areas most disturbed by the looters were the Burial Alcove, just north of Entrance I; Entrance II, and the Histo Chamber, south of Entrance II. The fragmented remains of human bone were found in both the Burial Alcove (hence the name) and the Histo Chamber. However, due to time constraints, and health reasons (the Histo Chamber contains a large number of bats resulting in a guano matrix, which can contain the fungus which causes the fatal *histoplasmosis*), excavations focussing on the location of burials were only conducted in the Burial Alcove. This is also where a majority of the bone was recovered.

This cave itself is located approximately 700 metres from the mouth of *Muknal* along a ridge. It is a much smaller cave than *Muknal*, and is actually more of a rock shelter with two very large entrances, side by side, joined together with a short hallway in the back. *Uayazba Kab* is dated to the Classic period, with an emphasis on the Late Classic, based on ceramic seriation. Unlike *Muknal* it contains a variety of elaborate petroglyphs, carved anthropomorphic faces and handprints. Actually, if one looks up to the cave from the base of the hill, the cave itself peers out like a face, or a skull. The art work found in the cave includes negatively painted handprints, painted triangles, carved

anthropomorphic masks, and footprints.

At the mouth of Entrance 1 is a large flow stone 'boulder' which has petroglyphs all over it. The front of this flowstone has four anthropomorphic faces, three of which are stacked in a vertical column in the lower right quadrant, stylistic forms, and some possible glyphs carved into it. On the southern side of this flowstone there are carved footprints leading up the slope to the top. There are also two elaborately carved faces found along side the footprints. Unfortunately, the flowstone is in poor condition, therefore making it difficult to discern some of the carvings. In the rest of the entrance there are isolated faces or masks carved into the walls. Most notable is the one in the Burial Alcove on the natural altar overlooking the area of burials.

The second area with ancient Maya art is actually inside the cave on the southern wall in the western part of a large room. Most notable are the four negative painted black hand-prints. There are three right hands and one left hand depicted, all in life size. On the rear western wall there are three triangles running side by side. The last painting is located on a section of flowstone just to the upper left of the hand-prints, and may depict a large sacred ceiba tree and a moon.

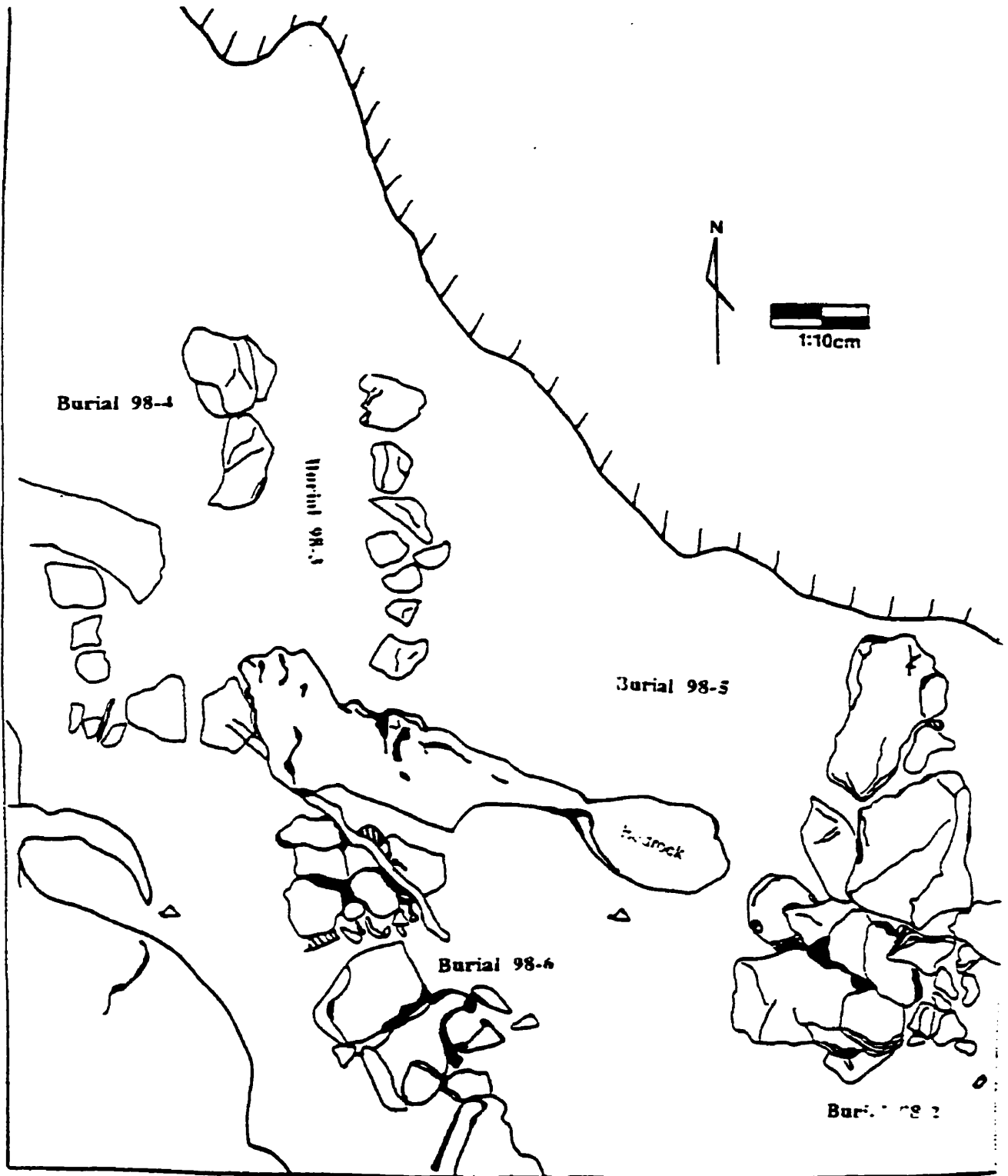
In addition to the burials in Entrance 1, the looters also exposed human bone from graves in the Histo Chamber off of Entrance 2. Most of what came out of this chamber was human bones and sherds. There were very few other artifacts. However, it should be noted that no excavation units were dug here, although a surface collection of the whole area was conducted and a very large pile of backdirt was screened.

In the Burial Alcove, after a thorough surface collection, two excavations units were dug during 1997, and two additional units in 1998 to see if there were any burials that the looters might have missed (see Ferguson 1999; Griffith 1998).

The first unit, during 1997, was dug along the west wall where Looter Pit 1 and

most of the backdirt was located. Some bone was recovered here, however, no clear remains of a burial. The second unit was placed just west of the centre of the alcove in an area where there was no apparent looting in anticipation of finding an undisturbed burial. An extension was required in order to expose the rest of a burial that was only partially exposed from this original unit. The individual encountered was laying in a fetal position on his right side. Unfortunately, looters had disturbed most of the head, but for some reason did not pursue the entire burial. There were *jute* shells everywhere (hundreds), as well as chert flakes, which covered the area directly above the individual. Obsidian blades, jadeite, *oliva* shells (which would have been sewn onto garments), and quartz crystal fragments that may have possibly fit into a mosaic, were also recovered. It appears there were cap stones above the burials, as there were numerous large flat stones laying on the ground surface that would not have originated in the cave (Griffith 1998).

Upon return to this cave during the 1998 field season it became apparent that looting activities had continued in the Burial Alcove in our absence. Thus, two units (Units 8 and 9) were established to investigate the expanded looting pits and to conduct salvage work of the area. As a result of these 1998 excavations six burials were exposed *in situ*. A surface collection was conducted at the locus of each unit, and then the looter pits were defined prior to excavating to the cave floor. Unit 8 contained five burials (Fig. 19) which were all located below the level of a plaster floor, which had been subsequently disturbed in order to bury the five individuals. Burial 98-2 was defined by a collection of rocks forming a partial crypt burial containing the remains of semi-flexed adult facing north-east. Lying above the burial was a large amount of *jute* shell and a mano. This burial extended beyond the borders of Unit 8 and an extension had to be



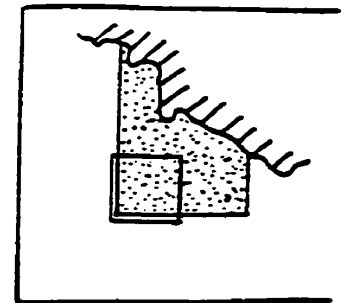
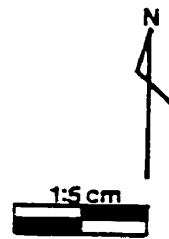
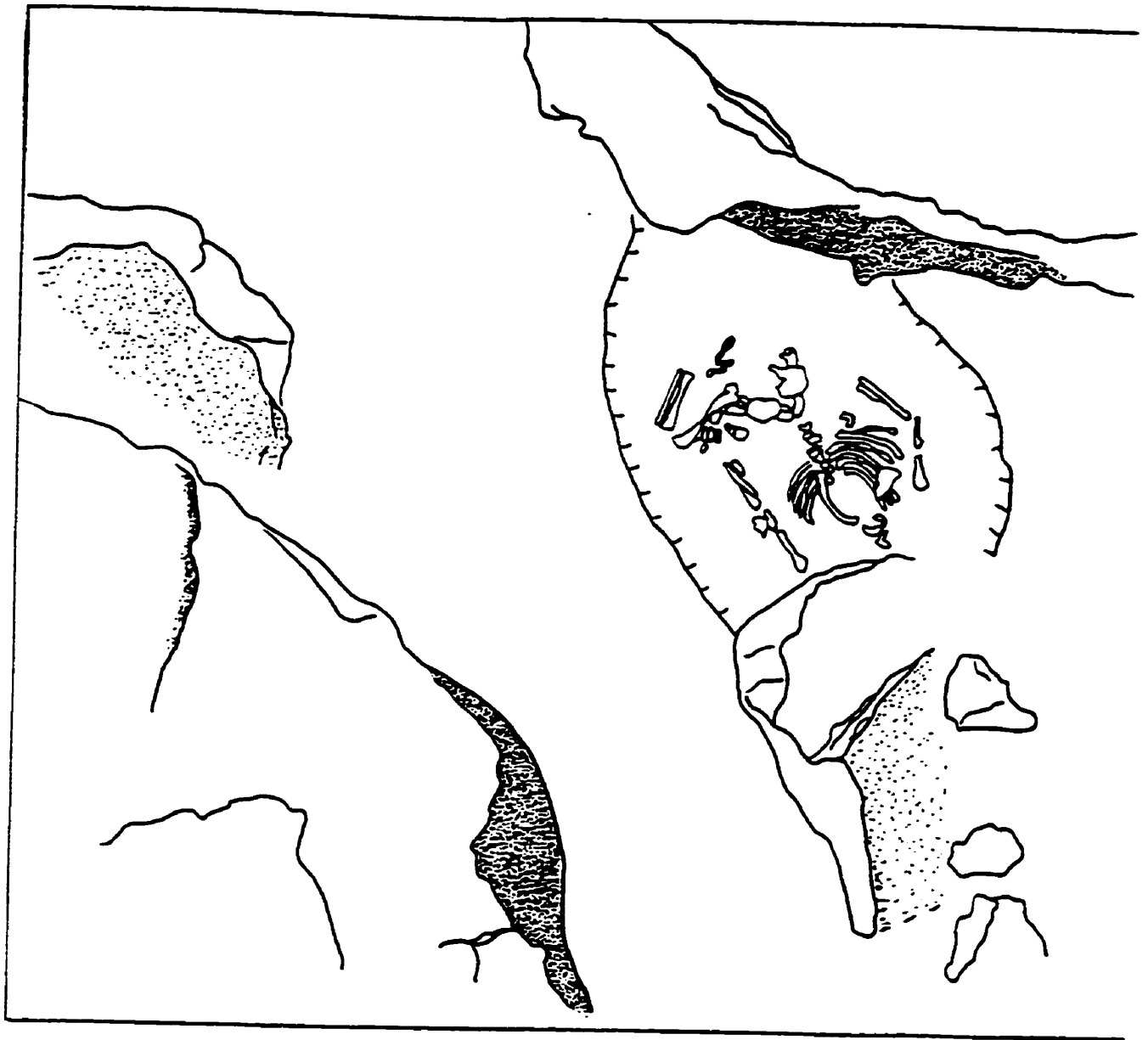
*Fig. 19: Map of Unit 8, A.U. K. (from Ferguson 1998)*

added. Burials 98-3 and 98-4 were encountered in the northwest portion of the unit, located very close to each other. Burial 98-3 was a cist burial with a flexed adult, prone and head to the northwest. *Jute* shell, ceramic and lithic artifacts, were found in association with this burial. Burial 98-4 contained the flexed remains of an adult, supine and head to the south-east. There was a ceramic cache located in the south-west maizeer of this burial. Burial 98-5 contained the flexed remains of an adult, supine, with the head to the east. Burial 98-6 (Fig. 20) was demarcated with a number of rocks aligned north-south. This burial was a simple pit with the remains of a flexed infant, prone head to the south-east. Associated artifacts included quartz crystal, *jute* shell, sherds, faunal bones, and a chert blade located between the legs of this individual (Ferguson 1999).

Unit 9 was located east of Unit 1 and north of Unit 2 from the previous 1997 field season. As with Unit 8, Unit 9 was established as a salvage operation due to the increase in looting activity. It was anticipated that human bone would be found in the disturbed matrix. Human bone was found throughout the layers leading to Burial 98-1. Burial 98-1 contained the extended remains of an older adult, prone and with the head to the west. There were no associated grave goods. However, chert flakes were collected from above the individual (Ferguson 1999).

The human remains from the Histo Chamber of Handprint Cave were collected from the surface, as well as from a very large pile of back dirt near the rear of the chamber during the 1997 field season. The preservation of the remains from this area was poor, and they were very damp. This may have been because the matrix is composed primarily of bat guano from numerous vampire bats occupying the cave. Numerous fragments, including cranial and vertebral fragments, as well as long bone





**Fig. 20: Map of Burial 98-6 (from Ferguson 1998)**

fragments were encountered. A right pubic symphysis of a very young adult, approximately 20 years of age based on the symphyseal surface, was luckily retrieved. There is also evidence for the presence of a child interred here. Unfortunately, there were no complete bones from the Histo Chamber, unlike the Burial Alcove.

In total, the MNI from the Burial Alcove is thirteen, of which six were from discrete burials. The individuals include a fetus and a newborn, a child, three juveniles, and seven adults. The MNI from the Histo Chamber is two, one child and one juvenile.

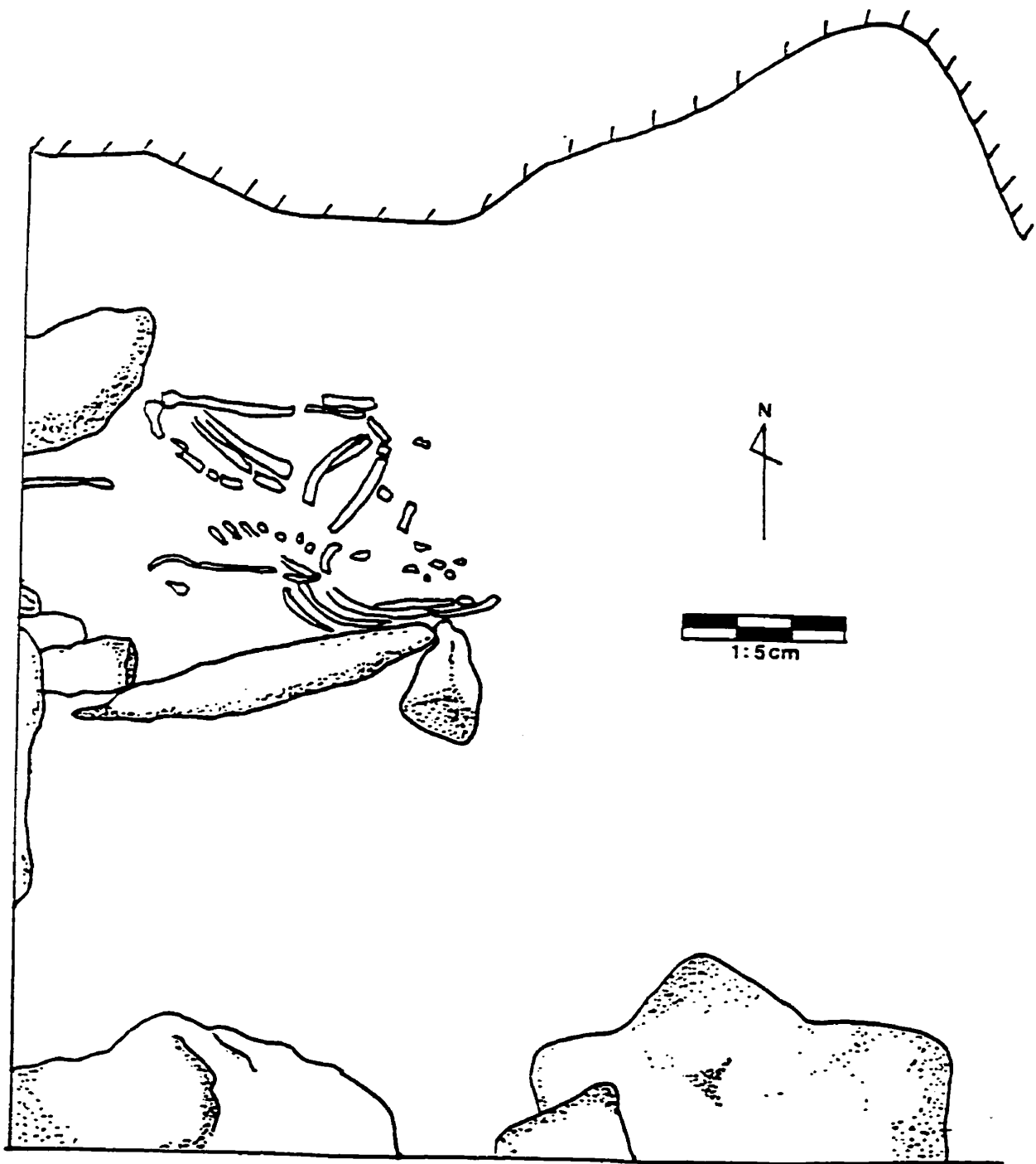
*Burial 1* (UK-BA-Burial 1) contained the fragmented remains of an adult male in a flexed position, lying on the right side with the head to the east, but facing north. Based on traits from the sacrum, mandible, cranium and femur it is suggested this individual was male. The sacrum is rectangular shaped and narrow, and the body-to-alae proportions are 1/4-1/2-1/4. The mandibular gonial angle is flared with a large ascending ramus. The mastoid process is also large and the zygomatic arch extends over the external auditory meatus. The femur head diameter is 44.54 mm, which falls within the range for males (Bass 1987: Table 38). The stature, based on the radius (232 mm) and the ulna (250 mm) is 163.3 cm +/-4 cm, also within the range for males (Marquez and del Angel 1997:56; Saul and Saul 1997: Table 3.10). The only observable female trait is the ischio-pubic index (103.87%), which well exceeds the index for white and Negro females (Bass 1987:193).

The age of this male is approximately 40 years. This estimate is based on the lateral-anterior external cranial vault closures indicating a medium age of 45, with a range of 27-54 years. Some sutures, however, are still open in areas. The intact auricular surface suggests a younger age range of 20-35 years (Lovejoy et al. 1985, Meindl and

Lovejoy 1989:165 from Buikstra and Ubelaker 1994: Fig 10). The dentition, however, shows heavy attrition suggesting an older age. An age of 40 years is estimated because it is within the two ranges provided from the auricular surface and the suture closures. Interestingly, there are linear bands on the left maxillary incisor and the right canine indicating enamel hypoplasia.

*Burial 2* (UK-98-1) (Fig. 21) contained the extended prone remains of an older adult, possibly female, from a simple crypt. The remains are in a primary interment. However, the lower portion of the skeleton is missing due to looter disturbance. Most of the cranium is present, although it is very fragmented. The mandibular corpus is missing, as well as the anterior portion of the alveolus of the maxilla. From the available data, this individual may have been female, based solely on qualitative cranial traits and general observations. The gonial angle of the mandible is not flared nor pronounced, but is rather smooth and rounded. The bones appeared to be generally gracile. It is suggested this individual was of an older age due to the deterioration and reabsorption of bone on two cervical vertebrae and the mandible, possibly indicating diseases of older age.

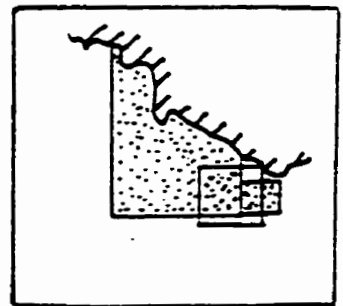
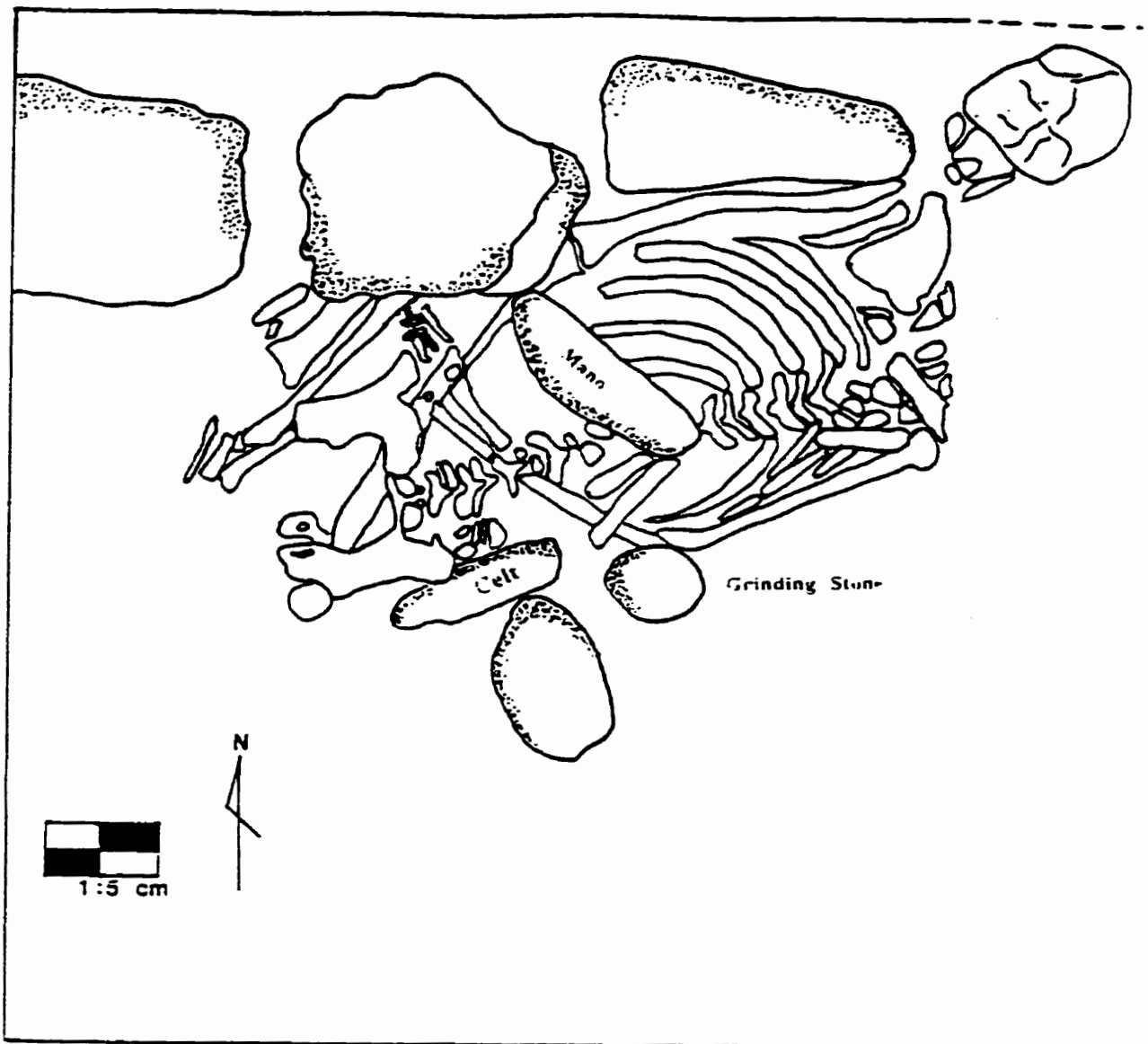
It is suggested that this individual may have suffered from osteoporosis. This is most evident from the two cervical vertebrae in which the bodies are compressed. There is also medium to heavy osteophytic lipping on the other thoracic vertebral bodies with some porosity. The mandible, which consists of the ascending ramus extending slightly into the corpus, seems to exhibit a mandible with a very low corpus, possibly as a result of periodontal disease. This is also supported by the absence of the mandibular molars. The right mandibular condyle also exhibit arthritis, as it is smaller than the left side and



**Fig. 21: Map of Burial 98-1 (from Ferguson 1998)**

has a ridge, or lipping. All of these examples of deterioration suggest an older age for this individual. In addition to the above mentioned potential diseases, this individual also suffered from severe porotic hyperostosis, as a probable result of an iron deficiency, very common among the ancient Maya. In particular, the parietal bones exhibit ecto-cranial activity resulting in severe pitting endo-cranially, as well as a loss of cortical bone ecto-cranially. There are a number of root caries present in the maxillary and mandibular incisors and canines. There is also extensive wear on all of the teeth with 2 mandibular incisors and 1 canine root present due to the wearing down of the crown. Hence, it appears as though this possible female lived a long life while suffering from anemia, arthritis, dental diseases and osteoporosis.

*Burial 3* (UK-98-2) (Fig. 22) was a partial crypt containing the flexed remains of a probable young adult female in the prone position with the hands at the pelvis. More than fifty percent of the bones have been recovered. However, they are very fragmented. Unfortunately, all but the left acetabulum of the pelvis is missing. The sex of this individual is based primarily on qualitative traits and two osteometric traits. Only the minimum and maximum mid-shaft diameter of the humerus could be taken which was used with the diaphyseal formula after France 1983 (from Bass 1987:154). The result yielded 1.52, just above the cutoff of 1.477, indicating a male. However, the diameter of the acetabulum (48.52 mm) can be considered to be small in size and, therefore, also indicating a female. There are also a number of qualitative traits taken from the left side which indicate a female. The orbits are large, the supra-orbital margin is thin and sharp, the zygomatic process ends before the auditory meatus, the glabellar region is rather flat, the mastoid process is small, narrow and rather pointed, and the gonial angle

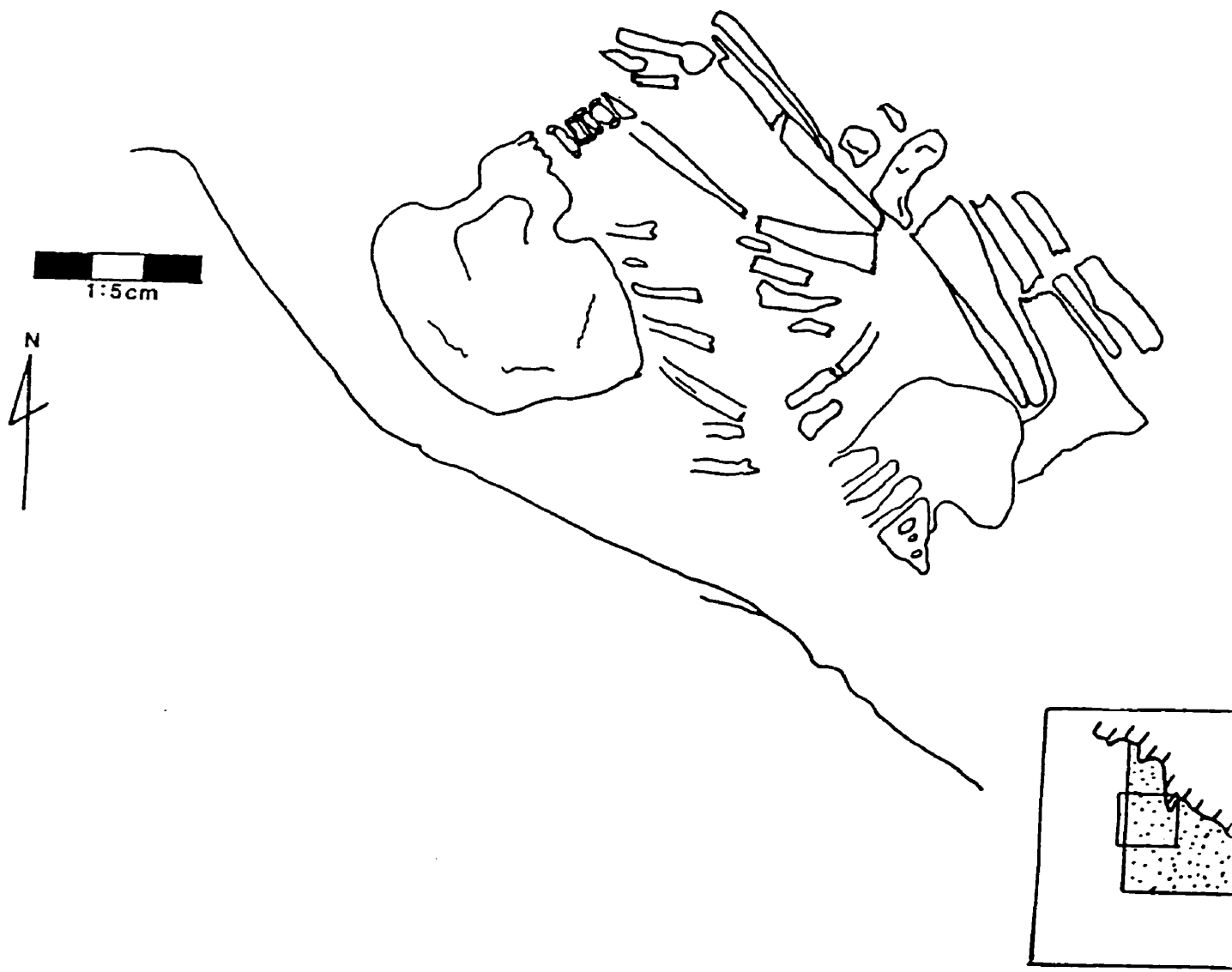


**Fig. 22: Map of Burial 98-2 (from Ferguson 1998)**

of the mandible is rather obtuse, round and smooth.

The age of this presumed female is suggested to be in the range of a young adult, based on the dentition. Unfortunately, the cranium is completely fragmented making any comments on the suture closure impossible. There are no signs of arthritis nor any evidence for porotic hyperostosis or cribra orbitalia, often attributed to anemia. In the maxilla the right M<sup>3</sup> has erupted and the left side probably did erupt but has been lost anti-mortem, however the left and right M<sub>3</sub> in the mandible have not erupted. This indicates that the individual was around 20 years of age, unless the two mandibular M<sub>3</sub> were never to erupt, in which case the individual could be somewhat older. The state of the dentition was rather poor with evidence for periodontal disease around the left maxilla, possibly the result of an abscess. There were a number of caries on many of the teeth on both the root and the occlusal surface, as well as calculus on some of the molars and a mandibular incisor. Attrition on the mandibular and maxillary incisors and canines was observed as heavy. Enamel hypoplasia on a number of the maxillary incisors, canines and the left first molar can be seen as indications of earlier developmental stress.

*Burial 4* (UK-98-3) (Fig. 23) is a cist burial containing the tightly flexed remains of an older juvenile (approximately 20 years of age) whose sex is indeterminate. *In situ* the head appeared to be bent backwards. However, upon examination of the bones, the second to fourth cervical vertebrae were still articulated and positioned in such a way as to suggest the individual's head was bent tightly forward. Preservation was fair but there were no complete bones.



**Fig. 23: Map of Burial 98-3 (from Ferguson 1998)**



The sex of this individual was examined using qualitative traits from the cranium and quantitative traits from the long bones . The orbital margin is blunt with a thick superior edge, the zygomatic process extends past the auditory meatus, the mastoid process is large and broad, the temporal and nuchal lines and the external occipital protuberance are strong and well developed. On the mandible, the mental eminence is square and the gonial angle is rectangular and flared with a marked tuberosity. All of these traits indicate this individual was probably a male. although some of the osteometrics indicate this could have been a female.

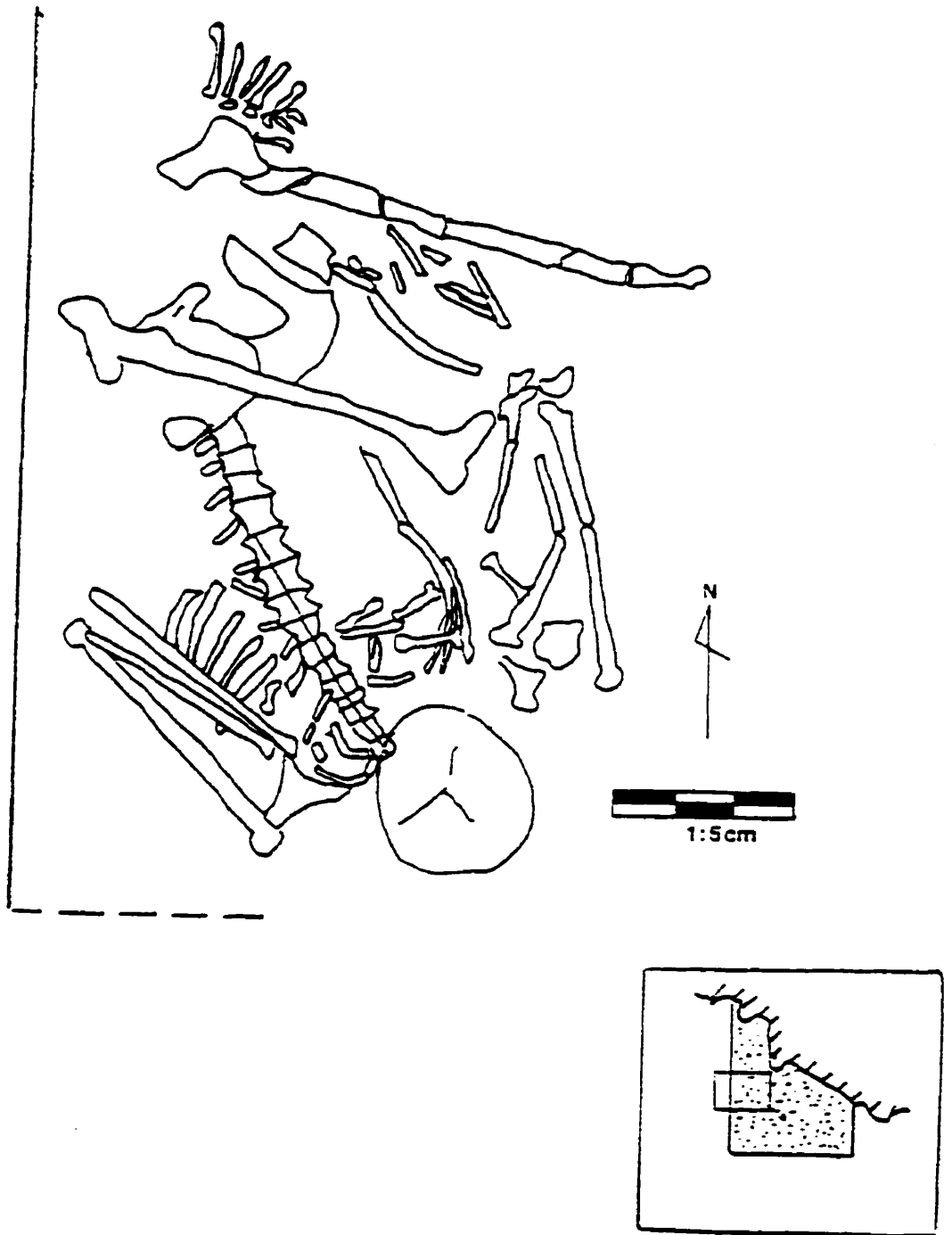
The diaphyseal variable of the humerus resulted in a value higher than the cut off in two formulas indicating a male (based on the Pecos Pueblo ( $1.772 > 1.477$ ) and the Arikara ( $1.756 > 1.48$ ) (France 1983, 1985 from Bass 1987:154-155)) On the other hand the maximum femoral length of 37.3 cm falls in the range for females (Marquez and del Angel 1997:56, 58). The stature of this individual, when using Genoves' (1967:76) formula for Mesoamerican females is 146.3 cm; when using the formula for males the stature is 150.7 cm. Both formulas provide a stature which falls within the range for Mesoamerican females during the Classic Period (Marquez and del Angel 1997:57, 58; Saul and Saul 1997:49).

Due to the assumed juvenile age of this individual (Acsadi & Nemeskeri 1970; Schwartz 1995:193-94) the sex can be ruled as indeterminable. This could be due to the fact that the femur has not reached its maximum length, thereby effecting the individual's stature. The fact that this individual has qualitative male traits could indicate this was a male who had not finished growing.

All four third molars have not erupted and show no signs of doing so, thereby

placing this individual under the age of 20 years, if not younger (Schwartz 1995:192-193; Ubelaker 1978: Fig 62), unless they were never to erupt. The humeral head has not completely fused, and fusion begins around 20 years of age and ends at roughly 25 years of age (Schwartz 1995:197). The distal epiphysis of the ulna has not completely fused. However, fusion has begun, placing this individual between 21 and 25 years of age (Schwartz 1995:197). The left clavicle is missing the sternal epiphysis, where fusion usually begins at 21-22 (Schwartz 1995:197). The marginal epiphyseal rings of the body on the lumbar, thoracic and cervical vertebrae that are present have not completely fused, and in some cases are missing. Fusion is usually complete between the ages of 20 and 25 years (Schwartz 1995:197). The iliac crest has not completely fused either. In some areas the metaphyseal line is very evident, while in others this epiphysis is simply not attached, but was still collected, putting this individual between 16 and 25 years of age from the beginning, and to the completion, of fusion (Schwartz 1995:197).

Although this individual was rather young it appears he (or she) was afflicted by a number of diseases. On the body of one of the cervical vertebrae was a large pit with rounded edges possibly indicating the presence of osteomyelitis. There is also evidence for iron deficiency with the presence of cribra orbitalia in the left orbit (the right orbit is missing) and porotic hyperostosis on both parietal near the apex, on the left parietal near lambda, and on the frontal bone at bregma. There are large endocranial pits and the internal wall is very thin. There is also a small depression on the right side of the frontal bone just above the orbit.

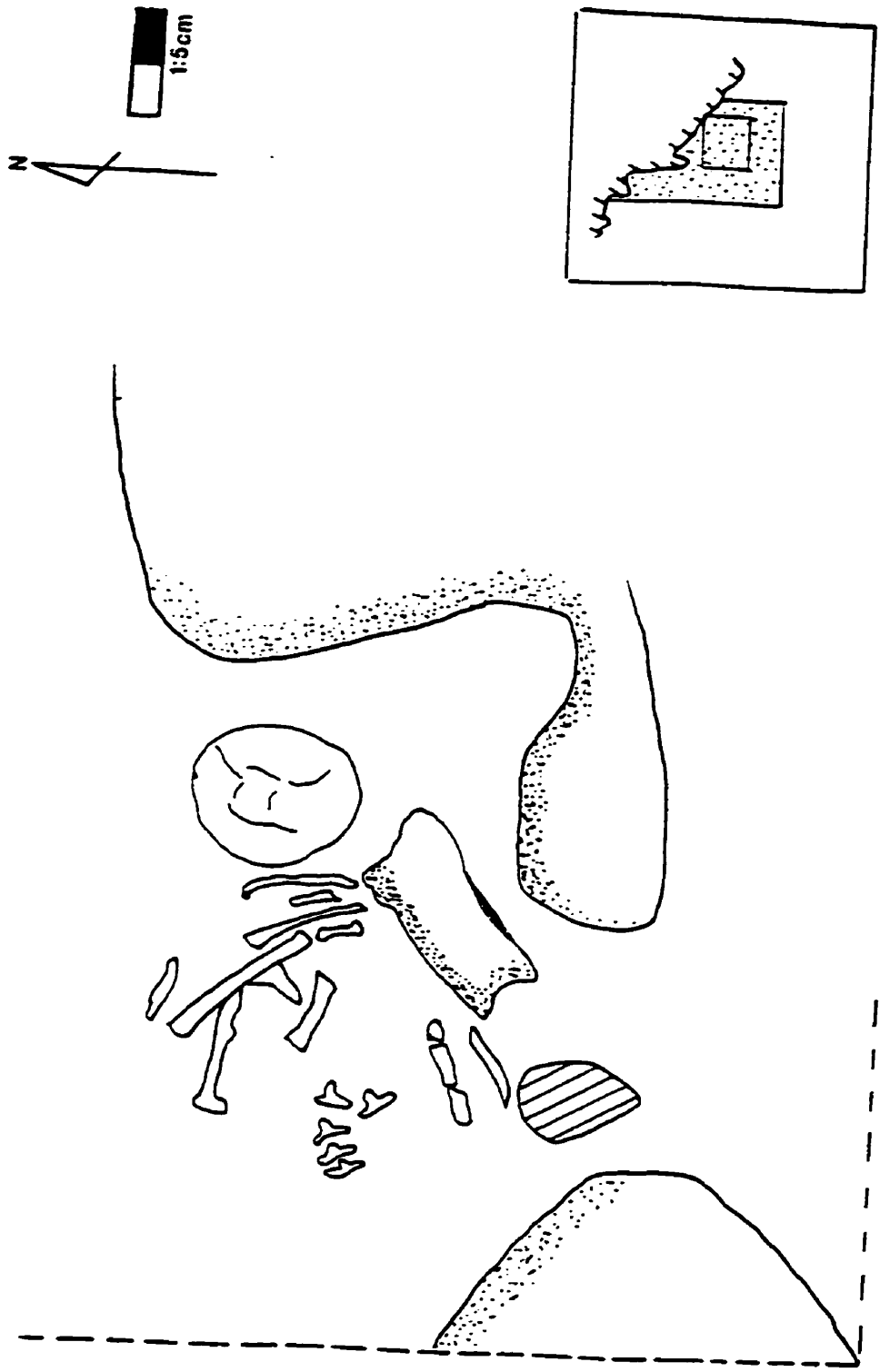


**Fig. 24: Map of Burial 98-4 (from Ferguson 1998)**

*Burial 5 (UK-98-4)* (Fig. 24) was a cist grave with the remains of a flexed older juvenile in a supine position with the head to the south and facing the east. The cranium, arms, right leg and lower left leg were very fragmented. The pelvis and trunk were in reasonably good condition.

The sex of this individual is indeterminate due primarily to the fact that this was a juvenile and that few traits were available for sexing. From the pelvis the ilium was present but provided ambiguous results. There was no preauricular sulcus present and the sciatic notch rated an ambiguous three from The Standards (1994:18) recording system for this trait. The iliac crest was S-shaped indicating a female trait. The cranium provided some important sex traits that were distinguishable. The glabellar region was rather flat, the orbital margin was sharp and moderately thin, there was no supraorbital ridge, however the nuchal lines and external occipital protuberance were present, but not strong. Based on these traits one could propose that this individual was female, but this would only be very tentative.

As mentioned the age of this individual is thought to be that of an older juvenile, or young adult, based on the charts from Schwartz (1995:197). The dentition was missing altogether so the epiphyseal fusion was examined. The left clavicle was missing the sternal epiphysis, which usually begins to fuse between 21 and 22 years of age, however the acromial epiphysis had fused, which occurs around 20 years of age. The distal epiphysis of the ulna is fused, but not completely, putting the age between 21 and 25 years. The superior and inferior epiphyseal rings of the centrum have not fully fused in the thoracic vertebrae, however they have in the cervical, putting the age between 20 and 25 years. The ischial tuberosity has not completely fused and the metaphysis is still



*Fig. 25: Map of Burial 98-5 (from Ferguson 1998)*

exposed in areas possibly indicating fusion had just begun, placing the age range between 16-17 (fusion begins) and 23-25 years (fusion is complete). The iliac crest epiphysis is missing, and does not appear to have even commenced fusion, giving an age range closer to 16 to 17 years when fusion should begin. The anterior superior iliac spine has joined but is not completely fused giving an age range of 17 to 23 or 25 year. From the small fragment of the pubic symphysis present the epiphysis has not completely fused and was missing in areas, as with the ischial tuberosity, giving it an age range of 20 to 29 years from the pre-epiphyseal stage (Meindl et al. 1985). The auricular surface provides an age range of 20 to 24 years. consistent with that given above (Lovejoy et al. 1985). Hence this individual is suggested to have been in the early 20's, perhaps 21 years of age.

*Burial 6* (UK-98-5) (Fig. 25) was a cist grave with the flexed remains of an adult, whose body was in a prone position with the head to the east, face down. Preservation was very poor with the pelvis and lower limbs missing and the cranium and ribs very fragmented. The sex of this individual is not known, while the age is estimated to be of middle to old age due to the extent of periodontal disease. Unfortunately, this is all that can be determined about this individual.

All of the burials were at a depth of approximately 70 cm and were all interred under a plaster floor which was interrupted (cut through) for each burial (Ferguson 1999). It appears there was a pattern to the burials and it is suggested they may have been interred within a short period of time, or a few generations (Ferguson 1990). It was discerned from the four excavation units placed in the Burial Alcove that all of the available space in the ground was taken up by burials. Each grave seemed to have been demarcated in one way or another (ie. outlined by rocks or the cave wall) (see Table 3).

**Table 3 - Skeletal Information from Aktun Uayazba Kab**

<u>BURIAL</u>	<u>GRAVE</u>	<u>AGE</u>	<u>SEX</u>	<u>ORIENTATION</u>	<u>POSITION</u>	<u>DIRECTION</u>	<u>GRAVE GOODS</u>
UK-BA-Burial 1	pit	40yrs	♂	prone	flexed	east	jute, chert flakes, pyrite, quartz, slate
98-1	crypt	adult	♀	prone	extended	west	none - chert flakes above burial
98-2	crypt	20yrs	♀	prone	flexed	north-east	jute, 2 manos, ground stone, basalt
98-3	cyst	sub-a	-	prone	flexed	north-west	jute, lithic, ceramic
98-4	cyst	20yrs	♀	supine	flexed	south-east	ceramic cache
98-5	pit	mid-a	-	supine	flexed	east	NA
98-6	pit	infant	-	prone	flexed	south-east	jute, quartz, chert blade between legs

It also appears as though the remains were positioned to follow the contours of the cave, thus maximizing the available space (Ferguson 1999).

From the loose, fragmented remains not directly associated with the above mentioned six burials, the following information has been obtained. The 6<sup>th</sup> adult individual (excluding the burial individuals) comprises a large number of fragments, especially cranial fragments. The bones include the shafts of a humerus, tibia and two femora (left and right), a number of phalanges, numerous cranial fragments, some vertebral fragments, and a number of teeth, which have a high degree of attrition. The mandibular gonial angle (and condyle) were also retrieved and exhibit some male traits. The gonial angle is large and pronounced with a marked tuberosity, and the angle is just above 90°.

The second juvenile, which is believed to be not older than 14 years of age, is comprised of 2 phalanges lacking the proximal epiphysis, while the distal epiphysis has

not fully fused, but is attached (Schwartz 1995: Table 7-6). The identification of a child is based on the loose dentition retrieved during the screening of the back-dirt. The following permanent teeth, at various stages of development, were identified: RI<sup>1</sup>, M<sub>1</sub>, RC<sup>2</sup>, RM<sub>1</sub>, which all indicate that there was a 4-5 year old child interred. The incidence of a newborn is indicated by the presence of a very small ilium fragment, 4 long bones (2 of which measure 33.5 and 35.8 mm in length), and 2 mandibular fragments.

The human remains from the Histo Chamber were collected from the surface, as well as from a large pile of back dirt near the back of the chamber (to the south). As previously mentioned a number of small fragments, including cranial and vertebral fragments, as well as long bone fragments were retrieved. Fortunately, the right pubic symphysis of an older juvenile, approximately 20 years of age based on the symphyseal surface, was salvaged, as well as a right talus, a scapula fragment (of the acromial process), and the distal end of a right tibia. There is also evidence for a child having been interred in this bat-ridden chamber. based on 2 young metatarsals, 5 phalanges and a right calcaneus.



### ***Skeletal and Dental Modification***

*Cranial modification* was commonly practised among the ancient Maya (Stewart 1975). It has been noted that although Landa (1978:52) identified only one form of modification, referred to as fronto-occipital (or anterior-posterior), there have actually been numerous other forms of modification 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 3 individuals from *Muknal* appear to be what is referred to as tabular oblique form. This form has also been identified by Tourtellot (1990) at Seibal, Massey (1989) at Colha, White (personal communication, 2000) at Lamanai, Haviland (1985) at Tikal and by Stewart (1975) at Dzibilchaltun, which they classified as pseudocircular. Blom (1954:131) also reported this tabular oblique form in Moxviquil Cave in Chiapas, Mexico. Stewart (1975:224) stated that for the Maya there are both temporal and spacial differences in the distribution of this intentional cranial modification. In particular he (Stewart 1975:224) noted that the appearance of tabular oblique modification occurs primarily during Late Classic and Postclassic times at certain Lowland sites. A common assumption has been that cranial modification was more likely practised by the Maya 'upper class', if not the elite (Coe 1959:138; Haviland 1971 in Chase and Chase 1992:6), however, there has been no evidence to support this claim.

*Dental Modification*, which includes filing and drilling with inlays, was commonly practised by the ancient Maya, and found at such sites as Altar de Sacrificios, Uaxactun, Piedras Negras, Tikal, San Jose, Holmul, Barton Ramie, Altun Ha, Lamanai, Zubin, Cahal Pech, Colha and Baking Pot (Coe 1959; Haviland 1985; H. Helmuth, personal communication, 1999; Massey 1989; Saul and Saul 1989; Schwake 1995; Smith

1972:228; C. White, personal communication 2000). The practise of filing began during the Middle Preclassic, and continued until at least the time of contact, when it was documented by Landa (Smith 1972:229). In contrast, dental inlaying first appeared during the Early Classic period and then apparently ceased to appear around the beginning of the Early Postclassic (Smith 1972:229).

The type of dental modification found on samples discussed in this thesis is categorized as surface modification involving filing (Buikstra and Ubelaker 1994:58; Ortner and 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) and Massey (1989) noted that dental 'decoration' was found among both females and males at Altar de Sacrificios and Colha, respectively. They argued that there was no preference for one sex over another. This can be confirmed by the dental remains from Altun Ha (H. Helmuth, personal communication).

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; Schwake 1995; Smith 1972:231; Thompson 1975: xxxiii), while filing may have been practised among all groups (Smith 1972). Perhaps it was used to delineate different groups, whether they be genetically or culturally defined.

## ***Summary***

As mentioned earlier, *Aktun Tunichil Muknal* and *Aktun Uayazba Kab* are two very different caves which have only recently been explored. The remains of individuals encountered within *Muknal* were located deep within the cave, and for the most part laid on the surface, presumably in pools of water, or in depressions believed to accumulate water. The remains of the individuals from *Aktun Uayazba Kab* are located just to the side of the Main Entrance. It should be noted that during the morning there is enough sunlight shining into Entrance 1 that no extra light is needed. However, in the afternoon, headlamps and flashlights are required as the alcove becomes rather dark. Hence, this alcove is not concealed deep within the cave, unlike the Burial Chamber in *Aktun Tunichil Muknal*. In addition, the individuals in *Uayazba Kab* were all buried under the cave floor and were accompanied by a large number of grave goods or offerings, such as shell, obsidian, quartz crystal, pyrite, slate, ceramic and lithic material. These artifacts are in direct association with the individuals, unlike the individuals in *Muknal*, who do not appear to have any artifacts association with them.

## **Chapter 7 Discussion**

This thesis has discussed ancient Maya burial customs, cosmology, the role of caves, and the occurrence of human remains within caves, and specifically examined evidence from two caves in Belize. It is hoped that such introductions to this aspect of life among the ancient Maya has 'set the stage' for an attempt to understand why the Maya were placing individuals within caves. It has been shown that the cave held great importance for the Maya and was often a site of numerous ceremonies. But how do such ceremonies relate to the remains of individuals found within these caves?

Ricketson (1925) noted early on that caves were not used as common burial places by the Maya, or many more human remains would be located within caves. He also did not support the suggestion of cannibalism as proposed by his predecessors (Mercer 1975; Thompson 1897). In 1934, Butler also questioned the occurrence of human remains in caves by discussing the idea of Nagualism. However, she dismissed this notion and suggested instead the possibility of ancestor veneration among the ancient Maya.

It has been noted that the Maya did not seem to segregate themselves from their dead. But for some reason there were a select few that were chosen to begin their journey to the afterlife removed from their communities within a cave. It is suggested that both males and females, adults and subadults, were placed in caves, with the sole purpose to ensure the success of the Maya people living in the present and their future descendants. This success can be seen as a necessity, such as ensuring a bountiful crop with adequate rains: or it can be viewed symbolically and socially, such as guaranteeing the success of the lineage and securing claim to specific lands, or caves.

Such guarantees could have been secured in ways that were particular to each

request. Chosen individuals could have been buried within a 'lineage' cave. Conversely, individuals could have been sacrificed within a cave as offerings to the deities or ancestors of the Underworld. Burying an individual destined to become an ancestor might have ensured the claim to a particular area (cave, land, or water source). Or, such individuals may have been shamans who had a strong religious link with the cave. It might have been a place where many ceremonies were conducted by such individuals, linking the shaman and her/his lineage to a particular cave. The sacrifice of an individual (by the above mentioned shamans) in a cave may have been dedicated to the deities of the Underworld or the earth, such as the rain god or maize god. This could have been conducted as part of a fertility rite, or to give thanks to the gods. The burial of potential ancestors could be viewed as a political manoeuvre, while sacrifices were a religious act, both vying for success.

### ***Burials***

Death has been explained as a 'rite of passage' by numerous individuals (van Gennep 1960, Turner 1992). There is a cognitive, or social, liminal stage that must be passed before one can become an ancestor. There is also a physical liminal stage that must be passed before entering the Maya Underworld. Such a physical stage separates the sacred from the secular, in this case the Underworld and all of its deities from the secular world and the living. According to Leach (1976:33-36), such a liminal place in the landscape should be considered sacred. Thus, it seems obvious that the place where these two liminalities take place is the cave.

One of the many great archaeological elements of *Aktun Uayazba Kab* is the negative handprints located inside of the cave. Such features have been suggested

elsewhere to represent the universal occurrence and completion of 'rites of passage' (Owens and Heyden 1997). Owens and Heyden (1997) have proposed that footprints and handprints in caves from Upper Palaeolithic Europe were evidence for 'rites of passage' for adolescents of elite into secret societies. Could it have been that the handprints found within *Uayazba Kab* were the 'signatures' of those individuals within the physical and cognitive liminal stage? Rites believed to have been associated with Maya caves were related to social incorporation. Such rites might have included baptisms, passage to adulthood, and sociopolitical ceremonies, as well as those rites involving curing or exorcism ceremonies (Bassie-Sweet 1991:77; Heyden 1975). It is suggested here that the handprints in *Aktun Uayazba Kab* may have been made by individuals on the verge of becoming shamans or communicators with the deities within the cave. These individuals would have then been returned to the cave upon their death.

The Maya cave was not merely a container or space in which events occurred; it was a point in the landscape of extreme sacredness which could and did structure activities around it. Such a sacred place was also a spatial context in which burials occurred. Due to the importance of this landmark it is suggested that not just anyone would be buried here. Such individuals, whether they be infants, juveniles, men or women, would have been perhaps of ascribed status within the community.

According to McAnany (1995:50), the ancient Maya continued to live with their ancestors, whether in residential or ritual contexts. They kept their ancestors within the community through their burial customs. Thus, the Maya kept an open line of communication with their ancestors who were often called upon to act as intermediaries for the people and the gods (Welsh 1988). In her otherwise excellent and broad

discussion on ancestors, McAnany (1995) avoids one sacred place as a context for the burial of ancestors, the cave. While she notes that caves are the link between “the living and the ‘other’ world of forebears (McAnany 1995:50)”, she considers such a place too far removed from the residential structures to function as a mausoleum for ancestors. However, the work that Brady (1997) has done at Dos Pilas, suggests that at each Maya site there must be a cave, whether artificial or natural. The cave does not have to be ‘too far removed’, but could actually be within site boundaries. Using geomancy we can turn back to McAnany and propose that the cave is a vital focal point of Maya settlement and should be considered as a context for the burial of ancestors.

There is a Pan-Mesoamerican belief that lineages came from their own specific caves. This ideology suggests that all souls that enter the cave en route to the Underworld are in a sense returning to the cave from which they were born (Bassie-Sweet 1991:81). If lineages came from particular caves, and if ancestors are the intermediaries between the profane existence and the sacred, then burying ancestors within a cave would seem to be an appropriate practice. Just as there was a lineage of scribes, whose residence and burial site is thought to be the “House of the Bacabs” at Copan (McAnany 1995: 26), could there not have been a lineage of priests whose shrine was a particular cave?

McAnany (1995:18) discusses the idea of “establishing a sacred geography that links “territorial places to ancestral time” according to the Huarochiri manuscript (Quechua manuscript documenting non-Christian practices) which states that the mummified ancestors were kept in caves or special stone structures. It is disappointing that such a parallel was not drawn with the Maya. If lineages believed they came from caves (Bassie-Sweet 1991:81) then this idea of ‘establishing a sacred geography’ could be

applied to the Maya and caves.

The example used to support this view is *Aktun Uayazba Kab*. It is directly across the river and 300 metres to the east of the surface site, *Cahal Witz Na*, and 700 metres to the south of *Aktun Tunichil Muknal*. During the time of occupation, from the Formative through the Classic Periods, it is believed that each cave would have been clearly visible and accessible from the surface site.

*Aktun Uayazba Kab*, in particular, would have appeared as though the mountain was watching the community. The cave actually appears to represent a face or skull peering out over the river valley. Perhaps to the ancient Maya it represented the ancestors, or the rain god (who lives in the mountain), watching over them.

The human remains at *Aktun Uayazba Kab* were recovered from two main locations, the Burial Alcove and the Histo Chamber. Unfortunately, very little can be commented on for the Histo Chamber as no excavations have been conducted there. Surface collecting and screening of a looter backdirt pile resulted in some fragmented and poorly preserved bone material, representing at least two individuals, a child and an adult. The remains collected from the surface were the result of looter activity and not from the ancient Maya leaving them on the surface, as seen in *Aktun Tunichil Muknal*. It is assumed that these remains may reflect similar activities to the Burial Alcove.

A number of grave goods were recovered from the seven burials. The associated grave goods included obsidian blades, slate, pyrite, lithic flakes and bifaces, crystal quartzite, jadeite, *oliva* tinklers and a plethora of *jute* shell. The pyrite and quartz crystal may have been part of a slate-backed mosaic or mirror, which were believed to have been used by shamans in order to communicate with the gods. There is ethnographic



information which describes crystals being used by shamans during healing ceremonies and fortune-telling (Bower 1998:57). Vogt (1969:304) discusses how shamans are “seers” who communicate with the gods and can see into their world. Crystals are believed to give a deity the power to speak to the shamans, and presumably vice versa (Vogt 1969:304).

Obsidian blades were commonly used in blood-letting rituals which would have been conducted by the rulers, their wives, and priests. The inclusion of such blades in the burial could indicate religious and ritual significance (Welsh 1988:103). Their presence could also indicate that the deceased practised auto-sacrifice. If so, such an individual may have been a ruler (Welsh 1988:167), or priest. The shell beads, or tinklers, and jadeite pieces are commonly viewed as indicators of social and political status. The combination of these three items lend credence to the religious and social status of these individuals, who may have served as religious figures in the community.

Snails, or shell, are thought to have symbolized death for the ancient Maya (MacLeod and Puleston 1977:74). The numerous jute (*Pachychilus* sp.) shell could be symbolizing the individuals' journey to the Underworld. Conversely, the presence of this abundance of shell could have also been the result of ritual feasting (Healy et al. 1990; Stanchly and Iannone 1996). The shells may have been placed in with the deceased following the feasting, or, they were given to the deceased for her/his journey.

Thus, it is suggested that the adults and possibly the sub-adults buried in *Aktun Uayazba Kab* were part of a lineage group who had special ties with the cave. Such a group may have been comprised of shamans who not only could trace ties to the cave, but who ritually had a special link with the cave. Perhaps they were the individuals who

conducted the ceremonies within the cave, and were the ones who communicated with the ancestors and deities.

Context is very important to consider when dealing with burials. One question that must be asked is: What is the boundary of cave graves (Hodder 1986:5)? It is suggested that the whole cave is a grave and can metaphorically be viewed as a tomb, or sepulchre, just as a funerary pyramidal structure. This can shed light on the community's feelings towards the deceased.

The comparison of contexts can be drawn between the mountain and cave and the temple pyramid. Vogt (1969:402), using ethnographic analogy, has attempted to link the past and the present by referring to the 'funerary-and-temple pyramids' of the Classic Maya as "lineage mountains" and making these analogous to the natural mountains, or features, which are venerated by the contemporary *Tzotzil* (McAnany 1995:26).

It is known that the Maya believed the cave (which is in a mountain) to be the entrance to the Underworld, and is the place where a number of deities reside. Rulers were usually interred within temple-pyramids, which were not only a visual reminder of the ruler but reaffirmed their importance. It is also believed that ancestors, or important lineage heads, male or female of various social (or economic) groups, were interred in residential or ritual shrines. Ancestor shrines were used to reaffirm importance in the community, or ties to agricultural land (McAnany 1995:51). This visual representation seems important. As previously described, *Aktun Uayazba Kab* would have peered out over the valley and its inhabitants and been a formidable image of all the ancient Maya connected to it.

## *Offerings*

The Maya believed they were created so that the gods could be nourished through their sacrifice (Schele and Miller 1986). Sacrificial victims have been identified at both surface and cave sites, indicating this was not an isolated event (Awe et al. 1997a; Becker 1988, 1992; Brady 1986, 1988; Gibbs 1997, 1998a, b, 1999; Massey 1989; Massey and Steele 1997; Smith 1954, 1972; Thompson 1975: xxvii; Webster 1997; Welsh 1988). Sacrifices from surface sites are often categorized as such when found in certain contexts. However, as previously discussed, there is no general consensus as to whether such features are burials or offerings. The premise of this thesis holds that such occurrences should be defined as offerings.

Offerings in caves have long been noted by colonialists and anthropologists. The Yucatan inquisition of the sixteenth century was started due to the discovery of the continuation of cave rituals that had been forbidden by the Church (Bassie-Sweet 1991:77; Tozzer 1941:76). Even today the Maya make pilgrimages to their caves for various ritual ceremonies (Bassie-Sweet 1991). As mentioned in previous chapters, the Maya believed that the rain, thunder and maize gods live in caves, and that such elements were actually created in caves (Bassie-Sweet 1991; Redfield and Villa Rojas 1934; Thompson 1971; Vogt 1969).

Landa reported that the Maya would sacrifice victims and throw them into cenotes. For instance, during times of drought Landa noted that the Maya made sacrifices at the Cenote of Sacrifice at Chichen Itza (Tozzer 1941:180). Tozzer (1957: 200) suggests that pleas for rain and predictions of future crops are reasons for such sacrifices. If the rain god and the maize god both reside in caves and mountains, then it would seem

reasonable for offerings to have been made there.

There is ample evidence in ancient Maya art and iconography which indicates that the Maya conducted such sacrifices as offering to the gods. The practice of heart removal is depicted on Stela 11 and 14 from Piedras Negras (Schele 1984:8). Robicsek and Hales (1984) also provide scenes of heart excision and comment on the knowledge and precision the priests must have had. There are also a number of scenes which depict the decapitation of prisoners. Perhaps the most vivid are from the murals from Structure 1 at Bonampak. The captives are depicted at a trial of sorts which involves the torture, decapitation, and hurling of captives down the terraces to their deaths (Miller 1986; Schele 1984; Welsh 1988b). There is also a scene of self-decapitation from a painted dish, now housed at the Museo Popul Vuh, Guatemala (Reents-Budet and MacLeod 1997: Fig 28b).

The remains of sacrificial victims have been retrieved from ball court alleys (Ferguson et al. 1996), under or directly in front of stelae, altars, temple stairs and in foundations (Healy 1990; Massey 1989; Massey and Steele 1997; Welsh 1988:170). Welsh (1988: 170) terms such offerings as “dedicatory cache burials”, because they most likely had a votive connotation but contained human remains. While it is agreed that these were votive offerings, this thesis considers them caches because of their intent, regardless of whether they included complete or partial remains.

It is proposed that caves may have been another type of context for the placement of offerings, including human remains. But why would the ancient Maya have been placing offerings deep within caves, as opposed to placing them in the places previously mentioned? It has been noted by Landa that during times of famine when the Maya “were

reduced to eating the bark of trees” they made a pilgrimage to the Cenote of Sacrifice to worship in order to make it rain (Tozzer 1941:180).

Perhaps their situation was so desperate that they had to resort to appealing to the gods themselves, as opposed to going through their ancestors as normally done. Ancestors were usually called upon to act as the mediators between those living and the lords, or deities (Welsh 1988). Such dialogues, which would have included offerings and rituals, might have taken place at the ancestor shrines or funerary pyramids.

Sacrifices can be inferred from any skeletal mutilation, burial location, and the context and placement of the remains (Welsh 1988a:167). While it is next to impossible to determine cause of death from the skeletal remains, which are often in poor fragmentary condition, there are some instances when it can be implied. In cases where only a cranium and the first few cervical vertebrae are identified, when a skeleton minus the cranium and cervical vertebrae are encountered, or when cut marks are present on the vertebrae, decapitation may be implied. If preservation is good, one can look for cut marks on the left side of the rib cage which may suggest the individual had her/his heart cut out (Robicsek and Hales 1984).

When such skeletal information is not available, a sacrifice can sometimes be implied from the context (Brady and Stone 1986; Welsh 1988). Sacrificial intent can be implied from four reported customs (Welsh 1988b). The first case would involve more than one individual, especially if the accompanying individuals are infants or children. Among the Yucatan Maya, Landa observed that upon the death of both parents, orphans, the children of slaves or deceased male relatives and slave women, were sacrificed (Tozzer 1941:117; Welsh 1988:168). It has also been noted that “children of

concubines....were vulnerable upon the death of the head and could be chosen as the object of human sacrifice” (McAnany 1996:55). There is also a painted scene from a plate which depicts an infant being offered in a plate with an incision in the chest suggesting it had its heart removed (Reents-Budet and MacLeod 1997: Fig 58).

The circumstances surrounding the infant burials from *Aktun Uayazba Kab* can be suggested to have been sacrificial victims accompanying the adult individuals who are thought to have been religious figures or members of a lineage tied to the cave. The chert blade that was recovered from between the legs of the infant could have been the implement used for its sacrifice.

The second sacrifice custom involves the sacrifice of slaves upon the death of their masters (Welsh 1988b). It is also suggested that this custom may have been practised on the sub-adult and young adults from the Burial Alcove at *Aktun Uayazba Kab*. While these individuals may have indeed been members of the proposed lineage, or young shamans, it is also possible they simply served as accompaniments to the adults. However, if we are to consider the grave goods that accompanied each burial it is found that only one adult had any grave goods, while artifacts for the other two were lacking. It is also interesting to point out that the two twenty year olds and the sub-adult had grave goods including a mano, a ceramic cache, and other lithic artifacts.

The third custom involves the sacrificial individual as caches. It is proposed that such was the case for the individuals from *Aktun Tunichil Muknal*. *Aktun Tunichil Muknal* has 15 individuals of which seven are infants. Five of the six infants are in places which are periodically covered with water. In this respect they resemble those infants found in Petroglyph Cave. The remains of the infants from both caves are found in

crevices or niches, or in travertine pools of standing water (Gibbs 1997, 1998b; Reents-Budet and MacLeod 1997). In such cases the remains are in secluded areas or removed from the presumed 'pathways' within the caves.

There is ample evidence of infant remains in caves in the Maya area, some of which include *Naj Tunich*, *Aktun Tunichil Muknal*, *Aktun Uayazba Kab*, Petroglyph Cave, Eduardo Quiroz, and *Aktun Petz* (see Brady 1989; Brady and Stone 1986; Gibbs 1997, 1998a,b; Healy et al. 1996; Pendergast 1971; Reents 1980; Reents-Budet and MacLeod 1997). Not only do all of these caves have infant remains, but there seems to have been a similar treatment of the infants. The context suggests something other than simply the burial of a deceased child. There is a general lack of associated grave goods. The remains are "haphazard" in nature and were found lying on the surface in small niches. In some cases it appears as though the crania had been smashed, although this could have been the result of the taphonomic processes.

What has been interpreted from the infant remains from a number of caves in the Maya area is that they were offerings, presumably to the lords of the Underworld. Such an offering is very symbolic. Infants represented all that was *zuhuy*, or "pure". They were obviously of flesh and blood, which was believed to have been sustenance for the gods. The small size of the children and infants relates them to the rain dwarfs (Becker 1992:190). Just as at *Cha-chac* ceremonies, the cries of children could have been used to summon rain as the Maya believed that the chirping tree frog attracted rain.

If we consider that infants represented such concepts, then the argument can be presented that the infants were sacrificed during ceremonies dedicated to the rain god, *Chac*. The Maya believed that only objects that were *zuhuy* could be offered to their

deities. In addition, those objects that were small may also have been considered to be proper offerings (Redfield 1941:121; Thompson 1970:184, 1975:xx). Thompson (1975:xx) adds that “the same idea probably lies behind the sacrifice of children, particularly to the rain god,” which is known to have been conducted by the Maya (Brady 1989:361; Brady and Stone 1986; Hooton 1940; Robicsek and Hales 1984:56; Scholes and Roys 1938:611; Thompson 1970:184, 1975: xxvii; Tozzer 1941). He 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” (Thompson 1975: xxiii).

There is ethnographic evidence that during *Cha-chac* ceremonies, children are used to chirp like frogs so as to entice the rains to come. Before the rainfall frogs and toads begin to chirp, the winds pick up and thunder looms in the distance. It is this sympathetic magic that is the basis for the *Cha-chac* ceremonies (Bassie-Sweet 1991:82). Perhaps this chirping evolved out of sacrificing infants whose cries may have mimicked frogs.

The seven adults from the Burial Chamber in *Aktun Tunichil Muknal* are believed to have served a similar purpose as the infants. They were all offerings or ‘food’ for the gods, most notably the rain god.

There is a long list of individuals who attest to the Maya sacrificing individuals, most notably to the rain god, *Chac*. Landa (Tozzer 1941) described sacrifices at the Cenote of Sacrifice at Chichen Itza. Such sacrifices have been depicted in ancient Maya art, most notably on their ceramic vessels, relief carvings, murals and codices. This idea of sacrifice may also be supported by the presence of the two carved stelae in Aktun



Tunichil Muknal, which are thought to represent two blood-letters, a string-ray spine and an obsidian blood-letter (Awe et al. 1996). This not only suggests that auto-sacrifice may have taken place within this cave, which Landa notes was a ritual to honour the ancestors (Tozzer 1941:113-114), but it suggests that individuals may have been sacrificed in the caves. Such rituals conducted in the cave may have been fertility rituals.

In such cases the Maya, perhaps, were by-passing their ancestors, who would normally have been interveners between the Maya and their gods (Welsh 1988). Instead, through cave rituals, the Maya were going directly to the gods themselves and doing so on sacred space. The deities they were most likely communicating with would have been *Chac*, their rain god, or their maize god.

There are suggestions from the Stela Chamber in *Aktun Tunichil Muknal* that bloodletting rituals were being conducted, as well as sacrifices (which most likely took place in the Main Chamber), as depicted from the Pabellon Moulded-carved vessel (Helmke 1998). The Main Chamber has fourteen individuals, from infant to adult, male and female, all seemingly placed in areas with water activity. The infants show evidence of trauma to the cranium which has also been reported at other caves such as *Naj Tunich* in Guatemala (Brady and Stone 1986) and Eduardo Quiroz Cave in Belize (Pendergast 1971). As Brady and Stone (1986:22) noted for *Naj Tunich*, “the grave goods and the haphazard nature” of one of the graves led them to believe that the child discovered was a sacrificial victim. The artifacts do not appear to be directly associated with the individuals, hence they would not have been grave goods given to the deceased for her/his journey to the Underworld. In another instance Brady (1989:362) mentions an adult from *Naj Tunich* that he believes to have been a sacrificial victim. He based this on the nature of the burial,

which lacked “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” (Brady 1989:362) Thus, Brady (1989:362) suggests that this individual was probably a sacrificial victim rather than a “deliberate interment”. This description matches the conditions for all of the individuals identified in *Tunichil Muknal*.

Rituals were clearly being conducted in *Aktun Tunichil Muknal* (Awe et al. 1997a, 1997b) and this, too, further supports the idea that these fourteen individuals in the cave were sacrificial victims. All were found laying on the surface, presumably laid down in water. Pohl and Pohl (1983:32) support this by stating that priests would have laid babies in pools of water in caves as part of an offering to the rain god.

If we are to consider that the rituals being conducted inside *Muknal* were directed toward *Chac* and associated with agricultural fertility, then the fourteen individuals, especially the young individuals, more likely represent offerings rather than burials. The individuals were, therefore, akin to other ritual offerings such as ceramic vessels, which were also ritually killed.

Such "symbolic behaviour is an essential aspect of religious ceremony and would be expected in a sacrifice" (Massey and Steele 1997:76). The archaeological, osteological and historical evidence combined strengthen the proposal that the Maya were sacrificing children within this physical and conceptual liminal stage. In addition, the same assemblage of evidence supports the supposition that adults were also sacrificed in such liminal places.

So far, there does not seem to be any discernable pattern of ritual behaviour from the physical and cultural morphology of the caves. For instance, there are caves with

artwork, but no burials or offerings. Not all 'burials' are located in the entrance, or light areas of the cave, but the locale of the skeletons, or part thereof, seems to vary from cave to cave. One day there may emerge some regional patterns, but it appears to be more specific than that. Perhaps each lineage conducted its own ceremonies in the way that suited them. Subadults and adults, and males and females, seem to occur with about the same frequency. There are a few instances where the number of adults far out weighs the number of juveniles (see Cactus Cave, Belize (Walters and Weller 1990); *Gruta de Xcan* (Marquez de Gonzalez et al. 1982) and Cave 1 of Cenote *X-Coton* (Smith 1953) in Mexico). What is apparent, from research already conducted, is that the number of individuals on the 'surface' is far greater than those buried, suggesting that the Maya were not using caves simply as actual burial sites, or necropolises. Instead, the surface deposits point to a type of offering as part of a ceremony conducted within a very sacred place.

### ***Summary***

In order to guarantee their success, the Maya needed to keep the lines of communication open with the deities, needed to pay homage to their gods through offerings and rituals, and they needed to recognize their ancestors, and lineage histories. It has been suggested that this was done through two ways. One was to offer human sacrifices to the deities during rituals in their honour. It is believed that the setting for such rituals may often have been in a cave. The second way of securing their success was to *bury* ancestors in places with which they were linked. The historical, ethnological, archaeological and osteological evidence, when combined, points to caves as such a place. Indeed, caves may have been sacred and used by lineages of shamans who, while living, had used such locales as places for ritual and worship.

## **Chapter 8 Conclusion**

This thesis attempts to contribute to a better understanding of the ancient Maya, especially regarding their placement of deceased individuals within caves, and who these individuals may have been. This topic has not been thoroughly investigated until now, and this is the first comprehensive treatment of the historic, ethnographic, archaeological and osteological evidence that deals with Maya cave usage.

A series of conclusions were reached from this thesis. The ancient Maya employed certain caves, at certain times, as repositories for human remains and locales for ritual activity. Based on previous cave studies with evidence of ancient Maya activity, and on personal investigations of two recently discovered caves in Western Belize (*Aktun Tunichil Muknal* and *Aktun Uayazba Kab*), some of the human remains appear to be the result of human sacrificial rites. Ethnohistoric and modern ethnographic accounts suggest caves were (and still are) closely associated with the rain gods of the Maya. As such, early cave use, and sacrifices, were likely associated with these deities and part of some form of fertility rituals.

While the remains of sacrificial victims seem to have been simply deposited on the floor of alcoves or even in pools of water, the remains of others were actually buried in prepared subterranean graves within the confines of the cave. An interpretation regarding the burials found within caves is that the human remains may have belonged to religious leaders, or shamans, who during their lives had been closely affiliated with these caves and who, upon death, were ritually deposited in them. A corollary to this is the notion that lineage groups associated with such leaders held special rights, privileges, and access to these caves. All of these findings reinforce the well-known view that caves held a special

place in the ancient Maya worldview, and that they were sacred, ritually-charged venues.

*Chapter 1* touched on the region that was being studied, the taphonomic problems that can be encountered when analysing human remains within caves, the theoretical discourse that surrounds such a discussion and the methodology employed.

*Chapter 2* was a brief introduction to ancient Maya cosmology looking at various sources of information. Not only were the artifacts, iconography and epigraphy of the ancient Maya used, but also the Popul Vuh and historical documents from the early Spanish chroniclers, as well as ethnographic research from modern Maya linguistic groups. It was an attempt to show how caves have had importance for the Maya throughout their history, as well as to provide evidence for the practice of human sacrifice within some caves.

*Chapter 3* discussed the burial customs of the ancient Maya. This chapter illustrated how Maya mortuary practices have been viewed by archaeologists. It indicated that there has been little or no discussion in the literature about the role of human remains that occur in caves. It was noted that some researchers have placed caves into grave typologies when, in fact, caves are not a type of grave but are a spatial context in which graves and caches can, and do, occur

*Chapter 4* provided a review of the many proposed uses for caves by the ancient Maya. The cave uses were classified as either utilitarian or ritual. It was agreed that the cave itself was not likely viewed strictly in functional terms, but that it also had a sacred and symbolic role within Maya life. From the information gathered in Chapter 3, it is possible to understand why the Maya would have wanted to enter and explore caves in the first place. For many Maya the cave was believed to have been the place from which life

grew, and where life, in a sense, ended. It is also the home to many deities important in Maya life. Perhaps for the shamans, priests, or rulers, entering a cave was like transcending death. They went on a journey to the Underworld to meet and appeal to the gods. Such individuals did not have to physically die to do so, and they would emerge at the end of this experience. Just as members of Western culture have questions for the Christian God which are perceived as unanswerable until the afterlife, the same could have been true for the Maya, except for those who had a way of accessing their gods during life through a cave.

*Chapter 5* discussed a number and variety of caves with human remains that have been identified within the Southern Maya lowlands. It was an attempt to look for patterns that could be used to support the two case studies, *Aktun Tunichil Muknal* and *Aktun Uayazba Kab*.

*Chapter 6* provided a description and discussion of two previously little known caves investigated along the Roaring River Valley in Western Belize (*Aktun Tunichil Muknal* and *Aktun Uayazba Kab*). Not only were the contextual and artifactual remains briefly discussed, but the human remains were thoroughly analysed in order to understand better who these individuals may have been. Whenever possible, information on age, sex, health, and cause of death were noted.

*Chapter 7* was an attempt to draw all of this information together. It was postulated that the remains from *Aktun Tunichil Muknal* were those of sacrificial victims who were left as offerings to *Chac* as part of a fertility ritual. The burials from *Aktun Uayazba Kab* were suggested to have been the buried remains of those individuals who had a lineage tie with the cave, perhaps being a shaman lineage, or individuals who had

possibly performed rituals within the cave.

It is recognized that this is a very large topic which could lead to a number of other research avenues. The purpose of this thesis is to draw attention to the fact that the ancient Maya were placing individuals in a variety of graves and caches within caves. Through such analysis more information can be discerned regarding how the ancient Maya themselves perceived the caves, as well as the activities that took place within them.

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## Appendices

### *Sex Estimates from Aktun Tunichil Muknal*

#### *Individual #1 - Male*

##### Cranium

zygomatic arch	appears heavy and thick, with muscle markings inferiorly ( $\sigma$ )
zygomatic process	extends above the auditory meatus ( $\sigma$ )
orbits	square, with thick superior margins ( $\sigma$ )
nasal bones	large and rather protrusive ( $\sigma$ )
alveolar margin	impressions of roots are marked ( $\sigma$ )

##### Long Bones

clavicle length	148 mm = ?
femur - bicondylar width	80 mm ( $\sigma$ )

#### *Individual #2 - Male*

##### Pelvis

lumbo-sacral articular facet	alae appear small - 1/4 each (27.4 mm) of the entire surface, while the facet is 1/2 (52.8 mm) ( $\sigma$ )
sacroiliac articular facet	extends into the 3 <sup>rd</sup> segment ( $\sigma$ )
sacral shape	rectangular ( $\sigma$ )
sacral curvature	appears as though it would be intrusive ( $\sigma$ )
sacral index	112.1% ( $\varphi$ )

##### Cranium

zygoma	surface is higher and thicker with the tubercle and marginal process marked ( $\sigma$ )
zygomatic arch	appears to be thin, but moderately marked inferiorly with a tubercle ( $\sigma$ )
zygomatic process	extends above the auditory meatus ( $\sigma$ )
palate	vaulted and appears broad ( $\sigma$ )
mastoid process	large, broader and stubbier ( $\sigma$ )
nuchal lines and external occipital protuberance	marked, but weak and rather smooth ( $\varphi$ )
occipital condyles	large ( $\sigma$ )
occipital bun	present ??

*Individual #3 - Male*

Pelvis

ischio-pubic ramus	flat anterior surface, broad (♂)
sub-pubic angle	narrow, 'V'-shaped (♂)
subpubic concavity	missing (♂)

Cranium

zygomatic arch	extends above the auditory meatus (♂)
orbits	thick superior edge, and squarish (♂)
mastoid process	large, robust and rugged (♂)
occipital protuberance	strong, well developed (♂)

*Individual #9 - Female*

Pelvis

subpublic angle	appeared to be obtuse and wide (♀)
ischio-pubic ramus	narrow (♀)

Long Bones

femur	noticeably small (♀)
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*Individual #10 - Male ?*

Cranium

mental eminence	very prominent, square (♂)
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*Individual #13 - Female ?*

Pelvis

subpubic angle	appears wide, but difficult to tell (♀)
sacral shape	broad and triangular (♀)
sacral curvature	less pronounced and less intrusive (♀)

Cranium

zygomatic arch	appears large and thick (♂)
facial skeleton	wide (♂)
mandible	very large ramus (♂)

Long bones

L humerus - size	277 mm = small (♀)
L femur - size	342 mm = small (♀)
R femur - size	317 mm = small (♀)
stature	149 cm = small (♀)

### ***Age Estimates from Aktun Tunichil Muknal***

*Individual #1:* The sagittal suture has been obliterated. The coronal suture is fused, with complete obliteration in the area around the temporal line. Due to this finding one can postulate that since “fully fused sutures are typically found in older adults (Krogman and Iscan 1986 In Standards:36)”, this individual was of an older age, perhaps above 40 years of age.

*Individual #2:* The lambdoidal suture and the squamosal suture are not fully fused, they would rate between a 1 (minimal closure score) and 2 (significant suture closure), which indicates “advanced but not complete closure stages” which “are characteristic of middle adults”, which has a range of 35 to 49 years of age (Standards:36). This individual also appears to have had severe periodontal disease.

*Individual #3:* From the pubic symphysis an age of approximately 30 years has been estimated based on Todd’s stages, of which this individual was found to be between the 5<sup>th</sup> (27-30 (26-27 as amended by Brooks (1955) (Schwartz:200) and 6<sup>th</sup> (30-35 (27-34)) phase. The right auricular surface shows signs of lipping and appears to match Lovejoy’s stage 6, which indicates a probable age of 45-49 years. There is major arthritic lipping on the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> lumbar vertebrae, as well as on the promontory of the sacrum, which could support the age of over 30 for this individual. There also appears to be some arthritic lipping on the medial condyle of the tibia.

*Individuals #4,5 & 6:* Outside of this little alcove was a humerus, a mandibular M1 as well as some cranial fragments. The humerus measures 111 mm in length, which indicates an age range of 1.5 to 2.5 based on Johnston’s subadult age estimates from Indian Knoll. The 1<sup>st</sup> permanent mandibular molar best resembles that of a 2 year old, or

slightly older. These two items fall within the range for the remains of three infants represented in the alcove. It is probable that these remains belong to one of the three.

*Individual #8:* Due to the extreme build-up of calcium carbonate on the bones of this individual, the size, although exaggerated, does indicate this individual was an adult. Whether he or she was a younger or older adult it is not known.

*Individual #9:* This individual was in very poor condition, and made aging rather difficult. However, there were a few key traits available. The pubic symphysis indicated a mid-adult or older. The surface was smooth and matched Todd's (1920) 8<sup>th</sup> stage of 29-44, or as revised by Meindl et al. (1985), 40-44 years of age. The arthritic lipping of the thoracic and lumbar vertebrae also indicate a middle to older aged adult.

*Individual #10:* Based on the dentition this child was approximately 7 years of age at death. The mandibular dentition shows the I<sub>2</sub> and M<sub>1</sub> have erupted, with the roots still developing, and the M<sub>2</sub> germ with almost no root development and not erupted. The maxillary dentition shows I<sup>1</sup> impacted and coming into I<sup>2</sup>, but it is just beginning to erupt, and M<sup>2</sup> is also impacted and coming into M<sup>1</sup>. These teeth show similar development to the mandibular dentition, hence suggesting an age of 7 years. The long bone lengths, however, support a younger estimate. Based on Johnston's (1962: Table 2) age estimates for femora from the Indian Knoll sample, the 217.5 mm long femur falls in the range of 4.5 to 5.5 years old. From Ubelaker's (1978: Fig 81) chart of Arikara, Indian Knoll and Late Woodland subadult femoral lengths, this child falls within the range of just over 4.25 to 6.5 years of age. From the iliac breadth of 82 mm this child falls within the range of 4 to 5.5 years old in Ubelaker's chart of Arikara and Indian Knoll subadults. In combination with the dentition and osteometrics this child was between 6 and 7 years of age at death.

*Individual #11:* From the length of the complete long bones an approximate age of 1 year has been obtained. Using Johnston's (1962: Table 2) table on age estimation for the femur from the Indian Knoll skeletal sample, the length of 111 mm falls within the range of 0.5 to 1.5 years of age. This is substantiated by Ubelaker's (1978: fig 81) chart with subadult Arikara and Indian Knoll femora measurements. The radial length (68mm) supports a younger age range with the sample from Ubelaker (1978: fig 79) pointing to under 1 year (6 months), while Johnston's data supports a range from new born to 6 months and 6 months to 18 months. The dentition also suggests a similar age range of 9 months to 1 year. The left side of the mandible was available for analysis with some of the dentition still *in situ*. The canine is near the surface, however, it has very little to no root development. The 1<sup>st</sup> and 2<sup>nd</sup> molars have no roots. The incisors have very small roots. The permanent incisor germs are present, but are very small and seem to foretell they may have been impacted upon eruption. It is suggested that this infant was approximately 12 to 15 months old at death.

*Individual #12:* This individual is similar to Individual #8 in that it is heavily encrusted with calcium carbonate. However, it appears that the distal epiphysis of the femur (the only bone that could be positively identified through the encrustation) is absent, and might indicate that this individual was a teenager since this epiphysis begins to fuse around the age of 15 years (Schwartz 1995: Table 7-6).

*Individual #13:* While this individual is also encrusted in calcium carbonate it is fairly easy to flake off. As a result, the distal end of the right femur is visible and reveals the incomplete fusion of this distal epiphysis. Total fusion usually occurs between the ages of 20 and 23 years. Thus, it is suggested that this individual was in their late teens, or

very early 20s when they died.

*Individual #14:* The only long bone visible is a humerus with a length of 111 mm indicating an age range of 1.5 - 2.5 years old based on Ubelaker (1978:70) and Bass (1987:149).

### ***Aktun Tunichil Muknal Osteometrics<sup>1</sup>***

#### *Individual #1*

R orbital height	35.57 mm
R orbital width	42 mm
orbital index (35.57*100/42)	84.69 % (mesoconchy)
bi-orbital breadth	98 mm
minimum bi-orbital breadth	27 mm
nasal breadth	25.55 mm
nasal height	49.5 mm
nasal index (25.55*100/49.5)	51.6 % (mesorrhiny)
least nasal breadth	12 mm
dacryon breadth	26 mm
minimum frontal breadth	96.5 mm
bizygomatic breadth	125 mm (suspect)
jugofrontal index (96.5*100/125)	77.2 %
frontal chord	113 mm
frontal arc	121 mm
frontal index (113/121*100)	93.38 %
glabella to bregma	107 mm
alveolare to glabella	86 mm
alveolare to bregma	180 mm
upper facial height	64 mm
upper facial index (64 *100/125)	51.2 % (meseny)
width of maxilla (alveolus)	62.2 mm
width of RI' (occlusal surface)	9.19 mm

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<sup>1</sup> Individuals 8 and 12 could not be measured due to the extreme build-up of calcium carbonate on the bones.

*Individual #2*

## Cranial

palatal length	47 mm
palatal breadth	40.2 mm
palatal index (40.2*100/47)	85.5 % (brachystaphyline)
maxilloalveolar length	65.3 mm
maxilloalveolar breadth	57.3 mm
maxilloalveolar index (57.3*100/65.3)	87.7 %
bi-pterion breadth	109 mm
bi-asterionic breadth	127 mm
bimastiod process breadth	117 mm
foramen magnum length	32.8 mm
foramen magnum breadth	29 mm
foramen magnum index (29*100/32.8)	88.4% (megasemic)
basion to prosthion	100 mm
opisthocranium to basion	106.5 mm
opisthocranium to alveolare	195 mm
occipital arc	94 mm
occipital chord	109 mm
occipital index (94*100/109)	86.2 %

## Postcranial

sacrum - breadth of vertebral facet	52.8 mm
sacrum - breadth of L ala	27.4
sacral length	97 mm
sacral breadth	108.8 mm
sacral index (108.8*100/97)	112.1% (♀)
L Tibia - maximum length	328 mm
L fibula	340 mm
L talus - length	50 mm
L talus - breadth	43 mm



*Individual #3*

ulna - least circumference	490 mm
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*Individual #2 or 3*

R. tibia - maximum length	337 mm
fibula	336.5 mm
STATURE	160 cm

*Individuals #4, 5 & 6*

femur (?)	107 mm
femur (?)	124.5 mm
femur (?)	107 mm
humerus (?)	119 mm
femur (located just outside of the alcove)	111 mm
unidentified long bone - length	95 mm
STATURE (based on the three femur lengths)	68 cm; 70.5 cm; 79 cm

*Individual #7*

humerus	80 mm
L tibia	80 mm
L. femur	97.5 mm
STATURE	62 cm

*Individual #9*

clavicle - maximum length	89 mm
clavicle - maximum breadth	10 mm
radius - proximal width	19 mm
phalynx - length	27 mm
phalynx - midshaft diameter	8 mm
thoracic vertebra - maximum breadth	60 mm
thoracic vertebra - maximum length	61 mm
thoracic vertebra - centrum breadth	26 mm

*Individual #10*

## Cranial

bigonial breadth	81 mm
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## Postcranial

L clavicle - length	83.5 mm
iliac breadth	82 mm
R. femur - length	217.5 mm
STATURE	117.5 cm

*Individual # 11*

R femur length	111 mm
R radial length	68 mm
R ulna length	78.5 mm
R iliac breadth	4.5 (?)
STATURE	70.5 cm

*Individual # 13*

L humerus - length	277 mm
L humeral head diameter	41 mm
L ulna - length	216 mm
L radius - length	190 mm
R humerus - length	244 mm
R ulna - length	213 mm
R radius - length	209 mm
L femur - length	342 mm
L fibula - length	302 mm
R femur - length	317 mm
R tibia - length	305 mm
R fibula - length	283 mm
sacral length	85 mm
R metatarsal - length	57 mm
STATURE	138 to 154.9 cm (mean 148.65 cm)

*Individual #14*

humerus	111 mm
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***Aktun Uayazba Kab Osteometrics<sup>2</sup>***  
*Burial 1 (UK-97-1)*

**Cranial**

mandible: min ramus breadth	38.49 mm
mandible: max ramus breadth	50.72 mm
mandible: max ramus height	65.35 mm

**Post-cranial**

L. radius	230 mm
L. radius: ant-post diameter at midshaft	14.3 mm
L. radius: med-lat dia. at midshaft	11.92 mm
L radial head diameter	21.6 mm
R. radius	232 mm
R. radius: ant-post diameter at midshaft	12.7 mm
R. radius: med-lat dia. at midshaft	11.6 mm
R. radial head diameter	21.8 mm
R. ulna	250 mm
femur head diameter	44.54 mm
sacrum: anterior length	85.77 mm
sacrum: max. transverse diameter at base	50.02 mm
os coxae height	182.5 mm
iliac breadth	138 mm
pubic length	80.18 mm
ischial length	77.19 mm
ischio-pubic index	103.87%
STATURE (radius and ulna)	163 cm

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<sup>2</sup>

There is no osteometric data available for Burials 2 and 6 due to the lack of any measurable bone fragments.

*Burial 3 (UK-98-2)*

Post-cranial

L. humerus: max diameter at midshaft	19.72 mm
L. humerus: min diameter at midshaft	13.1 mm
L humerus: circumference at midshaft	55 mm
acetabulum diameter	48.52 mm

*Burial 4 (UK-98-3)*

Post-cranial

L. humerus: max diameter at midshaft	19.32 mm
L. humerus: min diameter at midshaft	13.72
L humerus: circumference at midshaft	50 mm
L. ulna: physiological length	207.72 mm
L. ulna: least circumference at midshaft	30 mm
R. ulna: least circumference at midshaft	33 mm
L femur: max length	373 mm
L. femur: ant-post diameter at midshaft	23.15 mm
L. femur: med-lat diameter at midshaft	22.95 mm
L. femur: circumference at midshaft	72 mm
L. femur: max bi-condylar breadth	67.9 mm
L. femur: min bi-condylar breadth	61.63 mm

*Burial 5 (UK-98-4)*

Post-cranial

L. femur: max head diameter	40.56 mm
L. femur: ant-post diameter at midshaft	22.92 mm
L. femur: med-lat diameter at midshaft	24.06 mm

*Adult bones - MNI 2-3(?) (Burial Alcove - Surface Collection)*

Post-cranial

1 humerus: circumference at midshaft	18.38 mm
humerus: ant-post diameter at midshaft	16.05 mm
L. femur: ant-post midshaft diameter	27.07 mm
L. femur: med-lat midshaft diameter	22.35 mm
L. femur: circumference at midshaft	82 mm ♂
2 femur: head diameter	44.1 mm ♂-?
3 R. femur: subtroch ant-post diameter	29.4 mm
R. femur: subtroch med-lat diameter	24.6 mm
R. femur: ant-post midshaft diameter	25.45
R. femur: med-lat midshaft diameter	22.37 mm
R. femur: circumference at midshaft	75 mm ♀
L tibia: ant-post midshaft diameter	29 mm
L. tibia: med-lat midshaft diameter	20 mm
L. tibia: circumference at midshaft	80 mm ♀

*Infant bones - MNI 2*

Post-cranial

1. humerus	33.5 mm
femur	35.8 mm
2. R. ilium: height - (broken, actually larger)	26.6 mm