

ANCIENT MAYA MUSIC: AEROPHONES IN THE ARCHAEOLOGICAL RECORD

THESIS

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ABSTRACT

ANCIENT MAYA MUSIC: AEROPHONES IN THE ARCHAEOLOGICAL RECORD

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This thesis explores the use of the most commonly excavated musical instrument category in ancient Maya contexts: the aerophones. The aerophones, or wind instruments, are one of three categories of musical instruments that make up the prehispanic musical tradition. This thesis provides a background to the subject of ancient Maya music, presents an overview of the sound producing artifact assemblages at four different Maya lowland archeological sites and identifies the existing trends at these sites. I suggest an open-ended typological classification system for ancient Maya ceramic aerophones

and document the types of aerophones present at the sites of Cahal Pech and Blackman Eddy. I also conduct contextual analyses of the ceramic aerophones recovered from Cahal Pech and Blackman Eddy and identify and explore the patterns of use and deposition in order to contribute to the research on the role and significance of aerophones in the musical world of the ancient Maya.

CHAPTER 1

INTRODUCTION

Due to their intangible nature and the lack of written records, the intellectual and aesthetic arts of dance, drama and music are among the least-known aspects of ancient Mesoamerican cultures. Like material art, dance, drama and music can provide key insights into the life and ideology of a culture. Although music is not a new field of study for Mesoamerican anthropologists, it is not as well understood as the many other prehistoric accomplishments that have been unearthed, analyzed and studied from this area. We do know however, through ancient instruments found in archaeological remains and the depictions and portrayals of musical instruments in sculpture, painted vessels and murals, that prehistoric Mesoamericans were a musical people. In fact, from the variety and number of instruments uncovered in excavations at many Maya sites, it can be said that Classic Maya music achieved a noteworthy stage of advancement. Since the ancient Maya recorded no known

musical compositions, studying the surviving instruments is an imperative first step in understanding their musical world. Whether possessing a function of enhancement for funerary and festive experiences or a spiritual experience in itself, music was an essential and valuable component of Maya ceremonial, ritual and social life.

The aerophones, or wind instruments, are one of three categories of musical instruments that make up the prehispanic musical tradition. In his article Music of the Maya, Paul Healy described the instruments found from a pair of elite tombs at the site of Pacbitun, Belize. Among the many excavated instruments at this site were a number of aerophones including a group of five flutes and eight figurine ocarinas in a variety of anthropomorphic and zoomorphic forms, many of which can still be played. Healy considered the figurine ocarinas as "the largest and artistically most interesting group of instruments" (Healy 1988:26,27). One of the figurine ocarinas he described is called the "Fat God" and represents a deity often associated with death in the Maya pantheon. Another ocarina portrays a kneeling woman with an elaborate hat holding the afterlife water lily. Two ocarinas depict male individuals; one kneeling with his hands on his knees wearing a headdress with rabbit and raptorial bird qualities. The

other is smaller and depicts a standing chubby man wearing a long cloak and a headdress. Healy also described a figurine ocarina of a Maya woman wearing a *huipil* and a brimmed tasseled hat with a bird perched on her left arm.

In his thesis, Cameron Hideo Bourg asserted, "Examining the archaeological record of excavated aerophones dictates that the ocarina was the most widely employed instrument among the Maya" (Bourg 2005:46). He also stated "These instruments, in my opinion, are the most essential antiquities to recreating the sound of the ancient Maya" (Bourg 2005:58). However, the exact role and significance of the "ocarina" in the context of Maya music has not been clearly defined. Speculation surrounding this matter has alluded to a variety of explanations, from functioning as children's toys to satisfying the musical needs of the lower classes. Some scholars have hypothesized that whistles and ocarinas were used for individual rituals, providing families with a simple way of producing music for their small-scale rituals, while tubular flutes were elite musical instruments (Hendon 2003). Other scholars have associated musical instruments with funerary rituals and, in particular, infant and child burials (Healy 1988 and Welsh 1988).

Is there contextual support for these interpretations in the Belize Valley? What can we learn about ancient Maya music from these instruments? What can we learn about ancient Maya culture through music? These are the questions that inspired this thesis. However, before they could be explored, I found myself asking less inspiring questions like what exactly is an ocarina? And why am I finding multiple definitions for one instrument name? Standardized classification of ancient Maya ceramic aerophones is lacking in the literature concerning the musical practices of the ancient Maya. The unsystematic use of terms like whistle, ocarina and flute indicates that archaeologists are not in agreement when it comes to their meaning. It is necessary that archaeologists, ethnomusicologists and archaeomusicologists use musical instrument classification terms and concepts correctly and with consistency. Standardized classification of ancient Maya ceramic aerophones would be beneficial to understanding more about the music that permeated many parts of ancient Maya society.

Archaeological discoveries provide evidence that the ancient Maya, like many of the world's ancient cultures, reproduced the natural sounds around them with artificially made ones. Ethnomusicologists call those objects that are

used to make artificial sounds "sound producing devices". This term includes both what are commonly called musical instruments as well as sound producing devices that are unknown or obsolete in modern society (Lund 1981:246). This term is used so that the sound producing devices that are unfamiliar in modern society are not excluded from the corpus of potential musical instruments just because they are not normally seen as such. Therefore the term "sound producing artifacts" has been adopted in this thesis to include any artifact that can produce sound, including artifacts that would not be considered "musical" in modern society.

The archaeological investigations at Blackman Eddy and Cahal Pech, two Maya ceremonial centers in the Belize Valley, have yielded a fairly large number of ceramic aerophones. The aerophones at Blackman Eddy and Cahal Pech have been reported to depict anthropomorphic and zoomorphic forms and show great promise in contributing to our knowledge of these instruments and their place in Maya music. The present thesis takes advantage of an opportunity to continue the previously limited study of these relatively common and important instruments. The objectives of this thesis are: 1) to provide a comprehensive background to the subject of ancient Maya music, 2) to

present an overview of the sound producing artifact assemblages at four different Maya lowland archeological sites and identify the existing trends, 3) to suggest an open-ended typological classification system for ancient Maya ceramic aerophones, 4) to document the types of aerophones present at Cahal Pech and Blackman Eddy, 5) to conduct contextual analyses of the ceramic aerophones recovered from Cahal Pech and Blackman Eddy and 6) to identify and explore patterns of use and deposition in order to contribute to the research on the role and significance of aerophones in the musical world of the ancient Maya.

Organization of this Thesis

This thesis is organized into five chapters. Following this introductory chapter (Chapter 1), Chapter 2 provides background information about ancient Maya music. This chapter includes Spanish contact and iconographic sources detailing what is known about each musical instrument category. In addition, this chapter presents archaeological examples of musical instruments discovered at some major lowland Maya sites and will summarize the trends evident by these discoveries. The final section of this chapter will present general background information about the Belize

Valley Archaeology Project (BVAP) as well as an overview of previous investigations at the sites of Blackman Eddy and Cahal Pech. This section also provides information on specific structures at these sites. This chapter is not intended to provide a complete detailed description of the architectural sequences of every excavated structure at these sites, but rather, focuses on the structures that yielded archaeomusicological information.

Chapter 3 discusses the theoretical perspectives behind my analysis and classification system of ancient Maya ceramic aerophones. In this chapter, I point out some of the difficulties arising from mixed uses of common instrument classificatory terms and definitions in order to highlight the need for a standard classification system of ancient Maya ceramic aerophones. This is followed by an explanation of the theoretical perspectives that guided this study. The next section of this chapter discusses my research methods. It is in this section that I suggest a typological classification system of ancient Maya ceramic aerophones and explain my methodological approaches.

Chapter 4 presents the results from the typological and contextual analyses of the Cahal Pech and Blackman Eddy ceramic aerophone samples. This chapter contains a formal presentation of the aerophone artifacts from Blackman Eddy

and Cahal Pech. Next, I discuss several patterns evident from an interpretive analysis of the aerophone assemblages of Cahal Pech and Blackman Eddy. The purpose of this section is not to reinterpret previous contextual designations within the architectural sequences of the structures, but rather, to supplement previous interpretations with archaeomusicological data.

The final chapter of the thesis, Chapter 5, presents the conclusion and summary.

CHAPTER 2

BACKGROUND

An Introduction to Ancient Maya Music

The primary sources that facilitate the study of ancient Maya music are the sound producing artifacts themselves and the ancient iconography that depicts their use. The works of Norman Hammond, Paul Healy, Samuel Franco Acre and Samuel Martí have concentrated on the instrumentation used by the Maya. In his thesis Ancient Maya Music Now with Sound, Cameron Hideo Bourg (2003:7) referred to three groups of musical instruments: membranophones, idiophones and aerophones. These categories derive from the Sachs-Hornostel classification system, which is commonly used by music scholars and ethnomusicologists today. This system, derived in the early twentieth century, divides all instruments into four broad acoustical categories:

1. Membranophones: sound produced by the vibration of stretched skin or membrane.

2. Idiophones: sound produced by the vibration of a solid material, free of any kind of applied tension.
3. Aerophones: Sound produced by the vibration of an air column, that is, by wind or breath forced through a tube or across a reed.
4. Chordophones: sound produced by the vibration of stretched strings.

The earliest period in which Maya musical instruments have been documented is the Preclassic or Formative period. Excavations at Cuello, one of the earliest Maya lowland sites, have provided evidence of ceramic flutes, and ocarinas dating back to the Middle Preclassic Period (900-400 B.C.) (Hammond 1991). In 1566, Friar Diego de Landa wrote Relacion de las Cosas de Yucatan, the most complete account of pre-Conquest Maya life. Landa's narrative of Maya musical instruments included:

They have small drums which they strike with the hand, and another drum of hollow wood that gives a deep, mournful sound. This they hit with a longish stick at the end of which is a ball of a certain gum that extends from a tree. They have long, thin trumpets of hollow wood, the end of which is formed of a large twisted gourd. They have another instrument made of whole tortoise with its shells, from which the flesh has been removed; this they strike with the palm of the hand, giving a mournful, sad sound. They have

whistles of cane and of deer bones, also large conchs and reed flutes; with these instruments they accompany the dancers.

This passage, although short, provides us with invaluable information on ancient Maya musical instruments. Using historical, iconographic and archaeological references, additional information on what is known about each of the musical instrument categories is presented below.

Ancient Maya Membranophones

Presently, our knowledge of ancient Maya membranophones comes mostly from artifacts of the Classic Period (AD 300-900) Ancient Maya drums were the principle instruments of this family although the actual instruments have not been preserved as well as some of the other instrument families. We know from depictions of the instruments on murals and in codices that the drums were made of hollowed logs and clay. Wood is well known for decomposing rapidly in Mesoamerican soils, which could explain the rarity in finding ancient Maya wooden drums. Also, according to Bourg, clay drums were considered by the Maya to be more prestigious and were produced only for elite use, making them more rare than wooden drums. The largest known drum used by the Classic Maya is called the

Pax and can be seen in room 1 of Structure 1 of the Bonampak Frescoes at Bonampak, Chiapas, Mexico (Fig. 1). Dating to the Late Classic (A.D. 450-750), the Maya site of Bonampak holds the most famous representations of Maya ritual in association with musical instruments. The upright drum (Fig. 1a) is found with its player between three individuals beating turtle carapace drums (Fig. 1b) and four individuals shaking clay or gourd rattles (Fig. 1c). Other depictions of the Pax can be found on roll-out photos 2781 and 3009 (Figs. 2 and 3) of Maya vessels taken by Justin Kerr.

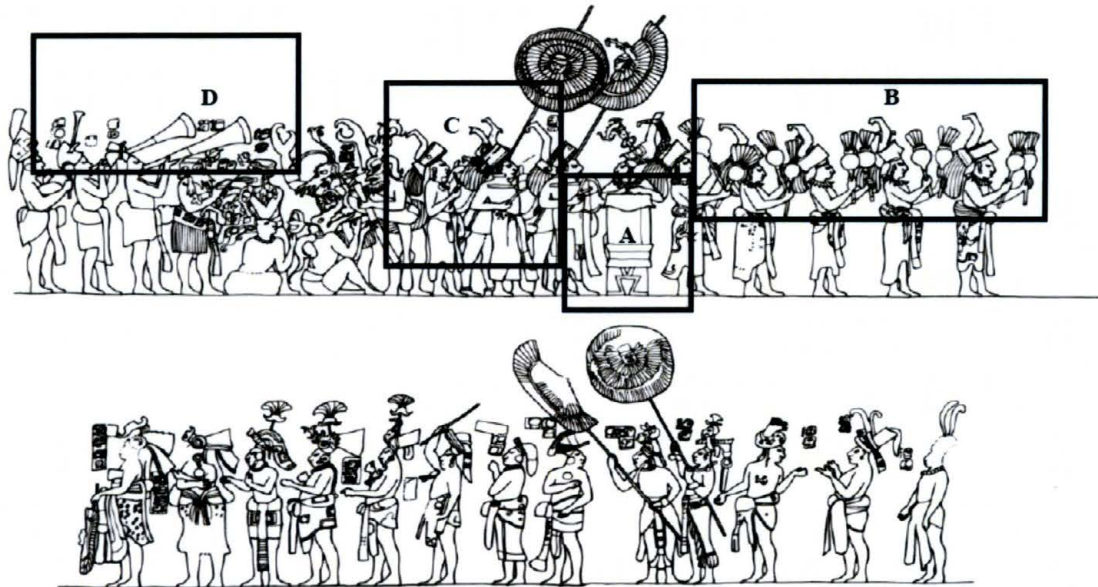


Figure 1: Bonampak Mural. a) Pax Drum b) Rattles c) Turtle Carapace Idiophones d) Aerophones



Figure 2: Kerr Roll-out photo 2781



Figure 3: Kerr Roll-out photo 3009

Ancient Maya Idiophones

The Idiophone family consists of shell tinklers, bone rasps, copper bells, rattles, turtle carapaces and drums

with no membrane. Rattles and turtle carapaces are both depicted in the Bonampak mural (Figs. 1b and 1c). Similar to the membranophones, the idiophones made of turtle shell, wood or gourds have survived only rarely in the archaeological record.

There is a depiction of a rattle in the Dresden Codex, which Bourq considered as an indication that it not only produced music but also was a symbol of sacred rituals. Like the drum and the flute in the Dresden Codex, the rattle seems to be associated ritually with the cultivation of corn. The codex invokes a feeling that the music of the drum, flute and rattle is what is making the corn grow (Fig. 4).

Bourq also believed that "the rattle was an essential instrument to ancient Maya music primarily because it was directly associated with mythological events" (Bourq 2005:23). He was referring to Justin Kerr's photographic record, which provided evidence that the rattle was associated with the Hero Twins from the Popol Vuh. Kerr's vase roll-out 791 (Fig. 5) depicts one of the Hero Twins playing the rattle while performing for the Lords of Xibalbá (Kerr 1998). The horizontal drum called Teponaztli or the Maya tunkul is a drum without a membrane and is described in some Colonial period memoirs. Diego Lopez de

Cogolludo (1688) referred to this drum in his book Historia de Yucatan. He explained its existence in the seventeenth century among the Itzá of the Petén, described it as being made of wood and wrote how there were some so loud that they could be heard two leagues away. In addition, Hammond stated that A.M. Tozzer recorded the tunkul as still being used by the Lacandon Maya (Hammond 1975:2).

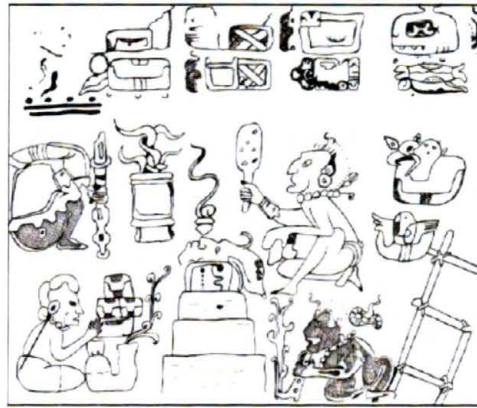


Figure 4: Dresden Codex,
Template 34

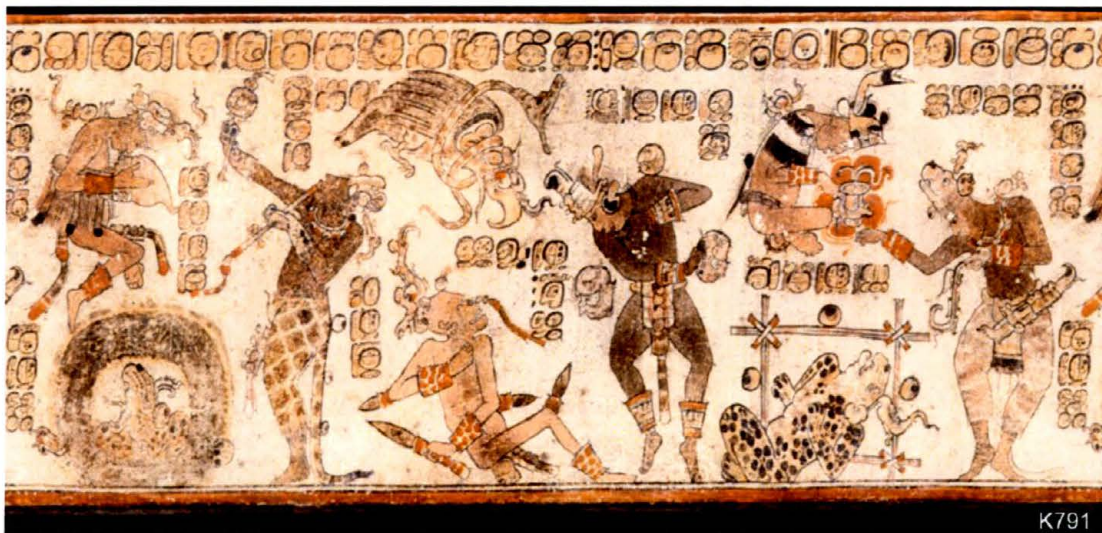


Figure 5: Kerr Roll-out photo 791

Turtle carapaces were an important source for percussion music and are still in use in some remote villages of Mexico. As depicted in Figure 6, these instruments were struck with deer antlers. In this figure, there is a *pax* drum between the legs of an individual, rattles being played by both individuals as well as a turtle carapace instrument.

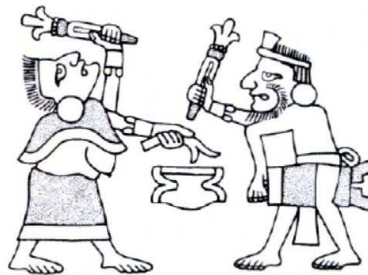


Figure 6: Old man and woman playing music with rattles and drums.
Codex Laud

Appearing from Preclassic to Postclassic context, shell tinklers are common to the lowland Maya area. According to contextual evidence, tinklers appear to have been worn as pendants. They are also depicted as being attached to belts, garments and the legs of individuals (Buttles, 2002:190). Since tinklers require movement of the individual wearing them to produce sound, they may have been used in dance and other rituals accompanied with music.

Bone rasps are typically manufactured from the long bones of animals and consist of a number of parallel, incised lines along the length of the artifact. Sound is produced from scraping another hard object up and down the lines.

Bells, mostly manufactured from copper, are the most common form of metal artifact in the Maya area. Metal artifacts first appear in the Maya area during the Early and Late Classic periods (Buttles 2002:312).

Ancient Maya Aerophones

The third major group of musical instruments is that of the aerophones, or wind instruments. According to the classification of Bourg (2003:8), aerophones are instruments that produce "sound by air forced from players' mouths". Another definition comes from Hornbostel and Sachs' (1914) classification, which defines aerophones as instruments with oscillating air as the sound generator. David Reck (1977:88) defines aerophones as "sound produced by the vibration of an air column, that is, by wind or breath in a tube or across a reed".

These instruments produce sound from air being forced through them, and are the most commonly excavated musical instruments of the ancient Maya. This family consists of a

variety of ceramic flutes, wooden trumpets, conch shell trumpets, bone flutes and reed flutes. Known and used all over the world, the conch shell trumpet is the oldest known trumpet, which Martí described as "Immemorially associated with creation, fecundity, the sea and rain" (Martí 1971:20). Hammond noted how Spanish references to conch shell trumpets are common but archaeological evidence of their use in the Classic period is rare (Hammond 1975:11). However, it should be noted that unlike the aerophones made of wood and bone, shell trumpets and ceramic flutes appear in physical form frequently in archaeological contexts. In Justin Kerr's vase rollout # 791, there is a conch shell being blown into by a floating individual on the left (Fig. 5). In addition, Acre (1991:12) proposed that conch shell trumpets could have been used to announce ceremonies or to send long distance signals.

Most of our knowledge of the wind instruments that were not made of ceramic or shell comes from Spanish chronicles, the Bonampak frescoes and painted vessels. Maya flutes of different shapes and sizes can be seen in the Bonampak frescoes (Fig. 1), the Grolier vase 33, the Dresden Codex (Fig. 4), Kerr's vase 791 (Fig. 5) and in figurines. It is not possible to tell whether these are depictions of ceramic or wooden flutes, although Hammond

(1975:10) refers to the flutes in the Bonampak murals as appearing to be made of wood. Similar to ceramic vessels, ceramic aerophones survive because of their durability and are therefore the most common sonorous artifacts discovered in archaeological contexts.

Chordophones

Until the recognition in 1991 of a stringed drum depicted on an ancient Guatemalan Maya vase (Fig. 7), it was believed that no cultures of Middle or South America had stringed instruments of any kind. However, the illustrated stringed instrument depicted on the vase is confirmation of the use of an instrument with a string component centuries before the arrival of the Spanish. The vase depicts a drum with string and rasping stick elements accompanied by figures wearing jaguar regalia.

A replica of the stringed drum was demonstrated in 1998 at a conference on pre-Columbian music and iconography held at Dumbarton Oaks. It was found that the instrument imitated the sound of the most important creature in the Maya cosmos, the Jaguar (Burkhalter and Griffin 2004).



Figure 7: Kerr Roll-out photo 5233

The Sound Producing Artifacts of the Maya Lowlands

In order to situate the aerophone artifacts from Blackman Eddy and Cahal Pech within the broader context of the Maya lowlands, it is necessary to review major artifact reports, present examples of sound producing artifacts in the archaeological record and identify the existing trends. The artifact reports referenced in this chapter include the Maya Lowland sites of Cerros, Dzibilchaltun, Colha, and Aguateca. Below, I present dating and context information for the sound producing artifacts recovered from each of these sites.

Cerros

Cerros is located in northern Belize on the south side of Chetumal Bay and was occupied from the Late Preclassic

period to Late Postclassic periods. However, the site core contains mostly Late Preclassic construction, as well as some Early Classic construction. At this site, archaeologists have unearthed a variety of idiophones and aerophones.

The artifacts belonging to the idiophone category include one bone rasp, seven shell tinklers and seventeen copper bells. The bone rasp was fashioned out of a human femur and was located on the beach near feature 1A, the earliest settlement zone at Cerros. The context of this instrument is probably Late Preclassic. Four of the shell tinklers were associated with domestic debris, two were found in pit fill and one was located within construction fill. All of the tinklers are located in Late Preclassic contexts. Sixteen of the copper bells were recovered from a Late Postclassic cache. The seventeenth bell was located in a humus deposit and therefore lacks dating information. However, because it is made of copper, it is most likely Postclassic.

The aerophones recovered at Cerros include one bone whistle, two shell trumpets and one clay aerophone. The bone whistle was recovered from Late Preclassic pit fill of Feature 1A. One shell trumpet had a ceramic mute and was found in a Late Postclassic cache of structure 11B, while

the other was located in a humus/fall deposit. The clay aerophone, recorded as a whistle, is pear-shaped and was discovered in a Late Preclassic Burial of feature 1A.

Dzibilchaltun

Dzibilchaltun is located on the northwestern coastal plain of the Yucatan Peninsula. At this site, archaeologists have unearthed a number of sound producing artifacts from the idiophone and aerophone instrument categories.

Among the idiophones is a group of 14 shell tinklers, and nine copper bells. The tinklers are from various surface, above floor and fill contexts. Ten of the tinklers have been assigned dates within a Late Classic to Late Postclassic range. The other four were recovered from Formative contexts. One bell was recovered from a context described as Late Classic or later surface and disturbed fill. Three bells came from a Late Postclassic deposit that was sealed into the first addition to an altar in structure 1-Sub. In structure 605, one bell was found sealed below a shrine floor and another bell was discovered in a cache. Both of these bells were assigned a Late Postclassic date. The provenience and chronological position of the last two bells is undetermined.

At the site of Dzibilchaltun, five whole shell trumpets, two bone flute fragments and 14 ceramic aerophones were recovered. The contexts and chronological placements of the shell trumpets are unclear. Therefore, they are not included in the summary of the chronological and contextual trends in the following section. One of the bone flute fragments was recovered from a Formative period context, predating the construction of Str. 226. The other bone flute fragment does not have available provenience information. Of the ceramic aerophones, there are four ocarinas, four vessel flute mouthpiece fragments, two whistles and four tubular flute fragments. Two of the ocarinas were associated with burial 6 of structure 96 and have a Terminal Classic chronological placement. One whole ocarina was collected from mixed surface material associated with structure 95 and has been dated to the Late Classic. One ocarina fragment occurred in a chronologically mixed deposit of structure 500. Three of the vessel flute mouthpiece fragments were recovered from terminal classic surface and mixed surface fill composed of materials from structures 55,13 and 3597. The other vessel flute mouthpiece, a figurine whistle and two of the tubular flute fragments were discovered from Cenote Xlakah, a Late Classic offertory. One simple oval whistle was found in

Late Classic fill of structure 38 and the other two flute fragments were from surface collections composed of chronologically mixed materials from structures 30 and 38. All of the aerophones, with the exception of the mouthpiece fragments and the simple oval whistle, are anthropomorphic representations.

Colha

Colha is located in northern Belize, Central America. Archaeological investigations at Colha have yielded 30 shell tinklers, four bone rasps, one metal bell and four clay aerophones.

The shell tinklers were recovered from midden (n=15), cache (n=4), burial (n=1), fire pit (n=1), and unknown contexts. These artifacts have been assigned early Middle Preclassic (n=1), Late Preclassic (1), Protoclassic (n=4), Late Classic (n=2), Terminal Classic (n=1), Middle Postclassic (n=12), Postclassic (n=7), and Unknown (n=2) chronological placements.

The four bone rasp specimens were recovered from construction related (n=2), unknown (n=1), and midden (n=1) contexts. Three of the bone rasps have been dated to the Late Preclassic while the other has a Terminal Classic chronological placement. The metal bell, most likely

manufactured from copper, was recovered from an unknown context. However, since metal artifacts seem to appear in the Maya area mostly during Terminal Classic (Buttles 2002), this artifact was probably deposited sometime during or after this period.

One of the clay aerophones has been identified as a whistle and was recovered from a Middle Postclassic midden context. This artifact is in the form of a turtle with the mouthpiece in the position of the tail. The other three aerophones are ocarinas. One of the ocarinas is a zoomorphic representation of a round bird and was recovered from a Late Classic context. Another ocarina also depicts a bird and was recovered from a Postclassic context. The last ocarina is a representation of a Peccary and was recovered from a Protoclassic adult burial.

Aquateca

Aquateca is located in the southern part of the Petexbatun region in the department of El Petén, Guatemala. Excavations in the epicenter of the site of Aquateca have exposed structures that were probably inhabited by the ruler and royal family of Aquateca as well as the residences of nobles and non-elites.

Because of the way in which certain areas of the site were rapidly abandoned, Aguateca provides perhaps the best opportunity to analyze a variety of sound producing artifacts in situ. According to Matthias Stockli (2007), "The architectural features of the excavated structures, their location and the artifact assemblages exposed in and around them allowed to draw conclusions not only about the number, sex and social status of the dwellers but also about a broad spectrum of activities related to the household proper or to a wider social context." Music was no doubt one of these activities.

All of the sound instruments were located in Late Classic contexts. The musical finds include a few instruments made of bone and shell, but most of them were made of clay. Although some clay drums and bells were found, the majority consisted of a number of tubular flutes, whistles and vessel flutes. From the combined analysis of intra-site and intra-structure distribution, Stockli concludes that 1) the sound producing artifacts were not only stored inside the structures, they were actually played and 2) both men and women participated in making music. He also suggests that since sound artifacts were recovered from spaces that contained objects of daily

life and work, playing music was a domestic activity in addition to a ritually related one.

Patterns

Instrument Categories

The majority of the sound producing artifacts recovered from the above mentioned archaeological sites belong to the idiophone and aerophone musical instrument categories. However, some clay drums were identified at Aguateca. The types of idiophones reported include shell tinklers, copper and clay bells, and bone rasps. As for the aerophones, the literature reports a variety of anthropomorphic and zoomorphic types for which there is no standard method of classification. It should be noted that without a standard classification system, clear descriptions or detailed photographs of these ceramic aerophones, inter-site comparisons are meaningless. Especially when aerophones are typically lumped under one category "whistles".

Chronology

Musical instruments are reported in all periods from the Middle Preclassic to the Postclassic. However, if the

types are looked at individually, there four significant patterns:

1. Copper bells were not found in contexts earlier than the Late Classic.
2. Instruments made of bone, including bone flutes and rasps were primarily found in Late Preclassic contexts.
3. Shell trumpets are limited to Postclassic contexts.
4. Shell tinklers and clay aerophones are found throughout the Formative, Classic and Late Classic periods.

Contexts

Five patterns can be identified regarding the contexts of the sound producing artifacts:

1. Copper bells are typically found in surface/humus deposits, burials, caches, and deposits sealed underneath structure features.
2. Bone rasps are recovered from construction and pit fill, deposits sealed underneath structure features, surface and midden contexts.
3. Bone aerophones are limited to fill contexts.

4. Tinklers can be found in surface/humus deposits, burials, caches, above floors of structures, fill and in middens.
5. Clay aerophones are found in burial, humus/surface, fill and midden contexts.

General Background Information for the site of Blackman Eddy

Directed by James F. Garber, the Texas State University-San Marcos Belize Valley Archaeology Project (BVAP) began investigating the site of Blackman Eddy and surrounding areas in 1990. Blackman Eddy is located in the central portion of the Belize Valley on a ridge that overlooks and extends into the valley below (Fig. 8) (Garber et al 2003:48). The primary objective of the project was to establish a cultural history of the site and to examine the role of Blackman Eddy relative to larger centers to the west. Over the first four seasons, preliminary investigations were conducted in Plaza B, and excavations were mostly concentrated in Plaza A (Fig. 9). Subsequently, efforts were redirected toward a thorough investigation of Structure B1.

Structure B1

Structure B1 is one of eight remaining buildings in Plaza B, which is located at the northern end of the site.

Bulldozing activity in the mid-1980s has, extensively damaged structure B1, along with a large portion of Plaza B. The bulldozer cut has provided a profile of the central axis of the structure (Fig. 10). This profile coupled with excavations to bedrock has facilitated the recording of the structure's complete construction history (Table 1), and therefore, the recording of a stratified sequence of occupations starting at the end of the Early Formative (ca. 1100 B.C.) and continuing on to the Late Classic period (A.D. 900).

Structure B5

Also located in Plaza B, Structure B5 is a Late Classic elite residential structure. Information about this structure is limited to the results from an investigation of an alleyway between structures B5 and B2. A deposit in this alleyway appears to reflect ceremonial rituals occurring on the nearby structures during a period after this area of the site had been abandoned and before it was reoccupied in the Late Classic.

Structure A7

Structure A7 is one of 13 structures making up the Plaza A group. Plaza A is located in the southern half of the site and is the largest plaza at the site. Structure A7 is an endzone range structure that lies south of two parallel ballcourt structures, Structures A8 and A9. Excavations of Structure A7 revealed three distinct construction phases beginning during the Late Preclassic and terminating during the Late Classic (Brown 2003:11).

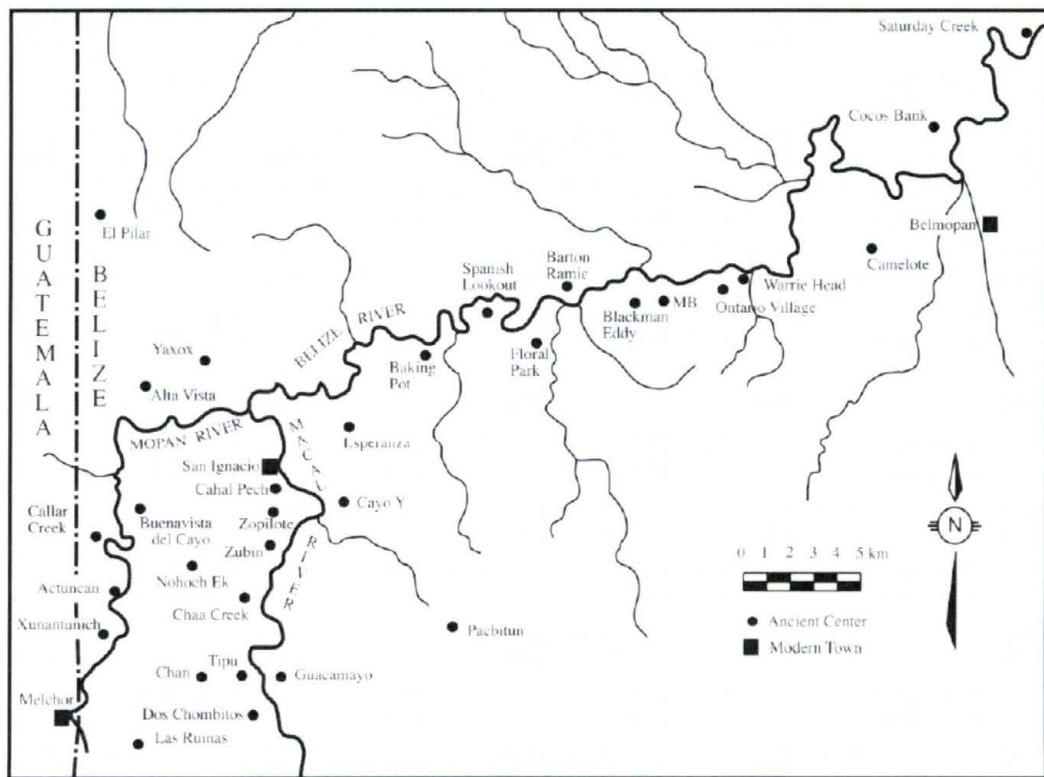


Figure 8: Archaeological Sites in the Belize River Valley

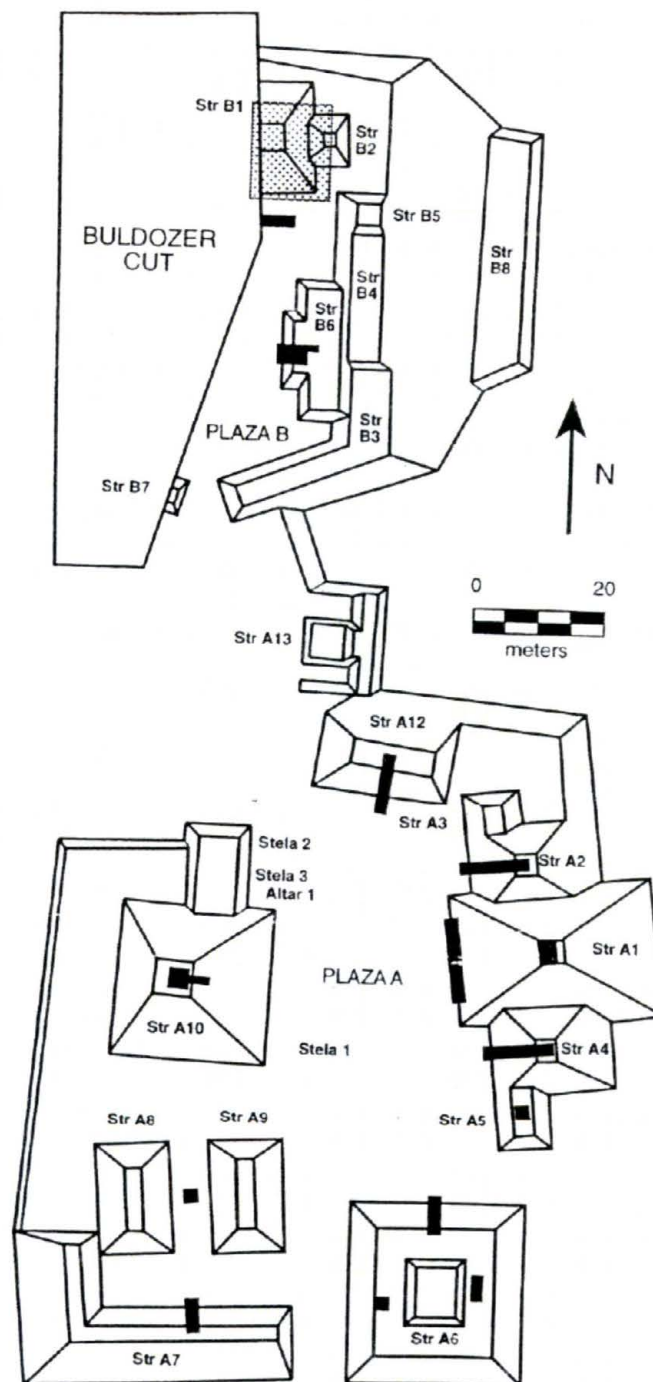


Figure 9: Map of Blackman Eddy site core

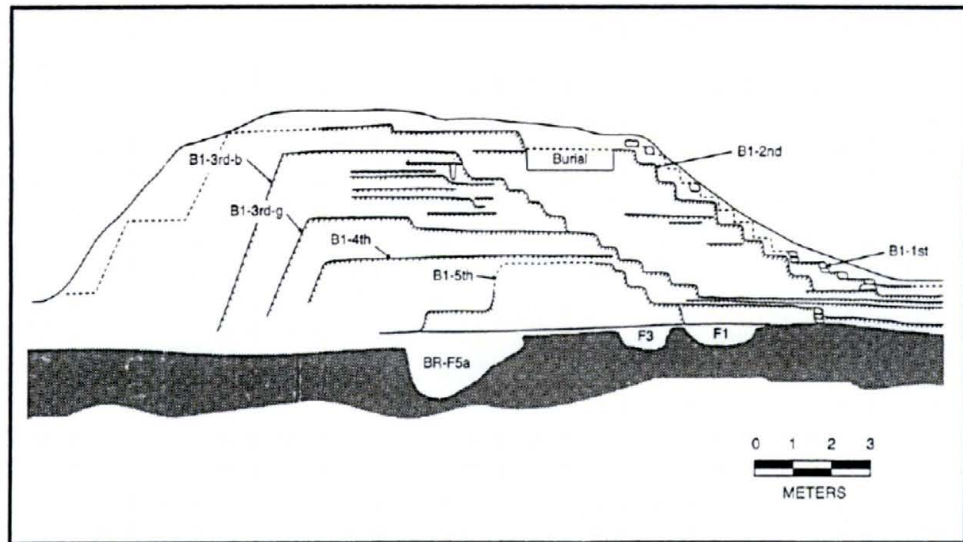


Figure 10: Bulldozer cut profile of Structure B1

Table 1: Middle Formative construction sequences by phase from Structure B1 at Blackman Eddy.

PERIOD	PHASE	
	STRUCTURE	
early Middle Formative	Kanocha	B1-13th
(1100-900 B.C.)	Kanocha	B1-12th
	Kanocha	B1-11th
	Kanocha	B1-10th
	Kanocha	B1-9th
	Kanocha	B1-8th
early Middle Formative	early facet Jenny Creek	B1-7th
(900-700 B.C.)	early facet Jenny Creek	B1-6th
	early facet Jenny Creek	B1-5th
late Middle Formative	late facet Jenny Creek	B1-4th
(700-350 B.C.)	late Facet Jenny Creek	B1-3rd-
g-e		

General Background Information for the site of Cahal Pech

Several researchers, including Gordon R. Willey, J.W. Ball, J.T. Taschek, Jaime J. Awe, M.D. Campbell, David Cheetham, and James F. Garber, have intensively investigated the site of Cahal Pech. Texas State University-San Marcos Belize Valley Archaeology Project (BVAP) began investigating the site of Cahal Pech in 2004. Cahal Pech is a medium-sized Maya ceremonial center located atop a steep hill overlooking modern town of San Ignacio (Figs. 8 and 11). The site was strategically placed on the western bank of the Macal River and covered an approximate area of 10 kilometers during the Classic period (Awe 1992; Healy et al. 2004). In the first BVAP field season a north-south trench was initiated in Plaza B (Garber et al. 2005). These excavations were continued in 2005, 2006, 2007, 2008 and 2009. The purpose of these excavations was to build upon earlier research conducted by Jaime Awe (1992) and Healy (1995, 1996) and to further document Early Formative and Middle Formative occupations at Cahal Pech.

Structure A2

Structure A2 is one of six buildings in Plaza A, the principal courtyard within the site core (Fig. 12). It is a large range-type building and separates Plaza A from Plaza

B. In 1988 eight units were excavated in A2 revealing information on the terminal phase of construction and two earlier substructures. Jaime J. Awe conducted subsequent excavations documenting post-abandonment ritual associated with this structure. Post-abandonment ritual is a cultural behavior where ceremonial centers are used as sacred spaces for ritual activity even after the site has been abandoned.

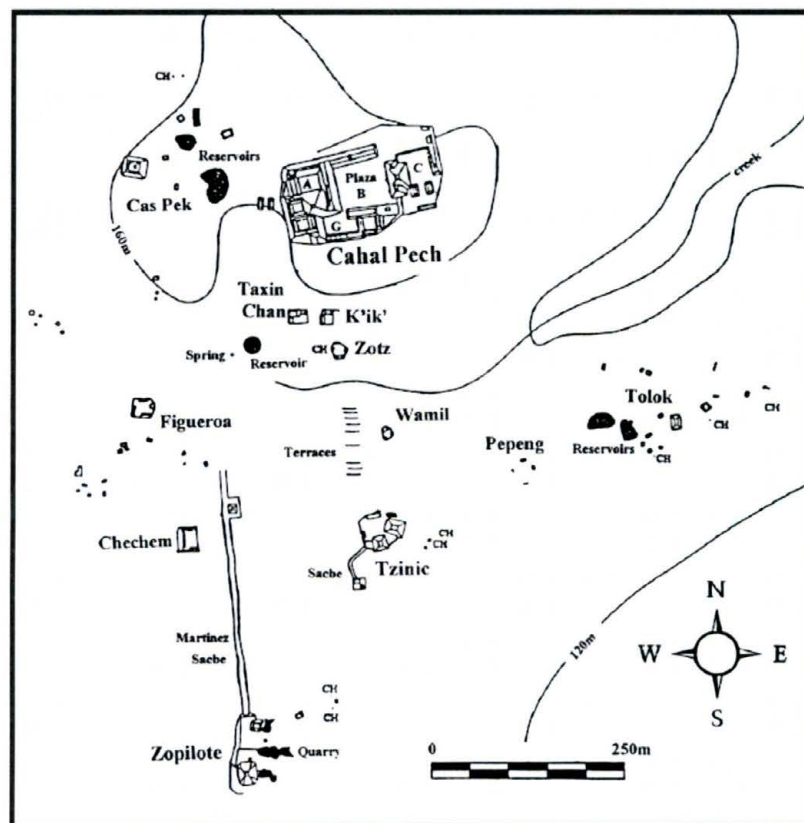


Figure 11: Cahal Pech settlement zone (From Healy et al. 2004)

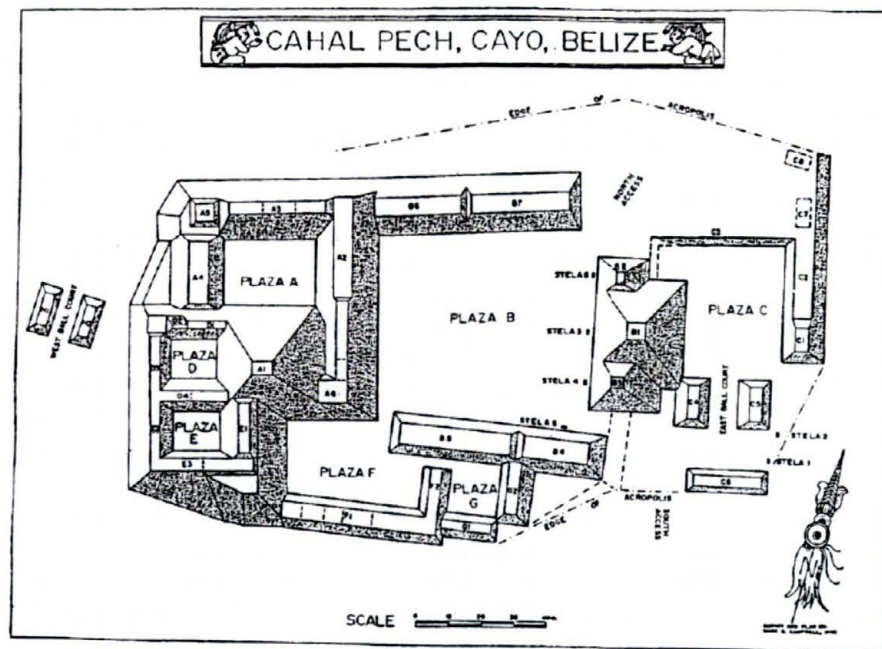


Figure 12: Cahal Pech site core (from Awe 1992)

Structure A3

Structure A3 is located in the north end of Plaza A. Like Structure A2, Structure A3 has yielded archaeological examples of post-abandonment ritual.

Structure B4

Structure B4 is a relatively small structure located in Plaza B. Plaza B is the largest courtyard within the site core. It is bordered by structures B6 and B7 to the north, B4 and B5 to the south, B1, B2 and B3 to the east, and by structure A2 to the west (Fig.12). The stratigraphic excavations B4 (Fig. 13) and a series of test pits and horizontal excavations into Plaza B (Fig.14) yielded data

that enabled the definition of a previously unrecognized occupation phase for the Maya lowlands initiated at the end of the Terminal Formative called the Cunil Phase (1100-900 BC) (Awe 1992; Garber et al. 2004, Healy et al. 2004).

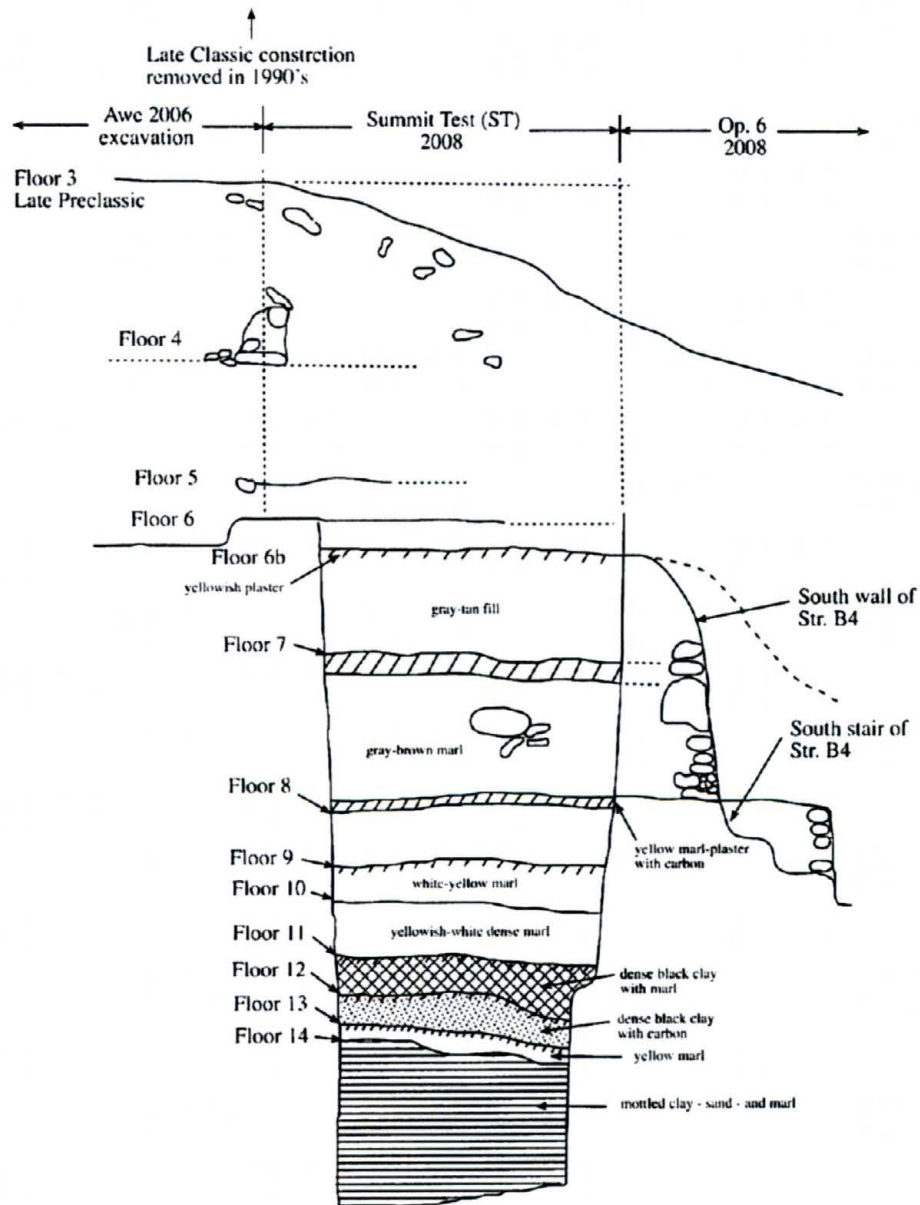


Figure 13: Structure B4. Summit Test profile, 2008

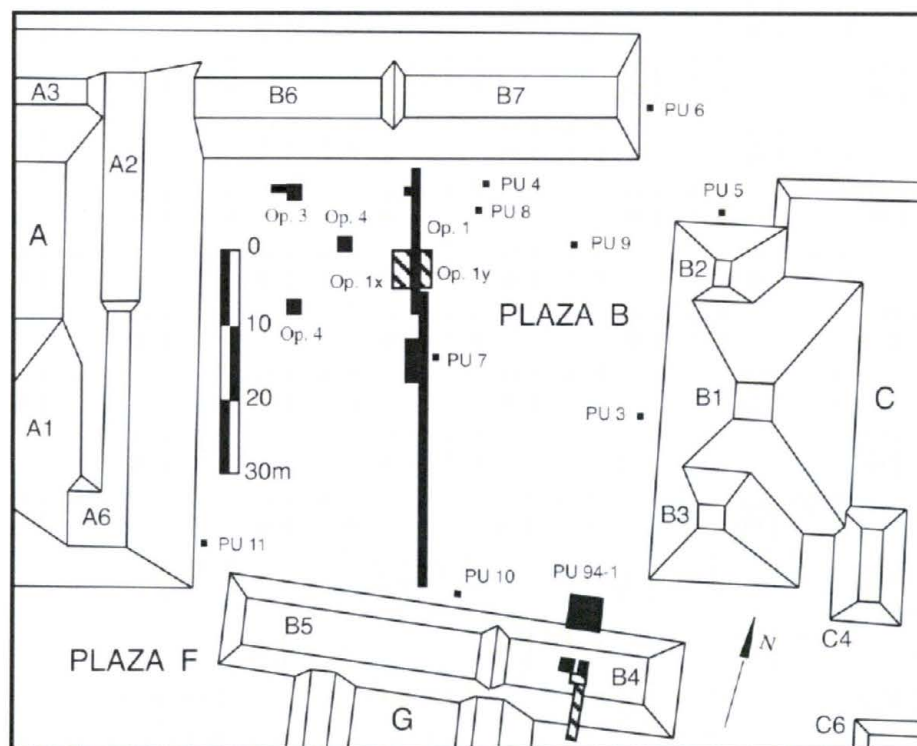


Figure 14: Plaza B at Cahal Pech (after Healy et al. 2004)

The Cas Pek Group

Cas Pek is one of six settlements in the periphery of Cahal Pech. The Cas Pek group is a patio-focused settlement cluster located just west of the site core along the perimeter of the western reservoir (Lee 1996; Lee and Awe 1995) (Fig. 15). There is a central platform with four structures (Structures 1-4) and at least eight mounds of varying size surrounding the platform. Investigations of Cas Pek conducted by Julian Vinuales in 1991 revealed that

the Cas Pek group was continuously occupied from the Late Middle Formative through to the Late Classic period.

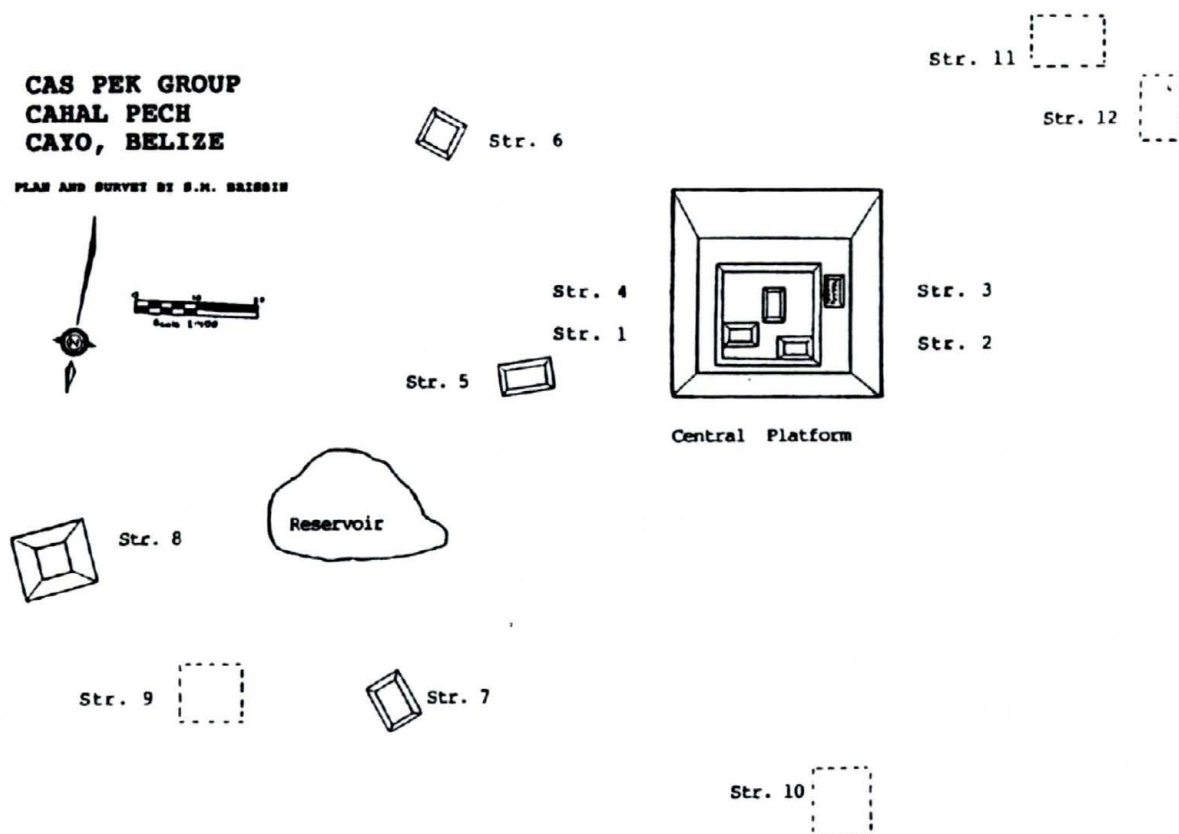


Figure 15: Cas Pek Group, Cahal Pech

The Tolok Group

The Tolok group is a structure focused periphery settlement cluster located approximately 300 m southeast of the site core (Fig. 16). This group consists of 11 mounds of varying size and four chultuns. Structure 1, the largest mound in the group, is located in the center.

Investigations at Tolok in 1991 revealed that the

settlement was continuously occupied from the late Middle Formative period to the Late Classic period (Awe 1992: 188).

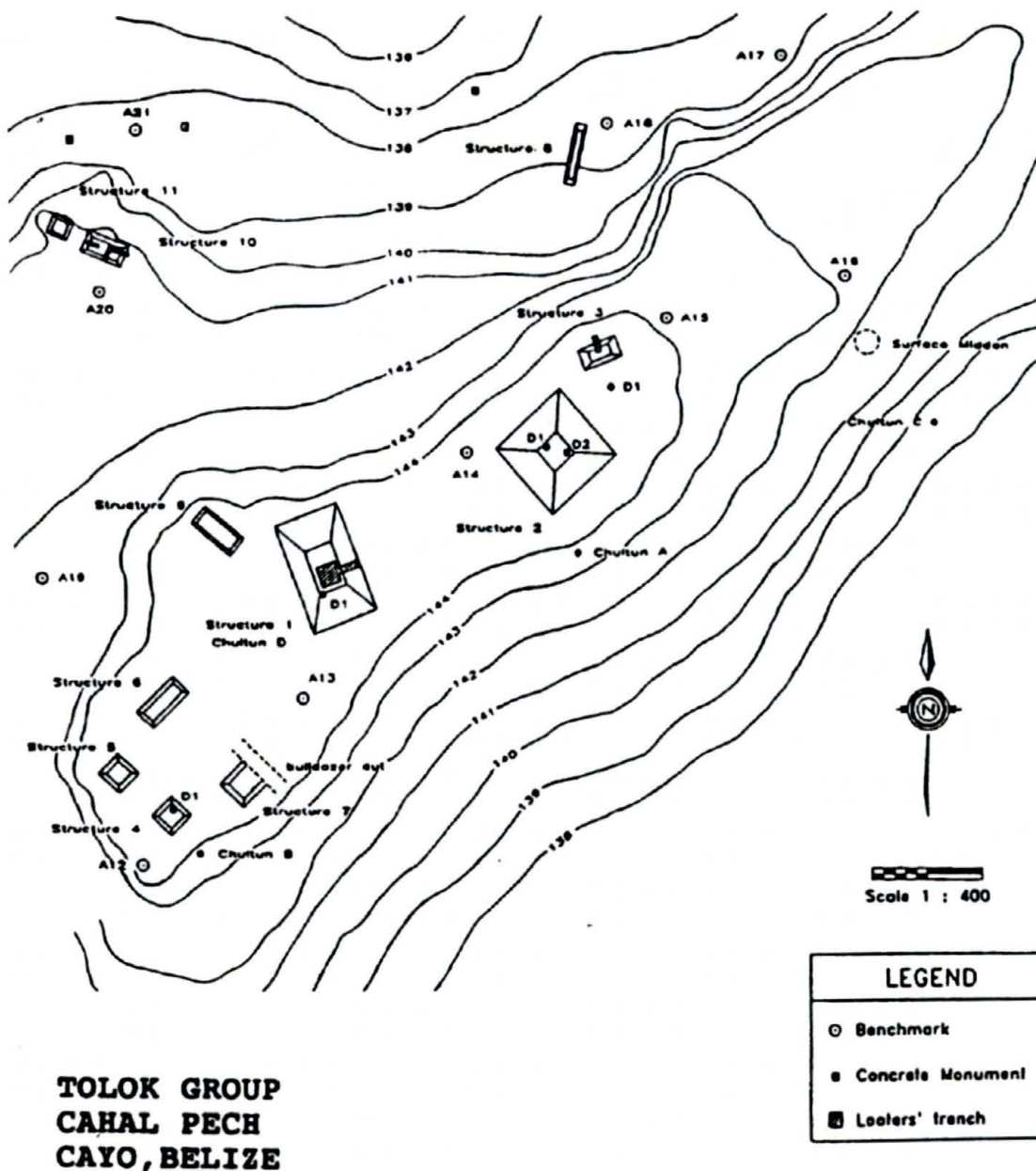


Figure 16: Tolok Group, Cahal Pech

CHAPTER 3

THEORETICAL PERSPECTIVES AND METHODOLOGY

Theoretical Perspectives

The works of Norman Hammond, Paul Healy, Samuel Franco Acre and Samuel Martí have concentrated on the instrumentation used by the ancient Maya and have greatly increased our understanding of Maya music. In addition, Cameron Hideo Bourg focused on the archaeological, societal and sonorous aspects of ancient Maya music in his thesis Ancient Maya Music Now with Sound. Although these scholars have provided a foundation for studying the musical world of the ancient Maya, a standard classification system for ancient Maya ceramic aerophones is lacking. The objectives of this chapter are 1) to highlight the need for a standard classification system of ancient Maya ceramic aerophones by reviewing previous methods of classifying and analyzing ancient Maya aerophones and 2) to outline the theoretical perspectives behind my analysis and subsequent typology of ancient Maya ceramic aerophones.

Literature on the prehispanic musical tradition contains obvious inconsistencies in the attempts to explain the difference between ceramic flutes, ocarinas and whistles. Many times they are not clearly defined in a way that uses explicit criteria to separate them. In fact, a common classificatory procedure in the pertinent archaeological literature is to refer to them as the same instrument. It is also noticeable that what one scholar would classify as an "ocarina" is referred to as a "whistle" by another, and vice versa.

In his BA thesis titled Ocarinas in the Maya World, Forbes defined an ocarina as a particular class of musical instrument:

Functionally, an *ocarina* is a wind instrument with finger holes. *Ocarinas* are closed ended instruments, unlike whistles that have an open end [Forbes 2004:7]. To be categorized as an ocarina, Forbes noted that the artifact must have five attributes:

1. Closed chamber- a spherical hollow chamber.
2. Tonal hole(s)- small round holes that are covered or left open to change pitch.
3. Beak/Mouthpiece- resembles the shape of a bird's beak, it is used for the initial passage of air.

4. Windway- the small opening in the centre of the beak that facilitates the passage of air into the chamber.
5. Window- a circle or arch shaped cavity that vents air to produce a musical note.

According to Forbes, the closed chamber is what defines ocarinas from other wind instruments. Forbes also provided portion and fragmentation tables listing different parts on ocarinas and detailing the preserved condition of ocarina sherds. Presumably, these tables could help researchers determine if a sherd came from an ocarina or a figurine. For example, Forbes notes:

An ocarina body sherd can be distinguished by the fact that it is very rounded. An ocarina forms a relatively small, sphere like shape. This accounts for the acute curve of a body sherd. In addition, ocarinas tend to be thinner than figurines, another important point allowing segregation between the two [Forbes 2004:15].

Not only does this not account for whistle sherds and hollow vessel feet, which might display acute curve and thinness, there are non-musical, hollow figurines found throughout the Maya region, which could also produce these types of sherds (Evans 2008:144).

Forbes (2004) analyzed an assemblage of Terminal Classic (AD 830-950) ocarinas from Pook's Hill plazuela

group 1 (PKH1) in Western Belize. From this assemblage, which is limited to only one of five plazuela groups and to only Terminal Classic artifacts, Forbes determined the minimum number of instruments and attempted to create a typology of Maya ocarinas from which five "functional types" were identified. The MNI was calculated under the assumption that each ocarina had only one effigy head. It is important to note that there are aerophones from Blackman Eddy and Cahal Pech, as well as from other Belize Valley sites that have two effigy heads. Oftentimes, when attempting to create functional types of a group of artifacts, the perceptions, experiences and implicit biases of the individual researcher make it difficult or even impossible for other scholars to produce similar classifications. Therefore, Forbes' typology might only be useful for categorizing what he considers to be "ocarinas" from only the Terminal Classic, and only at the Pook's Hill site.

The ambiguity surrounding ancient Maya instrument classification has been illustrated previous to the present thesis. In his thesis Ancient Maya Music Now with Sound, Bourg wrote:

The ocarina, as Hammond (1972) and Joyce (1933) point out, has been referred to as whistles in many scholarly publications (Bourg 2005:10).

Bourg also made a significant observation that:

The erroneous classification of ancient Maya ocarinas hinders my evaluation of the music of this culture because ocarinas differ greatly from whistles (Bourg 2005:11).

Bourg separated these types by explaining that the term whistle refers to an instrument that can only produce one sound or note, while an ocarina is a sonorous device that has a globular body and is capable of varying ranges of tone and pitch. While I agree with this separation, more explicit criteria need to be considered for a more defined classification.

In his dissertation Dawn In The Land Between The Rivers: Formative Occupation At Cahal Pech, Belize And Its Implications For Preclassic Development In The Maya Lowlands, Jaime Awe (1992) followed the system employed by Garber (1989) and Sheets (1978) to analyze formative period artifacts at Cahal Pech. In this methodological approach the artifacts are first divided into raw material categories and then subdivided according to the technology (industry) used for the production of the artifact.

According to Awe, the artifacts he classified as whistles belong to the Modelled Clay Industry. The modelled clay industry includes all hand-modelled clay artifacts. Awe identified three forms under this category. They include ear ornaments, tubular beads and figurines. The figurines are subdivided into anthropomorphs, zoomorphs, whistles and an unidentified category. Awe systematically listed information regarding frequency, dating and context for each artifact form or sub-form. Below is an example of this format for the Modeled Clay Industry.

ARTEFACT FORM: Ear Ornaments
 SUBFORM: Earspool
 FREQUENCY: 2
 MATERIAL: Modeled Clay
 DATING: Late Kanluk (Late Middle Formative)
 CONTEXT: Construction Fill of B-4\8th

Awe did not provide this type of information on the ceramic figurine form. However, he did provide a table that separates the figurines into three major forms: anthropomorphs, zoomorphs, figurine whistles and unidentified fragments whose forms could not be determined with a high degree of accuracy. In addition, Awe provided

information on the contextual distribution of the figurines.

In Chapter 4, the above-described format is followed for the formal presentation of the sound producing artifacts from Cahal Pech and Blackmann Eddy. However, I have slightly modified it in order to situate the newly developed typological classification system for ceramic aerophones. This methodological approach will be discussed in more detail in the following section.

Ideally, we as anthropologists should search for native categories and indigenous terminology and concepts of musical instruments in the field, or in the written language of the culture we are examining. This would be a way to more objectively classify the instruments and avoid the use of traditional European schemes. However, and unfortunately, we have yet to discover any Pre-Columbian musical compositions, and the musical practices of the living Maya today reflect the influences they have endured from Spanish and Christian elements. This is perhaps one of the reasons why there has been this lack of a standard classification system for the most commonly excavated musical instrument category in ancient Maya contexts. Another factor is that scholars have been working in isolation both from each other and from the developments in

the classificatory thinking of other relevant disciplines. Therefore, this thesis incorporates pertinent theory and methodology from the diverse field of archaeomusicology.

Archaeomusicology, sometimes called “music archaeology” is the study of music through archaeology. It is the study of music, musical instruments, and music making from archaeological sources (Olsen 2007). The ancient musical instruments and the ancient iconography that depict their use are the archaeomusicologists’ primary sources of material culture. In his article The complementarity and Interdisciplinarity of Archaeomusicology: An Introduction to the Field and this Volume, Dale Olsen (2002: 23, 2007:11-15) discussed how the discipline of archaeomusicology is based on “the coming together of many approaches by scholars with diverse backgrounds and research strategies” and defined a methodological model for archaeomusicological inquiry. This model, with musical knowledge at its center, includes four methods of analysis: 1) music archaeology 2) music iconology 3) music historiography and 4) music ethnographic analogy. This thesis focuses on the first of these music-archaeological methods, music archaeology. This method will be defined in the methods section of this thesis.

Because the subject of this thesis involves a group of artifacts for which we do not have a standard classification system, I have developed a typological classification system for ancient ceramic aerophones using the science of organology. Organology is the classification of musical instruments. According to Olsen, organology "is one of the most frequently used sciences in archaeomusicology because musical instruments comprise the largest primary source for the study of ancient musical cultures" (Olsen 2007:12). Although there has been no attempt in archaeomusicology to create a standard classification system or typology of ancient Maya aerophones, the use of organology in the archaeomusicology of ancient music cultures of South America and Mesoamerica has provided useful terms, definitions and organological categories (Olsen 2007; Rawcliffe 1992, 2007; Stockli 2007). These categories derive from the Sachs-Hornostel classification system described in Chapter two. With the exception of the stringed drum depicted on an ancient Guatemalan Maya vase, the instrumentarium of the ancient Maya consists of idiophones, membranophones and aerophones.

Musicologists and ethnomusicologists divide the aerophones into four classes according to the way sound is produced from them. For example:

- 1) Reed instruments produce sound by air being forced through or over reeds.
- 2) Horns and trumpets produce sound by air forced between the tightened lips of the player.
- 3) Free aerophones at directly on the outer air to produce sound.
- 4) Flutes produce sound by air that is blown across a sharp edge.

Based on this system, both the ceramic ocarina and whistle would be forms of flutes since they both produce sound by air that is blown across a sharp edge. This construction is called an edge-tone assembly. It is the part of a flute that converts the player's air stream into a tone. An edge tone is generated when a stream of air vibrates back and forth across a sharp edge, causing the air column or volume of a flute to resonate, producing a sound (Rawcliffe 1992). There are two basic types of edge-tone assemblies found in the Belize Valley, as well as in other archaeological sites throughout Belize. One of these edge-tone assemblies is the blowhole assembly (Fig. 17). In this assembly, the open area (aperture) is the blowhole and the lips direct the air stream across it to the far edge of the hole. The other edge-tone assembly is called an air-duct assembly (Fig. 18). This assembly has a slot or

windway that directs the air stream from the lips of the player across the aperture to an edge.

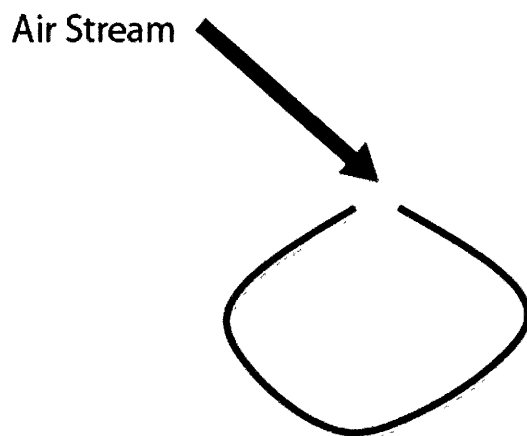


Figure 17: Edge-tone Assembly:
The blowhole assembly

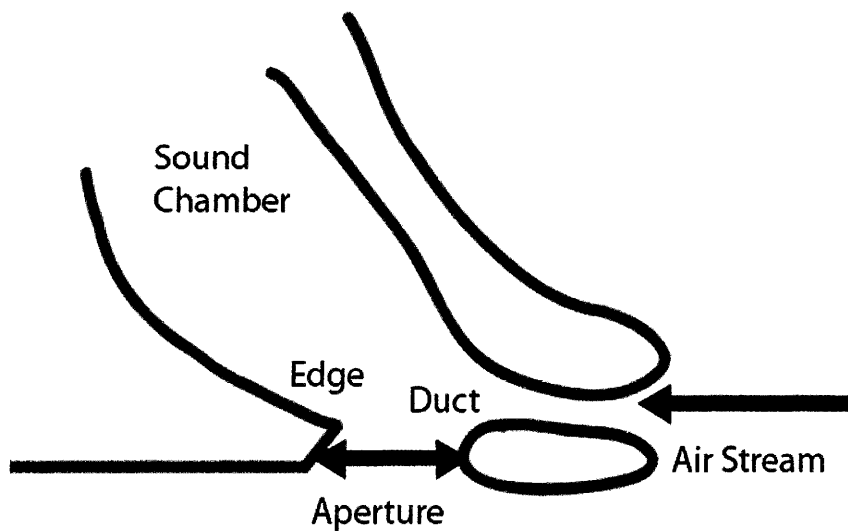


Figure 18: Edge-tone Assembly: The air-duct
assembly

Therefore, according to this organization, a "flute" is any instrument in which a column or volume of air is activated by an edge-tone assembly, either an air-duct or a blowhole. A "whistle" is simply a single-toned flute. In addition to these definitions, a classification system for the variety of aerophones that have been considered by some to be "ocarinas" is necessary. A detailed explanation of my complete typological classification system is provided in the following section.

It is necessary to categorize ceramic aerophones into useful types because of their varying surface, shape and technological characteristics and these varying characteristics need to be considered during the identification process. A standardized classification system of these ancient musical instruments would be beneficial to understanding more about the music that permeated many parts of ancient Maya society. Only when we standardize the way we record and classify these instruments will one be able to achieve an accurate representation of the archaeological population. Then, detailed statistical analyses will be more appropriate and we may begin to quantify the variation within the different flute types to look at chronological changes, interworkshop variation and stylistic variations. Furthermore, through an

analysis of contextual data, the archaeologist can more accurately use these instruments as indicators of past behavior.

We cannot look at these instruments as having different functional classes like we do for ceramic vessels. For example, ceramic vessels are classed according to their function as storage, cooking, serving or ritual vessels. All ceramic aerophones "function" as sound producing objects. However, through a consideration of their morphology and depositional contexts, we can produce interpretations regarding the variety of behavioral realms in which different types of ceramic aerophones function. In other words, relationships between different form classes of ancient Maya aerophones and general usage patterns can be established. This would allow the researcher to use these instruments as indicators of past musical behavior. Once we begin to identify and present these materials in a common way, archaeologists will be able to consider these questions and situate their own material in the broader Maya regional context.

A critical analysis of ancient ceramic aerophones from archaeological sites throughout Belize has augmented these perspectives and facilitated the development of a

comprehensive and useful classification system and typology of Ancient Maya ceramic aerophones.

Methodology

In addition to a literature review, the research methods for this thesis include data collection, artifact analysis and contextual analysis. This thesis brings these research processes together, forming the method of music archaeology, in order to provide a complete description and analysis of the sound producing artifacts discovered in archaeological excavations at Blackman Eddy and Cahal Pech. This method "involves the descriptive and analytical study of the musical-cultural remains of a people" (Olsen 2007:13).

During the month of December 2008, I was given an opportunity to visit the Belize National Collection where I recorded and photographed all of the sound producing artifacts in the collection. In addition, during the summers of 2008 and 2009, I collected data on the sound producing artifacts from Blackman Eddy and Cahal Pech, two ceremonial centers in the Belize Valley. From the available data, I have reviewed many sound producing artifacts, the vast majority consisting of a variety of ceramic aerophones. The goal was to secure a basic corpus of

ceramic aerophones, broad enough to provide a foundation for further research into the nature, practice and function of these instruments within the music that permeated many parts of ancient Maya society. Furthermore, a typological classification system was derived from observations of patterns occurring in this corpus of ceramic aerophones (Table 2).

Table 2: Aerophone Typology

Flute Type	Formal Description
Whistle	Closed-ended, single toned flute with an air-duct assembly
Tubular Flute	A tubular, multi-toned flute, either conical or cylindrical, that has an air-duct assembly
Vessel Flute	A globular, multi-toned flute. A volume of air is activated by an edge-tone assembly, either an air duct or a blowhole.
Ocarina	A vessel flute with an air-duct assembly.
Rim-blown Vessel Flute	A vessel flute with a blowhole assembly.

Using this classification system, a typological analysis of the sound producing artifacts was conducted. This stage of analysis consisted of organizing all of the aerophones from Blackman Eddy and Cahal Pech into flute types based on the presence or absence of the attributes defined in my classification system. For this analysis, the raw material category of "clay" and the industry category of "modeled clay" were adopted from the system and format used by Garber (1989), Sheets (1978) and Awe (1992). However, I have added the category of "sound producing artifacts" to the list of modeled clay forms. Therefore, the figurine form would no longer be subdivided into anthropomorphs, zoomorphs and whistles. The figurine form would only have the subdivisions anthropomorphs and zoomorphs since whistles are a type of sound producing artifact. In the proposed methodological approach taken here, the sound producing artifacts are subdivided into membranophones, idiophones and aerophones. Aerophones are then subdivided into the five flute types listed above. If the artifact contained an air-duct assembly, was closed ended and could only produce one note, it was classified as a whistle. If the artifact displayed an air-duct assembly, produced more than one note and had a tubular shape, it was classified as a tubular flute. Any artifact that is

globular (vessel-like), multi-toned and has an edge-tone assembly, either an air duct or a blowhole assembly, can be classified as a vessel flute. The vessel flutes that had air-duct assemblies were classified as ocarinas, and the vessel flutes with blowhole assemblies were classified as rim-blown vessel flutes (also called ductless flutes). Any artifact that had a hollow sound chamber, but no mouthpiece or tonal holes, was placed in an unidentified category since there is no way of knowing if it was once a whistle or a vessel flute. The artifacts without mouthpieces that displayed hollow sound chambers and at least one tonal hole were classified as vessel flutes. However, since the type of edge-tone assembly is unknown, they were not given a subtype (ocarina or rim-blown vessel flute).

Contextual Analysis

The second stage of analysis involved examining the recorded contextual information for the aerophones found in archaeological excavations at Blackman Eddy and Cahal Pech. Contextual data was gathered from field reports, lot forms and daily field notes.

Dating of the artifacts was based on the chronological placement of their associated context. The chronological age of the contexts were determined by combining dates derived from radiocarbon testing and associated ceramics.

Aerophones are found in four contextual categories at Cahal Pech and Blackman Eddy: 1) construction fill, 2) middens, 3) special deposits and 4) post abandonment ritual. The aerophones recovered from construction fill and middens are considered to be in secondary context. On the other hand, special deposits represent intentional deposition of material culture in primary context. In this thesis, the term "special deposit" is used for the primary context deposits discovered in the architectural sequences of structures and plazas. Primary context deposits include problematic deposits, dedication caches, burials and the deposits of intentionally destroyed material culture resulting from termination rituals. Evidence throughout the Maya lowlands suggests that these types of deposits are intentional and most likely signify ritual behavior.

Post-abandonment ritual is a cultural behavior where ceremonial centers are used as sacred spaces for ritual activity even after the site has been abandoned. The Maya often buried their ancestors within certain structures at ceremonial centers, making those structures sacred. Therefore, this could be one reason for the Maya to occasionally come back to a site and perform ritual activities. The disturbances and material culture of the people participating in these rituals was often left

behind. Post-abandonment ritual also consists of cutting into benches and floors of structures to bury deceased relatives, perpetuating the act of making spaces sacred.

Information regarding frequency, dating, and context are listed for each flute type in Chapter 4. For the final phase of this thesis, the contextual support for previous interpretations on the function of ancient Maya aerophones is explored. This information is also presented in Chapter 4.

CHAPTER 4

THE CORPUS

The Modeled Clay Industry

This industry comprises all hand-modeled artifacts made from clay, including sound producing artifacts. The sound producing artifacts are subdivided into membranophones, idiophones and aerophones. The objectives of this chapter are 1) to provide descriptions of the aerophones found at Cahal Pech and Blackman Eddy, 2) to present the contextual information available for the sample of aerophones and 3) to present intra-site distribution information. The later information is subsequently used to explore the contextual support for previous interpretations on the function of ancient Maya aerophones.

Blackman Eddy

ARTIFACT FORM: Sound Producing Artifact

SUBFORM: Aerophone

TYPE: Vessel Flute (Figs. 19-26)

SUBTYPE: Unknown

FREQUENCY:

1. Figures 19-21
2. Figures 22-26

MATERIAL: Modeled Clay

DATING:

1. Middle Formative
2. Middle Formative

CONTEXT:

1. Structure B1, 20b-10
2. Bulldozer cut surface. Below structure B1 3rd, Op. 8

COMMENTS: These two aerophones can be considered vessel flutes and not whistles because they both display a multi-tonal construction. The first has two windways connecting to a sound chamber. The second vessel flute has one remaining tonal hole and one sound chamber. However, since the mouthpieces did not survive, it is not possible to determine their subtypes (ocarina or rim-blown vessel flute).

1. This vessel flute has an oval-shaped sound chamber and two hollowed out "legs" connecting on one end. It is not clear if this figure is anthropomorphic, zoomorphic, or was constructed in a purely functional style.

2. This vessel flute represents a tapir with two eyes and incised details. This musical artifact contains a suspension hole below the eyes.

ARTIFACT FORM: Sound Producing Artifacts

SUBFORM: Aerophones

TYPE: Vessel Flute

SUBTYPE: Ocarina (figs. 27-36)

FREQUENCY: 3

1. Figures 27-30
2. Figures 31-34
3. Figures 35 and 36

MATERIAL: Modeled Clay

DATING:

1. Terminal Classic
2. Late Classic
3. Late Early Formative-Middle Formative Transition

CONTEXT:

1. Structure B1 - Post Abandonment Ritual
2. Structure B5, 17a-1 - Post Abandonment Ritual
3. Structure B1, 20b-10 - Special Deposit

COMMENTS:

1. This artifact depicts a bird. It has two tonal holes, one on each side and a suspension hole below the eyes. The mouthpiece is located on the bird's tail.
2. This ocarina depicts what appear to be two copulating birds. The birds have punctuated eyes and incised beaks. There is a suspension hole in between the two birds' heads. This ocarina has two sound chambers, and two air-duct assemblies. The apertures, located on each side of the top bird, also act as tonal holes, making this instrument multi-tonal.
3. This is an anthropomorphic ocarina, depicting the face of a bearded male. The mouthpiece is located on the top of the head, and there are two tonal holes making the eyes and two tonal holes located in the ear spools.

ARTIFACT FORM: Unidentified, possible sound producing artifacts (figs. 37-50).

SUBFORM: Possible Aerophones

FREQUENCY: 6

1. Figures 37 and 38
2. Figures 39-41
3. Figures 42-44

4. Figures 45 and 46

5. Figures 47-49

6. Figure 50

MATERIAL: Modeled Clay

DATING:

1. Terminal Classic

2. Terminal Classic

3. Terminal Classic

4. Early Middle Formative

5. Terminal Classic

6. Late Classic

CONTEXT:

1. Structure B-1 - Post Abandonment Ritual

2. Structure B-1 - Post Abandonment Ritual

3. Op. 15n-85 - Post Abandonment Ritual

4. Structure B-1 13th, 24b-1 - Construction fill

5. Structure B-1 - Post Abandonment Ritual

6. Structure A-7, Op16a-3 - Construction fill

COMMENTS: These fragments all have acute curvature, perhaps indicating that they once had sound chambers and other musical qualities. However, the absence of mouthpieces and tonal holes makes it impossible to designate a type.

1. This fragment has a possible sound chamber and two short leg-like features protruding out on one side.

2. This fragment depicts the head of a howler monkey.
3. This fragment depicts the head of a bird, with two punctuated circular eyes and an incised beak.
4. This artifact resembles a bird ocarina with two punctuated circular eyes, wings and a broken beak.
5. This artifact resembles an ocarina molded to depict two copulating birds. It has a suspension hole and the birds have eyes and beaks similar to fragment # 3. It is darkly colored on one side, possibly due to a burning event.
6. This fragment resembles the top of a jaguar. Two ears and a cleft between them are visible.



Figure 19: Vessel
Flute



Figure 20: Vessel
Flute

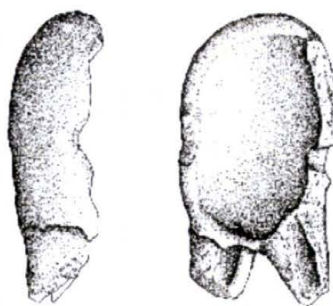


Figure 21: Vessel Flute



Figure 22: Vessel Flute



Figure 23: Vessel Flute



Figure 24: Vessel Flute



Figure 25: Vessel Flute

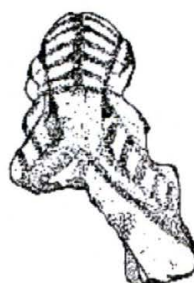


Figure 26: Vessel Flute



Figure 27:
Ocarina



Figure 28: Ocarina



Figure 29:
Ocarina

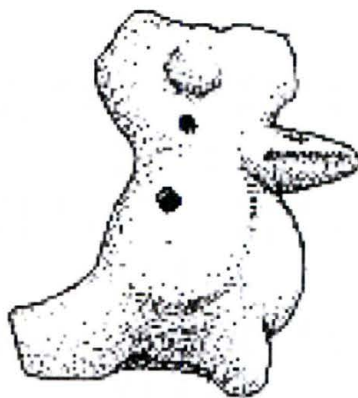


Figure 30: Ocarina



Figure 31: Ocarina



Figure 32: Ocarina



Figure 33: Ocarina

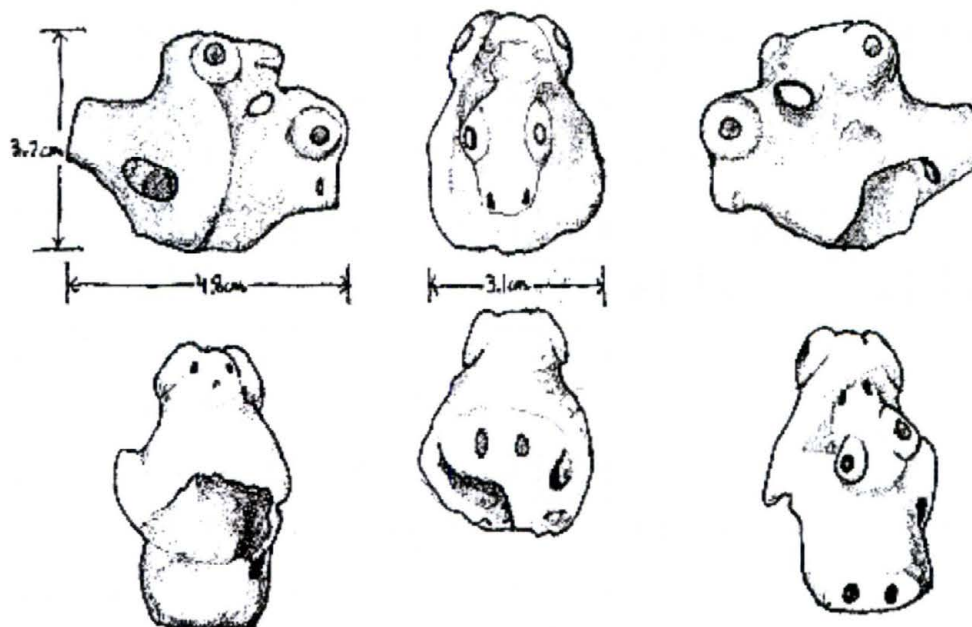


Figure 34: Ocarina



Figure 35: Ocarina



Figure 36: Ocarina



Figure 37: Unidentified,
possible S.P.A.



Figure 38: Unidentified,
possible S.P.A.



Figure 39:
Unidentified,
possible S.P.A.



Figure 40:
Unidentified,
possible S.P.A.

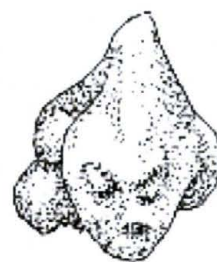


Figure 41:
Unidentified,
possible S.P.A.



Figure 42:
Unidentified,
possible
S.P.A.



Figure 43:
Unidentified,
possible S.P.A.



Figure 44:
Unidentified,
possible S.P.A.



Figure 45: Unidentified,
possible S.P.A.



Figure 46: Unidentified,
possible S.P.A.



Figure 47:
Unidentified, possible
S.P.A.



Figure 48:
Unidentified, possible
S.P.A.

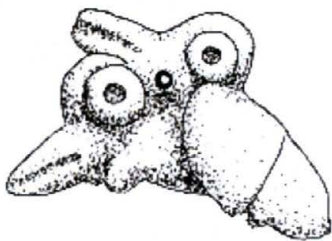


Figure 49:
Unidentified,
possible S.P.A.



Figure 50:
Unidentified,
possible S.P.A.

Cahal Pech

ARTEFACT FORM: Sound Producing Artifacts

SUBFORM: Aerophone

TYPE: Whistle (figs. 51-55)

FREQUENCY: 2

1. Figures 51 and 52

2. Figures 53-55

MATERIAL: Modeled Clay

DATING:

1. Middle Formative

2. Terminal Classic

CONTEXT:

1. Subfloor construction fill of Plaza B

2. Level 1 (surface) of Plaza A, in front of structure A3
- Post-abandonment ritual

COMMENTS: The first of these two whistles at Cahal Pech has an ovoid shape. This whistle has a small clay bead or "pea" inside the resonance chamber which is used to intensify the sound of the whistle. The second whistle is in the shape of a canine head. The snout is the mouthpiece and the aperture and air-duct are located on the underside of the head. Both whistles are still playable.

ARTEFACT FORM: Sound Producing Artifacts

SUBFORM: Aerophone

TYPE: Tubular Flute (figs. 56 and 57)

FREQUENCY: 1

MATERIAL: Modeled Clay

DATING: Terminal Classic

CONTEXT: Surface (Level 1) of Plaza A in front of Str. A2

- Post-abandonment ritual.

COMMENTS: This artifact is the mouthpiece of a tubular flute. It depicts an anthropomorphic face with earspools.

ARTEFACT FORM: Sound Producing Artifacts

SUBFORM: Aerophone

TYPE: Vessel Flute (figs. 58-72)

SUBTYPE: Unknown

FREQUENCY: 6

1. Figures 58-61
2. Figures 62 and 63
3. Figures 64-66
4. Figures 67
5. Figures 68 and 69
6. Figures 70 and 71

MATERIAL: Modeled Clay

DATING:

1. Middle Formative
2. Middle Formative
3. Middle Formative
4. Early Facet of the Late Formative
5. Late Facet of the Middle Formative
6. Terminal Classic

CONTEXT:

1. Plaza B Level 8, in the fill below one of the earliest Plaza B floors.
2. In the fill Below Floor 4 of Str. B4
3. In the fill Below Floor 4 in Str. B4
4. This specimen was found on the surface of a road that was cut into the large platform at the Cas Pek Group. This context is in the construction fill below two late Formative floors and therefore it is dated to the early facet of the late Formative.
5. Plaza Unit 1 below a plaza floor in Plaza B
- Construction Fill
6. In the humus and collapsed architectural debris overlying the terminal construction phase of structure A2 - Post-abandonment ritual

COMMENTS: All of these artifacts are fragmentary. The absence of a mouthpiece makes it impossible to determine

whether any of these vessel flutes were ocarinas or rim-blown vessel flutes.

The first three of these fragmentary vessel flutes were molded to depict a bird, have one sound chamber and one visible tonal hole. The paste and composition of the first vessel flute is characteristic of the Cunil Phase (1100-900 BC).

4. This artifact has a globular shape due to a large, round sound chamber. There are two possible tonal holes. The fragmentary condition of this artifact makes it difficult to determine what it was meant to depict.
5. This zoomorphic vessel flute has one sound chamber and one tonal hole. It is depicting a feline with pointed ears and slanted eyes.
6. This anthropomorphic vessel flute has a rectangular shape and a naturalistic human face incised on one side. The other side displays 3 possible tonal holes. One of these could be an aperture for an air-duct assembly. There is also a suspension hole running through the entire top of the vessel flute.

ARTEFACT FORM: Sound Producing Artifacts

SUBFORM: Aerophone

TYPE: Vessel Flute

SUBTYPE: Ocarina (figs. 72-85)

FREQUENCY: 6

1. Figures 72 and 73
2. Figures 74 and 75
3. Figures 76 and 77
4. Figures 78 and 79
5. Figures 80 and 81
6. Figures 82-84

MATERIAL: Modeled Clay

DATING:

1. Middle Formative
2. Middle-Late Formative
3. Middle-Late Formative
4. Middle-Late Formative
5. Terminal Classic
6. Middle-Late Formative

CONTEXT:

1. Structure B-4, Unit 9 level 7c - Construction fill
2. Fill below level 3 of Str. B4
3. Fill below level 3 of Str. B4
4. Fill below level 3 of Str. B4

5. This specimen was found along with several grave goods accompanying the remains of a child. The grave had intruded into a bench located in Room 2 of Str. A3 in Plaza A - Special deposit
6. Structure B-4, Unit 3, below floor 2 - Construction fill

COMMENTS:

1. This fragmentary ocarina has an air-duct assembly, two visible tonal holes and one suspension hole. Depending on its orientation, this artifact resembles either a bird or a conch shell.
2. This ocarina is also fragmentary depicts an anthropomorphic figure wearing a loincloth. The arms are bent forward against the chest with hands making fists. The head is missing and the mouthpiece, which acts as a third support is in the back along with two tonal holes. The aperture is on the bottom of the figure.
3. This anthropomorphic ocarina is complete. It has a naturalistic human face with round cheeks and closed eyes. It has either hair or a simple headdress framing the face. The arms are bent forward against the chest with hands making fists. The construction of the air-duct assembly is similar to # 2.

4. This ocarina is similar to # 2. However, the arms have been broken off along with the head.
5. This complete ocarina depicts an anthropo-zoomorphic figure with a large headdress. It is polychrome.
6. The last ocarina is complete and depicts a bird. It has one suspension hole on top and one tonal hole on the front (chest) side of the bird. The mouthpiece is the tail and the aperture is on the bottom side of the tail.

ARTEFACT FORM: Sound Producing Artifacts

SUBFORM: Aerophone

TYPE: Vessel flute

SUBTYPE: Rim-blown vessel flute (figs. 85-91)

FREQUENCY: 3

1. Figures 85 and 86
2. Figures 87-89
3. Figures 90 and 91

MATERIAL: Modeled Clay

DATING:

1. Terminal Classic
2. Middle Formative
3. Middle Formative

CONTEXT:

1. This specimen was found along with several grave goods accompanying the remains of a child. The grave had intruded into a bench located in Room 2 of Str. A3 in Plaza A - Special deposit
2. This specimen was found on the surface of a road that was cut into the large platform at the Cas Pek Group. This context is in the construction fill below two late Formative floors and therefore it is dated to the early facet of the late Formative.
3. Tolok Str. 1 - Midden at bedrock

COMMENTS:

1. This tubular shaped rim-blown vessel flute is polychrome. It is open ended, giving the player four tonal holes.
2. This rim-blown vessel flute depicts an armadillo. The blowhole is located on the rear end of the animal.
3. The last rim-blown vessel flute depicts a bird. At first glance, this artifact looks more like an ocarina. However, it does not have an air-duct assembly. It has one tonal hole in the front and one blowhole on the bottom. The player would position their mouth around the tail so that the air stream would be blown across the blowhole, producing a sound.

ARTEFACT FORM: Sound Producing Artifacts

SUBFORM: Aerophone

TYPE: Unidentified (figs. 92-95)

FREQUENCY: 2

1. Figures 92 and 93

2. Figures 94 and 95

MATERIAL: Modeled Clay

DATING:

1. Middle-Late Formative

2. Middle-Late Formative

CONTEXT:

1. Below Floor 2 on Str. B4 - Construction fill

2. Below Floor 2 on Str. B4 - Construction fill

COMMENTS: These artifacts display air-duct assemblies and sound chambers. Since they have no visible tonal holes and are fragmentary there is no way of knowing whether they used to be whistles or ocarinas. They are both of similar size and shape, and depict some sort of zoomorphic figure.

ARTIFACT FORM: Unidentified, possible sound producing artifacts (figs. 96-111)

FREQUENCY: 8

1. Figures 96 and 97

2. Figures 98 and 99

3. Figures 100 and 101
4. Figures 102 and 103
5. Figures 104 and 105
6. Figure 106
7. Figures 107-108
8. Figures 109-110

MATERIAL: Modeled Clay

DATING:

1. Terminal Classic
2. Between the Middle and Late Formative
3. Between the Middle and Late Formative
4. Terminal Classic
5. Terminal Classic
6. Terminal Classic
7. Middle Formative
8. Middle Formative

CONTEXT:

1. Surface (Level 1) of Plaza A in front of Str. A2 -
Post-abandonment ritual.
2. Below Floor 2 on Str. B4 - Construction fill
3. Below Floor 2 on Str. B4 - Construction fill
4. Surface (Level 1) of Plaza A, in front of Str. A2 -
Post-abandonment ritual

5. In front of Structure A2, Level 2 - This specimen seems to have fallen below the plaza floor, into level 2 due to bioturbation. Therefore, it could have once been deposited on the surface of Plaza A during post-abandonment ritual activity in the Terminal Classic.
6. This specimen was found along with several grave goods accompanying the remains of a child. The grave had intruded into a bench located in Room 2 of Str. A3 in Plaza A - Special deposit
7. B4 Summit Test 7b - Construction fill
8. B4 Summit Test 7b - Construction fill

COMMENTS: These fragments all have acute curvature, perhaps indicating that they once had sound chambers and other musical qualities. However, the absence of mouthpieces and tonal holes prevents any ability to ascertain their type.

1. This fragment was molded to depict two naturalistic anthropomorphic figures, perhaps a mother and child. The main figure has a small hat and incised hair. The smaller figure, also with incised hair is positioned lower and to one side.
2. This anthropomorphic fragment has a naturalistic face with incised features.
3. The third fragment also depicts a naturalistic human face with incised features.

4. This fragment depicts a human face with earspools. The face is not very detailed, probably due to its damaged state.
5. This anthropomorphic fragment has a naturalistic face with incised features.
6. This anthropomorphic fragment has a naturalistic face with incised features and an elaborate headdress. It is painted with blue and orange colors.
7. This fragment is in the shape of a human torso.
8. This fragment depicts an anthropomorphic face with large features. It is possible that this fragment was once attached to fragment #7.



Figure 51: Whistle



Figure 52: Whistle



Figure 53:
Whistle



Figure 54:
Whistle



Figure 55:
Whistle



Figure 56: Tubular
Flute



Figure 57:
Tubular Flute

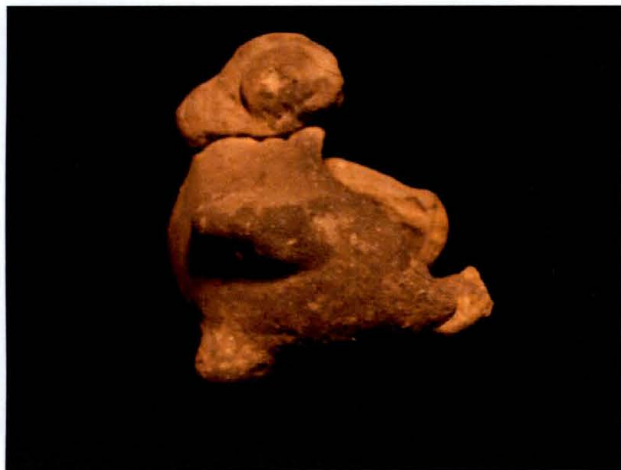


Figure 58: Vessel Flute with
unknown subtype



Figure 59: Vessel Flute with
unknown subtype

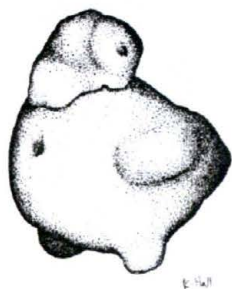


Figure 60: Vessel
Flute with unknown
subtype

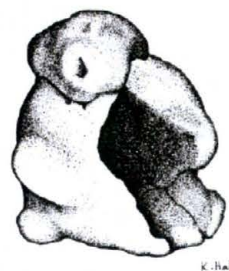


Figure 61: Vessel
Flute with unknown
subtype



Figure 62: Vessel
Flute with unknown
subtype



Figure 63: Vessel
Flute with unknown
subtype



Figure 64: Vessel
Flute with unknown
subtype



Figure 65: Vessel
Flute with unknown
subtype



Figure 66: Vessel
Flute with
unknown subtype



Figure 67: Vessel Flute
with unknown subtype



Figure 68: Vessel Flute with unknown subtype



Figure 69: Vessel Flute with unknown subtype



Figure 70: Vessel Flute with unknown subtype



Figure 71: Vessel Flute with unknown subtype



Figure 72: Ocarina



Figure 73: Ocarina



Figure 74: Ocarina



Figure 75: Ocarina



Figure 76: Ocarina



Figure 77: Ocarina



Figure 78: Ocarina



Figure 79: Ocarina



Figure 80: Ocarina



Figure 81: Ocarina



Figure 82:
Ocarina



Figure 83:
Ocarina



Figure 84:
Ocarina



Figure 85: Rim-blown vessel flute



Figure 86: Rim-blown vessel flute



Figure 87: Rim-blown vessel flute



Figure 88: Rim-blown vessel flute



Figure 89: Rim-blown vessel flute



Figure 90: Rim-blown vessel flute



Figure 91: Rim-blown vessel flute



Figure 92: Aerophone
with unknown type



Figure 93:
Aerophone with
unknown type



Figure 94: Aerophone
with unknown type



Figure 95: Aerophone
with unknown type



Figure 96: Unidentified,
possible S.P.A.



Figure 97: Unidentified,
possible S.P.A.



Figure 98: Unidentified,
possible S.P.A.



Figure 99: Unidentified,
possible S.P.A.



Figure 100: Unidentified,
possible S.P.A.



Figure 101: Unidentified,
possible S.P.A.



Figure 102: Unidentified,
possible S.P.A.



Figure 103: Unidentified,
possible S.P.A.



Figure 104: Unidentified, possible S.P.A. Figure 105: Unidentified, possible S.P.A.



Figure 106: Unidentified, possible S.P.A.



Figure 107:
Unidentified, possible
S.P.A.



Figure 108:
Unidentified, possible
S.P.A.



Figure 109: Unidentified,
possible S.P.A.



Figure 110: Unidentified,
possible S.P.A.

Distribution

Blackman Eddy Intra-Site Distribution

Excavations at the site of Blackman Eddy have yielded two unidentified vessel flutes, three ocarinas and six artifacts that are unidentified, possible aerophones. Four of these aerophones were located in Formative period contexts, two were located in Late Classic contexts and five were located in Terminal Classic contexts.

Two of the Formative period artifacts were associated with a special deposit overlying bedrock. This deposit has been designated as having a Terminal Early/Early Middle Preclassic Transition date and appears to have been associated with the earliest apsidal structures at the site (Cochran 2009). One of the Formative aerophones was recovered from the debris of the bulldozer cut. Therefore, the original context of this artifact is unknown. However, its location and association with Op. 8 suggest that it could have been in the construction fill associated with one of the Middle Formative buildings within the architectural sequence of Structure B1. The last Formative period aerophone was recovered from the removal of the eastern edge of structure B1-13th. It was located in the

fill of this Early Middle Formative structure overlying bedrock.

One of the ocarinas at Blackman Eddy was associated with Structure B5, which was a Late Classic elite residential structure. This artifact was found with a deposit that can be associated with post-abandonment activity. This deposit occurred sometime after this area of the site was abandoned and before it was reoccupied in the Late Classic. In other words, this deposit consists of refuse associated with post-abandonment ritual that occurred between two phases. The other Late Classic aerophone was found in the construction fill of Structure A7. Four of the Terminal Classic aerophones were recovered from a special deposit in an alleyway between structures B1 and B2. The deposit, also associated with post-abandonment ritual, was interred sometime after structure B1-2nd was no longer in use and before structure B1-1st was constructed. The fifth Terminal Classic aerophone was associated with a different special deposit within structure B1.

Cahal Pech Intra-Site Distribution

Excavations at the site of Cahal Pech have yielded two whistles, one tubular flute mouthpiece, six fragmentary vessel flutes, six ocarinas, three rim-blown vessel flutes,

two unidentified aerophones and eight unidentified, possible sound producing artifacts. Ten of these aerophones were recovered from Middle Formative contexts, eight were recovered from contexts dated between the Middle and Late Formative periods, one was located in a Late Formative context and nine can be dated to the Terminal Classic.

The Middle Formative aerophones were recovered from construction fill (n=9) and midden (n=1) contexts. All of the aerophones dated to a period between the Middle and Late Formative (n=8) were recovered from construction fill. The Late Formative vessel flute was also recovered from construction fill. Three of the Terminal Classic aerophones were recovered from special deposits (burials), while six were associated with post-abandonment ritual contexts.

The Context of Music

Speculation surrounding the role and significance of the ancient Maya aerophone in the context of Maya music has alluded to a variety of explanations. One explanation is that they functioned as toys for children. Another explanation proposes that they satisfied the musical needs of the lower classes. Some scholars have hypothesized that whistles and ocarinas were used for individual rituals, providing families with a simple way of producing music for

their small-scale rituals, while tubular flutes were elite musical instruments. Other scholars have associated whistles and ocarinas with funerary rituals and, in particular, infant and child burials.

All of these interpretations could be inferred from the associated contexts of the aerophone artifacts recovered at Cerros, Dzibilchaltun, Colha, and Aguateca, as well as Cahal Pech and Blackman Eddy. Most of the Cahal Pech and Blackman Eddy aerophones were recovered from contexts associated with the monumental architecture in the site core. Therefore, the elite of the site can be considered the "users" of these sound producing artifacts. However, this is not the only social group that is associated with musical instruments. At Cahal Pech, two aerophones were recovered from the Cas Pek periphery settlement and one was recovered from the Tolok periphery settlement. These periphery settlements contain residential and civic-ceremonial architecture that was used by the non-elite of the site for housing, craft production and family/community-oriented ritual performances (Garber 2003:110). It is likely that if excavations are directed toward periphery settlements at Blackman Eddy and other lowland sites, similar discoveries will be made.

Secondary contexts are typically excluded from most contextual interpretations of ancient Maya musical instruments. However, a large number of all types of aerophones are reported from middens and construction fill. Although these types of contexts do not contribute to "exciting" interpretations about musical activity, they can provide archaeomusicological information. For example, the fact that aerophones are often recovered from these contexts supports the idea that these artifacts were not always used for funerary rituals and burials. In both elite and non-elite areas, these artifacts were used, discarded and often later incorporated into construction fill.

From the data at both Cahal Pech and Blackman Eddy, it is also clear that post-abandonment ritual should be considered as an activity involving music. Although the three aerophones that were associated with the child burial at Cahal Pech were technically recovered from a "special deposit", it is likely that this child and the grave goods were interred after the site was abandoned in the Terminal Classic. Therefore, not only did the Maya revisit sites to honor and worship their ancestors that were already buried within the architecture, they perpetuated the act of making the site sacred by continuing to bury their dead in certain structures. Ancestor veneration was and still is an

important aspect of Maya ritual and religion. The persistence of this tradition implies that it was a valued practice. Furthermore, music was an essential aspect of this valued practice. It is important to remember that both prehistoric and post-abandonment activities contribute to the final record of the past that archaeologists uncover. Therefore, as we see at Blackman Eddy and Cahal Pech, some contexts recorded as "special deposits", could actually be the disturbances and material culture of the people participating in post abandonment ritual.

CHAPTER 5

CONCLUSION

This thesis is the result of a strong interest in Maya music and the list of research questions and goals that followed this interest. The primary sources that facilitate the study of ancient Maya music are 1) the sound producing artifacts and 2) the ancient iconography that depicts their use. Although the instrumentation used by the Maya has been studied, there has been no attempt to standardize the method of classifying ancient Maya aerophones, the most commonly excavated musical instrument category in ancient Maya contexts. The typology proposed in this thesis was derived from an inclusive and detailed analysis of the observations of patterns occurring in a relatively large sample of ancient Maya aerophones.

Through the analysis and typology presented here, it is my hope that archaeologists, ethnomusicologists and archaeomusicologists will be motivated to pay greater attention to ceramic aerophone classification terms and concepts than has characterized archaeological writing in

the past. Once we begin to identify and present these materials in a common way, other archaeologists will be able to consider the questions explored in this thesis and situate their own material in the broader Maya regional context.

In addition to suggesting a typology, this thesis has provided a background to the subject of ancient Maya music. It has also presented an overview of the sound producing artifact assemblages at four different Maya lowland archeological sites, documented the types of aerophones present at Cahal Pech and Blackman Eddy, presented contextual analyses of the ceramic aerophones recovered from Cahal Pech and Blackman Eddy and explored patterns of use and deposition in order to contribute to the research on the role and significance of aerophones in the musical world of the ancient Maya.

The aerophones recovered at Cahal Pech and Blackman Eddy have contributed to our knowledge of these instruments and their place in Maya music. The finds reveal a sophisticated knowledge of musical instrument construction as well as an intriguing level of creativity. The data from Cahal Pech and Blackman Eddy also shows that, similar to other sites in the Maya lowlands, aerophones are found in a wide variety of contexts from elaborate burials associated

with monumental architecture to construction fill below plaza and domestic house floors.

From previous interpretations on the role and significance of ancient Maya aerophones it may be tempting to believe that these instruments were used by a limited group of people in a limited amount of situations. However, as I have demonstrated, the use of aerophones was a general, perhaps even decentralized cultural practice. I believe that Aerophones were manufactured and used by the Maya to not only reproduced the natural sounds around them, but also to use as symbols of sacred rituals and to invoke, communicate with and worship the spirits of their deceased ancestors. The anthropomorphic and zoomorphic representations of these instruments facilitated these functions. Future research might show that certain types of aerophones have social status like the Maya who once lived at the ceremonial centers we see today. However, their function as a whole cuts across social barriers. Social status has no relationship to the ultimate value of music. Because the Maya were unified in their view of the world regardless of their station in life, their religion and ritual were full of unified traditions. Therefore music, as an essential and valuable component of Maya ceremonial, ritual and social life, was enjoyed by many.

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