The Realm Below

Speleoarchaeological Investigations in the Macal River Valley, Belize

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Preface

Jaime J. Awe
Former Director of the Belize Institute of Archaeology (2003–2014)

In June of 2010, while I was still serving as Director of the Belize Institute of Archaeology, Dr. Gyles Iannone, who was conducting research at the upper Macal River Valley site of Minanha, arrived at my home in San Ignacio bearing two large fragments of an exquisitely painted polychrome vase. Exceptionally well preserved, the vessel fragments were decorated with vertical and horizontal bands of large hieroglyphs that bordered an elaborately attired Maize God. Gyles informed me that one of his workers, Dennis Martínez, had discovered the fragments of the vase within a cave that was located high up on a cliff overlooking the Macal River gorge. Martínez had also noted that the cave was untouched and that it contained several other complete and fragmented ceramic vessels. Having directed the Western Belize Regional Cave project for almost a decade, during which time we documented more than 30 caves in the Cayo District, I was well aware of the rarity of unlooted cave sites. Indeed, because most caves are readily accessible, and because the ancient Maya deposited cultural remains on the surfaces of these caverns, most cave sites have been, and continue to be, plundered for the ancient relics within them. For this reason, and the fact that only a few hieroglyphic texts have ever been recovered in the Belize River Valley region, I arranged for a team of cavers to return to the site to conduct reconnaissance, and to search for other fragments of the vase.

Led by David Larson of the Xibalba Mapping and Exploration Team (XMET), the group, which also included Belizean tour guides Marcos Cucul and Mario Pérez, returned to the site

on July 4 and recovered several more pieces of the vase. In spite of retrieving these additional fragments, however, the vase was still incomplete. By this time, I was also concerned that increased traffic to the site could lead potential looters to plunder the cave and thus we would lose an opportunity to record and study one of the very few pristine caves in the Macal Valley. My responsibility to protect and preserve Belize's cultural heritage also weighed heavily on my mind and these concerns led me to organize a second expedition to Cuychen under the supervision of Christophe Helmke together with Shawn Morton. They were capably assisted by Belizean cave guides Abel García, Esperanza Gaitán, and Gonzalo Pleitez, Belize Valley Archaeological Reconnaissance project archaeologist Catharina Santasilia, plus Bruce and Alex Minkin, close friends and colleagues who had assisted me in my previous cave research in the Roaring Creek Valley. Members of this second expedition mapped the entirety of the small subterranean chamber and documented sixteen whole and fragmented ceramic vessels, but only recovered one more sherd of the Cuychen vase. A third expedition headed by Helmke and Morton, accompanied by Cucul and Mario Portillo of Belmopan, returned to the site with the express purpose of excavating the whole of the cave, which they completed with the expert assistance of Nazario and Marvin Puc of San José Soccutz in a matter of days.

Although I was disappointed by the fact that the Cuychen vase remained incomplete, this situation was neither unique nor surprising. Having spent a fair number of years documenting cave sites throughout the country, my students and I previously noted that this was a recurrent pattern with highly decorated vessels in the caves of western Belize. This was certainly the case at Actun Tunichil Mucnal, Actun Balam, and even Hokeb Ha Cave in southern Belize, to name but a few. In spite of this situation, the discovery of the fragmented Cuychen Vase represents a truly fantastic and rare event in cave research in western Belize. As testimony of this significance, the hieroglyphic text on the vessel has led us to identify a heretofore unrecorded Emblem Glyph, and has also provided new information on the sociopolitical landscape of the central Maya lowlands. This volume is therefore a celebration of the unique discoveries that we have made in the subterranean sites of the Macal River Valley, and of the significant contributions that cave research in Belize continues to provide to our understanding of ancient Maya civilization as a whole.

Figure 1. Cave opening, peering out onto the rainforest (photograph by Christophe Helmke).

Foreword

Cuychen and the Caves of the Macal River Valley

Christophe Helmke

> Standing a few yards within [the cave] and looking out, the scene was beautiful in the extreme. The exquisite tracery of bright green leaves, the gorgeous flowers of creepers and lianas which hung from above like a curtain over the entrance, outlined against a background of cloudless blue sky […] Close to a large boulder, near the mouth of the cave, and completely buried in bats' dung, we found two bundles of pitch-pine sticks, each stick about a couple of feet long, and of the thickness of a lead pencil, bound together with henequen fibre, and evidently meant to be used as torches. These had probably been left, centuries before, by the ancient occupants, as the henequen, which is a remarkably tough and lasting fibre, was quite rotten from age. The pitch-pine, on the other hand, which is full of resin and practically indestructible, was as good now as on the day it was left there. Lighting one of the bundles, which made an excellent torch, we proceeded to explore the cave. (Gann 1925:110-111)

This is how Thomas Gann describes his exploration of a cave—sometime between 1892 and 1894—in the vicinity of Benque Viejo, in present-day Belize. The account is clearly meant as an erudite report of his exploration of a cave, the candor of his perceptive comments interrupted solely by the destruction that he wreaked on the site and its archaeological remains. The perfectly preserved torch, quite possibly dating to the Classic period, reduced to ashes in just moments. Despite the by-now well known and distinctive damage that Gann

Figure 2. Cave exploration and the discovery of artifactual materials (photograph by Christophe Helmke).

dispensed on archaeological sites—in the name of his favorite pastime of excavation—he did keep a record of much of the archaeology that he had the fortune of encountering, leaving modern generations of archaeologists to brood in envy and conjecture (Thompson 1975; Pendergast 1993:4).

A similar, albeit less destructive account, is provided by J. Eric S. Thompson in his much celebrated paper entitled "The Role of Caves in Maya Culture" (Thompson 1959). In that text Thompson makes some observations on the same cave in the vicinity of Benque Viejo, an area he knew well thanks to his ethnographic work at nearby San José Soccutz (1927–1929) and his excavations at Xunantunich (in 1938) (Thompson 1930, 1942; see also Pendergast and Graham 1981).

> The floor of an inner chamber, where the atmosphere was close, oppressive and distinctly musty, was carpeted with a layer of potsherds several inches thick, which must have represented many hundreds of vessels. (Thompson 1959:126)

What is remarkable about these excerpts is that they are some of the earliest accounts of cave exploration in Belize (McNatt 1996:81-82). The words still resonate, despite the many years that separate the accounts from those presented in this volume. Anyone who has entered a cave in the humid tropics can imagine the excitement of the early investigators, exploring the dark and cool recesses of caves, gaining a sense of their surroundings, as the objects left behind by the ancient Maya appear dimly visible in their flickering lights (Figures 1 and 2). These accounts are not only noteworthy given their early date, but also because both recount the exploration of caves in the Macal River Valley of western Belize. It is precisely this area that we report on in this volume. Thus, whereas caves of the Macal Valley have witnessed more than twelve decades of archaeological exploration, they are continuing to yield significant finds and contribute to our knowledge of ancient Maya cave utilization, ritual, and world-view.

Nowadays cave research, or speleoarchaeology as it is also known, is an integrated part of archaeological research projects in the Maya area. This was not always the case, with caves often relegated to a subsidiary category of sites. The true importance of these subter-

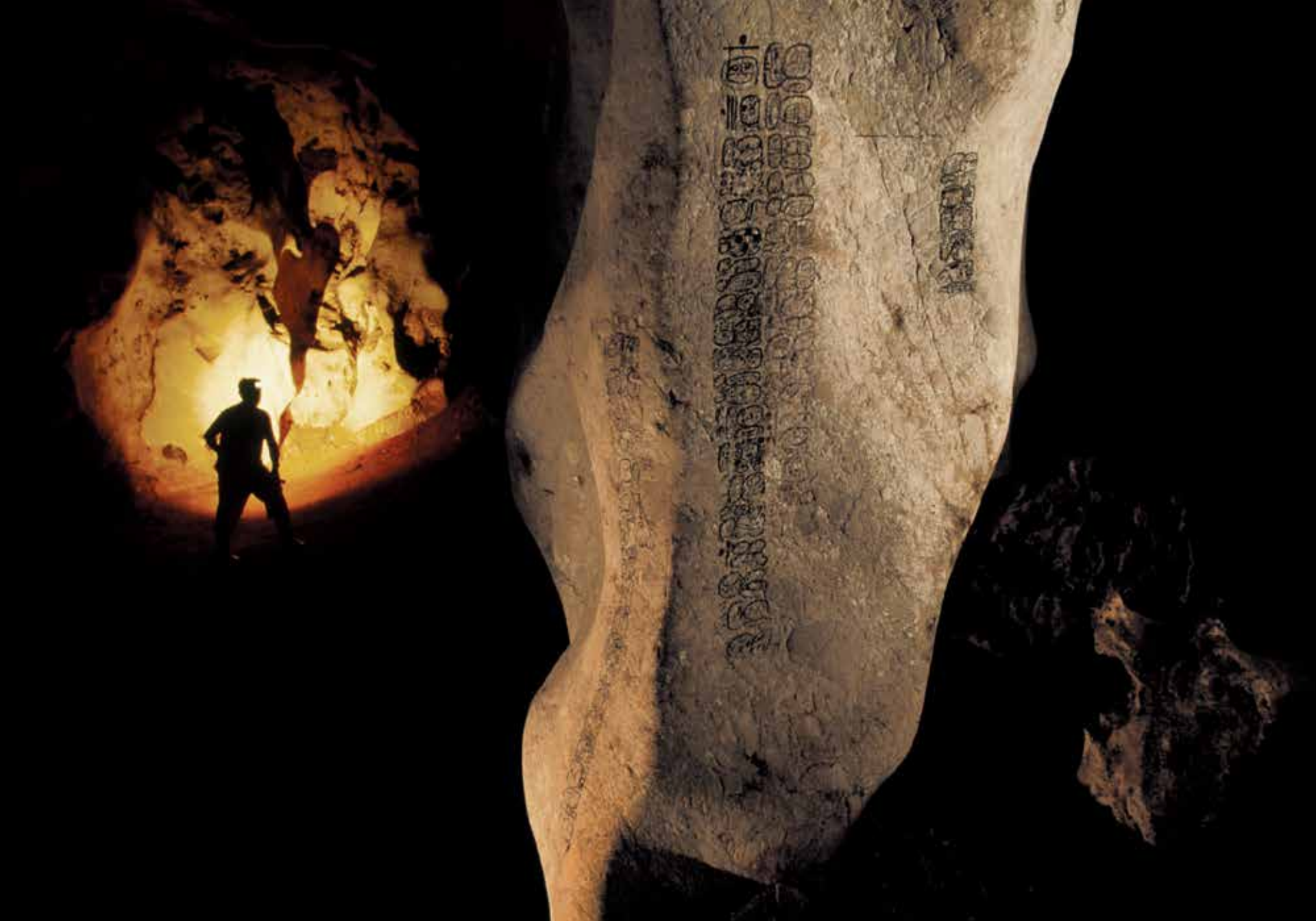


Figure 3. The cave site of Naj Tunich, in the Peten of modern-day Guatemala, is remarkable for its many glyphic texts, painted by pilgrims to the site from the end of the seventh century until the middle of the eighth (photos by Stephen Alvarez and Wilbur E. Garrett © National Geographic).

ranean sites was not made clear until decades later. Whereas Thomas Gann, Henry Mercer, Edward Thompson, Eric Thompson, and even the intrepid Stevens and Catherwood duo (see McNatt 1996; Brady and Prufer 2005) all made clear the importance of caves in the Maya area and began hinting at the ritual significance of caves in no uncertain terms, I would argue that the single most decisive turning point in cave studies was the discovery of Naj Tunich in 1979 (G. Stuart 1981; Brady 1989). This unique cave site, located in the southeastern corner of the present-day Peten district in northern Guatemala, owes its distinction to the wealth of its rock art. There the glistening walls of the cave bear four dozen glyphic texts, painted in dark, decisive, and elegant brush strokes, commemorating the arrival of pilgrims to this important sanctuary, including royal figures from an array of capitals in the area (see Stone 1995) (Figure 3). So evocative are the texts and images of Naj Tunich that scholars were never able to see caves in the same light again. Clearly, caves were of paramount importance to the ancient Maya, both high and low, as kings made

Figure 4. The Cuychen Vase (photograph by Myka Schwanke).

pilgrimages to caverns in antiquity. The importance of caves persists unabated since caves continue to serve as places of worship among traditional Maya communities. Whereas the discovery of Naj Tunich is unparalleled, sustained speleoarchaeological work has led to a series of important finds in the last three decades (e.g., Brady 1997; Brady et al. 1997; Brady and Ashmore 1999; Prufer and Brady 2005; Healy 2007).

The fortuitous discovery of Cuychen in July 2010 is one of these important finds. Located in the upper reaches of the Macal River Valley that remain difficult of access and overgrown with rainforest, the cave owes its importance not to its size, but to the fact that it was unlooted and that it contained an exceptional polychrome vase. It is precisely the remoteness of the site, its small size, and the difficulty of access that have sheltered it from prying eyes and pillaging. As noted in the preface, a casual encounter between the discoverer of the cave and archaeologists working in the area promptly led to the deployment of an archaeological team and the thorough documentation of the cave and complete retrieval of the vase and associated finds (see this volume Chapter 2, Helmke et al. 2019).

The importance of the Cuychen Vase (Figure 4) stems not only from the rich iconography and detailed glyphic text that adorn it, but for its archaeological context, since it is one of a very few such specimens with known archaeological provenience. The illicit looting of archaeological sites for materials that are deemed aesthetic and which are sold on the black market is to blame for the paucity of objects with known proveniences. Thus, even though almost four dozen examples of ceramic vessels depicting Holmul Dancer scenes are known, only a small fraction have been recovered as part of controlled archaeological excavations (see Looper 2008:4-7). Aptly enough, it is the tripod plate that was recovered as part of the 1910–1911 excavations at Holmul (Merwin and Valliant 1932:15; Reents 1986), that stands as the fossil specimen—the first of its kind—with the site serving as the namesake for the whole series. Just a decade later, another vase bearing a Holmul Dancer scene was found in a cave near Benque Viejo (Gann 1925:72) (Figure 5a), and during the pioneering excavations at Uaxactun (1926–1937) another fragmentary vessel was found (Smith 1955:Fig. 2b) (Figure 5b). In the 1980s, a fragmentary vase was discovered at Río Azul (Adams 1999:88-89) (Figure 5c), and a superb vase of Naranjo production was dis-

Figure 5: Examples of Zacatel Cream-polychrome and Cabrito Cream-polychrome vessels with archaeological provenience: (a) recovered by Thomas Gann in a cave in the vicinity of Benque Viejo (after Gann 1925:72); (b) Uaxactun (after Smith 1955:2:Fig. 2b); (c) Río Azul; (d) Buenavista del Cayo; (e) Baking Pot; (f) Cuychen. Cabrito Cream-polychrome versions of Holmul Dancer vases: (g) Lower Dover (courtesy of Jaime Awe); (h) Cahal Pech (where unspecified, photos by Christophe Helmke).

covered at Buenavista del Cayo in 1988 (Taschek and Ball 1992; Reents-Budet 1994:294-311) (Figure 5d). As part of a reconnaissance to the cave of Uchentzub in western Belize, members of the Western Belize Regional Cave Project discovered another, albeit fragmentary, example of a Zacatel Cream-polychrome vase (Ishihara 2001:247, Fig. 5; see also this volume Chapter 1, Awe et al. 2019). Just three years later, in 2003, a barrel-shaped vase with a low pedestal base was found at Baking Pot, apparently an import from Holmul (Reents-Budet et al. 2005:371, Fig. 1b) (Figure 5e), and in 2010 the stunning Cuychen Vase was discovered (Helmke et al. 2015) (Figure 5f). The most recent finds are two vases discovered in interments within residential groups at Naranjo. One of these is a very fine and detailed specimen analogous to another vase (K0633) without archaeological provenience. The other may be of Río Azul production but was found at Naranjo, indicating some connection between the two sites in antiquity (Vilma Fialko, personal communication 2017). Based on this review we can see that a very low proportion of Holmul Dancer vases have known archaeological proveniences, whereas more than 80% are the product of illicit excavation, sale, and acquisition—a startlingly high proportion, not least when one considers that these are the result of pervasive looting over the past six decades, with no clear signs of abating.

Despite the lack of archaeological provenience, the place of manufacture of such vases, but not the final place of deposition, can, at times, be reconstructed on the basis of stylistic traits, execution of the iconography, and glyphic texts citing the names and titles of the individuals who once owned these vessels. With such a footing, it can be said that the majority of Holmul Dancer vessels were produced at ceramic workshops attached to the court of Naranjo and Holmul (Reents-Budet 1994:179-188), although the Cuychen vessel appears to originate at the site of Xultun in the Peten (something that I will return to in the chapter examining the glyphs of the vase; see this volume Chapter 3, Helmke 2019). In contrast, less accomplished productions of Holmul Dancer vessels were produced in western Belize at one of the great regal workshops of the area. Initially it was assumed that these types of ceramics were produced at Buenavista del Cayo on account of their relative abundance at the site (Ball 1993:249-252; Reents-Budet et al. 2000:107-116). Since then, analogous specimens have also been discovered at other surface sites, including of Cahal Pech (Ball 1994a; Ball and Taschek 2002) (Figure 5h),

Lower Dover (Jaime Awe, personal communication 2011) (Figure 5g), and Naranjo (Fialko and Barrios 2016:692, Fig. 3). Similar ceramics have also been found in cave sites, including Actun Tunichil Mucnal (Helmke 2009:Fig. 6.21k), the Laberinto de las Tárantulas (Helmke 2009:Fig. 4.25b), and Actun Lubul Ha (Shawn Morton, personal communication 2010). Yet it is the discovery of the largest assemblage of these types of ceramics at Baking Pot in recent years (see Hoggarth et al. 2016) that is greatly changing the picture and casting some doubt on the site of origin of this type of ceramic. On account of abundance and ubiquity one would be left to conclude that these were produced at Baking Pot, but such an interpretation will have to be evaluated in light of petrographic and chemical attributes of paste composition in coming years. Together this grouping of sites in the eastern Peten and adjoining western Belize thus emerges not only as the primary production area for Holmul Dancer vessels, but also the area where this particular mythic motif occupied a particularly predominant role.

In this volume a series of detailed chapters are presented that together provide a coherent context for the Cuychen Vase and make clear the importance of proper archaeological research surrounding such important finds. In the first chapter, by Jaime J. Awe, Christophe Helmke, and Shawn G. Morton, the authors provide an overview of the speleoarchaeological research that has been conducted in the Macal River Valley, especially the more recent investigations of the Western Belize Regional Cave Project (1998–2003), under the direction of Jaime J. Awe.

With this backdrop, the second chapter, by Christophe Helmke, Shawn G. Morton, Jaime J. Awe, and Gyles Iannone, provides an account of the archaeological research conducted at Cuychen, including a background on the circumstances of discovery and the excavations conducted at the site in 2010. The ceramic materials documented and recovered as part of these excavations are also presented and analyzed in order to reconstruct general features and periodization of the site's utilization and some of the ritual activities conducted within this diminutive cave.

A thorough examination of the imagery and the glyphic texts is provided by Christophe Helmke in the third chapter. The detailed iconography that embellishes the vase is examined with an eye to reconstructing the events surrounding the resurrection of the Maize god, one of the pivotal events in this vitally important myth. The epigraphy elucidates the dedicatory

phrase of the vase, parts of the titular elements of the original owner, as well as a large portion of his pedigree, wherein the names and titles of the mother and father are presented.

In the second part of the volume special analyses are presented. The fourth chapter, by Dorie J. Reents-Budet and Ronald L. Bishop, is the first of these expert studies, wherein they relate the results of their Instrumental Neutron Activation analyses of the vase, which is designated as M2265 in their database. The analyses reveal that the vase exhibits a unique chemical profile that is as distinctive as its decoration, marking the vase as an exceptional chef d'oeuvre.

The fifth chapter, by Gavin B. Wisner, Katie K. Tappan, and Chrissina C. Burke, presents a meticulous report on the faunal remains encountered in the cave, based on a series of samples taken during the excavations. As most of the matrix is comprised of animal remains, the identity of these materials has an important bearing on an appraisal of site formation processes. These natural remains are informative with regard to the taphonomy of the site and are contrasted to the few species that were introduced by the ancient Maya as part of the primary phase of utilization.

In the sixth and final chapter, Kendall Baller, Marcus Lorang, Christopher Schwartz, and Christopher Morehart provide a methodical review of the macrofloral and botanical remains recovered from the matrix samples via floatation. Whereas the vast majority of remains are relatively recent and pertain to the taphonomic process of site formation, rather than stemming from ancient offerings and rituals performed by the ancient Maya, they contribute to a holistic study of the material traces amenable to archaeological scrutiny. These latter studies thereby demonstrate what can be achieved via thorough and systematic excavations of a cave site.

With these words, let us not tarry and let the following chapters guide us onto this fascinating journey into the speleoarchaeology of the Macal River Valley of Belize.

Figure 1. The underworld realm beneath the tropical Maya lowlands (photograph by Shawn Morton).

Chapter 1

Beyond the Twilight Zone: Cave Exploration in the Macal River Valley, Belize

Jaime J. Awe, Christophe Helmke, and Shawn G. Morton

The impression given by painted pottery, murals, and carved monuments in the Maya area is of a highly scheduled existence, marked by periodic and prescribed acts and ritual obligations, especially among the rulers and elites of antiquity. This relationship was mapped out in the very structure of their ancient cities, with wide processional ways leading to soaring pyramidal structures and temples that served as stages for the politico-religious rituals that sustained regal power over the masses gathered there in the grand plazas below. This structure permeated even the daily functioning of activities and actions at every site. Active participation in, or at the very least observation of, such ceremonies would have likely been a periodic requirement of civic membership, the monumental hearts of ancient cities continuing to inculcate the population as they went to market in the shadows of looming structures and fulfilled their civil obligations to the state.

Given this, it is understandable that both professional archaeologists and laypersons, alike, are drawn to the many civic-ceremonial centers that dot the Mesoamerican landscape. However, there is a world beneath this world. Below our feet, below the jungle floor, lies a hidden realm of caverns and caves, spectacular columned galleries stretching beyond the limits of even the most powerful of headlamps, rushing rivers in steep-walled canyons, and crystal-clear lakes, eerily still in the murky and musty darkness (Figure 1). It is to these locations that the ancient Maya, both elite and non-elite,

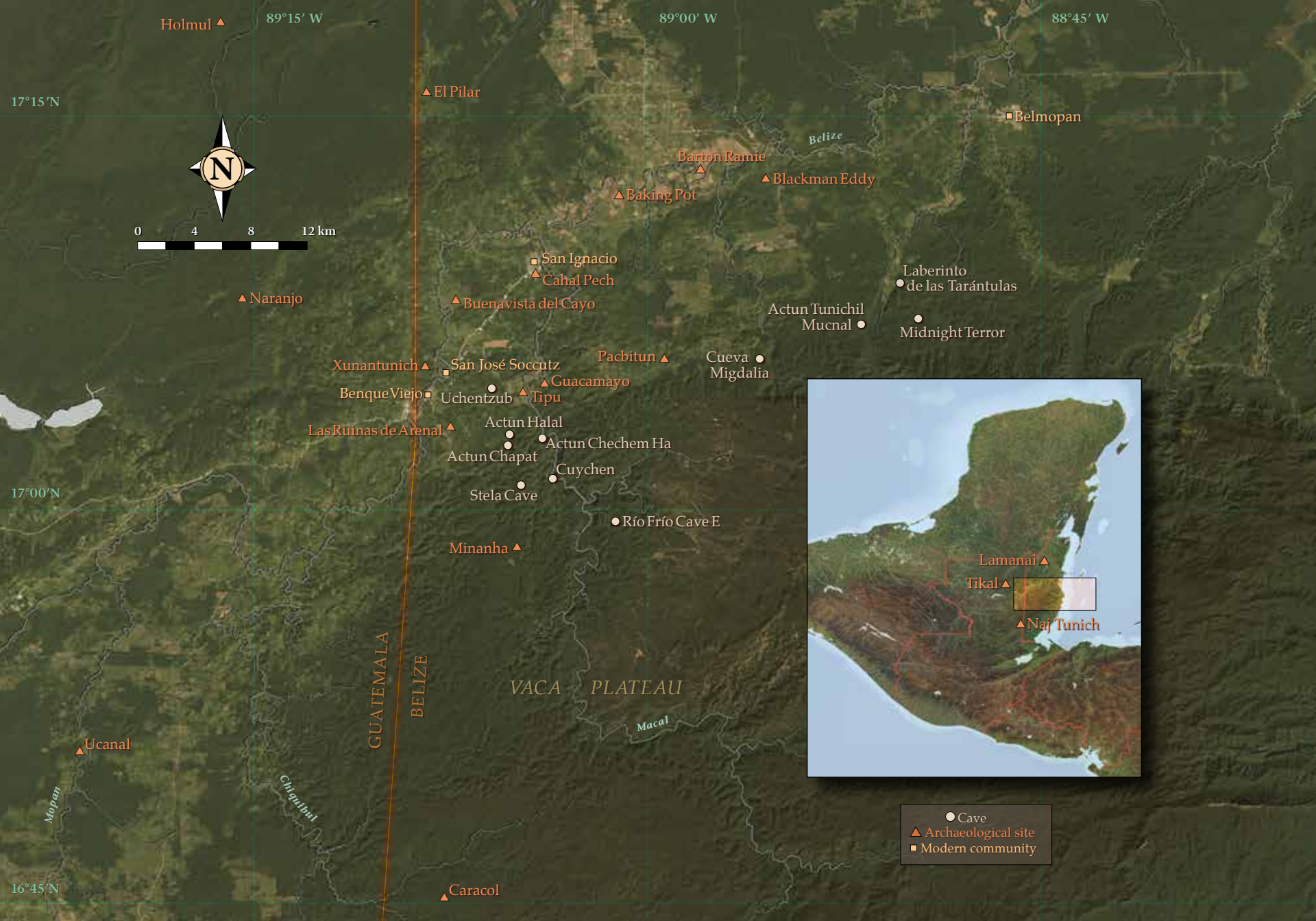

Holmul
89°15′ W
89°00′ W
88°45′ W
17°15′N
El Pilar
Belmopan
Belize
Barton Ramie
Blackman Eddy
Baking Pot
N
0
4
8
12 km
San Ignacio
Cahal Pech
Laberinto
de las Tarántulas
Naranjo
Buenavista del Cayo
Actun Tunichil
Mucnal
Midnight Terror
Xunantunich
San José Soccutz
Pacbitun
Cueva
Migdalia
Guacamayo
Benque Viejo
Uchentzub
Tipu
Las Ruinas de Arenal
Actun Halal
Actun Chechem Ha
Actun Chapat
Cuychen
17°00′N
Stela Cave
Río Frío Cave E
Minanha
Lamanai
Tikal
Naj Tunich
GUATEMALA
BELIZE
VACA PLATEAU
Macal
Ucanal
Mopan
Chiquibul
Cave
Archaeological site
Modern community
16°45′N
Caracol

Figure 2. Map showing the location of archaeological sites mentioned in the text. Solid circles indicate the location of caves, whereas triangles mark surface sites. Open squares refer to modern settlements. In this projection each 15′ latitude corresponds to c. 27.8 km (map by Christophe Helmke and Prexolumbia Mesoweb Press).

went to commune with deities and ancestors, to conduct funerary rituals, to make sacrifice and petition for rain, health, and prosperity, to engage in rites of socio-political transition, to mark their borders and the passage of time, and perhaps even to divine their futures. It is also to these locations that a few hardy archaeologists have ventured, seeking evidence of these ancient activities and to understand their meaning and significance. In this volume, we explore a small portion of the ancient Maya world that has been particularly influential in shaping our knowledge of these subterranean realms: the Macal River Valley of west-central Belize.

The Setting

The Macal River Valley flows from the southeastern margin of the Yucatan Peninsula, in what is now modern-day Belize (Figure 2). Today, Maya populations in Belize are concentrated in the economically less affluent districts of Toledo and Stann Creek, though sizeable populations exist in less homogenous communities in other districts. Notable among these are the Yukatek speaking villagers of San Antonio and San José Succotz in the Cayo District (Thompson 1930; Scholes and Thompson 1977), and the descendants of refugees from the 1840s Caste War in the Orange Walk and Corozal Districts (see Restall 1997). The Maya of southern Belize are largely Mopan- and Q'eqchi'-speakers, having migrated to the region respectively from the Peten and Alta Verapaz, of present-day Guatemala, beginning in the late 1800s and with notably extensive migration in the 1960s, spurred by the Guatemalan civil war (see Thompson 1972; Jones 1997). However, in the past many different Maya groups inhabited the whole of Belize in populations far greater than those of today. Caracol alone has been estimated to have housed approximately 100,000 people at its peak (Healy et al. 1983; D. Chase and A. Chase 1994:5; A. Chase and D.

Chase 1998; Chase et al. 2011:389). Recent linguistic analyses of place names are beginning to illuminate the diversity of this population as well (Helmke 2009:194-196). For example, the names of several communities, such as Zaczus (Saksuutz') and Yaxteel Ahau (Yaxte'el Ajaw), which were recorded along the Belize River by Spanish priests in the seventeenth century, are derived from the Ch'olan language once spoken in the area, whereas other place names such as Lamanai (Lama'anayiin) and Tipu (Tipuj) are more clearly Yukatekan and thereby represent a later linguistic stratum (Helmke 2009:194-196; Awe and Helmke 2015; Helmke et al. 2017).

Due in no small part to the relative paucity of hieroglyphic texts in this part of the Maya area, the monuments of Caracol being a salient exception, the ancient Maya sites of Belize have often been relegated by both archaeologists and the general public to a peripheral position in the history and culture of the Maya area, particularly during the Classic period. Yet, over the last several decades intensive research within Belize has revealed that the ancient Maya of this eastern region were well-integrated, influential, and enduring in the greater Precolumbian Maya story (Pendergast 1993). Far from being peripheral, Belize has been home to human populations since the end of the Pleistocene (the Paleo-Indian period, reaching back to around 12,000–10,000 BC, and perhaps even earlier), followed by a well-defined Archaic period (10,000–1,200/900 BC; Lohse et al. 2006; Stemp et al. 2016) before the rise of some of the earliest culturally identifiable proto-Maya centers in Mesoamerica, consisting of the late Early Formative Cunil and Kanocha complexes in western Belize and the Swasey sphere in northern Belize, beginning ca.1100 BC (see Freidel 1977; Hammond 1977, 1991; Gerhardt 1988; Maynard 1988; Awe 1992; Brown 2003; Garber et al. 2004; Healy et al. 2004).

The Precolumbian centers of Belize were also some of the last to be abandoned, with sizeable populations continuing to service inland and coastal trade routes during the Postclassic (Aimers 2007) and in some cases well into the post-Conquest period in the sixteenth and seventeeth centuries AD (Scholes and Thompson 1977; Graham 1998; Awe and Helmke 2015).

Together with the Mopan River Valley, the broader Macal River Valley is the location of many of Belize's most intensively studied archaeological sites, including Cahal Pech, Minanha, Pacbitun, Buenavista del Cayo, Xunantunich, and Las Ruinas del Arenal, and appears to have been one of the major arteries of transit and trade linking the Caribbean coast and the central Lowlands. Solid evidence for Maya occupation of this specific area extends from the late Early Formative period (Awe 1992; Brown 2003; Sullivan and Awe 2013; Stemp et al. 2016) through to the Colonial period occupation of Tipu, located a few kilometers upriver from Cahal Pech, on the west bank of the Macal River and midway between the Vaca Plateau and the confluence forming the Belize River (Awe 1992; Graham 1998; Emery 1999; Awe and Helmke 2015) (Figure 3). Topographically, Belize is dominated to the north and east by a seasonally swampy plain ranging in elevation between 0 and 100 meters above mean sea level (amsl). To the south and west, steep-sided and densely vegetated peaks dominate. In the Maya Mountains, Victoria Peak and Doyle's Delight, the highest topographic points in Belize, top out at ~1120 m and 1124 m amsl respectively. In general, rainfall increases with elevation and as one proceeds further south. Estimations of mean annual rainfall may be as high as 5000 mm for areas around Punta Gorda to the south, nearly four times greater than in Corozal to the north (Miller 1981:11). Belize as a whole experiences distinct

wet and dry seasons: March and April are typically the driest months, and June marks the beginning of the rainy season. Day lengths vary between 11 and 13 hours, with daily temperature variation being a factor of cloud cover more than hours of available sunlight. From October through February, cold "northers" and associated cloud cover combine to occasionally lower temperatures to below 10° C. These differences in topography, humidity, and temperature are paralleled ecologically, with northern/eastern areas characterized by downland (i.e., below 400 m amsl) pine ridge savannah and lowland broadleaf forest, and southern/western areas characterized by the upland (i.e., above 400 m amsl) Mountain Pine Ridge and upland broadleaf forest. The Lower Macal River Valley is located in this western upland region and is thus composed primarily of deciduous, seasonal, broadleaf forests.

The Macal and Mopan, both tributaries of the Belize River, together represent the most prominent hydrographical features in west-central Belize. The Macal originates in the central Maya Mountains, just northeast of Caracol, and flows in a northerly direction along the western edge of Mountain Pine Ridge. Throughout most of its length the Macal flows swiftly through the steep Macal Gorge, which ends approximately 800 m east of the civic-ceremonial center of Cahal Pech, near modern-day San Ignacio. Upon emerging from the gorge, the river flows for two kilometers through a relatively flat alluvial valley before joining the Mopan downstream, where together they form the Belize River, which in turn flows on to the Caribbean Sea.

Geologically, the Lower Macal River Valley consists of a series of low-lying alluvial terraces that are bounded by upland terrain. Northern ridge lands extend northwest from the confluence of the Mopan and

Figure 3. The morning mist shrouds the upper Macal Valley, just north of Caracol (photograph by Christophe Helmke)

Macal Rivers into the Peten and eventually terminate in southeast Campeche and southwest Quintana Roo, Mexico. Soils in the Lower Macal River Valley grade from more fertile alluvial sediments along the valley bottom (Fedick 1995:19) to fertile, calcareous soils with a higher susceptibility to erosion in the valley uplands (Turner 1978:168). The Macal is subject to seasonal flooding and has been known to rise as much as 10 m above its normal level during periods of heavy rainfall associated with tropical storms and hurricanes. The steep slopes of the valley greatly increase their susceptibility to erosion, especially when subject to deforestation, continuous cropping, and reduced fallow periods. In order to prevent erosion, agriculturalists must either implement a long-fallow cultivation system or construct terraces to catch eroding soils and nutrient runoff. Consequently, it comes as no surprise that most major Maya centers have been recorded throughout the upland zones of the Macal River Valley and adjoining Vaca Plateau (Ower 1927; Thompson 1931:228-229; Wright 1959:112-113, 178; Willey et al. 1965:574-575; Turner 1978:168-170; Healy 1983; Fedick 1994; Neff 1997; A. Chase and D. Chase 1998). The cave sites introduced here are found along the same northern course of the Macal River.

Brief Description of Caves in the Macal River Valley

The verdant and karstic slopes of the Macal River Valley (Figure 4) are pierced by abundant natural caves, rockshelters, and sinkholes that served as the setting for the rites and obligations of both the elite and non-elite in ancient Maya society. As mentioned in the opening pages of this monograph, these caves have long attracted the attention of archaeologists and explorers. Most of our archaeological knowledge of these sites, however, is based on the vari-

Figure 4. Aerial view of the Macal Valley (photograph © Marius Jovaiša).

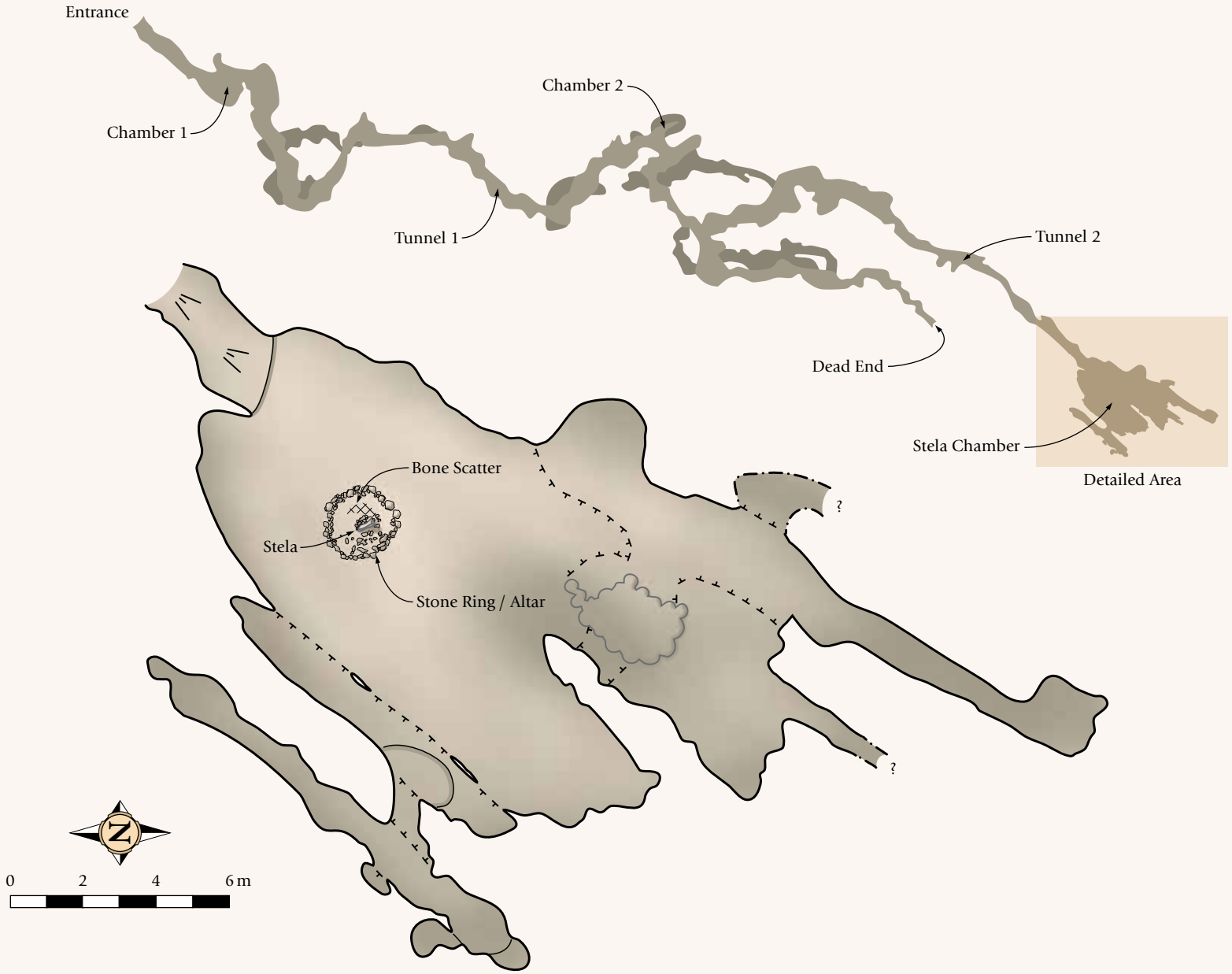
ous research activities of the Belize Valley Archaeological Reconnaissance Project, and particularly its offshoot, the Western Belize Regional Cave Project (WBRCP), and more recent investigations by Holley Moyes and her colleagues (Moyes 2006a, 2006b; Moyes et al. 2009, 2017; Moyes and Awe 2011). And while we only describe a representative sample of these caves in this monograph, it is important to note that the subterranean sites of this region are as diverse as they are numerous.

Chechem Ha

Chechem Ha (originally called Vaca Falls Cave) was discovered in 1989 by William Plytez (Figure 5). At the time of its discovery, the entrance was blocked by large boulders. Pushing, heaving, and rolling these aside, Plytez became the first person to visit the cave after almost 1200 years. The blocking of cave entrances is not uncommon in the Maya lowlands, and is often interpreted as part of ancient Maya termination rituals, in which the cave (or sometimes, a portion thereof) was decommissioned as an active ritual site (see Brady 1997; Helmke and Brady 2014; Moyes et al. 2017). Alternatively, caves or portions thereof were at times walled off to decommission them following episodes of destruction and desacralization, as part of martial actions between rivaling polities (Brady and Colas 2005; Helmke and Brady 2014). Following its discovery, the then Belize Department of Archaeology and several speleological groups explored and surveyed the site, with intensive research beginning in 1997 by archaeologists of the Western Belize Regional Cave Project under the direction of Jaime Awe (see Awe et al. 2005; Moyes 2006b; also Moyes et al. 2009, 2017).

Chechem Ha is a dry cave, its entrance penetrating the slope of a steep limestone hill approximately 15.2 km south of the modern twin towns of San Ignacio and Santa Elena. In relation to Benque Viejo del Carmen and Arenal, the two nearest modern

Figure 5. Plan of Chechem Ha, Macal Valley, Belize, with emphasis on Stela Chamber (survey by Holley Moyes, Christophe Helmke, and Cameron Griffith; plan by Holley Moyes, redrafted by Shawn Morton).


Entrance
Chamber 1
Chamber 2
Tunnel 1
Tunnel 2
Dead End
Stela Chamber
Detailed Area
Bone Scatter
Stela
Stone Ring / Altar
?
?
N
0
2
4
6 m

settlements, the cave is located 9.7 and 9.2 km to the southeast and east, respectively. An old river passage, or phreatic tube, Chechem Ha is characterized by high limestone walls and sticky, muddy floors of fine alluvial sediment (Figure 6). There is no interior water source and large dripstone formations are present in only two areas, just inside the entrance and near the center of the tunnel system. These areas have a tendency to flood during heavy rains producing pools, but water does not at present flow through the cave. The main tunnel is approximately 200 m long, descending to a large cathedral-like chamber at its terminus. Chechem Ha contains substantial evidence of ancient Maya ritual activity, dating from the Middle Formative period (900–300 BC), especially at its entrance, through to the end of the Late Classic period (ca. AD 850) (Moyes et al. 2017). Over more than a millennium-and-a-half, ancient Maya utilization resulted in the deposition of artifacts throughout the cave—along the floor of the tunnel, in niches, and on high ledges. Among these cultural remains, large wide-mouthed ollas, or jars, are the most common object encountered. In several cases the mouths of these large ollas are covered by wide bowls, presumably serving as improvised lids, protecting the dry foodstuffs once contained within the jars (Figure 7). Macrobotanical remains of maize and *achiote* (annatto) found in three vessels suggest that some of these jars served as containers for offerings used in agricultural rituals (Morehart 2002). Other vessels appear to have served as votive offerings. One of these, a tripod dish, is decorated with four stylized cormorants on the inner walls of the vessel (Figure 8). Another jar has simple and stylized monkey figures appliqued on opposite sides of its shoulders (Figure 9). The artifact assemblages, features, and modifications in several low "crawls" extending off the main passage are distinct from those found throughout the rest of the cave, suggesting that a variety of discrete ritual programs occupied the ancient Maya in Chechem Ha (Moyes 2006b). In one such crawl a fragmentary Cabrito Cream-polychrome vase was found, attesting to the wealth of materials deposited within the cave, but also to the social status of the ancient users (Figure 10).

Figure 6. Photographs of portions of the main passage showing the high ceiling, dominant limestone walls, and the characteristic mud floor (photos by Christophe Helmke).

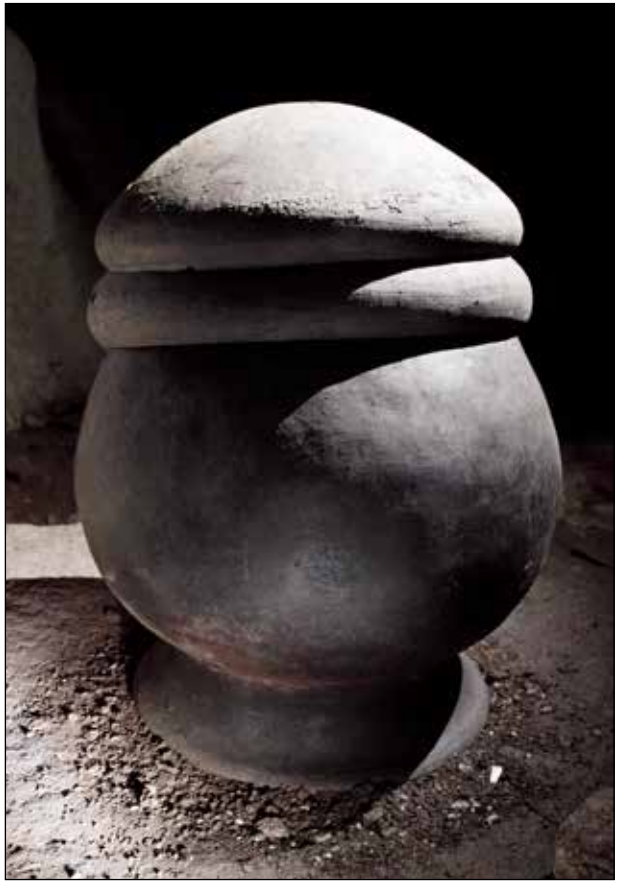


Figure 7. One of the clusters of ollas covered by bowls, producing distinct mushroom-like forms. Since the discovery of the site the custodians, in collaboration with the Belize Institute of Archaeology, have done everything in their power to preserve the artifacts in situ, within the cave. This gives us a good impression of one of these important groupings of artifacts, as the ancient Maya themselves had deposited them more than twelve centuries ago (photos by Christophe Helmke and Marco Vernaschi).

Figure 8. Two of the polychrome vessels found within Actun Chechem Ha include these tripod dishes that are decorated with stylized cormorants, three along the rim and one in the center (photos by Christophe Helmke and Jaime Awe).

Figure 9. Detail of an olla with a stylized monkey figure appliqued to the shoulder of the vessel. Similar decorations have been found on ollas in the Roaring Creek Valley to the east, particularly at Actun Tunichil Mucnal and the site of Pook's Hill, but also further afield at sites in the Caves Branch Valley. An earlier example has also been reported for Black Rock Caves, which we presume is synonymous with Uchentzub. One of the ollas found within Cuychen also bears a similar design, although it exhibited an even greater degree of simplification and abstraction (photograph by Christophe Helmke).

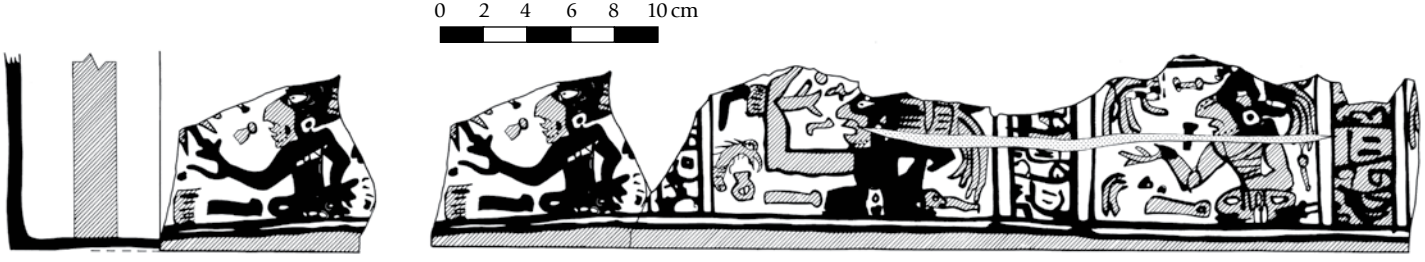


Figure 10. A fragmentary Cabrito Cream-polychrome vase found within one the crawls of Chechem Ha. The vase depicts a series of seated regal figures, each in separate panels, divided by vertical bands of pseudoglyphs. In terms of style, execution, and finish this vase resembles the ceramics produced in western Belize and found at sites such as Buenavista del Cayo, Cahal Pech, and Baking Pot (drawing by Reiko Ishihara; photograph by Christophe Helmke).

The most exceptional feature in the cave is a small plain limestone stela located in the terminal chamber. It is set in the muddy floor and supported by small boulders. This monument stands 70.5 cm tall and is surrounded by a circle of stones (Figure 11). Adjacent to the stela is a broken stalactite/stalagmite that was used to hold a burning substance and as such can be described as a censer. Sherds of modeled ceramic censers similar to those found at Xunantunich and Caracol have also been found in the same chamber as the stela. Awe and colleagues (2005:227) have suggested that two similar monuments identified in the eponymous Stela Chamber of Actun Tunichil Mucnal were designed to represent implements used in autosacrifice: Stela 1, with its scalloped edges has been interpreted as a stingray spine, while Stela 2, with its long parallel edges and pointed tip is thought to represent an obsidian blade (see also Helmke 2009:339-341, 378-387). It is possible, though the morphological connections are not as apparent, that the stela at Chechem Ha had similar associations, or that the spatial contexts of the monuments at both sites may have been used for similar ritual activities.

Figure 11. The small limestone stela erected at the heart of the terminus chamber of Chechem Ha (photograph by Christophe Helmke).

Actun Chapat

Actun Chapat (Figure 12) is located west of the Macal River, a short distance (2–3 km) north from Chechem Ha, and less than 1 km south of Actun Halal at the base of haystack-shaped foothills, their steep slopes covered in numerous agricultural terraces. Preliminary reconnaissance of the site was conducted by Awe and members of the Department of Archaeology in 1982, and the cave subsequently became a focus for work conducted by the Western Belize Regional Cave Project. During the initial reconnaissance, a handful of significant artifacts were recovered including a polychrome vase decorated with Mexican Year Signs (Figure 13), and a carved wooden backing for a mirror (Figure 14), as well as part of a pinewood torch (Mirro et al. 1999:28-29) (Figure 15). Ceramic artifacts suggest a period of use between 300 BC and AD 900 and include a noteworthy and rare Protoclassic vase (Figure 16) (Awe 1998:8; Ferguson 2000; Ishihara 2001). In addition to the expected range of artifact types, including human remains, Actun Chapat is perhaps best known for the extraordinary degree to which the native cave environment was modified with architecture—walls, raised platforms, stairs, paths, and artificial terraces (Ferguson 2000)—and augmented by petroglyphs, culturally modified speleothem sculptures, perforated speleothem curtains (Figure 17), and caches of broken speleothems (Griffith and Jack 2005; Helmke et al. 2003).

Figure 12. Plan of Actun Chapat, Macal Valley, Belize (survey by Christophe Helmke and Cameron Griffith; plan by Cameron Griffith, redrafted by Shawn Morton; Chapat overview by David Larson and Eleanor Larson).

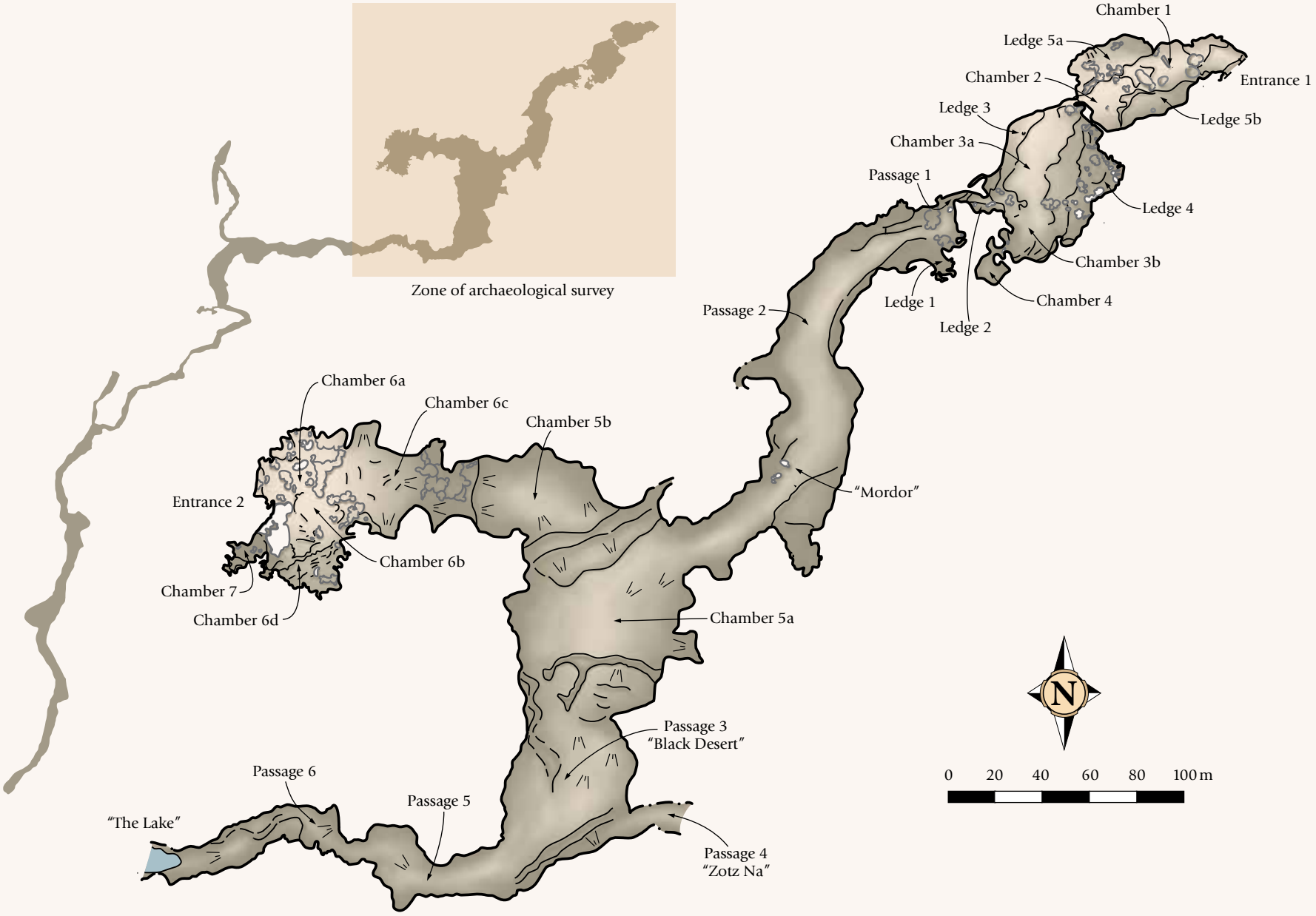

Zone of archaeological survey
Chamber 1
Ledge 5a
Chamber 2
Entrance 1
Ledge 3
Ledge 5b
Chamber 3a
Passage 1
Ledge 4
Chamber 3b
Ledge 1
Chamber 4
Ledge 2
Passage 2
Chamber 6a
Chamber 6c
Chamber 5b
"Mordor"
Entrance 2
Chamber 6b
Chamber 7
Chamber 6d
Chamber 5a
Passage 3
"Black Desert"
Passage 6
Passage 5
"The Lake"
Passage 4
"Zotz Na"
N
0 20 40 60 80 100 m

Figure 13. The polychrome vase discovered in an elevated niche within Entrance 2, during initial exploration of the cave in 1982. The vase is highly distinctive on account of the Mexican Year Signs that adorn the center of the iconographic field. These signs are typically associated with central Mexican cultures and with Teotihuacan in particular. At the time that this vase was produced, Teotihuacan had collapsed and the metropolis had witnessed near-wholesale depopulation. As such this is part of a Late Classic revivalist movement wherein motifs of central Mexican origin and especially those tied to and associated with Teotihuacan saw renewed vigor in their use and application. We now know that the Mexican Year Sign was the distinctive emblem of the headdresses or crowns of the rulers of Teotihuacan (Nielsen and Helmke 2017). This makes the pairing of this symbol with the simplified Maya glyphs for *ajaw* "king" along the rim, all the more suggestive. The decorative field is also divided into rhomboids by elongated elements that are perhaps best described as fronds. Similar divisions of decorative fields are found in the murals of Teotihuacan but also in the famed stucco frieze of Tonina in the western Maya area (photograph by Jaime Awe and roll-out photograph © Justin Kerr).

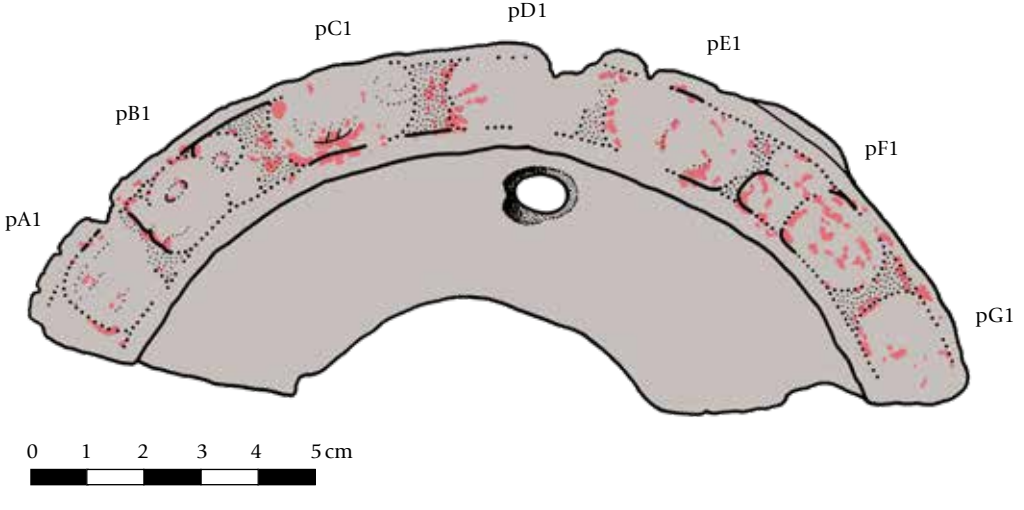


Figure 14. Fragmentary wooden mirror backing discovered in Entrance 2. Only one portion of the mirror backing was recovered, suggesting that it had been deliberately broken as a means of termination in antiquity. The discovery of wooden artifacts is an extreme rarity in the humid tropical lowlands of the Maya area, making this specimen all the more remarkable. The side of the mirror preserves part of a human hand, as though it was once part of a figure or effigy that bore the mirror. Similar statues are known and these depict diminutive assistants—often dwarves—bracing the mirror into which a regal personage would gaze. The face of the backing preserves part of a glyphic text. Although the text initially consisted of as many as eighteen glyph blocks, only part of seven remain. Among these we can discern part of the verb *yuxul* "it is its carving" (pA1–pC1) indicating that the text originally bore a statement of dedication and ownership. Unfortunately, nothing of the names and titles of the original owner remain legible (photographs and drawing by Christophe Helmke).

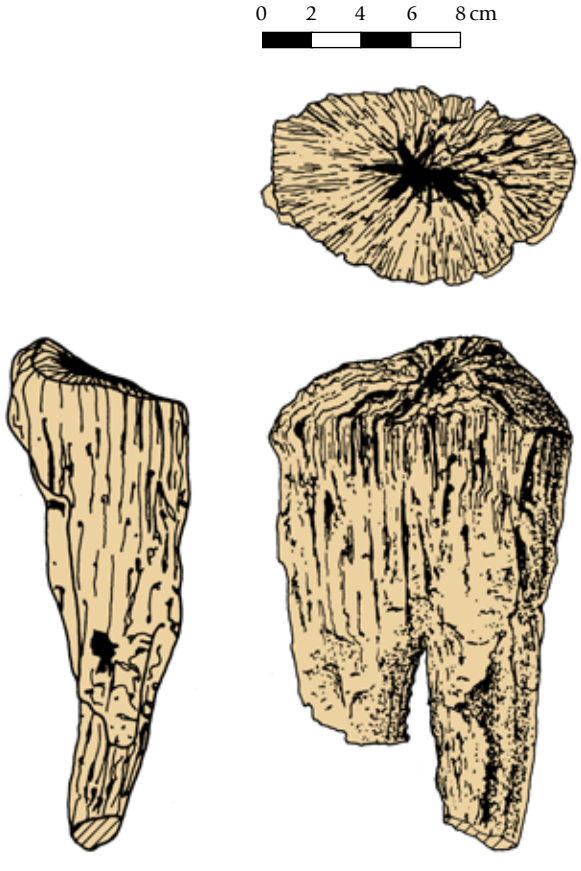


Figure 15. The remains of a partial pinewood torch found within Actun Chapat (drawing by Joel Borieck).

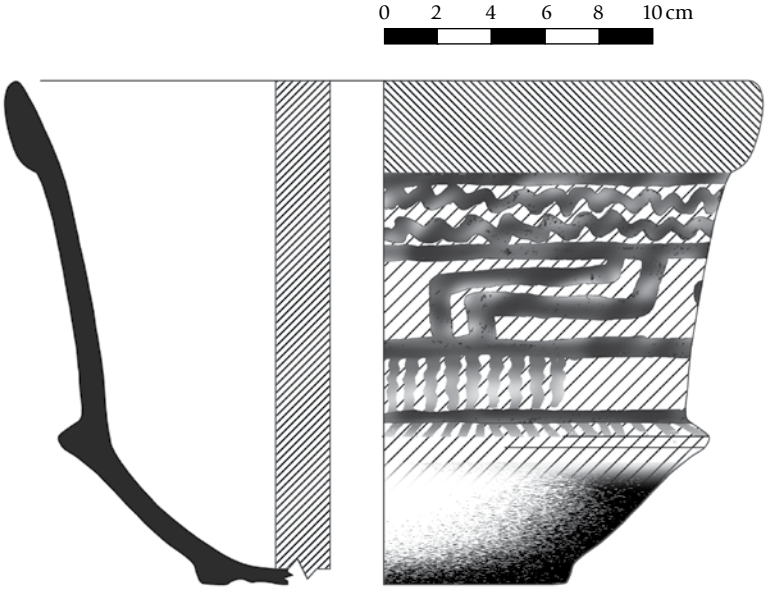


Figure 16. A fragmentary vase discovered in Actun Chapat is distinctive for the rarity of its type and form. It has been identified as a Metapa Trichrome, a type of the Protoclassic phase (c. 50 BC – AD 100), and although the decorative motifs on its exterior have been painted, some are rendered with distinctive wavy lines, thereby emulating the decorative mode of Late Preclassic Usulutan ceramics well known for El Salvador. In some respects this type of decoration survives to this day in the plastic skeuomorphs of ollas produced in Guatemala (drawing by Christophe Helmke, photograph by Jaime Awe).


CM

Figure 17. Among the distinctive features of Entrance 2 are the many biconically perforated curtain formations. The exact function of these remains unclear, but they appear to have served as anchor points for lashing ropes (photographs by Christophe Helmke).

Actun Chapat is massive, and a comprehensive map is still under preparation. Nevertheless, initial mapping efforts reveal that several kilometers of passage and a number of expansive galleries/chambers separate both known entrances to the cave (Figure 18). Chapat is hydrologically very active and a seasonally wet arroyo receives its primary input from Entrance 1. While it would be expected that extreme weather events, such as hurricanes, may have affected water levels in Chapat, the surprising degree to which this occurs was only recently noted by David and Eleanor Larson (personal communication 2017). They recorded that, in the day following 2016's Hurricane Earl, Chamber 5a was flooded under more than 30 m of water, the flood rising and returning to normal levels within a 24 hour period. Southwest of Chamber 5a, a large, crystal clear subterranean lake and the passages beyond remain only partially explored, leaving open the possibility that additional entrances to the cave may be found in time. The massive skylight chamber of Entrance 2 (Figure 19) has been the primary focus of survey, reconnaissance, and excavation activities in Chapat, and exhibits more than 30 terraces (Ferguson 2001) (Figure 20). Following the chronology outlined for Barton Ramie by Gifford (1976), ceramics recovered from this chamber suggest a period of use stretching from the Barton Creek complex of the Middle Formative through the Spanish Lookout complex of the Late Classic (Ishihara 2001). Excavations in Chamber 3B yielded similarly early dates, though this area appears to have fallen out of use prior to the Late Classic period (Morehart 2002). Looking in particular at the distribution of temporally diagnostic sherds within the Entrance 2 chamber, Ishihara (2001) has suggested that the final terraces were constructed sequentially, with lower, naturally flat areas being used earliest, and with middle and upper terraces being constructed as subsequent use required. She also raises the intriguing but as-of-yet unverified hypothesis that changing preferences for vessel type (specifically, jars vs. bowls) over time may reflect functional changes in the rites so associated.

Figure 18. One of the expansive galleries of Actun Chapat, known as Passage 3 or the "Black Desert" (photograph by and © Bob Biddix).

Figure 19. The skylight Entrance 2 of Actun Chapat that gives way to Chamber 6, which exhibits an important array of cultural modifications including the construction of terraces and petroglyphs, as well as the breakage and modification of speleothems (photograph by Christophe Helmke).

Figure 20. Gavin Wisner inspecting a concentration of ceramic sherds at the base of one of a series of terraces built within Chamber 6 at Actun Chapat (photograph by Christophe Helmke).

Actun Halal

Actun Halal (Figure 21) is located approximately 1 km north of Actun Chapat's Entrance 1. Members of the Western Belize Regional Cave Project were first made aware of the cave following verbal reports by William Pleitez, Ken and Phyllis Dart, and Gilberto Puc. Actun Halal is a relatively small cave with a very limited dark zone and is accessed via two distinct, arching entrances (Griffith and Helmke 2000). Morphologically, Halal is more akin to a rockshelter than it is to the deep caves thus far discussed. Entrance 1 faces east and measures 8.5 m wide by 5 m high, whereas Entrance 2 faces north-by-northeast and measures 4.75 m wide by 4 m high; the two openings are separated by approximately 26 m of passage, varying in width from between 4.5 and 8 m (Griffith and Helmke 2000) (Figure 22). As a result, most of the cave is filled by light and penumbral zones, but at the north end lies a small dark chamber.

Whereas Actun Chapat is wet, Actun Halal is notably dry. The floor of the cave is characterized by a dusty, light-brown matrix, a mixture of bat guano, leaf litter, and humus, along with other accumulated sediments. Soil formation appears slow, as a profusion of ancient ceramic sherds were found lying on the same surface as relatively modern concentrations of shattered glass, fragments of metal cans, and the remains of at least two recent campfires attesting to the use of the cave as a shelter for both hunters and looters operating in the area. While an area of breakdown just within the dripline of Entrance 2 betrays a more dynamic and seismic past, little colluvium or ceiling spall has accumulated on the surface in the past several millennia to obscure

Figure 21. Plan of Actun Halal, Macal Valley, Belize (survey by Christophe Helmke and Cameron Griffith; plan by Cameron Griffith, redrafted by Shawn Morton).

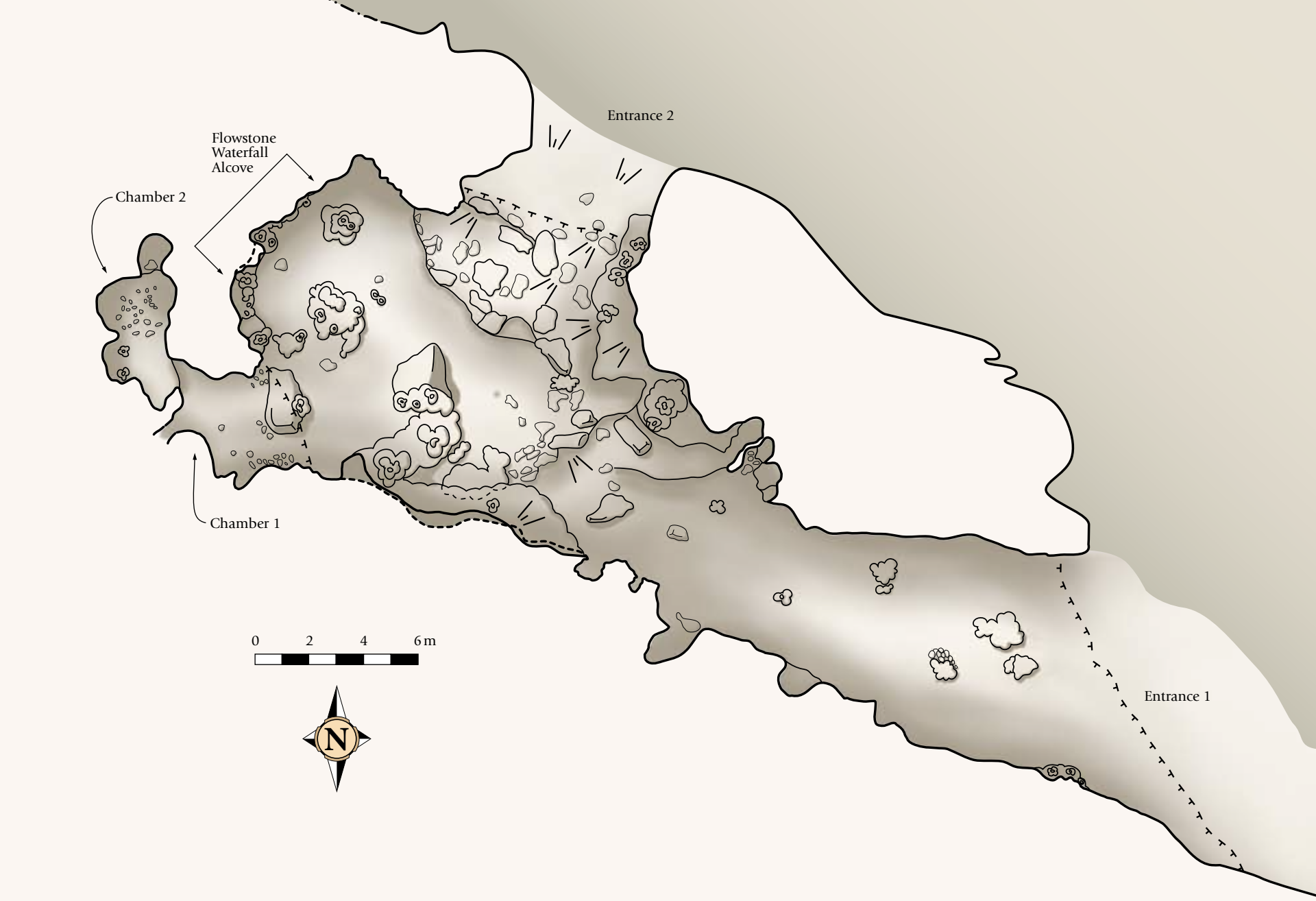

Entrance 2
Flowstone
Waterfall
Alcove
Chamber 2
Chamber 1
0
2
4
6 m
N
Entrance 1

Figure 22. View of Actun Halal, looking from Entrance 1 through to Entrance 2 (photograph by Christophe Helmke).

floor surfaces, and Actun Halal must look today much as it did when actively used by the ancient Maya (Griffith and Helmke 2000).

It is fortunate that Actun Halal shows only limited recent hydrological activity—primarily in the area around Entrance 2—as flowstone formations throughout the cave still preserve an ample record of perhaps two dozen petroglyphs (Griffith and Morehart 2001; Griffith and Jack 2005) (Figure 23). The majority of those identified within the cave consist of simple faces similar to those found in other caves in Belize (consisting of pecked or drilled circular eyes and a simple incised line for a mouth; Bonor Villarejo 1989; Bonor and Martínez Klemm 1995; McNatt 1995; Helmke and Awe 1998, 2001; Helmke et al. 2003) and elsewhere in the Maya area (Stone 1995; Brady 1997; Brady et al. 1997). Griffith and Morehart (2001) note that short, squat formations seem to have been preferentially chosen for such modifications, presumably because they already bear a passing resemblance to crania (Griffith and Jack 2005). Other modifications are more elaborate, with lightly modified speleothems somewhat approximating sculptures in the round.

Following Gifford's (1976) ceramic chronology, the pottery recovered in Actun Halal suggests a primary period of use stretching from the Early Classic (Hermitage complex) through the Late Classic (Spanish Lookout complex), with the vast majority of material (85%) attributable to this latter period (Griffith and Helmke 2000). Some other, tantalizingly early, but as of yet still poorly understood data,

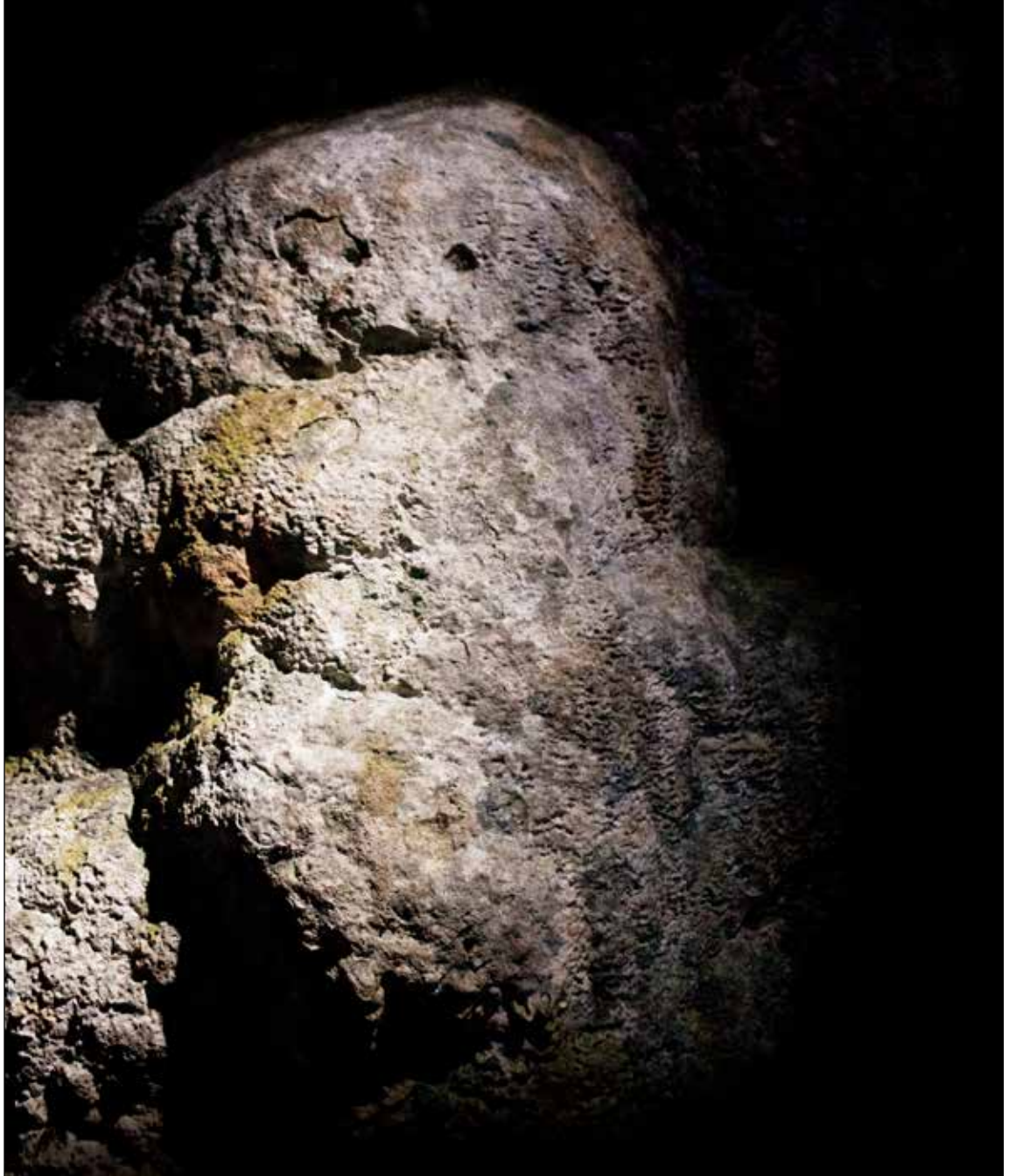


Figure 23. An example of the simple pecked faces in the northern end of Actun Halal by Entrance 2. These constitute one of the basic types of petroglyphs encountered in this part of Belize and the eastern central Maya Lowlands (photograph by Christophe Helmke).

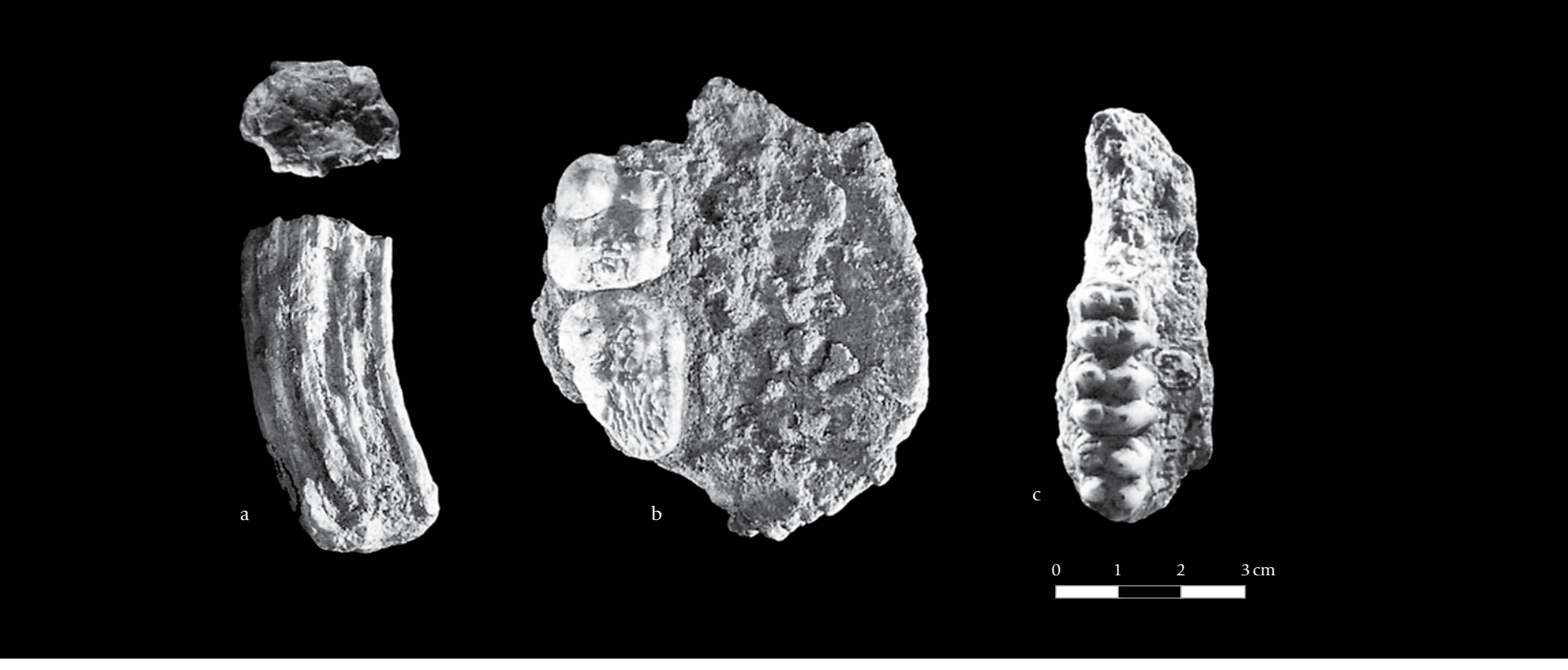


Figure 24. A selection of animal bones recovered from some of the earliest strata of the excavations conducted within Actun Halal. These include the teeth of extinct Pleistocene fauna, such as (a) horse and (b) bear as well as (c) peccary (photograph by Sam Gardner).

in the form of extinct horse, giant armadillo, and cave bear remains (Figure 24) suggest that Paleoindian or Archaic (roughly 8000–2000 BC) peoples similarly made use of the site (Griffith and Morehart 2001; Lohse et al. 2006), a finding confirmed by radiocarbon dates from anthropogenically-deposited plant remains and the presence of temporally diagnostic constricted adzes (an important tool in early horticultural toolkits in the region; Hudler and Lohse 1994; Lohse 2008, 2010).

The Late Classic assemblage at Actun Halal is dominated by bowls, present in a ratio of approximately 2:1 over jars (Ishihara 2001), a pattern similarly noted at Chapat, and perhaps reflective of a regional pattern of cave use (Helmke 2009). Although the specific acts/motivations behind the

proportions of these assemblages remain to be answered conclusively, we suspect that they reflect the use of these objects in the activities that ultimately resulted in their deposition within the cave. This will be touched upon again when discussing the ceramics of Cuychen (see the following chapter). The ceramic assemblage from Halal provides us with additional insights into the economic/political landscape of the region during the Late Classic, particularly as these relate to the discussion of Cuychen to follow, not least since one polychrome ceramic sherd bore glyphs with a stylistic affinity to those found at Naranjo (Helmke et al. 2003) (Figure 25).

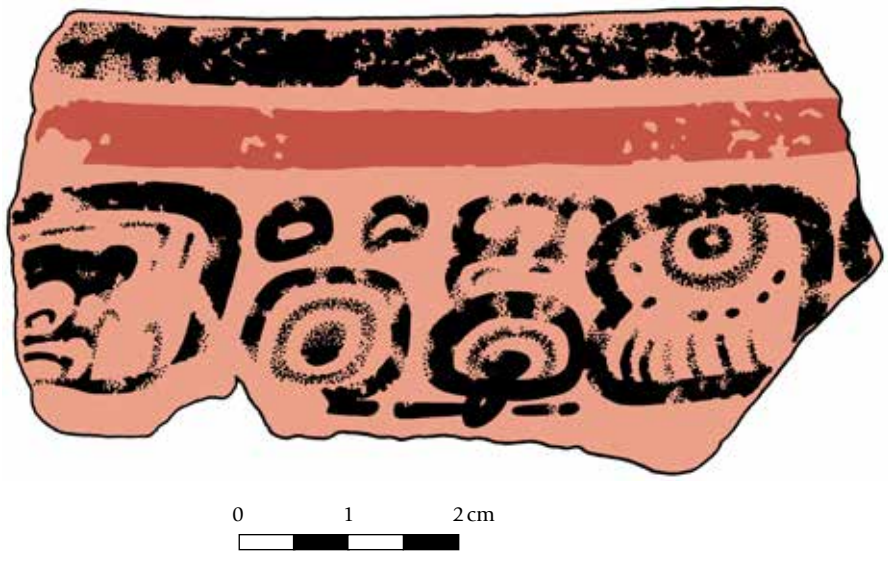


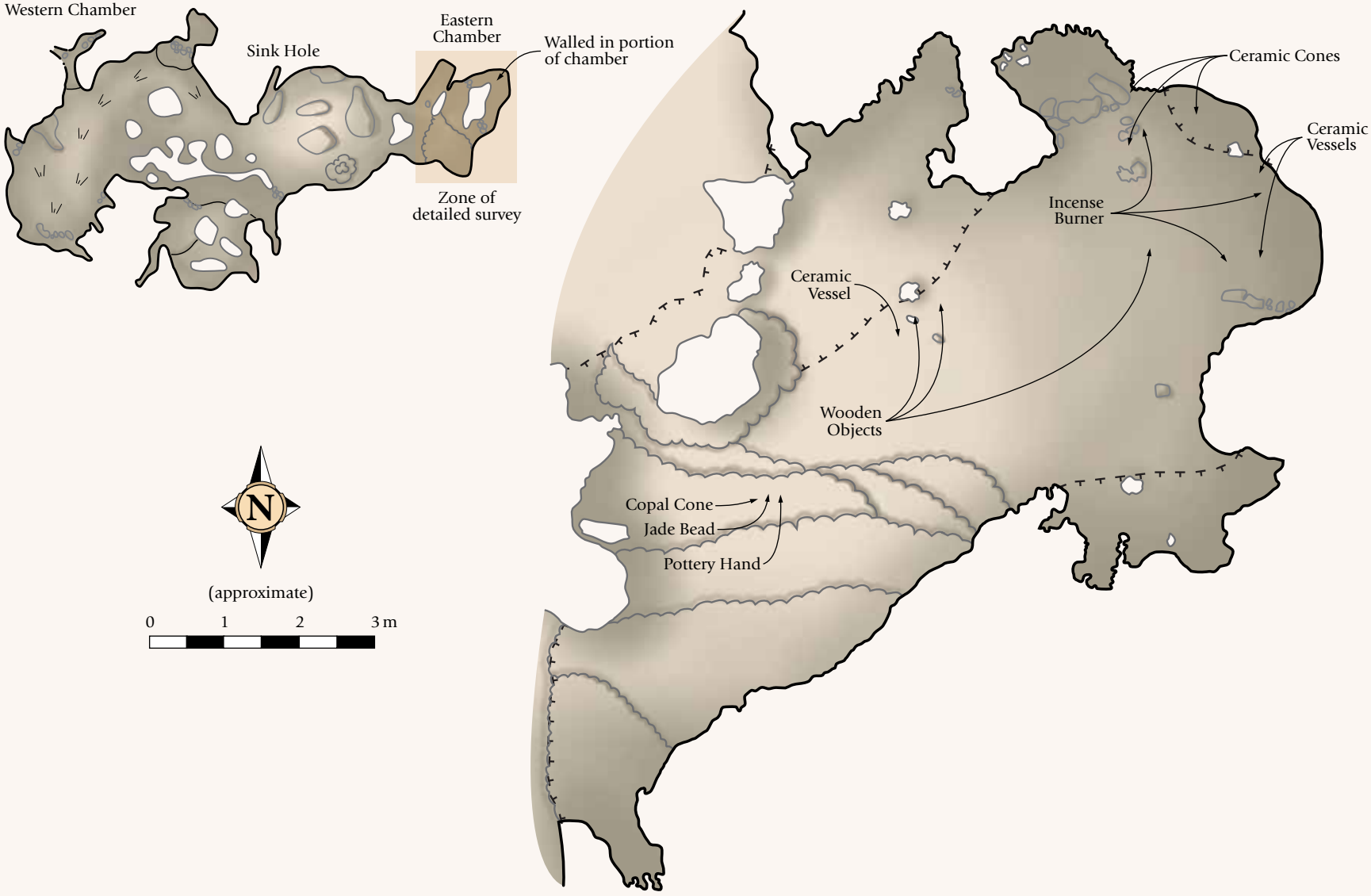
Figure 25. The sherd of a Saxche Orange-polychrome bowl recovered from the excavations at Actun Halal (entrance 1, unit 3, level 2). The original bowl from which this sherd stems was undoubtedly produced at a Middle Classic workshop affiliated with the Naranjo court, undoubtedly during the reign of Ajasaaj Chan K'inich (a.k.a. "Aj Wosal"), considering the form, decorative modes, stylistic features, palette, and paleographic traits. A small part of the glyphic text that once adorned the bowl is preserved, providing what may be the toponym *Sak-ha'* ("white-water"), also cited in the texts of Naranjo. This may be a site to the west of Actun Halal in present-day Peten, near a locality now known as Laguna la Blanca. Whereas this specimen may have found its way to Actun Halal by many means, we wonder if this may not represent an offering made as part of a ritual pilgrimage, by the lord of Sakha', or one of its allies (Helmke et al. 2003). Interestingly, other caves in the Macal Valley, especially around the site of Minanha, also include ceramics from farther afield, including Naranjo, Caracol, and perhaps even the Pasión area of Guatemala (Reents-Budet et al. 2017) (drawing by Christophe Helmke).

Uchentzub

The site of Uchentzub (Figure 26) was first recorded in 1968 and investigated by Peter Schmidt (1977:107-108) two years later. Some three decades afterwards, Uchentzub was revisited by Reiko Ishihara (2001) and Mike Mirro while conducting reconnaissance as part of the Western Belize Regional Cave Project. The cave can be accessed on foot via a large, open sinkhole measuring approximately 10 m in diameter and varying from 5–10 m in depth (Figure 27). Several additional chambers extend off this entrance. The lower portions of the large western chamber are dominated by towering columns, with the majority of cultural material being found in the higher areas of the chamber. The site has also been known by other names including Flourcamp Cave, which is the common name used today among non-archaeologists.

As at Actun Halal and Actun Chechem Ha, hydrological activity at Actun Uchentzub, while clearly evident, has been minimal over the past millennium, and at the time of fieldwork

Figure 26. Plan of Actun Uchentzub, Macal Valley, Belize, with detailed overview (survey and plan by Reiko Ishihara and Mike Mirro, redrafted by Shawn Morton; overview by Peter Schmidt).


Western Chamber
Sink Hole
Eastern Chamber
Walled in portion of chamber
Zone of detailed survey
Ceramic Cones
Ceramic Vessels
Incense Burner
Ceramic Vessel
Wooden Objects
Copal Cone
Jade Bead
Pottery Hand
N
(approximate)
0
1
2
3 m

the cave appeared dry (Ishihara 2001). As in other cases, the chambers of Actun Uchentzub appear to have been mined for speleothems, and the remains of broken stalactites are common. It is uncertain to what degree this activity is ancient, as there is considerable evidence for modern access to the cave, including numerous looter pits, evidence of displaced artifacts, and a modern ladder to facilitate access. Architecture is common in this cave—typically, involving undressed limestone rocks and speleothems (accounting for at least some of the clipping), often incorporating the existent natural cave formations—with numerous small alcoves or crawlways blocked off by artificial walls (Ishihara 2001). Blocked off portions of chambers contain much of the better-preserved artifacts.

The variety of objects, both in terms of material and form, found in Uchentzub is remarkable in the regional context. In addition to the ubiquitous ceramic sherds typical of cave contexts, a number of additional rare items have been noted. As part of a reconnaissance expedition organized by the WBRCP, the base

Figure 27. The large sinkhole entrance of Uchentzub (photograph by Christophe Helmke).

of a fragmentary Zacatel Cream-polychrome vase was discovered (Figure 28). This type of ceramic was produced in one of the workshops of the Naranjo polity. The fine details of the iconography suggest that a Maize God was depicted, in turn suggesting that the vase represented a Holmul Dancer scene (see Reents 1985; Reents-Budet 1991). The presence of this vase in Uchentzub once more suggests a close connection between Naranjo and sites in this part of western Belize, on a par with the bowl fragment found in Actun Halal (see above) and the sherds found in caves around Minanha (Reents-Budet et al. 2017).

Figure 28. Fragmentary Zacatel Cream-polychrome vase (photograph by Christophe Helmke).

a

b

Figure 29. Three of the Postclassic hourglass-shaped censers found within Uchentzub. (The censer in *a* appears on the left in *c*, while the censer on the right in *b* is on the right in *c*.) These censers are stylistically and modally identical to specimens found at Tikal, especially within the ritual deposits at the summit of Temple I. The presence of these censers at such sites indicates that rituals continued to be performed at sacred loci even after the population centers had declined and been abandoned for the most part. The identity of these ephemeral Postclassic populations will continue to puzzle researchers as long as the settlements they occupied remain unidentified (photograph *a* © Jaime Awe, *b* © Marilyn Masson, and *c* © Peter Schmidt).

c

In Schmidt's (1977) initial report, unusual objects include four complete hourglass-shaped incense burners (Figure 29), the basal fragment of one partial incense burner, three conical lumps of copal (one possibly mixed with rubber), one staff-like wooden object, one fragmentary wooden disk or plate, one irregular wooden object with traces of burning, one pottery disk, one ceramic effigy hand, and one rectangular jade bead. The incense burners are stylistically associated with the Caban complex at Tikal (Culbert 1996) as well as the Hocaba and Tases complexes of Mayapan (Smith 1971), extending the use of the cave beyond that of the other sites thus far discussed, well into the Late Postclassic period (see Willey et al. 1965:27-28).

Ishihara proposes that Uchentzub is referred to in the *Ceramics of Barton Ramie* (Gifford 1976) as "Black Rock Caves" and that according to Gifford it contained ceramic types spanning the Late Preclassic (Barton Creek complex) through Early Postclassic (New Town complex), which is to say from at least 300 BC until after AD 1000. Recent radiocarbon assays of New Town materials (see Hoggarth et al. 2014), however, suggest that the relative dating of these remains is inaccurate and that there was a hiatus in occupation and of cave use during the Early Postclassic period in western Belize (see also Awe and Helmke 2000; A. Chase and D. Chase 2007:21-22).

Conclusions

Each of these caves serves as a valuable counterpoint to Cuychen, the site that is the focus of this monograph. Differing in morphology, size, location, condition, and perhaps use from Cuychen, they each serve to add context to the ensuing papers. The significance of Cuychen is explored further in the pages that follow.

Acknowledgements

For the funding provided, we would like to thank the Social Sciences and Humanities Research Council of Canada for funding the Western Belize Regional Cave Project. Many thanks also to all the staff and students of the WBRCP who helped us over the years to document the wonderful caves of the Macal Valley, especially Cameron Griffith, Holley Moyes, and Reiko Ishihara. To Precolumbia Mesoweb Press, our thanks for the excellent maps included herein. Many kind thanks to Marius Jovaiša, Justin Kerr, Bob Biddix, Sam Gardner, Marilyn Masson, and Marco Vernaschi for permission to include some of their outstanding photographs. Similarly, many thanks to Joel Borieck and Reiko Ishihara for their fine drawings. To the Royal Ontario Museum, our gratitude for giving us access to the wooden mirror backing from Actun Chapat and allowing us to study it. Many thanks to Kenneth Dart and David Larson for a pleasant trip to Actun Chapat and Actun Halal, as well as to William and Gonzalo Pleitez for access and help at Actun Chechem Ha. Last but certainly not least thanks to the Institute of Archaeology, its director, and staff for permitting and encouraging our research over the years.

Figure 1. The karstic topography of the upper Macal Valley (photograph © Marius Jovaiša).

Chapter 2

Archaeological Investigations at Cuychen, Macal River Valley, Belize

Christophe Helmke, Shawn G. Morton, Jaime J. Awe, and Gyles Iannone

The foothills of the Maya Mountains form a landscape rich in caves that were intensively utilized by the ancient Maya. Over the past few decades these important subterranean sites have increasingly attracted the attention of archaeologists. Due to the favorable preservation afforded by the shelter and stable microclimate of caves, and the fact that these sites tend to be open and of relatively easy access, most cave sites are the target of looting for the express purpose of retrieving well-preserved artifacts for the illicit antiquities trade. As such, most of the caves in the Maya area have already fallen prey to looters before they are ever reported or the subject of comprehensive archaeological investigations. Thus, when the opportunity presents itself to investigate a recently discovered cave, archaeologists have to act fast to foil prospective plunderers. Precisely such an opportunity arose in July of 2010 when an unlooted cave was discovered in the Macal River Valley of western Belize.

Here we present the results of the work conducted at the site that we named Cuychen /*kuy-ch'een*/ "owl-cave."[1] Remarkably, this small cave had escaped the attention of looters due to its remote location and very difficult access. The cave, perched high in a cliff face overlooking the Macal River Valley, contained a well-preserved assemblage of ceramics and a stunning and unique polychrome vase (see this volume Chapter 3, Helmke 2019). Below we report on our investigations and provide summary analyses of the artefactual remains of the cave. In so doing we elaborate on the provenience of the Cuychen vase and attempt to reconstruct the ritual events that the ancient Maya celebrated within this site.

Site Setting and Description

Cuychen is located near the middle of the Macal Valley of west-central Belize. For most of its course the Macal River flows through the steep granitic terrain of the Maya Mountains and in its lower reaches it sweeps through the rolling karstic topography of the Vaca Plateau (Figure 2). In large measure the area has been little developed and still exhibits primary rain forest on both river banks. At the higher elevations to the south the vegetation gives way to endemic pine forests. The small cave is set within the limestone cliffs that border the western bank of the Macal River and overlooks what is today the Vaca Falls hydroelectric dam. Cuychen is ringed by a series of caves that have already been the subject of intensive archaeological investigations undertaken by Peter Schmidt, David Pendergast, and more recently by members of the Western Belize Regional Cave

[1] The name of the cave stems primarily from the observation that it served as the roost of a raptorial bird of prey. The many small rodent bones that formed the guano of the floor of the cave in turn suggest that the cave had been inhabited by owls (see this volume Chapter 5, Wisner et al. 2019). In addition, the name of the cave draws a pun from the glyphic text of the vase found within, wherein the names of the father and the mother of the vessel's owner contain the segments *kuy* "owl" and *ch'een* "cave," respectively.

Figure 2. For most of its course the Macal River sweeps through lush subtropical rainforest (photograph © Marius Jovaiša).

Project under the direction of Jaime Awe. Some of these sites include Uchentzub (Schmidt 1977; Ishihara 2001), Actun Chechem Ha (Ishihara 2000; Ishihara et al. 2000; Moyes 2003, 2006b, 2008; Moyes et al. 2009), Río Frio Cave E (Pendergast 1970), Stela Cave (Ishihara and Griffith 2004), Actun Chapat (Ferguson 2000, 2001; Ishihara 2002; Griffith et al. 2003), and Actun Halal (Griffith and Helmke 2000; Griffith and Morehart 2001; Griffith et al. 2002; Lohse et al. 2006:216-217, 221; Lohse 2007) (see map page 22). Nearby surface sites include Minanha (5.8 km to the south; Iannone 2001, 2005; Iannone et al. 2004), Las Ruinas de Arenal (8.0 km to the northwest; Taschek and Ball 1999), and the as-yet-little-investigated site of Guacamayo (6.7 km to the north). Although we cannot conclusively demonstrate this at present, we surmise that the ancient users of Cuychen stemmed from one of these important surface sites. From a larger vantage, Cuychen can be described as located nearly equidistant from the major centers of Naranjo and Caracol, and as such the cave is located less than a day's walk from either of these sites.

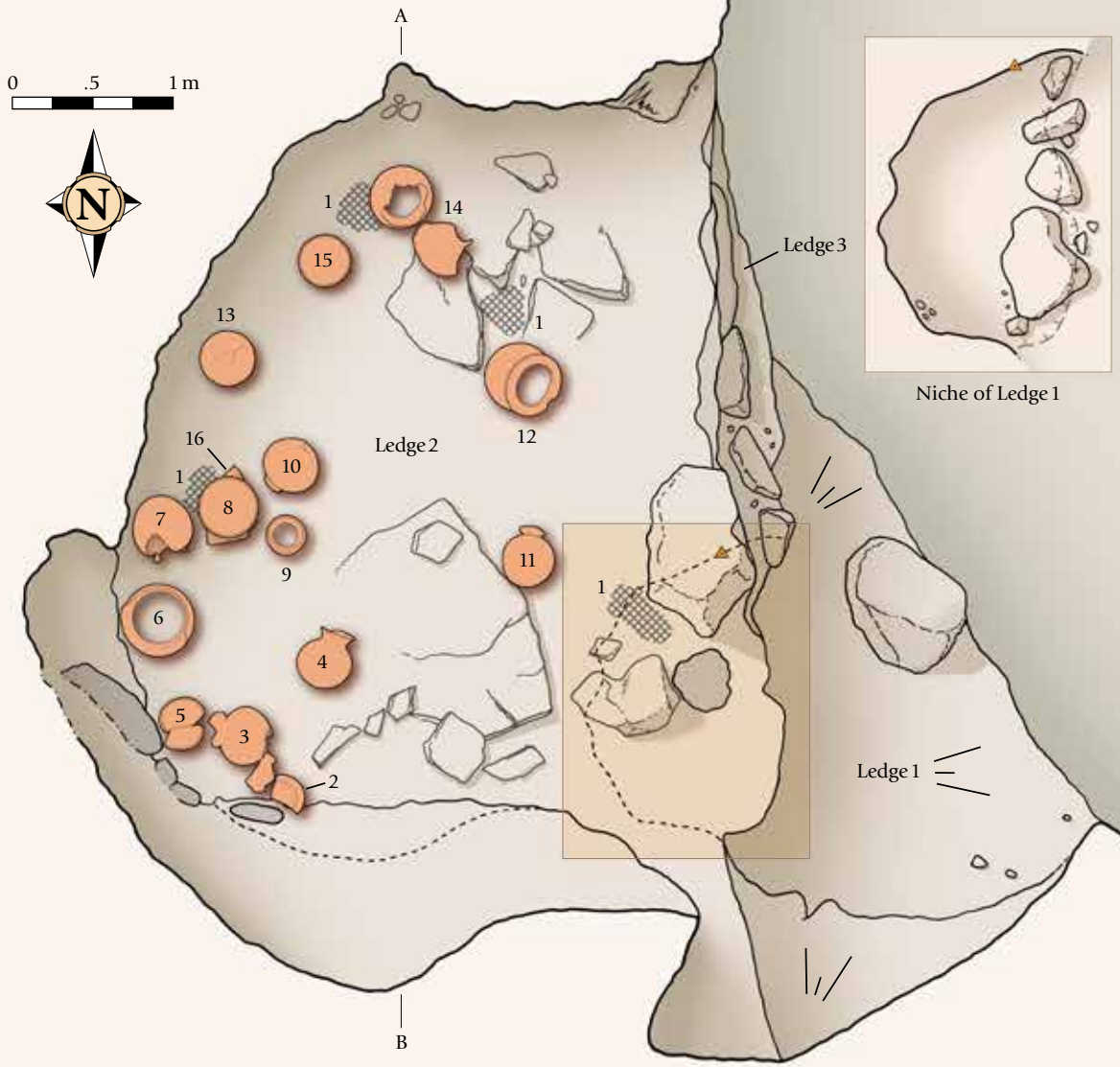
The karstic topography bordering the Macal River is in many parts characterized by a series of prominent cliffs (Figure 1). Formed through the seepage of groundwater, many caves are found in this area, especially along these exposed cliff faces. Cuychen follows the same pattern and it is clear that it was formed by slow-flowing water, seeping through a horizontal cleavage plane between two strata of limestone conglomerate. The spring that formed at this point eventually dissolved a cavity out of which a small waterfall once flowed. Dripstone formations developed within the cave at a later date, probably the result of seepage brought about by precipitation during the rainy season. Nowadays the water table has dropped and the cave is completely inactive even in the wet season.

Cuychen is found near the summit of a prominent hill. The eastern face of this peak exhibits a series of sheer cliffs, each interrupted by horizontal shelves, giving the cliff face a stepped appearance (Figure 3). The uppermost rock face is no more than 5 m high and gives way at its base to a sloping shelf before drop-

Figure 3. The setting of Cuychen. The cave is located within the cliff near the middle of the photograph. Note the *milpa* in fallow in the hanging valley behind the hill in which the cave is found (photograph © Marius Jovaiša).

ping off for another c. 30 m to an additional shelf. The base of this lower shelf aligns more or less to the top of the subtropical canopy. The third and lowest cliff is estimated to be 22 m high, based on the average height of canopy in the area. From there the over 120-meter-high talus slopes evenly downwards to the course of the river. Cuychen perforates the face of the central of the three cliffs just described. Access to the site is difficult and requires rappelling 15 m down from the edge of the uppermost cliff (Figure 4). Since the cliff face bulges slightly outwards the entrance of the cave is partly recessed in relation to the rock face. As a result one essentially has to swing into the mouth of the cave in order to gain access to the site. We surmise that access in antiquity was gained by means of a broad wooden ladder built up from the shelf immediately below the cave entrance. As such this conjectured ladder would have resembled those—until recently in use in the Yucatan peninsula—built to give access to the water table via cenotes during the dry season (Stephens 1979). Nevertheless, we have yet to explore the shelf in question to see if it does indeed lead to the adjoining hanging valley and corroborate that this is the easiest point of access.

Figure 4. View from Cuychen out onto the Macal Valley, with Marcos Cucul rappelling into the entrance (photograph by Shawn Morton).



Cuychen itself has been subdivided into three main areas (Figure 5). The first is Ledge 1 and constitutes the small and sloping entrance landing, encompassing no more than 5.1 m^2. Extending westwards from Ledge 1 into the bedrock is a small globular niche (c. 1.22 x 1.78 m). The largest area of the cave is Ledge 2 and constitutes the cave proper. Ledge 2 is raised at least 1.7 m

Figure 5. Plan of Cuychen outlining Ledges 1, 2, and 3. Note the niche of Ledge 1 that is shown as an inset. Cross-hatching marks the sherd clusters of the polychrome vase (Vessel 1). All other ceramic vessels (Vessels 2 through 16) are indicated by their numerical designation.

above the other portions of the site and access is gained by climbing up from Ledge 1, over the niche just mentioned. The mostly flat area of Ledge 2 measures 5.75 m north-south and 4.54 m east-west and encompasses 19.2 m^2 in all. The ceiling height of Ledge 2 is variable, but averages 1 m so that one cannot stand in this area and instead has to sit or squat (Figure 6). Parts of Ledge 2 exhibit large and flat limestone slabs that have detached from the ceiling. To the west and south of Ledge 2 low shelves have formed in the limestone and are the source of the groundwater that formed the cave. The majority of dripstone formations are found along the edge of the shelves, and a larger helictite column—formed by the interference of wind—is found at the eastern

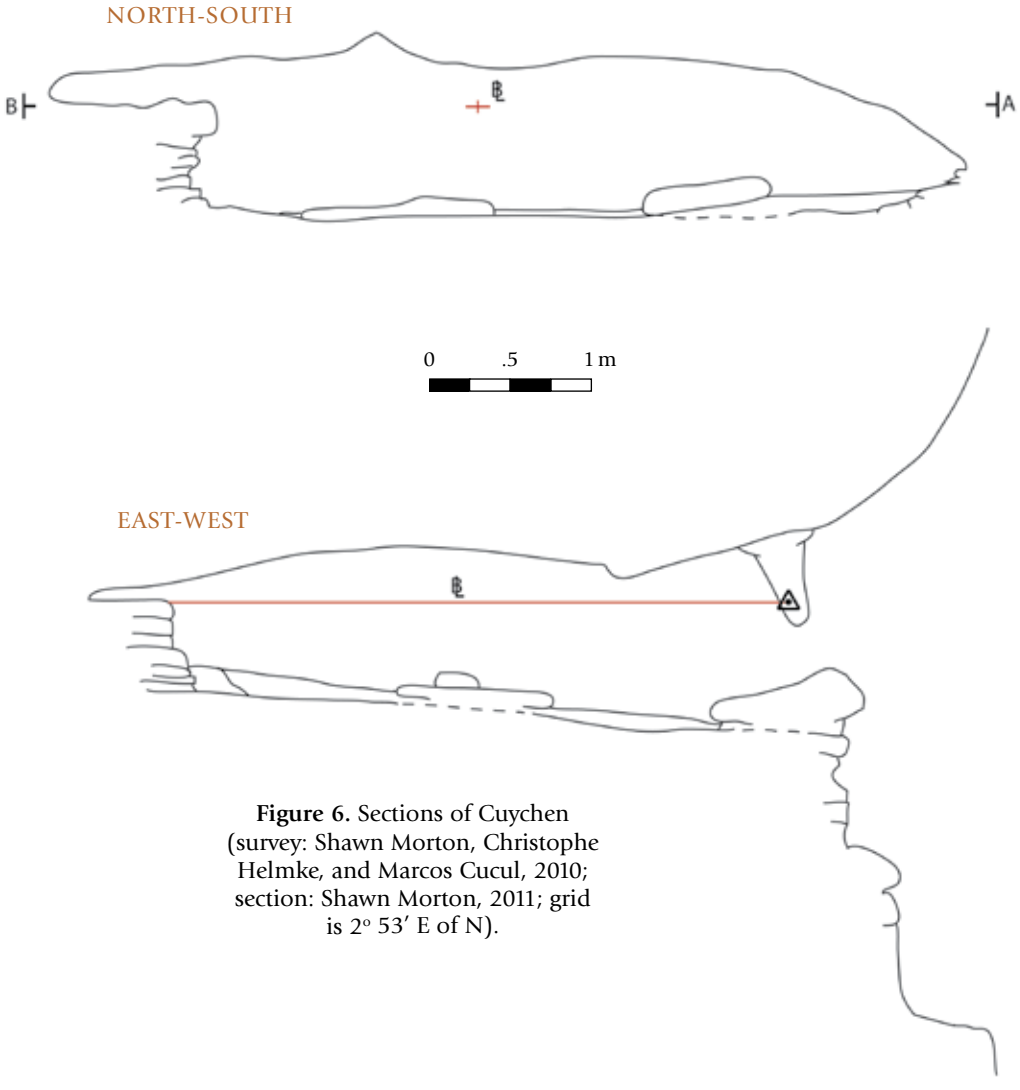


Figure 6. Sections of Cuychen (survey: Shawn Morton, Christophe Helmke, and Marcos Cucul, 2010; section: Shawn Morton, 2011; grid is 2° 53′ E of N).

edge of Ledge 2. This column appears to have been broken and detached from its base during a seismic event. Along the eastern portion of the cave a series of small shelves step down from Ledge 2, which collectively have been designated as Ledge 3 (c. 0.9 m^2). All in all Cuychen encompasses no more than 26.8 m^2 and is thus not only one of the smallest caves that we have investigated, but also a small cave in terms of other subterranean sites in the Maya area as a whole. For the sake of illustration, the surface area of the relatively small and nearby Stela Cave is at least 25 times larger than Cuychen, and just to the northwest is Actun Chapat that boasts more than 500 m of mapped passages, whereas total passage lengths of both Naj Tunich and Actun Tunichil Mucnal are in excess of 3 km. Nevertheless, Cuychen's size proved advantageous since it allowed us to investigate the site fully, rather than limiting us to a minute sample as is otherwise the norm. Furthermore, this cave tells us that these small features did play a significant role in the sacred landscape and calls out for archaeologists to record such sites, rather than focusing on the larger and more imposing cave systems.

Circumstances of Discovery and Summary of Investigations

The site was first brought to the attention of the authorities by Dennis Martínez, a local *milpero* who has been cultivating his plot of maize in the hanging valley immediately to the north of the cave site. He relates that he had noted the existence of the cave while hunting on the opposite, eastern side of the valley. His curiosity aroused, he and an unnamed companion set out to gain access to the cave on June 21, 2010. Martínez descended on a rope while his companion remained at the top of the cliff. Inside the unlooted cave he found a series of ceramic vessels and sherds of an exquisitely painted polychrome vase. He collected the two largest pieces of the vase—a basal sherd and a rim sherd—and his companion hauled

him out of the cave. Having thus acquired the pieces, Martínez proceeded to get in contact with Gyles Iannone, director of the Social Archaeology Research Program, which was conducting investigations at the nearby site of Minanha. Realizing the importance of the find, Iannone contacted Jaime Awe, then director of the Belizean Institute of Archaeology, and made arrangements for the pottery to be delivered to the authorities.

In response to this discovery Awe promptly put together a team headed by freelance mountaineering experts Marcos Cucul and Mario Pérez who, in collaboration with David Larson (of the Xibalba Mapping and Exploration Team), returned to the cave on July 4 to recover more pieces of the polychrome vase. Cucul and Pérez photographed the sherds of the vase in situ before retrieving all pieces that they could find on the surface and used flagging tape to mark the areas from which they recovered specimens.

The senior author arrived in Belize the following week to continue his documentation of the glyphic texts at the sites of Caracol, Buenavista del Cayo, Baking Pot, and Tipan Chen Uitz. Motivated by the fact that the cave remained unlooted and considering the uniqueness of the vase, it was decided that we should assemble another team to return to the cave, to map the site, document the archaeological remains found within, search for additional fragments of the vase, and initiate excavations. It took until July 30 to assemble the team and necessary equipment, this time composed of Abel García and Esperanza Gaitán (caving experts from Caves Branch Lodge), Catharina Santasilia (field supervisor of the Belize Valley Archaeological Reconnaissance Project), Gonzalo Pleitez (senior guide of River Rat Tours), as well as father-and-son team Bruce and Alex Minkin, in addition to Christophe Helmke and Shawn Morton. Having been led to the site by Martínez, we were able to gain access to the cave and begin the mapping of the site as well as the documentation of

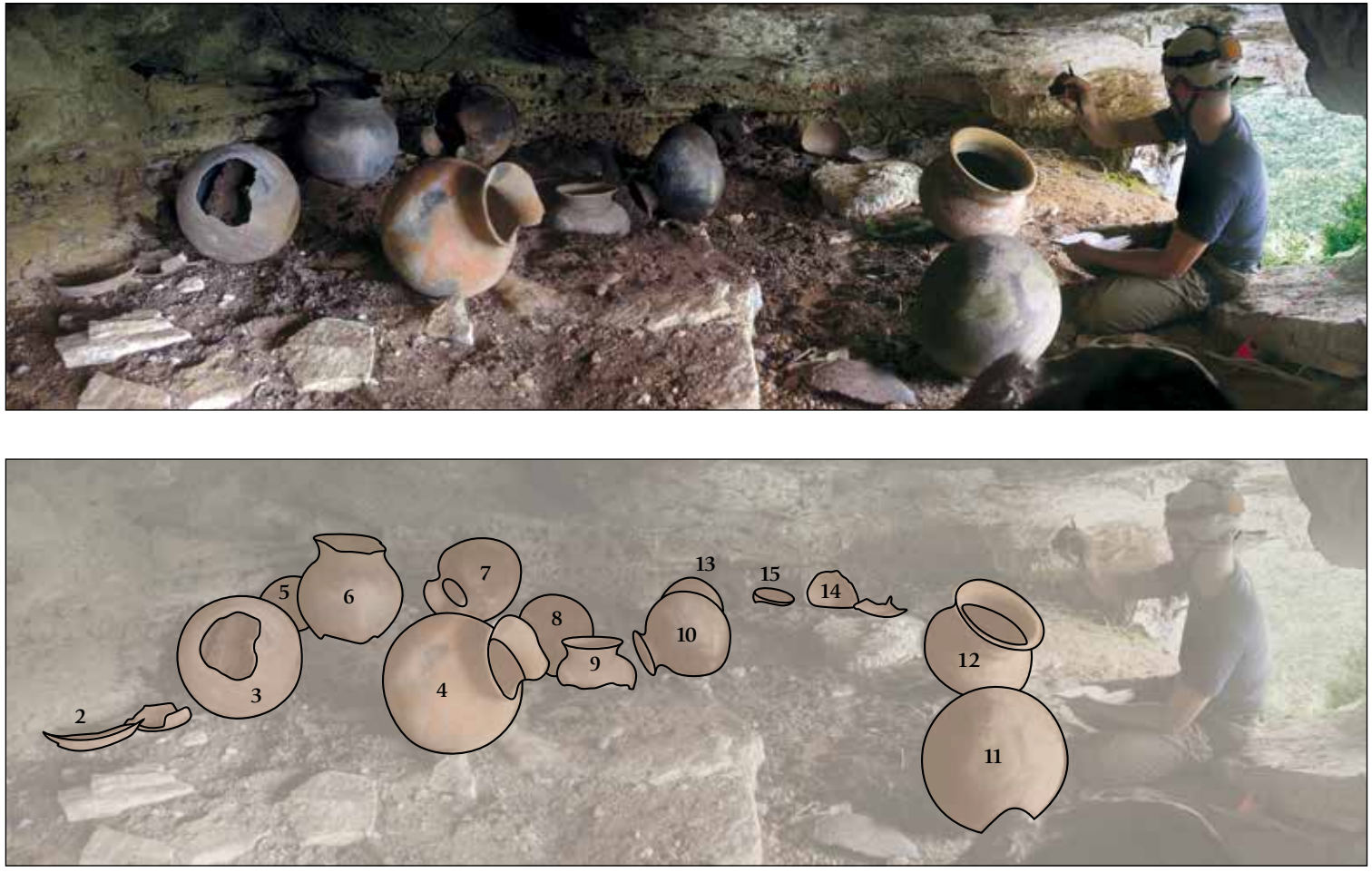


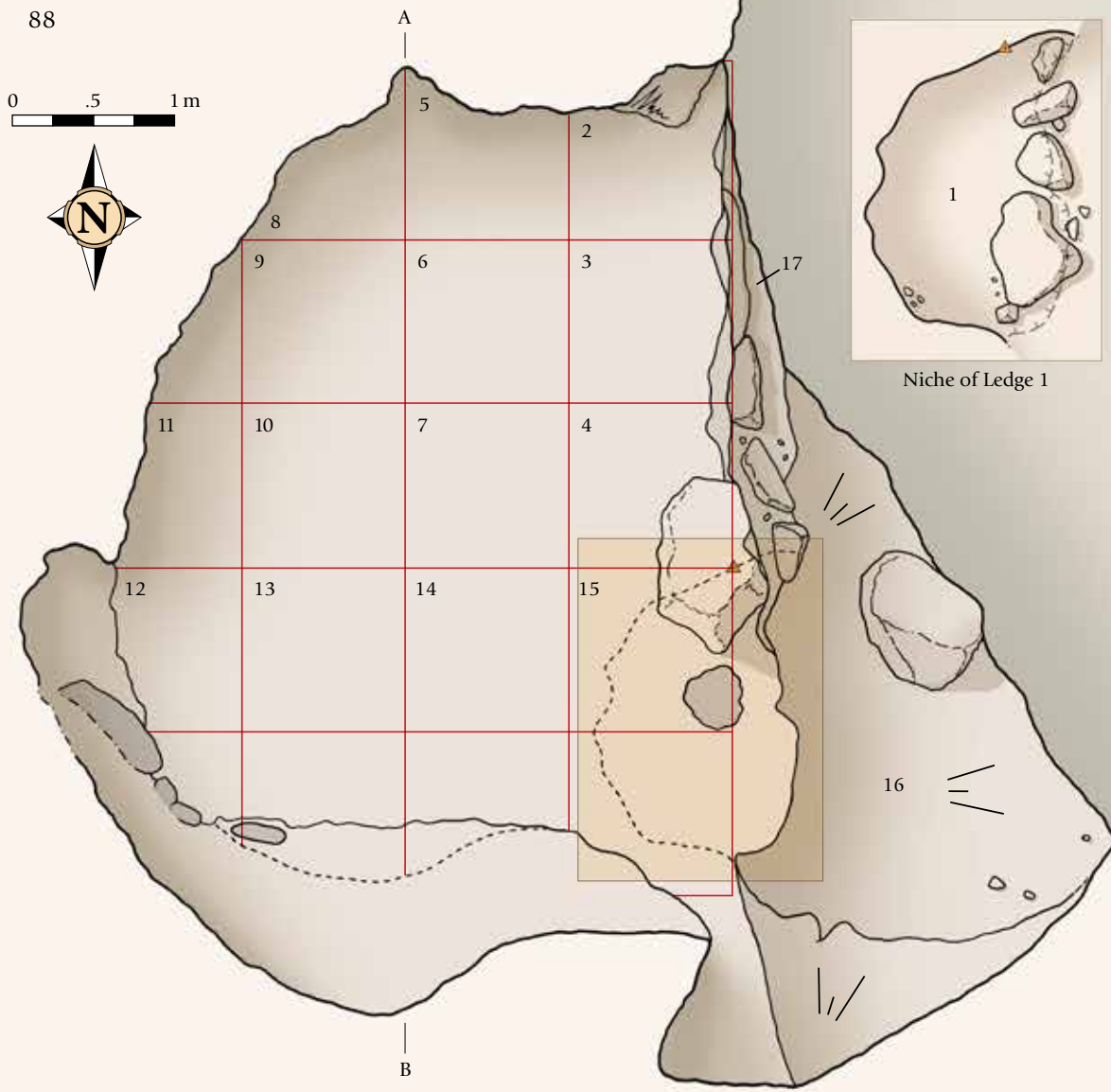
Figure 7. Panorama of Ledge 2 looking northwest, with Shawn Morton taking points off the baseline. The numbers correspond to those in Figure 5.

the 16 whole or reconstructible ceramic vessels found on the surface (Figure 7). We were also able to recover select matrix samples and one additional sherd of the vase.

The following week, on August 5 we attempted another entry of the cave, but this time due to torrential downpours and what can be described as equipment failure the expedition was aborted in the interests of safety, and we decided to resume work at the cave after the rains had subsided.

We returned to the cave on October 13—by which time the rainy season had ended—with Cucul and Mario Portillo of Belmopan. At this point we finished the mapping of the site, recorded the cross-sections of the cave, and also completed the bulk of the in situ documentation and analyses of the ceramic vessels. The following day we returned with Nazario and Marvin Puc, two experienced excavators from Soccutz, to undertake the excavations of the cave. On account of the cave's size it was deemed plausible to excavate the whole site by means of a series of excavation units according to a 1 x 1 m grid (aligned to grid north; 2° 53′ east of magnetic north). This grid was laid out all across Ledge 2 and constituted the basis for 14 excavation units (Figure 8). On Ledge 1 we segregated the niche (designated Excavation Unit 1) from the entrance landing (Excavation Unit 16), whereas the shelves of Ledge 3 were subsumed under one context (Excavation Unit 17). All the matrix excavated was sieved within the cave through quarter-inch (0.6 cm) screens, and all archaeological materials recovered during the excavations were brought to San Ignacio for further processing and analysis. In addition, where possible we recovered one matrix sample from each discrete context for analysis (see this volume Chapter 6, Baller et al. 2019). By the end of the day on October 14 we had completed the excavations of the cave and the archaeological investigations of the site were deemed complete.

At the onset of excavations, Ledge 1 consisted of fine-grained and damp light brown matrix, not unlike alluvium, undoubtedly derived from the leaching of the surrounding limestone conglomerate. Prior to excavations the niche (EU1) exhibited ceramic sherds on the surface, whereas the landing proper did not, suggesting that we should segregate the two areas. In order to make room for the screen and sieved matrix we opted to excavate the niche first. In so doing we found that the matrices within the niche extended to a depth greater than 10 cm. Due to the hydraulic processes responsible for the accumulation of matrices in the niche no clear stra-



tigraphy was discernible and it was thus decided to excavate this context in 10-cm arbitrary levels. Within the second level we found several ceramic sherds laid flat, forming a continuous lens, indicating that these had been deposited along a natural interface, quite possibly marking the first phase of the site's utilization. We excavated below this lens down to a depth of 20 cm below the surface at which point the sandy matrix proved devoid of artefactual materials and was deemed sterile. At this juncture we ceased excavations of EU1. Although

Figure 8. Plan of Cuychen showing layout and distribution of excavation units.

both Excavation Units 16 and 17 were characterized by the same matrix as EU1, the former did not exhibit significant accumulations of soil, and as a result these were only the subject of surface collections. Similarly, at the rappelling anchor near the top of the cliff two ceramic sherds were found whilst clearing vegetation, which were also collected (Lot 19).

For Ledge 2, the matrix was considerably different and was the product of zoogenic processes. Indeed the matrix of Ledge 2 consisted of a single 4 to 13-cm thick stratum of dry and dark brown guano characterized by a high abundance of rodent bones, the occasional remains of amphibians, and desiccated termites' nests (Figure 9). The expansive deposit of fecal matter attests to the presence of raptorial birds that made Cuychen their nesting site (see this volume Chapter 5, Wisner et al. 2019). By the time we began our investigations the cave had been abandoned by the raptorial birds and we were thus unable to confirm precisely what type of birds had utilized the site. Nonetheless, we surmise that it had

Figure 9. Close-ups of the zoogenic matrix of Ledge 2.

been occupied by owls, which as nocturnal birds of prey would account for the preponderance of small rodent bones. It is this observation that in part provides the site its Maya name. No distinct stratigraphy could be discerned in the dried guano, and it was thus decided to excavate it as a single context using the excavation units as a means of spatial segregation. Nevertheless, it was found that the majority of ceramic vessels evident on the surface had been deposited upon the guano, indicating that this phase of usage took place at a time when the cave was already inhabited by the raptorial birds. Since some of the vessels contained significant amounts of guano it is also evident that the birds continued to inhabit the site even after the ancient Maya had ceased to utilize the cave. On account of our excavations we were able to determine that the original cave floor of Ledge 2 consists of small and wonderfully formed travertine dams (Figure 10) and the whole grades evenly from west to east, a testament to the site's formation processes (Figure 6). Parts of the travertine floor are overlain by large and flat slabs of stone that have detached from the ceiling. The entirety of the travertine floor of Ledge 2 and parts of the ceiling slabs were overlain by the stratum of guano, indicating that the slabs probably detached from the ceiling at a time prior to the utilization of the cave by the ancient Maya.

Figure 10. The travertine dam floor of Cuychen's Ledge 2 exposed by Nazario Puc in Excavation Units 2 and 3 (photograph by Shawn Morton).

Ceramic Dating

As a result of our investigations we were able to document that Cuychen witnessed multiple phases of utilization during the Classic period. This is indicated by the stratigraphic evidence that we were able to document and corroborated by the dating of the ceramic materials recovered as part of the excavations. For Ledge 2 we should note that all the ceramics found on the surface can be squarely assigned to the Spanish Lookout ceramic complex (see Gifford 1976:225-288), which typologically corresponds to the Late Classic (Figure 11). As such the more complete vessels found on the surface attest to the latter episodes of the site's use. To this one can add the observation that these ceramics constitute a coherent and temporally discrete assemblage that in large measure was deposited atop the stratum of guano. Thus, all the artefactual materials recovered as part of the excavations of the underlying matrix necessarily predate the deposition of the more complete vessels. This conclusion is confirmed by the analyses of the ceramic sherds recovered from the excavations since these can be identified as belonging to the Hermitage, Tiger Run, and Spanish Lookout complexes, corresponding respectively to the Early Classic (Tzakol 3), Middle Classic (or more properly speaking Tepeu 1), and Late Classic periods (most likely restricted to Tepeu 2) (see Gifford 1976). As such we can see that there is an uninterrupted, if periodic utilization of the cave from the late Early Classic to the latter part of the Late Classic (c. AD 450–830), which fits the most intensive occupation documented for nearby Minanha.

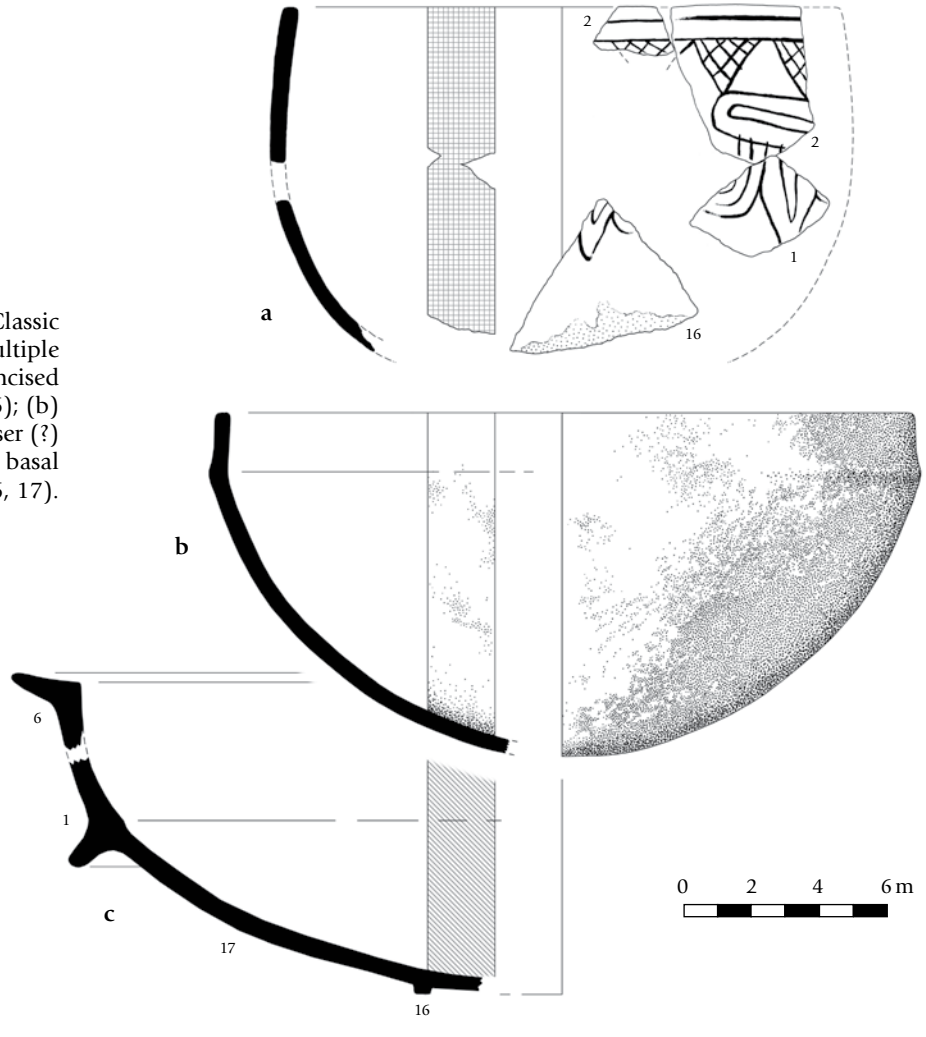


Figure 11. Fragmentary Early Classic ceramics recovered from multiple contexts: (a) Urita Gouged-incised bowl (Lots 1, 2, and 16); (b) unnamed and unslipped censer (?) (Lot 17); (c) Minanha Red basal flange vessel (Lots 1, 6, 16, 17).

Our analyses of the 475 the ceramic specimens found within the cave (Table 1) indicate that the majority can be typologically assigned to the Late Classic, whereas the Early Classic materials represent the second most important sub-assemblage. The tabulation of all diagnostic ceramics indicates that 32% could be identified as Early Classic, 1.3% as Middle Classic,[2] and 66.7% as Late Classic (Table 1). All Early Classic materials could be assigned to a late facet that corresponds to Tzakol 3 in the central Peten (c. AD 450–550), based on the presence of certain ceramic modes, including the size of basal flanges and the presence of bowls with inset bases[3] and incised decorations that are stylistically late (see Reents 1982:61-62; Healy et al. 1998:Fig. 8a) (Figure 11). Typologically we have tentatively segregated all the Late Classic materials as belonging to the early facet of Spanish Lookout (corresponding to Tepeu 2 in the Peten; c. AD 700–830), since none of the diagnostic types or markers of the Terminal Classic or late-facet Spanish Lookout complex (i.e., Tepeu 3; c. AD 830–950) have been found at the site (see Sabloff 1975:153-228; LeCount 1992, 1996:153-165). Nevertheless, it is possible that the site witnessed some usage during the Terminal Classic although the ceramic evidence remains mute on this point.

[2] As is typical of the area, the intervening and so-called Middle Classic (c. AD 550–700) ceramics constitute a very small subset. In large measure this is brought about by typological characteristics as initially defined by James Gifford (1976:191ff), which artificially segregate coeval types from one another resulting in a typologically pure but impoverished Tiger Run complex. As such it gives the appearance that Tiger Run materials constitute an ephemeral period of utilization, when in actuality this is probably not the case.

[3] The same type of base is referred to by David Pendergast as "indented bases" for the Altun Ha assemblage and as "excised bases" by James Gifford for the Barton Ramie ceramics. We have opted to use a slightly more neutral descriptor here, but are referring to the same exact mode.

Lot	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
Hermitage Complex (EC3)																				**48**
Minanha Red	2	1				1										3	5			12
Balanza Black						3			1			1		1						6
Rel. to Urita Gouged-incised (bowl)	1	2														2	1			6
Eastern Branch Plain (?)	1																			1
Rel. to Hewlett Bank Unslipped (bowl)	1																1			2
Unnamed Unslipped censer (?)																	21			21
Tiger Run Complex (LC1)																				**2**
Uacho Black-on-orange										1										1
Zibal Unslipped																			1	1
Spanish Lookout Complex (LC2)																				**98**
Garbutt Creek Red													2							2
Vaca Falls Red												1								1
Dolphin Head Red	1																			1
Zacatel Cream-polychrome							3		2			3				3				11
Mount Maloney Black	8					3		1							1					13
Belize Red						1														1
Platon Punctuated-incised														1						1
Tinaja Red						1			1		1									3
Rel. to Silver Ck. Impressed / Tinaja									1		1		2	2						6
Cayo Unslipped	1							1	7		4	1	30		1	7	2			54
Cayo Unslipped: Var. Unspec. (Buff)														1						1
Alexanders Unslipped: Alex. Var.										1										1
Tu-tu Camp Striated							1			1										2
Rel. to Cayo Unslipped					1															1
Unidentified & Undiagnostic																				**327**
Unidentified olla	7	8			6			1						2	7	3				34
Unidentified bowl	1																			1
Undiagnostic olla	36	12	1	4	4	48	8	11		12		3	13	15	31	22	69	2	1	292

Table 1. Ceramic specimens (vessels + sherds).

As a means of determining the minimum number of vessels that were originally introduced into the cave, each complete or reconstructible vessel was counted once, as was each grouping of sherds of the same type-variety that could reasonably stem from the same original vessel. In cases where multiple diagnostic sherds from the same type-variety exhibit features or modes with different form or metrics these must stem from an equal number of different vessels and are thus counted accordingly. The minimum vessel estimates based on this method (Table 2) lead us to identify a total of 33 vessels. The temporal breakdown accords almost perfectly with that obtained for the sherd assemblage since 24.2% date to the Early Classic, 6.1% to the Middle Classic, and 57.6% to the Late Classic.

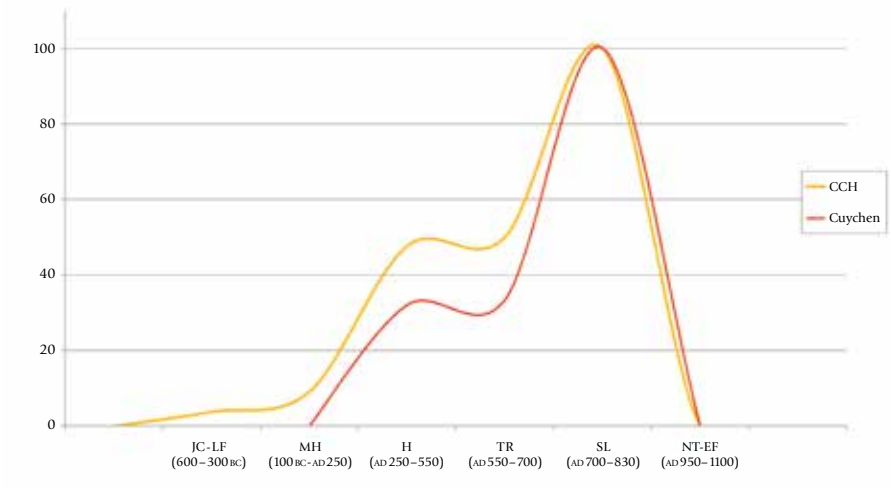
Intensity of Usage

Based on our work at several other caves throughout west-central Belize, we have found that the use of subterranean sites intensifies during the Late to Terminal Classic periods. This conclusion stems from the use of ceramic remains as proxies for human utilization, with increasing incidence of ceramic materials corresponding to proportionate intensity of utilization. As such, the bulk of the materials tend to date to the latter phases of utilization whereas the opposite also holds true (see for example Pendergast 1969, 1970, 1971, 1974; McNatt 1996; Ishihara et al. 2000:91-94; Helmke 2009). While at first one might be tempted to view this as a product of sampling, we do not consider this to be a viable proposition since the patterning is repeated at the vast majority of all sites investigated, irrespective of the size of the sample or whether the sampling is partial or exhaustive. Human remains and carbon samples recovered from Actun Chechem Ha, Actun Tunichil Mucnal, and Midnight

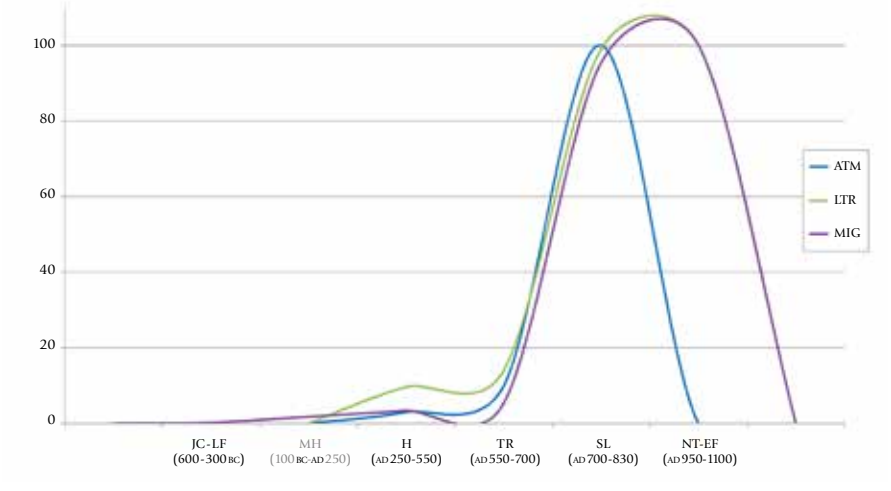
Lot	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
Hermitage Complex (EC3)																				**8**
Minanha Red (basal flange)	0.2	0.1				0.1										0.3	0.2			1
Minanha Red (bowl w/ inset base)																	1.0			1
Balanza Black (olla)						0.6			0.2					0.2						1
Balanza Black (bowl w/ inset vase)												1.0								1
Eastern Branch Plain (?)	1.0																			1
Rel. to Urita Gouged-incised (bowl)	0.2	0.3														0.3	0.2			1
Rel. to Hewlett Bank Unslipped (bowl)	0.5																0.5			1
Unnamed Unslipped censer																	1.0			1
Tiger Run Complex (LC1)																				**2**
Zibal Unslipped																			1.0	1
Uacho Black-on-orange										1.0										1
Spanish Lookout Complex (LC2)																				**23**
Garbutt Creek Red V5													1.0							1
Vaca Falls Red V8												1.0								1
Dolphin Head Red (dish)	1.0																			1
Zacatel Cream-polychrome V1							0.3		0.2			0.3				0.3				1
Mount Maloney (olla)	0.7					0.3														1
Mount Maloney Black: Applique Var. V11								0.5							0.5					1
Belize Red (bowl)						1.0														1
Platon Punctuated-incised (tripod-dish)														0.3	0.7					1
Tinaja Red (olla)						0.5			0.5											1
Tinaja Red (?) V10											1.0									1
Rel. to Silver Ck. Impressed / Tinaja V2											0.2		0.4	0.4						1
Rel. to Silver Ck. Impressed / Tinaja V15									1.0											1
Cayo Unslipped (olla)	0.1							0.1							0.1	0.6	0.2			1
Cayo Unslipped V3													1.0							1
Cayo Unslipped: Var. Unspec. (Buff) V4														1.0						1
Cayo Unslipped V6											0.1		0.9							1
Cayo Unslipped V7												1.0								1
Cayo Unslipped V9											1.0									1
Cayo Unslipped V14									1.0											1
Tu-tu Camp Striated V12							1.0													1
Tu-tu Camp Striated V16										1.0										1
Alexanders Unslipped: Alex. Var. V13										1.0										1
Rel. to Cayo Unslipped (fingerbowl)					1.0															1
Totals	**3.7**	**0.4**	**0.0**	**0.0**	**1.0**	**2.5**	**1.3**	**0.6**	**2.9**	**3.0**	**2.3**	**3.3**	**3.3**	**1.9**	**1.3**	**1.5**	**3.1**	**0.0**	**1.0**	**33**

Table 2. Ceramic vessel estimates (vessels + sherds amounting to a vessel).

Terror have recently been subjected to ^{14}C assays, which wholly corroborate the temporal trends suggested by the ceramic data (see Moyes et al. 2009:194). Plotting the cumulative relative frequency distribution of ceramic materials according to the phase to which they date, one can obtain a curve that hypothetically mimics the intensity of a site's utilization. The curve for Cuychen is remarkably similar to that produced for the nearby cave site of Chechem Ha, despite the fact that the assemblage is nearly twice as large (n = 991) and was independently analyzed by Reiko Ishihara (2000; Ishihara et al. 2000) and Jim Aimers (see Moyes 2006b:162-163) (Figure 12). Furthermore, producing such curves for cave sites in the Roaring Creek and Barton Creek Valleys (i.e., Laberinto de las Tarántulas, Cueva Migdalia, and Actun Tunichil Mucnal) results in another set of almost identical profiles, also despite vastly different assemblages (these vary between n = 792 and 7618 ceramic specimens, respectively) (Helmke and Ishihara 2002:130-142; Helmke 2009). This implies that the curves produced for the cave sites from the same valleys tend to share comparable trends in their utilization. In turn this suggests that cave usage may be subregionally more homogeneous than has heretofore been recognized. Since cave usage was probably motivated in large measure by ritual intentions, the congruous curves for each subregion provide us with a glimpse as to the relative intensity and history of such utilization in each particular area.



a



b

Figure 12. Ceramic assemblages as proxies for the intensity of human utilization of caves: (a) temporal curve for ceramic assemblages in the Macal River Valley for Cuychen and Actun Chechem Ha; (b) matching curves for the Upper Barton Creek and Roaring Creek Valleys for Laberinto de las Tarántulas, Actun Tunichil Mucnal, and Cueva Migdalia.

Vessel Form and Activity Sets

Elsewhere, the senior author has developed a model accounting for the particular vessel forms found within caves (Helmke 2009). The underlying stipulation is that—unlike surface sites—all ceramic materials found in caves derive from vessels or implements that were deliberately introduced by human agency, in order to fulfill particular functional requirements. Thus, if one were to ascertain the original primary and/or secondary functions that vessels served, one would be in a better position to reconstruct the types of activities conducted in caves in antiquity. As is well known, the form of particular vessels correlates with their primary functions, as serving vessels for solid, semi-liquid, and liquid foodstuffs, as transportation or storage containers for solids or liquids, as food-preparation implements, and as receptacles for burning incense (see Rice 1987:207-243; Houston et al. 1989; Boot 2005a; Helmke 2009:609-634). Based on these attributes it would seem that the majority of cave rituals entailed the votive or petitionary deposition of foodstuffs, to offer thanks or to placate supernatural entities thought to inhabit the earth (see also Morehart et al. 2004; Morehart and Butler 2010). In tabulating vessels according to form for each respective period for a series of caves in the Roaring Creek Valley, the senior author was able to determine that there is some regularity in the ratios of vessel forms that co-occur within discrete areas of caves and between different phases of utilization. The recurrence of particular vessel forms according to a standardized ratio has been interpreted as "activity sets," in line with the model formulated by ethnoarchaeologist Michael Deal (1998:84-85). As a result, each

periodic episode of utilization appears to have entailed the introduction and subsequent deposition of such discrete activity sets within the cave. On the whole then, each complete activity set is considered to represent one cycle of usage, presumably one complete ritual action or event.

At Cuychen, the sixteen Late Classic vessels found on the surface (Figure 13) form an assemblage wherein certain elements occur in near-even pairs, suggesting that we are looking at two distinct activity sets, each ideally comprised of: one incurving bowl, one tripod dish, one narrow-mouth olla, and four wide-mouth ollas (Table 3). The conclusion then is that the Late Classic vessels together represent two closely related, but distinct events, in which the earlier of the two included the polychrome vase in its activity set. Overall the Late Classic ceramic assemblage from Cuychen compares favorably with contemporaneous assemblages found within western Belizean caves that exhibited comparable activity sets, wherein each included one Zacatel Cream-polychrome: Cabrito Variety[4] vase, making the comparison all the more significant (see Gann 1925:72;

[4] Whereas the Cabrito Variety of Zacatel Cream-polychrome has been established for some time (Smith and Gifford 1966:164; Gifford and Kirkpatrick 1996:160), Joseph Ball (1993:249-252, 1994b:364-365) has attempted to segregate the Cabrito Variety from the Zacatel type by proposing the creation of a new type named Cabrito Cream-polychrome, with its dependent varieties. While we concur that much of the cream-polychrome material that has been found at Buenavista del Cayo does not fall squarely under Zacatel and would benefit from its own type designation (Ball 1993:249-252; Reents-Budet et al. 2000:107-116), we think it viable to maintain the Cabrito Variety of Zacatel, not least since it is precisely to this type-variety that the Cuychen and Jauncy vases can be assigned. With regard to the specific specimens discussed here, much of the material found in caves can be assigned to Ball's Cabrito Cream-polychrome.

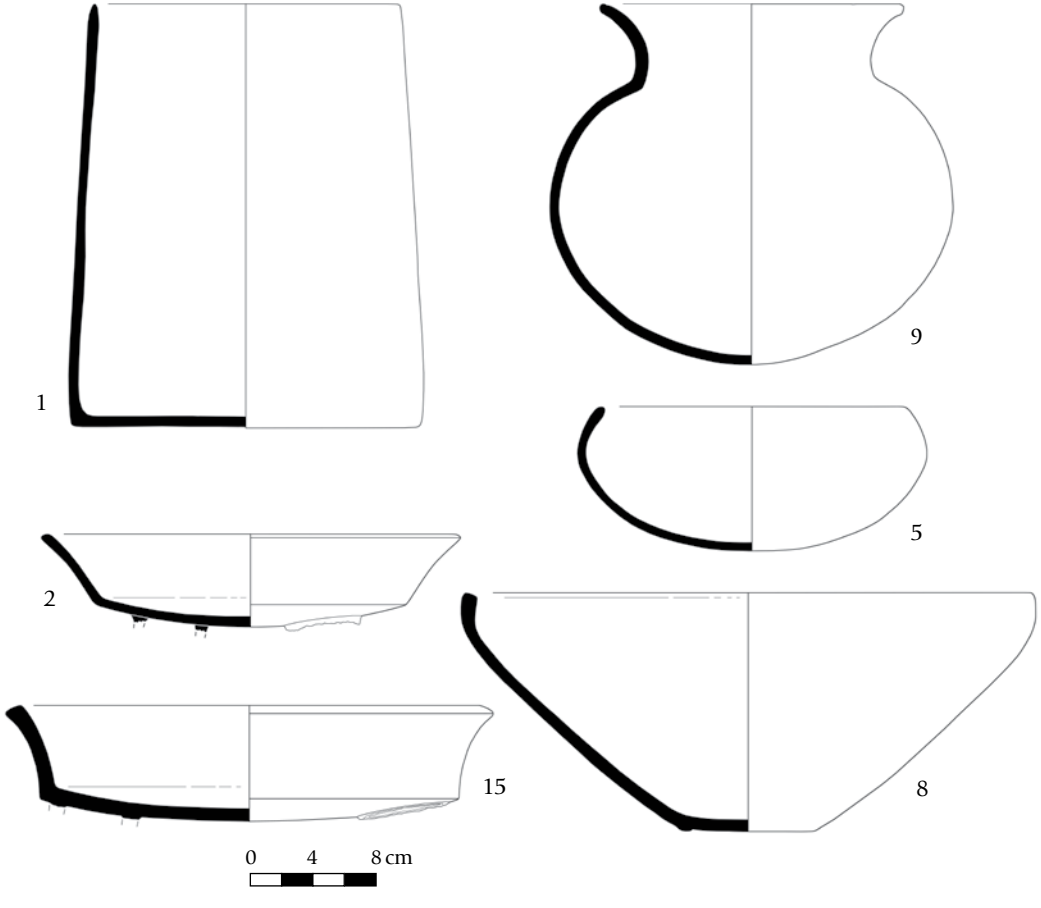
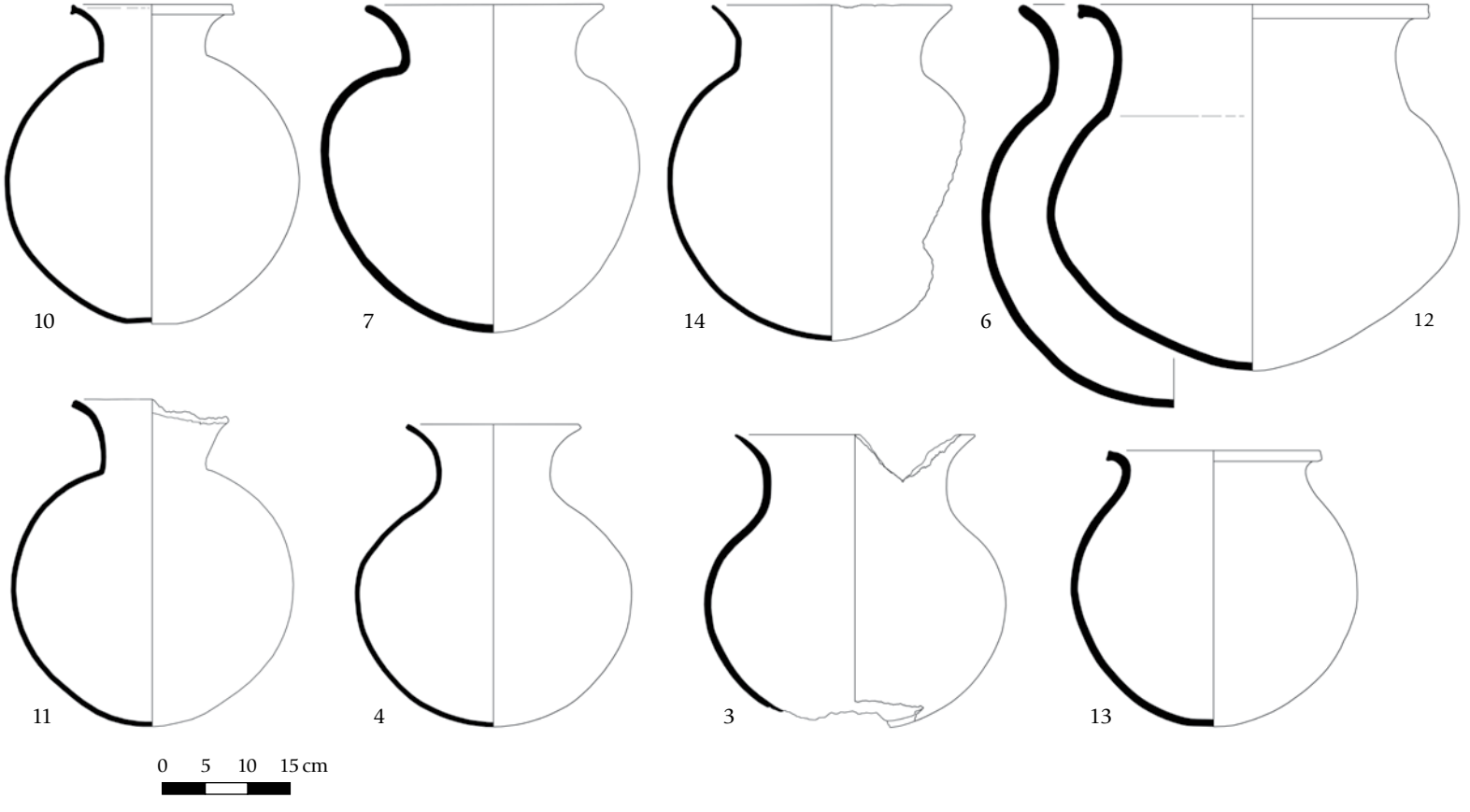


Figure 13. Section drawings of the more complete and reconstructible Late Classic vessels found on the surface of Ledge 2; numerals refer to the vessel designations: (1) Zacatel Cream-polychrome: Cabrito Var.; (2) related to Silver Creek Impressed and incised Tinaja Red; (3) Cayo Unslipped; (4) Cayo Unslipped: Var. Unspec. (Buff / Orange ware); (5) Garbutt Creek Red; (6) Cayo Unslipped; (7) Cayo Unslipped; (8) Vaca Falls Red; (9) Cayo Unslipped; (10) probably Tinaja Red; (11) Mount Maloney Black: Applique Var.; (12) Tu-tu Camp Striated; (13) Alexanders Unslipped: Alexanders Var.; (14) Cayo Unslipped; (15) related to Silver Creek Impressed and incised Tinaja Red.


10
7
14
6
12
11
4
3
13
0 5 10 15 cm

Vessel	Form	Description	Type-variety
V01	vase	cylinder	Zacatel Cream-polychrome: Cabrito Var.
V02	dish	tripod	Rel. to Silver Creek Impressed and incised Tinaja Red
V03	olla	wide-mouth	Cayo Unslipped
V04	olla	wide-mouth	Cayo Unslipped: Var. Unspec. (Buff / Orange ware)
V05	bowl	incurving	Garbutt Creek Red
V06	olla	wide-mouth	Cayo Unslipped
V07	olla	wide-mouth	Cayo Unslipped
V08	bowl	incurving	Vaca Falls Red
V09	olla	wide-mouth (small)	Cayo Unslipped
V10	olla	narrow-mouth	Tinaja Red (?)
V11	olla	narrow-mouth	Mount Maloney Black: Applique Var.
V12	olla	wide-mouth	Tu-tu Camp Striated
V13	olla	wide-mouth	Alexanders Unslipped: Alexanders Var.
V14	olla	wide-mouth	Cayo Unslipped
V15	dish	tripod	Rel. to Silver Creek Impressed and incised Tinaja Red
V16	olla	wide-mouth	Tu-tu Camp Striated

Table 3. Summary of the vessel form and type-variety of the Late Classic ceramic vessels found within Cuychen.

Reents-Budet and MacLeod 1997:Table 10c; Helmke and Ishihara 2002:125; Helmke 2009:239-240, 249, 374, 413-415) (Figure 14). In sum, it would thus appear that the activities conducted at Cuychen closely compare to those that transpired within other caves in central Belize. As such, it is clear that the ritual actions conducted at Cuychen were firmly embedded within a coherent regional tradition, rather than representing an idiosyncratic material precipitate of human activities.

Figure 14. Zacatel Cream-polychrome vase said to have been found in a cave near Benque Viejo (photograph from Gann 1925:72). Note the period-ending date 8 Ajaw recorded in the vertical text.

Ceramic Termination

Whereas analyses of activity sets help to explain the functional considerations involved in the votive events themselves, an equally important part of the ceremonial actions that transpired in cave sites involves termination rituals. Although we are aware that the dichotomous model of dedication vs. termination formulated for caches and other offerings (see Coe 1959:118-119) is probably an inadequate oversimplification, the conceptual baggage conveyed by the term "termination" remains a viable model, with some evident caveats and amendments (e.g. Freidel and Schele 1989; Iannone 1992:105-117). For example, in which part of the ritual cycle did the termination take place, at the close of a particular ritual event, or at the beginning of a subsequent ritual event? If the latter, the termination of ceramics used in prior events may in fact be better described as an initial and dedicatory ritual act for ensuing rituals. This hypothesis makes sense in the context of "ritual cleansing," which has already been introduced for similar archaeological materials (MacLeod and Puleston 1979:72; Brady et al. 2009:55-56), whereas Evon Vogt (1976:102) and Linda Brown (2004:36) discuss this practice among the contemporary Maya where it entails the cleaning and removal of old ritual paraphernalia associated with waterholes, caves, and mountain shrines. The same holds true for tomb reentries since the human remains and associated grave goods of the earlier occupant tend to be removed or pushed to one side to make room for the new interment (see Awe 1985:40-43; D. Chase and A. Chase 1996; Healy et al. 1998).

From the onset of our investigations it was clear the vast majority of the ceramic vessels found within Cuychen had been subjected to ter-

mination by various means. As is typical of Maya practices most of the vessels exhibit what have been termed "kill holes," a feature also seen in other parts of Mesoamerica and even as far afield as the American Southwest (e.g., Thompson 1959:125; Reents-Budet 1994:198). Vogt (1976:18-19, 52-55, 94-96) was among the first to foster a cogent model that explains that the Maya, both past and present, view human-made objects as essentially sterile and soulless, in stark contrast to all other elements of the natural world that inherently possess a soul or godly essence (see also Freidel et al. 1993:181-183, 213-219; Houston et al. 2006:35, 83). Thus all human-made objects have to be purposefully instilled with a spiritual essence so that they could perform and operate as integral parts of the natural and cultural environment without adversely affecting their users and their social milieu. The so-called Primary Standard Sequence (Coe 1973; MacLeod 1990), now termed by some the Standard Dedicatory Formula (Boot 2005c:1; Stuart 2005:114, 118), which is not only seen adorning ceramic vessels but also jewelry, items of regalia, clothes, as well as some architectural elements such as benches, lintels, and altars (Stuart 2005:118-122; Grube 2006:62-72), can now be viewed as a specialized incantation or chant, whose express purpose was to dedicate objects by instilling them with such an essence. At the opposite extreme of an object's life-history is their termination, which was designed to release the spirit back into an intangible pool of godliness (see Vogt 1976:22-23; Helmke 2012a:65-67). These terminations plainly disassociate the objects from the cultural realm in which they partook as active, although non-sentient members and allow them to rest at their points of deposition as dead and lifeless objects, as Westerners might conceive them.

In the case of Cuychen, termination was accomplished by one of several means, entailing either: (1) striking with a pointed object to pierce a small

Figure 15. Means of ceramic termination documented at Cuychen: (a) typical "kill hole" piercing the side of Vessel 7; (b) base punched out of Vessel 3; (c) sherds of Vessel 1, which was terminated by means of smashing; (d) base of Vessel 15 with scars of torn supports; (e) rim of Vessel 12, chipped with a blunt tool (*c* photograph by Marcos Cucul).

	V01	V02	V03	V04	V05	V06	V07	V08	V09	V10	V11	V12	V13	V14	V15	V16
shattered	✓	✓	-	-	✓	-	-	-	-	-	-	-	-	✓	-	✓
kill hole	-	-	✓	-	-	✓	✓	-	-	-	-	-	-	-	-	-
chipped rim	✓	-	✓	✓	-	✓	✓	-	-	-	✓	✓	✓	-	-	-
torn off legs	-	✓	-	-	-	-	-	-	-	-	-	-	-	-	✓	-

Table 4. Summary of means of termination affecting the Late Classic ceramic vessels of Cuychen.

hole in the body or base of a vessel, without otherwise affecting its integrity, conforming to the typical kill holes (Figure 15a); (2) punching-out the whole base, resulting in a spree of conjoining sherds usually found in the vicinity of a vessel's final point of deposition (Figure 15b); or (3) wholesale smashing of a vessel and the eventual scattering of its sherds over larger areas (Figure 15c) (Table 4). In the latter case it has also been documented that some sherds were subsequently gathered and re-deposited away from the point of breakage as discrete, grouped clusters, whereas other sherds appear to have been taken out of the cave, presumably to be deposited in caches at another site away from the cave. It is this type of termination that appears to have affected the polychrome vase (Vessel 1) since its sherds were found as four discrete clusters spread out across Ledge 2. In addition, despite our exhaustive excavations we only recovered 49% of the vase, and we surmise that the remainder was removed from the cave in antiquity, either intentionally or accidentally.[5] Furthermore, within Vessel

[5] Dennis Martínez (personal communication 2010) relates that he noted some sherds at the bottom of the cliff that he thought might have stemmed from the cave, having been knocked out by the birds that inhabited the site. We have yet to reconnoiter the area in question and ascertain if this can be substantiated.

8 we found a calcite deposit showing the imprint of a vessel with a diameter of c. 20 cm (Figure 16). Since the polychrome vase is the only vessel found within the cave with a matching diameter, it seems plausible that the large basal sherd initially recovered by Dennis Martínez had been placed within Vessel 8 by the ancient Maya, after its termination. Other types of terminations that have yet to be properly acknowledged in the academic literature, but which we have documented time and again within caves of central Belize, entail the chipping of olla rims with a stone tool (Figure 15e) and the forcible removal of supports from tripod dishes (Figure 15d) (see Mirro 2007:105; Helmke 2009:60, 453, 470). In the latter two cases we surmise that the ritual act was designed to affect the vessels but not their contents, hence the type of termination applied, which also reinforces the conclusion that the vessels contained foodstuffs at the time of their deposition.

Ceramic Spatial Distribution

The more complete Late Classic ceramic vessels found on the surface of Ledge 2 had been principally deposited in a broad arc along the base of the cave's rear wall (see Figure 5). This pattern conforms to the intrasite distribution of burials and artefactual features found within the majority of caves in central Belize, which are prefer-

Figure 16. Calcite deposit within Vessel 8 showing the impression left by a vessel with a diameter of c. 20 cm.

entially found along the base of cave walls. However, one group of ceramics stands out from this patterning: three vessels (8, 9, and 10) whose placement forms a neat equilateral triangle near the center of the cave (Figure 17). This feature had been noted from the outset of the investigations but was initially dismissed as fortuitous. It was not until the ceramic analyses were completed that we obtained corroborative evidence to suggest that these vessels represent an intentional and deliberate feature. The first noteworthy aspect is that these three vessels are the only ceramics found within Cuychen that had not been ritually terminated or killed (see Table 4). Second, these vessels appear to form a discrete "activity set" being comprised of a bowl, a large narrow-mouth olla (for transport and storage of liquids), and a small wide-mouth (cooking?) olla. Third, it was also within the bowl (Vessel 8) that a sherd of the polychrome vase appears to have been placed after its termination. We suspect that the three vessels may represent the final episode of the cave's utilization, thereby accounting for the ceramics showing no signs of termination. If these interpretations are accurate, then it would seem termination did not conclude a ritual cycle, but rather transpired as the initial element of a subsequent event. Cumulatively, this evidence suggests that these three vessels stand out as a deliberate feature and that their triangular disposition is not merely coincidental.

Figure 17. The triangular configuration formed by Vessels 8, 9, and 10.

EU	m²	Ce spec.	Ce spec./m²
1	1.68	122	73
2	0.80	1	1
3	0.93	4	4
4	0.76	11	15
5	0.86	57	66
6	1.00	12	12
7	1.00	14	14
8	0.63	12	19
9	1.37	15	11
10	1.00	6	6
11	0.70	9	13
12	1.03	47	46
13	1.57	22	14
14	1.55	42	27
15	1.72	40	23
16	4.26	59	14
17	0.58	2	3
Totals	**21.42**	**475**	---

Table 5. Total incidence and spatial density of ceramic specimens (Ce. spec.) found at Cuychen according to excavation units (EU) in which these were found. Materials from Levels 1 and 2 of EU1 are here tabulated conjointly.

In calculating the incidence of ceramics by excavation unit (Table 5) we found that the spatial density is actually quite variable, ranging from 1 to 73 specimens per square meter. Based on this variability we have been able to create a plan showing the spatial distribution of ceramics according to contour intervals of 5 per square meter (Figure 18). In so doing we can see that there are essentially two prominent areas where ceramic specimens occur in high frequencies, peaking at 47 and 66 sherds per square meter. These concentrations are again found along the rear wall of the cave, to the southwest and north, respectively, indicating that there is a consistent spatial patterning to the artifacts. In consequence we surmise that the cave witnessed similar activities and saw consistent utilization over the various periods attested by the ceramics. The high incidence of sherds in these two areas probably indicates that ceramic vessels utilized in earlier ritual cycles had been smashed in these areas as a means of termination. The triangular configuration of ceramic vessels is almost perfectly centered on an area that exhibits one of the lowest concentrations of specimens (i.e., less than 10 sherds per square meter). This is again noteworthy in regard to further isolating this feature from all the other ceramic vessels found in the cave. As such, it would appear that the triangular feature served as a central point around which other ritual activities transpired.

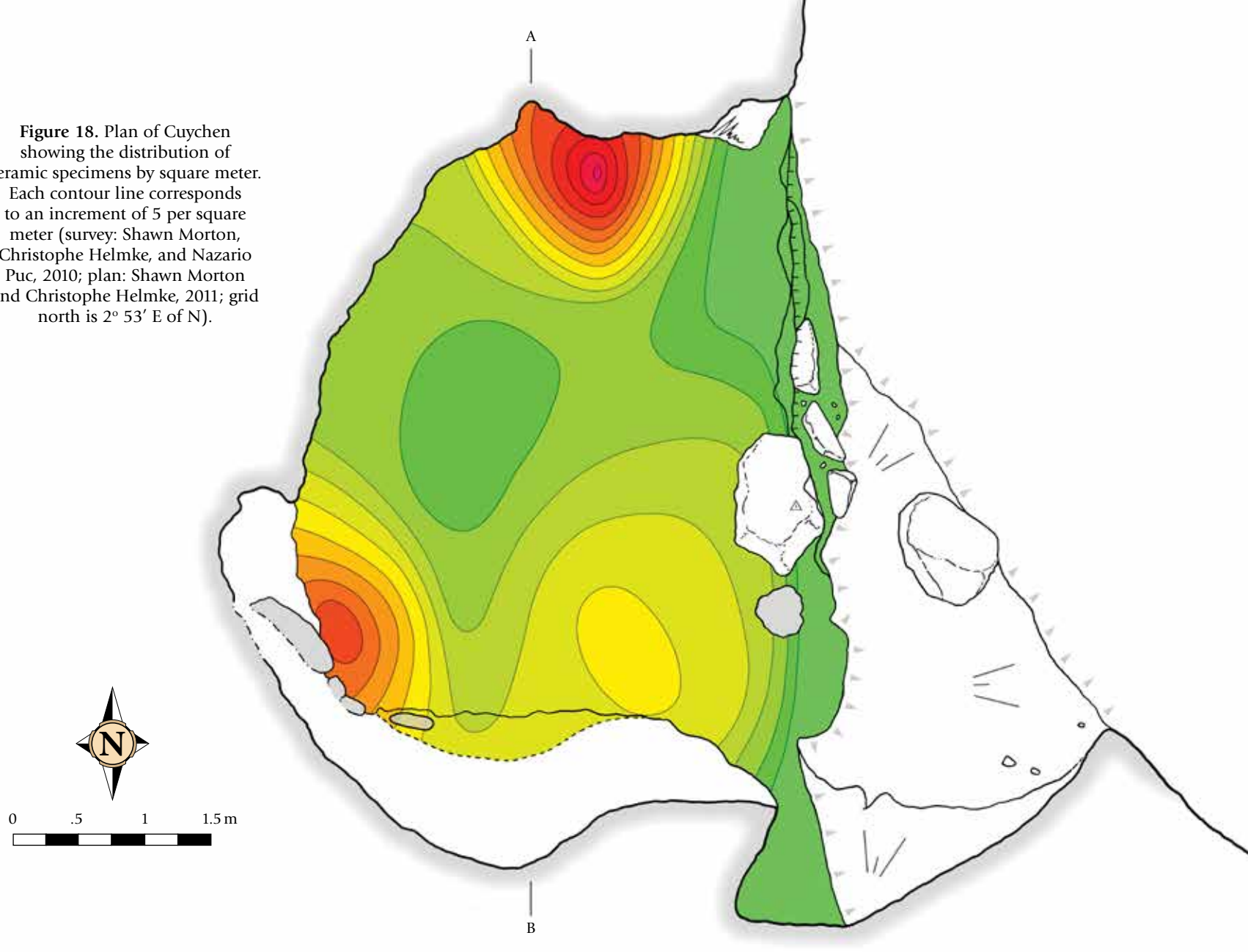


Figure 18. Plan of Cuychen showing the distribution of ceramic specimens by square meter. Each contour line corresponds to an increment of 5 per square meter (survey: Shawn Morton, Christophe Helmke, and Nazario Puc, 2010; plan: Shawn Morton and Christophe Helmke, 2011; grid north is 2° 53′ E of N).

The triangular configuration is evocative of the three hearth stones or *tenamaste* that are a ubiquitous feature of traditional Mesoamerican homes and kitchens. Archaeological examples in domestic contexts show that hearths outlined by three stones are of great antiquity, whereas groupings of three speleothems set in similar configurations found in caves of west-central Belize appear to be mostly symbolic emulations (see Moyes 2001; Helmke and Ishihara 2002:126, 127; Morton 2010:43-44, Fig. 5.3; Wrobel et al. 2010:77). In other cases four ceramic vessels deposited in offerings at surface sites serve to mark the cardinal points of a cosmogram, such as the Preclassic cache at Cival (Estrada-Belli 2006:59-63), or the Terminal Classic termination at the nearby Ruinas de Arenal (Taschek and Ball 1999:229-230). At Cuychen, the three ceramic vessels would echo such a hearth, with each vessel symbolically equating to a hearthstone. From ancient Maya glyphic texts we know that such three-stone hearths played an important role in mythological events set at the pivotal period ending between the past and present creation (Freidel et al. 1993:64-67; Karen Bassie, personal communication 2012). The text of Quirigua Stela C is particularly revealing in this regard since it relates that at the hinge with the last creation, in 3114 BC (13.0.0.0.0), three distinct stones were planted by the different deities "at the edge of the sky," and the text closes by relating that this was "the first hearth." Each of the stones is named, the first being termed "Ocelot throne-stone," the second "Saurian throne-stone," and the last "Water throne-stone." Thus, all of the domestic hearths of the Maya are essentially replications of this cosmological event, serving to center the domestic universe. From glyphic records of period endings, we know that these events were also celebrated in subterranean sites, such as Naj Tunich, Jolja', and another unidentified site in Alta Verapaz (see Stone 1995:89-90; Bassie et al. 2000; Bassie 2002; Houston 2007; Helmke 2009:188-193); we are left to wonder if one of the principal ritual events attested archaeologically at Cuychen equally represents the commemoration of a major Late Classic period ending. At Cuychen then, the three vessels might also serve to define the center of a ritual area, and the spatial distribution of artifacts is certainly in keeping with this interpretation. Whether the four clusters of the polychrome vase around this putative center also served to delineate and frame the ritual space, however, remains open to discussion.

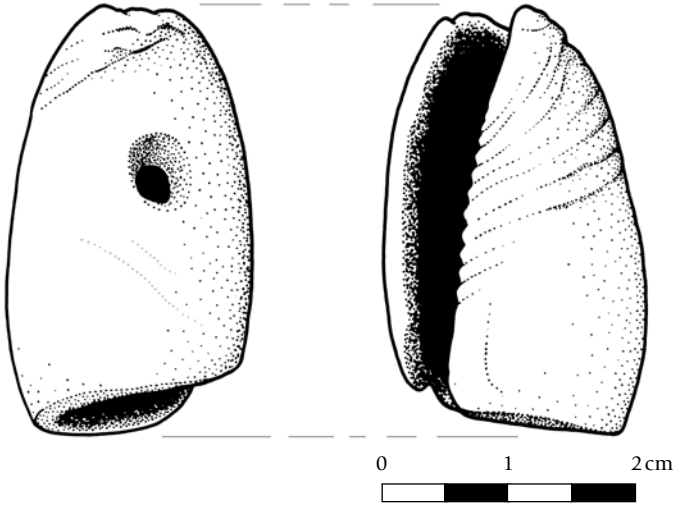


Figure 19. The olive shell tinkler found in Excavation Unit 9.

Non-Ceramic Artifacts

The final element of material culture that bears discussing comprises the only non-ceramic artifacts found at Cuychen. These include two marine shells, the first a small perforated margin snail shell (*Prunum apicinum*) used as a bead, and a tinkler made from an Olive shell (*Oliva* sp.), which was spire-lopped and centrally drilled (see this volume Chapter 5, Wisner et al. 2019) (Figure 19). The tinkler was found within the matrix of Excavation Unit 9, in the northwestern portion of the cave, whereas the bead was recovered as part of floatation of a matrix sample from a general surface collection in the same portion of Ledge 2. The particularities of these artifacts is that they represents solitary and isolated items of personal adornment. As such, it finds parallels with other comparable and also singular items of regalia found in other caves of the Maya Lowlands (e.g., Helmke 2008, 2009:400-402, 444-446, 449-451; Morton 2008:54, 59). A particular kind of feature

encountered at surface sites in the eastern Lowlands as unsealed artefactual deposits that occur stratigraphically in terminal occupation contexts also shows some remarkable similarities. These deposits have been interpreted as the remains of termination rituals (Awe et al. 2009; Radnicka 2011) or feasting events (Helmke 2001:26-27, 31-33, 53-65). What ties these termination deposits from surface sites to cave assemblages is that both tend to exhibit isolated items of regalia, such as a single earspool, jadeite bead, tinkler, or *adorno*. The fact that these items of personal adornment occur singly is what strikes us here. These do occur not in random distributions that might suggest that they could be the product of unintentional actions, such as loss. Furthermore, that these items occur in what can be deemed from the outset to be votive contexts indicates that their presence is deliberate and ritually motivated.

But how is one to account for the repeated incidence of such singular items and their inclusion in what appear to be ritual deposits? We surmise that we have to turn to Classic Maya texts to find the answer. Based on the evidence afforded by the glyphic texts, Marc Zender (2004b) has been able to conclusively demonstrate that the language recorded in the glyphs makes, much like its modern counterparts, a distinction between different degrees of possession. Thus in Mayan languages there are certain things that are deemed possessed or unpossessed without impinging on emic conceptions. In contrast a series of terms are inherently and inalienably possessed. These are terms that cover body parts and kinship terms. As such "hand," "heart," or "child" are marked for inalienable possession by a series of suffixes that specify them as being immutably attached to an owner. Interestingly, Zender (2004b:199-200, 208-209) remarks that items of personal adornment including necklaces and earspools also receive a suffix marking them as inalienably possessed along much the same lines as one's own body parts. We believe that it is this emic conceptualization that forms the basis for explaining the presence of the solitary items of regalia in the archaeological record. Considering that such jewelry was conceived as intimately tied to its owner, the act of removing but a bead from a necklace, or a shell tinkler from one's belt, would be tantamount to severing part of one's body or person. As

such, we interpret these items as the tangible remains of votive sacrifices wherein an officiant literally shed a part of himself to placate supernatural powers. In this sense the deposition of items of personal adornment appears to function along the lines of *k'ex* "substitution" rituals, and may have been conducted in lieu of auto-sacrificial bloodletting (see Carlsen and Prechtel 1991:26, 34; Freidel et al. 1993:203-204, 285; Taube 1994:669-674).

Summary and Conclusion

The investigations of Cuychen reported here contribute to the growing body of data of ancient ritual activities that transpired in caves. The site's isolation and difficult access, as well as the rapid response to the find, meant that we had the unique opportunity to investigate a wholly unlooted cave site. Thanks to its small size, we were able to conduct exhaustive excavations, thereby providing us with no small window onto the activities that the site witnessed over the course of its use. As a result we are now in a favorable position to reconstruct the history of the site's utilization as well as to contrast this record against other caves in the region. Our work at the site has shown that the material culture reflects a set of human behavior that favorably compares with datasets from other cave sites. The utilization of Cuychen therefore matches the practices documented for caves in the region. Based on the ceramic analyses we have also been able to determine that the rituals probably entailed the offering of foodstuffs, centered on a symbolic hearth, echoing primordial celestial features of the mythological past. The termination of ceramic vessels, a trait that is often noted but rarely integrated into the syntheses of ancient symbolic behavior, has upon examination proved to be a fertile area in which to explore the cyclical sequence of ceremonial events. The two non-ceramic artifacts have, once integrated into ancient emic conceptions, yielded a model for votive offerings that can now be tested by continued research. Although many aspects of Cuychen's utilization will have to remain within the purview of future research, we hope to have aptly set the

stage for a complete analysis of the truly exceptional polychrome vase that was discovered at the site. With this framework the vase now has not only clear provenience, but also a dynamic ritual setting in which it actively functioned as a key instrument.

Acknowledgements

The research reported herein could not have been undertaken without the dedication and bravery of our team, who rigged the rappelling anchors and safety lines and were instrumental in the documentation, mapping, and excavation efforts. These are: Marcos Cucul, Esperanza Gaitán, Abel García, David Larson, Bruce and Alex Minkin, Mario Pérez, Gonzalo Pleitez, Mario Portillo, Nazario Puc, Marvin Puc, and Catharina Santasilia. We also greatly benefited from indispensable mountaineering gear put at our disposal by Marcos Cucul, Abel García, Rafael Guerra, Bruce Minkin, and William Pleitez. Our gratitude goes to Dennis Martínez for his collaboration and for contacting the authorities to relate his discovery of the cave and the beautiful vase found within. Joe, Miriam, and Efrain Martínez all deserve special thanks for their hospitality and for their assistance while in the field. Rafael Guerra also provided us with geo-referenced sheet maps of the area, whereas Jesper Nielsen commented on dedication and termination ceremonies, for which we are thankful. Many thanks to Marius Jovaiša for kindly sending us copies of his excellent photographs and allowing us to publish them here. Our thanks go to James Brady for carefully reading and commenting on an earlier version of this chapter. During the formal peer-review of the article on which this chapter is based we greatly benefitted from the comments and edits of Karen Bassie and two anonymous reviewers. We would also like to acknowledge the generous funding provided by the Research Council for the Humanities of the Danish Ministry of Science Technology and Innovation for the support of the senior author's post-doctoral research. Finally, we extend a warm thanks to the Belize Institute of Archaeology and its staff for its continued support of our research.

Figure 1. The Cuychen vase.
Photograph by Christophe Helmke.

Chapter 3

An Analysis of the Imagery and Text of the Cuychen Vase

Christophe Helmke

The polychrome vase discovered within Cuychen (Figure 1), a small cave situated along the course of the Macal River in west-central Belize, represents a significant contribution to the iconographic and epigraphic corpus of the ancient Maya. The importance of this find rests in the fact that it is among a strict minority of polychrome vessels with clear archaeological provenance, having been recovered by means of controlled excavations (see this volume Chapter 2, Helmke et al. 2019), but it is also due to the stunning text and imagery that the vase exhibits. The elaborate iconographic program that adorns the vase is presented below, and we will see how its narrative contributes to our understanding of maize-related mythology and associated divinities. The glyphic texts of the vase also represent singular features in terms of their contents, syntax, and spelling that set this vase apart from other comparable masterpieces, making it clear that the Cuychen vase is the creation of a highly skilled scribe. As part of the epigraphic analysis presented here, emphasis is placed on paleographic and philological features that assist in determining the vessel's origin as well as its temporal placement. Based on these analyses it is clear that the Cuychen vase finds its origin in a workshop of the northeastern Peten. In order to account for its deposition within a cave far removed from its site of origin, the sociopolitical context of the Cuychen vase is sketched out at the close of this paper.

Physical Properties

The Cuychen vase is a relatively large vessel, measuring as much as 27.3 cm high. The vessel's flat base is wider (22.9 cm) than its mouth (19.8 cm), resulting in gently insloping sides. Using interior measurements the Cuychen vase could have held a little over 9.7 liters (2.5 gal) if filled to the rim. This was a very large serving vessel, perhaps used for joint drinking by a group of revelers as part of festive and/or ritual occasions.

The thickness of the vase varies between 6 and 7 mm and exposed sections show that the vase had been expertly fired in fully oxidizing conditions. The unslipped interior is only roughly finished and preserves finger impressions in some areas, whereas the rounded and smooth rim is accentuated by a broad, red-slipped band (mean c. 5.1 cm high). The exterior is perfectly burnished and an even cream background (0.6Y 9/5) was applied to the vase before it was decorated with shades of dark red (8.9R 4/16) and orange (9.4R 6/17) slip with a diluted light orange wash (5.1YR 7/9) applied secondarily to some sections.

The vase was shattered within the cave to terminate its lifecycle and was scattered in four discrete clusters. In all, only half of the vase was recovered; the remainder was unfortunately not found, despite extensive excavations (see this volume Chapter 2, Helmke et al. 2019). Based on the typological attributes of the vase and the quality of the surface treatment, the type-variety of the vase can be identified as Zacatel Cream-polychrome: Cabrito Variety (see Smith and Gifford 1966:164; Gifford 1976:251; Ball 1993:249-252, 1994b:364-365; Gifford and Kirkpatrick 1996:160).

Dorie Reents-Budet sampled the vase (MS2265) shortly after its discovery and Ron Bishop of the Smithsonian Institution conducted Instrumental Neutron Activation of the samples (see this volume Chapter 4, Reents-Budet and Bishop 2019). Although the vase was found to have an idiosyncratic chemical profile, the analysts suggest that it fits within the broader Holmul ceramic paste tradition (Dorie Reents-Budet, personal communication 2010; see also Reents-Budet 1994:179-187). As indicated below, additional evidence can be brought to bear on the origin of the vase, on the basis of epigraphic data recorded in the glyphs and stylistic elements of the overall execution.

Iconography

The iconography of the Cuychen vase depicts a so-called Holmul-dancer scene (Coe 1978:94-99; Reents-Budet 1991), wherein three youthful maize gods (Taube 1985:172-174) are shown dancing, wearing opulent jewelry and sumptuous backracks (Figure 2).[1] A characteristic of these scenes are the small attendants that stand with arms raised before the dancing figures, which can be identified as supernatural dwarves (see Miller 1985; Houston 1992; Prager 2001). Typically, the attendants exhibit variable conditions, including proportionate, disproportionate, and hunchback dwarfism (Ferguson 1995). On the Cuychen vase, only the dwarf paired with the first maize god remains.

Although the preservation is variable, the three maize divinities depicted on the Cuychen vase appear to have been rendered more or less identically, which allows us to reconstruct them in full (Figure 3). Each figure wears weighty anklets, bracelets, necklaces, and earspools, and a headband tied to the back of the head in a band of woven cloth. The diadem, or frontlet, of the headdress represents a jawless zoomorphic figure with a scrolled snout, broad and sinuous fang, and nostrils embellished with bone beads. This entity may represent a late variant of the Jester God in its aquatic from, marking the Maize God as supreme monarch (Karl Taube, personal communication 2011). A small cranium is placed at the crown of the head that seems to tie up the bundled hair and most probably represents a personified jadeite bead (see Stuart 2007a). Unfortunately, most of the belt assemblage is missing, but based on the examples seen on other vessels it can be suggested that the maize gods wore short kilts, fringed by shell tinklers, with the central element of the belt composed of a broad thorny oyster shell (*Spondylus* sp.) set in the maw of a stylized shark. The acquisition of this belt assemblage is rendered in some of the variants of this mythic narrative, during an aquatic episode wherein the Maize God is swallowed up by a gigantic shark-like monster, which is eventually defeated, its maw festooned with a *Spondylus* shell obtained from deep undersea (see Helmke 2012b:111-113; Tokovinine 2012a; Helmke and Kupprat 2016:47-48, 60-61). Suspended from the marine shell

[1] The conventions used here in the transliteration of glyphs build upon those developed by Lacadena and Wichmann (2004) as well as Kettunen and Helmke (2005).

Figure 2. Composite rollout of the Cuychen vase. Scanning and graphic editing by Christophe Helmke.

is the loincloth that is embellished with woven strips and terminates in a flourish of beads. This belt assemblage matches that worn by both male and female ruling figures and forms part of the netted jade-bead dress worn as part of important ceremonies (see Proskouriakoff 1950:71, Fig. 26.J; Miller 1974:153-155; Nehammer Knub et al. 2009:190, 192).

Each maize deity is clearly rendered in an attitude of dance with knees partly bent and left heel raised. In Maya iconography canonical depictions of dance entail figures rendered with one raised heel (Proskouriakoff 1950:28, 145, Fig. 9.J1; Grube 1992:201, 204), a feature that stems from Amerindian dance practices wherein the toes remain firmly planted on the ground, but the heels are raised and lowered in time with the beat of the accompanying music (see Laubin and Laubin 1977). Furthermore, the maize gods painted on the Cuychen vase are also depicted with one arm raised and the other lowered, another characteristic of dance portraiture more recently identified by Matthew Looper (2008:3, Fig. 1) and Karl Taube (2009:46-47, Fig. 5).

Past studies have focused on the

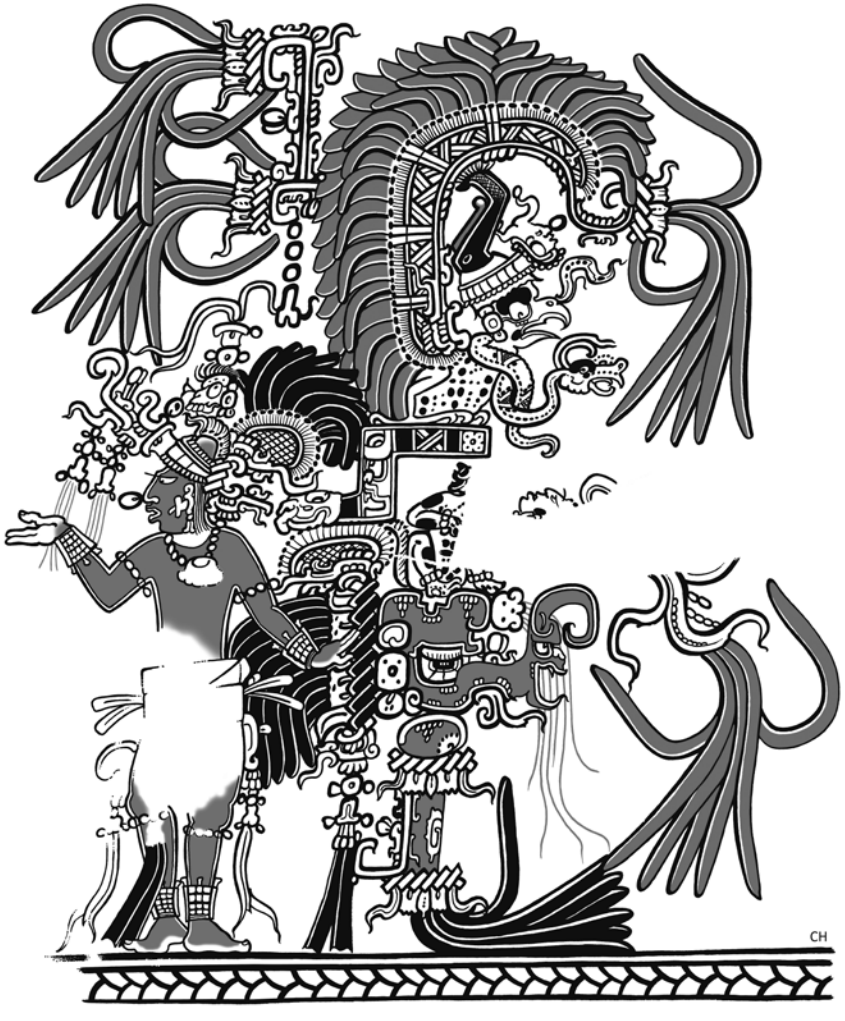
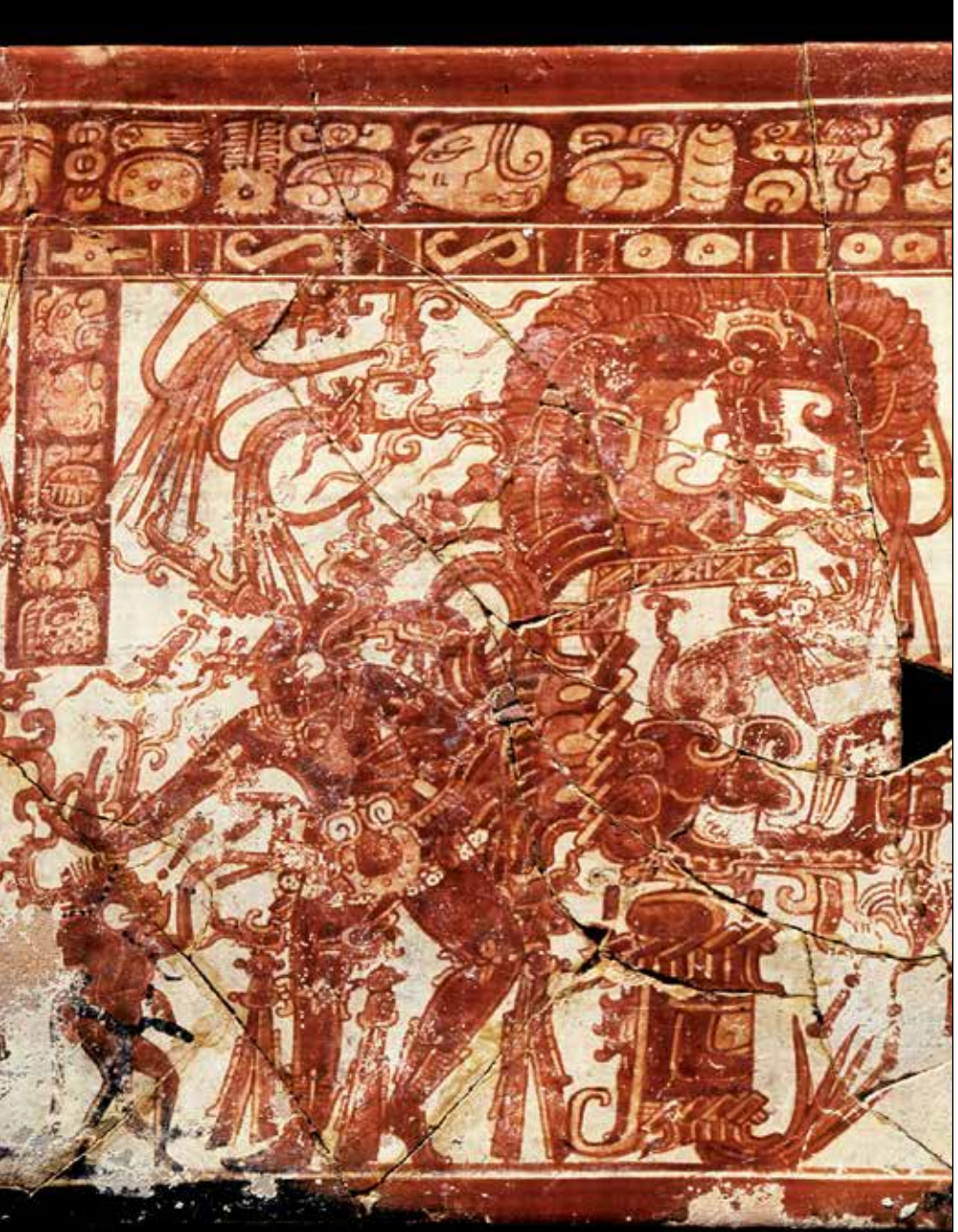


Figure 3. Composite rendition of the maize gods on the Cuychen vase. Note the silhouetted figure seated in the backrack, known as the Maize God's "burden." This and all other figures by Christophe Helmke, unless otherwise indicated.

constituent parts and symbolism of the elaborate backracks worn by the dancing figures (Coe 1978:94, 96; Reents-Budet 1991; Houston et al. 1992:502-503). As these earlier studies have demonstrated, the backracks carried by the maize gods represent diminutive cosmograms wherein the terrestrial realm is denoted by a personified mountain, or *witz* monster, and the heavens are represented by a stepped sky band. On the Cuychen vase the jawless *witz* monster has an upturned and personified snout and set in its maw is a stone glyph from which streams a wide loincloth apron framed by square-nosed entities associated with solar fire and flowers. Perched atop the sky band is a great avian figure known as the Principal Bird Deity (see Bardawil 1976; Nielsen and Helmke 2015), which is depicted with a large curving wing that swoops forward to form a canopy over the head of the avian figure. The body of the bird is dappled with dark splotches as if to affirm a connection with spotted felines, and a snake coils around its neck, a feature otherwise seen with malign and avian spirit co-essences known as *wahy* (see Houston and Stuart 1989; Grube and Nahm 1994; Helmke and Nielsen 2009).

Seated atop the mountain sign, in the cavernous space framed by the stepped sky, is a small figure, as if taking the place of the earth lord known from more recent Maya cosmologies (Vogt 1969:457; Brady and Ashmore 1999:126-127; Vogt and Stuart 2005). Although there is some variability, the three figures, or burdens, that are usually seated within the niches include an odd hairy saurian creature, a simian entity, and a spotted feline. Importantly, accompanying glyphic captions make it clear that the small figures seated in the backracks were specifically tied to the toponymic main signs of select Emblem Glyphs (Coe 1978:96; Houston et al. 1992:502-503). As a result, the different maize divinities depicted in Holmul-dancer scenes would seem to represent distinct manifestations of the same deity, each embodying mythological beings of particular dynastic houses, royal courts, and/or city-states. Matching the glyphic captions to the iconography on K0633 (Figure 4), a vase from Naranjo, we can see that the saurian creature was viewed as a "snake" (*chan*) and paired with the toponym *kanu'l* "where snakes abound" of the Calakmul Emblem Glyph (see Helmke and Kupprat 2016); the spotted feline, termed "ocelot" (*hix*),[2] was as-

[2] Stephen Houston (personal communication 2011) suggests that *hix* may be generic "cat," covering a wider range of spotted felines rather than being specifically tied to a particular species.

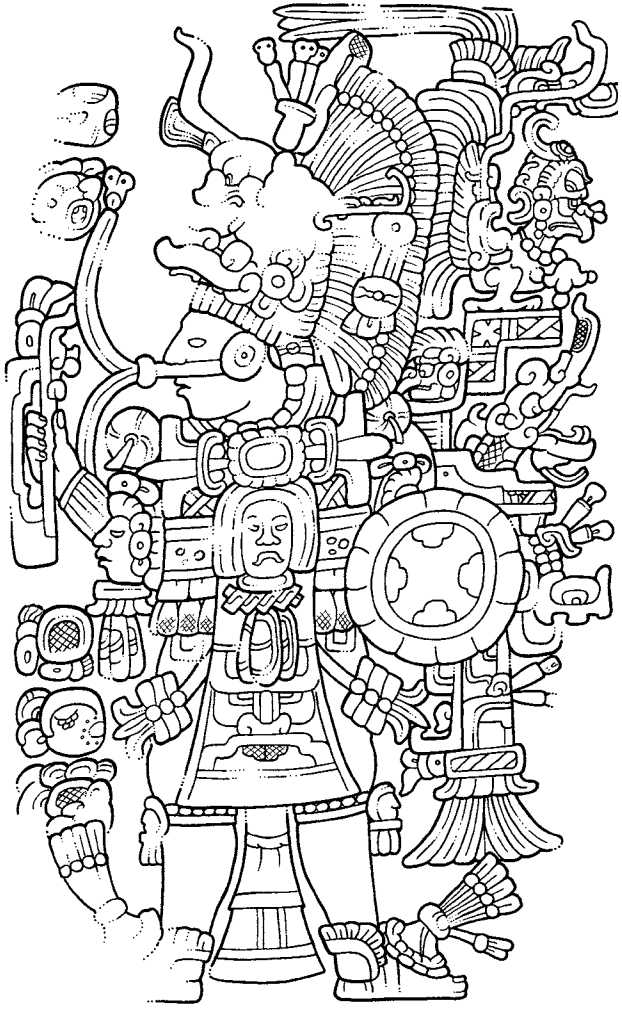


sociated with Tikal's place name *mutu'l* "where reed effigies (?) abound;" and the simian, named "monkey" (*chuwen*), was tied to the toponym of the Machaquila Emblem (written T174**[su]**[3]; for the *-u'l* toponymic suffix, see Lacadena and Wichmann n.d.). Whereas the Holmul-dancer scenes make it clear that these particular backracks are the diagnostic regalia of the Maize God, key examples are known from Classic Maya monuments at Tikal, Dos Pilas, Quirigua, and La Corona wherein kings are depicted carrying the same backrack[4] (Coe 1978:96; Reents-Budet 1991:219;

[3] Although the Emblem Glyph of Machaquila remains for the most part undeciphered, a few key contexts record the main sign of the Emblem as T174**[ti-su]** (Str. 4, Block H; Stela 2, rear), suggesting that T174 here functions as a logogram while the syllabogram **ti** serves as a phonetic complement (Dmitri Beliaev and Guido Krempel, personal communications 2011).

[4] It should be remarked that the backrack that Tikal's ruler Yik'iniiy Chan K'awiil is shown carrying on Lintel 2 of Temple IV may have a snake as its burden and not the ocelot typically associated with the local Mutu'l dynasty. This snake burden is instead associated with the Kanu'l dynasty of Calakmul and is here depicted as part of a triumphal procession involving a god-litter of Naranjo that was seized in the AD 744 war (Martin 1996). Whatever the origin of this backrack it may well have formed part of war booty that was forcibly obtained from Calakmul in AD 736—or as part of the victory of Yik'iniiy Chan K'awiil's father against Calakmul in AD 695. Bearing this backrack in the triumph would have asserted the ritual privileges associated with its use, which were equally appropriated by Tikal (see Helmke 2010).

Figure 4. Rollout photograph of K633, an unprovenanced vase produced in the Naranjo workshops. Note the glyphic captions associated with each of the three dancing maize gods. Photograph © Justin Kerr.



Houston et al. 1992:502-503). In historic contexts these backracks were probably borne by kings who ceremonially adopted the guise of the youthful Maize God as part of particular dance ceremonies. Intriguingly, the same backrack with the ocelot burden was carried by Bajlaj Chan K'awiil, dynastic founder of Dos Pilas (Schele and Miler 1986:77; Martin and Grube 2008:56-58). This indicates that Dos Pilas and Tikal shared not only the same Emblem Glyph but also the mythology and supernatural entities attached to the dynastic title (Houston et al. 1992:503), as well as the ritual privileges tied to dance pageantry (Helmke 2010).

Similarly, at La Corona, the

Figure 5. Detail of Panel 1b of La Corona showing the historical figure K'ihnich Yook wearing the backrack of the Maize God, with the snake burden associated with the Kanu'l toponym (drawing by Christophe Helmke, based on photographs by Felix Kupprat and a preliminary drawing by David Stuart).

local lord is shown performing a ritual with a backrack featuring a large snake (Figure 5), the burden linked to Kanu'l, the Snake dynasty established at Calakmul in the Classic (Helmke and Kupprat 2016:65). The use of this backrack implies close ties between La Corona and Calakmul, as well as shared ritual privileges, something that is also borne out by the close and multigenerational marital alliances between the two royal courts (Martin 2008; see also Martin 2000).

A closer look at the glyphic captions on the Cuychen vase provides us with detailed epithets for the various maize gods and their associated burdens (Figure 6). Each is headed by **u-[BAH]hi / 1?-IXIM**,

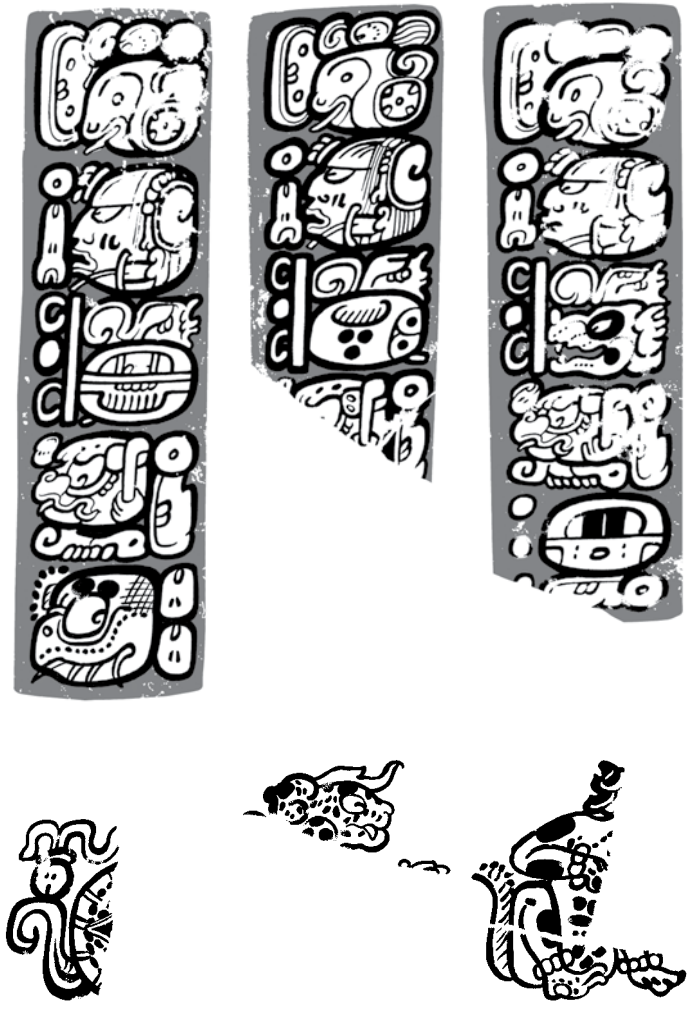


Figure 6. The glyphic captions of the maize deities and associated burdens as represented on the Cuychen vase.

read *ubaah juun ixiim* "it is the image of One Maize" (R1–2, S1–2, T1–2).[5] The third glyph block of each caption makes reference to the burden, wherein the first two match well-known examples, namely **6-[CHAN]NAL**, *wak chan-nal* "six snake-place" (R3) and **6-[HIX]NAL**, *wak hix-nal* "six ocelot-place" (S3). Surprisingly, the third is the otherwise rare **6-[OK]NAL**, *wak ook-nal* "six coyote[6]-place" (T3), tying the Cuychen vase to another Holmul-dancer vase discovered at Río Azul (Adams 1999:88-89) (Figure 7). In these spellings the central element of the name provides us with the emic zootaxon of the supernatural burden (i.e., snake, feline, canine), but it is equally clear that these form part of toponymic constructions, since each is suffixed by *-nal* "place" (see Schele et al. 1990; Stuart and Houston 1994:20, 21, Fig. 22). As such the burdens and their mountain seats together constitute important physiographic features in the sacred landscape to which the toponyms refer. The fourth glyph block (R4, S4, T4) records a rare spelling for what seems to function as a verbal form, here written **KAL-wi-TE'** and read *kalaawte'*.[7] This same segment is seen in the glyphic captions of other Holmul-dancer vases (e.g., K3400 and K8966), but the Cuychen vase provides the only complete spelling. Another key example of the

[5] Although it may seem odd to treat the jewel or bauble element before the head of the Maize God as numeral "1" the same device is used later in the same text within the name of the Water Lily Serpent, where it serves the same function. Supporting this identification are the texts of Tikal Stelae 9 (A2) and 40 (E4) wherein the numeral "2" utilized in calendrical expressions is equally embellished (Simon Martin, personal communication 2011). A similar example is also seen on the recently discovered Element 33 of Hieroglyphic Stair 2 at La Corona (E5), where the same embellished numeral is found as part of a nominal sequence. Based on these examples it is reasonable to treat these as adorned numerals.

[6] As has been pointed out to me by Albert Davletshin (personal communication 2011), it might be best to translate the lexeme *ook* as "coyote," since *ok* ~ *oq* "coyote" is found in several Greater Q'anjobalan languages (Kaufman 2003:597) and *ok'-il* "coyote" is attested for Tzeltalan and Tojolabalan (Kaufman 2003:741), whereas *tz'i'* and its reflex *tx'i'* "dog" is found in all major branches of Mayan languages excepting Yukatekan and Wastekan (Kaufman 2003:573-574).

[7] This collocation can be segmented morphologically as *kal-aaw-te'-Ø*, analyzed as split/open-ANTIPASS-tree-3SG.ABS, and translated literally as "he tree-split" or "he tree-opened." In comparison the titular *kalo'mte'* can be segmented and analyzed as *kal-o'm-te'* split/open-AG-tree, for "tree-splitter." Considering the many representations of this title involving a particular manifestation of the axe-wielding thunder god Chaahk (God B), it seems plausible that *kal* in the Ch'olan of the Classic period meant "to split, chop, axe." The titular epithet *kalo'mte'* would thus name the personification of storms that split and chop trees.

same collocation is found on Palenque's Palace Tablet (M7) where it serves as an accession verb in a short clause that precedes a death expression (**i-OCH-bi-ja**) (Erik Boot, personal communication 2011). Based on the diagnostic suffix *-aaw* and the presence of the noun *te'* "tree" the construction seems to record an object-incorporating antipassive (see Lacadena 2000:156, 159-162) involving the verbal root *kal* "to split, make an opening" (see Wagner 1994:2). In this connection, it is hard not to think of the exalted title *kalo'mte'*, which throughout the Classic period was usually borne only by the kings of the most influential dynasties and acquisition of the title required another separate accession to the corresponding office (Wagner 1994). Could the *kalaawte'* expression serve as a denominalized form of the title and convey the accession to the commensurate office (Simon Martin, personal communication 2011)?

Figure 7. The fragmentary Holmul-dancer vase discovered at Río Azul, now on display at the Museo Nacional de Arqueología y Etnología in Guatemala.

Furthermore it bears remarking that *kalaawte'* directly substitutes for a verbal expression, possibly read *t'abaay* (the so-called mediopassive inflection of the verb *t'ab* "lift, raise, ascend"; see Stuart 1998:409-417), which is seen in precisely the same syntactic context in the captions of another Holmul-dancer vase (see Figure 4). As a result, there has to be some semantic equivalence between *kalaawte'* and *t'abaay*, which makes me wonder if these do not somehow provide emic labels for the ascent and resurrection of the Maize God. However, it is also possible that the two verbal expressions refer to different, and even consequent actions that form part of the same narrative (Helmke and Kupprat 2016:66). Stephen Houston (personal communication 2011) suggests that these verbal forms record actions pertaining to the animal burdens being lifted or acceding to high titles, by being borne aloft by the Maize God. Paired with the reference to the Maize God these captions may thereby refer to the moment at which the Maize God was made *kalo'mte'*, raised to the highest of royal titles, as primordial king of kings. The final glyph blocks (R5, S5, T5) record the place names ascribing the maize gods to their native courts or city-states, including the toponyms of the Emblems of Calakmul (*kanu'l*) and Tikal (*mutu'l*). In contrast, the third is not Machaquila's toponym, as might otherwise be expected, but a dynastic title (*uxhaabte'*) connected to the lords of Río Azul. Appropriately enough this title also closes the caption on the Holmul-dancer vase from Río Azul (see Figure 7).

To summarize, let me provide a précis of the mythic narrative, wherein the Holmul-dancer scenes depict but one event. As such, the Holmul-dancer scenes collapse a complex narrative into a single powerful scene that epitomizes the mythology of maize. The vignettes depicting the legendary Maize God of Classic Maya iconography find as their anchor the fundamental events in the life cycle of maize, wherein the harvest of cobs was conceived as the decapitation of personified maize (Taube 1985:175). From the kernels, the mortal remains of the deity were resurrected from the underworld, the soil in which the seeds are planted. In Classic-period mythology it is the so-called "Hero Twins," the sons of primordial Maize that resurrect him, by literally watering the seedling, as he emerges from the back of a cracked turtle carapace embodying the earth (Coe 1987:175-177), or from a personification of a sprouting seed (Stuart et al. 1999:47) (Figure 8). Based on natal analogies, the reborn Maize God is represented as

Figure 8. The rebirth of the Maize God, in a typical birth pose, emerging from a personified seed. Codex-style vase discovered at Calakmul (photograph by Jorge Pérez de Lara).

nude, and a key episode represents this divinity being dressed by a series of female attendants while the "Hero Twins" carry platters brimming with their father's regalia (Coe 1987:177-178). The growth of Maize at his resurrection was portrayed as a dance (Taube 2009) and as such the Holmul-dancer scene represents Maize in apotheosis, shortly after his rebirth, donning his majestic jewelry and regalia.[8]

It is intriguing in this regard

[8] The Holmul-dancer scenes not only provide a snapshot of Maize in glory, but what is equally significant is that the growth and resurrection of maize was conceived of as a dance (see Taube 2009). Although so much of Classic Maya culture has been lost, it is conceivable that the Maize God is depicted performing a particular kind of dance, perhaps on a par with the *danza del maíz* and *tzacamson* known from the Huasteca Region (Croda León 2000; García Franco 2000) and the so-called green-corn dances that are well known among North American Indians, especially in the Southwest and Southeast (Laubin and Laubin 1977:171-228). The Holmul Dancer scenes may thus provide a rationale for the mythic origin of the young maize dance that would have been celebrated and performed in the Classic period.

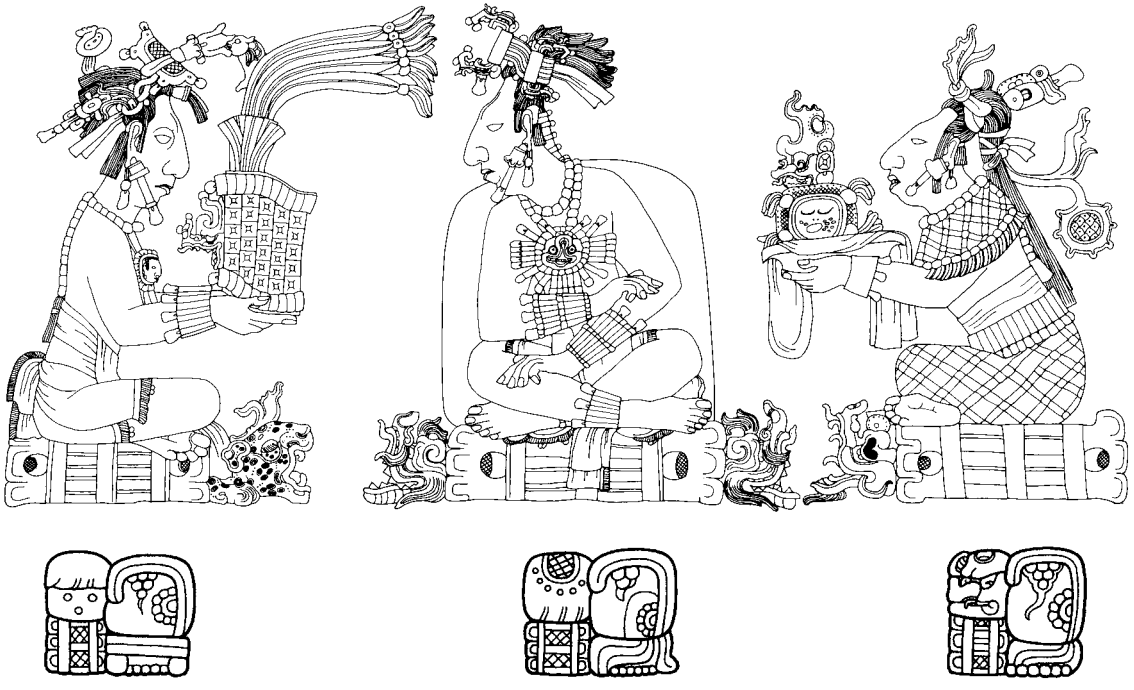


Figure 9. Detail of the Palace Tablet at Palenque, showing the presentation of the emblems of office to K'an Joy Chitam II, by his parents who frame the scene, each seated on one of the primordial thrones of creation (drawing by Linda Schele). These are compared to the glyphs designating these same seats in the text of Stela C at Quirigua (drawings by John Montgomery).

that the Holmul-dancer scenes often emphasize the tripartite aspect of divine maize, which is differentiated in large measure by the animal burdens. It is noteworthy that the animal entities closely match the three named stone thrones depicted in the iconography of Palenque and cited in Classic-period creation accounts, such as the text of Quirigua Stela C (Figure 9). That text relates that at

the last creation, in 3114 BC, three throne-stones were planted at the edge of the sky to form the first three-stone hearth by the so-called Paddler Deities, and it goes on to name each stone in turn as "Ocelot," "Saurian," and "Water" (see Freidel et al. 1993:64-67). Are these triadic stones the premise that warranted the existence of three different incarnations of the reborn Maize God? If this is the case then it follows that the three city-states, which each claimed a distinct aspect of the Maize God, essentially asserted that the Paddlers had planted the stones at the seats of their capitals in the deep mythological past. Furthermore, the shattered Cuychen vase was found associated with a triadic arrangement of ceramic vessels that has been interpreted as a symbolic emulation of this mythological hearth (see this volume Chapter 2, Helmke et al. 2019). Although it is difficult to substantiate, the correspondences are compelling and may provide a bridge between the iconography of the vase and the motivations behind the ritual actions that led to the termination and deposition of *this* vase within Cuychen (for additional discussions of Maize God iconography see Tokovinine 2013:115-123, as well as Helmke and Kupprat 2016).

Primary Text

The primary text of the Cuychen vase originally consisted of 29 glyph blocks, and we are fortunate that parts of 21 are preserved on the vase. The first half of the text adorns the rim of the vase, leading to the second half that was rendered in a double-column that strikingly separates the iconographic field. Unlike the iconography, the background of the glyphic text has been boldly and evenly accentuated with dark red slip. The outlines of the glyphs themselves were first painted with confident and thicker brush strokes in the same red slip, rendering the details and diagnostic elements with a finer line. The background of the glyphs was enhanced by a streaked and diluted orange wash, applied in broad brush strokes. It is clear that the wash was applied after the glyphs had been written since it serves to differentiate details of particular signs, the original cream of the background gleaming through the eyes of head-variant glyphs. This particularity ties the Cuychen vase to vessels produced at Naranjo (K4464, K5722), Xultun (K5976), and Río Azul (K7720), which all exhibit the same treatment, although the back-

grounds of the last named have uniformly been left unaltered (see Houston et al. 1992:503). The use of an orange wash to accentuate glyphs and pseudoglyphs is also a common feature of Cabrito Cream-polychrome vessels produced at Buenavista del Cayo (e.g., K5356, K6624; see Ball 1993:249-252, 260-263; Reents-Budet et al. 2000:107-116). The use of red background to enhance the textual fields finds a similar distribution since it also adorns vessels from Naranjo (K633), Holmul (K5723), and Xultun (K4572). Based on these two stylistic traits alone, the Cuychen vase can be said to have been produced at a workshop located somewhere between Naranjo and Río Azul. This conclusion is also substantiated by the fact that the same eastern Peten workshops preferentially produced vases with the Holmul Dancer motif (Reents-Budet 1994:179-187).

Dedicatory Segment

The Primary Standard Sequence (PSS) or dedicatory clause of the vase is highly abbreviated and was rendered in the first four glyph blocks (A1–D1) (see Coe 1973; MacLeod 1990; MacLeod and Reents-Budet 1994:109-119, 123-128; Boot 2005c:1; Stuart 2005:118-154; Grube 2006) (Figure 10). The dedicatory segment is headed by the so-called Initial Sign (A1), which has as its main sign the head of the deity known as GI (see MacLeod 1990:40-41; Stuart 2006). The main sign is subfixed by the syllabogram **ya** and, although missing, was undoubtedly prefixed by a vocalic sign **a**. Together these have been used to read the Initial Sign as the demonstrative *alay* "here" that initiates typical dedicatory statements (Boot 2005c; MacLeod and Polyukhovych 2005).[9] Due to syntactical parameters the second glyph block (B1) must record the dedicatory verb. Unfortunately, it is highly eroded, but the few faint remaining details are sufficient to discern the logogram **HAB** *haab* "year," which is only found with one particular dedicatory verb. Although the verb in question remains undeciphered, it typically represents the head of an aged male deity who bears the year sign in his hand, and significantly the whole

[9] Alternatively, the Initial Sign may be read *aliiy* "it is said" (Lacadena 2003), thereby functioning essentially as a quotative, wherein the **ya** syllabogram spells the temporal deictic *–iiy*. David Stuart (personal communication 2009) has also proposed that the main sign may simply carry the logographic value **AY** "there is."

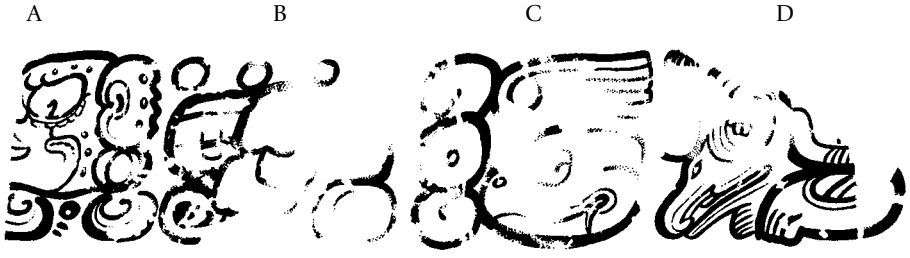


Figure 10. The dedicatory segment of the primary text adorning the Cuychen vase (A1–D1).

collocation is at times prefixed by the numeral 4 (Stuart 2005:152; Grube 2006:65). As a result, it is surmised that the glyph block represents one of four year bearers whose Atlantean task probably cues the intended verb (see Martin 2015:188-192). On the Cuychen vase enough remains to make out the numeral that topped the *haab* sign. Most intriguingly, this particular variant of the verb is found on vases affiliated primarily with Tikal, El Zotz–Uaxactun, and secondarily with Xultun and Río Azul,[10] which helps us to narrow down the workshop at which the Cuychen vase was created. The third glyph block (C1) is evenly weathered, but the outlines plainly render **yu**-**k'i**-**bi**, for *y-uk'-ib* "his-drinking-implement," the typical designation for cylindrical vases (MacLeod 1990:313-362; MacLeod and Reents-Budet 1994:115, 127; Boot 2005a; Stuart 2005:126-127; Helmke 2009:617-618). Although the fourth glyph block (D1) is only partly legible, structure dictates that it originally recorded the intended contents of the vase. The head variant of the preposition **ti** and the syllabogram **ji** form the first and last glyphic elements, respectively, whereas the intervening and eroded main sign appears to be a **tzi** grapheme. Together this glyph block is read *ti tzij*, wherein *tzij* refers to the type of beverage for which the vase was designed. The meaning of this term remains debated, although it may refer to a maize-based drink that was especially popular in the northeastern Peten, at sites

[10] The dedicatory verb in question is found on ceramics from the following sites: Tikal (K3642, K4498, K5452, K8426, K8955), El Zotz–Uaxactun (K0530, K1186, K3444, K3844, K5456, K5460, K6080, K7525, K8393, K8418, K9080), Xultun (K4997), and Río Azul (K1383).

such as Xultun and Río Azul (Stuart 2005:143-144).[11] What is truly significant here is that the Cuychen vase spells the contents as *tzij* rather than the more usual *tzih*, which indicates that the text was painted after the phonological distinction between *h* [h] and *j* [x] had been lost in the Classic-period language recorded in the script. Due to this loss, Classic Maya scribes no longer maintained the orthographic distinction that governed the use of *j : h* and from as early as AD 706, but especially after AD 730, terms that had formerly been spelled with graphemes involving [h] began to be written interchangeably with [x] (Grube 2004a:79-81). Consequently, based solely on the presence of *tzij* on the Cuychen vase it is clear that it was produced in the northeastern Peten and sometime after the loss of *j : h* was reflected in the script in the eighth century.

Impersonation Statements

Surprisingly, the next segment of the rim text records not the name of the original patron or owner of the vase, as would otherwise be expected, but two impersonation statements rendered in an intriguing couplet construction, an exceptional feature of the Cuychen vase. Impersonation statements record ritual events in which elite individuals, presumably in a trance state, took on the attributes of a particular god (see Houston and Stuart 1996:297-300; Stuart et al. 1999:54-56). At times individuals undergoing this rite also wore the attire of the god they impersonated, and some glyphic texts make it clear that intoxication played a key part in these events (Grube 2004b:68-69; Zender 2004a:4-5, 8; Nehammer Knub et al. 2009:190-193). In its fullest form, the impersonation expression can be read as *ubaahila'an ta k'uh*, which can be succinctly translated as "it is his/her portrayal as a god" (Nehammer Knub et al. 2009:186).

[11] One interpretation holds that *tzih* functions as the adjective "fresh, raw, pure" (MacLeod 1990:395-405), especially where the content is specified as *tzihil kakaw* "fresh cacao" (Grube 2006:76-77), which is particularly evocative when we consider the colonial Tzotzil *tzeel kokov* "pure chocolate" (Stuart 2005:144). Nevertheless, in most cases the term *tzih* stands by itself indicating that it should function as a noun and thereby specify a particular beverage, perhaps a maize-based drink since Ch'olti' has <tzihpac> and Tzeltal *tzejib*, both for "tamal de elote," whereas *tzih "nixtamal" can be reconstructed for greater K'iche'an languages (Kaufman 2003:1191, 1223; Stuart 2005:144).

The syntactic structure of clauses recording such ritual events is consistent and is initiated by the impersonation expression, followed by the name of the god and closed by the name of the human agent who assumes the godly countenance. Several other impersonation statements are known from the texts rendered on ceramic vessels, which has led David Stuart (2005:158) to suggest that these vases were specifically intended "for drinking in rituals that involved ceremonial role-playing." Nonetheless, most examples are embedded in the titular segment of the vessel's owner, rather than recording an event in itself (Nehammer Knub et al. 2009:187). Apparently the distinction and honor were sufficiently great to record for posterity as a type of title, or more properly, an honorific form of address, preceding a name. On the Cuychen vase, however, the syntactical structure of the impersonation statements is at odds with these titular constructions, in preceding the nominal section and forming rather a sentence in its own right, and as such would serve to record an actual event, in keeping with the historical records of monumental texts.[12]

The first impersonation statement on the Cuychen vase (E1–I1) is headed by the usual expression, here written **u-BAH[AN]-na** (Figure 11). The spelling of this expression has several unique particularities, including a heretofore unknown allograph of the vocalic sign **u**, representing what may be a series of stacked deer hooves (Figure 12a). The other is the synharmonic spelling of the existential particle with a phonetic complement **na**. In a study of the various diachronic spellings of the impersonation expression it was hypothesized that the existential particle evolved phonologically over the course of the Classic period—thereby affecting the consequent spellings—from *-a'an* > *-aan* > *-an* (Nehammer Knub et al. 2009:181-183). The same study found that the existential particle was preferentially complemented with **nu** between AD 692–791, leading to the realization *-a'an*; thereafter the logogram **AN** received no complementation, to mark a short vowel and the loss of glottalization. The complement **na** on the Cuychen vase results in the phonetic realization *-an*, thereby supporting this model, and also suggesting that the vessel was produced sometime after AD 791. The following three

[12] Two other vases, produced at Naranjo and Río Azul, also exhibit similar impersonation statements in the same syntactical context (K0635 and K1383), as does a vase in the collections at Dumbarton Oaks, originally from northeastern Peten (see Tokovinine 2012b).

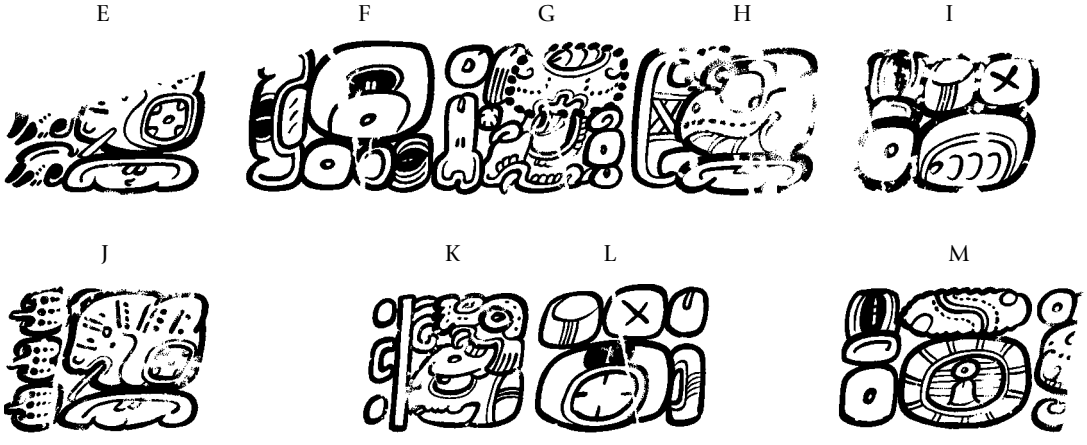


Figure 11. The impersonation statements recorded on the Cuychen vase (E1–N1).

glyph blocks (F1–H1) record the name of the divinity impersonated, in this case the epithets of the so-called Water Lily Serpent (see Schele and Miller 1986:46; Stuart 2007b). The full name is written **YAX-CHIT-ti** / **1?-WITZ'?** / **NAH-KAN-na** to be read as *yax chit juun witz' nah kan*. Although some elements of this theonym resist translation it essentially describes the Water Lily Serpent as the first master among great and ancient snakes, and the one who splashes or sprays water. As such, the Water Lily Serpent can be seen as a personification of bodies of running water, perhaps related to misty waterfalls (see Stuart 2007b). The Water Lily Serpent was the second-most commonly impersonated deity during the Classic period and both males and females took its guise, probably on account of the snake's asexual characteristics (Nehammer Knub et al. 2009:190). The last glyph of the first impersonation statement is clearly written **ti-AJAW-le**, *ti ajawlel*, or "in kingship," usually found in the monumental texts as part of accession expressions in which a ruler is said to have been installed into the office of kingship.

The second impersonation (J1–M1) is again initiated with the expression **u-BAH[AN]-na**, and a very rare allograph of the vocalic sign **u** is utilized to provide the pronoun, here rendered

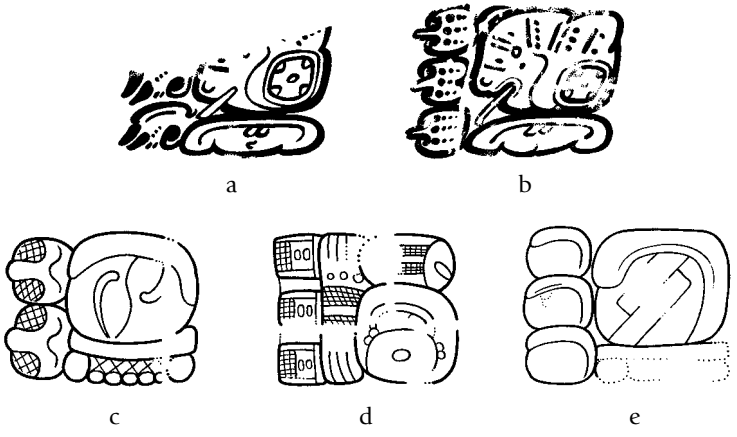


Figure 12. Rare **u** allographs in Classic Maya writing involving stacked elements: (a) **u-BAH[AN]-na**, Cuychen vase (deer hooves); (b) **u-BAH[AN]-na**, Cuychen vase (leaves); (c) **u-TZ'AK-a**, Quirigua, Str. 1B-1, Hieroglyphic Bench (leaves); (d) **u-tz'i-ko-lo**?, Copan, Structure 10L-11, Panel 3 (*muwaan* feathers); (e) **u-TZ'AK-a**, Naranjo, St. 10 (stones) (drawings by Christophe Helmke).

as three superimposed leaf-like elements (Figure 12b).[13] The theonym of the impersonated deity follows (K1–L1) and records the name of one particular martial aspect of the sun god: **7-CHAPAT[TZ'IKIN] / [K'IN]AJAW-wa**, read *uhuk chapaht tz'ikiin k'inich ajaw*[14] (Taube 1992:50-56, 2003:410; Boot 1999, 2005b:250-259). This name can be translated as "seventh centipede-raptorial bird, radiant lord" and was the most commonly impersonated deity in the Classic

[13] As has been pointed out to me by Sven Gronemeyer (personal communication 2011), an example of a comparable allograph for the vocalic sign **u** is found on the glyphic bench of Structure 1B-1st at Quirigua, Guatemala (Figure 12c). Another example of an **u** allograph comprised of three stacked elements, apparently involving the stone sign (T528), can be seen on Naranjo Stela 10 (Figure 12e). Remarkably both of these texts can be dated to AD 810 (9.19.0.0.0 at Quirigua and 9.19.0.3.0 at Naranjo), which falls squarely within the stylistic dating attributed to the Cuychen vase (i.e., c. AD 791–820). An example from Copan Str. 10L-11 pointed out by Marc Zender (personal communication 2012) (Figure 10d) is noteworthy in that the latest date recorded in the textual panels corresponds to AD 775, thereby forming a secure lower-end threshold for the Cuychen vase.

[14] Intriguingly, on the Cuychen vase the logogram **K'IN** seems to be infixed in the syllabogram **yi**. Together this would suggest that this segment of the theonym was spelled **yi[K'IN]AJAW**, to be read *yik'in ajaw* < /y-ik'-k'in/, translating roughly as "lord of darkness" rather than the more usual *k'inich ajaw* "resplendent lord." This idiosyncratic spelling deserves closer attention in future studies.

period, but on account of marked masculine and martial traits was the exclusive prerogative of male impersonators (Nehammer Knub et al. 2009:189). As such, it seems clear that the original owner or patron of the vase was male. The impersonation statement is closed by a beautifully executed flint-and-shield expression (M1) written **ti-TOK'-PAKAL**, to be read *ti took' ti pakal*, which is usually seen in martial expressions (Houston 1983; Schele and Miller 1986:210, 221; Martin 2001:178-179). Thus, on the whole the impersonation statements form the following couplet or parallel construction[15] (see Hull 2003:390-395; Lacadena 2009:34-35), allowing us to gain a better overview of the literary trope employed in these passages:

impersonation	*name of deity*	*prepositional construction*
u-baah-il-an u-baah-il-an	yax chit juun witz' nah kan u-huk chapaht tz'ikiin k'inich ajaw	ti-ajaw-lel ti-took' ti-pakal

The rare use of the preposition *ti* with *took'* and *pakal* aligns the Cuychen vase with the few other known examples from Bonampak (Room 1, Initial Series text), Chinkultic (undesignated stela), Yaxchilan (Hieroglyphic Stair 3), Dos Caobas (Stela 1), Xunantunich (Panel 2), and Sabana Piletas (Hieroglyphic Stair 1) (Grube et al. 2009:101; Helmke et al. 2010:104; Stephen Houston, personal communication 2011). Intriguingly, precisely the same construction involving the same rare variant of the logogram **PAKAL** is also seen on K5022, wherein K'inich Laamaw Ek', a lord of Río Azul, is said to impersonate the same aspect of the solar deity. Also,

[15] What is noteworthy about the couplet construction on the Cuychen vase is that it relates that a human agent impersonated two distinct deities and the repeated use of *ubaahilan* at the start of each sub-clause suggests that this refers to two separate events. However, in most cases wherein a clause records multiple verbal expressions, these tend to record events that co-occurred on the same day. This interpretation has several ramifications for understanding other impersonation statements that record the names of several gods, such as for example Lintel 3 of Temple IV at Tikal. Thus, it seems most likely that the Tikal text records that Yik'iniiy Chan K'awiil first impersonated the maize deity Ajaan and thereafter the death deity Ahkan, rather than impersonating a distinct deity exhibiting features of both, according to the principles of theosynthesis (see Martin 2007).

in the text of a vase originally from northeastern Peten, now in the collections at Dumbarton Oaks, the same impersonation statement is found in an analogous syntactical context (Tokovinine 2012b). In typical martial contexts the expression, or difrasismo, *ti took' ti pakal* is usually translated as "by the flint, by the shield" to emphasize the weaponry of the agent, or alternatively as "with the flint, with the shield" in reference to the garb of the subject, dressed in the attire of a warrior. In this case it is suspected that the latter reading applies to the Cuychen vase as well, to record that the agent impersonated the martial aspect of the solar deity, "as a warrior." In turn, we are left to equally interpret the *ti ajawlel* segment of the first phrase to relate that the protagonist impersonated the Water Lily Serpent "as a king." As a result, it can be seen that the impersonations record the agent as having taken the guise of these prevalent deities, thereby heightening the two idealized and complementary aspects of ancient Maya rulership.

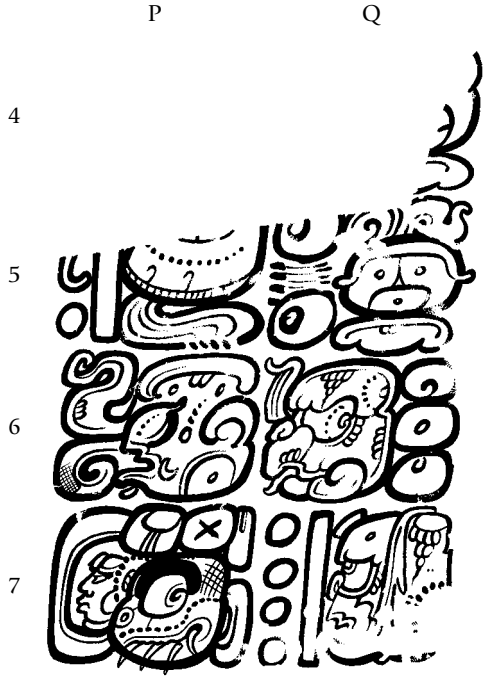


Figure 13. The parentage statement that closes the primary text on the Cuychen vase (Q4–Q7).

Patron and Parentage Statement

The final segment of the text is notably better preserved and records a parentage statement or pedigree by citing the names and titles of the owner's mother and father, in that sequence (Figure 13). The last part of the mother's name (Q4) represents a main sign that has as its diagnostic element a sun sign (T544) followed by a phonetic complement **na**. Together this probably spells **CH'EN-na** for *ch'een* and forms part of an otherwise well-attested female name Ixyohl Ch'een "lady of the heart of the cave." Paleographic analyses of the **CH'EN** logogram

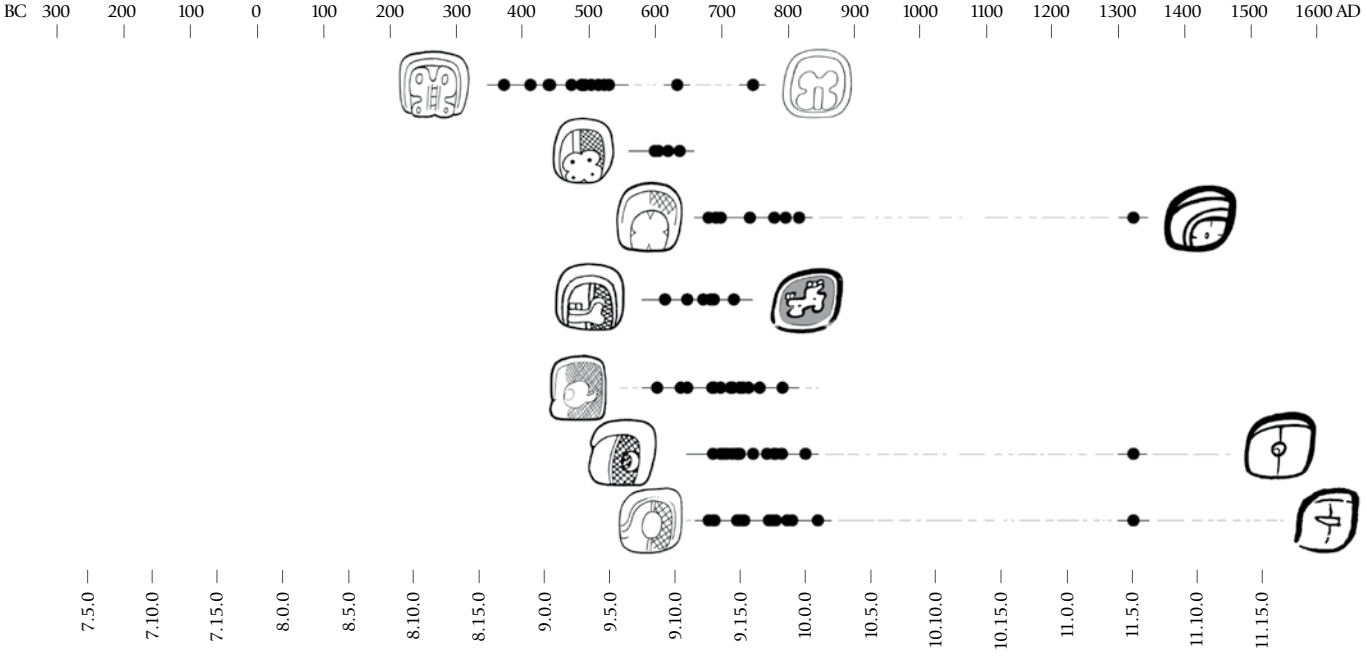


Figure 14. The paleography of the various geometric allographs of the logogram **CH'EN** in Classic Maya writing. Note the third variant from the top that uses as its diagnostic element the *k'in* sign.

(Helmke 2009:536-576) indicate that the allograph that has the sun sign as its diagnostic element was utilized between AD 684 and 820 (Figure 14), indicating that the Cuychen vase was likely produced during this interval. Whereas *ch'een* is used in several anthroponyms throughout the Classic period, it is noteworthy that the sites that preferentially employed this type of name form a spatially contiguous area, spanning from Dzibanche in Quintana Roo to Naranjo in the Peten (Figure 15). Upon closer scrutiny, the mother's site of origin can be narrowed down even further by noting that *yohl ch'een* only names women from Xultun (Caracol Stelae 13 and 16; K5976) and Holmul (bone pins from Naranjo; K8019) (Grube and Martin 2004:36; Helmke 2009:586-599; Matteo and Krempel 2010) although on account of marriage into foreign dynasties they are also mentioned in the texts of other sites.

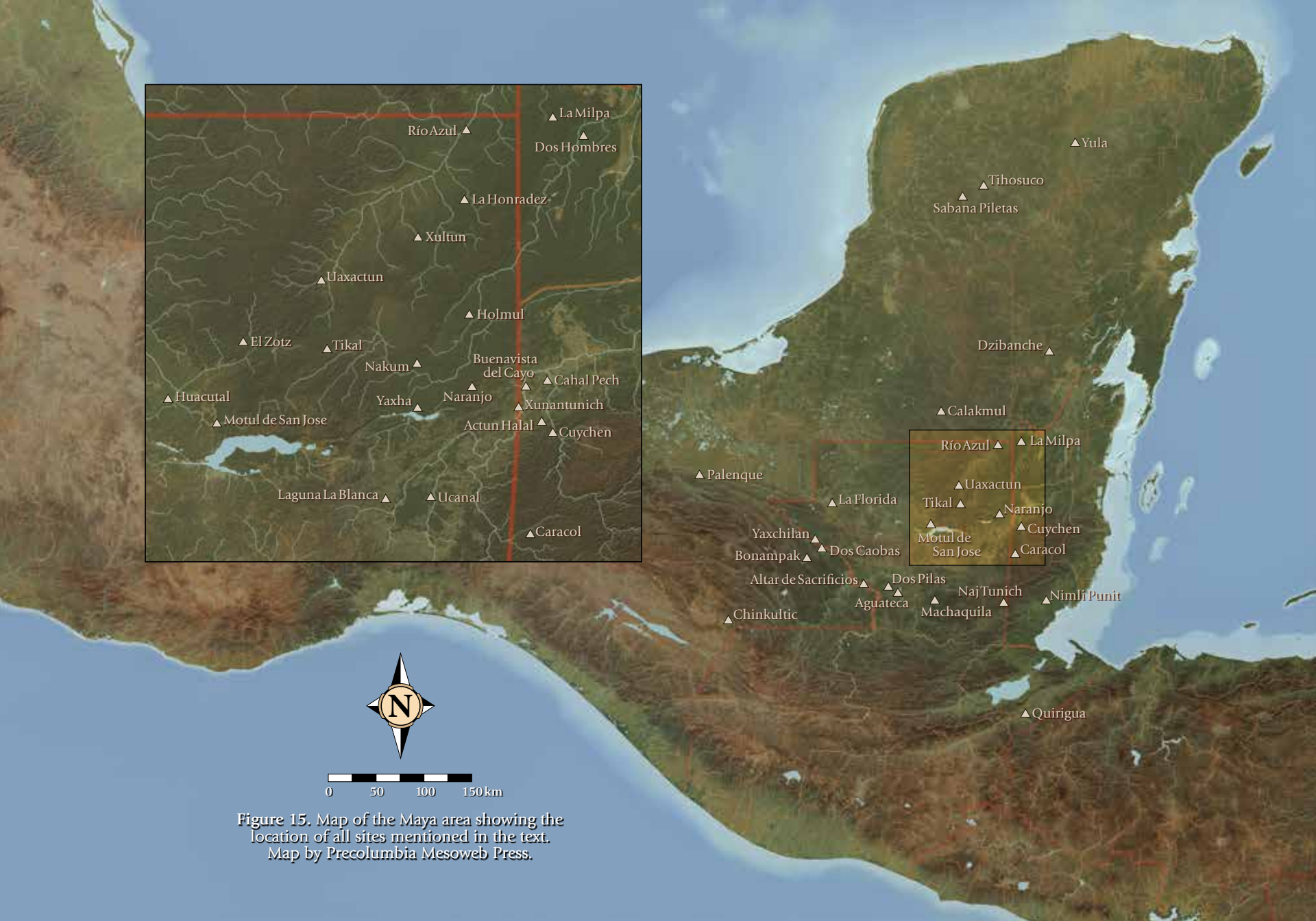


Figure 15. Map of the Maya area showing the location of all sites mentioned in the text. Map by Precolumbia Mesoweb Press.

The following glyph block (P5) provides the mother's only title, which is formed by the numeral **7** prefixing a sign written T501[544]—likely functioning as the syllabogram **so** (Zender 2011)—and subfixed by the syllabogram **ni**. Based on these parameters, the reading of the full title may have approximated *huk soon*. Analogous numbered titles[16] are known for the remainder of the Maya Lowlands (Figure 16), and although these are not as frequent as one might wish, there is enough evidence to suggest that they may conform to some regional distribution (Tokovinine 2008:253-255, 263-264; Valencia Rivera and Sheseña Hernández 2016). The title **4**-T501[544]-**ni** that is found at Bonampak and Motul de San José may form the basis for identifying the region in which that particular title occurs. In contrast the **5**-T501[544]-**ni** title occurs predominantly at Naranjo (Stelae 13 and 30) and Río Azul (K1383 and K2914). The same title (written **5**-T501[544]) is also found with the name of a woman bearing the dynastic title of Cahal Pech (Awe and Zender 2016) on the recently discovered jadeite plaque of Nimli Punit (Prager and Braswell 2016:271). As such, it now seems probable that Cahal Pech fell within the same area as that using this particular title.

Most importantly to the case at hand, an example of **HUK**-T501[544]-**ni** is found in the texts of Naj Tunich (Drawing 82) where it might title a person from Xultun, whereas another possible example is found captioning a captive named Bohb depicted on Stela 19 at Aguateca

[16] While it is difficult to substantiate since there is no clear substitution, I suspect that NUMBER-T501[544]-**ni** is an abbreviated and geometric form of the same title that uses the head of a bat as its main sign. In the latter case the sun glyph T544 is regularly infixed into the eye or set at the cheek of the bat. At times both the geometric and head-variant forms fail to take the -**ni** syllabogram (e.g., K1453, K3331, K5723, K7149), suggesting that it functions as a phonetic complement. Nevertheless, the possibility cannot be discounted that the T544 sign here serves to cue the syllabogram **so**, with the absence of the final -**ni** representing a case of underspelling. The head variants tend to be prefixed by syllabic **yo**-, which based on patterns of phonetic complementation has been taken to indicate that the title reads *yoon* (Dmitri Beliaev, personal communication 2006). However, one key substitution that does not seem to have been taken into consideration is found on K2206 where the head of a dog substitutes for the otherwise common bat. The only plausible resolution for this substitution is that the bat sign has the value **tz'i** whereas the dog playfully cues the syllabogram by means of rebus from its logographic value **TZ'I'**. One key example also reduces the spelling to **yo**-T544 (K3331), where the sun sign may serve as the diagnostic element of the syllabogram **so**. As such, although the meaning of this title remains to be clarified, it is possible to suggest that its full spellings simply record **yo**-**tz'i**[**so**]-**ni** or *yootz'-soon*.

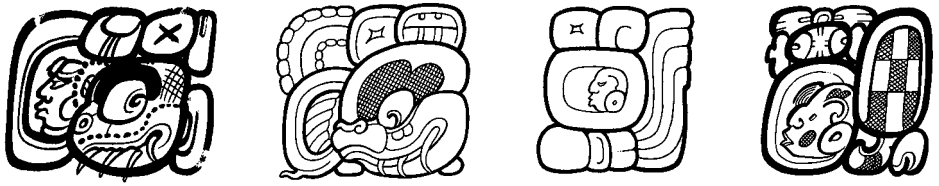
a b c d e

Figure 16. Numbered titles found in Classic Maya texts: (a) numbered title on Motul de San José Stela 4; (b) example on K1383 of Río Azul; (c) Cuychen vase, title of owner's mother; (d) title recorded at Naj Tunich, Drawing 82; (e) unprovenanced vessel K7042.

(see Houston 2014:244-248). Cumulatively, on the basis of the spatial patterning governing the mother's anthroponym and title, Xultun emerges as the best match for her site of origin.

The father of the vessel's owner is introduced by the kinship term **u-MIHIN-na**, *u-mihiin* "child of (father)" (Jones 1977; Coe and Van Stone 2001:87; Schele and Grube 2002:65; Kettunen and Helmke 2005:32) (Q5). The name of the father follows (P6–Q6), rendered in a confident and elegant hand as **K'AK'-u-TI'** / **ku-yu**, *k'ahk' uti' kuy* or "fire is the mouth of the owl." From several other ceramic vases we know that the nocturnal *kuy* was also considered to be a spiritual co-essence or *wahy* of the kings of Motul de San José and possibly also those of the site of Huacutal (see Grube and Nahm 1994:703-704; Stuart 2005:160-165; Helmke and Nielsen 2009; García Barrios and Velásquez García 2010). Although there is no necessary connection, it bears remarking that the name of the owner of K8966 begins with a similar rendering of **u-TI'** with the following signs eroded and partly repainted. As such there is an outside chance that the father on the Cuychen vase owned K8966 (Simon Martin, personal communication 2011). Unlike the name of the mother, anthroponyms that make use of *ti' kuy* are rarer and less spatially restricted, with key examples known from La Florida (Altar G), Yaxchilan (Lintel 45), Xultun (K3500, MS1839), and possibly Naj Tunich (Drawing 65). As a result it is not possible on the basis of onomastic patterns to make a proposal as to the father's site of origin.

Nevertheless, some clues are afforded in the following glyph blocks that record the father's titles. The penultimate glyph block (P7) provides an Emblem Glyph, written T239-[764]



a b c d

Figure 17. (a) Problematic Emblem Glyph represented on the Cuychen vase; (b) Calakmul Emblem Glyph, La Corona, Hieroglyphic Stair 2, Block X; (c) Altar de Sacrificios Emblem Glyph, Itzan, Stela 17; (d) name of Palenque's patron God III, Temple XIX, west face of bench.

AJAW-wa marking the bearer as an *ajaw*, or "king" (Figure 17a). Technically speaking this is actually a partial or so-called problematic Emblem Glyph since it is not prefixed by the logogram **K'UH** that provides the qualifier *k'uhul* "godly" to the title (see Houston 1986; Grube 2005). The main sign T764 represents the head of a snake that in other contexts carries the value **CHAN**, which initially suggested that this might record the Emblem Glyph of the Snake dynasty established at Calakmul in the Late Classic (see Martin 2005; Helmke and Awe 2016b; Martin and Velásquez 2016) (Figure 17b). Nevertheless, there are several key features that argue against this interpretation (Simon Martin, personal communication 2010). For one, considering the exalted status of Calakmul kings in the Late Classic the Emblem Glyph always carries the prefix *k'uhul*, which, as said, is notably absent in this case. For another, since the snake head involved in the Calakmul emblem records an archaic form of the term "snake," *kan*, it is systematically prefixed by the syllabogram **ka** to cue this reading (Martin 1997; Helmke and Kupprat 2016:39-41). Again this prefix is absent in the Cuychen case.[17] Finally, the emblem on the Cuychen vase is prefixed by T239, an undeciphered sign

[17] It should be noted that the **ka** prefix also seems to be absent from the snake head that captions the first Maize God as well as the supernatural snake cited in the first of the two impersonation statements, where these undoubtedly stand for **KAN**. Nevertheless, note the small comb-like element that is encircled by the dots on the snake's brow. Although unlikely, it is possible that this serves as the syllabogram **ka**, a feature that is also present in the Emblem Glyph on the Cuychen vase. As a result the sign T764 in the Emblem on the Cuychen vase may also have been read *kan*, rather than the more common *chan*, although at present there is insufficient evidence either way to ascertain which is the more plausible reading.

representing a human head (outside of this context usually read as **XIB**) within a circular cartouche. The T239 sign is never actually found in the emblem of Calakmul, although it is seen as the main sign of other distinct emblems such as that of Altar de Sacrificios (Houston 1986:2-4; Stuart and Houston 1994:19-20, Fig. 20) and also serves as part of the name of GIII, one of Palenque's triadic patron gods (Berlin 1963; Stuart 2006; see also Prager n.d.) (Figure 17c–d). As a result I am left to conclude that the Emblem Glyph painted on the Cuychen vase records a heretofore unknown regal title. Since at present no additional examples of this emblem are known in the written corpus, I cannot suggest which particular archaeological site this title was tied to.

The final glyph block records the second title carried by the father, written **9-tzu[ku]**, probably read *baluun tzuk* (Q7). Numbered *tzuk* titles (first identified by Grube and Schele 1991:2-3) are otherwise most commonly prefixed either by the numeral 7 or 13, again making the Cuychen vase exceptional. Here *tzuk* can be translated as "partition," but probably serves as the term for "province" as is supported by entries found in Acalan Chontal <*tzuc*> "province" (Smailus 1975:132) and the Motul dictionary of Yukatek <*tzuc*> "cuenta para pueblos," <*tzucub*> "provincia," and <*tzucul*> "pueblo pequeño, parcialidad, o parte de pueblo" (Martínez Hernández 1929:266-268). As has been demonstrated by Dmitri Beliaev (2000), these numbered *tzuk* titles tend to be shared by sites within spatially contiguous areas, with *huk tzuk* "seven province" connected to Motul de San José, Yaxha, Naranjo, Holmul, and Komkom, whereas *uxlahjuun tzuk* "thirteen province" was borne by lords of Tikal, La Honradez, Xultun, and Río Azul (Figure 18). Thus, despite their disparities and nominal independence, many sites appear to have been subsumed under the same larger province, or *tzuk* to use the emic term. While the origin and extent of this system of territorial division of the Maya Lowlands remains unknown, the provinces designated by the numerals 7 and 13 are sufficiently well documented to allow us to reconstruct the border that separates the two.[18] Another

[18] It should be remarked that a <*kan tzuc*> "four province" is known for Colonial Yucatan and is recorded as 4-*tzuk* at the site of Yula, whereas clear examples of 6-*tzuk* are known in the texts of Nimli Punit in southern Belize (see Beliaev 2000:63; Wanyerka 2003:36-38, 2009:476-487). Note also the settlement in Quintana Roo named <Tihosuco>, perhaps from *ti ho' tzuk* "at province five," which might give an idea as to the original location of 5-*tzuk*. As such, the full spectrum of clearly documented numbers involves 4, 6, 7, 9, and 13. Nevertheless, at present we simply lack sufficient data to conclusively make a case as to the numerology involved in the labeling of Classic-period Lowland Maya provinces.

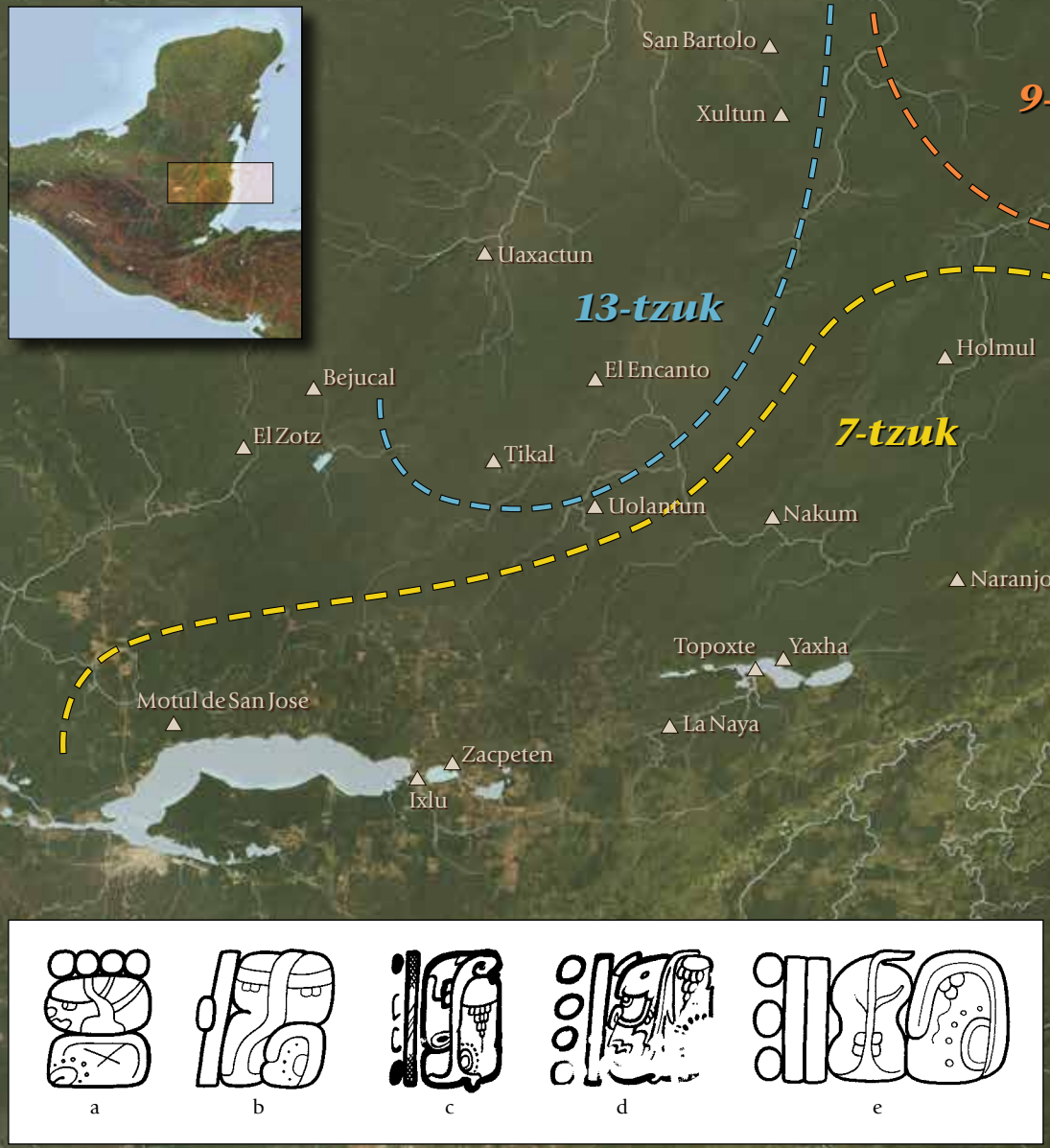


Figure 18. Map of the Maya Lowlands showing the distribution of sites associated with different numbered *tzuk* titles and approximate borders between the different "provinces." Map by Precolumbia Mesoweb Press: (a) 4-*tzuk*, Yula, Lintel 1; (b) 6-*tzuk*, Nimli Punit, Stela 2; (c) 7-*tzuk*, Naranjo, K1398; (d) 9-*tzuk*, Cuychen vase; (e) 13-*tzuk*, Dos Pilas, Hieroglyphic Stair 2.

feature of note is that lords of 7-*tzuk* made a further distinction by prefixing the title with either *ochk'in* "west" or *elk'in* "east." Motul de San José and Yaxha, sites that carry the prefix "west," are indeed located in the western half of 7-*tzuk*, which leads me to suspect that the toponym Komkom, which is prefixed by "east" (K2730), probably corresponds to a site located in western Belize (see also Houston et al. 1992:508; Beliaev 2000:65; Helmke et al. 2016).

However, one additional example of the title *baluun tzuk* is known from a fragmentary polychrome dish recovered at the site of Dos Hombres in Belize (see Robichaux and Houk 2005) (Figure 19). On this example it serves as the first title of an individual who is tied to the toponym *witzil mulnib* "where there are mountainous hills" (for comments on the *–nib* toponymic suffix see Boot 2009:6; Helmke et al. 2010:104-107). While it cannot be proposed with any degree of certainty that Witzil Mulnib refers to Dos Hombres it remains a possibility to be investigated further. Most intriguingly the patron of the dish is said to be the *yajaw* or "vassal" of another higher-ranking individual. Only a part of the numeral 18 is preserved that records the name of the latter individual.[19] Returning to the *tzuk* title, if one assumes that the plate indeed mentions a local lord, it has several important implications, not the least of which is that 9-*tzuk* may have encompassed the region to the east of 13-*tzuk* and to the north of the eastern part of 7-*tzuk*, essentially most of northwestern Belize (Figure 18). On the basis of the present data this suggestion has to remain tentative, but it is hoped that more data can be brought to bear to corroborate, or refute, this hypothesis. However, assuming that 9-*tzuk* has been placed in roughly the right region, this would imply that the father of the patron of the Cuychen vase was a lord of a site in northern Belize.[20]

[19] Given Classic Maya onomastics, the most plausible name is Waxaklahjuun Ub'aah K'awiil, a regnal name carried by several Maya lords during the Classic period, but considering the context and time period of the find it may well refer to the last known king of Naranjo (Martin and Grube 2008:83). Alternatively it could refer to a ruler of La Milpa (Robichaux and Houk 2005:9-10), or one of the kings of Dzibanche (Helmke and Awe 2016a), although the evidence is equivocal.

[20] Interestingly, on the recently discovered inscribed jadeite plaque found at Nimli Punit, the same 9-*tzuk* title also appears. In that case it styles the original owner of the plaque, named Janaab Yohl K'inich, although his exact place of origin remains to be discussed, since his mother seems to have hailed from Cahal Pech and his father may bear the so-called Square-Nosed Beastie as part of his honorific terms of address, here presumably naming the mythic founder of the Naranjo dynasty (compare with Prager and Braswell 2016:271, 274).

Figure 19. The fragmentary plate from Dos Hombres, Court C-7. Note the 9-*tzuk* title at pC1 (photograph and drawing by Christophe Helmke).

Summary and Conclusion

In this analysis of the Cuychen vase I have attempted both to narrow down the time period during which it was created and to identify the most plausible workshop of manufacture. On the basis of paleographic data and diachronic spelling patterns it seems likely that the vase was produced sometime between AD 791 and 820, although continued analysis could probably narrow down this range further. Nevertheless, this dating accords perfectly with the stratigraphic evidence and the associated ceramics found within the cave, since the deposit which yielded the vase has been dated to c. AD 700–830 (this volume Chapter 2, Helmke et al. 2019). On the basis of spatial patterning governing the name and title of the patron's mother it was determined that she likely hailed from the site of Xultun, whereas I have tentatively suggested that the patron's father governed a site in northern Belize. But what of the original owner? Vexingly, the relevant section of text is missing and as a result we are left with precious little information concerning the patron. However, based on the names and gender categories of the deities impersonated, it is surmised that the vase was originally owned by a male individual. Furthermore, considering that Classic Maya society was strongly patrilocal, it stands to reason that the patron equally ruled over a site in northern Belize, perhaps the same site indicated by the Emblem Glyph recorded in the final part of the text. Nevertheless, considering that what remains of the name of the patron is partially consistent with the name of K'inich Lamaw Ek' of Río Azul, this remains a distinct possibility. As to the workshop where the vessel was originally produced, at the intersection of complementary lines of evidence it seems most probable that the vase was produced in a workshop associated with the greater Xultun area. The idiosyncratic chemical signature of the vase points to a production area outside of well-documented samples, which is why the Holmul attribution is called into question (this volume Chapter 4, Reents-Budet and Bishop 2019). Based on present evidence it may thus have been a vase produced in a regal workshop associated with the court of Xultun, but specifically produced for a ruler of Río Azul—perhaps as a present from an uncle to his nephew.

Much remains unknown about the workshops and regally-sanctioned artisans of the northeastern Peten, but recent studies are now beginning to shed some light (Matteo and

Krempel 2010; Krempel and Matteo 2011). As a source of analogy, in the interim one can turn to the highly prolific workshop maintained by the rulers of Naranjo, who over the centuries commissioned a series of outstanding polychrome ceramics. The workshop manufactured vessels both for the local royal household as well as items that were gifted to vassals. Significant examples include the Jauncy vase discovered at Buenavista del Cayo—although it was originally made for Naranjo's 38th ruler K'ahk' Tiliw Chan Chaahk—and another vase that was purposefully produced for "Itzamnaaj" Bahlam of Ucanal (K1698-MS1684; see Houston et al. 1992:504, 506; Reents-Budet 1994:300-302). In the latter case the vase was probably produced after AD 698, by which time Naranjo had defeated Ucanal and made "Itzamnaaj" Bahlam a subservient vassal. As a result, the production and gifting of polychrome ceramics testify to intricate sociopolitical maneuverings that usually took place after the cessation of military engagements. As such, the Cuychen vase may equally well have been produced to foster ties between a northern Belizean vassal and his overlord. Based on the historical records of the ancient Maya we know that marital ties frequently followed martial actions and served to cement alliances between erstwhile antagonists. Take for example the marriage of Naranjo's K'ahk' Tiliw Chan Chaahk to Ixunen Bahlam, princess of Tubal (Nakum?), a site conquered at the start of his reign in AD 693 (see Martin and Grube 2008:76-77; Helmke and Kettunen 2011:51-57). The same state of affairs may have involved Xultun and the elusive northern Belize site, an alliance reaffirmed during the son's reign by the commission and ritualized gifting of the Cuychen vase.

Considering the vessel's final resting place, a cave in western Belize, in a foreign *tzuk* or "province," several possible scenarios emerge. Nevertheless, the dating of the vase and the ceramics found within Cuychen suggest, whatever the historical circumstances, that the vase was not utilized for more than a few decades before it was deposited within the cave. One scenario posits that the original owner further gifted the vase to a local lord ruling in the vicinity of Cuychen, who eventually terminated the vase in the cave as part of a ritual action. At this juncture it bears remarking that the texts of Naj Tunich represent testimonials of elite figures who undertook rituals there, some of whom came from as far afield as Caracol (53 km away), Huacutal (125 km), and Xultun (140 km) (see MacLeod and Stone 1995; Helmke

2009:140-141). Thus it is not inconceivable that the posited northern Belizean ruler physically partook in a joint ritual action at Cuychen, resulting in the deposition of the vase. Similarly, a sherd of a late Middle Classic bowl (c. AD 550–650) bearing the toponym Sak Ha'al was found in a cave, known as Actun Halal, located just 4.3 km north of Cuychen (Helmke et al. 2003). The place name Sak Ha'al, possibly tied to Laguna La Blanca in the Peten (Beliaev 2000:73), would name a site located 40 km to the west, and comparable historical circumstances may account for the deposition of the Cuychen vase and the Actun Halal bowl. Finally, the possibility should not be excluded that the Cuychen vase was forcibly obtained by local lords and as such constitutes war booty obtained via a martial action against a northern Belize site (see Houston et al. 1992:509). Smashed and scattered within an isolated cave, the vase lay dormant, waiting for over a millennium, before it was discovered and could once more be appreciated. Whereas several key questions still shroud a complete understanding of the Cuychen vase, the present analysis forms the foundation for further studies of this exceptional vessel.

Acknowledgments

First and foremost I would like to give my heartfelt thanks to Jaime Awe, as former director of the Belize Institute of Archaeology, for the opportunity to study this exceptional artifact. My gratitude goes to Dorie Reents-Budet for sharing the results of the neutron activation analyses of the samples (MS2265) and to Simon Martin for commenting on the Emblem Glyph recorded on the vase. Donald Hales commented upon the impersonation statements and Karl Taube on the iconography of the vase, for which I am grateful. I would also like to thank Jaime Awe, Dmitri Beliaev, †Erik Boot, Albert Davletshin, Sven Gronemeyer, Stephen Houston, Guido Krempel, Simon Martin, and Yuriy Polyukhovych for carefully reading earlier drafts of this paper as well as for their insightful comments on the vase and its associated text. As part of the final formal review, the paper greatly benefited from the perceptive and constructive comments of Stephen Houston, Marc Zender, and an anonymous reviewer. The research reported here was funded by the Research Council for the Humanities of the Danish Ministry of Science Technology and Innovation.

Element	MS2265
Na	15900
K	20500
Ca	0
Sc	8.17
Cr	32.80
Fe	21900.00
Co	15.70
Rb	79.80
Zr	202.00
Sb	0.68
Cs	3.31
Ba	824.00
La	21.00
Ce	106.00
Sm	4.73
Eu	0.74
Tb	0.63
Yb	2.38
Lu	0.25
Hf	6.78
Ta	0.65
Th	10.40
W	8.17
Layb	8.82
Thsc	1.27
Crth	3.15

Table 1. Elemental mean concentrations for the sample of MS2265

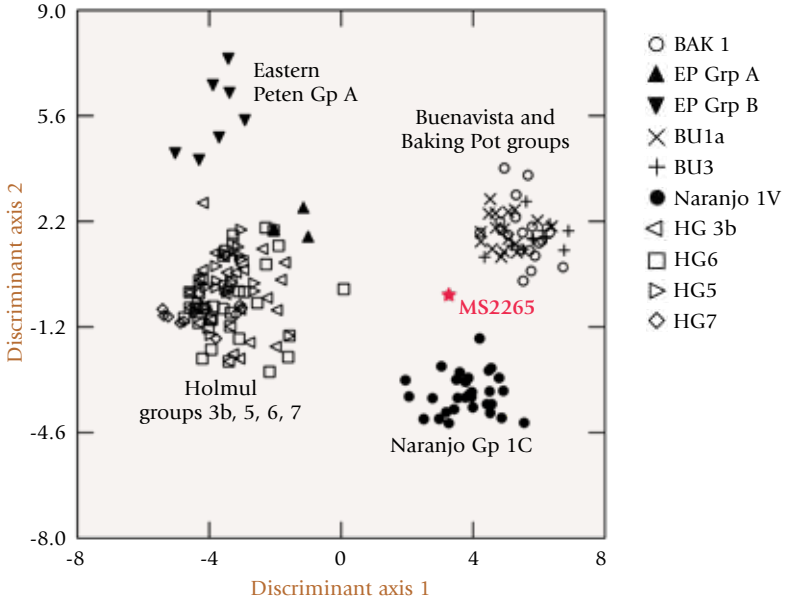


Figure 1. The chemical composition of the Cuychen vessel, MS2265, is similar to, yet distinct from, clusters of chemically characterized pottery made in the general eastern Peten border region flanking Belize. The lack of close correspondence to other samples in the NAA database is based on its multivariate distance from the centroids of the established groups or its Euclidean distance from individual samples or clusters. Discriminant analysis illustrates the chemical separation of MS2265 from the established eastern Peten reference groups. Axis 1 reflects the discriminating power of iron, scandium, and thorium. On Axis 2, iron again is strongly loaded. MS2265 is notable for its high cerium concentration (2x that found in the comparative groups). Cerium concentration is reduction- and oxidation-sensitive, and even if the cerium value is removed, MS2265 remains an outlier to the eastern Peten reference groups.

Chapter 4

Instrumental Neutron Activation Analysis of the Cuychen Vase

Dorie J. Reents-Budet and Ronald L. Bishop

The Cuychen vessel was sampled for neutron activation analysis (NAA) by the Maya Ceramics Project, National Museum of Natural History, Smithsonian Institution (see Blackman and Bishop 2007 for a discussion of the analytical technique). The goal was to determine if the vessel's paste chemistry could reveal a place of manufacture (sample number MS2265). Unfortunately, the paste composition showed little to no similarity with any other specimen in the database of more than 25,000 samples of ancient Maya pottery. The lack of chemical similarity may be due to the vessel's paste composition, or "paste recipe," being idiosyncratic and/or it was made in an area whose ceramic products are not represented in the compositional database of the Maya Ceramics Project.

Close examination of the compositional profile suggests both interpretations underlie the lack of chemical similarity. First, MS2265 has a cesium value three times higher than is typical for lowland Maya pottery (Table 1). It also lacks elemental calcium in detectible quantities (less than 2%); the absence of calcium runs counter to most ash-tempered Late Classic Maya pottery which usually contains 2–20% calcium. The other elements are well within the parameters for Classic-period ceramics of the central lowlands, in particular pottery associated with sites in the eastern Peten region between Tikal and Belize and south of Río Azul to the greater Naranjo area. Therefore, the chemical composition of the Cuychen Vase may be considered an idiosyncratic paste recipe from a site in the eastern central lowlands.

Its ceramic typological designation as Zacatel Cream-polychrome: Cabrito Variety (Smith 1955; Ball 1994b) dates the vessel to the Late Classic and also indicates the eastern Peten as its place of manufacture. The following eastern Peten sites are represented in the Maya Ceramics Project's database: Naranjo, Nakum, Holmul, La Sufricaya, San Bartolo, Kinal, Río Azul, Yaloch, Yaxox, Buenavista del Cayo, and Cahal Pech. No sample from any of these sites is chemically close to MS2265 (Figure 1), although those few samples with low probability of

Figure 2. Eastern Peten–related pottery with low probabilities of chemical similarity to MS2265: (a) MS0382 (Nasher Museum of Art; photograph by Dorie Reents-Budet); (b) MS0982 (private collection, Guatemala; photograph by Ronald Bishop); (c) MS1416 (K4464; Buenavista del Cayo, Belize, 27/189-9; photograph by Christophe Helmke); (d) BVB0071 (sample excavated at Baking Pot, Belize; photograph by Dorie Reents-Budet).

similarity to MS2265 represent ceramic types and pottery styles consistent with an eastern Peten attribution (Figure 2). Similarly, MS2265 is not chemically correlated with any locally produced pottery excavated at any of the sampled sites located in the western Belize River Valley (Figure 3). It should be noted that the collections of these sites include a relatively large number of vessels imported from the eastern Peten (Figure 4), indicating more than sporadic connections between western Belize and eastern Peten sites during the time when the Cuychen Vase, too, was imported to Belize from eastern Guatemala (see also Helmke et al. 2017).

The failure of paste composition to suggest a workshop location beyond that of the eastern Peten turns our attention to stylistic features shared with other chemically sampled vessels to suggest a place of origin. The painting style of the Cuychen vessel and its "Holmul Dancer" pictorial theme are distinctive of the eastern Peten (Reents-Budet 1994:179-188), the ceramic style being associated with such sites as Naranjo, Nakum, Holmul, Xultun, and Río Azul in Guatemala, and extending eastward to Yaloch and Buenavista del Cayo in western Belize (Reents 1985; Reents-Budet 1991; Reents-Budet et al. 2000). The vase's unusually large size, technically accomplished vessel formation, and high-quality painting intimate that it is the creation of a skilled potter and painter

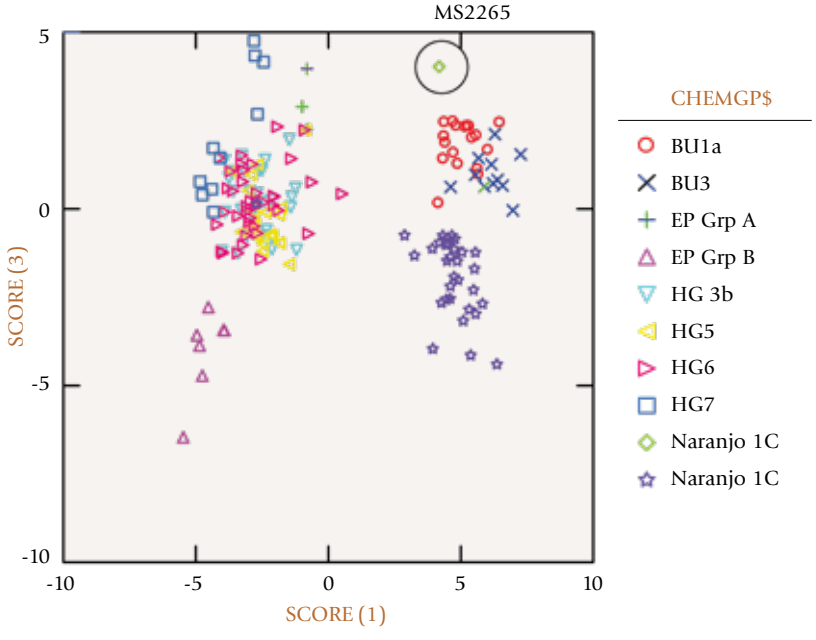


Figure 3. MS2265 is chemically separate from ceramics produced in western Belize based on its distance from the multivariate centroids of pottery excavated at these sites, with the likelihood of membership based on the Mahalanobis distance. Discriminant analysis shows the compositional deviation of MS2265 from pottery made at Buenavista del Cayo (BU1, BU3), Naranjo, Holmul (HG3, 5, 6, 7), and various eastern Peten ceramic types whose hieroglyphic texts name Xultun nobility (EP Grp A, B).

a

b

c

d

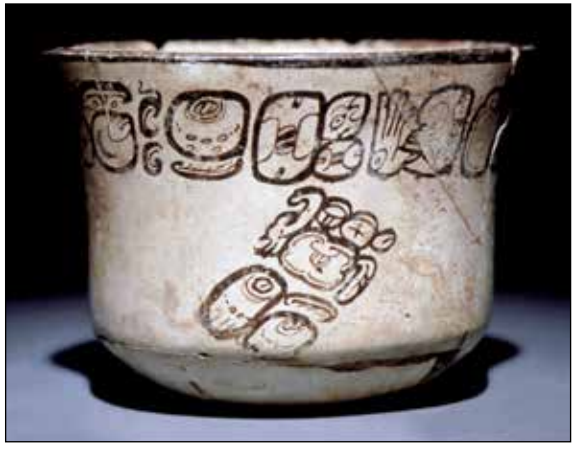
e

Figure 4. Examples of eastern Peten–produced pottery excavated from Buenavista del Cayo and Baking Pot, Belize: (a) MSBU10, excavated at Buenavista del Cayo but made in the Naranjo area (photograph by Dorie Reents-Budet); (b) BVB011, excavated at Baking Pot, but made in the vicinity of Holmul (but not at the site nor at nearby La Sufricaya) (drawing by Gustavo Valenzuela); (c) MSBX78, a Chinos Black-on-cream sherd excavated at Buenavista del Cayo but made in the vicinity of Holmul (but not at the site nor at nearby La Sufricaya); its text names a king of Komkom; (d) BVB009, excavated at Baking Pot but made in the vicinity of Holmul (but not at the site nor at nearby La Sufricaya) (photograph by Christophe Helmke); (e) MS5331, a Zacatel Cream-polychrome bowl chemically similar to *d* and whose patron is a lord of Komkom, a locality in the vicinity of Naranjo (photograph by Ronald Bishop).

a b c

Figure 5. Xultun-related vessels based on stylistic and epigraphic data, including patrons named as a Baax Witz lord: (a) MS1445 (K4909) (photograph © Justin Kerr); (b) MS1852 (K3025) (photograph by Dorie Reents-Budet); (c) MS2256 (K9271) (photograph by Ronald Bishop); (d) MS1446 (K4572) (photograph © Justin Kerr); (e) MS1398 (K4387) (photograph © Justin Kerr).

d

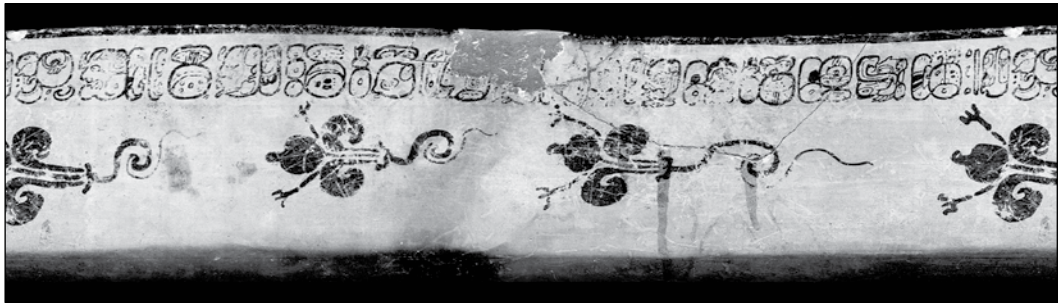


e

of extensive experience who likely was producing at the behest of regal clients (Ball 1993; Reents-Budet 1998). It is logical to conjecture that the workshop was attached to patrons living at one of the principal Late Classic sites in the eastern Peten. Of these, three of the most politically active during the Late Classic were Naranjo, Holmul, and Xultun, the former two being represented in our chemical database.

Naranjo and Holmul can be ruled out as the workshop's location because there is no paste compositional similarity between MS2265 and pottery excavated at either site, including Zacatel and other cream-polychrome samples (see Figure 1). Xultun, on the other hand, is a site for which we at present have no ceramic paste compositional data. That being said, Xultun is likely represented in the database by unprovenienced vessels whose hieroglyphic texts name Xultun (Baax [Tuun] Witz) nobles (Prager et al. 2010; Matteo and Krempel 2011; see also Garrison and Stuart 2004). These vessels share stylistic features with MS2265, including the red bichrome "Holmul Dancer" theme, black-on-cream fine-line painting, and unusually large-sized hieroglyphs formed by a combination of strong and delicate outlines (Figure 5). These stylistic features are typical of eastern Peten examples of both Zacatel Cream-polychrome: Cabrito Variety and Chinos Black-on-cream pottery and especially those epigraphically connected to Xultun (see Reents-Budet 1994 for a discussion of the distribution of Chinos Black-on-cream pottery; see also Krempel and Matteo 2012) (Figure 6).

a



b

c

Figure 6. Xultun-related vessels based on stylistic and epigraphic data, including patrons named as a Baax Witz lord: (a) MS1396 (K2358; photograph © Justin Kerr); (b) MS1661 (K5628; photograph by Dorie Reents-Budet); (c) MS1417 (K4388; photograph © Justin Kerr); (d) MS1838 (Gift of Landon T. Clay, photograph © 2017 Museum of Fine Arts, Boston); (e) MS1838 (Gift of Landon T. Clay, photograph © 2017 Museum of Fine Arts, Boston); (f) MS5320 (photograph by Ronald Bishop).

d

e

f

The corpus of unprovenienced Zacatel Cream-polychrome and Chinos Black-on-cream vessels whose dedicatory texts (or Primary Standard Sequences; Coe 1973) end with the names or titles of Xultun and related nobility form a coherent paste compositional grouping. Such coherency intimates that they were made from similar clays and paste recipes, which implies that they are the products of geographically and socially related workshops. Minor compositional variations reflect small differences in clay resources and/or paste recipes which may suggest the products of more than one workshop exploiting local but different clay and/or temper resources and thus minor variations in paste recipe. As with the Cuychen Vase (MS2265), none shows chemical similarity to pottery from any of the sampled eastern Peten sites. Thus the chemical database proffers negative evidence suggesting Xultun and its immediate vicinity as a plausible production locale for the chemically coherent group of Zacatel Cream-polychrome and Chinos Black-on-cream vessels as well as MS2265.

Interestingly, the patron/owner named on the Cuychen Vase may well be the nobleman K'inich Lamaw Ek'—bearing the titles Uxte' Haab and Uxlajuun Tzuk, tied to the royalty of Río Azul—who also is named on K5022. This lord may be identified as a member of the ruling elite of Río Azul based on the presence of the Uxte' Haab Emblem Glyph associated with Río Azul (Matteo 2007). Yet the weight of the compositional, epigraphic, stylistic, and ceramic typological features point to Xultun and its immediate vicinity as the most feasible candidate for the workshop location of the Cuychen Vase (see this volume Chapter 3, Helmke 2019). Perhaps, then, the Cuychen Vase may have been commissioned by a noble person of Xultun as a gift for the Río Azul lord. The stirring question thereby remains as to the socio-political circumstances which brought this unusual vessel from the Xultun-Río Azul area to a cave in western Belize.

Figure 1. Two owl pellets recovered in the American Southwest (photographs by Shawn Morton).

Chapter 5

Zooarchaeology of Cuychen: Natural and Cultural Cave Taphonomy

Gavin B. Wisner, Katie K. Tappan, and Chrissina C. Burke

This chapter provides a detailed analysis of faunal materials recovered from Cuychen, a small and hard-to-reach cave located in the Macal River Valley of western Belize. Access to this cave required rappelling 15 meters down a limestone cliff face and then swinging into the cave, which had remained unlooted since antiquity (see Helmke et al. 2012, 2015; this volume Chapter 2, Helmke et al. 2019). As discussed below, the majority of the skeletal elements recovered are from natural taphonomic contexts—those not associated with human activity. In this cave, the primary agents of deposition are birds of prey utilizing the cave as a roost. Many of the taxa represented in the site are those of small mammals, with most belonging to the Rodentia family Cricetidae, or New World voles, rats, and mice. Other families present include mammals from Soricidae, or shrews, and anoles of family Iguanidae. These remains are likely to have been derived from pellets regurgitated by predatory birds (Figure 1). Of the faunal remains only two marine shells have been recovered that are clearly the result of human agency, and both are culturally modified—both worked shells have been drilled to create beads or tinklers. One of these marine shells is an extremely small genus *Marginella* sea snail and the other is a somewhat larger Olive snail from genus *Oliva*.

Figure 2. Epiphyses of rodent femora from Cuychen (photograph by Shawn Morton).

Materials and Methods

Two liters of matrix, including faunal remains, were recovered from each unit within Cuychen. All faunal materials analyzed came from Ledge 2 of Cuychen, stemming from Excavation Units 2, 5, 6, 7, 8, 9, 10, 11, 12, and 13 (see this volume Chapter 2, Helmke et al. 2019:Fig. 9). The faunal remains were floated, cleaned, and separated from floral materials (see this volume Chapter 6, Baller et al. 2019) and the dense layers of guano that coated and helped to preserve many of the remains. During flotation, many epiphyses from subadult long bones were disarticulated, potentially leading to an increase in our quantification of skeletal materials (Figure 2).

Faunal materials from Cuychen were examined by the authors at the Faunal Analysis Laboratory of the Department of Anthropology, Northern Arizona University. All materials were initially processed through flotation in Belize and prepared for export. Following export, any remaining dry-brush cleaning was completed, and all faunal remains were identified to skeletal element, portion of said element, body portion, such as exoskeleton, cranial, appendicular, axial, side, age—generally subadult or adult—sex, and modifications—either natural or

cultural. A conservative approach to taxonomic classification was undertaken. Using diagnostic anatomical features, measurements, and comparative collections allowed for many accurate identifications; however, these designations were made conservatively to avoid data inflation. If confidence in taxonomic identification was not absolute but the authors could identify some minor diagnostic features or measurements, specimens are compared in tabulations to a taxon by means of the abbreviation cf. (from the Latin *confer*/*conferatur*). When specific taxonomic categories could not be attained, skeletal materials were classified to size class—small, medium, or large (and gradations therein) following David Pendergast (1971:78).

To begin a zooarchaeological analysis, researchers often quantify materials with several standard measures. The most fundamental unit of quantitative analysis, number of identified specimens (NISP), is defined as the total count of individual specimens (Lyman 2008). For this analysis, number of identified specimens denotes to skeletal element or body portion (appendicular, axial, cranial) and taxon. Additional measures, including quantification of minimum number of elements (MNE), to assist with establishing minimum number of individuals (MNI), are also provided.

Minimum number of elements (MNE) is used to assess the number of specimens for each specific element examined. Accordingly, this measure is used to identify patterns in skeletal element completeness. These quantitative measures will be MNEpr, minimum number of elements proximal portion; MNEds for distal portion elements; MNEsh for shaft portion; and finally, any complete bones are counted as to constituent element as one proximal, one shaft, and one distal portion. Further, several ratios are assessed using the MNE portions to illustrate differential destruction between the specific elements and between specific portions (Lyman 1994:102-104). Identifying differential destruction to skeletal elements assists with determining taphonomic patterns useful in differentiating cultural versus natural processes influencing the preservation of the assemblage and the depositional nature or site formation processes in the cave.

The last quantitative measure used for this collection is minimum number of animal units (MAU), which accounts for the elements in a collection (Lyman 1994:104-105). The formula for MAU is MNE_x/number of $times_n$ occurs in one skeleton (Binford 1981:51; Lyman

1994:104-105). Finally, %MAU will be assessed for the collection using the entire collection and then MNE portion values. %MAU is found by taking MAU × 100 and dividing it by the maximum MAU value (Binford 1981:51; Lyman 1994:104-105). Standardizing the MAU allows researchers to identify the most represented skeletal element, and in our analysis the particular portion of said element, in the assemblage to further discover taphonomic patterns.

Finally, analyzing patterns observed in natural or cultural taphonomic features or modifications and the importance of particular animals to the ancient Maya is further considered. Taphonomic research is expansive, as it covers many fields including archaeology, paleontology, botany, and paleoanthropology (Behrensmeyer and Kidwell 1985; Marshall 1989). The historical building of taphonomic research was initiated with the definition proposed by Efremov (1940:93), in which taphonomy was the "science of the laws of embedding." In Latin, *taphos* is defined as "burial" and *nomos* is "law" (Shipman 1981). Olson (1980:5) and Shipman (1981:6) suggest that taphonomy encompasses all factors included in the transition of organisms from the biosphere to the lithosphere. Lawrence (1968) refined Efremov's more simplistic definition by emphasizing the recognition and evaluation of biases in faunal assemblages. Behrensmeyer and Kidwell (1985) further refined the definition of taphonomy by including preservation processes and biases as forces that influence the recoverable information in a faunal assemblage.

When analyzing the faunal remains from an archaeological site, we are concerned with removing the overarching taphonomic biases that lead to misinterpreting data as culturally significant. These biases can be caused through natural and cultural agents that each leave traces indicative of the processes involved. Below we evaluate the natural and cultural processes present at Cuychen.

Results

The faunal assemblage of Cuychen has an NISP of 1,968 (Table 1) with the majority of the remains resulting from natural causes. All of the remains present from each sample taken were from small size classes in all of the taxonomic categories present, with most of the remains

Taxonomic Category	Common Name	NISP	% Faunal Remains
Order: Anura	Frogs and Toads	17	0.86%
Order: cf. Anura	cf. Frogs and Toads	4	0.20%
Class: Aves	Birds	50	2.54%
Order: cf. Piciformes	cf. Woodpeckers, etc.	1	0.05%
Order: cf. Strigriformes	cf. Owls	1	0.05%
Family: cf. Paridae	cf. Tits, Chickadees, etc.	1	0.05%
Class: cf. Aves	cf. Birds	2	0.10%
Class: Reptilia	Reptiles	1	0.05%
Order: Squamata	Lizards and Snakes	4	0.20%
Family: cf. Iguanidae	cf. Iguanas, Anoles, etc.	1	0.05%
cf. *Anolis* sp.	cf. Anoles	2	0.10%
Class: cf. Reptilia	cf. Reptiles	1	0.05%
Family: cf. Squamata	cf. Lizards and Snakes	1	0.05%
Order: Chiroptera	Bats	1	0.05%
Order: cf. Chiroptera	cf. Bats	1	0.05%
Order: cf. Soricomorpha	cf. Shrews, Moles, etc.	1	0.05%
Family: cf. Soricidae	cf. Shrews	1	0.05%
Cryptotis	Least Shrews	10	0.51%
cf. *Cryptotis* sp.	cf. Least Shrew	3	0.15%
Order: Rodentia	Rodents	41	2.08%
Family: Cricetidae	New World Mice, Rats, Voles, etc.	416	21.14%
Family: cf. Cricetidae	cf. New World Mice, Rats, Voles, etc.	1195	60.72%
cf. *Sigmodon hispidus*	cf. Hispid Cotton Rat	36	1.83%
Family: Heteromyidae	Pocket Mice, Spiny Pocket Mice, Kangaroo Rats & Mice	1	0.05%
Family: cf. Heteromyidae	cf. Pocket Mice, Spiny Pocket Mice, Kangaroo Rats & Mice	1	0.05%
cf. *Heteromys* sp.	Spiny Pocket Mouse	1	0.05%
Family: Sciuridae	Squirrels, Chipmunks, etc.	1	0.05%
Order: cf. Rodentia	cf. Rodents	156	7.93%
Class: Gastropoda	Snails and Slugs	3	0.15%
Carychium sp.	Carychium Land Snails	12	0.61%
Prunum apicinum	Marginella Shell	1	0.05%
Oliva sp.	Olive Shell	1	0.05%
Total		**1968**	**100.00%**

Table 1. Number of identified specimens (NISP) from the Cuychen assemblage.

from microvertebrates. Two remains were culturally modified, an *Oliva* sp. tinkler and a margin shell bead. The other 1,966 remains consisted of intrusive deposits of rodent, frog, reptile, and bird, most likely accumulated over hundreds of years through raptorial predation. Since the materials have undergone floatation and had been influenced by post-depositional factors, evidence of raptorial behaviors are evident through patterns in skeletal preservation. Additionally, several egg shell fragments and a few chitinous insect parts are intermixed in the assemblage, but are not further analyzed here.

Approximately 94% of the faunal sample are rodents, with 83.7% of these rodent remains from small mice and rats in the family Cricetidae. Of these, the hispid cotton rat (*Sigmodon hispidus)* is one of the few easily identifiable. A lack of a regional rodent comparative collection made species identification conservative; however, it can be argued that the majority of the animals preyed upon by the raptorial birds present in the cave were New World rats and mice.

Outside of rodents, bats and shrews were the only other two mammal species present in the sample and each represented by less than a percent. At least 0.8% of the remains came from one of the two species of small-eared shrews or closely following the shrew species found in Belize. Additionally, 0.1% of the remains were identifiable to closely following one of the numerous bat species in Belize (Kricher 1989). These were both identifiable through cranial elements, with a few shrew appendicular elements present.

Non-mammal vertebrae remains made up 4.4% of the total NISP. Of these, 2.8% of the remains were from indeterminate small size class Aves. Approximately 1.1% consisted of small size class Anura, frogs and toads. Reptiles had an NISP of 0.5% of the sample. Since intrusive remains were analyzed, landsnails were also included and made up 0.8% of the total NISP, with 0.6% from *Carychium* species. The marine shell artifacts present made up 0.1% of the total NISP.

MNI was determined based on the maximum number of elements that could be identified as to side (MNE) of a given taxonomic group (Table 2). For class Aves, MNI was three, based on three left tibiotarsi and three left carpometacarpi. For class Amphibia, MNI was two, based on two left radioulni. Class Reptilia had an MNI of one based on all axial, appendicular,

Taxonomic Category	MNI
Class: Aves	3
Class: Amphibia/Order: Anura	2
Class: Reptilia	1
Class: Mammalia/Order: Chiroptera	1
Class: Mammalia/Order: Soricomorpha	2
Class: Mammalia/Order: Rodentia (cranial)	38
Class: Mammalia/Order: Rodentia (appendicular)	72
Class: Gastropoda/Genus: *Carychium*	12
Class: Gastropoda/*Prunum apicinum*	1
Class: Gastropoda/Genus: *Oliva*	1

Table 2. Minimum number of individual (MNI) mammals from the Cuychen assemblage.

and cranial elements present. Class Mammalia was further broken down to orders: Chiroptera, Soricomorpha, and Rodentia. Order Chiropetera has an MNI of one based on the presence of a right dentary. Order Soricomorpha has an MNI of two based on the presence of two left femora, two right dentaries, and two mostly complete rostrums. Order Rodentia has the largest MNI of 72 based on right femora present.

Invertebrate remains were broken down to taxon and an MNI was determined for identified marine and land molluscs. The marine molluscs include *Oliva* sp. and *Prunum apicinum*, both with an MNI of one. The terrestrial molluscs recovered include the *Carychium* species, with an MNI of 12 and a few indeterminate land snail fragments not from this species.

MAU and %MAU were useful for determining abundance of mammalian specimens represented, due to the infrequency of reptile, frog, and bird remains (Table 3). The results demonstrate that the proximal femur is the most frequent element and portion in the assemblage, which is discussed in more detail below. Complete humeri also rank as one of the more frequent elements in the assemblage, with other long bones following behind. Outside of appendicular materials significantly fewer axial elements are present.

Skeletal Element	MNE Portion	# in Skeleton	MAU	%MAU
Humerus	Proximal	2	23.5	46.5
Humerus	Distal	2	38.5	76.2
Humerus	Shaft	2	34.5	68.3
Femur	Proximal	2	50.5	100.0
Femur	Distal	2	34.5	68.3
Femur	Shaft	2	31.0	61.4
Tibia	Proximal	2	8.5	16.8
Tibia	Distal	2	15.0	29.7
Tibia	Shaft Proximal	2	34.0	67.3
Ulna	Distal	2	20.0	39.6
Ulna	Shaft Proximal	2	15.0	29.7
Ulna	Distal	2	17.0	33.7
Radius	Shaft Proximal	2	18.0	35.6
Radius	Distal	2	16.0	31.7

Table 3. Minimum animal units (MAU) and %MAU for Cuychen assemblage, according to Class: Mammalia.

Most of the remains were relatively complete and fragmentation was minimal. It is argued that the assemblage was very likely created by owls due to their dietary patterns, where prey is swallowed whole, and bones, fur, and other undigested materials are later regurgitated in a pellet form leaving many of the bones intact with little or no digestive damage evident. The digestive damage that commonly appears on elements linked to owl predation involves a form of pitting along the distal and proximal ends of appendicular elements. This intrusive digestion damage is common across predatory birds; however, the heavier digestion damage, which leaves traces similar to weathering throughout the elements, was lacking entirely from the sample.

Cultural Taphonomy

Zooarchaeological analysis consists of identifying taphonomic markers/traces left on faunal remains that can indicate the taphonomic agents involved. This includes identifying certain features on bone such as cutmarks, burning, as well as manufacturing marks brought about during the production of bone tools or personal adornments that are distinguishable from naturally caused effects. At Cuychen, two worked shells were recovered. Other cultural modifications are completely absent from the remainder of the assemblage.

To evaluate whether bone has been modified, we must consider the processes that create bone artifacts. Typically, bone artifacts are manufactured with the removal of the proximal and/or distal epiphyses from long bones as the first step (Emery 2008, 2009). This removal can be done through a number of methods including the use of string, lithics, or other cutting technologies. Once the proximal and distal ends are removed the bone can be modified to form a variety of artifacts including awls, rasps, tubes, needles, and hairpins (e.g., Moholy-Nagy 2003). Human modifications to bone often leave distinctive marks on the bone that can help infer its purpose. For instance, bone needles and awls often have use-wear on the tips that can indicate the intended purpose behind the artifact.

At Cuychen, the only faunal remains that had any modifications brought about by human agency were marine shells, which had been drilled into a bead as well as spire-lopped and sawn into a tinkler. These include a common marginella (*Prunum apicinum*) shell and an olive shell (*Oliva* sp.) (Figures 3–5). Use wear can be seen along part of a drilled perforation through the common marginella shell bead, through which it was suspended on a string or sewn into clothing, as personal adornment. This was identified through SEM, which we discuss further below.

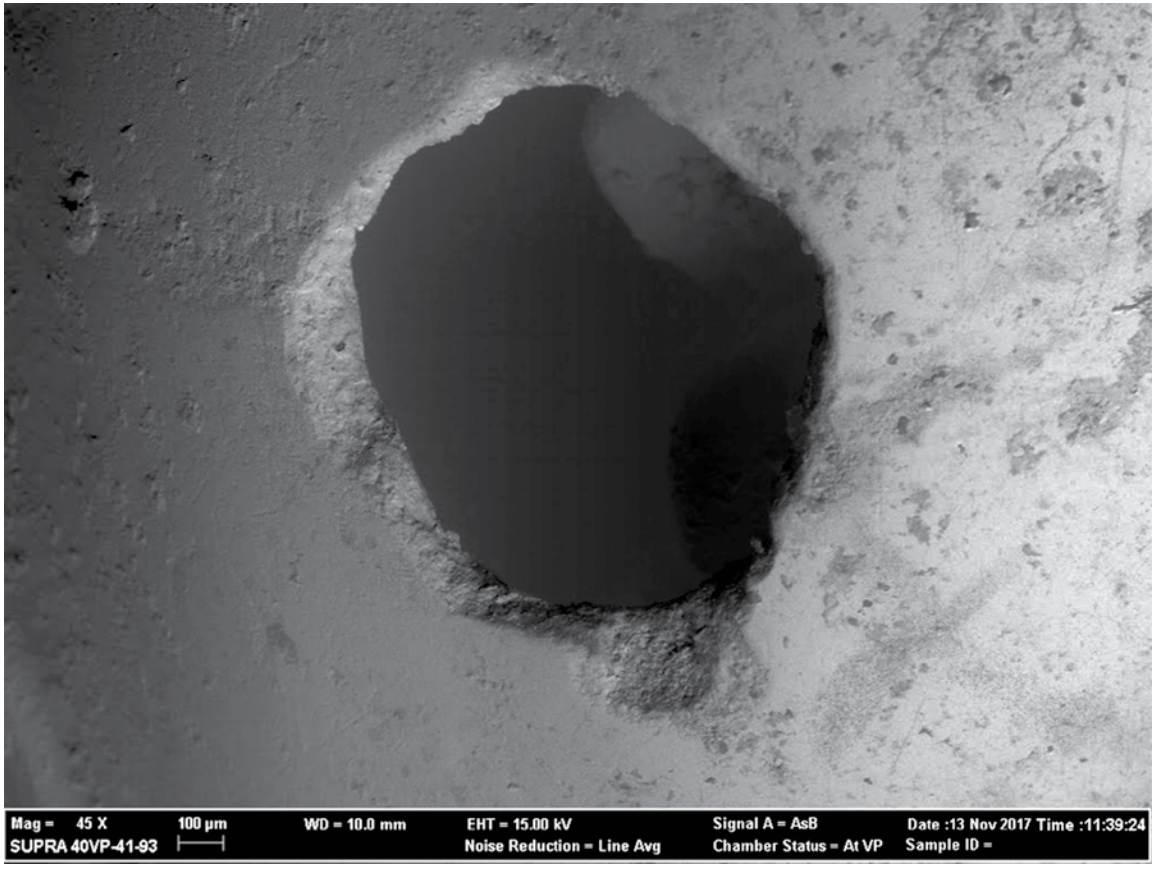


Figure 3. SEM image of perforation on the worked marine shell bead, *Prunum apicinum*.

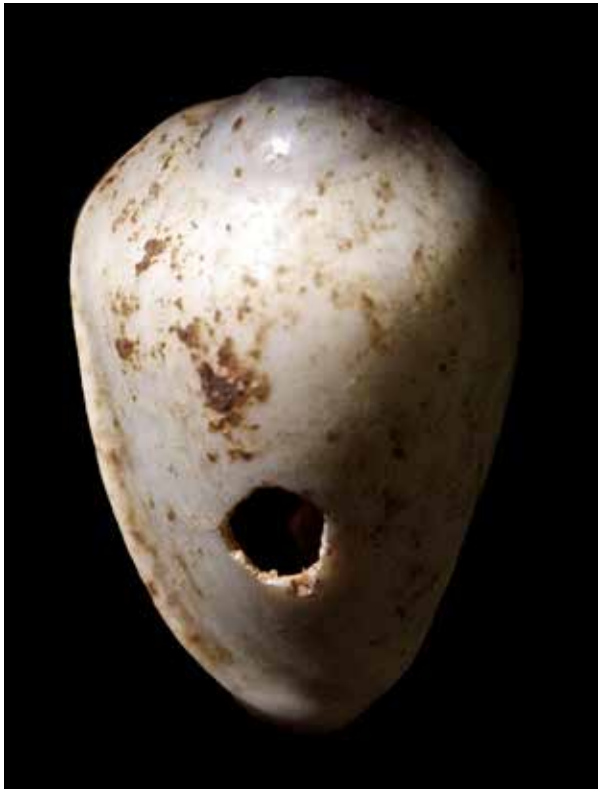


Figure 4. Worked marine shell bead, *Prunum apicinum*. This shell measures 8.7 mm in length (photograph by Shawn Morton).

Figure 5. Worked marine shell tinkler, *Oliva* sp. (photograph by Christophe Helmke).

Natural Taphonomy

Natural taphonomy consists of traces that impact bones throughout their life history through naturally occurring factors. These range from forest fires to the root etching that occurs through the acidity of plant roots present near and around bones. The unique location and physical setting of Cuychen has limited the number of natural processes that are likely to impact the assemblage as well as the agents involved with the accumulations.

Coprocoenosis is a term used to describe faunal assemblages that occur through the accumulation of scats and pellets (Lyman 1994). Pellets are created through the regurgitation of undigested remains, with the amount of bones present in the pellet ranging from species to species. Birds of prey are typically identified by the size and shape of pellets and based on the environmental locations where they are found, such as in caves, forests, and swamps (Andrews 1990:27). Owls tend to be one of the primary agents that lead to bone accumulations in caves because their pellets tend to preserve an abundance of the prey's bones, whereas diurnal predatory birds such as kestrels tend to have relatively little bone in their accumulations (Andrews 1990:38). Although the identification of predatory birds through bone accumulations in pellets is possible, dietary research in the neotropics, including Belize, is limited. A study on the dietary patterns of barn owls in northern Belize illustrated a preference for hispid cotton rats, with a few other Murids, Amphibians, and Aves interspersed (Platt et al. 2008).

Prey size can be another indicator of the predator involved with the accumulation, although species composition in prey assemblages can be flawed, given that predators are often opportunistic. That being said, a simple analysis of the size of species recovered and completeness of the faunal materials identified can assist with interpreting the predator responsible for the accumulation. At Cuychen, the majority of the bones present were

rodents, primarily mice and rats, with a small number of shrew, frog, lizard, and avian remains present. Additionally, the skeletal materials collected are mostly complete, which is more representative of owl digestion than what is observed in other predatory birds.

Digestion of remains can lead to corrosive damage, such as pitting, on prey bones and teeth, brought about by the stomach acids of the predatory bird. These modifications can vary between predators, but digestive damage can be used as an indicator of a specific bird of prey when other natural processes are accounted for and limited (Andrews 1990:64). Digestion damage can be observed on molars and incisors of rodents as well and used to identify different predators, especially with larger birds of prey creating more significant damage to the enamel. As for postcranial damage, there are two general types. Intrusive digestion occurs mainly along the articular ends of long bones. The second type results in damage to the bones similar to climatic weathering and also leads to the rounding of skeletal edges (Andrews 1990:79). These can be identified using a scanning electron microscope (SEM), which offers a closeup of the damage caused to the elements (discussed below). The most common elements in Cuychen with intrusive digestive damage are the proximal ends of femora, humeri, and the proximal end of tibiae. Otherwise the remains are relatively complete as discussed previously. This further supports the contention that the predators in question at Cuychen were owls.

There are thirteen different species of owls found in Belize, including the vermiculated screech-owl, the ferruginous and Central American pygmy-owls, the burrowing owl, the striped owl, the barn owl, the crested owl, the Stygian owl, the great horned owl, the spectacled owl, the black-and-white owl, the short-eared owl, and the mottled owl (see Jones 2010; Kettunen 2016) (Figure 6). Unfortunately, without applicable dietary studies on the pellets of each of these owls, it is difficult to formally identify what owls were involved with creating the assemblage.

Figure 6. Selection of owls identified in the humid neotropics of Belize (photographs © the National Audubon Society and Jorge Chinchilla).

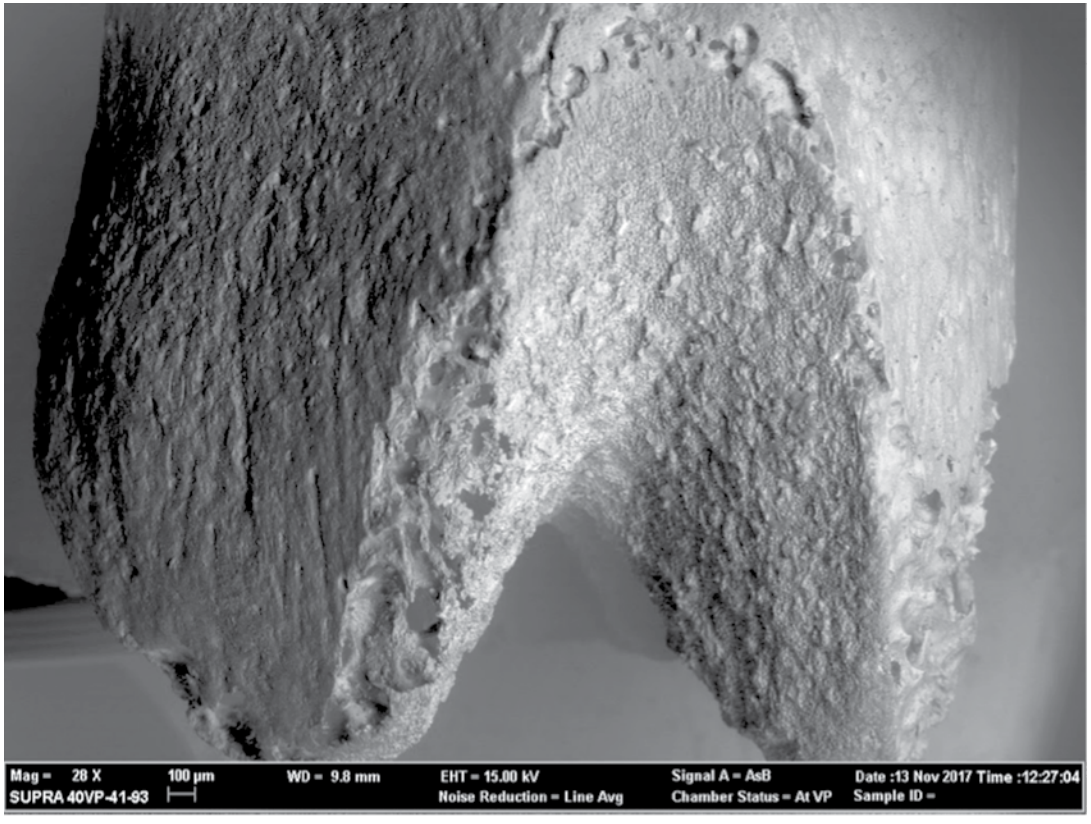


Figure 7. SEM image of distal end of femur from adult rodent.

Scanning Electron Microscopy

Besides basic digital photographs taken for this research, several images were obtained using a SEM. The SEM photographs were taken with the materials uncoated, with 22.6% brightness and 86.7% contrast. These images allowed us to reveal the intricate details of bird digestive processes and the cultural act of perforating a shell for stringing as a bead. For instance, the destructive nature of bird stomach acids leading to pitting of the cortical bone surface as well as removal and damage to the cancellous bone was identified on a series of rodent bones (Figures 7–10).

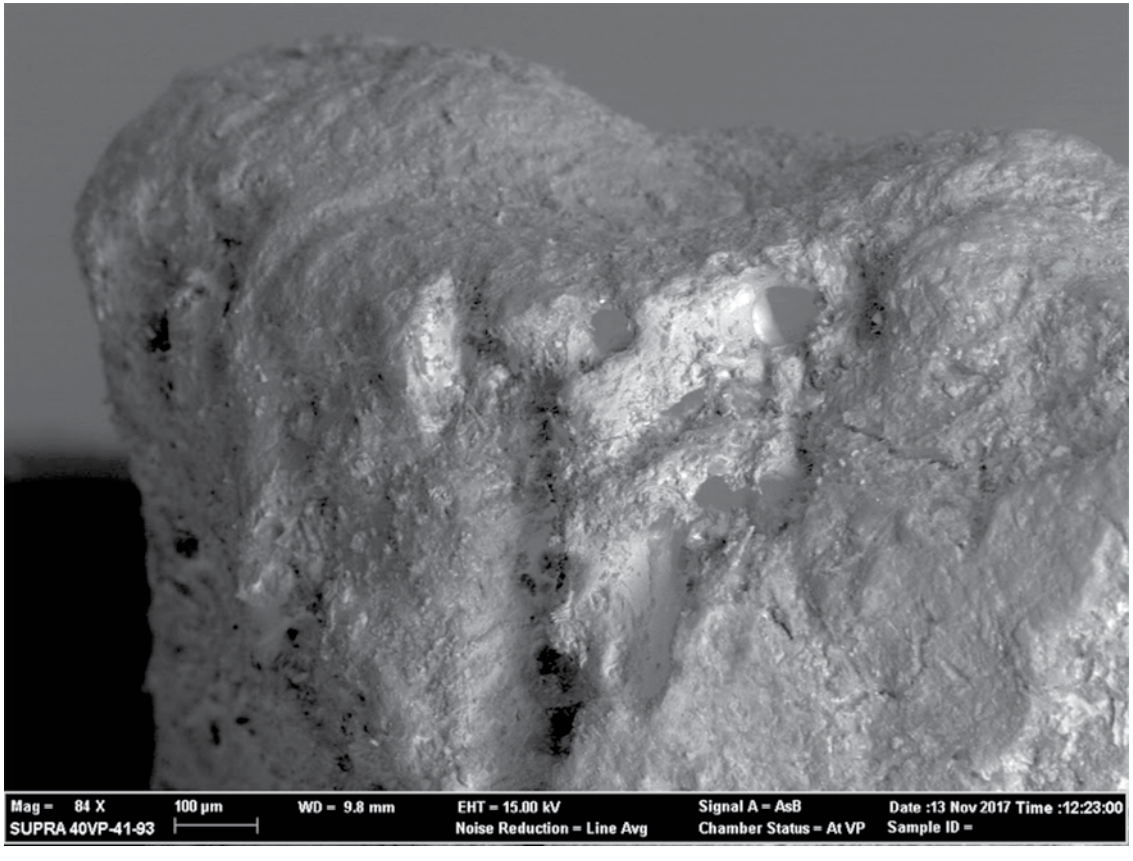


Figure 8. SEM image of proximal end of femur from adult rodent.

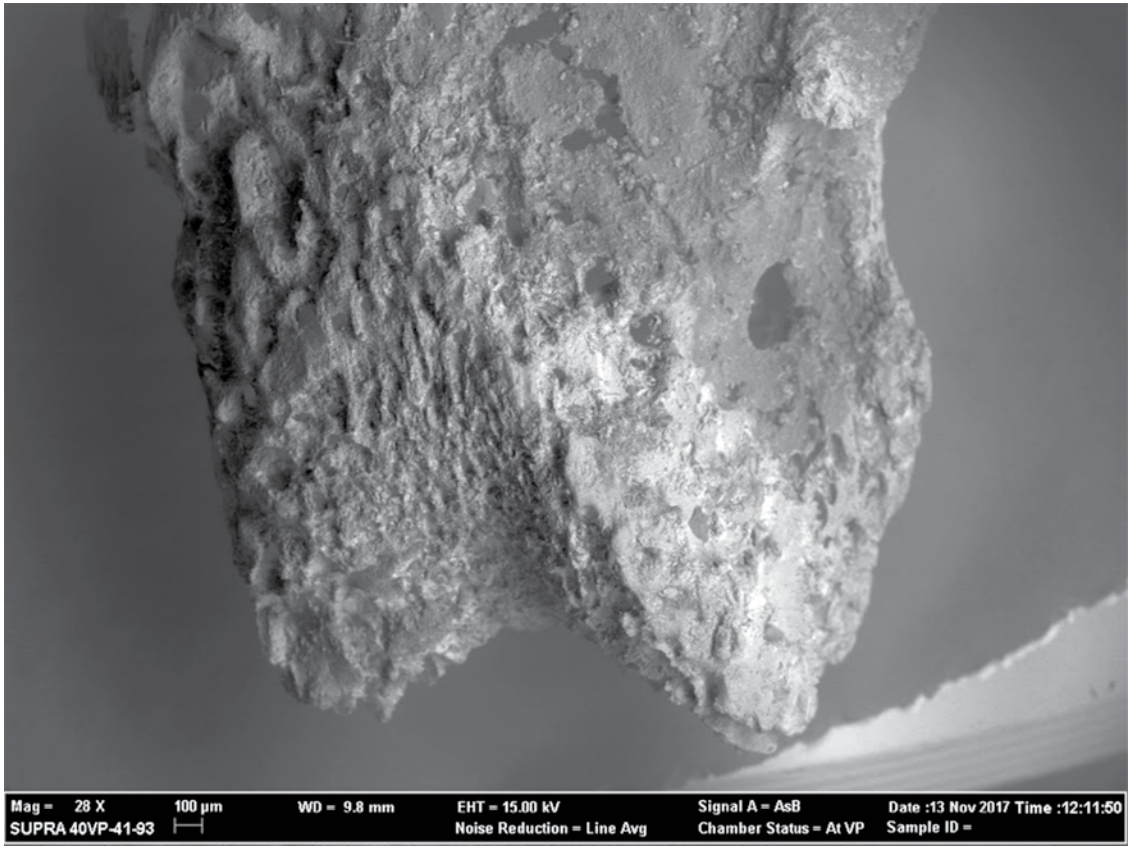


Figure 9. SEM image of long bone shaft fragment from subadult rodent.

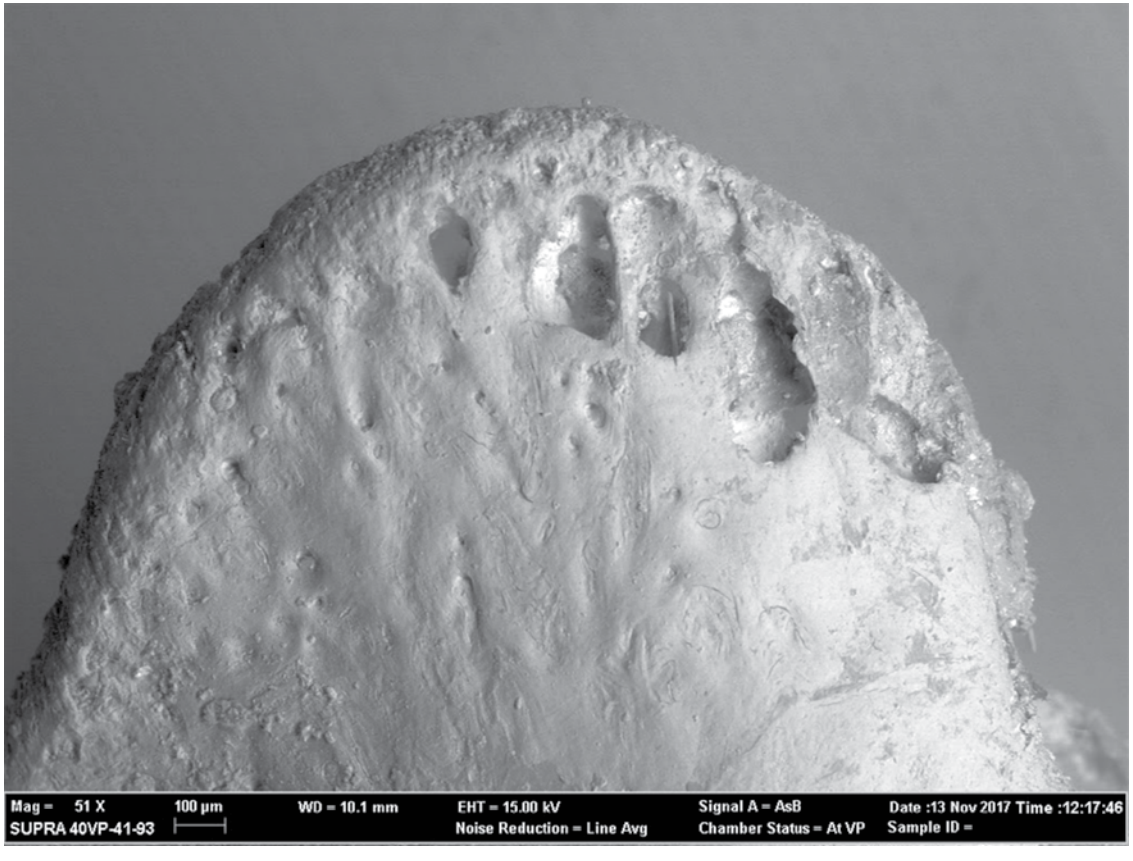


Figure 10. SEM image of long bone shaft fragment from subadult rodent.

Conclusion

The sample of faunal remains from Cuychen indicates that predatory birds were the primary agent in the accumulation of skeletal materials. While this suggests limited cultural activity involved with regard to the animal materials deposited, it is possible that the cave was significant to the ancient Maya due to the presence of predatory birds that roosted there. The predatory birds involved were owls based on the breakage patterns, which were minimal, the relative completeness of the skeletal elements present throughout the assemblage, and the preference for rodents and small mammals over lizards, aves, fish, and amphibians. Owls tend to hunt small rodents and other mammals throughout the night, and consume significantly less reptiles, amphibians, and other birds, than do diurnal raptors, such as osprey, falcons, and hawks. As previously stated, research on neotropical owls is minimal, but some dietary patterns between nocturnal and diurnal raptors throughout the forests of the Peten support our identification of owls as the main agent for accumulation at Cuychen (Whitacre and Burnham 2012).

Owls have been depicted as messengers from the underworld in a variety of mythic accounts, most notably in the *Popol Vuh* (Christenson 2003), and have been found within ritual caches dating to the Late Classic at Chichen Itza and Copan (Pohl 1994; Kettunen 2016). As well, supernatural owls figure prominently in ancient Maya conceptions of spirit companions and as ghoulish *wahy* or co-essences (Grube and Nahm 1994; Helmke and Nielsen 2009). The symbolic roles owls played within ancient Maya ideology (see Kettunen 2016) may have given a sense of more explicit or supplemental importance to Cuychen and possibly served as a point of access to some of the owl species in the Macal River Valley. While the fauna recovered from the cave were naturally deposited, that the site was a roost primarily for owls today is of interest, especially given the length of time that owls employed Cuychen for nesting.

Future research on the assemblage, particularly with inclusion of a larger regional comparative collection, would improve taxonomic identifications and be helpful for identifying the predatory birds present in the cave. Shifts in predators roosting in the

cave over extended lengths of time are possible and necessitate thorough ecological studies on the diets of owls and other raptors in this region. While raptors had abandoned the cave prior to the excavations of Cuychen, it is possible that a basic game camera could be used to identify any predatory birds that continue to inhabit the cave today.

Acknowledgments

We would like to thank Norbert Stanchly and Rafael Guerra for exporting the faunal materials from Belize to Northern Arizona University for our analysis. We also thank Aubrey Funke from the Northern Arizona University, Imaging and Histology Core Facility (NSF DBI:1229740) for assisting us with the production of the SEM images provided in this chapter. Thanks to Shawn Morton for securing photographs of some of the faunal remains. Finally, we thank the archaeologists who excavated Cuychen and Christophe Helmke for inviting us to submit this chapter to the volume.

Chapter 6

Analysis of Archaeobotanical Samples from Cuychen

Kendall Baller, Marcus Lorang, Christopher Schwartz, and Christopher Morehart

This brief report presents the results of archaeobotanical analysis of a series of botanical samples collected from Cuychen, Belize. Cuychen is an unlooted Maya cave site in the Macal Valley of western Belize excavated by Christophe Helmke, Shawn Morton, and members of the Belize Valley Archaeological Reconnaissance (BVAR) project (see this volume Chapter 2, Helmke et al. 2019). Ceramic dating suggests usage of Cuychen occurred in multiple phases across the Classic period. Our analysis finds little evidence that the botanical data were deposited via human activity. With the exception of small fragments of pine (*Pinus* sp.) charcoal, the botanical material appears to have been deposited naturally, most likely by bats.

Methods

One-liter soil samples were collected from each discrete context excavated at Cuychen. In all, thirteen such samples were recovered from the excavation units on Ledge 2, with twelve yielding light fractions, of which two were sterile in terms of archaeobotanical remains. Samples were manually floated in Belize, and the light fractions were processed

Figure 1. The endemic pine species that predominate in the northern reaches of the Maya Mountains give the the Mountain Pine Ridge its name and were the closest source for the procurement of pinewood in the Classic period (photograph by Christophe Helmke).

ID Number	Provenience	Plant	Part	Quantity	Weight	Comments
10001-001	Ledge 2, Unit 9, Level 1, Lot 10	*Passiflora* sp.	Seeds	10	0.06	
10001-002	Ledge 2, Unit 9, Level 1, Lot 10	*Tabebuia* sp.	Seeds	2	<0.01	
10001-003	Ledge 2, Unit 9, Level 1, Lot 10	*Spondias* sp.	Stone	4	0.01	Fragments
10001-004	Ledge 2, Unit 9, Level 1, Lot 10	*Ficus* sp.	Seeds	3	<0.01	Fragments
10002-001	Ledge 2, Unit 2, Level 1, Lot 11	Unknown	Unknown	30	0.41	Unknown organic fragments
10002-002	Ledge 2, Unit 2, Level 1, Lot 11	*Spondias* sp.	Stone	21	0.82	Fragments
10002-003	Ledge 2, Unit 2, Level 1, Lot 11	*Pinus* sp.	Charcoal	8	0.04	Fragments
10002-004	Ledge 2, Unit 2, Level 1, Lot 11	*Passiflora* sp.	Seeds	22	0.05	
10002-005	Ledge 2, Unit 2, Level 1, Lot 11	*Cecropia peltata*	Seeds	2	<0.01	
10002-006	Ledge 2, Unit 2, Level 1, Lot 11	*Piper* sp.	Seeds	3	<0.01	
10003-001	Ledge 2, Unit 2, Level 1, Lot 11	*Passiflora* sp.	Seeds	2	<0.01	
10003-002	Ledge 2, Unit 2, Level 1, Lot 11	*Vitis tiliifolia*	Seeds	1	<0.01	
10004-001	Ledge 2, Unit 13, Level 1, Lot 14	*Passiflora* sp.	Seeds	42	0.09	
10004-002	Ledge 2, Unit 13, Level 1, Lot 14	*Cecropia peltata*	Seeds	27	<0.01	
10004-003	Ledge 2, Unit 13, Level 1, Lot 14	*Ficus* sp.	Seeds	46	<0.01	
10004-004	Ledge 2, Unit 13, Level 1, Lot 14	*Pinus* sp.	Charcoal	2	<0.01	
10005	Ledge 2, Unit 12, Level 1, Vessel 6	Sterile	---	---	---	Only insect droppings
10006-001	Ledge 2, Unit 13, Level 1, Lot 13	*Passiflora* sp.	Seeds	2	<0.01	
10006-002	Ledge 2, Unit 13, Level 1, Lot 13	*Solanum* sp.	Seeds	2	<0.01	
10006-003	Ledge 2, Unit 13, Level 1, Lot 13	Unknown	Seed	1	<0.01	
10006-004	Ledge 2, Unit 13, Level 1, Lot 13	*Ficus* sp.	Seeds	2	<0.01	
10007-001	Ledge 2, SC2, Level 1	*Passiflora* sp.	Seed	1	<0.01	
10008-001	Ledge 2, Unit 7, Level 1, Lot 13	*Passiflora* sp.	Seed	12	0.01	
10009	Ledge 2, Unit 7, Level 1, Lot 13	Sterile	---	---	---	
10010-001	Ledge 2, Unit 2, Level 1, Lot 9	*Passiflora* sp.	Seeds	5	<0.01	
10011-001	Ledge 2, Unit 6, Level 1, Lot 7	*Passiflora* sp.	Seeds	6	1	
10012-001	Ledge 2, Unit 10, Level 1, Lot 11	*Passiflora* sp.	Seeds	6	<0.01	
10012-002	Ledge 2, Unit 10, Level 1, Lot 11	*Ficus* sp.	Seeds	1	<0.01	
10012-003	Ledge 2, Unit 10, Level 1, Lot 11	*Paspalum* sp.	Seed	1	<0.01	

Table 1. Tabulated archaeobotanical remains from Cuychen (<= less than)

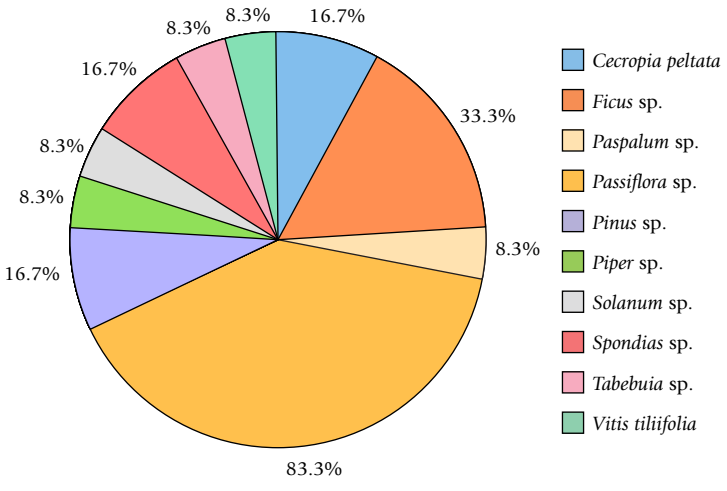


Figure 2. Ubiquity of taxa identified in the Cuychen samples.

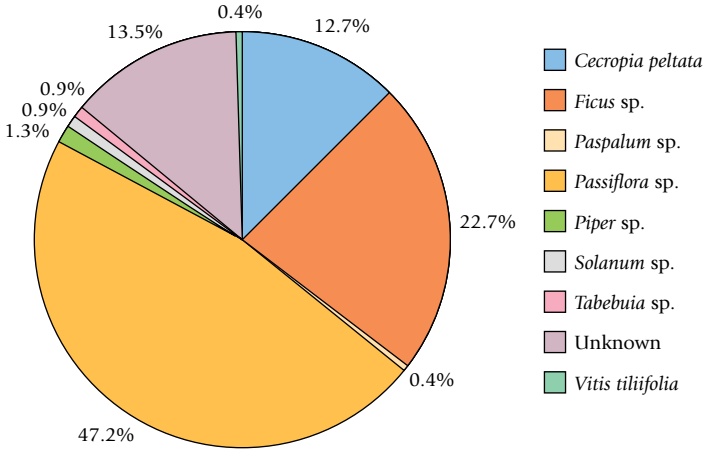


Figure 3. Taxon-specific proportion of seeds identified in the Cuychen samples.

at the School of Human Evolution and Social Change, Arizona State University. Analysts sorted each sample under low magnification using stereoscopes. Botanical remains were placed into taxonomic groups based on their morphological characteristics. Specimens were then compared with reference materials in, or with photographs from, reference manuals (e.g., Lentz and Dickau 2005). Items were counted, weighed, and entered into an Excel spreadsheet. Data were quantified using basic assessments of ubiquity and absolute frequencies. Samples were imaged using a high resolution, HP Laserscan G4050 digital scanner.

Results

We identified 10 taxa, including nine species of seeds and one species of wood charcoal. Table 1 lists results of our analysis. Figure 2 shows the distribution of taxa by ubiquity, or the percentage of presence across samples, and Figure 3 shows the distribution of taxa among all the seeds identified.

Passiflora sp. (passion fruit) was the most ubiquitous taxon found in our samples, which was found in all samples except two (83.3%) (Figure 4). We identified 108 *Passiflora* seeds, 47.2% of the total number of seeds

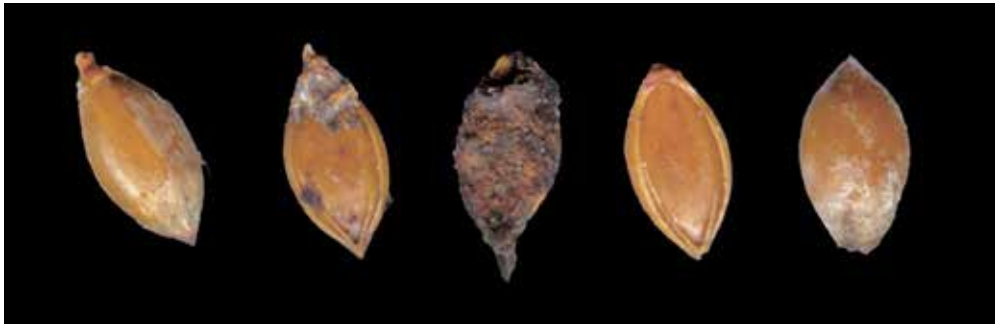
Figure 4. *Passiflora* sp. seeds from Cuychen (marks indicate 1 mm) and the flower of a *Passiflora* species (photograph by Tomas Castelazo).

identified. *Ficus* sp. (fig trees) seeds were the second most common taxon recovered, comprising 22.7% of total seed recovered. The lowest percentages of seeds recovered were *Paspalum* sp. (a grass species) (Figure 5) and *Vitis tiliifolia* (West Indian grape, or *water vine* in Belizean Kriol), each equaling 0.4% of the total assemblage. The rest of the seed taxa recovered consisted of *Cecropia peltata* (trumpet tree), *Piper* sp. (pepper vines), *Solanum* sp. (nightshades), and *Tabebuia* sp. (flowering plants in the family Bignoniaceae) (Figure 6).

Of the non-seed remains recovered, charcoal fragments from *Pinus* sp. were identified in two samples. The fragments are very small, under 2 mm in diameter. There were also fragments recovered from unknown organic material.

Discussion and Conclusion

The macrobotanical samples from Cuychen likely were deposited by bats or other non-human organisms inhabiting the cave. All the seeds are uncarbonized, signifying a recent origin. Specifically, the macrobotanical assemblage from these samples is consistent with data on Neotropical bat diets. Analyses of bat fecal samples have shown they consist of four categories: seeds, fruits, insects, and spiders (Bernard 2002:178, 182). Species of *Ficus*, *Passiflora*, *Piper*, *Solanum*, and *Cecropia* have been found by other researchers (Galindo-Gonzalez et al. 2000; Bernard 2002). Cave samples, in other words, would offer a useful vantage to examine the ecology of bats as seed dispersers. However, bats often do not



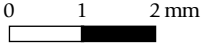


Figure 5. *Paspalum* sp. seeds from Cuychen (marks indicate 1 mm) and the perennial grass *Paspalum pectinatum* in the Mountain Pine Ridge (after Sylvester 2009:Fig. 19).

Figure 6. *Solanum* sp. seed from Cuychen (marks indicate 1 mm) and a *Solanum diphyllum* shrub bearing fruits (photograph by Charles T. Bryson).

consume the seeds of the fruits they eat because many seeds are too large to ingest (Bernard 2002:182). Consequently, analysis of fecal samples might produce incomplete assessments of bat diets. Nevertheless, these macroremains offer important data to understand the depositional nature of cave contexts, especially naturally deposited elements that should not be assigned cultural significance. Morehart (2011), for example, elsewhere observed that bats are responsible for introducing many seeds into archaeological contexts in Belize cave and open-air sites.

The only evidence of human activity is pine charcoal. Cuychen is located within a semi-deciduous forest dominated by hardwoods (dicotyledonous angiosperms). The Mountain Pine Ridge, located in the northern foothills of the Maya Mountains, is the closest contemporary source of pine (Figure 1). If the distribution of pine forests in the past was similar to today's, human agents would have had to physically introduce pine wood to the cave to be burned. The *Pinus* sp. is not unusual but is a common inclusion in the archaeological record of both surface and sub-surface sites. At the former these represent the remains of hearths, quotidian activities, and small-scale craft production (see Morehart and Helmke 2008), whereas in caves *Pinus* sp. charcoal derives from burnt offerings and torches (Morehart et al. 2005; Morehart 2011). The *Pinus* sp. fragments found at Cuychen confirm that the activities conducted there included burning, presumably as part of offerings, since the entirety of the site is exposed to daylight. There is no significant patterning with regards to the distribution of the two samples within Excavation Units 2 and 13, but what is surprising is how little charcoal was recovered considering how widely pinewood was used in ancient cave rituals in this region (Morehart et al. 2005).

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