

CACHING IT IN: LOCAL PATTERNS IN ANCIENT MAYA RITUAL CACHES
OF ECCENTRIC LITHICS WITHIN THE BELIZE VALLEY

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B.A. University of Oregon 2011

A Thesis
Submitted in Partial Fulfillment
of the Requirements for the Degree
of Master of Arts
in Anthropology

Northern Arizona University
May 2017

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ABSTRACT

CACHING IT IN: REGIONAL PATTERNS IN ANCIENT MAYA RITUAL CACHING OF ECCENTRIC LITHICS

KELSEY JEAN SULLIVAN

The ancient Maya expressed their highly developed and complex ideological and cosmological systems through diverse methods. The Maya conveyed these beliefs through a range of symbols and various ritual practices. Imagery on ceramics and other media, as well as written texts, also indicate that many cultural traditions, such as the Maya creation story and the myth of the hero twins, were shared across broad temporal and spatial landscapes (Sharer and Traxler 2006). The methods used to express these ideologies, however, differed from region to region, in contrast to other shared Pan-Maya ideologies and symbolic systems. This ritual variation is principally observed in burial practices, architectural styles, and settlement configuration (Ashmore and Sabloff 2002; Becker 2004; Pendergast 1990).

Ritual caching activity was a Pan-Lowland Maya tradition (Coe and Houston 2015). The ritual caching of objects, particularly offerings containing eccentric chert and obsidian lithics, was a common Lowland manifestation of the complex ideologies of the ancient Maya. The wide variety of eccentric forms suggest that these ritual implements further served to communicate elements of ancient Maya ideology through ritual expression. It appears, however, that distinct styles of eccentric caching practices existed from region to region. Regional variation is evident in the context of cache deposition, as well as in the forms of

eccentrics used in these caches. Factors influencing the production, morphology, and use of eccentric lithics may reflect differences in social function of cache, as well as differential access to raw materials or distinct collectives of craftspeople.

My thesis presents a methodological and theoretical framework, within which I will investigate ancient Maya ritual caching of chert and obsidian eccentrics. Specifically, I will focus on eccentric caches recovered from sites in the Upper Belize Valley, with an emphasis on data from the major polity of Xunantunich. I examine forms and contexts of eccentric lithic caches from these sites. Using these data, I explore the eccentric caching traditions of the major and minor centers in the Belize Valley. I then use this comparative data to compare local traditions with other regions within the Central and Southern Maya Lowlands to determine whether the caching of eccentrics can yield information on regional differences in ritual behavior.

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Acknowledgments

There are so many people who contributed to the production of this thesis, and my development as an archaeologist, who I would like to thank.

First, I would like to thank my entire committee, especially my Chair, Dr. Jaime J. Awe. Jaime, you have nurtured my interest in archaeology and guided me along the process of conducting research and writing my thesis and continue to help guide me on to the next phase of my archaeological career. Dr. Francis E. Smiley worked closely with me and imparted his expertise in lithic analysis and casting techniques, as well as Geographic Information System, and Dr. Frederick P. Lampe helped shape my theoretical interests and expanded my anthropological perspective. Many other professors contributed to my academic development while at Northern Arizona University including, but not limited to, Dr. Chrissina Burke, Dr. Sharon Moses, Dr. Lisa Hardy, Dr. Corina Kellner, and Dr. Britton Shepardson.

I want to thank my entire cohort for the wide range of support you have provided to me, including long days and nights in the lab, editorial help, and for generally caring for each other's academic and personal well-being. I would not have made it through this process without all of you.

To everyone on the Belize Valley Archaeological Project, especially Dr. Jaime J. Awe, Dr. Julie A. Hoggarth, Dr. Claire E. Ebert, and Myka Schwanke, as well as the other amazing staff, including but certainly not limited to Tia B. Watkins, Hannah Zanotto, Mike Biggie, G. Van Kollias, J. Britt Davis, Sydney Lonaker, and Diane Slocum: Thank you for your continued support of my research and archaeological development, as well as for all the fun times we have had over the years working in Belize together. In addition, countless students and Eduardo, Rob, Saul,

Jimcito, Jaime, Jose and all the other fabulous local collaborators from San Ignacio, San Jose Soccutz, and Benque Viejo del Carmen in Belize.

Thank you to former researchers from BVAR and other Belize Valley projects, who's work contributed to my thesis research, including Catharina Santasilia, Leann Du Menil, Dr. Gyles Iannone, Dr. Terry Powis, "Big Jim" Conlon, Norbert Stanchly, and Dr. Carolyn Audet.

To Douglas Tilden, thank you for the support throughout my research and your guidance through life always. To Gregory Allen and Shane Dvorak, thank you for excavating a beautiful unit, just in time for me to hop down and find a cache of eccentrics. One day, it'll be your turn.

I want to acknowledge the contributions that Dr. Nicholas Jew has made towards my archaeological career. Nick taught me a range of skills, helping to develop my fierce interest in lithic technologies from around the world, while working closely together at the University of Oregon. He continues to provide personal and professional guidance to me and we continue to collaborate on a range of archaeological projects. I'd also like to thank several additional colleagues I worked with during my time at the University of Oregon, including Dr. Jon Erlandson, Dr. Scott Fitzpatrick, Dr. Kristina Gill, and Amira Ainis all of whom contributed greatly to the beginning of my archaeological career by mentoring and teaching me a range of analytical techniques, as well as the ins and outs of academia.

To Lucas Martindale Johnson, thank you for always providing important insight into ancient Maya lithic technologies. For my thesis, you graciously offered to conduct the pXRF analysis of obsidian artifacts, adding important data to my research, for which I greatly thank you. Thank you, Shane M. Montgomery, for always listening, contributing ideas, and providing editorial help.

Finally, and most importantly, I would like to thank my wonderful family for their unconditional support throughout every facet of my life, especially during my time as a graduate student at Northern Arizona University. To my parents, Mike and Connie, and my brother Dan and his lovely partner, Elha, and my kitty Zadie, you are the best family I could ask for. Thank you for providing your endless love and support to me always.

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Dedicated to my parents, Mike and Connie

Chapter 1: Investigation of Ancient Maya Eccentric Caching

This thesis focuses on ritual the caching of chert and obsidian eccentrics, as practiced by the ancient Maya. *Caches* are deposits of materials within a special or ideological context and eccentric lithics are non-utilitarian chipped stone implements (Loten and Pendergast 1984). Ritual eccentrics come in a range of simple to elaborate forms, which demonstrate the application of wide range production styles and skill levels of the craftspeople who produced them. While fine Maya eccentrics are considered the apogee of world lithic traditions, such as ones recovered from Copán and Quiriguá, others are simple unifacially modified flakes or various types of production waste (Martindale Johnson 2016; Tilden et al. 2017).

This thesis investigates contextual distribution of eccentric caches, as well as eccentric form and production techniques, to ascertain cultural traditions within the Belize Valley region of Western Belize, with a particular emphasis on the center of Xunantunich. Archaeological evidence of eccentric caching at Xunantunich demonstrates an intensive ritual caching campaign, enacted in conjunction with the architectural florescence of the civic-ceremonial center in the Late Classic Period, between AD 600-670 (LeCount et al. 2002:41, Tilden et al. 2017).

Comparisons of the Belize Valley eccentric cache assemblage with extra-regional practices allow me to elucidate regional similarities and differences in this ritual tradition, allowing for inferences to be made about the function of eccentric caching at Xunantunich.

Eccentric Lithics

Eccentric lithics are enigmatic artifacts, which have long intrigued antiquarians and archaeologists, as they represent one of the finest lithic traditions in the history of stone tool use.

Recognized in the late 19th century, some of the earliest reported eccentrics “flints” were discovered in British Honduras (now known as Belize) and particularly in the Belize Valley site of Benque Viejo, which later became known as Xunantunich, Mayan for “Stone Woman” or “Maidan of the Rock” (Gann 1918; Joyce 1932). *Eccentric lithic* is a general term for a range of highly complex and diverse chipped-stone artifacts. Eccentrics are interpreted to have no utilitarian function, but served as ritual implements (Iannone 1993a; Iannone and Conlon 1993; Meadows 2001). While fine, distinctly-formed eccentrics are more commonly recognized, new research suggests that the Maya used a range of lithic material removed from the production sequence to cache in similar contexts (Martindale Johnson 2016).

General Research Questions and Methodological Approach

Through an integrative approach, I present a broad overview of eccentric caches excavated over the previous 100 years of research in the Belize Valley, as well as present a detailed discussion of recently discovered caches from my original field research, conducted during the 2016 field season under the auspices of the Xunantunich Archaeology and Conservation Project (XACP) and the Belize Valley Archaeological Reconnaissance Project (BVAR), with logistical support from BVAR and Northern Arizona University (NAU). In order to explore contextual elements of caches, I will examine the placement and contents of several caches to understand the range of variation in ritual behavior and to determine if local and regional patterns exist in the deposition of these caches in the Maya lowlands.

Although my title, “Caching it in,” appears to be a silly pun, I explore this topic from the perspective that the Maya were caching their collective history and ideology into the vaults of time, in an attempt to garner socio-political prestige through these caching rituals. Eccentric lithics

are one of many materials cached by the Maya, but these implements provide a unique look into Maya ideological expression. These rituals are evident across a broad temporal range in Mesoamerica, showing long-term continuity of behavior, through which elites expressed both a Pan-Maya and local collective ideology and identify. In addition, my thesis research has greater anthropological significance as past cultural lifeways and ideological practices are relevant to modern Maya populations. My research will contribute to the greater studies of ritual continuity and discontinuity between modern and ancient Maya groups.

Research Questions

The research I conducted in the 2016 field season, as a research staff member of the XACP and BVAR projects, in combination with an extensive literature review, addressed questions related to ritual behavior of the ancient Maya of Xunantunich. Results of this research provide an avenue to answering several research questions pertaining to the ancient Maya practice of caching eccentric lithics.

Research questions addressed in my thesis are:

1. Evidence of the caching of lithic eccentrics appears throughout the Southern Maya Lowlands. Overall, commonalities and differences exist in eccentric lithic forms and the contexts of caches within sites. Do caching practices of eccentric lithics in the Belize Valley demonstrate local homogeneity or irregularity in this ritual practice or in the forms of implements used in these caches?

2. Differences in morphology of lithic eccentrics may suggest ideological differences influencing the production and ritual use of eccentric lithics. Contextual differences in caches likely suggest that the act of depositing ritual implements served different social or ideological functions. Are intra-regional and inter-regional variations in eccentric lithic caching practices related to the contexts or contents of caches, or some other feature?

3. The Belize Valley is a geographically-restricted area with a network of medium-sized, proximally located political centers. What can be inferred about inter-site dynamics in the valley through the study of variations in the caching of eccentric lithics?

Chapter 2: Cultural and Environmental Background of the Ancient Maya

The Southern and Central Maya Lowlands

Geographical and Environmental Background. Modern archaeological research on the prehistory of Mesoamerica and the ancient Maya has been ongoing for over 100 years (Coe and Houston 2015; Gann 1918,1925; Sharer and Traxler 2006). The Maya region comprises modern Guatemala, Belize, southern Mexico and the Yucatan Peninsula, as well as El Salvador and northwestern Honduras (Figure 1).

Archaeologists divide the Maya area into several geographic and cultural regions: including the Guatemalan Highlands, the Maya Lowlands—Southern, Central, and Northern—and the Pacific Piedmont along the Pacific coast (Sharer and Traxler 2006). Extensive investigations over the last century on both elite and commoner lifeways at archaeological sites in the Maya Lowlands have produced great insight into the vast temporal and spatial range and socio-political contexts within which the ancient Maya.

Several environmental zones comprise the Maya lowlands. The Northern Lowlands is comprised of the semi-arid Yucatan Peninsula, which lacks surface water. The rich sub-tropical forests of the Southern and Central Maya Lowlands provide a wealth of natural resources for both human populations and the diverse fauna that inhabit the area. The Lowlands include sites in the Petén District of Guatemala, as well as Belize, northern Honduras, and southern Campeche, a region which has several surficial rivers and lakes. The Maya Mountains provide a break in elevation between the low-lying jungles of Guatemala and the flat coastal plains of Belize (Awe 1992).



Figure 1. Map of the Maya area with major sites (Map by K. Sullivan).

The region boasts a variety of sources of important lithic resources, utilized by the ancient Maya to manufacture both utilitarian and ritual implements. Available lithic resources in the Maya region include, but are not limited to, limestone, cherts, chalcedonies, granite, slate, obsidian, jadeite, and pyrite (Awe 1992; Hruby et al. 2014; Sharer and Traxler 2006). These essential resources are restricted to specific geographic localities, necessitating the development of complex, long-distance trade networks in order to distribute raw materials throughout a broad region of sedentary populations (Coe and Houston 2016).

Architectural Background. Large Maya civic-ceremonial centers display a concentration of public and private architecture with a variety of functions (Ashmore and Sabloff 2002; Becker 2004). Ceremonial structures, administrative buildings, and elite residential complexes comprise the majority of architectural features identified within the “downtown” areas of these ancient centers. Residential settlement clusters, as well as agricultural fields and terraces, radiate outward from these central places (Awe et al. 2015).

The site cores of Maya centers provide considerable evidence of ritual activity in a variety of public and private ceremonial contexts, typically associated with elite populations (Ashmore and Sabloff 2002; Becker 2004). Ritual performances and caching practices within public spaces provide a means of cultural reproduction, as well as cosmological and ideological communication between members of the local population, as well as externally with other communities and regions (Chase and Chase 2010). Evidence of a high degree of homogeneity in ritual practices throughout the Maya Lowlands suggests commonalities in ideological beliefs between sites throughout the region.

Ancient Maya Chronology

Ceramic seriation and chronometric dating techniques, combined with epigraphic data, allow archaeologists to develop and refine the chronology of cultural development and socio-political transitions within the Maya region. Archaeologists assign diverse period names and date ranges to the history of the ancient Maya. Throughout this research, I adopt period designations presented by Sharer and Traxler (2006: Table 1), provided here in Table 1.

Limited evidence of Paleoindian and Archaic period occupation exist in the area, identified as a highly mobile population, includes human and megafauna remains, as well as lithic technologies, such as Fishtail and Lowe projectile points (Lohse et al. 2006).

Archaeologists generally attribute the development of distinct Maya culture to the Early Preclassic period, when sedentism, as well as agricultural and faunal domestication, developed between 2000-1000 BC (Sharer and Traxler 2006). Evidence of horticulture and the manipulations of flora species is present even earlier in the palenological record beginning at 3400 BC (Sharer and Traxler 2006). Substantial evidence of early settlements and civic-ceremonial centers in the Maya Lowlands appears in contexts associated with the Middle Preclassic period (Coe and Houston 2015; Sharer and Traxler 2006). By the Middle to Late Preclassic period, 1000 BC to AD 100, large centers, including El Mirador and Nakbé, began to develop throughout the Maya Lowlands.

Table 1. Chronology of Cultural Development in the Maya Region (after Sharer 2006: Table 2.2).

Period	Approximate Dates	Significant Cultural Developments
Paleoindian	12,000/20,000—8000 B.C.	Initial Settlement of the Americas
Archaic	8000—2000 B.C.	Settled Communities and Agriculture
Early Preclassic	2000—1000 B.C.	Initial Complex Societies, distinct Maya culture
Middle Preclassic	1000—400 B.C.	Growth in Socioeconomic Complexity
Late Preclassic	400 B.C.—A.D. 100	Initial States
Terminal Preclassic	A.D. 100—250	Decline and Transformation of States
Early Classic	A.D. 250—600	Expansion of Lowland States
Late Classic	A.D. 600—800	Apogee of Lowland States
Terminal Classic	A.D. 800—900/1100	Decline and Transformation of States
Postclassic	A.D. 900/1100—1500	Reformulation and Revival of States

The Early Classic period is associated with the widespread architectural florescence at sites throughout the Lowlands, as well as cultural developments such as hieroglyphic writing system, mathematics, and high-resolution astronomical calculations, as well as complex socio-political systems and a variety of high quality specialization craft industries (Coe and Houston 2015). The Late Classic Period (AD 600-800) was the pinnacle of ancient Maya High Culture. At this time, sites reached the apex of population density, the greatest period of architectural expansion and remodeling, intensive agricultural strategies, as well as a proliferation of carved monuments and ritual intensification.

The Terminal Classic Period, defined here as AD 800-1100, is more of a social transformation process than a specific time period. As the socio-political transformation coincided with the depopulation of centers in the Southern and Central Maya Lowlands, triggering changes in occupation patterns, use of space, ritual and mortuary practices, as well as demographic shifts.

At this time, sites in the Northern Maya Lowlands, such as Chichén Itza began to grow in prominence coinciding with the large population migration north into the Yucatan Peninsula. In the Postclassic period, major centers in the Southern and Central Maya Lowlands were largely depopulated, with more dispersed settlement in the lowlands (Hoggarth et al. 2014:1057). Large population centers at this period were located in the Northern Lowlands at sites such as Chichén Itza and Mayapán (Sharer and Traxler 2006).

The Upper Belize Valley

Geographical and Environmental Background. In the Upper Belize Valley of western Belize, major and minor centers comprised a network of interconnected, yet autonomous sites, located near three important river ways—the Macal, Mopan, and Belize Rivers (Figure 2) (Awe et al. 2015; Driver and Garber 2004). The Mopan River originates in the Maya Mountains, draining swamps in the Department of Petén, Guatemala into the Belize River and out to the Caribbean Sea (Awe 1992). The Macal River drains the central Maya Mountains, moving north from the Mountain Pine Ridge to the Belize Valley. The two rivers converge just north of the modern sister cities of San Ignacio and Santa Elena, joining together to become the Belize River. The Upper Belize Valley is located approximately 200 kilometers upriver from the coast (Awe 1992). The Belize River drainage links the Caribbean Sea to the Petén, which served as an important trade route for the ancient Maya.

The Upper Belize Valley is comprised of a variety of environmental zones, including flat alluvial plains and low-lying foothills that give way to the Maya Mountains. The area is ideal for agricultural production and natural resource exploitation. Due to seasonal flooding and water management tactics, such as ditched systems, the plains surrounding the Mopan and Belize Rivers

were highly productive agricultural zones for the ancient Maya (Ebert et al. 2016). Lithic resources are abundant in the valley due to the presence of the limestone foothills, rich in building materials and good quality cherts, useful in the production of utilitarian and ritual implements (Sullivan et al. 2015). Due to its position along these important riverine trade routes, the valley appears to have had regular access to regional resources such as granite, slate, and pyrite from the Maya Mountains to the south, as well as access to extra-regional resources, such as obsidian and jadeite, from the Guatemalan Highlands (Awe 1992; Ebert et al. 2015; Hoggarth 2012).

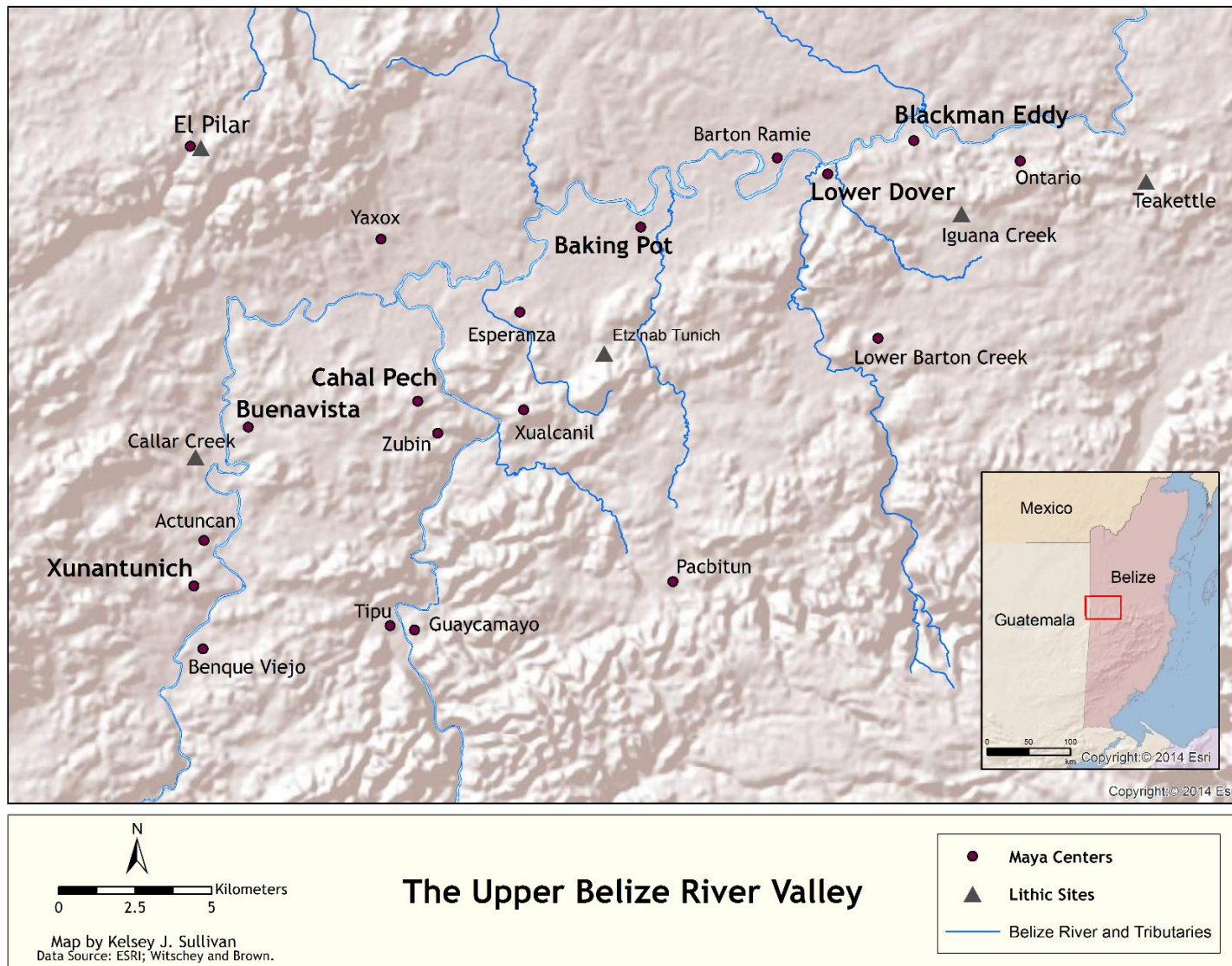


Figure 2. Map of the Upper Belize Valley with major centers bolded (map by K. Sullivan).

Cultural Chronology of the Belize Valley. Given the geographic and environmental setting, the Upper Belize Valley supported dense populations, with Middle Preclassic Period development at polities such as Xunantunich, Actuncan, and Buenavista del Cayo around 950 BC (Cap 2011:244), Cahal Pech around 1000 BC (Awe 1992:344), at Baking Pot within the Late Preclassic Period by at least 600 BC (Audet 2006:104; Hoggarth 2012:40), and Blackman Eddy earlier, with construction by 1200 BC (Yacubic 2006:9).

The architectural florescence of several sites, however, occurred in the Late Classic period, including the development of the hilltop civic-ceremonial plazas of Xunantunich between AD 600-670 (Audet 2006:90; Ashmore 2010:46; LeCount et al. 2002:41) and the emergence of sites, such as Lower Dover, which likely developed within the Middle to Late Classic Period (Guerra and Collins 2016:223-224; Petrozza 2015:19).

Major valley sites described above show long term settlement continuity, with evidence of occupation from the Middle Preclassic Period to the Late to Terminal Classic Periods. Baking Pot alone displays evidence of a much longer occupation, lasting into the Post Classic Period. Ongoing research at Baking Pot, however, suggests discontinuous occupation of the site, with the settlement hiatus in the Terminal Classic and Early Postclassic Periods (Hoggarth et al. 2014).

The Polity of Xunantunich. Xunantunich developed within the Middle Preclassic Period, becoming a major polity much later in the Late Classic Period within the Belize Valley. The Late Classic period civic-ceremonial center, known as Classic Xunantunich, is located on a modified hilltop, overlooking the Mopan River (Figure 3). The site is located approximately three kilometers north from the modern city of Benque Viejo, adjacent to the western border between Belize and Guatemala.

As stated above, the polity of Xunantunich had two major phases of development—the Middle Preclassic and the Late Classic periods. Within the Late Classic Period, substantial evidence of control of Xunantunich by the nearby major center of Naranjo exists (LeCount and Yaeger 2010). While extensive research has been conducted into the Late Classic iteration of the site, on-going research conducted by M. Kathryn Brown and Jason Yaeger under the Mopan Valley Archaeology Project (MVAP) and the Mopan Valley Preclassic Project (MVPP) from the University of Texas, San Antonio, seeks to better understand the earlier phase of the site, located downhill from the later civic-ceremonial center. New research, however, continues to reveal significant features of the Late Classic elite residents of the site (Tilden et al. 2017).

Discussion

The Belize Valley is a distinct geographically-isolated region, which displays regional architectural and cultural traditions, making it an ideal area to investigate of local patterns in ritual behavior. The valley offers superlative study area for a regional study of ritual behavior, as sites in the valley have been extensively researched for over 100 years. The small geographic area supported many major and minor centers, fairly evenly distributed across the region. These sites likely vied for political superiority and prestige through a range of methods including performative ritual acts with implements such as eccentric lithics.

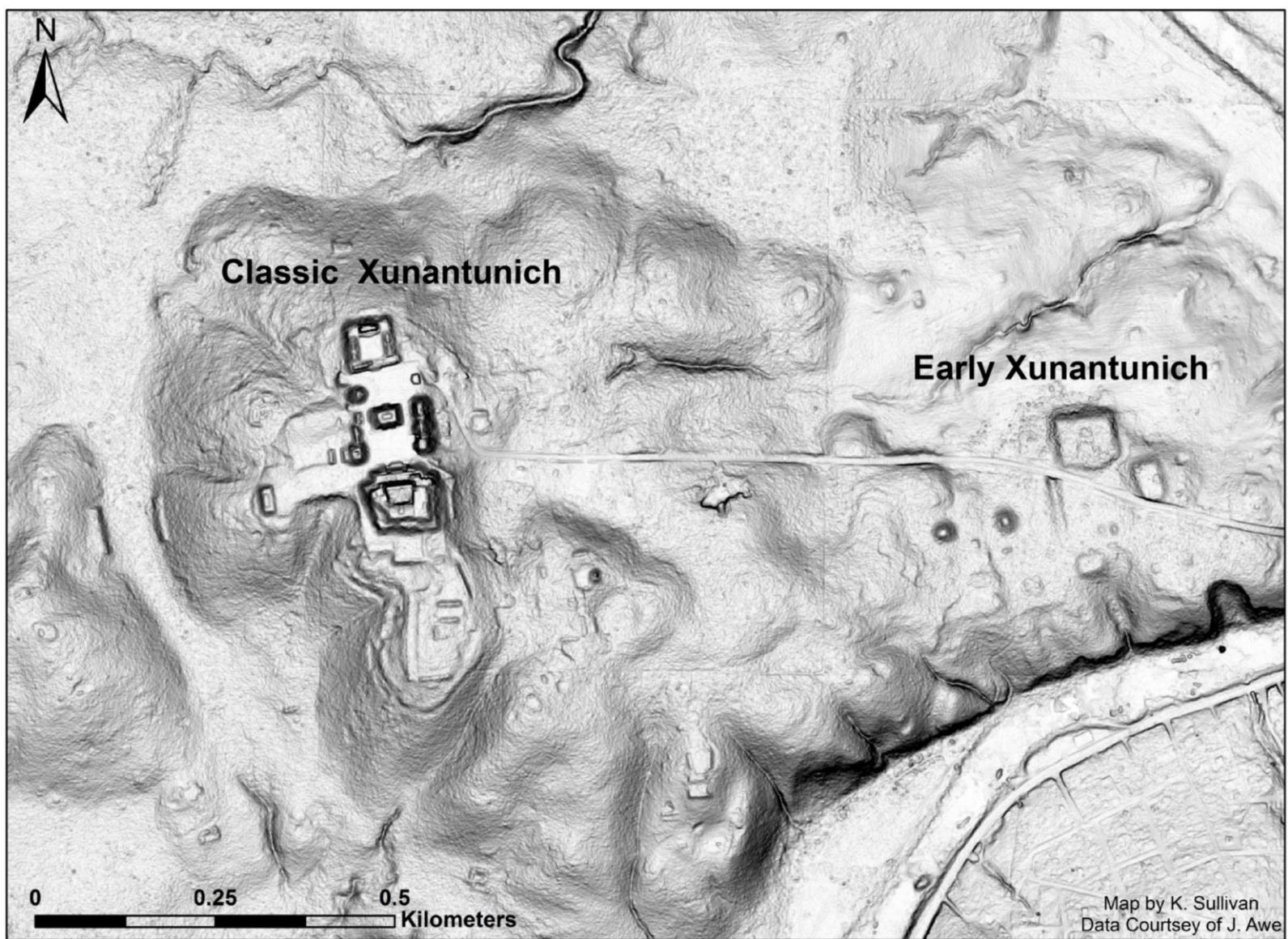


Figure 3. Slop map of greater Xunantunich, with the two site cores labeled (Map by K. Sullivan, data courtesy of J. Awe and BVAR).

Ancient Maya Ideology and Cosmology Background

In order to explore cosmological connections and ideological expression embedded within archaeological evidence of ritual, it is important to lay the foundation of the Maya cosmological understanding of the world and examine how elements of these cosmological beliefs are expressed through ideological ritual communication. The concepts of *cosmology*, and *ideology* are integrated parts of how groups understand their position in the world, as well as establish essential features of a groups' acceptable actions and lifeways. In this thesis, I define *cosmology* as the beliefs individuals and groups hold about origins and nature of the universe and their position within it, while *ideology* represents a system of conscious and unconscious beliefs, which order action. Through ideological systems, individuals and groups express their cosmological and ontological perspectives through action.

Ancient Maya lifeways were intrinsically tied to their cosmological understanding of the world. The cosmology is the backbone of their socio-political and theistic ideologies, which come together to form a deeply ingrained social structure. The Maya cosmology is complex and divergent from Western notions of space. The Maya view the world as three integrated levels: The sky, or heavens, the earthly world, and the underworld, or *Xibalba*. The three levels rest of the back of a crocodile, which floats in the watery underworld. The earthly world is “flat and four-cornered,” each corner associated with a cardinal direction and color (Coe and Houston 2015:223). From the earthly world, there are 13 levels up to the heavens—six levels up, one central level, and six levels back down—and nine levels down into the underworld—four levels down, one central level, and four levels back up.

This view of the world is diffused into many aspects of Maya life and culture (Sharer and Traxler 2006:755). Architectural design of ancient Maya sites and buildings incorporate these

cosmological concepts as well as cardinal directionality. The importance of *Lak'kin*, or East, is evident in large triadic pyramidal structures (Coe and Stone 2005:125). Within and anterior to eastern structures, extensive archaeological evidence of ritual activity, likely public in nature, have been identified throughout the Central and Southern Maya Lowlands, including elite burials, concealed dedicatory caches, and displays of stone monuments, known as *stelae* (Awe et al. 2016).

The quadripartite, or four-sided, design is another important cosmologically related symbol often used to represent the earthly world (Figure 4). Quadripartite elements are featured in iconography and other imagery in many forms, including the Kan and Maltese crosses, which depicts a cross-shaped emblem with a dot in the middle and within annulet or negative space chert eccentrics (Garber and Awe 2009; Matthews and Garber 2004).

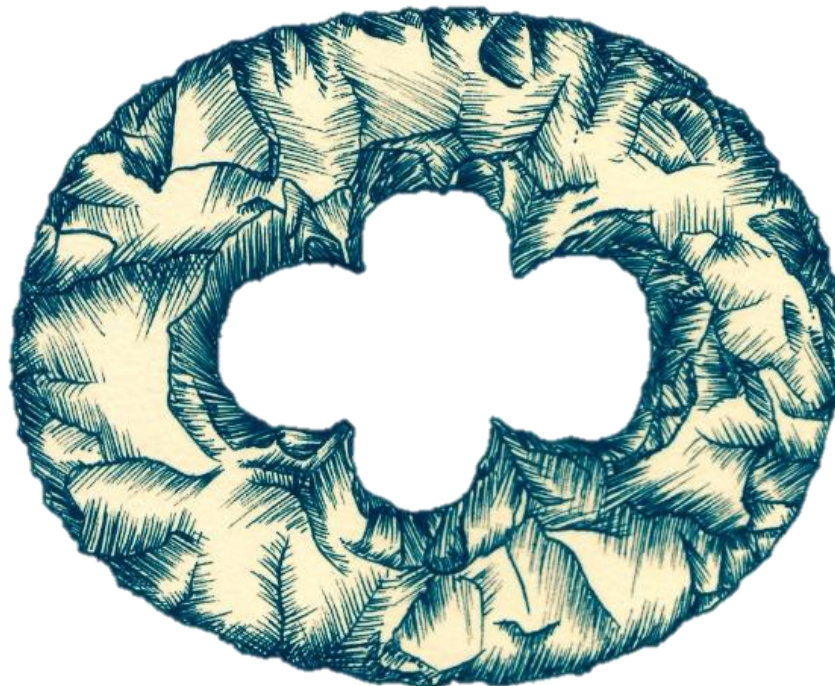


Figure 4. Chert eccentric from Xunantunich with a quadripartite “negative space” design (Drawing by M. James, courtesy of BVAR).

Popol Vuh

A brief review of the Maya creation story, the *Popol Vuh*, demonstrates the Maya cosmological perspective and allows for the exploration of how these perspectives are integrated and expressed in public and private art, as well as through ritual performances. The *Popol Vuh*, the K'iche Maya creation story, is a poem containing over 9000 lines, which elucidates the K'iche perspective on “cosmology, mythology, and traditional history” (Christenson 2007; Sharer and Traxler 2006:123). The K'iche Maya are a distinct cultural group from the Guatemalan Highlands. Although the *Popol Vuh* was a product of Spanish-trained K'iche scribes and displays signs of Spanish and Catholic influences, archaeological evidence demonstrates continuity of these oral and written traditions at least as far back as the Classic period (Sharer and Traxler 2006), though likely even earlier (Awe 2017). For example, images of the Hero Twins, two central characters in the *Popol Vuh*, often appear on polychrome ceramic vessels, carved imagery, and through other performative and oral traditions. Depictions of the Hero Twins span from the Late Preclassic Guillén period (300-50 BC) at Izapa, through the Classic period at sites such as Copán in Honduras, and into the Spanish contact period at sites in northern Belize and the Yucatan (Kerr 2016; Sharer and Traxler 2006). This evidence of cosmological continuity allows researchers to explore common ideological concepts, expressed through ritual acts, such as eccentric caching, across broad spatial and temporal ranges throughout the Central and Southern Maya Lowlands.

Ritual Activity and Caching

Bell (2009) define ritual as a ‘patterned or ceremonial act that involves the manipulation of religious symbols’ in order to express ideological beliefs. One of the various ways that archaeologists identify Maya ritual activity is often identified within the archaeological record in

the form of caches—“one or more objects found together, but apart from burials, whose grouping and situation point to intentional interment as an offering” (Coe 1959:77). The ancient Maya cached a variety of materials in numerous contexts (Coe and Houston 2015; Sharer and Traxler 2006).

While defining the purpose of caches is not in the scope of this research, it is essential to briefly discuss the variety of cache types. Based on the deposition of eccentric caches, I interpret them to most commonly be placed in dedication to a structure, monument, or even a person. Dedicatory or consecratory caches are placed to imbue a structure, plaza, or other location with the essence of life (Garber et al. 1998:128). Objects are typically cached prior to or during construction to commemorate a new structure or phase of use (Chase and Chase 1998; Coe 1959). This type of cache is often associated with new or remodeled constructions, as well as with the placement of stone monuments, or *stela*.

Materials cached by the Maya include ceramic dishes and figurines, marine and riverine shells, human and animal remains, as well as lithic materials such as jadeite, obsidian, and chert. Items may be intentionally broken, or terminated, as part of the ritual performance or crafted implements or repurposed them specifically for deposition within a cache, as is suspected with eccentric lithics.

Caches provide a line of evidence for investigating differences in socio-economic statuses of individuals and polities, as well as to examine the social function of ritual practices. Attributes which serve to define a cache include the type(s) of artifact(s), the placement and position of the artifacts in relation to each other, as well as the context of the entire group of artifacts in relation to a structure, burial, or other feature and the purpose of the deposit (Du Menil 2014; Matthews and Garber 2004).

Research across the Central and Southern Maya Lowlands traditionally focused on ritual deposits and social function of ritual behavior at major sites such as Copán, Caracol, and Tikal, with limited focus on the individual caches (Aoyama 2005, 2008; Chase and Chase 1998; Chase and Chase 2010; Moholy-Nagy 2007). Limited research has focused on the role of caches at smaller polities in the periphery of the Petén, in areas such as the Belize Valley, and in the Vaca Plateau of western Belize. Iannone's MA Thesis (1993a) focused on the contexts of caches from the Cahal Pech area, as well as provided a review of the corpus of known eccentric caches at that time.

Discussion

A cursory understanding of ancient Maya cosmology and ideology, as well as their creation story, the *Popol Vuh*, provides a foundation for understanding some of the motivations behind ritual behavior and sheds light on symbolic meaning embedded within these practices. This discussion will complement the subsequent discussion of the production and use of eccentric lithics, their forms, as well as the specific contexts within which these ritual implements were interred. Moreover, this cosmological and ideological background will also articulate with the theoretical perspective of the use of eccentric lithics.

Eccentric Lithics

Eccentric lithics are irregularly shaped, non-utilitarian chipped stone artifacts, most commonly crafted from chert and obsidian (Iannone 1993a). Archaeologists recover eccentric lithics and caches of other non-utilitarian lithic implements across the Southern and Central Maya Lowlands and throughout Mesoamerica, including at Teotihuacan, as well as throughout greater

North America, in areas such as California, the Great Basin, and in the Southeast (see Clements and Reed 1939; Gann 1918; Iannone 1993a; Iannone and Conlon 1993; Kilby 2008; Macko 2005; Meadows 2001b, 2003).

Throughout this thesis, I use the terms eccentric lithics to replace the traditional European term, *eccentric flints*. Eccentric lithic is a more encompassing term for tools crafted from a range of lithic raw materials, such as obsidian, a volcanic glass obtained through long distance trade, as well as cherts, chalcedonies, and other cryptocrystalline silicates, which are widely available throughout Mesoamerica.

While forms identified in Oklahoma appear crafted from a projectile point base, Maya eccentrics display a wide range of forms and production methods (Clements and Reed 1939). Ancient Maya eccentric forms range from elaborate distinct symbols and complex abstract forms to hastily-produced, ill-defined shapes and modified flakes (Iannone 1993a:6-7). Eccentrics are primarily bifacially modified, ranging from crudely chipped tools to some of the finest lithic implements crafted in human history. In some instances, unifacially modified chert flakes, often simple denticulate or serrated flakes were cached with bifacial eccentrics or in place of eccentrics (Matthews and Garber 2004).

Obsidian eccentrics are produced with a range of techniques. The most common obsidian eccentric were crafted from exhausted blade cores. Blade cores were notched into a variety of forms after they were no longer viable for the production of triangular and trapezoidal prismatic blades. Other obsidian eccentrics include incised flakes, presently only found at Tikal and Uaxactun, as well as notched macro flakes, likely removed during the preparation of a prismatic blade core, as seen at Xunantunich (Kidder 1947; Moholy-Nagy 2007; Tilden et al. 2017). Bifacially worked obsidian eccentric have been recovered in limited quantities, with some

particularly unique examples, such as the solid obsidian ax, recovered by Thompson at the center of San Jose in Northwestern Belize (Thompson 1939).

The morphology of these implements often reflects elements of Maya cosmology, including representations of gods such as K'awil, identified by a smoking celt splitting the forehead (Freidel et al 1993:91, 199; also see Schele and Miller 1986; Robicsek 1978). Additional forms include anthropomorphic figures, insects and serpents, and natural features such as cave openings or *maws*, as well as more abstract forms, including denticulate lanceolate points, annulet or negative-space discs, Maltese crosses, crescents, and tridents (Bullard and Bullard 1965; Iannone 1993a; Meadows 2001a, 2001b).

Production and Consumption of Eccentric Lithics

The ancient Maya produced these implements for use in ritual events and deposits, evident in the lack of usewear on these finely crafted tools (Iannone 1993a; Meadows 2001, 2003). Eccentric lithics were primarily high-status, elite objects in ancient Maya society, which may at times have been gifted to high status commoners. Eccentric lithic production appears to have been a vocation likely sponsored and conducted by elites (Hruby 2007:71; Meadows 2003)

Eccentric lithics were produced through a range of standard biface reduction techniques including direct and indirect hard and soft hammer percussion in addition to pressure flaking. Annulet or negative-space eccentrics may have required additional production techniques, including drilling or grinding.

The production techniques used to create these ritual implements were, in most cases, basic skills, which any experienced flintknapper would know. It appears, however, that the production knowledge needed to craft these implements was restricted. Craftspeople must have had

specialized, or *esoteric production knowledge*, to produce these cosmologically-significant implements (Hruby 2007). This demonstrates the idea that the production activity was a ritualized process.

Elite connection to the consumption of eccentric lithics is suggested by archaeological evidence of caching within primarily elite contexts, including structural and sub-stela caches in areas consistent with a public performative element to the ritual, as well as more private elite contexts such as in high status burials (Chase and Chase 2010). Limited evidence of eccentric use has been identified in peripheral residential and commoner contexts, suggesting a connection to local elites.

In the periphery of Cahal Pech and Baking Pot, larger *plazuela* groups, which have been interpreted to be high-status commoner residential groups, feature isolated instances of eccentric lithics and ritual caches (Du Menil 2014; Ebert and Fox 2016; Iannone 1993a; Powis 1993). In addition, eccentrics have been located at minor centers peripheral to Xunantunich, including Chaa Creek and Benque Viejo (Awe, Personal Comm. 2016; Connell 2003; Gann 1918). Based on the isolated nature of these caches, it appears that these sites did not have regular access to eccentric lithics or the specialized production knowledge needed to produce them. It is most likely that these ritual implements were gifted from the nearby major centers.

Moreover, evidence of production appearing within site cores, as observed at Aguateca in the Department of Petén, Guatemala, provides insight into the production, distribution, and consumption of the prestige items by elites, such as eccentrics (Inomata 2001). The Aguateca Archaeological Project (AAP), directed by Inomata, Triadan, and Ponciano, provided unique data pertaining the lifeways of the ancient Maya, as the site was rapidly abandoned, leaving a great deal of cultural materials in their original context.

The AAP excavations of a high-status residential complex within the site core revealed large concentrations of specialized craft production tools in discrete areas including implements associated with scribal activities, textile manufacture, shell carvings, and stela carving. The location of these items, within elite residential complexes, suggest that production of prestige goods was an elite activity and that specialists produced wares for consumption by or gift exchange with other elite figures. The prestige craft items were “not only economically valued and aesthetically pleasing but also ideologically and symbolically charged” (Inomata 2001:331).

Evidence of consumption, such as the placement of these items in caches and burials within monumental structures associated with high-status activity, points to this ideological significance, as well as further suggesting elite control over such items. Inomata (2001) provides an essential baseline for understanding the manner in which the ancient Maya conceptualized prestige crafts, presenting a compelling argument for understanding the ideological connection to craft specialization.

In order to examine the role of individual types of specialized crafts, one must understand that production of these items likely occurred at an elite level, as did consumption. The ideological significance of these item necessitated that all activity, including production, happened within elite contexts. Moreover, elites competed for prestige through the production, consumption, and gifting of fine items. It was an honor to own items of high quality, as well as to bestow them to elite from other polities.

Experimental Approaches to Understanding Eccentric Production

Negative space, or annulet shaped, eccentric lithics, typically thin, flat bifaces that have been centrally perforated with a hole or design, have a unique morphology not commonly seen in

other world lithic traditions (Figure 5). This form is observed in chert, and less commonly obsidian, eccentrics found across the Maya Lowlands, including at many sites in the Belize Valley such as Xunantunich and Cahal Pech. While the production methods used to produce these negative space bifaces remain poorly understood, experimental archaeology opens up new lines of investigation into the production of the negative space.



Figure 5. Negative space or annulet chert eccentrics from Xunantunich (photos by J. Awe and K. Sullivan).

I conducted a pilot experiment on the perforation of lithic raw materials, in order to better understand potential production methods used in the manufacture of these particular eccentric lithics. In this experiment, I hypothesized that a quartz-tipped bow drill hole could be used, in combination with sand and water, to perforate lithic raw materials including chert and obsidian (Sullivan 2016a). This brief experiment proceeded in four experimental drilling stages in an attempt to test the efficacy of drilling with this technology and a range of abrasion techniques (Figure 6).

The results of the experiment demonstrated that it is very possible to drill both obsidian and chert (Sullivan 2016a). While this does not prove that the ancient Maya produced negative space eccentrics in this method, it offers a possible explanation for the production technique used to produce these objects.



Figure 6. Drilling techniques used in (above) and results of (below) experimental drilling of obsidian (bottom left) and chert (bottom right) (photos by K. Sullivan).

This experiment complements a study conducted by Clark and Woods into the standardization of eccentric production (Clark and Woods 2015). The study examined a hypothesis developed by Guatemalan architect, Prado, which posited that the ancient Maya craftspeople employed standard units of measure in a variety of craft industries, including the production of ceramic vessel and eccentric lithics (Clark and Woods 2015).

Through a wide variety of approaches, it is clear that prestige items, such as lithic eccentrics were most likely produced and consumed by elite specialists (Inomata 2001). Ritual implements appear to have been gifted in certain instances, as has been suggested at El Palmar and Tikal (See

Tsukamoto 2014). In the Belize Valley, the presence of eccentrics in limited numbers in peripheral residential group assemblages suggests the exchange of prestige items from elites at the nearby major centers (see Connell 2003; Du Menil 2014; Ebert and Fox 2016; Iannone 1993a, 1993b).

Maya Eccentric Caches

Eccentric caches first appear in the archaeological record in the Classic Period (AD 250-600) throughout the Central and Southern Maya Lowlands. At centers in Northern Belize, including Altun Ha, Nohmul, and Colha, eccentrics appear within burials and structural caches (Gann 1939; Iannone 1993a; Pendergast 1990a, 1990b, 1990c). Classic period caches recovered at centers such as Tikal and Uaxactun in the Petén region include Sub-*stelae* and axially aligned structural deposits (Coe 1959, 1965; Iannone 1993a). These caching patterns repeat throughout the Central and Southern Maya Lowlands throughout the Early Classic Period into the Late Classic Period.

Coe (1965) suggests that the standardization of the number of eccentrics in caches at Tikal, specifically focused on caches of nine eccentrics, comes into practice in the Late Terminal Classic, whereas earlier caches featured larger assemblages with less-patterned numbers of implements and a wider variety of forms (Coe 1965).

Centers within the Belize Valley, particularly Xunantunich, show evidence of strong site-specific traditions of eccentric caching practices, though overall homogeneity is demonstrated between several of the centers of the valley. Eccentric caches have been recovered from both major and minor sites, as well as isolated *plazuela* groups in the hinterlands of these sites. Gann (1925) first reported eccentrics in the valley from various localities around the site core of Xunantunich. Subsequent caches located at the site include those found by Awe and Audet (Audet 2006), Stewart

(1953), and several recently discovered by the Xunantunich Archaeological and Conservation Project (Santasilia and Tilden 2015; Tilden et al. 2017). Other caches in the valley include deposits from Cahal Pech (Conlon 2013) and its peripheral groups (Ebert and Fox 2016; Iannone and Conlon 1993), at Baking pot (Audet 2006; Bullard and Bullard 1965; Du Menil 2014; Powis 1993; Ricketson 1931), Barton Ramie (Willey 1965), and Chaa Creek (Connell 2003).

In order to assess patterns in ritual caching of eccentric lithics at centers within the Belize Valley, I examine recent data collected from the major valley site of Xunantunich, as well as the nearby minor center of Benque Viejo. Additionally, I will review previously collected data from additional valley sites, including but limited to Cahal Pech and Baking Pot. These data provide a foundation for discussing the similarities and differences in caching behavior in the Belize Valley and, more broadly, throughout Central and Southern Maya Lowlands. I will then apply results of this research to discuss inter- and intra-regional similarities and differences in ideological organization and cosmological communication, as discussed through the lens of collective memory.

The practices and patterns of ritual caching in the Belize Valley, and the greater Western Belize sub-region, including sites such as Caracol will be compared to Petén centers such as Tikal, Uaxactun, and El Palmar (Figure 7) (Aoyama 1994, 2006; Audet 2006; Chase and Chase 2008, 2010; Coe 1956; Maxwell 1996; McAnany 1998; Meadows 2001a, 2001b, 2003; Pendergast 1990a, 1990b, 1990c; Schwake and Iannone 2010; Tsukamoto 2014).

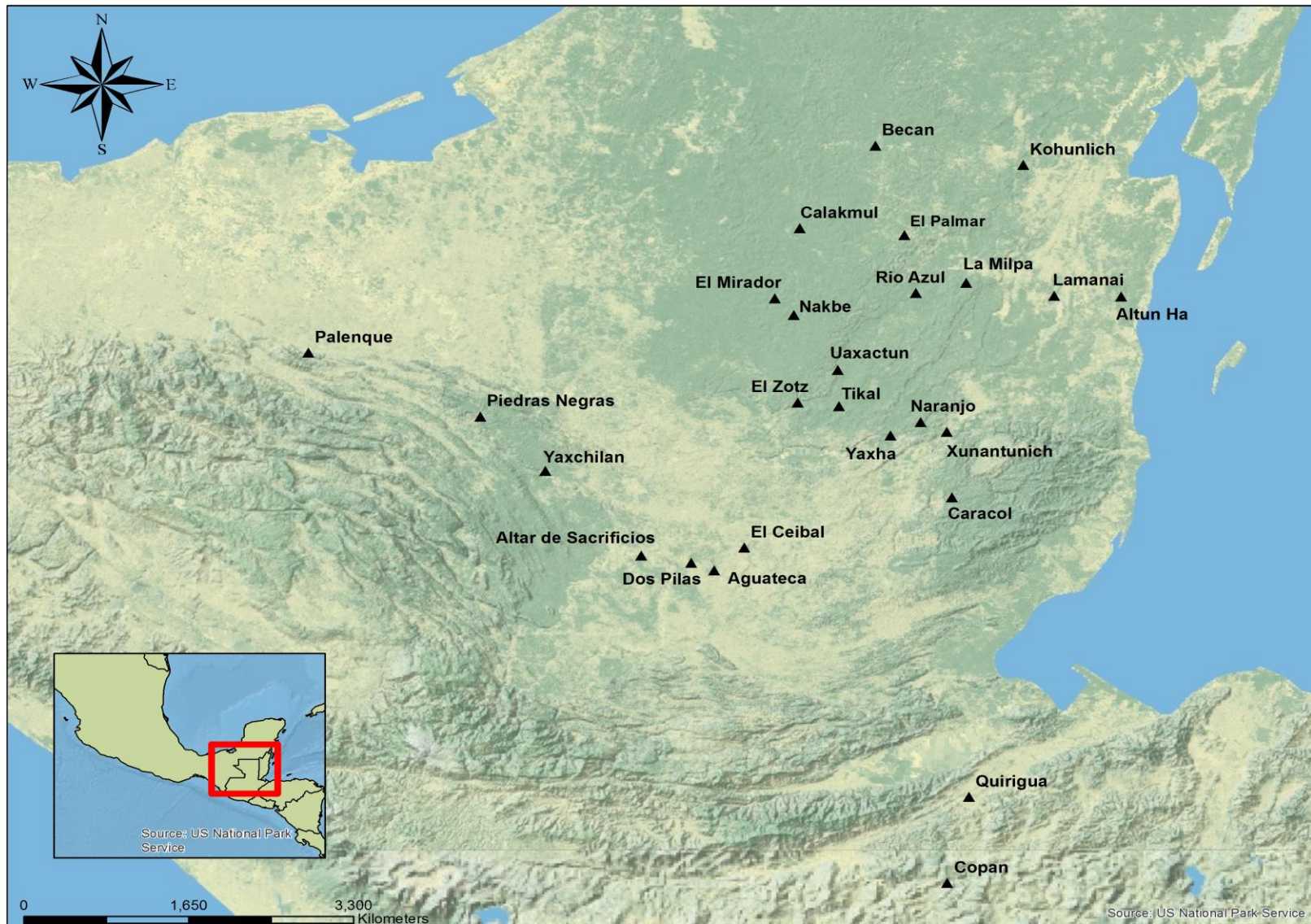


Figure 7. Map of the Central and Southern Maya Lowlands (map by K. Sullivan).

Chapter 3: Theoretical Framework and Anthropological Context

Previous researchers (Iannone 1993a; Meadows 2001b), investigating eccentric lithics have contextualized their studies in a broad range of theoretical perspectives. A review of these works will provide essential background to this thesis, highlighting both similarities and differences of this study to the corpus of anthropological literature. I will contextualize my research within the recent ritual caching discourse and discuss the anthropological significance of my research, while developing an original composition of theoretical perspectives, which offer explanatory framework for a culturally contextualized understanding of ancient Maya ritual behavior.

Previous Theoretical Approaches to the Study of Maya Eccentric Lithics

Iannone (1993a) presents a “systemic and archaeological” approach to the study of contexts in his thesis on eccentric lithic caching, citing Michael Schiffer and Ian Hodder as the driving forces in his theoretical approach. In order to assess the importance of contexts, it is necessary to observe the “associational similarities and differences” in cache context (Hodder 1986:124-125; Iannone 1993a:31). Iannone modifies and expands on Hodder’s contextual approach, building on it through the incorporation of linguistic anthropology, semiotics, Hermeneutic Contextualism, and a Multimodal framework to arrive at a Neocontextualist approach to his study of eccentric caches (Iannone 1993a:48-49).

Meadows (2001b) approaches the study of eccentric lithics through a combination of theoretical frameworks, relying most heavily on explanations relating archaeological constructions of craft specialization. Specifically, Meadows looks at the political economy and the use of wealth to mediate social relations (Meadows 2001b:96).

Building on Iannone's and Meadow's studies, my research evolves from previous theoretical perspectives, allowing me to craft an integrative theoretical framework for this thesis research. Symbolic and contextual theoretical approaches to my research will aid in the evaluation of the role ancient Maya ritual caching plays in collective memory. A contextual understanding of symbolic aspects of eccentric lithics elucidates the animistic view of the Maya world and its influence on ritual activity performed to consecrate sacred space and reinforce collective memory. After contextualizing the symbolism of the ancient Maya within their cosmology and ideology, I will analyze eccentric caching as a performative act which may have served to evoke socio-political prestige through collective remembering.

Contextual Symbolic Approach

In order to investigate the social significance of ritual caches to the Maya, I assess the meaning of particular symbols and ritual practices associated with lithic eccentrics, with the use of symbolic and contextual approach. Seminal publications shed light on approaches to understanding culture through the study of symbols and rituals (See Pierce 1932, Barthes 1957). Victor Turner (1967) and Clifford Geertz (1973) introduced the first perspectives on symbolic or interpretive anthropology. An underlying culture structure provides the framework for which these symbols are expressed and understood within the group. Moreover, group identity is reinforced by its juxtaposition and separation from the *other* (Geert 1973). This framework is closely tied to collective memory, but instead focuses on the articulation of social structures. Maya ritual caching can be viewed in terms of the process, as well as assessed through an analysis of the objects associated with this behavior. Turner (1967) focused on the nature of symbols as a part of social processes.

Geertz observed symbols as an expression of culture and identity, explaining that culture is a system of “symbolic forms by means of which they communicate, perpetuate, and develop [the group’s] knowledge about and their attitudes towards life” (1973:89). These approaches are complimentary with many other studies of symbolic meaning, all of which are essential to the understanding of how and why the Maya used eccentric lithics in ritual practices.

Geertz (1973:91) defines “symbols” as:

“any object, act, event quality, or relation which serves as a vehicle...for meaning. [They are] abstractions from experience fixed in perceptible forms, concrete embodiments of ideas, attitudes, judgements, longings, or beliefs.”

Referential meaning is clearly present in the corpus of Maya eccentric lithic caches, as groups of forms commonly appear together, emphasizing their co-dependent significance. These symbolic forms come together as a collection of ideologically based eccentrics, cached in buildings or under *stelae* to impart places with ritual significance. These caching rituals take place in public plazas, suggesting a group’s social function, such as collective remembering. Public ritual serves to unify groups through shared ideological beliefs and practices.

In order to better understand the symbolic meaning of eccentric lithic caches, it is essential to approach these questions from a contextual perspective. Ian Hodder (1982) advocates for a contextual framework within which to analyze the symbolic nature of material culture and ritual action. According to Hodder (1982), without an understanding of cultural and historic contexts, it is impossible to elucidate the true nature of culture and ideology. Artifacts are active entities, which engage in and shape cultural or ritual practices. Symbols convey meaning and through repetition of these practices, symbolic meaning evolves (Geertz 1973; Iannone 1993a; Tuner 1967).

Assessing the processes of engagement and evolution of symbols within a culturally specific context may reveal aspects of social functionality of ritual caching behavior.

Julia Hendon (2012) draws on a combination of epigraphic and archaeological data, as well as ethnographic accounts, in order to contextualize the Maya perspective of personhood. In this perspective, objects are imbued with souls and through human-object interaction, perceptions on identity are shaped. Understanding objects through this animistic perspective illuminates the ideological belief system behind the caching of ritual objects. The interaction between people, objects, and ritual events further develops the perspective of a contextual symbolic approach to understanding collective knowledge and memory of personhood and identity.

The Maya believe the objects, including eccentrics, ceramics, and even architecture are imbued with souls and that they experience a lifecycle just as humans and animals do (Hendon 2012). An understanding of this animate perspective of objects gives depth to the study of symbolic meaning of eccentric form and caching practices as an act of collective remembering.

Collective Memory

In this theoretical exploration, I discuss the intersection of memory, culture, and the group as collective process through which group identity is reproduced across broad temporal ranges. Cultural practices, specifically ritual, serve to connect groups to their collective history, as well as communicate group-specific, collectively-held social knowledge (Assmann 2008:109). The development and transmission of this type of knowledge is often dictated by elites or ritual specialists. Society mediates the transmission of this knowledge and in turn, the knowledge creates systems of meaning for a group.

Theories concerned with the nature of social or collective memory emerged in sociology in the 1920s, in the writings by French sociologist and philosopher, Maurice Halbwachs. Halbwachs coined the term *mémoire collective*, an essential perspective on the social function of memory, which he suggests is central to the development of group identity (Assmann 2008). Halbwachs' work set the stage for later exploration of the transmission of memory and the social processes of identity formation through collective acts of remembering.

The theoretical framework of collective memory asserts that cultural practices, such as ritual, serve as connections to the past and to group-specific, social knowledge. Collective memory examines the development and transmission of this culturally-held knowledge, or *cultural memory*, which society mediates and through which systems of meaning develop.

In the 1980s, Paul Connerton and Jan Assmann introduced social memory to anthropology and archaeology. Connerton, a British social anthropologist, was the first to resurrect memory studies, moving these concepts into the realm of anthropological thought. His approach to memory derived from Halbwachs, and evolved away from “discursive knowledge...to embodied experience,” as evident in his discussion of non-cognitive forms of memory (Peterson 2012: 272).

Early anthropological applications of collective memory studies (Connerton 1983; Halbwachs 1992, 2008) were conducted within socio-cultural anthropology, while recent approaches have been archaeologically focused (Fowler et al. 2010; Golden 2010; Iannone 2010; Schwake and Iannone 2010). For example, Schwake and Iannone (2010) present a practical approach to the use of collective memory, asserting that spatial and temporal distribution of Maya ritual caches illuminate instances of “cultural recollection” (2010:338).

Articles by Assmann and Czaplicka (1995) and Schwake and Iannone (2010) also present the theoretical framework and method to elucidate collective memory in the archaeological

investigation of ritual behavior. Schwake and Iannone (2010) examine ancient Maya ritual caching and interpret the social function of this behavior as the transmission of collective memory between ideological leaders, such as priests and other elites, and Maya commoners. In order to understand the span and depth of collective memory across the Southern Maya Lowlands, this thesis aims to identify regional patterns in caching practices throughout time, which may have reinforced social memory and group ideology.

Assmann, a German Egyptologist, discusses the concept of collective knowledge, which “directs behavior and experience in the interactive framework of a society and... [is obtained] through generations in repeated societal practice and initiation” (Assmann and Czaplicka 1995: 126). Groups develop a shared identity through a common past and the recollection of this past through social and ritual processes. Group identity is closely related to *objectivized culture* and ceremonial communication (Assmann 1995). Several characteristics form the foundation of cultural memory including identity, formation, reconstruction, organization, obligation, and reflexivity (Assmann 1995). The process of social memory transcends *communicative* or everyday memory. An examination of the function of cultural memory illuminates the “constitution and tendencies of a society” (1995: 133).

Collective memory includes theoretical considerations essential to my research by providing a framework for explaining spatial significance and ritual behavior in the archaeological record (Connerton 1983; Fowler et al. 2010; Golden 2010; Iannone 2010; Schwake and Iannone 2010).

Acts of remembering, as observed in public ritual performance, serve as a commemoration of a group’s history and identity, as well as “present condition and vision of the future” (Mills 2008; Schwake and Iannone 2010: 331). Schwake and Iannone (2010) highlight the significance

of spatial referents within ritual performances of collective remembering. The consecration and use of space in Maya ritual emphasizes referential ties to their cosmological view of the world. Both individual and group memory are deeply tied to spatial reference within the human mind (Schwabe and Iannone 2010). Ritual acts repeated over broad temporal spans, within a consecrated space, reinforce connections to past ritual acts, further solidifying a group's collective identity in the past, present, and future. Gillespie (2010, 402) echoes this, discussing that use of material objects within ritual contexts “condense[s] the social history of a community...and through their persistence and materiality projects them forward.”

The Maya practice of caching items in vertical alignments, over long temporal spans, provides a clear example of the importance of space and time in building collective memories associated with ritual (Schwabe and Iannone 2010). Regional differences in ritual practices could suggest group differences in social knowledge and memory, specifically pertaining to the ancient Maya expression of a shared ideology.

The ancient Maya used both public and private ritual to consecrate space within the cosmological order, which “establish[es] group solidarity” and reinforces social remembering (Chase and Chase 2010:10).

Archaeologists commonly distinguish between public and private lives in relation to the location of caches. Public rituals would take place in large, central, open access plazas, while private activity was limited to restricted temples, palaces and plazas. An analysis of caching locations illuminates the importance of space and scale of ritual caching.

Chase and Chase (2010) suggest a need for a better understanding of public and private ritual behavior and its social function for the ancient Maya. The article complements the theoretical approach of my research into the nature of caches and provides insight on the variety of caching

contexts. My research examines only rituals performed in public plazas, which may have served to enhance and trigger social memory. Although ritual was often performed in public plazas, these events were not necessarily public events. Ritual associated with public architecture, however, creates a spatial relationship between ritual act and the memory of these important cultural traditions.

Dedicatory and termination caches, commonly found in association with public architecture in the Maya Lowlands, may evoke memory of past ceremonies and the cycles of time. The cycle of public ritual reflects time cycles, a central part of Maya Life. At Tikal, Moholy-Nagy (2007) identified chert and obsidian eccentrics cached below *stelae*, which commemorated *Katuns*, or cycles of 20 years (Chase and Chase 2010). Although large audiences of people may not have witnessed the interment of the eccentrics, the *stela* serves as a reminder of the cyclical ritual and of past caching events. At the site of Xunantunich, Santasilia (2016.) recovered two caches below the stairway of Structure A3, directly behind a *stela* facing the large and public Plaza A1. I will examine one of these caches below to assess the use of eccentric lithics in ritual activity, and attempt to determine any connection between the cache and the monument.

Referential and symbolic meaning is present within the corpus of Maya ritual caches and individual artifacts, as combinations of materials and implements commonly appear together, emphasizing their co-dependent significance. Symbols, expressed through eccentric lithic forms, for example, come together as an assemblage of cosmologically-based symbols, concealed within buildings or under *stelae* to consecrate a space, imparting places with cosmological and ideological significance (Chase and Chase 2010).

Conclusions

Principles of symbolic anthropology, as defined by Geertz (1973) and Turner (1967), within contextual approaches to symbol meaning (Hodder 1982) provide a framework for the investigation of social functions of public ritual within Maya society. Ideological beliefs and expression reinforce group identity. Collective memory and identity appear to be one of the primary driving factors behind Maya ritual (Chase and Chase 2010; Iannone 2010; Renfrew 1996; Schwake and Iannone 2010). Collective memory is held at both individual and group levels, although the individual is contextualized into and framed by the group (Lohse 2007). Within this structure, individuals build meaning and conceptualize identity (Geertz 1973). The Maya, however, were a population comprised of many culturally and linguistically distinct groups (Sharer 2006). Great overlap appears in the expression of ideological beliefs. This does not mean, however, that an identical ideological perspective existed between all Maya groups. The investigation of symbolism within Maya ritual may reveal how symbols express similarities and differences between the ideological beliefs and practices of distinct Maya groups. In addition, a deeper understanding of the social function of this ideologically based ritual may elucidate the manner in which the Maya transmitted culture and formed group identity, through a collective memory.

It is essential to understand the relationship between Maya identity and material culture in order to evaluate the memory-related function of caching practices. While it may not be possible to get into the head of past people to understand their exact motivation for performing ritual activity, through a contextual understanding of Maya cosmology and human-object interaction and co-essence, archaeologists are able to draw connections between the Maya worldview and their ritual activity, providing for a contextual baseline for elucidating cultural communication and social memory within this ritual behavior.

Great overlap appears in the Maya expression of cosmological beliefs. This does not mean, however, that a homogeneous ideological perspective existed between all Maya populations. A closer investigation of symbolism within Maya ritual may reveal how symbols reveal similarities and differences between the cosmological beliefs and ideological practices of distinct Maya groups, as well as elucidate the manner in which the Maya transmitted culture and formed group identity, through a collective memory.

Within Maya archaeology, it is necessary to contextualize the study of memory within several theoretical lenses. In order to understand an emic perspective of how identity and social status was negotiated in ancient Maya society, one must evaluate the relationship between human-object interaction, ritual activity, and other processes of remembering and forgetting. Although this is not the only valid approach to the study of public ritual, social memory and collective identity articulate well with the Maya cosmological perspective of an animate world and with the nature and social function of public rituals, memorialized within material culture.

Chapter 4: Research Framework: Methods and Potential Impacts

In order to develop a comprehensive understanding of ritual eccentric caching practices in the Belize Valley, my research focuses on the analyses of several newly discovered eccentric caches from the sites of Xunantunich and Benque Viejo (Figure 4.1), complemented by a review of the literature into eccentric caching practices, previously reported for the Belize Valley and the Maya Lowlands (Aoyama 1994, 2006; Audet 2006; Chase and Chase 2008, 2010; Gann 1918; Iannone 1993a, 1993b; Iannone and Conlon 1993; Maxwell 1996; McAnany 1998; Meadows 1998, 2001, 2003; Moholy-Nagy 2007; Pendergast 1990a, 1990b, 1990c; Santasilia and Tilden 2016; Schwake and Iannone 2010; Thompson 1939).

Through the investigation of ritual practices at major and minor centers in the Belize Valley, as well as throughout multiple regions within the Maya area, I will discuss patterns in the contexts of caches, as well as in the ritual implements deposited in these caches. Within this study, I will place particular emphasis on the Upper Belize Valley and the major Late Classic center of Xunantunich, as on-going research by XACP, BVAR, MVAP, and MVPP continues to produce a wide array of eccentric caching data. These data will allow me to assess variation in the localities of ritual caching activity and forms of eccentric lithics across the Belize Valley, in addition to any evidence of regional ideological differences or differences in the social function of eccentric lithics and these caching rituals.

Methods and Data Collection

In order to conduct a thorough review of caching practices at the site of Xunantunich and throughout the Belize Valley, it is essential to investigate these archaeological issues through integrative methods. A range of methods are employed in this thesis including an in-depth

literature review and original field excavation, as well as cache and lithic analysis, to provide multiple lines of evidence to explore the nature of the caching in the valley.

This thesis relies heavily on previously collected data. These data were compiled through a wide range of primary-source literature, field notes and reports, and personal contacts with researchers to provide a detailed review of the corpus of the known eccentric caches located in the Belize Valley. In addition to this research, new data, recovered by the author and colleagues on XACP, BVAR, and MVAP will be discussed in greater depth.

Literature Review. To produce a comprehensive data set containing all the contextual information concerning caches from the Belize Valley, I reviewed the range of literature, including published site reports, articles, and books, and unpublished field notes, in addition to personally contacting individual researchers. BVAR has conducted the majority of field research in the valley over the course of the last 30 years, which provided me access to essential data.

Excavation Methods. Excavations in the 2015 and 2016 field seasons of XACP and BVAR focused on activity at several large pyramidal structures on the east and west sides of the civic-ceremonial center of Xunantunich. While many archaeological questions drove the research, one of the primary objectives was to search for evidence of ritual behavior within the site core. Caches, and particularly those featuring eccentric lithics, have been recovered by archaeologists in high frequencies within the center of Xunantunich, which made researchers optimistic about the potential for identifying additional caches.

Excavation units were placed to investigate areas beneath stelae, as well as at the base of and within axial stairways of the main monumental architecture. These localities are primary

contexts within which caches have been recovered across the site. The units were excavated with care and, at the discovery of any potential cached materials, excavations were taken over by a highly-trained excavator with experience of exposing caches in-situ.

Once the cache has been thoroughly documented in-situ, the artifacts are recovered one by one, bagged, and label individually. All dirt surrounding and within the cache is screened through ¼ inch mesh to search for any potential small artifacts. The ability to study caches in-situ provides insight into the interment of the cache and the arrangement of the artifacts gives additional cosmological understanding.

Cache Analysis. Cache analysis sought to understand cached materials in situ, which provides the researcher with a deeper understanding of the deposition of the cache in antiquity. In order to understand the placement of the cache, it is essential to note if artifacts are clustered tightly or loosely scattered within the deposit. This will lend insight into the method of interment—artifacts bundled within textiles or other natural materials versus placed individually. It is also essential to investigate for possible organic or inorganic materials, such as lithic chips, within the caches. The expression *cache dirt*, a term proposed by Chase and Chase (2008), defined as “small chips of valuable materials,” will henceforth be used to refer to small lithic and marine materials. The use of cache dirt is a practice commonly observed at the site of Caracol and less commonly noted at other sites, including Xunantunich (Martindale Johnson 2016:65; Tilden et al. 2017).

Lithic Analysis. Lithic analytical techniques were used to understand the features of individual eccentric lithics, including craftsmanship and raw materials used (type, quality, and source). Eccentrics refer to a wide range of lithic implements including modified and unmodified

flakes, unifacially and bifacially-chipped tools, and in rare cases, incised obsidian flakes. It is essential to understand the method of production to explore the variation in production and use of eccentric lithics. Additionally, it is essential to look at the source of materials cached, as implications exist for the access and consumption of local or exotic materials for ritual purposes.

Potential Inference

To address my research questions, I will identify commonalities and differences in morphology of eccentrics and in cache contexts at sites in the Belize Valley and various sub-regions of the Maya Lowlands.

Data pertaining to eccentrics including raw material, size, and production methods, may have implication into raw material accessibility and quality. Differences in eccentric forms may suggest that ideological differences influenced the production of eccentrics or express individuality of the polity, rulers, or craftsman. Contextual differences in caches would indicate that the act of depositing ritual caches serve different social or ideological functions, such as public ritual versus private elite ritual. Diverse geographic regions generally contain differential raw material quality and availability, which would influence the production of chert eccentrics. Differences in obsidian eccentrics may suggest differential access to long distance trade goods and in specialized production knowledge. It is possible to suggest regionality even if only one of these patterns is observed in the data.

Potential Negative Outcomes of Research Questions. Throughout the course of this research, it is possible that differences in eccentric lithics and caching practices are not substantial enough to suggest regionality. If no differences are observed in regional caching, this could

represent a cross-cultural, ideological caching ritual. Ubiquitous forms would suggest similar symbolic significance across the Southern Maya Lowlands, which would be ideological, environmental, or both. Similarities in contexts of caches would suggest similar social or religious functions.

Although this may negate the discussion of regional distinction of ritual practice, it will redirect investigations towards other factors influencing differences in eccentric lithics and caching practices. Other factors may include raw material accessibility, wealth and prestige of a particular polity, or particular collectives of artisans. If patterns in caching appear to be similar throughout the Maya Lowlands, this may represent a Pan-Maya ritual.

Research Impacts: Educational Outreach through Casting

In addition to the potential to add to the understanding of ancient Maya ritual behavior and generally more about the collective memory or identity of Maya groups, this research has the potential to impact the public interpretation of Maya archaeology. I aim to take on cultural, societal, and educational problems through the production and donation of casts, or replicas, to the Belize National Institute of Cultural and History (NICH) and the Institute of Archaeology of Belize (IOA) for the use in public education initiatives.

Through the dissemination of the result of my research, as well as the eccentric casts, I have the opportunity to impact the archaeological education and outreach within the country of Belize. It is essential for academics to make their research results available and accessible to the public, especially members of the community within which we work. It is a crucial part of my research to give back to NICH, IOA, and the country of Belize.

Chapter 5: The Eccentric Caches of the Belize Valley

Belize Valley Caches

Building on the important synthesis of caching data, presented by Iannone (1993a) in his MA thesis, I will present an overview of caching practices in the Belize Valley, with an added focus on recent caches found in the valley by the BVAR project. The discovery of caches tends to go fairly underreported. Reports of caches are buried within field reports and lack depth in the contextual descriptions.

It is essential to look at broad patterns of caching to understand this ritual practice in terms of the societal function and to see the distinction of practices within differing regions.

In this chapter, I will present a discussion of known caches in the valley, providing insight into the general practices of eccentric caching observed throughout sites in the Belize Valley. For the sake of organization, I will discuss caches at sites beginning with Blackman Eddy, the eastern most major center in the Upper Belize Valley, moving west, and ending with the major center of Actuncan and the minor center of Chaa Creek, located in the periphery of Xunantunich. In the following chapter, I will discuss the caching practices at the site of Xunantunich at length and provide a discussion about the relationship between Xunantunich and other Belize Valley sites.

Blackman Eddy Eccentric Caches

Blackman Eddy was a major center, located at the easternmost extent of the Upper Belize Valley, immediately downriver from Baking Pot and Barton Ramie. The center has a long history of occupation, beginning in the Middle Preclassic and continuing into the Late Classic period (Garber et al. 2004). Research conducted by J. Garber and M. K. Brown yielded important data into the ritual practices at the site.

Two Early Classic lip to lip vessels were cached containing nine “crudely produced, brown chert flakes”, as well as a layer of limestone marl, rodent remains, and carbonized twigs, were located within the lower platform of the eastern structure (Matthews and Garber 2004:52-53). While these lithics are not formal eccentrics, the use of flakes in this context suggests they were “functional equivalents” or even precursors to more elaborate cache items such as eccentrics (Matthews and Garber 2004:53). No image of the flakes could be located, however, a diagram presented the context of the eccentrics. The context and stacked arrangement of the cache led researchers to suggest the cache represented a cosmogram (Matthews and Garber 2004).

While the practice of caching eccentrics within vessels is similar to those seen at Uaxactun and Caracol, only at one other site, Barton Ramie, in the Belize Valley do we find evidence of lithic eccentrics in ceramic vessels. The ceramic vessels within the cache from Blackman Eddy suggest an Early Classic date, which may account for the differences in caching practices. While eccentrics are found in Early Classic contexts at sites in the Petén, eccentrics do not seem to appear in the Belize Valley until the Late Classic Period (Coe 1959, 1965; Iannone 1993a).

Barton Ramie Eccentric Caches

Barton Ramie is a minor center located on the northern banks of the Belize River within the modern Mennonite village of Spanish Lookout. Gordon Willey conducted extensive archaeological investigations at the site between 1953-1956 (Willey et al. 1965:vii). Willey and colleagues designated several settlement clusters. Within the Oxbow Group, Willey and colleagues extensively excavated BR-1, a 2-3 meter-tall house mound in 1954. Willey et al. reports the discovery of one crescentic chert eccentric within a burial (1965:30). The burial, Burial 6, was the wealthiest of the 24 burials discovered within the mound. The adult individual, sex unknown, was

surrounded by a wide range of stacked ceramic vessels. Some of the vessels contained implements, such as finely-chipped laurel leaf bifaces and the single crescent-shaped chert eccentric.

In addition, Willey discusses M.B. Chambers' discovery of several eccentric caches within Structure BR-96, a large pyramidal structure. In total, Chambers' excavations yielded over 20 chert and obsidian eccentrics at the site (Willey et al. 1965:446). The authors note that the caches were contained within lip-to-lip ceramic vessel, which date to the Spanish Lookout Ceramic Phase (AD 700-900). Unfortunately, there is no information pertaining to the contexts within which these caches were recovered.

Baking Pot

Baking Pot was a major political center within the Belize Valley. Settlement at the site began in the Late Preclassic period and persisted into the Late Postclassic period, with a settlement hiatus between the Terminal Classic and end of the Early Postclassic periods (Hoggarth 2012; Hoggarth et al. 2014). The site comprises of two large monumental groups—Group A and Group B—and several settlement clusters, located near the Belize River (Figure 8).

While the site contains many markers of major centers including monumental architecture, ball courts, sacbeob, and elaborate tombs, the site lacks carved monuments. The latter characteristics is shared with most Belize Valley sites and is a tradition that sets the Belize Valley apart from sites in the Petén region to the west, and with centers in southern Belize. One of the few exceptions to this rule is Xunantunich, but then again, that site lies on the eastern fringes of the Petén sub-region.

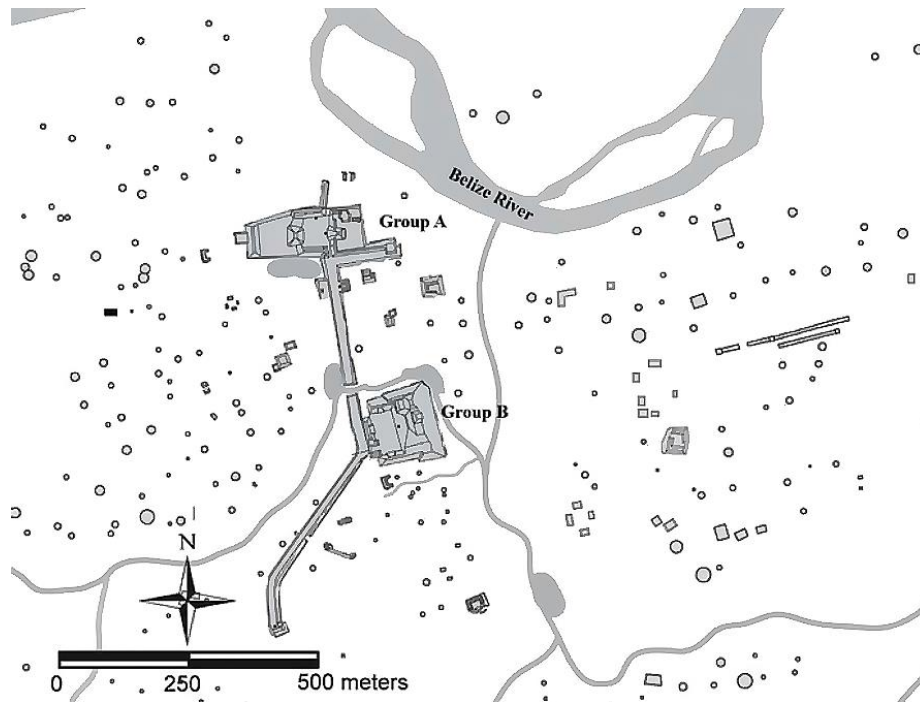


Figure 8. Map of Baking Pot (Map courtesy of BVAR).

Ricketson was the first to conduct archaeological research at Baking Pot in the 1920s. Subsequent research was conducted by A. Hamilton Anderson, the first archeological commissioner of Belize, in 1949, followed by Gordon Willey in 1959, and William and Mary Bullard in 1961. BVAR began research at Baking Pot in 1992, completing a range of excavations within the site core and in various localities in the settlement.

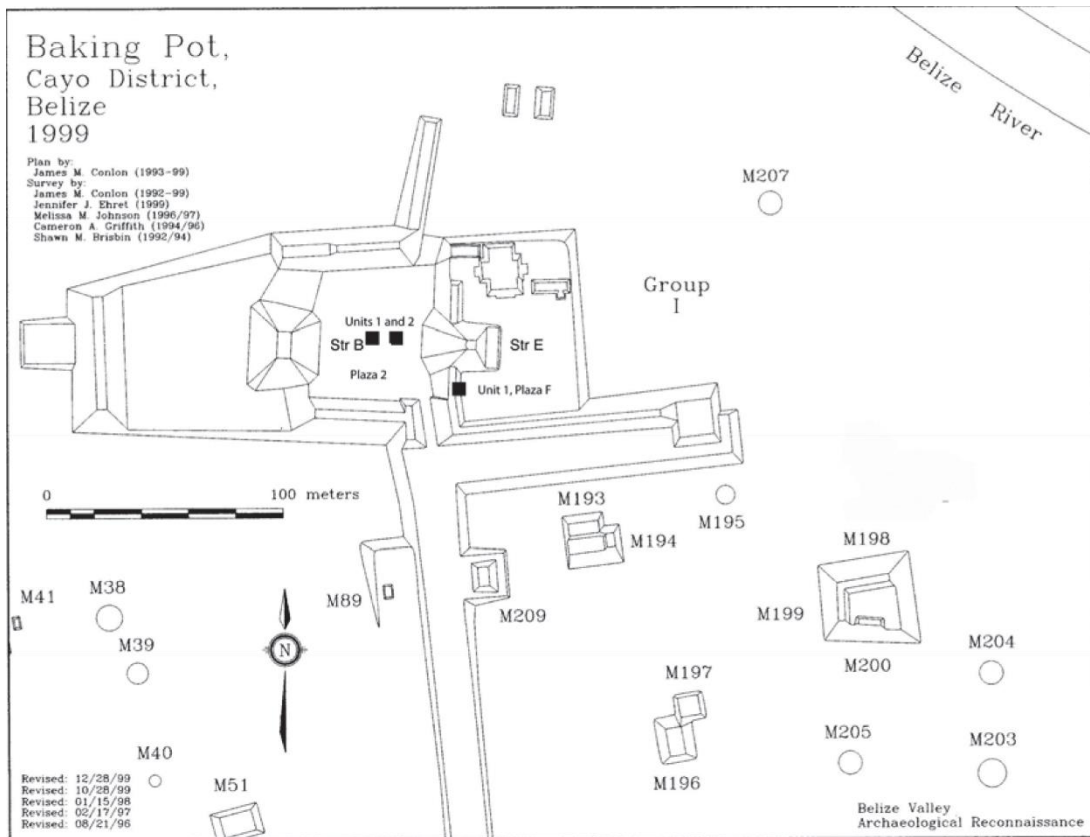


Figure 9. Map of Group A (or Group 1), the northern Monumental group at Baking Pot (Map courtesy of BVAR).

Baking Pot Eccentric Caches

Site Core Caches. In Group A, the northern group of Baking Pot, Ricketson discovered a cache of nine chert eccentrics in the large eastern triadic shrine (Figure 9) (Ricketson 1931:5-6). Ricketson also trenched the summit of Structure E, the central structure of the eastern triadic shrine and found another cache within the structural fill, in neither a “cyst” nor within any clear context in relation to any architectural feature (Ricketson 1931:5). The eccentrics included zoomorphic figures, a spiked crescent, and denticulate oval biface (Figure 10). The eccentrics were crafted from local raw materials, including red banded, brown, pink, and white cherts ((Ricketson 1931:5-6).

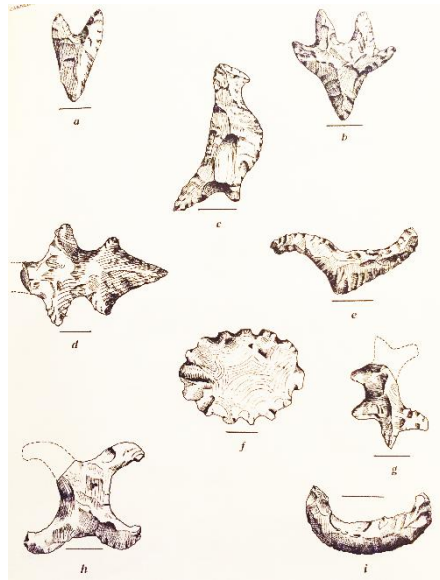


Figure 10. Eccentrics from the summit of Structure E, in Group A, at Baking pot (Ricketson 1931:Plate 13). Line scales represent 1 inch.

In 1961, William and Mary Bullard excavated two rooms at the base of Structure B1, in Group B, the southern group at Baking Pot (Figure 11) (1965:12,16, 29). Both Rooms 1 and 2 housed stone monuments (Bullard and Bullard 1965:12). The monument in Room 2 may not have been a stela, but clearly represented an object of significance. Room 2 featured a bench, which had been cut through, and two caches, one featuring eccentric lithics, had been placed inside, and the bench was subsequently filled back in with dirt.

The cache included 27 fine chert eccentrics and seven obsidian eccentrics, as well as two obsidian blades (Bullard and Bullard 1965:12). In addition, the cache contained two vessels, “Red and Black on Vinaceous Tawney tripod bowls,” placed lip-to-lip (Bullard and Bullard 1965:12). While the stated purpose of the excavation was to seek “exhibitible artifacts...well documented by provenience,” the report lacks great detail of the context of the cache (Bullard and Bullard 1965:11-12).

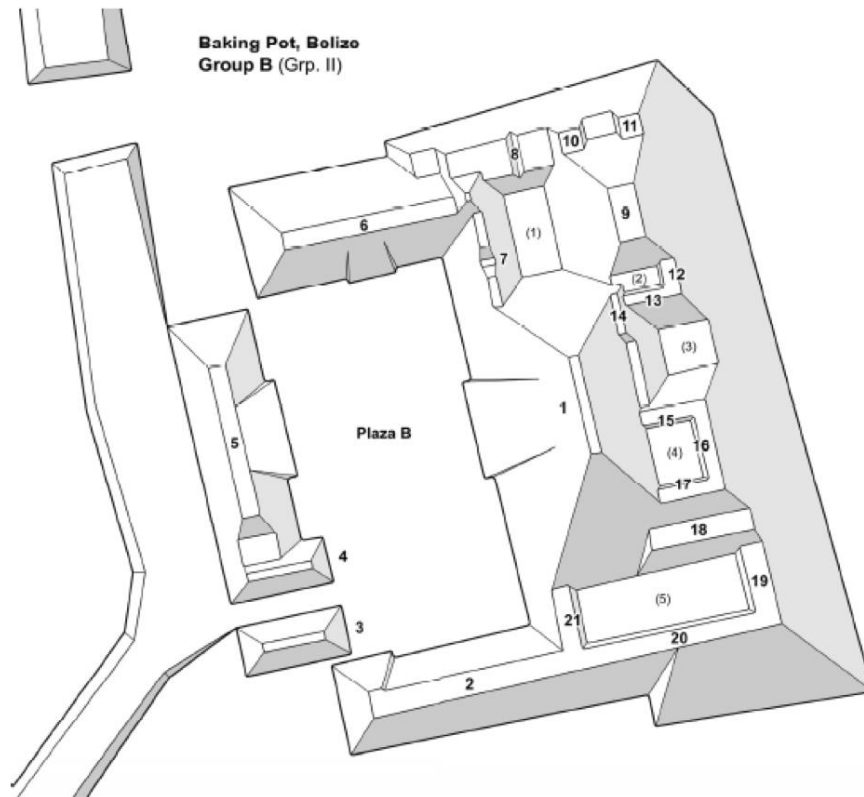


Figure 11. Map of Group B (or Group 2), the southern Monumental group at Baking Pot (Map courtesy of BVAR).

Carolyn Audet (2006:184) and Jaime Awe excavated Structure E in Group A, the northern group of the site core at Baking Pot. Within the large eastern structure, a royal tomb was discovered. The tomb featured eccentric lithics, laid out on the floor surrounding the interred individual. The eccentrics are crafted from local materials (Figure 12). These distinct chert eccentric forms resemble typical Petén region eccentrics, less common in the Belize Valley.

Considering the size and architectural complexity of Baking Pot, the number of known eccentric caches remains limited. Recent archaeological investigation demonstrated a range of ritual behaviors in the civic-ceremonial center, including large termination deposits, discovered in

Group B by Hoggarth et al. (2015). The small quantity of eccentric caches may relate to varied ritual behaviors or rather research biases, relating the placement of excavation units.



Figure 12. Eccentrics from Burial 1 in Structure E, at the Group A at Baking Pot (photo courtesy of BVAR).

Settlement Group Caches. Lubul Huh, also known as Mound 410, is a large settlement group, located less than a kilometer west of Group B, in settlement cluster A (Du Menil 2014:8; Hoggarth 2012:55). Under the floor, in front of the Structure 410A, several objects were encountered within the fill between floors, interpreted to be ritual in function, including two chert eccentrics, as well as two jadeite beads, and a piece of modified quartz (Figure 13).

In the corner between Structures 410A and 410B, researchers reported two obsidian artifacts, including two obsidian blade core eccentrics (Du Menil 2014:35). The pXRF analysis of the obsidian artifacts identified the raw material as consistent with the El Chayal source in

Guatemala, the most common source of obsidian found in the Belize River Valley (Du Menil 2014:35; Ebert et al. 2015).



Figure 13. Two patinated chert eccentrics and two obsidian blade core eccentrics (right), recovered from Structures 410A and 410B at Lubul Huh, a large peripheral group in the settlement of Baking Pot (photos by L. du Menil, modified by K. Sullivan, courtesy of BVAR).

The Bedran group is a small plazuela group, located in the southwestern sector of the Baking Pot settlement cluster F (Hoggarth 2012:55). Excavations in the early 1990s by the BVAR project explored the function of the small group, which contained a large assemblage of high-status artifacts, including a large cache of eccentrics, as well as polychromatic ceramics with hieroglyphic texts (Figure 14) (Conlon et al. 1994; Iannone 1993b). The group comprises of four low structures enclosing a formal courtyard.

Within the stairway of the eastern structure, Structure 2, researchers discovered a cache, labeled Cache 3, placed along the primary axis. Cache 3 contained several Spanish Lookout Phase ceramics, as well as 48 eccentrics—42 chert and six obsidian eccentrics (Conlon et al 1994; Iannone 1993b; Powis 1993). Using Gifford's (1976) ceramic typological designations, the

ceramics in Cache 3 fall into the Spanish Lookout Ceramic Phase (AD 700-900) of the Late Classic Period. This is a rare example of a temporal indicator within a cache in the Belize Valley.

The eccentrics' forms reflect patterns similar to those seen throughout the Belize Valley, including smooth and serrated crescents and annulets, notched blades and bifaces, and zoomorphic forms, such as scorpions (Figure 14). The raw materials are local cherts and chalcedonies, as well as extra-local obsidian.



Figure 14. Layout of chert and obsidian eccentrics of Cache 3 (left) and cache in-situ (right), found within the stairs of Structure 2 at the Bedran Group, Baking Pot (photo source Awe, courtesy of BVAR).

Aside from Cache 3, a plaza deposit, labeled Cache or Deposit 8, was discovered in front on an appended platform. This deposit was interpreted to be a termination deposit (Conlon et al. 1994). Ceramic sherds and vessel refits, along with one chert eccentric was recovered in the deposit. The ceramic types within the deposit belong to the Spanish Lookout Ceramic Phase, dating to the Late Classic Period (AD 700-900) (Gifford 1976). In addition, one eccentric was discovered within a burial in Structure 2, the eastern structure of the group.

The two caches located at the Bedran Group provide essential insight into the date of the caches, as they are associated with distinct ceramic types, all from the Late Classic Period. The

majority of eccentric caches in the Belize Valley lack dateable materials, further complicating the temporal designation of eccentric caching practices. The Bedran Group caches also provide a fairly unique example within the valley of a relatively small plazuela group with a high frequency of fine artifacts, including the large deposit of eccentrics, as well as fine ceramics with hieroglyphic texts.

Cahal Pech

Settlement at Cahal Pech began in the Preclassic Period, with the earliest evidence of occupation within the site core starting around 1200 BC. Cahal Pech continued to grow and flourish through the Late Classic Period, with evidence of decline and abandonment in the Terminal Classic Period (Awe 1992).

Research at Cahal Pech has spanned several decades with preliminary mapping and excavations conducted by Linton Satterthwaite in the 1950s, followed by brief surveys by Gordon Willey and A. H. Anderson (Awe 1992). In the late 1960s, Peter Schmidt conducted salvage excavations on the main structure of the eastern triadic group. Joseph Ball and Jennifer Taschek conducted excavation and conservation of several structures in the late 1980s. Finally, in 1988, Jaime Awe began the BVAR project, which focused on the site core and peripheral settlement of the site. Research by Awe and BVAR has been continuous at Cahal Pech since its inaugural field season, yielding a great wealth of data on the long occupation history of this important Belize Valley site.

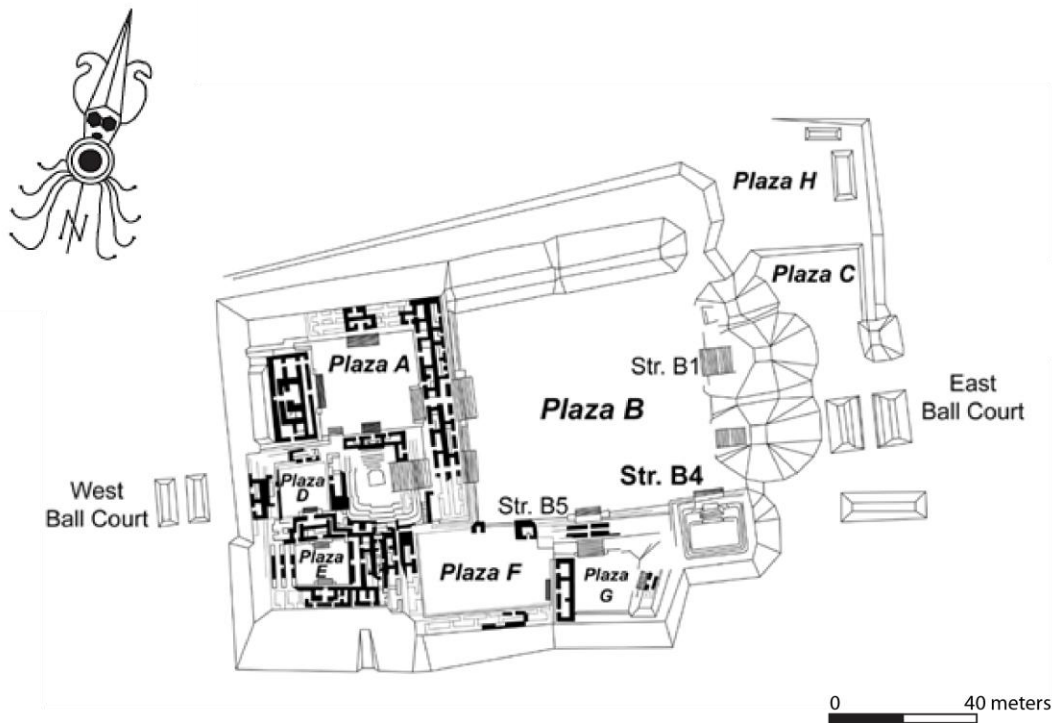


Figure 15. Map of the site core of Cahal Pech (Map courtesy of BVAR).

Cahal Pech Eccentric Caches

Site Core Caches. While a variety of ritual caches have been recovered from within the civic-ceremonial center of Cahal Pech, researchers have little evidence of eccentric lithic caches (Figure 15). The one exception was a cache discovered on the summit of Structure B3, the southern structure associated with the eastern triadic shrine in the largest, public plaza of Cahal Pech (Figure 15). The cache was located in a cut in the terminal floor, and was never resealed. The latter context suggests that the cache may have been intrusive (Conlon 2013).

The cache featured 19 obsidian eccentrics, produced from exhausted blade cores and were bifacially chipped (Figure 16). The forms are consistent with obsidian eccentrics located at other Belize Valley centers, such as annulets and zoomorphic forms such as scorpions.



Figure 16. Eccentric caches recovered from Structure B3 at Cahal Pech (photo by J. Conlon).

Settlement Group Caches. The Tzinic group is a large settlement cluster, located 450 meters south of the site core of Cahal Pech (Figure 17). The BVAR project investigated the site, directed by Conlon, in the early 1990s. The group consists of 7 structures and is considered a minor peripheral center, closely tied to the civic-ceremonial center of Cahal Pech (Conlon 1992; Iannone 1992, 1993a).

At the site, researchers found a collection of 15 chert and obsidian eccentrics (Figure 18). These artifacts, however, were located within a disturbed context—a looters trench—which excludes these implements from the quantitative analytical portion of this study. It is essential to note the presence of this cache, as it is one of the few examples of an eccentric cache from a minor center.

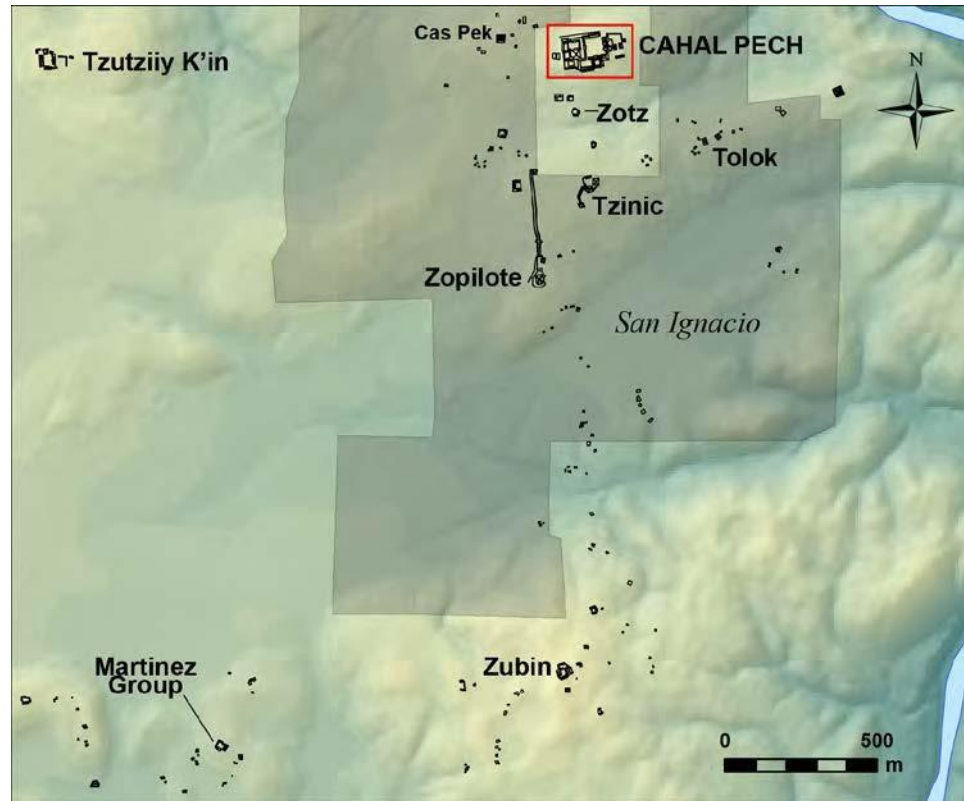


Figure 17. Map of the greater Cahal Pech settlement area (Map by C. Ebert, from Ebert and Fox 2016:Fig 1, courtesy of BVAR).

It is very likely that the eccentrics were originally interred within the structure in which it was found, Structure 2. Structure 2 is a 5.6-meter-tall pyramidal structure on the southern side of a moderate-sized plaza, which features a stela (Conlon 1992). Although this context is not certain, as it was found near a looter's trench, it is most likely that the looters missed these implements and that the cache was disturbed due to bioturbation and modern post-depositional processes within the structural fill (Iannone 1993a:93).

The Tzinic eccentric assemblage comprises 15 eccentrics—11 obsidian eccentrics and four chert eccentrics—chipped into common forms seen in caches throughout the Belize Valley (Figure 18) (Conlon 1992; Iannone 1993a). Some of the obsidian eccentrics were made by notching exhausted blade cores, a common production techniques used throughout the Maya Lowlands.



Figure 18. Fifteen eccentrics, made of obsidian (above) and local chert (below), were recovered in a looters trench at the site of Tzinic (photos courtesy of BVAR).

Recent excavations at the Martinez Group reveal the presence of a single chert eccentric. The Martinez Group is a medium sized residential group located 2 kilometers southwest of Cahal Pech (Ebert and Fox 2016:101). The group was investigated for evidence of Preclassic occupation.

Within Structure 2, a low platform on the south east side of the group, a single eccentric was located within the fill (Figure 19). The eccentric is made from local chert and is interpreted to represent a dog or the flamed eyebrow, a significant iconographic representation (Ebert and Fox 2016:102). A single ^{14}C date suggest the construction fill was placed between cal AD 640-760 (Ebert and Fox 2016:103-104). This chronometric date provides further evidence that eccentric caching was a strong tradition within the Late Classic Belize Valley Maya.



Figure 19. Single chert eccentric, recovered in the architectural fill of Structure 2, at the Martinez Group, a residential group located in the periphery of Cahal Pech (photo by C. Ebert, modified by K. Sullivan, courtesy of BVAR).

Actuncan Eccentric Cache

Actuncan is the major site most closely located to Xunantunich. It is located on the west banks of the Mopan River, near Clarissa Falls. McGovern (2004) reports on the presence of eccentric caches at the site of Actuncan, just 2 km from the site core of Xunantunich. Within the large southern structure, Structure 1, archaeologists located evidence of postholes, one of which was filled with a small cache of 12 eccentrics—four obsidian blade eccentrics and 8 chert

eccentrics—above a layer of 15 unbroken jute shells and a small cluster of non-diagnostic ceramics (McGovern 2004:124). The author suggests that the cache dates to the Late Classic period and was placed in association with the construction of the “massive Late Classic I temple,” Structure 1 (McGovern 2004:124).

Xunantunich Periphery Caches

Benque Viejo Cache. At the small site of Benque Viejo, peripheral to Xunantunich, a big rain event caused the erosion of an eccentric cache out of the side of a small eastern structure, Structure 6 (Figure 20).

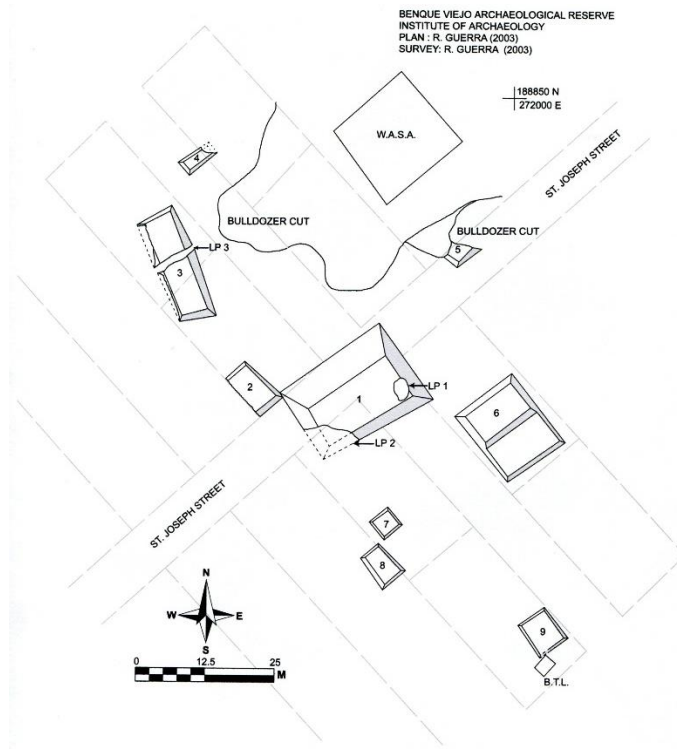


Figure 20. Map of Benque Viejo site (Map by R. Guerra, courtesy of BVAR).

The cache contained eight chert eccentrics and one semi squared-off chunk of jadeite, polished on one side (Figure 21). Local raw material was used to produce the ritual implements.

The cache was recovered by J. Awe and were submitted to the Institute of Archaeology in Belmopan.

Eccentric forms included in the cache are very similar to those observed at the nearby major center of Xunantunich. Crescentic and annulet forms, as well as scorpions, are the most common forms observed at the site. The eccentrics recovered from Benque Viejo are produced from locally available cherts. Considering the forms of the eccentrics, the raw material utilized, and the small size of Benque Viejo, it is most likely that these ritual implements were gifted to the site by the elite of Xunantunich.



Figure 21. Chert eccentrics and a piece of polished jadeite, recovered from a small eastern structure at the site of Benque Viejo in the 2015 field season (photo by K. Sullivan).

Chaa Creek Eccentric Cache. At the site of Chaa Creek, investigations by Samuel Connell (2003), in association with the XAP project, showed the presence of eccentrics within the stairway of the main pyramidal structure. The cache featured nine chert eccentrics, some of which are on display at the Chaa Creek Resort Natural History Museum (Figure 22). Connell suggested that the presence of eccentrics at the site of Chaa Creek indicates an ideological connection to Xunantunich (Connell 2003). The practice of caching eccentrics in the construction of buildings, within stairway, clearly extends outside of Xunantunich. It is possible that the eccentrics were gifted to the elites at the site of Chaa Creek from Xunantunich.



Figure 22. Sample of eccentrics recovered from the site of Chaa Creek, on display at the Chaa Creek Resort Natural History Museum (photo by K. Sullivan).

Conclusions

Eccentric caches and finds in the settlement of Baking Pot suggest distributed wealth between elite populations in the site cores and high-status commoners, possibly through the gifting of eccentric lithics to these large settlement groups. This pattern is similar to that seen at the site of Cahal Pech. Eccentric caches have been observed at a few larger periphery groups including the Bedran and Lubul Huh groups at Baking Pot, Tzinic at Cahal Pech, and a cache of obsidian eccentrics recovered from the village of San Jose Soccutz, near Xunantunich. These cache tend to be unique examples at each locale, suggesting rare access to these high-status objects.

Neither Baking Pot, nor Cahal Pech display a strong caching tradition, with only a few eccentric caches or finds within the two site cores.

Sites lower in the valley, such as Barton Ramie (Willey 1965) and Blackman Eddy (Matthews and Garber 2004) also display a minimal trend towards eccentric dedicatory caching—each with two and one caches respectively.

The sole major center which lacks evidence of eccentric lithics is Lower Dover. This, however, may reflect the minimal amount of work done at the site, compared to the long history of excavations at other Belize Valley sites. Lower Dover appears to have flourished in the Late to Terminal Classic Periods. While the early Late Classic Period appear to have been the apex of eccentric caching, it is not clear if the occupants of the site participated in the type of ritual activity, or if they had access to these types of implements.

Caches and terminal deposits, as well as burials, have been located at Lower Dover. These ritual contexts featured a range of local and exotic materials and craft goods including ceramic vessels, greenstone beads, modified faunal remains, and very finely crafted chert bifaces, potentially made of chert from the Northern Chert Bearing Zone, in northern Belize (Guerra and

Collins 2015; Guerra, Personal comm. 2016). While eccentrics have been located in these contexts at the other valley sites, eccentrics have not been identified at Lower Dover.

Sites in along the western branch of the Belize River Valley, also defined as the Mopan Valley, include the major sites of Xunantunich, Buenavista del Cayo, and Actuncan, as well as minor center of Benque Viejo. These sites also display similar trends in eccentric caching to other Belize Valley sites. Excavations at Xunantunich alone show evidence for a strong eccentric caching tradition, while other sites have only a few examples of eccentric caches. Like suggest for Lower Dover, most sites in the Mopan valley have seen fewer excavations compared to other major sites such as Xunantunich, Baking Pot, and Cahal Pech.

A chronological understanding of caches in the Belize Valley remains elusive, as caches are often void of datable materials such as ceramics for relative dating or carbon for absolute dating. Moreover, caches recovered in the Petén District of Guatemala, are dated through the relation to dated stela. This poses a methodological problem for the analysis of caches in the Belize Valley, valley sites are nearly devoid of inscribed stone monuments. Xunantunich is the only site with a wide range of carved stela, many of which have caches of eccentrics beneath.

Within the Belize Valley, eccentric caches are most commonly found in association with construction episodes, within structures on the primary, front/back axis or within the summit platform of pyramidal and range structures within the civic-ceremonial centers, as well as occasionally appearing at minor centers and large peripheral settlement groups.

Chapter 6: The Eccentric Caches of Xunantunich

Xunantunich Caches

The long history of archaeological research at the site of Xunantunich, beginning with Thomas Gann's research in the 1890s, provides a rich data pertaining to the ritual practices of the ancient Maya of the Upper Belize Valley. A wide range of ritual behaviors are evident throughout the civic-ceremonial center of Xunantunich, including caches of ceramic vessels, and eccentric lithics, as well as elaborate burials. Nearly every major excavation within the site core identified evidence of the use of eccentric lithics within ritual contexts. While some reports are vague, overall, these data allow for an in-depth analysis of the patterning of this common ritual practice at Xunantunich. Eccentric caches have been found in a variety of repetitious contexts, suggesting a cyclical or standardize eccentric caching ritual, associated with the terminal architectural and monumental florescence at the Late Classic civic-ceremonial core of Classic Xunantunich (Figure 23).

For the sake of organization, within this chapter, I present caches in chronological order and by the researcher or project who excavated each cache, beginning with Thomas Gann's research in the 1894-1895 season and ending with research conducted by XACP, the BVAR project, Dr. Awe, and the author in the 2016 field season.

I have created a table after the cache table, designed by Jamison, in *Provincial Politics* (2006), refined to contexts containing eccentrics and updated to reflect new eccentric caches found in the 2015 and 2016 field seasons, in order to add clarity to the descriptions and locations of each cache (Tables 2-5).

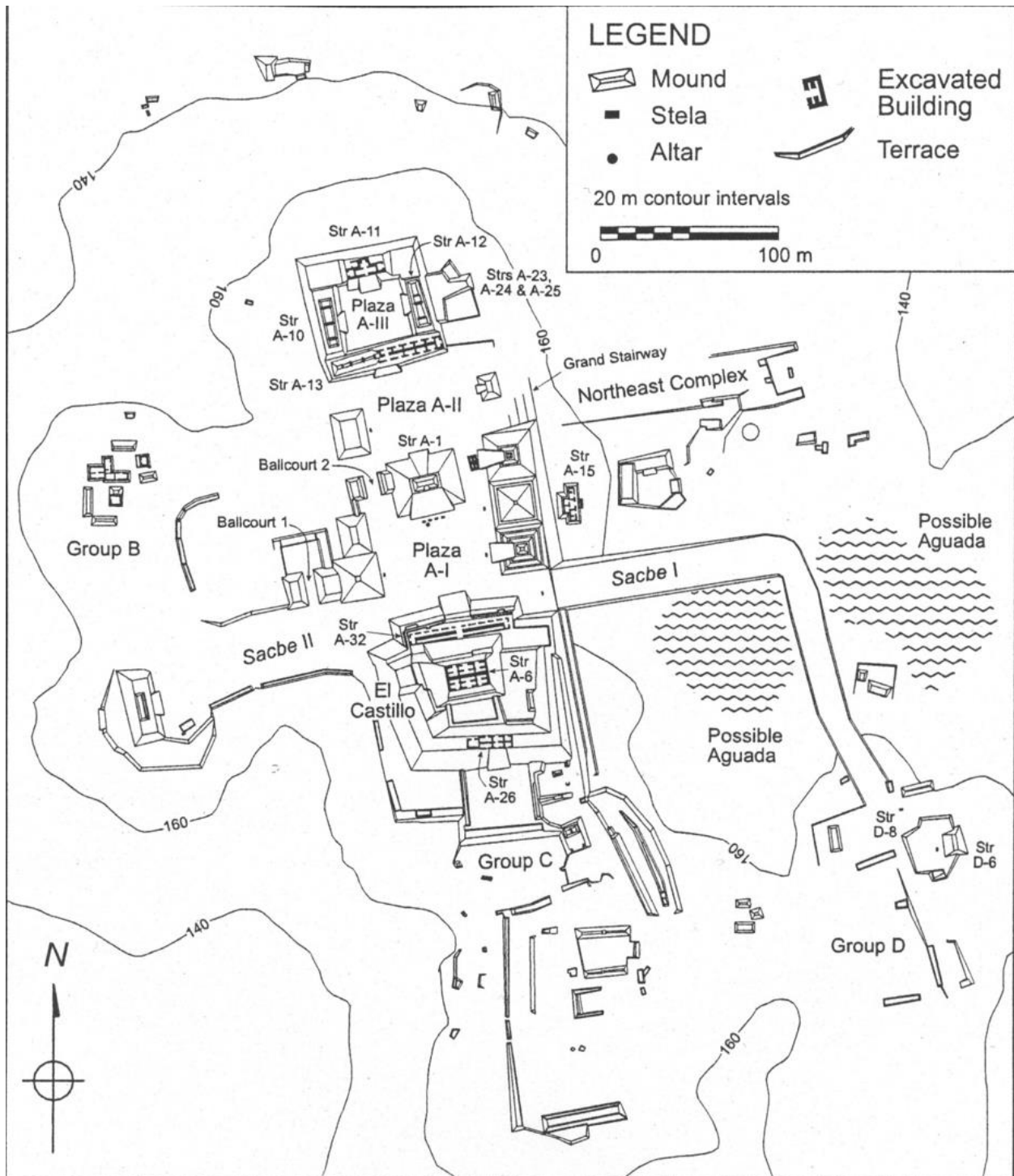


Figure 23. Map of the civic-ceremonial center of Classic Xunantunich (Map after Keller and Yaeger).

Thomas Gann's Eccentric Caches. Thomas Gann was a British medical doctor, who took an interest in Maya archaeology and explored many centers in Belize. Gann conducted the first systematic investigations at the site of Xunantunich and reported his work in the books *The Maya Indians of Southern Yucatan and Northern British Honduras* (1918) and *Mystery Cities of the Maya* (1925). In his field season at the site between 1894 and 1895, Gann recovered a large eccentric cache from the summit of structure A7, as well as sub-*stela* caches from structure A1 and the eastern triadic group—Structures A-2, A-3, and A-4—*stelae*.

Structure A-1 is an imposing structure, situated in the center of two large Plazas—Plazas A-I and A-II. On the southern face of the structure, the Maya placed 5 stela in front of the central stairway. One of these stela was carved, dating to AD 849. Below the monument, Gann noted the presence of a small depression carved into the bedrock, which contained three chert eccentrics. Gann does not describe the individual implements but comments that the form, size, quality, and production techniques are so similar to those found in Structure A-7 that they must have been made by the same craftsman (1925:63). While this is debatable, it is the best description of the eccentrics available.

Gann described Structure A-7 as a burial mound, a highly contentious classification for modern Mayanists. The large pyramidal structure is located on the western side of Plaza A-I. Within the top of the structure, Gann discovered a large cache of various materials including 40 total eccentrics—35 chert and 5 obsidian—jade blocks, marine shells, an obsidian core, hammerstones, and two chisels, with highly degraded human remains including a femur and a fibula (Gann 1925:52-54). The special deposit may be associated with the terminal construction phase of the structure.

In the 2016 field season, excavations on Structure A-7 revealed the presence of a still-plastered penultimate stairway. As Gann's description is fairly vague, it is possible he located this earlier phase of architecture. He noted "at a depth of 22ft, a wall built wall of squared stones, held together by tough mortar," a description that compliments new archaeological data recovered from the structure (Gann 1925:54; Tilden and Sullivan 2017).

Gann explored the stela in front of the Eastern Triadic Group—Structures A-2, A-3, and A-4—and the summit of one of the three structures. Gann noted the presence of a sub-stela eccentric cache and a large concentration of eccentrics on the summit of one of the three structures, presumed to be Structure A-3, and (Figure 24) (Gann 1918:96). Gann described the excavations of the mound and the discovery of the eccentrics saying:

“Upon the summit of one of these mounds...Sixty-four of these objects were found in all at depths varying from one or two inches to a foot beneath the surface; all were within an area if about two square yards (Figure 25). Some of the objects were chipped out with great care and accuracy; other were merely flint flakes with a few shallow indentions chipped into their sides” (Gann 1918:96).

The eccentrics recovered from the summit comprise the largest concentration of eccentrics found at the site of Xunantunich, and perhaps one of the largest caches in the Maya Lowlands. The contextual information about the cache, however, is incredibly limited. The missing details makes it impossible to determine if this assemblage represents one or more ritual depositions, as the materials are not in a one singular cyst or feature, typical to a cache.

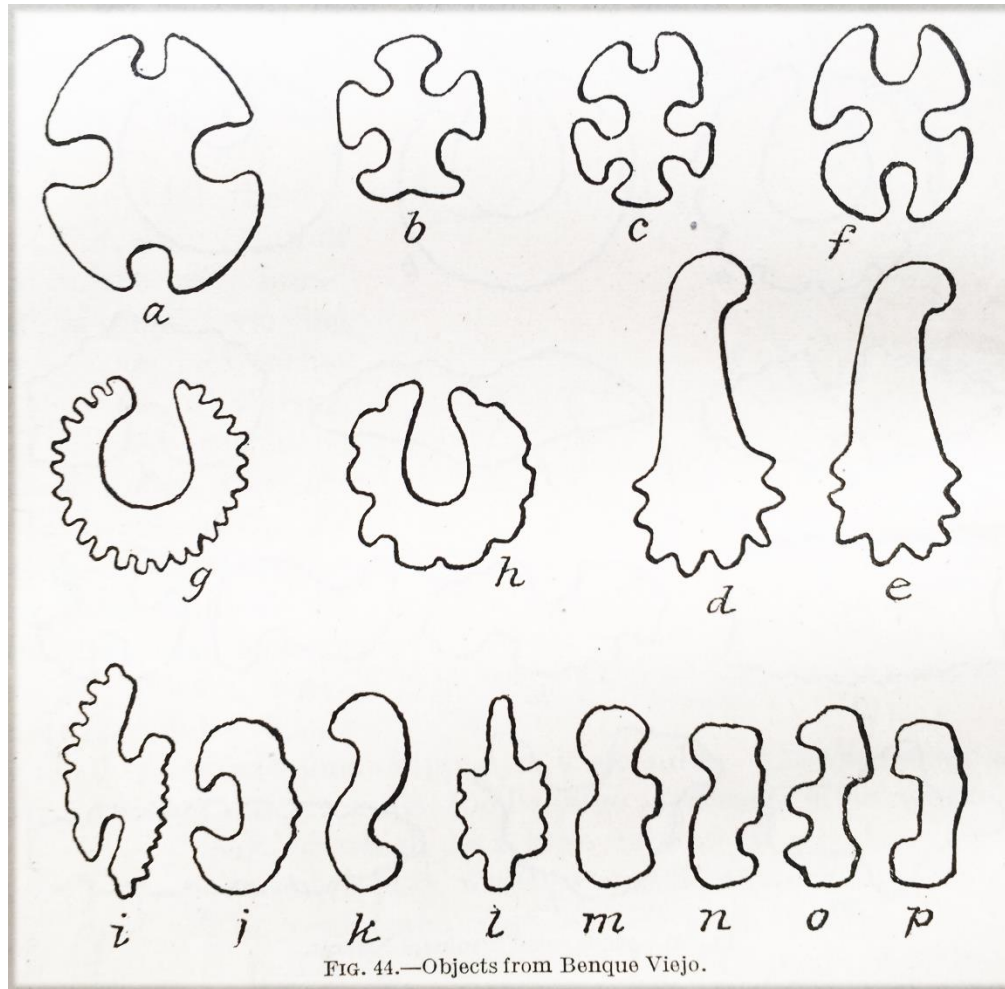


FIG. 44.—Objects from Benque Viejo.

Figure 24. Eccentrics recovered from the summit an unspecific structure of the Eastern Triadic Shrine at Xunantunich. Eccentrics a—l are made from chert and eccentrics m—p are made from obsidian (Gann 1918:Fig. 41).

The forms of the eccentrics from the summit reflect typical morphology seen at Xunantunich and across the Maya Lowlands. The forms include crescents, Maltese crosses, and scorpions, as well as embellished and notched laurel leaf bifaces and small notched obsidian eccentrics, produced on exhausted blade cores, in the common forms including the “S-form,” “E-forms,” which likely represent Venus (Figures 24 and 25).

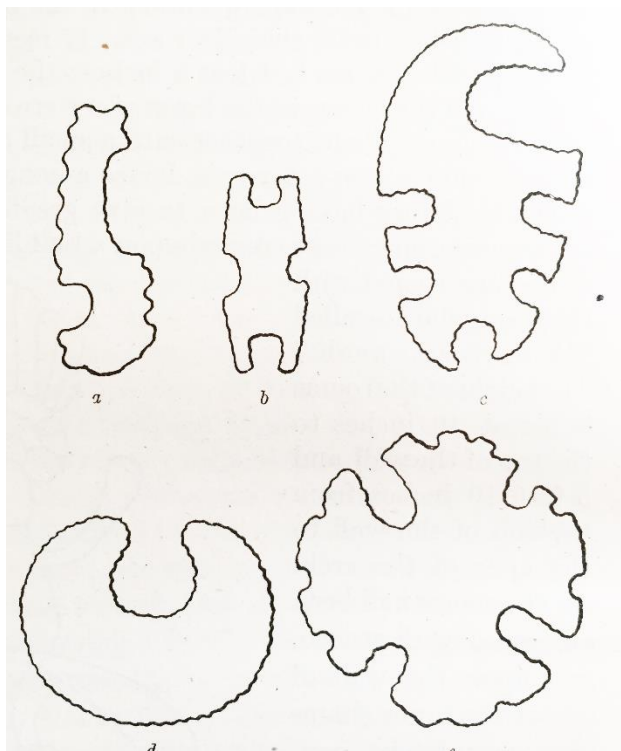


Figure 25. Additional chert (a, c—e) and obsidian (b) eccentrics recovered from the summit of an unspecified structure of the eastern triadic shrine at Xunantunich (Gann 1918:Fig. 40).

In yet another vague description, Gann discusses the excavation beneath a stela and altar pair “in front of the largest pyramid” (Gann 1918:97). This likely refers to Structure A-1, which featured a series of stelae and altars on its southern face. This, however, remains unverified. Excavations located two eccentrics, which were “in contact” with the base of the stela, suggesting the cache was placed in conjunction with the erection of the monument (Gann 1918:97). The two eccentrics were made of chert and reflect similar forms and craftsmanship of other eccentrics from Xunantunich, including the scorpion and crescentic forms (Figure 26).

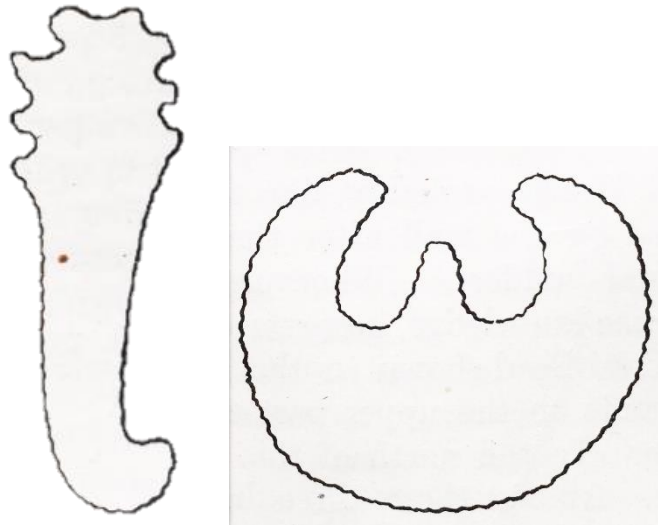


Figure 26. Eccentrics found in a sub-stela cache from Xunantunich, scale unknown (Gann 1918: Figs. 41 and 42).

In addition to the caches Gann reports from the civic-ceremonial core of Xunantunich, he describes a cache from by Dr. Davis in the excavations of a small mound near the modern village of San Jose Soccutz, located directly east of the site core of Xunantunich, across the Mopan River. The cache contained six obsidian eccentrics, whose forms reflected those similar to eccentrics found at the site core of Xunantunich, as well as eccentrics from the center of Naranjo, in the Petén District of Guatemala, found by Teobert Maler (Figure 27) (Gann 1918:96-97). The craftsmanship is not addressed Gann's report. Based on the forms, however, it is very likely that these eccentrics were crafted from exhausted blade cores.

It is a fairly unusual to find eccentrics in within hinterland contexts. These implements most often appear within restricted elite ritual contexts. Data recovered from the settlement of Baking Pot and Cahal Pech, however, demonstrate a similar of trend in access by large peripheral house groups to eccentric lithics (Du Menil 2014; Powis 1993; Iannone 1993a, 1993b; Iannone and Colon 1993). This is the lone example I have encountered of a peripheral house group with

eccentrics around the site of Xunantunich. It is most likely that eccentrics recovered within hinterland contexts were gifted to residents.

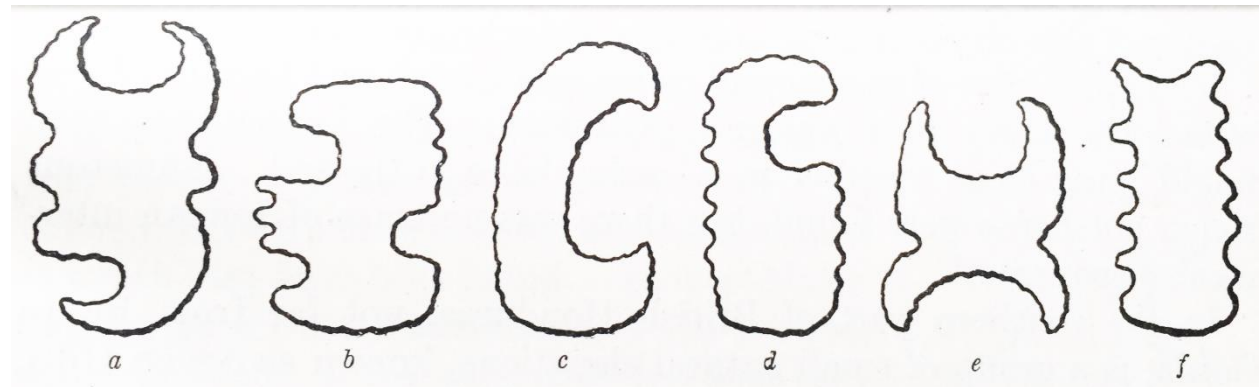


Figure 27. Drawing of eccentrics recovered in the excavation of a small mound near the modern village of San Jose Soccutz, Belize located directly east of the site of Xunantunich (Gann 1918:Fig.45). Scale is unknown.

Michael Stewart's Eccentric Caches. Michael Stewart excavated on the eastern triadic structures in the seasons of 1952 and 1953. In his brief report, he details the trenches he explored, which paralleled the three eastern structures—A-2, A-3, and A-4. A platform in front of the structure was completely exposed. Within the floor of the platform, two caches were discovered. The caches were in approximately the same location, with five centimeters of floor separating the two deposits (Stewart 1953:3). The presence of floor separating the two caches indicates a temporal separation of the two depositional events. The first cache, Cache B, contained “several” chert eccentrics, “resting on the fragments of a shallow dish” (Stewart 1953:3). The second cache, Cache C, rested in dry core fill within the platform and contained 36 lithic implements, all eccentrics aside from two obsidian blades (Stewart 1953:3).

Euan MacKie's Eccentric Cache. A very brief description of one eccentric recovered in the excavations from Structure A-15, located off the main plazas, slightly east, behind the eastern Triadic shrine—Structures A-2, A-3, A-4. While the find did not constitute a cache of eccentrics, an isolate chert eccentric found by Mackie, is the isolated example of an anthropomorphic form found at Xunantunich. This form is prevalent at sites such as Altun Ha and Lamanai, in the Northern Coast Plain region, as well as common the in Petén Region. Researchers have suggested that this form relates to eccentric lithics from Teotihuacan, located over 1000 km from Belize, in the Valley of Mexico.

Xunantunich Archaeological Project Eccentric Caches. In the 1994 field season of the Xunantunich Archaeological Project (XAP), J. Braswell investigated Structure D-6, the large eastern shrine of the group (Braswell 1995). In front of the structure, the Maya placed a stela, known as Stela 11. The fill surrounding the stela included large amounts of ceramic sherds, all dating to the Terminal Classic period (Braswell 1995). These data provide a general date for the erection of the monument. Below the stela, Braswell located a cache of eight obsidian eccentrics. Seven of the eight eccentrics were produced on exhausted blade cores, similar to eccentrics found within the site core. Sourcing shows that all eccentrics were produced from obsidian from the El Chayal source in highland Guatemala (Braswell 1995:219). In addition to the sub-stela cache, one fragmented eccentric accompanied a burial in the lower crypt of Structure D6. This “eccentrically chipped obsidian” was made of Ixtepeque obsidian (Braswell 1995:219).

While eccentrics are mostly commonly found within burial or cache contexts, these ritual implements are occasionally found in seemingly haphazard contexts (Iannone 1993a). In Group D, within the platform of Structure D-16, two chert eccentrics were found within the construction

fill (Braswell 1995). This is an unusual context for eccentrics and may suggest that Structure D16 served as an activity area, used for the production of eccentrics and other lithic tools. Similarly, in several instances at the sites of Piedras Negras and Dos Pilas, both in the Petén region of Guatemala, researchers have located eccentrics within construction fill, sometimes in discrete caches and other times, seemingly haphazardly placed within the structural fill (Coe 1965; Palka and Escobedo 1992). This practice is important to note, although it is less commonly observed at Xunantunich.

Tourism Development Project Eccentric Caches. Between the years of 2000- 2004, the Tourism Development Project (TDP), an international cooperative effort, sponsored in part by the Belize Ministry of Tourism and the Institute of Archaeology, excavated and conserved a number of major Maya sites across the country of Belize including Caracol, Lamanai, and Xunantunich.

As part of the Tourism Development Project, Awe and Audet excavated several structures at Xunantunich, including the northern face of El Castillo (Structure A-6), as well as Structures A-4 and A-14. The TDP excavations revealed concentrations of ritual materials, including burials and caches featuring eccentric lithics in several structures, specifically Structure A-4 and A-14.

Structure A-14. Structure A-14 is a small platform, located on the east side of Plaza A-II (Figure 28). The structure is positioned just to the north of the Eastern Triadic Group and across the plaza from Structure A-9. Gann extensively excavated, or according to some stories, used dynamite to blow the top off of the structure. Due to Gann's dismantling of the structure, it is unclear what the original height of the structure was, as it is missing all but the base of the structure.



Figure 28. Photo of Structure A14 after the TDP excavation and conservation (photo by J. Awe, courtesy of BVAR).

During the TDP excavations at Xunantunich, Awe and Audet excavated two small units on the western face of Structure A-14, facing into Plaza A-II. While no artifacts were encountered within the unit that penetrated the stairway, two eccentric caches were identified in front of the stairway, along the east/west structural axis, beneath the terminal plaza floor (Audet 2006:151).

The caches were placed at the same level, 65 centimeters below the modern plaza level, and 30 centimeters apart from each other (Figure 29). Each cache contained nine objects. Cache 1 comprised of nine chert eccentrics, while Cache 2 featured eight chert eccentrics and one jadeite bead (Figure 30) (Audet 2006).



Figure 29. Two chert eccentric caches in-situ, discovered in front of Structure A-14 at Xunantunich (photo source J. Awe, courtesy of BVAR).



Figure 30. Chert eccentrics from the two axially-aligned caches in front of the stairway of Structure A-14 at Xunantunich (photos by J. Awe, modified by K. Sullivan, courtesy of BVAR).

Several caches recovered from Plaza A-I, including the caches from the eastern triadic shrine and Structures A-1 and A-7 seem to reflect this earlier pattern at Tikal, with caches featuring large quantities of eccentric implements. This is in contrast to caches recovered from Plaza A-II, such as these two caches from Structure A-14, and Cache 2 from Structure A-9, a cache which will be discussed later in this chapter. It is unclear if this temporal evolution of caching practices, documented at Tikal, is reflective of the caching patterns at Xunantunich, as extremely limited temporal information exists for the caches from the site.



Figure 31. Photo of Structure A-4, after TDP excavation and conservation (photo by J. Awe, courtesy of BVAR).

Structure A-4. Structure A-4 is the southernmost pyramidal structure of the Eastern Triadic Shrine at Xunantunich (Figure 31). Structure A-4 has several caches within the summit. A cyst containing human remains on the center line of the summit of Structure A-4. The remains include the entire remains of a child, approximately 10 years of age, an adolescent female, two addition

skulls, and one cranium, and the remains of the five adults and one sub-adult. This interpretation, offered by Freiwald (2011:145-146) and Peihl, varies from the original assessment of the remains (Audet 2006:139-140). West of this cache was 4 caches in front of the bench. Audet (2006:140) detailed the contents of the four caches:

1. Cache 1 contained five crescentic eccentrics made of red chert and two spiny oyster shells (Figure).
2. Cache 2 also comprised of five crescentic eccentrics made of red chert.
3. Cache 3 had 11 eccentrics in a range of forms and one jadeite bead.
4. Cache 4 was a ceramic vessel cache including incensarios, polychrome vases, and bowls.

Caches 1 and 2 reflect a highly standardized caching ritual, featuring a collection of homogenous eccentric forms—crescentic shaped—made of locally sourced, red banded chert. Cache 1 featured five of these eccentrics, in addition to two large complete spiny oyster shells (Figure 32). The description of the eccentrics from Cache 3 are vague, and no pictures of the eccentrics can currently be located. The spatial distribution of the four caches suggest a coeval deposition. No chronometric dates were established for the caches, and the age of the caches can only be suggested through ceramic seriation. Benque Viejo polychrome vases and Mount Maloney Black bowls present in the caches suggest that these caches were placed in the Late Classic Period (Audet 2006:140).



Figure 32. Cache 1, recovered from the summit excavations on Structure A4 by the TDP, which comprised of 5 crescentic chert eccentrics and two large marine shells (photo by C. Audet, courtesy of Awe).

Below these caches, Audet (2006:144) located a penultimate structure, which featured vaulted rooms. Within Room 1, an excavation unit was placed into the floor. The excavations revealed a burnt layer, which covered nine clusters of artifacts, interpreted to be a cache. This cache included a limestone altar, a total of 17 eccentrics, six of which were sprinkled with cinnabar, as well as two Saturday Creek Polychrome vessels (Audet 2006:146). Saturday Creek Polychrome is diagnostic of the Tiger Run Complex, in the Tepeu 1 sphere, dating between AD 600-700, or the early part of the Late Classic Period (Gifford 1976).

The eccentrics from this cache were crafted out of a range of locally procured raw materials including chert, quartzite, and chalcedony, as well as obsidian. A description of the eccentric forms is limited, although the author does describe the obsidian eccentric found beneath of the altar as a scorpion form (Audet 2006:146).



Figure 33. Burial featuring eccentric lithics, recovered from the summit excavations on Structure A4 by the TDP (Photo by J. Awe, courtesy of BVAR).

Below the altar, excavations revealed human remains (Figure 33). Within the burial chamber, a range of high-status objects, including fragmented ceramics, which proved to be parts of the two Saturday Creek Polychrome vessels found above the burial. This evidence is important, suggesting that the offering was placed at the same time as the burial. Other grave goods included three obsidian blades, two jade beads, one obsidian core, and a total of 7 eccentrics (Audet 2006:146). The eccentrics, as well as the remains, had been sprinkled with cinnabar.

The burial within Structure A-4 comprises only the second example of eccentrics within a burial context at Xunantunich, along with the cached human remains, discovered by Gann within the summit of Structure A-7. The two structures face each other, across Plaza A-I. It is unknown if the location of the two structures is relevant to the discussion about eccentrics placed with human remains, but it is an interesting pattern to note. Overall the two structures appear to have a deeper construction history than the majority of other structures within the civic-ceremonial center of

Xunantunich. Excavations on each structure have revealed a penultimate construction phase, a feature which many monumental structures in the site lack.

The burial from Structure A-4 is securely within the penultimate structure and based on a somewhat limited explanation from Gann (1925), it is likely that the burial in Structure A-7 was also placed within the penultimate structure. This may suggest that the practice of interring individuals with eccentrics was an early articulation of eccentric caching practices at Xunantunich, and was phased out as practices transitioned to monumental and structural dedication caches. The data to substantiate this idea remains limited, but as more caches are discovered, a chance exists to expand the currently chronological understanding of caching at Xunantunich.

Mopan Valley Archaeology Project Eccentric Caches

Group D, Structure D-6. Group D is a terminus group, located at the end of Sacbe 1, to the southeast of the Late Classic site core (Figure 34). Extensive research has been conducted on Structure D-6, the large eastern pyramidal structure of Group D by J. Yaeger and W. Lytle of MVAP and UTSA, as well as Jennifer Braswell and XAP. Excavations revealed long term use and extensive remodeling of the structure, spanning from the Preclassic into the Late to Terminal Classic Periods.

Recent excavations by MVAP exposed several eccentric caches. Results of the 2016 MVAP field season were presented by Lytle (2017) at the 82nd Annual Society for American Archaeology Meeting in Vancouver, B.C.

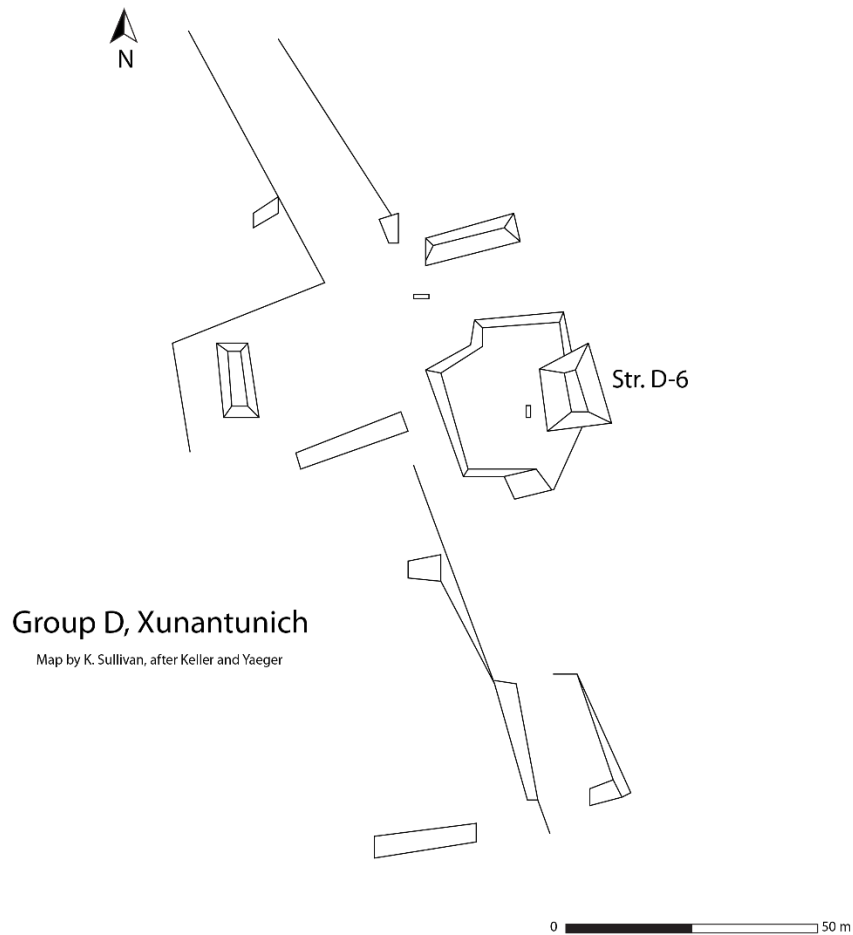


Figure 34. Map of the central portion of Group D, with Structure D-6 labeled (Map by K. Sullivan, after Keller and Yaeger).

In addition to the sub-stela cache of eccentrics recovered by Braswell (2005), Lytle (2017) noted the presence of three additional features containing eccentrics. Caches within the eastern shrine span the range of cache contexts observed at Xunantunich, including a sub-stela cache, a cache located within the plaza floor in front of the axial stairway, a structural cache located within the Late Classic remodeling, as well as within a Late Classic burial.

Xunantunich Archaeology and Conservation and BVAR Projects Eccentric Caches

Structure A-3. Structure A-3 is the central pyramidal structure in the eastern triadic group at Xunantunich (Figure 35). In the 2015 field season, Awe and Santasilia led excavations by the XACP and BVAR Projects at the base of the western face of Structure A-3, facing into Plaza A-I. In order to determine the construction sequence of the structure, researchers excavated units from the top and base of the structure. At the base, the excavation penetrated the stairway, revealing the presence of a construction stairway within the structure.



Figure 35. Photo of the Eastern Triadic Shrine at Xunantunich, from left to right Structures A-2, A-3, and A-4, following the conservation of Structure A3 in 2015 (photo by K. Sullivan).

The ancient Maya placed a cache of nine chert and nine obsidian eccentrics just behind the first stair, in front of the construction stairway (Figures 36 and 37) (Santasilia and Tilden 2016). This cache, known as Cache 1 (Xun-15-A3-CA1) most likely served as a dedicatory cache, placed

during the construction of the building to consecrate the space. The structure itself appears to have one constructional episode, which further suggests that the cache was placed just prior to the completion of the temple.

The obsidian eccentrics were primarily composed of exhausted blade cores, which were repurposed through decorative notching into ritual implements (Figure 38, left). The use of exhausted obsidian blade cores to produce eccentrics is a very common practice throughout the Maya lowlands at sites such as Tikal, Uaxactún, Piedras Negras, and Pusilha (Coe 1959:28; Kidder 1947:19-20; Moholy-Nagy 2007; Willey et al. 1965:449). This tradition of repurposing utilitarian cores of obsidian also appears within the Belize Valley, as these implements have been recovered from caches at Barton Ramie, Cahal Pech, and Xunantunich.

The nine obsidian eccentrics combined with nine finely-chipped chert eccentrics (Figure 38, right). The chert eccentrics are unusually small and detailed in comparison to other eccentrics located at Xunantunich. The raw material is high quality chert, which appears to be local in origin. The range of forms are both typical and atypical within this cache and include anthropomorphic and zoomorphic forms such as scorpions, snakes, spiders, and centipedes, as well as more common eccentric forms such as crescents and serrated points. One particularly interesting form present in Cache 1 is a thin oval chert biface with a negative quadripartite design chipped from the center.

The cache appears to have been placed in a deliberate layout. Researchers have suggested that caches at many sites are cosmological representations, which portray the Maya understanding of the world (Awe 2017; Matthews and Garber 2004). The elements and arrangement of Cache 1 may form a cosmogram, with individual elements of the heavens, the earthly world, and the underworld represented in relation to each other. The cache is centered by the quadripartite disk, likely representing the earthly world, with a crescentic eccentric below. Several zoomorphic forms

are stack above the disk, comingled with forms such as an ancestor or deity profile and Venus form (Figure 38).



Figure 36. Cache Xun-15-A3-CA1 in-situ, or Cache 1, in the upper right corner, recovered on the front-back (east/west) structural axis of Structure A-3, behind the first stair, in front of the construction stair (photo by C. Santasilia, courtesy of BVAR).



Figure 37. Cache Xun-15-A3-CA1 in-situ, or Cache 1, recovered on the front-back (east/west) structural axis of Structure A-3, behind the first stair (photo by C. Santasilia, courtesy of BVAR).



Figure 38. Layout of Cache Xun-15-A3-CA1, or Cache 1, of obsidian (left) and chert (right) eccentrics from Structure A-3, recovered in the 2015 field season by Santasilia and Tilden (2016) (Photos by K. Sullivan).

Significant of the Eastern Triadic Group (Structures A-2, A-3, and A-4). The eastern triadic group at Xunantunich comprises of three pyramidal structures—Structures A-2, A-3, and A-4. The three large structures each are marked by uncarved stelae. Early investigations at the group by Gann and Stewart revealed large concentrations of ritual behavior including large caches of eccentrics and ceramic deposits (Gann 1925; Stewart 1953). Additional work down on the group by Awe and Audet, as part of the TDP, revealed ritual materials in the form of many caches and burials (Audet 2006).

Structure A-9 Excavations. In the 2016 field season, BVAR research, led by Awe and the author, focused on the excavation of Structure A-9. Structure A-9 is a large pyramidal structure, located on the western side of the large public plaza, Plaza A-II (Figure 39) (Slocum 2018; Slocum et al. 2017; Tilden et al. 2017). The structure was previously excavated by Gann (1925), resulting in the large divot visible on the summit of the structure, and Richard Leventhal and the XAP project (Awe, Personal comm. 2016). Gann located a burial at the summit of the structure, accompanied by a few grave goods, including jadeite ear spools, a chert point, and a broken obsidian blade (Gann 1925). No additional evidence of ritual behavior had been previously identified in association with the structure.

The 2016 excavations on Structure A-9 began by exposing the architecture at the base of the structure, including the central stairway. In addition, a small unit was placed to explore the area beneath the base of the fallen stela. Centered in front of the stairway, the large stela, which would have stood approximately four meters tall, now rests on its face. Within this unit, a small constructed stela foundation was revealed, in addition to a dedicatory cache (Slocum 2018; Slocum et al. 2017; Tilden et al. 2017).



Figure 39. Structure A-9 at Xunantunich, a large pyramidal structure on the western side of Plaza A-II with a large uncarved stela, seen in part of the bottom right (Photo by J. Awe, courtesy of BVAR).

Within the small stone enclosure, designed to stabilize the base of the stela, researchers encountered a large cache of chert eccentrics and eccentric flakes, cemented together in marl, known as Cache 1 (Xun-16-A9-CA1) (Figure 40). Cache 1 comprised of 28 total eccentrics implements, 14 of which were bifacially worked, and 14 of which were denticulate flakes or unifacially modified flake eccentrics (Figures 41 and 42). Bifacial eccentrics' forms in the cache included a scorpion, several crescentic forms, two denticulate laurel leaf bifaces, and a solid circular disk (Figure 42) (Tilden et al. 2017). The unifacially worked flakes are indeterminate forms, but clearly added significance to the caches. In addition to the eccentric lithics, one small eroded ceramic sherd was present in the cache. Unfortunately, the sherd was highly eroded, preventing it from being dated. No additional datable material accompanied the cache.

The Maya placed Cache 1 in association with the erection of the uncarved stone monument, directly in front of the central stairway of Structure A9. This sub-stela context is a common setting for caches of eccentric lithics, especially at the site of Xunantunich.



Figure 40. The stela placed in front Structure A-9, with the location of the cache marked with the red circle (photo by K. Sullivan). In order to expose the cache in-situ, it was necessary to flip the stela up and secure it with ropes to the trees growing on the structure.



Figure 41. Cache 1, or Xun-16-A9-CA1, in-situ, recovered beneath the uncarved stela in front of Structure A-9 at Xunantunich (photo by K. Sullivan).



Figure 42. Layout of the contents of Structure A-9 Cache 1, Xun-16-A9-CA1, which contained 28 total eccentrics—14 chert eccentrics and 14 unifacial eccentric flakes (photo by K. Sullivan).

Just behind the stela, a small unit was placed centered in front of the stairway of Structure A-9, in order to look for potential offerings, placed in association with the construction of the structure (Figure 43). Excavation quickly revealed the presence of a second cache— Cache 2, or Xun-16-A9-CA2—which was placed by penetrating through four plaster floors and resealing the terminal floor (Tilden et al. 2017).



Figure 43. Central stairway of Structure A-9. In front of the first stair Cache 2, or Xun-16-A9-CA2, contained 9 obsidian eccentrics, marine shells, and small polished and raw precious lithic materials (photo by K. Sullivan).

This cache consisted of nine obsidian eccentrics, several large and small marine shells, coral, and freshwater shells, as well as small raw and worked pieces of precious lithic materials including jadeite and pyrite (Figures 44-51) (Tilden et al. 2017). The combination of obsidian, jadeite and marine shells within caches is a common ritual practice throughout the Maya lowlands, evoking the primordial sea (Freidel et al. 1993; Willey et al. 1965:452).

The items in the cache were placed with the large marine materials bordering the eccentrics, with the small freshwater and marine shells, and the small lithic materials sprinkled in with the eccentrics (Figure 44). No evidence of bundling of the artifacts is present, though the artifacts are placed in a rather deliberate way. The cache is aligned with the center east/west axis of the structure. Along the same line is approximately 1 meter farther out from the structure is the location of Cache 1.



Figure 44. Cache 2, Xun-16-A9-CA2, located beneath the plaza floors, in front of the central stairway of Structure A9, and pictured in-situ (photo by K. Sullivan).

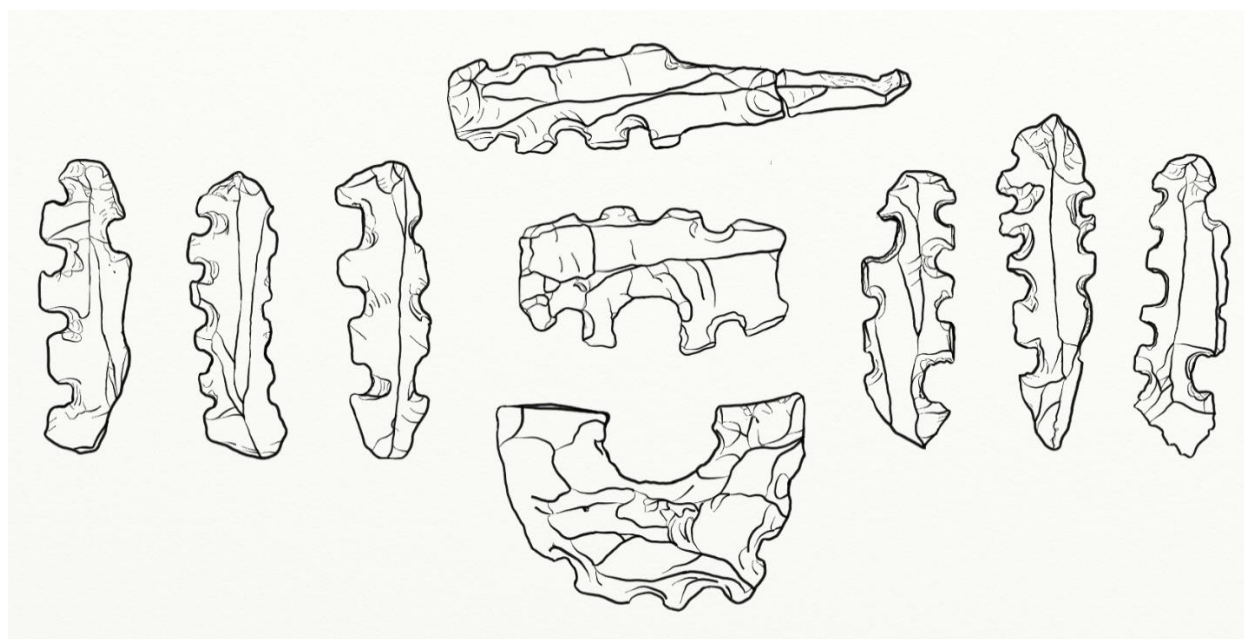


Figure 45. Photo (above) and line drawings (below) layout of the nine obsidian eccentrics from Cache 2, Xun-16-A9-CA2 (photo by K. Sullivan, drawing by S. Montgomery).

Cache 2 features eccentrics in zoomorphic forms, such as scorpions or centipedes, in addition to one thick notched crescentic ring, forms which are common throughout the Belize Valley and the site of Xunantunich (Figure 45). Interestingly, however, the eccentrics are made on large macroblades and are primarily unifacially worked, a pattern not demonstrated by assemblages from other sites in the valley.

The serrated crescent, or crescentic eccentric, artifact Xun-16-A9-CA2-I, shows evidence of being produced from an exhausted blade core or having prior blade removals (Figure 46). It is not clear if this eccentric is made from the same objective piece as the other macroblade-based eccentrics. There are two blade scars present on one surface, (see Figure 46, right side of right photo). The presence of the blade scars suggests the implement was crafted out of repurposed obsidian, or that blades were removed during the process of producing the eccentric.



Figure 46. Crescentic obsidian eccentric (Xun-16-A9-CA2-i) from Cache 2 (Xun-16-A9-CA2), shown from both sides (photos by K. Sullivan). On the right side of the right photo, a two small blade scars are present.

Eight of the nine obsidian eccentrics from Cache 2 were produced by retouching macroblades through pressure flaking. The macroblades were likely struck off in the preparation of a blade core, a process which has the added benefit of creating blanks for the production of eccentrics. It is evident that the macroblades were struck from the same objective piece, demonstrated by the intact margins, some of which refit. While not all have been shown to fit together, two clusters of the eccentrics do refit along intact original margins (Figures 47 and 48). It is most likely that each of the eight blades were struck from the same core, by the same craftsman. The striations within the material appear to be homogeneous and the raw material is all sourced from El Chayal in Guatemala (See Chapter 9 of this volume for additional sourcing information).



Figure 47. Obsidian eccentrics D (Xun-16-A9-CA2-D) and F (Xun-16-A9-CA2-F) from Cache 2 (Xun-16-A9-CA2), made from macroblades, which refit on their intact original edges (photo by K. Sullivan). The fact that the eccentrics refit in this manner suggest that they were all stuck from one core, prior to being retouched into ritual eccentrics implements.



Figure 48. Obsidian eccentrics B (Xun-16-A9-CA2-B) and G (Xun-16-A9-CA2-G) from Cache 2 (Xun-16-A9-CA2), made from macroblades, which refit on their intact original edges (photo by K. Sullivan). The fact that the eccentrics refit in this manner suggest that they were all stuck from one core, prior to being retouched into ritual eccentrics implements.

Many marine materials were incorporated into Cache 2 including a large chunk of branch coral and two complete marine shells—one large cockle and one Turkey Winged Arc Clam (*Arca zebra*). Cache 2 also included two small Spondylus shell fragments, one of which is perforated, as well as a conch spine, and two small, unidentified marine bivalves (Figures 49 and 50). The marine materials were identified by Norbert Stanchley (Personal comm. 2016). The cache also included three lopped off freshwater jute (*Pachychilius glaphyrus*) shells.



Figure 49. Large marine materials found in Cache 2 include a Conch Spine (A), a chunk of branch coral (B), a large cockle shell (C), and a Turkey Wing Arc Clam, *Arca zebra* (D) (photos by K. Sullivan).

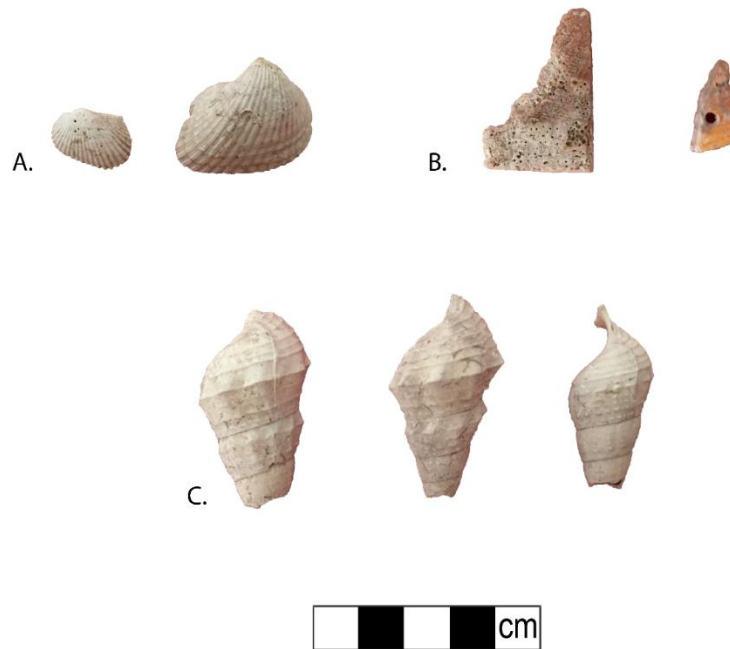


Figure 50. Small freshwater and marine materials found in Cache 2 include two unidentified marine bivalves (A), two pieces of *Spondylus* shell, both are modified and one is perforated (right) (B), and three freshwater jute, *Pachychilium glaphyrus*, shells (C) (photos by K. Sullivan).

In addition to the eccentric, small fragments of lithics materials were present in the cache including 15 small, flat polished pieces of jadeite and 18 pieces of flat, polished pyrite, both of which could have served as pieces of a mosaic, as well as 10 small raw pieces of jadeite and five small pieces of an unidentified red mineral, which is most likely hematite (Figure 51).

These materials, referred to by researchers as “Cache dirt” were sprinkled around the primary components of the cache (Chase and Chase 2008; Martindale Johnson 2016:65). The material types were highly valued by the ancient Maya and their presence within the cache would have increased the prestige or ideological value of the cache.

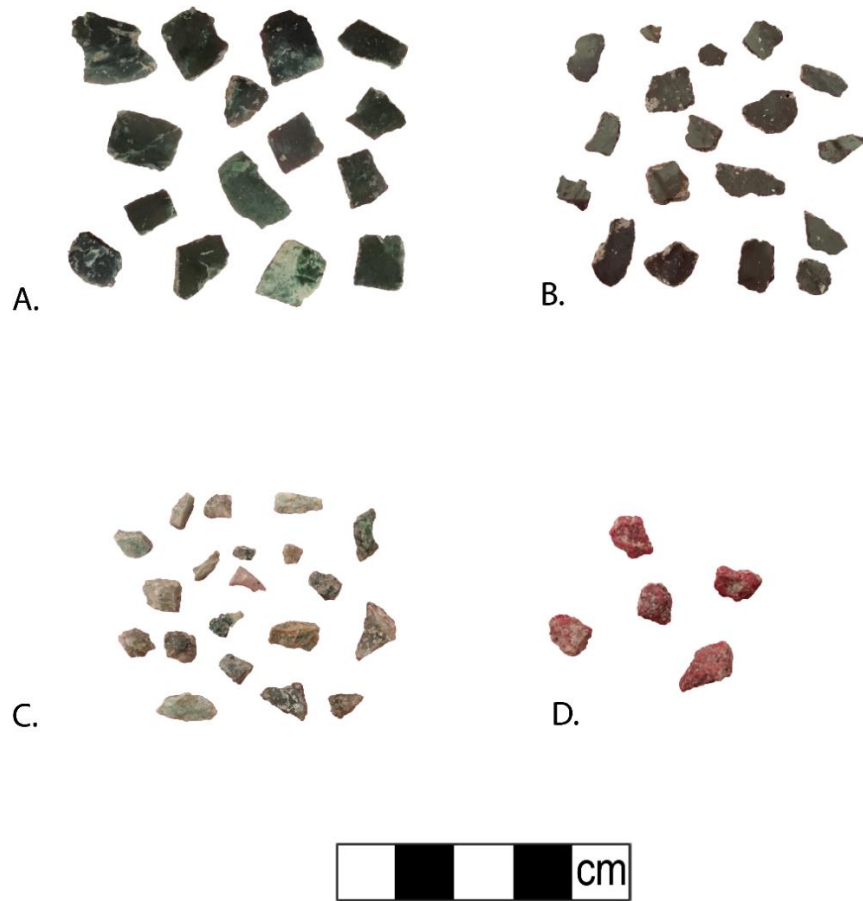


Figure 51. “Cache dirt” or lithic materials recovered from Cache 2, including flat, polished jadeite (A), flat, polished pyrite (B), raw jadeite (C), and pieces of an unidentified red mineral, which may be hematite or cinnabar (D) (photos by K. Sullivan).

While the polished pieces of jadeite and pyrite may have been part of a mosaic, or debris from the production of a mosaic, the raw jadeite and other mineral may not have been suitable for craft production but still held ideological significance. These materials likely represent detritus from craft production, sequestered for a period of time for use in ritual deposits.

Structure A-9 Significance. The caches recovered from Structure A-9 have additional significance when combined with additional archaeological data recovered from the site in the 2016 field season. The XACP and BVAR excavations exposed the eastern face of the building,

revealing two hieroglyphic panels flanking each side of the central stairway (Figure 52). Christophe Helmke of the University of Copenhagen, the epigrapher in charge of deciphering the inscriptions on the panels, examined and drew the panels (Figure 53). Helmke and Awe (2016) proposes the panels originated at the site of Caracol as part of a hieroglyphic stairway. The panels were looted in antiquity from Caracol during a waring event involving Naranjo and their allies, Xunantunich and Ucanal (Helmke and Awe 2016). The panels include three dates in the years AD 638, 640, and 642, which provides important to insight into the time frame, within which the panels were carved and subsequently brought to Xunantunich.

Additional excavations revealed the presence of a large elite tomb (Figure 54). The tomb amounts to an extraordinarily rare find, as it is the first of its type at the site if Xunantunich and only one of a few structures thought to be constructed around a burial chamber—a practice more commonly associated with the pyramids of Egypt. The tomb held the remains of a young man, age ranging from 20s to 30s, surrounded by 37 Late Classic Period ceramic vessels, several obsidian blades, and a large deposit of faunal remains, suspected to be the remains of large cat species, such as puma or jaguar (C. Burke, personal comm. 2016; Tilden et al. 2017).

This ongoing research seeks to develop a chronology of construction, interment, and placement of the panels, as well as correlate this information with the hieroglyphic record of events. ¹⁴C samples from the tomb date between cal AD 670-770. This date range complements the age of the panels and the presumed age of the eccentric caches placed in front of the structure (Slocum 2018; Slocum et al. 2017; Tilden et al. 2017).



Figure 52. Photos of Panel 3, discovered in association with Structure A-9 at Xunantunich (Photos by K. Sullivan).

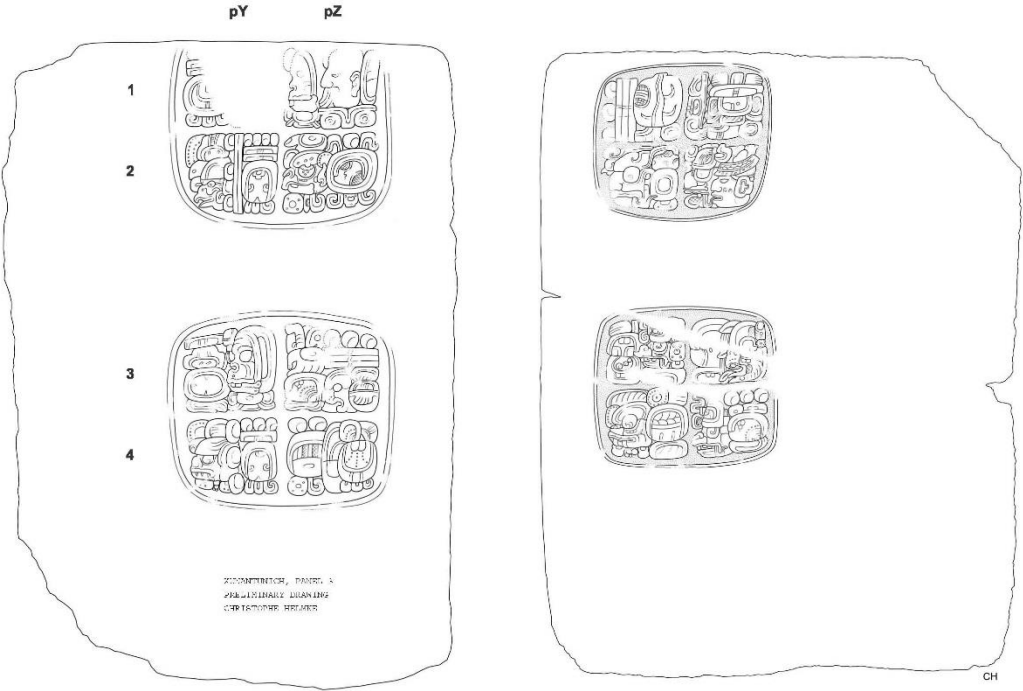


Figure 53. Drawing of Panel 3 (left) and Panel 4 (right), discovered in association with Structure A-9 at Xunantunich (Drawings by C. Helmke, courtesy of BVAR).



Figure 54. Photo on the elite tomb discovered within Structure A-9 at Xunantunich (Photo by K. Sullivan).

Discussion

Reviewing the contexts in which caches were placed by the Maya throughout the Belize Valley presents a view of a region entrenched in a ritual practice. This practice has been suggested to function as a dedicatory ritual, an act of imbuing a soul into, or consecrating a space as well as

physically representing the Maya cosmological worldview, including recreating the primordial sea (Freidel et al. 1993).

At the site of Xunantunich, the Maya cached chert and obsidian eccentrics in three main contexts—sub-stela caches, structural axis caches, and to a much more limited extent, within burials. Observing the location of caches, it is evident that the occupants of Xunantunich valued the practice of caching eccentric lithics, as they are present in nearly every monumental structure.

The range of forms, both stylistic and technical differences, suggest that a variety of craftspeople produced these implements. Raw material utilized in the production of eccentrics is most commonly local, medium to high quality cherts and chalcedonies. Obsidian eccentrics are also common. Eccentrics made of obsidian are most commonly repurposed, notched blade cores. The consumption of raw material suggests economic conservancy, considering the minimal consumption of long distance trade commodities such as obsidian and jadeite, and the use of locally sourced cherts.

While temporal information regarding the deposition of caches remains extremely limited, it is possible to make inferences based on the date of construction of the monumental structures within the site. The exact function can only be speculated. It is clear, however, that a pattern of caching exists within the Belize Valley. The groups of forms are fairly consistent, as is the placement of the caches. While there is limited evidence of eccentrics in burial contexts, sub-stela and axially aligned caches placed in front of central stairways are fairly prevalent in the valley.

While eccentrics have been identified at every major site in the valley, as well as within minor centers and limited residential contexts. Considerably fewer caches have been recovered from other major centers in the Belize Valley. The total number of eccentric caches from Xunantunich, however, surpass other Belize Valley sites substantially (Jamison 2010). One might

conclude that caching practice was more prevalent at the site. It is also essential to consider, however, the time depth of research conducted at the site, potentially owing the sheer amount of caches. Moreover, the rulers of Xunantunich likely sought to legitimize the rapid development and the prestige of the new civic-ceremonial center through an intensive caching campaign (Jamison 2010).

Chapter 7: Analysis of Obsidian Eccentrics from Xunantunich

Obsidian was an essential lithic resource to ancient Maya lifeways. Obsidian, a volcanic glass, is available from a range of sources restricted to highland Guatemala and central Mexico. The ancient Maya transported obsidian throughout the region for the production of essential utilitarian blade tools and a range of ritual implements including lancet blood letters and eccentrics. Some scholars approach the study of obsidian production as an entirely ritualized process (Hruby 2007; Martindale Johnson 2016).

An understanding of obsidian sourcing and the utilization of obsidian provides essential information into trade routes and access to raw lithic material. In order to elucidate the obsidian source of eccentrics from Xunantunich, artifacts were geochemically analyzed through portable X-ray Florescence Spectroscopy (pXRF).

Portable X-Ray Fluorescence Spectroscopy Analysis Methods

Research colleague Dr. Martindale Johnson, of the University of Florida, conducted pXRF analysis of the obsidian eccentrics recovered from Xunantunich, using a Bruker Tracer III-V+ SD handheld XRF spectrometer with a rhodium target X-ray tube and a silicon drift detector to analyze the elemental composition of each artifact. Each specimen was tested twice. First, chemical concentrations were measured at 40 kV and 12.0 μ A with a 12 mil Al, 1 mil Ti, and 6 mil Cu filter, with artifacts placed in the X-ray path for 200 live seconds, in accordance with standardized methods used by BVAR (Ebert et al. 2015). Next, the voltage was adjusted, measuring concentrations at 40 kV and 28.0 μ A with a 12 mil Al, 1 mil Ti, and 6 mil Cu filter, with specimens placed in the X-ray path for 200 live seconds, in accordance with the standard methods employed by Martindale Johnson (Personal Comm. 2016). Martindale Johnson placed the artifacts directly

in the X-ray beam, in order to maximize live valid counts per second collected by the detector. In addition, the flattest surface of each artifact was targeted to ensure the majority of the X-rays produced were analyzed.

Peak intensities for 10 elements were converted to parts per million (ppm) concentrations by normalizing intensities to the Compton peak of rhodium using a calibration developed at MURR, based on well-characterized obsidian standards (Ebert et al 2015; Martindale Johnson 2016). Results of the pXRF analysis will be presented in this chapter, accompanied by a discussion of the obsidian sources and access to these material for the ancient Maya of the Belize Valley.

Sourcing Obsidian Eccentrics from Xunantunich

Obsidian artifacts recovered from the 2015 and 2016 field seasons were analyzed. In addition to the eccentrics recovered from Structures A3 (n=9) and A9 (n=9), one lancet, or potential blood letter, recovered in a structural cache within Structure A3, and one blade recovered from excavations on Structure A9 in 2016 were analyzed.

The results of the pXRF analysis show that the geochemical composition of each artifact was constant with obsidian from the El Chayal Source, located in southern Guatemala (Figure 55). While these data present only a small sample of the total obsidian eccentrics and blades recovered from Xunantunich, they are consistent with results from Braswell (1995), suggesting that the main source of obsidian at the site of Xunantunich in the Late Classic period was El Chayal. These sourcing data are also consistent with patterns observed more broadly throughout in the Belize Valley (Ebert et al. 2015).

Bivariate Fit of SrKa1 By ZrKa1

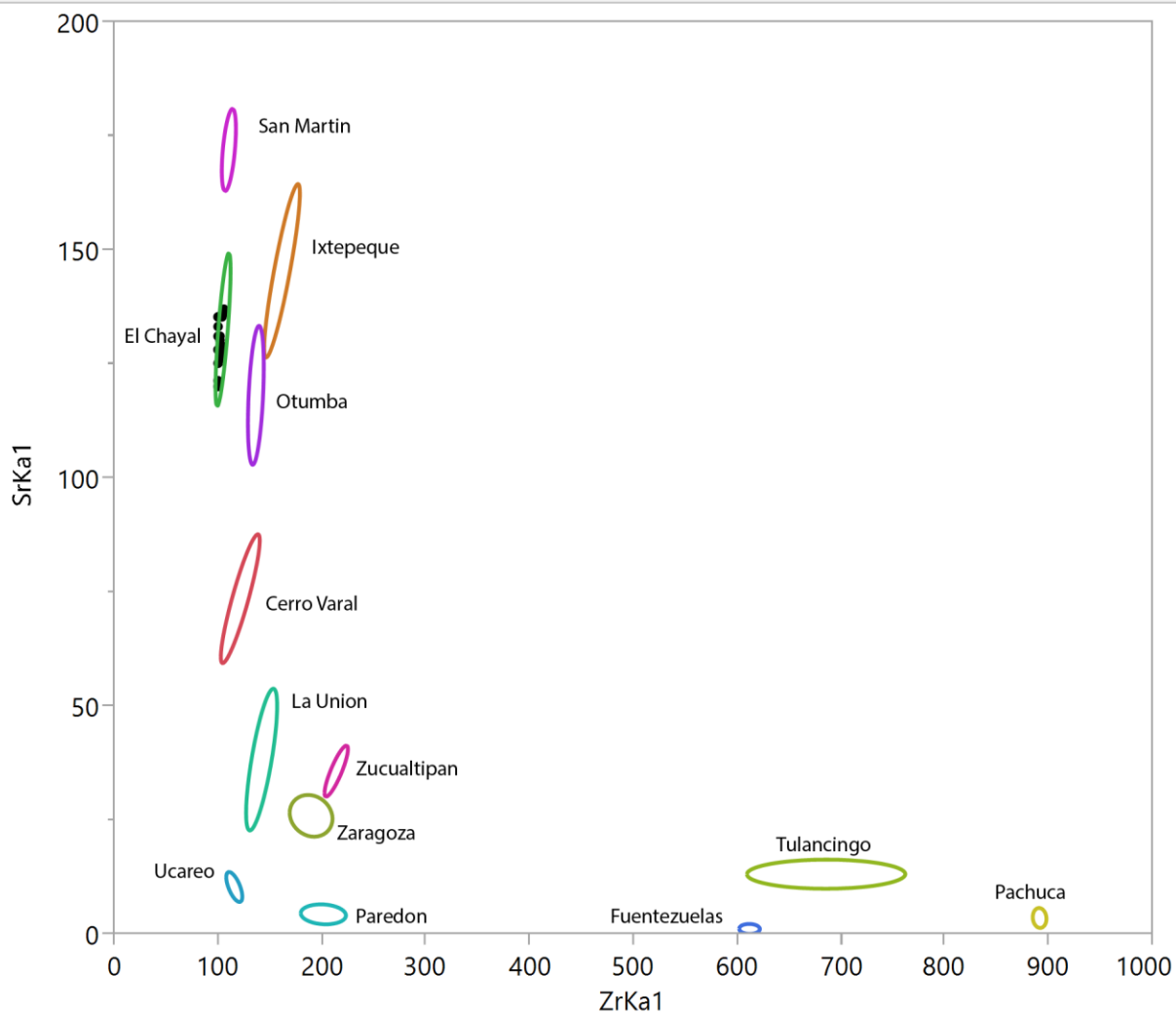


Figure 55. Strontium and Zirconium bivariate plot of all obsidian eccentrics recovered by BVAR from Xunantunich with 95 percent confidence ellipses for common obsidian sources in Mesoamerica (plot by L. Martindale Johnson). All artifacts are made from raw material consistent with the El Chayal source in Guatemala.

Regional Study of Obsidian Sourcing in the Belize Valley

Members of the BVAR project, including J. Awe, C. Ebert, and J. Hoggarth, are conducting an on-going regional study into long distance trade networks and the access to obsidian in the Belize Valley. This research has analyzed large quantities of obsidian artifacts, primarily prismatic blades, recovered by BVAR from three major sites, Cahal Pech, Baking Pot, and Lower Dover

(Ebert et al. 2015). Cahal Pech and Baking Pot both had broad occupational histories and provide an opportunity to explore temporal shifts in raw material access, while Lower Dover, a later and shorter occupied site, provides additional sourcing data from the Late Classic period.

Preliminary results suggest El Chayal as the primary source of obsidian, accessed in the Late Classic Period throughout the Upper Belize Valley, as it dominates the assemblages from the sites of Cahal Pech, Baking Pot, and Lower Dover (Ebert et al 2015). Ebert et al. (2015) conclude that access to specific obsidian sources shifted in different temporal periods ranging from the Preclassic to the Postclassic Period (800 BC—AD 1500).



Figure 56. Map of Obsidian Sources in Mesoamerica (map after L. Martindale Johnson 2016:Fig. 4-1).

The analysis of obsidian assemblages from Late Classic Period deposits show that at Cahal Pech, 74 percent of obsidian recovered site core, and 69 percent located in the settlement were from the El Chayal Source (Ebert et al. 2015). Obsidian assemblages recovered from the site of Baking Pot comprised of 84 percent El Chayal obsidian in the site core and 71 percent of settlement group assemblages (Ebert et al. 2015).

Both Cahal Pech and Baking Pot show evidence of shifts in source-specific availability of obsidian, as a clear pattern is evidence through an examination of sources in various time periods. In the Middle Preclassic, evidence at Cahal Pech and Baking Pot, specifically evident at Mound 410, a large, high-status residential group in the northwestern settlement cluster of Baking Pot, show a higher reliance in the San Martin Jilotepeque obsidian source, located near El Chayal in highland Guatemala (Figure 56) (Du Menil 2014; Ebert et al. 2015).

At the site of Lower Dover, the entire assemblage (n=345) was analyzed and comprises of 71 percent El Chayal obsidian (Ebert et al. 2015). The site itself appears to have developed much later than other sites in the Belize Valley, fluorescing in the Late Classic Period. It is presumed that most, if not all, of the obsidian recovered from the site represents Late Classic Period material.

While a comprehensive analysis of the obsidian source of Xunantunich have yet to be conducted, researchers from the BVAR project exported all obsidian blades recovered in the 2016 field season at the site, in order to conduct similar analyses and to incorporate results into the greater regional study. This may illuminate temporal patterns in trade access to obsidian, which would add depth to the temporal understanding of obsidian use in eccentric production and caching.

Conclusions

The pXRF analysis of the obsidian eccentrics from Xunantunich did not reveal significant insight into obsidian sourcing in the valley. These data, however, do correspond to obsidian sourcing patterns seen at other major sites in the valley, including Cahal Pech, Baking Pot, and Lower Dover (Ebert et al. 2015). Specifically, within the Late Classic Period, it is evident that the majority of obsidian moving into the Belize Valley was quarried at the site of El Chayal in Highland Guatemala.

As all sites in the valley are situated in close proximity to the three important waterways, it is likely that extra-regional trade commodities would be important to major valley sites fairly equally. While access to exotic materials does vary between sites in the Belize Valley, it appears that material patterns exist in temporal phases of regional access to various sources.

Chapter 8: Discussion, Conclusions, and Future Research Directions

Exploratory Data Analysis

Through the thorough examination of the context and contents of caches recovered from sites in the Belize Valley, the use of Exploratory Data Analysis (EDA) allows for the visual investigation of patterns within the data. I conducted EDA by compiling a quantitative set of caching data and visually organizing these data with IBM's statistical software package, SPSS 24. The results of the EDA provide quantitative evidence to discuss the intra-site patterns within the Belize Valley.

Cache Contexts

The ancient Maya of the Belize Valley cached materials in a range of contexts. Caches deposited within structures, most often placed in association with Late Classic Period remodeling episodes, comprise nearly half of all occurrences of eccentric caches in the Belize Valley (43.33 percent) (Figure 57). Less common cache contexts include in front of axial stairways, within burials, and below stone monuments, each comprising 13.33 percent of valley caches (Figure 57). Eccentrics are found in several even less common contexts, including on the summit of monumental structures, within construction fill, as well as out of well-provenienced contexts, such as within looter's trenches or surface finds.

It is essential to briefly discuss biases in the data pertaining to sub-stela caches. Although these caches account for over 13 percent of caches in the valley, they are only recovered from the site of Xunantunich (Figure 57).

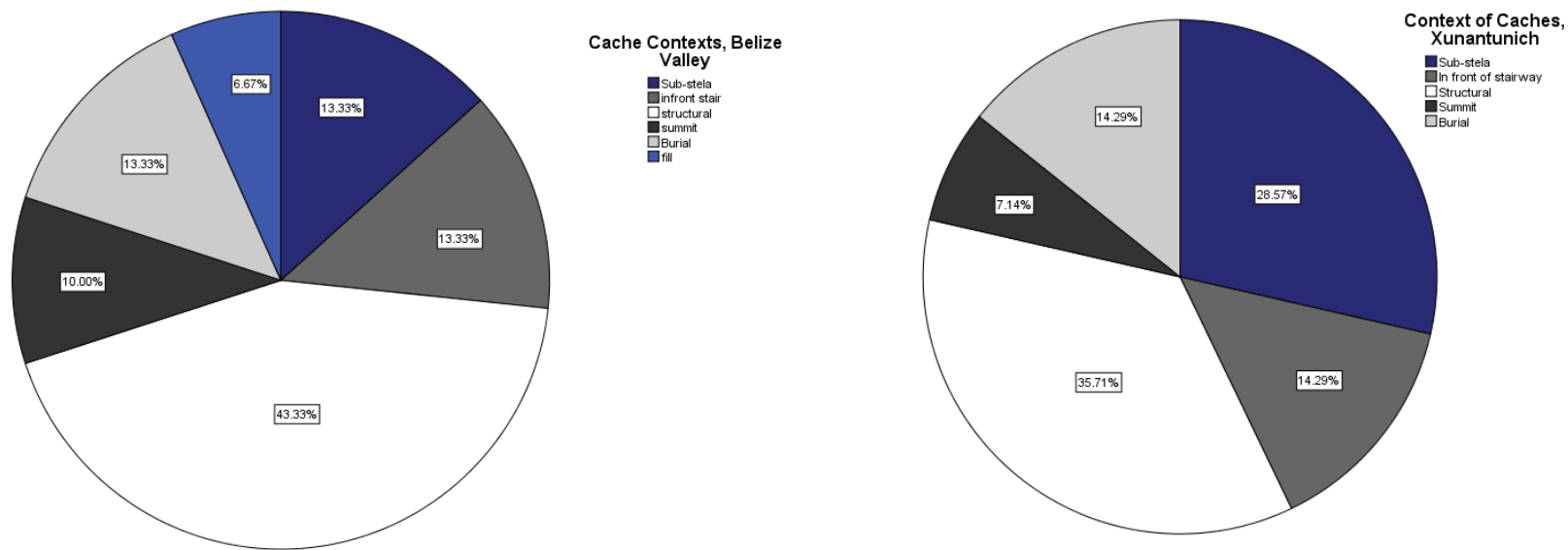


Figure 57. Cache contexts for sites in the Belize Valley (left) and Xunantunich (right) (figure by K. Sullivan).

While many sites have uncarved stone monuments, carved monuments are less common within the Belize Valley. Xunantunich boast several carved and uncarved stelae, erected in front of many of the monumental structures within the Late Classic civic-ceremonial center. Concurrently with the erection of stela, the ancient Maya placed caches of eccentric lithics at the base of these monuments. Sub-stela caches account for 28.75 percent of caches from Xunantunich, suggesting that this caching ritual was an important part of elite ideology at the site (Figure 57).

Figure 58 provides additional insight into the discussion of cache context. Not only does Xunantunich have a much higher number of caches, it also has the most diverse range of cache contexts (n=5) (Figure 58). Diverse ritual practices evident at Xunantunich reflect a different pattern of use of eccentrics than other Belize Valley sites. This may be a result of extra-regional influence from the Petén, specifically from the site of Naranjo. It is possible, however, that differences in ritual practices at Xunantunich result from the rapid development of the site and the elite's desire to garner prestige through intensive campaign of building and caching (Jamison 2010).

Additional major valley centers, including Cahal Pech and Baking Pot, have caches from a range of contexts (n=4 and n=3, respectively) (Figure 2). The other sites, however, have a significantly smaller sample of eccentric caches to analyze. The limited number of caches recovered from Belize Valley sites may represent significant differences in the use of eccentric lithics by the ancient Maya or simply be due to a lack of recovery, due to research biases, modern disturbances, and luck.

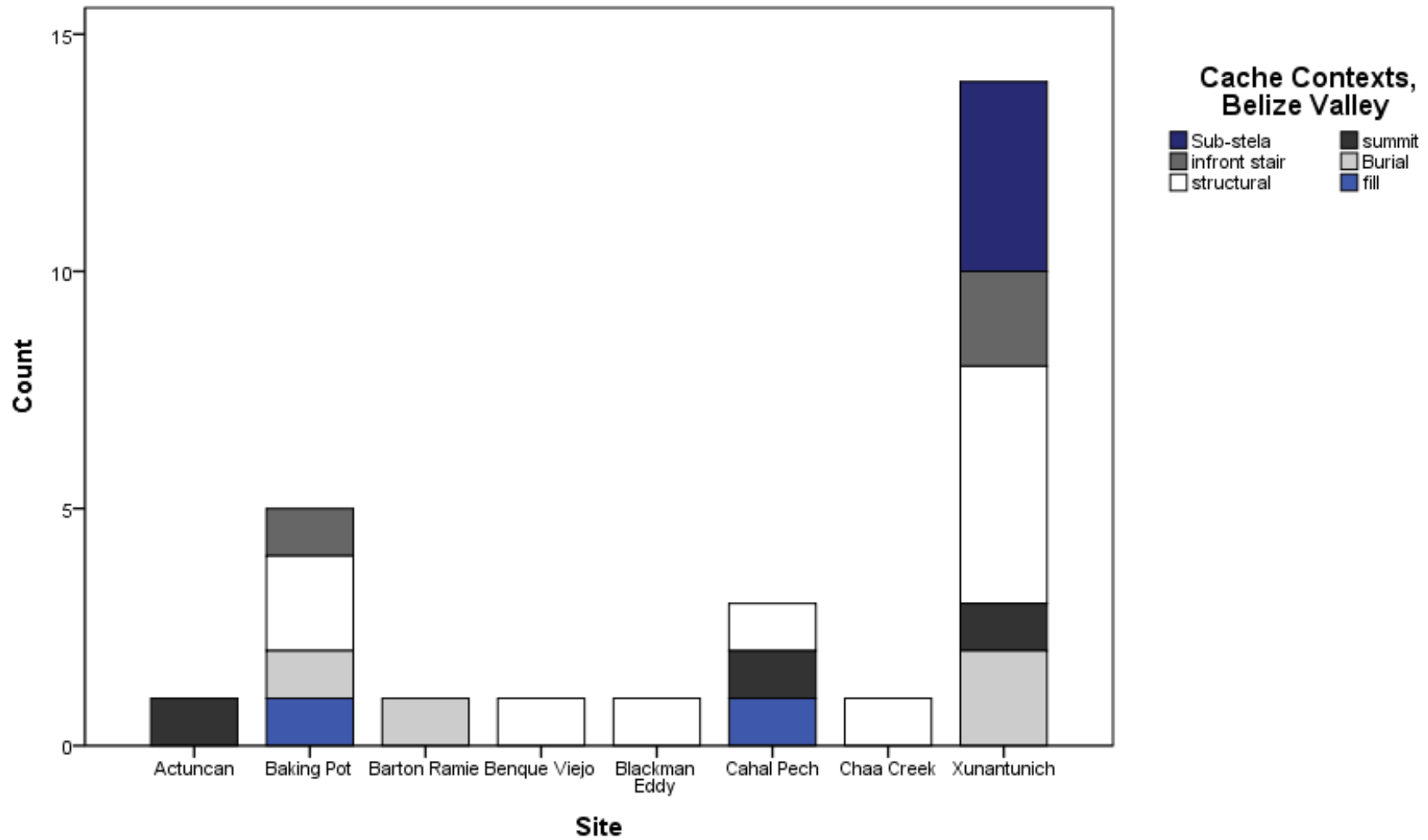


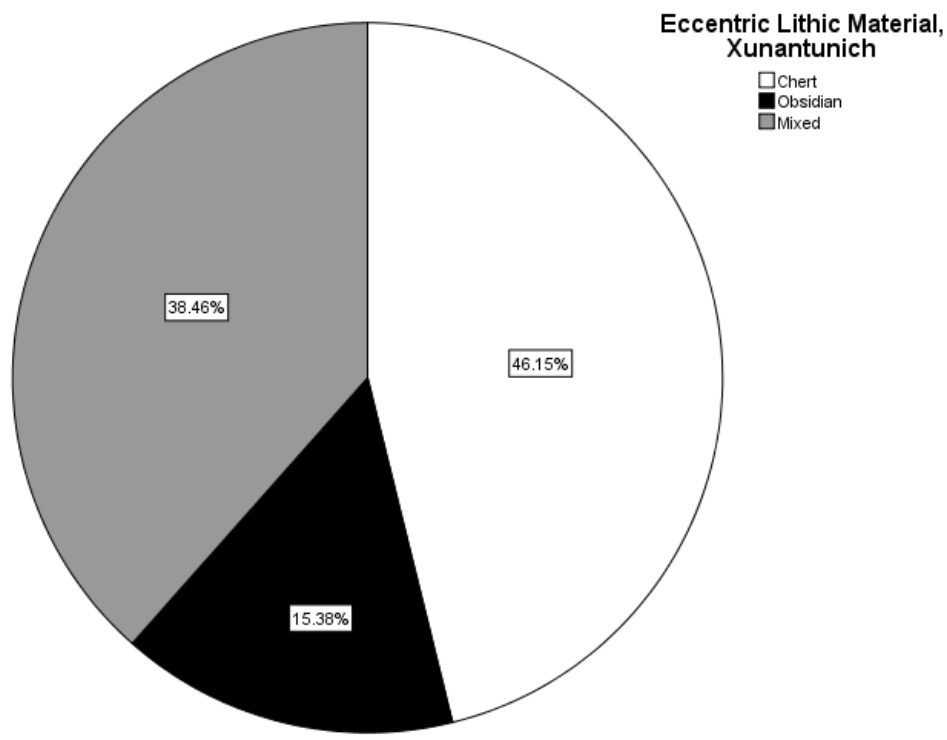
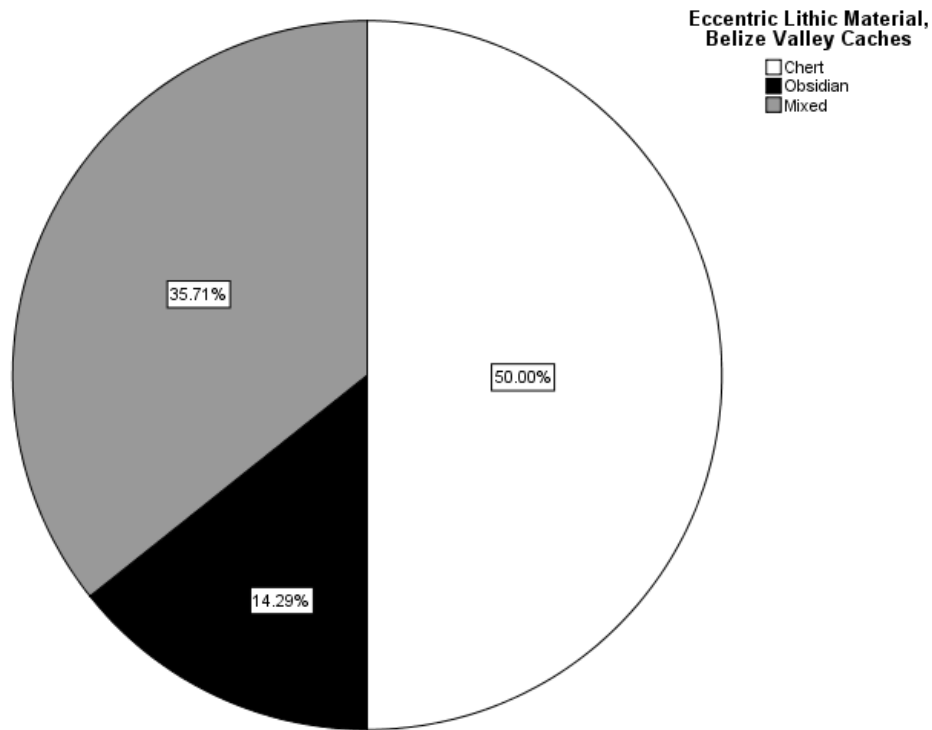
Figure 58. Graph of all Belize Valley caches in the sample, indicating the site and context within which they were recovered (figure by K. Sullivan)

Using EDA to assess patterns in the context of eccentric caches in the Belize Valley demonstrates that the ancient Maya associated the use of eccentrics closely with the construction and remolding of monumental architecture within civic-ceremonial centers, as well as within domestic eastern shrines and southern structures, during the Late Classic Period.

Cache Contents

Raw Lithic Material. Beyond context, observations of contents of caches provides insight into the range of caching behaviors practiced by the ancient Maya of the Belize Valley. First, it is essential to discuss the raw materials used to produce eccentrics. Obsidian and chert are the two most common materials used to produced eccentrics throughout the Maya Lowlands and within the Belize Valley. Within the Belize Valley, 50 percent of eccentric caches contain only implements crafted from chert (Figure 59). Caches with only obsidian eccentrics comprise just 14.29 percent of caches, while caches with both chert and obsidian eccentrics represent 35.71 percent (Figure 59).

Eccentric caches from the site of Xunantunich reflect a nearly identical pattern as the Belize Valley as a whole, pertaining to the raw material used in the production of eccentrics. Nearly half of eccentric caches are all chert implements (46.15 percent), with a low percentage of obsidian eccentrics only (15.38 percent) and a moderate amount of caches with both obsidian and chert eccentrics (38.46 percent) (Figure 59).



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Figure 59. Graphs of the raw lithic materials used to produce eccentrics at all Belize Valley sites (above) and Xunantunich (below) (figures by K. Sullivan).

The high reliance on chert in the production of eccentrics within the Belize Valley likely relates to its accessibility, as it is an abundant local resource. Like utilitarian tools recovered in the valley, chert eccentrics are made from medium to high-quality local cherts. Obsidian, however, is a long-distance trade commodity, which would have been less accessible. This research demonstrated that obsidian used in the production of eccentrics in the Late Classic Period, at least at the site of Xunantunich, was predominantly from the El Chayal source in Highland Guatemala (see Chapter 9 of this volume for results and discussion of pXRF analysis).

Eccentric Frequency. In addition, it is important to look at the frequency of eccentrics within individual caches. Eccentric caches in the Belize Valley contain diverse frequencies of ritual implements, ranging from one eccentric to 64 (Figure 60). While most frequencies are unique or repeated just a few times, caches with nine eccentrics are significantly more common. This is a pattern seen not just within the Belize Valley but across the Maya Lowlands.

Within Maya cosmology, the number nine hold particular significance. Relating to the nine lords of the underworld. Matthews and Garber suggest that this representation activates a portal to the underworld. Additional underworld significance is also drawn with the used of material combinations, such as obsidian, jadeite, and marine materials. David Freidel and colleagues suggest that these elements evoke the primordial sea (Freidel et al. 1993). Through the caching ritual, the structure was imbued with a soul, through the underworld portal (Freidel et al. 1993; Matthews and Garber 2004:53).

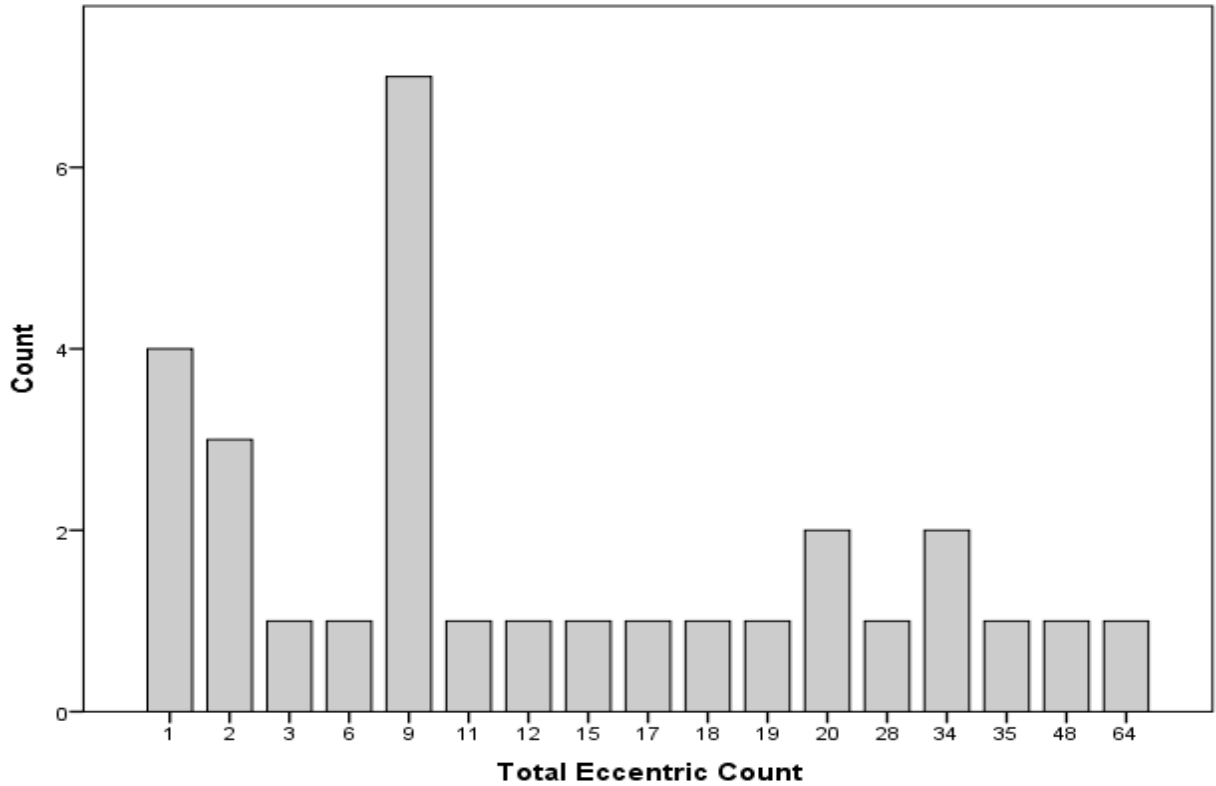


Figure 60. Graph of eccentric frequencies within caches from sites in the Belize Valley (figure by K. Sullivan).

Through EDA, cache features discussed in early chapters of this volume are organized and thoroughly analyzed. It is clear that caching practices within the Belize Valley reflect some of the hallmarks of eccentric caching seen throughout the Maya Lowlands. Although variation exists within cache behavior, it is evident that these practices stem from a set of similar cosmological beliefs, held by diverse populations.

Conclusions

In conclusion, it is essential to restate my intended research questions and discuss how the research addressed each of them.

Research questions investigated in my thesis were:

1. Does a review of caching practices of eccentric lithics in the Belize Valley demonstrate local homogeneity or irregularity in this ritual practice and in the implements used in these caches?
2. Are intra-regional and inter-regional variations in eccentric lithic caching practices related to the contexts or contents of caches, or some other feature?
3. What can be inferred about inter-site dynamics in the valley through the study of variations in the caching of eccentric lithics?

In response to Question 1, a study of caching in the Belize Valley demonstrates a wide range of eccentric lithic caching practices. There are commonalities between the articulations of this ritual practice, including a fairly small number of repetitious contexts. While many caches focus around the number nine, or multiples of nine, the frequencies of cached eccentrics range from 2-64 in the valley. Moreover, though repetitive eccentric forms are observed within caches across the Maya Lowlands, individual centers, rulers, or craftspeople seem to favor particular forms. For example, while the annulet, or negative space, eccentric form is found in relatively high frequencies in valley caches, especially at Xunantunich, eccentric forms throughout valley caches. Overall, Belize Valley caching practices demonstrate both homogeneity and differences in caching patterns, which is most likely the result of individual expression of the same dedicatory practices.

In response to Question 2, while intraregional differences in caching center around the frequencies of eccentrics and the implement morphologies, interregional differences suggest greater differences. A cross-regional comparison demonstrates similar caching contexts with highly variable methods of deposition. At the site of Caracol, for instance, nearly all eccentrics were deposited within ceramic vessel, while this practice in the Belize Valley is only seen at Blackman Eddy and Barton Ramie. Moreover, eccentrics from Caracol are nearly all obsidian, ranging from finely-chipped eccentrics to simple flakes and other production waste. This is very different than eccentrics observed in the valley, which are most commonly fine to crudely-chipped chert eccentrics, made of locally procured raw materials.

Distinct regional eccentric types, such as the incised eccentrics from Tikal and Uaxactun and the elaborate eccentrics from the Copán Valley, suggest divergent production methods or stylistic favoring. The contexts within which these eccentrics are recovered, however, do not suggest any difference in the ritual significance of the implements.

In response to Question 3, through the study of regional ritual practices, inference can be made about inter-site dynamics. My review of the eccentric caching practices of the ancient Maya indicates that this tradition reflects a shared Pan-Maya cosmology. Elements of performance, such as the location of caches, in association with stone monuments, tombs, and significant public structures within the civic-ceremonial centers of ancient Maya cities, suggest these rituals may have conducted as part of public ceremonies that likely included elites and commoners from across the territory of the polity. This public performative nature demonstrates the presence of a greater societal function to the ritual.

Researcher (Iannone and Schwake 2010) seek to explain the social function of ritual performance through a range of explanations. In order to forge group identity, it is essential for a

group to share a bond, often described as a collective identity, or memory. Eccentric caching practices within the Belize Valley and the greater Maya area do not feature the hallmarks of collective memory, demonstrated by Iannone and Schwake (2010) at the site of Minanha through a series of vertically-aligned caches that span several centuries. Eccentric caches appear to serve as dedicatory caches, which connect the Maya cosmological view of an animate world with the consecration of public and sacred space. Moreover, the performative act of caching likely served to evoke socio-political prestige through collective remembering, or behavior associated with other great centers such as Caracol or Naranjo.

Future Research Directions: Public Interpretation of Archaeology

Finally, as part of this research, I sought to enhance public education initiatives through the production and donation of eccentric casts to NICH and the IOA, as well as through the dissemination of my research to both the academic community and laypeople. In doing so, I am working to generate new interest in these remarkable ritual implements and spread greater understanding of their use in ancient Maya ritual practices.

Artifact Replication. In order to complete this portion of the research, Dr. Awe and I exported 41 eccentrics from Xunantunich to Northern Arizona University Lithic Casting, Research and Teaching Lab for replication. Dr. Francis E. Smiley and I produced replica casts of the 41 eccentric lithics from three caches, Cache 1 from Structure A3 and Caches 1 and 2 from Structure A-9, recovered at Xunantunich by XACP and BVAR. These casts will provide a broad range of educational applications throughout Belize, as well as at Northern Arizona University (NAU). A collection of casts will be presented to the IOA and NICH and will provide unique opportunities

for Belizean people, as well as tourists, to learn about these esoteric ritual implements through a hands-on experience. This will aid in the protection of the real artifacts while enhancing education outreach opportunities.

Educational Impacts. The education of tour guides working in Belize provides immediate and long-lasting benefits to local people and tourists, and serves to impart archaeological knowledge to a wide range of people. The tourism industry provides wide-reaching benefits to local communities in Belize. Tourism makes up 39 percent of Belize's total GDP, and provided over 35 percent of direct or indirect nationwide employment in 2014 (World Travel and Tourism Council 2015). More importantly, early education on the ancient Maya provides local people a connection to their cultural heritage, which in turn leads to increased internal stewardship of archaeological materials and sites.

At Northern Arizona University, Dr. Smiley provides unique learning for undergraduate and graduate students through hands-on work a world-class lithic cast collection, which spans the entire range of lithic traditions. The new collection of Maya eccentric casts from Xunantunich comprises the first comprehensive cast of ancient Maya eccentrics ever produced. The opportunity to host these replicas provides Northern Arizona University students a groundbreaking, hands-on opportunity to work with some of the rarest and finest stone tools crafted throughout the world lithic traditions.

The production of these casts are but one element of the dissemination of this thesis research. Working in unison with a range of public presentations given at the university and academic conferences, and forthcoming publications and reports, these replicas will help to

enhance public and disciplinary understanding of the ancient Maya and eccentric lithic implements (Figure 61).



Figure 61. Photos of author at the 2016 Maya at the Playa Conference in Florida presenting the results of my research (left) and demonstrating the assembly of Cache 1 from Structure A3 at Xunantunich with eccentric casts (right), or replicas, made by Dr. Francis E. Smiley of Northern Arizona University.

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Appendix

Table 2. Eccentric in Burials and Caches from Xunantunich

Site	Location	Cache Context	Cache Contents	Refnces
Xunantunich	Plaza A-I, Stela 1	Sub-stela Cache	chert eccentrics	Gann 1925
Xunantunich	Structure A2	Structural Cache	chert and obsidian eccentrics	Gann 1918:96
Xunantunich	Structure A3	Sub-stela Cache	chert eccentrics	Gann 1925; Mackie 1985:11
Xunantunich	Structure A3	Structural Axis Cache	9 chert and 9 obsidian eccentrics	Santasilia and Tilden 2016:126-127
Xunantunich	Structure A4	Summit Caches	Cache 1: five red chert crescents and two Spondylus shells Cache 2: five red chert crescents Cache 3: seven chert eccentrics and a jade bead	Audet 2006:140
Xunantunich	Structure A7	Summit Cache	35 chert and obsidian eccentrics, human femur and fibula, 100+ chert cores, two small blocks of jade, seven marine shells, a flattened stone with dots, a block of obsidian, chert hammerstones, and two celts	Gann 1925:53-54
Xunantunich	Structure A9	Sub-stela Cache	28 chert eccentrics	Tilden et al. 2017; See Chapter 8, this volume
Xunantunich	Structure A9	Cache in front of stairway axis	Nine obsidian eccentrics, branch coral, five marine shells, three freshwater shells, polished and raw jade, pyrite, and an unidentified red mineral	Tilden et al. 2017; See Chapter 8, this volume
Xunantunich	Structure A14	Caches in front of stairway axis	Cache 1: 9 chert eccentrics Cache 2: 8 cache eccentrics and one jade bead	Audet 2006:151

Xunantunich	Group B	N/A: Surface find	One notched obsidian eccentric	Thompson 1942:27
Xunantunich	Structure D6	Sub-stela Cache	Obsidian eccentrics	Braswell 1994:217
Xunantunich	Structure D6	Cache in front of stairway axis	11 chert eccentrics	Lytle 2017
Xunantunich	Structure D6	On top and within Burial	"At least" 20 chert and obsidian eccentrics	Lytle 2017
Xunantunich	Structure D6	Placed within the Late Classic structural fill	17 chert eccentrics	Lytle 2017

Table 3. Eccentric in Burials and Caches from Cahal Pech

Site	Location	Cache Context	Cache Contents	References
Cahal Pech	Structure B3	Summit Cache	19 obsidian eccentrics	Conlon 2013
Cahal Pech	Tzinic Group	Str. 2, Surface	4 chert eccentrics, 11 obsidian eccentrics	Iannone 1993a
Cahal Pech	Martinez Group		1 chert eccentric	Ebert and Fox 2016

Table 4. Eccentric in Burials and Caches from Baking Pot

Site	Location	Cache Context	Cache Contents	References
Baking Pot	Bedran Group	Str. 2, Burial	One chert eccentric	Powis 1993
Baking Pot	Bedran Group	Plaza Terminal Deposit	42 chert and six obsidian eccentric	Powis 1993
Baking Pot	Group A, Str. E	Summit, Structural Fill	Nine chert eccentrics	Ricketson 1931:5-6
Baking Pot	Group A, Str. E	Burial	Nine chert eccentrics	Audet 2006
Baking Pot	Group B, Str. B1	Group B, Str. B1, in Room 2 within Bench	27 "fine" chert and seven obsidian eccentrics	Bullard and Bullard 1965:12
Baking Pot	Mound 410	Str. 410A, Platform	Two chert eccentrics	Du Menil 2014:35
Baking Pot	Mound 410	Corner of Strs. 410A and 410B	Two obsidian eccentrics	Du Menil 2014:35

Table 5. Eccentric in Burials and Caches from Barton Ramie

Site	Location	Cache Context	Cache Contents	References
Barton Ramie	Oxbow Group	BR-1, Burial 6, Eccentric in ceramic vessel	One chert eccentric	Willey et al. 1965:82,446, 545-46
Barton Ramie		BR-96	Approximately 20 chert and obsidian eccentrics	Willey et al. 1965