

Comparison of Chert Silhouettes from the Late and Terminal Classic Eastern Lowlands

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In recent years, several lithic caches have been discovered at Ucanal, Guatemala, and Xunantunich, Belize, located in the eastern portion of the Maya Lowlands (figures 8.1 and 1.7; Halperin and Garrido 2016, 2020; Slocum 2018). In 2016 we decided to compare caches from each site to determine whether there were any similarities between them, and thus determine whether there may have been a shared cultural *tradition* or perhaps a *community* or *constellation of practice* among elite knappers separated by political boundaries and geographic space. We were interested to know whether different kinds of esoteric knowledge associated with the production of ceremonial lithic artifacts was shared between Classic Maya polities and, if so, what kinds of things were shared. The production of utilitarian bifaces, flakes, and blades often varies little over great distances in the Maya world, but the more elaborate silhouettes (i.e., eccentrics) do. With all of their stylistic and technical particularities, they provide an excellent opportunity to examine the possibility of shared lithic production knowledge (i.e., *hexis* [i.e., learned, embodied knowledge]; Bourdieu 1977) and practice across different sites and polities. As Jean Lave (2008) notes, however, communities of practice

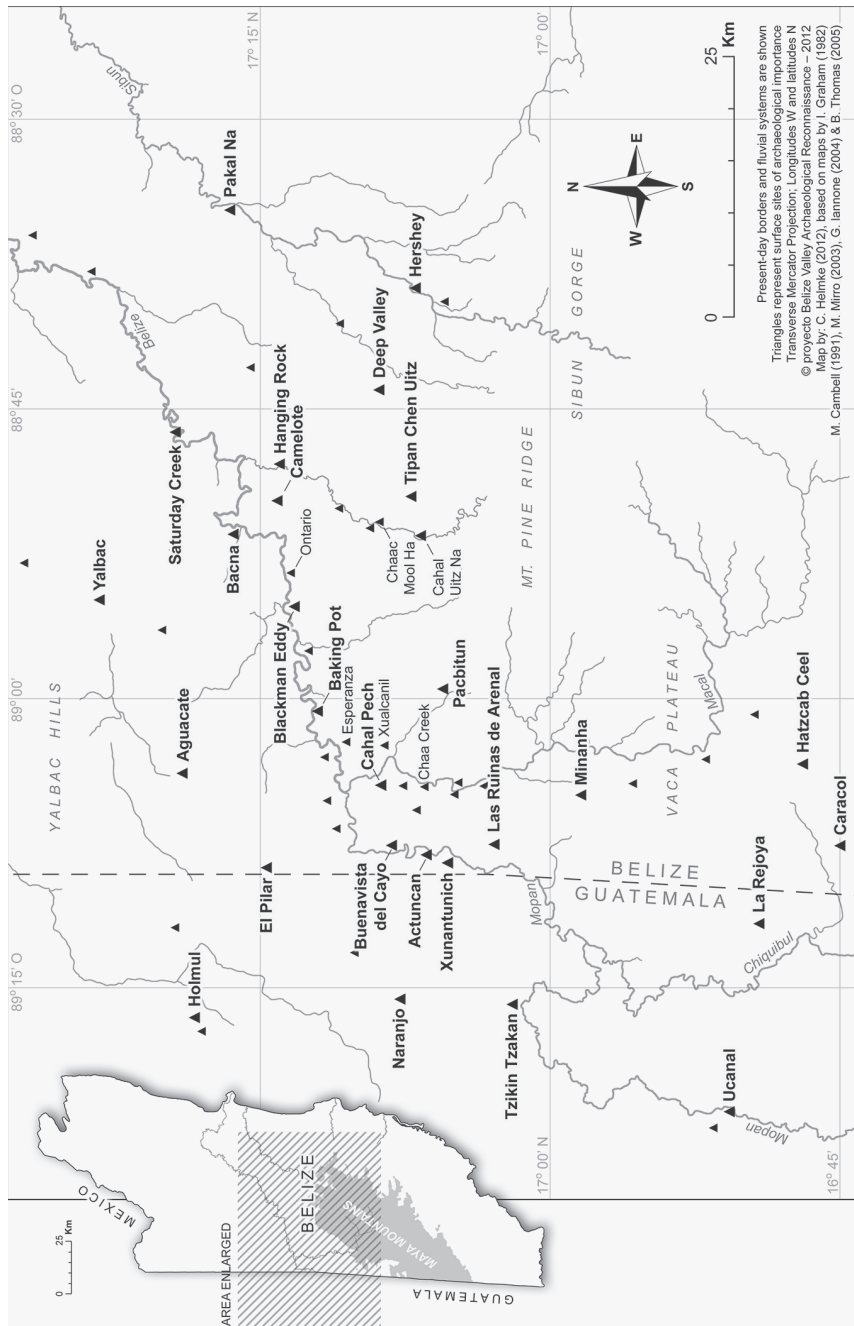


FIGURE 8.1. Map of Eastern Petén and Central Belize.

are not something to discover but rather a way of looking at social relationships (see also Roddick and Stahl 2016; Sassaman and Rudolphi 2001). We use this theoretical perspective to flesh out possible social relationships understood through these enigmatic objects and the people who made them.

Many communities of knapping practice appear to have been tethered to their local geology, to a certain extent, as part of their social identity. Cache vessels and cache offerings were often made locally and affirmed local rather than foreign affiliation. The likely goal was to tie local lineages to local creation myths meant to legitimize ideologies that placed the king, his lineage, and the city as the center of the universe and creation itself. Chert silhouettes were perhaps even more tied to home, since chert materials were often found right below the people's feet (see Roddick and Janusek 2018 for an Andean example). Nevertheless, some chert silhouettes were virtually identical between cities. Given that the vast majority of these ritual tools were not produced for exchange, it is possible that knowledge of what and how to produce them was shared between crafters. Like Maya writing, esoteric knowledge production was likely spread through the fissioning of lineages and the creation of new political centers by people who carried the practices with them, as well as close alliances and intermarriage between royal and noble houses from distant polities. Given the elite and royal contexts of chipped-stone silhouettes, we believe their production was tied to power (Hruby 2006, 2007) and as such require some consideration of power and access to production knowledge (Crown 2016; Inomata 2001).

Although the sites of Ucanal and Xunantunich were politically independent from one another, they are located close to one other (~50km) and situated along the same river course (the Mopan River). In addition, they were also tied together through similar histories and interaction spheres. For example, the majority of Pine Ridge Carbonate incurved rim bowls at Ucanal are Mount Maloney black slipped types (Halperin et al. 2020), which was the ceramic of choice for not only quotidian cooking and serving of food but caches and offerings at Xunantunich during the Late and Terminal Classic periods (LeCount and Yeager 2010). Additionally, the two sites both possess hieroglyphic monument blocks that originally decorated one of the building facades at Caracol (Helmke and Awe 2016a, 2016b; Martin 2017). Both centers were client states of the larger polity of Naranjo during the end of the seventh century and beginning of the eighth century CE, although they later asserted their respective political independence during the Terminal Classic period (ca. 810–950 CE; see Awe et al. 2020). Thus, the examination of three Late and Terminal Classic caches from these sites provides an opportunity to not only document these newly discovered caches but identify possible communities of practice surrounding these ceremonial objects and their changes over the course of the Late to Terminal Classic period. Although we lack important data points regarding chert source locations

and specific production locales, and consequently do not have direct data on all the links of the *chaîne opératoire*, we address their implications through the lens of communities of practice, brokers, and boundary objects (Lave and Wenger 1991; Wenger 1998). Thus, this chapter explores the utility of this approach for ceremonial lithic studies at this early stage of analysis.

Our data consist of chert silhouettes from two Terminal Classic caches from Ucanal and a Late Classic cache from Xunantunich. We use partial data from other sites as well, in order to situate these Eastern Lowland sites in the broader Classic period silhouette horizon. The information from other sites is incomplete, because we rely on reconstructed metrics, technology, and outline from photographs and drawings. Most significant, we draw from the site of Tikal, which features a large corpus of chert silhouettes from the entirety of the Classic period, and to a lesser extent on a small published corpus of silhouettes from Naranjo. The work of William Coe, who created a detailed typology and classification of eccentrics and caches from Tikal, has been indispensable, and we frequently refer to the study, which was published with Hattula Moholy-Nagy in 2008. The Tikal study, a project that really began with his (Coe 1959) work at Piedras Negras, Guatemala, is essential reading to comprehend our analysis below.

COMMUNITIES AND CONSTELLATIONS OF PRACTICE

The eccentrics or silhouettes contained in these caches were difficult to make, if not for the technical aspect of the more elaborate bifaces, then for the often precise proportions that must be understood to finish the most simple of them (see chapter 1 for a general discussion). In most cases the modified flake silhouettes were backdrops for paintings (Hruby and Ware 2009), which is part of what makes the interpretation of their iconography difficult (Hruby 2007). This situation begs the question: What did the knappers actually know, and did all the knappers control the same esoteric religious knowledge to create these rather diminutive god effigies? Did a single knapper or artisan create all of the chert silhouettes for elite caches? There is good evidence, for example, to suggest that the artisans who made the flint silhouettes were not the same people who made the obsidian ones (Hruby 2007). In other words, were the production of items for caches made by single artisans or were they group activities, directed by one or a few coordinators?

In terms of knowledge production and sharing, Maya royals, and elites in general, were likely extremely finicky and guarded about who got to own, know, and carry out these practices. One of the reasons for this restrictive behavior and the likely creation of sumptuary laws was that many sensitive forms of ritual required the production of sacred items and their proper use, for example in the divination and calculation associated with important events, as well as in the impersonation of powerful supernatural beings. The second reason is directly related to the maintenance of the status quo vis-à-vis upwardly mobile people eager to increase their social status. One of the primary ways that Maya elites maintained their position was by controlling esoteric religious and crafting

knowledge (Hruby 2007; Inomata 2001). Certainly, the most potent of these practices was writing, which tied together creation mythology, local genealogies, and the recording of history—the very foundation of ruling ideologies of the Classic Maya. The guarded nature of writing practices is underscored by the fact that the majority of people in Maya society were illiterate, and holy books were reserved for the ruling elite. Other crafts were part of these restrictive practices of knowledge production. As Takeshi Inomata and his colleagues (2001) have demonstrated, the Maya palace was not simply a place of luxury but also a locus of craft production for making the most prestigious items, such as pyrite mirrors and carved stones, directed and owned by the elite. Hruby has also argued that ancient Maya silhouette knappers may have used their knowledge as a form of symbolic capital (*sensu* Bourdieu 1977) to cement their position in society and gain higher status (Hruby 2006, 2007; Hruby and Ware 2009). However, it is how the guilds, *oficios* (see Hruby 2007; McAnany 2010), or communities of knapping practice organized themselves within political centers and between them that is the focus of this chapter.

Communities of practice are a useful way to explore local and regional variability in technology and iconography but through the lens of individual practitioners who share production knowledge and histories through practice as situated learning (i.e., *legitimate peripheral participation*; see Lave and Wenger 1991; Wenger 1998). Emergent communities of practice were first studied in depth by Jean Lave and Etienne Wenger (1991) and understood as “mutual engagement, a joint enterprise, and a shared repertoire” of doing and making things (Wenger 1998, 73). These theories can aid archaeologists in problematizing (1) different kinds of skills from more simple to more complex as they are shared in more or less restricted ways; (2) the possibility of membership in more than one community of practice, and (3) how technologies and design elements were transmitted between individuals and between communities of practice through brokers and boundary objects (see also chapter 1). Archaeological models that focus on different artifact traditions and horizons, as well as interaction spheres (Blanton 1976; Freidel 1979), have the effect of removing individual artisans from the processes of social change or stasis (see Joyce 2017), or essentializing all this complexity into a master-apprentice relationship.

Communities of practice have been used to examine pottery making in the Southwest (Mills et al. 2013), the Belize Valley region of the Maya Lowlands (Jordan et al. 2020), and Western Africa (Gosselain 2008, 2012), among other regions of the world (Roddick and Stahl 2016). Such ideas have not been employed much in the realm of lithic studies, perhaps because projectile point styles and production techniques often did not change much over great distances and over long periods of time. Nevertheless, for ritualized lithics, they provide an opportunity to think about distinctions and overlaps between symbolic forms and

production techniques similar to the way communities of practice approaches have considered the highly visible decorative styles on pottery in conjunction with the knowledge of paste recipes and practices of forming vessels.

Concepts of communities and constellations of practice have been expanded to address the relationships, or relationality, between power, political turmoil, and crafters (Roddick and Stahl 2016). Such a focus is relevant to Mesoamerica, especially the Classic Maya, since the entirety of the Classic period can be characterized as expanding and contracting alliances between largely antagonistic city-states. Indeed, one of the greatest conundrums of Maya archaeology is understanding how material and immaterial culture traits can be so homogenous over such a wide area vis-à-vis political disunity. For example, while we can explain how some art styles, motifs, and writing conventions were shared between polities through the capture or sequestering of foreign scribes and carvers, we cannot explain how all of these practices are shared. We know from epigraphic studies that some artisans and scribes traveled between the capital city and its subsidiaries as a way to entangle these smaller sites through the gifting of symbolic and material capital. There is no better example than the Usumacinta region, wherein scribes and carvers were sent out to create monuments that touted political relationships between the center and the periphery (e.g., Houston 2021). There is little doubt that these master artisans shared at least some of these practices with local stone workers and acted as “brokers” in terms of practice theory (Wenger 1998). We could easily interpret this state of affairs as constituted by a community of practice among master and lower-status, or novice, artisans within political centers with constellations of practice existing between cities in the same political hierarchy.

These processes, however, do not explain how writing and art could be so similar between antagonistic polities or across the entirety of the Maya world. Were there writers’ conferences where people got together and shared techniques and mythologies? Or was freedom of movement more acceptable for some kinds of crafters? It may be that greater freedom was given to those on religious pilgrimages, and thus people were allowed to communicate with foreigners and share information on these journeys. In any case, other than the client-patron relationships, hierarchical subsidiary relationships, and the capturing of artisans, other modes of sharing knowledge and learning were likely in play. It is clear that these were highly conservative traditions, except for, interestingly, the small areas in which creativity was encouraged. In hieroglyphic writing, for example, the structure of the sacred language and texts did not vary much, nor did the content of the writing. Scribes were nevertheless encouraged to express creativity in the execution of these texts, as one can easily witness in the full figure glyphs of Copan, or the twelve different ways to write the third-person pronoun U glyph at Palenque (figure 8.2). It was this restricted creativity that led to some

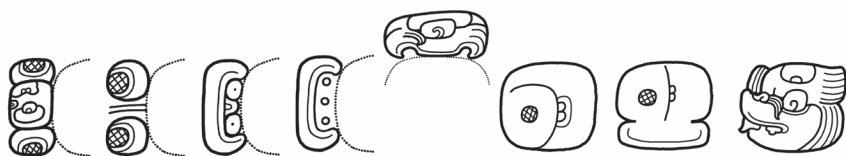


FIGURE 8.2. Eight different versions of the third-person pronoun U glyph in Maya writing (Drawings by Alexandre Tokovinine).

of the most beautiful and elaborate artworks in the Maya world. We argue that the production of eccentrics likely followed similar guidelines.

In past work, Hruby (2006, 2007) focused on how ancient Maya knappers may have been organized into something akin to a European guild system but situated in Mesoamerican ontologies, in the context of what was termed in early Colonial times as *oficios* (Clark and Houston 1998). The importance of this concept has also been noted by Patricia McNany (2010), who used it in her pathbreaking study of ancient Maya economics. Although the term is Spanish, it characterized people in the same community of practice, and yet so little is actually known of this form of social organization that it still lacks specificity. The *oficio* rubric clearly demarcates individuals who belong to and share in mutual engagement and whose identities were both tied to one another through technical knowledge and through religious belief and social identification. The analogy falls short, partially since it remains a vague concept due to a lack of ethnohistorical data but also because it does not provide many avenues for understanding different levels or scales of complexity of practice and how that production knowledge was shared, without relying on analogies from other regions or even continents. The communities of practice concept may be better equipped to understand Pre-Contact communities of practice, without forcing crafters into an imperfect, albeit useful, archaeological analogy. In turn, the notion of *constellations of practice* provides a framework for thinking about wider, more diffuse sharing practices in which multiple communities of practice are linked by shared histories and brokers or boundary objects, such as circulating finished products (Roddick and Stahl 2016, 9–10; Wenger 1998).

To examine communities of practice among ancient knappers, one must start from the bottom up—a task to which subtractive lithic technologies are well suited. Lithic analysts must outline raw material locations and the *chaîne opératoire* of different modes of production practiced by one or more crafters. Like other crafts, there are some pros and cons to reconstructing *chaînes opératoires* of chipped-stone manufacture. On the plus side, if production debitage can be located, then one can determine with some accuracy what someone was making and where the material likely came from (e.g., via chemical and visual

analyses). In rare cases, it may also be possible to determine the output of a production area or workshop. On the negative side, production waste dumps are usually incomplete, since many pieces were removed, often by the knappers themselves, and if only the finished products are in evidence, then the final stages of chipping often remove the evidence of the earlier stages of production. Consequently, the entire production sequence may not be known. Indeed, there has only been one possible silhouette workshop found in the Maya area: Colha, Belize (Shafer and Hester 1991).

In Mesoamerica, as elsewhere in much of the Americas, the entirety of the *chaîne opératoire* for most lithic industries is not known, or is likely based on some ill-informed, or at least Eurocentric, assumptions of efficiency, supply and demand; individual-centered production; and secular practice disconnected from religiously informed ontologies. Most archaeologists interested in chipped-stone production, as well as replicative experimenters, work alone. They are interested in figuring it out by themselves; finding sources; publishing their findings alone or coauthored with distinct knowledge sets per article; and sitting alone, knapping, and working on techniques that can be carried out by one person. Traditional American archaeologies are male centered, with visions of the lone hunter making their own equipment, completely self-reliant. As is often the case, these lithic specialists may have focused on Paleo-Indian peoples—highly mobile hunting and gathering bands with extremely low populations—who may very well have been self-reliant in the extreme. In many ways this “lone-knapper” approach has permeated much of our reconstructions of past lithic production models (see chapter 3). Thus, while we may get close to replicating how a flake was detached from a core, less focus has been placed on the relations of production, distinct *hexis* and practice sets, and the implications of these more complex forms of situated learning and social organization.

TECHNOLOGICAL TYPES AND *CHAÎNE OPÉRATOIRE*

The *chaîne opératoire* begins with resource acquisition. For most Maya cities, chert, chalcedony, and flint availability was a local matter. Chert availability may have been a deciding factor in settlement strategy, since it is more difficult to build a city of limestone without chert tools to cut, hammer, peck, and carve its building blocks. There are many types of landforms from which the Maya extracted their raw materials, but the most common were from outcrops found above the soil, *bajo* mud or soil matrix as float, and river or creek contexts where the material collected from recent or ancient alluvial processes. Each of these have different implications for the organization of production. In the first example, the source may represent a “boundary object,” which according to Wenger (1998) are things or places that act as a liminal spaces between different communities of practice. Andrew Roddick (2016), for example, has suggested

that based on ethnographic data clay sources in the Titicaca basin were places in which different communities of potters intersected with each other. Through the application of stylistic and technological analysis, Jilian Jordan et al. (2020) recently demonstrated a similar practice among Late Classic period potters in the Belize River Valley.

In any case, local knappers were undoubtedly involved in resource extraction, or at least in assaying the nodules brought to their workshops. In many ways choosing a viable nodule involves the greatest breadth of knowledge, since the color, quality, and consistency of the stone must be surmised to achieve the desired end product. In addition, the knapper must think three-dimensionally and envision the finished product “within” the stone. If the stone is too small, or has too many undulations, then the desired end may simply not be achievable. This process is important and speaks to resource scarcity, since, of a hundred nodules available at a given source, only one or two may fit the correct size and color requirements of the end product. Of course, this process is more important for the very large silhouettes, but it involves considerations that all knappers must have had to make.

The selected nodules then had to be decorticated through direct percussion. Far from a mindless task, removing the decortication flakes and macroflakes was all done with specific goals and products in mind. The majority of lithic caches Hruby has studied over the last twenty-five years suggest that the larger nodule reduction flakes were reserved to make smaller secondary silhouettes that often flanked larger ones in the cache context, the latter of which usually took a central position. The most common centrally placed silhouettes are the sun or discoidal forms, or sometimes the largest of the serpent or lightning forms. Usually a medium-sized nodule (20–30 cm in length), reduced to make medium-sized silhouettes (10–15 cm), also yields two to three secondary eccentrics that fall in the small- (<10 cm) to medium-size range. These decisions were being made actively as the nodule reduction was happening. Once these blanks were produced, either a rough bifacial core or a macroflake, then the knappers would continue with obvious direct percussion strategies to further remove overhangs and thin edges, and well as remove primary biface-thinning flakes.

The next stage is less known, a transitional or middle-stage reduction process in which indirect percussion is used. This process is discussed in chapters 3, 4, and 5 and appears to have been a much more widespread practice in Mesoamerica, and the Americas in general. The process involved using an antler or wooden punch to thin the biface, create even-flake patterning, and maintain the desired width of the biface. It is easier to create a greater thickness-to-width ratio, which is common in ritualized lithic artifacts from the Maya area. The process is also often easier, with fewer errors if it is done by more than one person—someone to hold and position the core, another to place the punch, and the other wielding

the percussor. Indirect percussion can be done by a single person, but it isn't easy. The end result of this stage is the silhouette preform, which usually consists of a celtiform, discoidal, or laurel-leaf format. These products were also placed in caches at most Maya sites, and the basic forms carried their own symbolic load (Hruby 2006, 2007).

The preform was then ready for shaping and notching into the final format. In general, the basic technological types of chert silhouettes in the Maya area include *fully bifaced*, *mostly bifaced*, *partially bifaced*, and *modified flake* (figure 8.3a–d). While some of these type names may seem quibbling, each one indicates very different approaches, resource constraints, and skill level to produce. *Fully bifaced silhouettes* are the most time consuming to produce, and the surface features little to no evidence of the blank or nodule from which it was produced (figure 8.3a). They may also include indirect and pressure notching and were finished by pressure. The type implies the production of a fully bifaced preform *before* the notching and contouring is carried out. *Mostly bifaced silhouettes* are those that still retain a noticeable portion of the original blank or nodule on their surfaces (figure 8.3b). Although finely crafted, they may also feature some of the original arc, or curvature, of the flake from which they were made. They were probably manufactured with the same level of skill as the fully bifaced examples, and it was the constraints of the smaller blank that kept the knappers from making a full biface. This type may indicate a lack of resources, with subsequent reliance on smaller-than-desired blanks for production.

Partially bifaced silhouettes are easier to make but still require knowledge of direct and indirect percussion to notch and finish properly, not to mention proper proportions and measurements (figure 8.3c). Only the edges were reduced bifacially, and in some cases not on all edges. This type may indicate resource scarcity or a lack of knowledge or skill by the knapper making the piece. The *modified flake silhouettes* are the simplest type and only require basic pressure work to complete (figure 8.3d). Again, the measurements and proportions must still be known to make these, and there is probably also a symbolic component to the kind of flake chosen to make them. All four are commonly found together in Maya caches, and those studied in this chapter are no exception. These four types could all have been made by the same person, and the more elaborate ones may have been made by more than one person. Importantly, it is on the fully bifaced examples that individual hands and styles may be more easily identified, because there are more details and flake patterning to compare and the final product is less dictated by the flake or blank used to make the final product. Finally, all of these stages of production could have been accompanied by chanting and bloodletting, and preceded by ritual preparations of fasting and abstention from sexual activity (Clark 1991; Clark and Houston 1998; Hruby 2006, 2007).

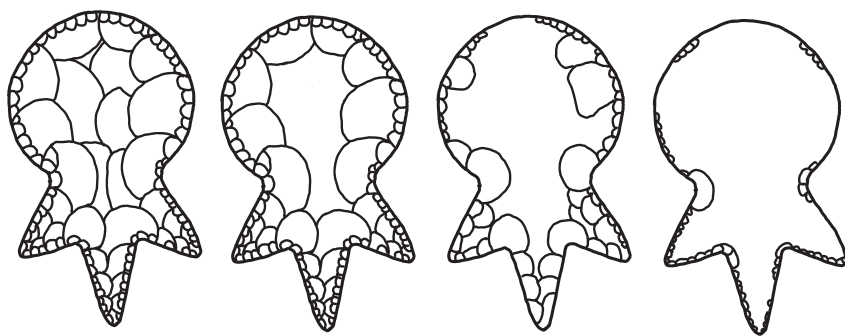


FIGURE 8.3. *The basic technological types of chert silhouettes in the Maya: (a) fully bifaced silhouette; (b) mostly bifaced silhouette; (c) partially bifaced silhouette; (d) modified flake silhouette*

THE UCANAL AND XUNANTUNICH CACHES

The Ucanal and Xunantunich caches analyzed here were all closely associated with stelae, having been found in front or just to the side of stelae and thus likely deposited at the moment of monument erection. At both sites, a few of the eccentrics were not found associated with the main group of eccentrics, which may indicate some regional pattern of deposition that is not yet understood. The Ucanal cache Cache #1-1 contained 9 chert silhouettes, Ucanal Cache #20-1 contained 9 cherts and 11 obsidians, and Xunantunich cache A-3-1 featured 9 chert and 9 obsidian silhouettes.

Context: Ucanal Groups J and K

Ucanal Cache #1-1 (UCA1C-11-3-78; Artifact numbers UCML-22 to -28) was excavated by the Proyecto Arqueológico in 2016. The cache was found in Group J, an elite residential and administrative complex (figure 8.4). It was interred at the base of Ucanal Stela 19, which was poorly preserved, with only its base remaining in situ and its upper portion missing during the time of excavation (Cruz Gómez and Garrido 2016).

No evidence of inscriptions or carvings were noticeable on the base of the monument. The stela is located directly in front of (to the east of) a low shrine or altar consisting of a small, square platform approximately 30 cm high at the center of Group J. Seven total chert silhouettes were found in situ in three rows within the final phase of platform fill. While ceramics in the fill immediately surrounding the cache were from mixed time periods (Late Preclassic to Late Classic), more recent excavations of the Group J platform indicate that the final phase of the entire platform underwent a major remodeling during the Terminal Classic period (Halperin and Garrido López 2019; Perea and Dubois-Francoeur

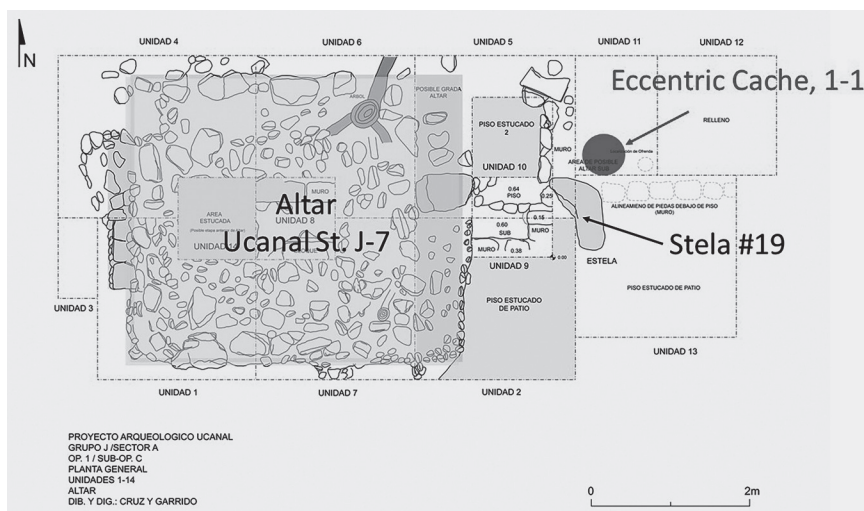


FIGURE 8.4. Archaeological context of Ucanal Cache #1-1 and the remains of Stela 19 in Group J.

2020), dating the erection of Stela 19 and the burial of Offering #1-1 to this later time period.

Interestingly, two complete silhouettes (UCML-29 and UCML-30) from Ucanal Cache #1-1 were found near the ground surface above the level of the eroded plaza floor sealing the lithic cache (figure 8.5; UCA1C-12-1-80, UCA1C-11-2-77). Because the two “misplaced” silhouettes are of the same material, a rose-ecru translucent chert, as two from the in situ cache, they were likely produced alongside the cached eccentrics. Although the reasons two of the eccentric pieces were not placed with the others are difficult to discern, such finds point to the performativity of the caching process, whereby the act of placing the eccentrics helped realize particular ritual goals and whereby the eccentrics themselves may have a particular animacy or power that dictated particular actions.

An additional eccentric cache, Offering 20-1, was recently excavated in 2019 and found directly associated with newly discovered Stela 29, located in front of a large temple-pyramid in a public ceremonial group, Group K (López López 2020). The stela, presently the oldest-known stela with inscriptions at the site to date (Halperin and Martin 2020), dates to the Terminal Classic period, with 879 CE as a probable corresponding period-ending date. The stela was erected on a small masonry platform (1.5 × 1.2 × 0.3 m) containing late-phase Terminal Classic ceramic sherds. Offering 20-1 was placed within the small stela platform in front of the stela but slightly offset to the east from its center axis.

Although the chert and obsidian silhouettes were intermixed, it is clear that some were purposefully placed close to each other at the moment of deposition.



FIGURE 8.5. Position of the chert silhouettes of Ucanal Cache #1-1 in relation to Stela 19. (photo by C. Cruz-Gómez)

For example, chert silhouettes B-4 and B-5 not only were found directly on top of each other but were made of the same source material. Chert silhouettes B-8 and B-9 were also found directly next to each other in the cache and were made of the same source material (see below).

The Context Xunantunich Structure A-3

Cache A3-1 was discovered on the centerline of Structure A3, a large west-facing pyramid in the main plaza at Xunantunich. Structure A-3 is approximately 16 m tall and 24 m wide, and represents the central pyramid of the site's eastern triadic shrine. The structure appears to have been built in one construction phase during the end of the Late Classic period. Excavations behind the first original step, which was located on the plaza floor, revealed the A-3-1 cache (figure 8.6). The cache was aligned with Stela A1, which stood 50 cm in front of the cache and the first step. It contained 18 objects: 9 chert eccentrics and 9 obsidian eccentrics. Three were located on their own circa 10 cm away, while the rest were all clustered together in one big pile. They exhibited no sign of paint or other marks of decoration.

The location of Cache A3-1, along the central axis and base of a nondomestic structure (A-3), is a pattern that is consistent with many caches containing chert silhouettes at Xunantunich. Cache A14-1, for example, was axially located at the base of Structure A14 and contained two discrete sets of nine objects each (Audet 2006, 151). The first set of cached items included nine chert silhouettes. The second set, located 30 cm to the south of the first set, contained eight chert silhouettes and one jade bead (figure 8.7). Directly west and across the plaza

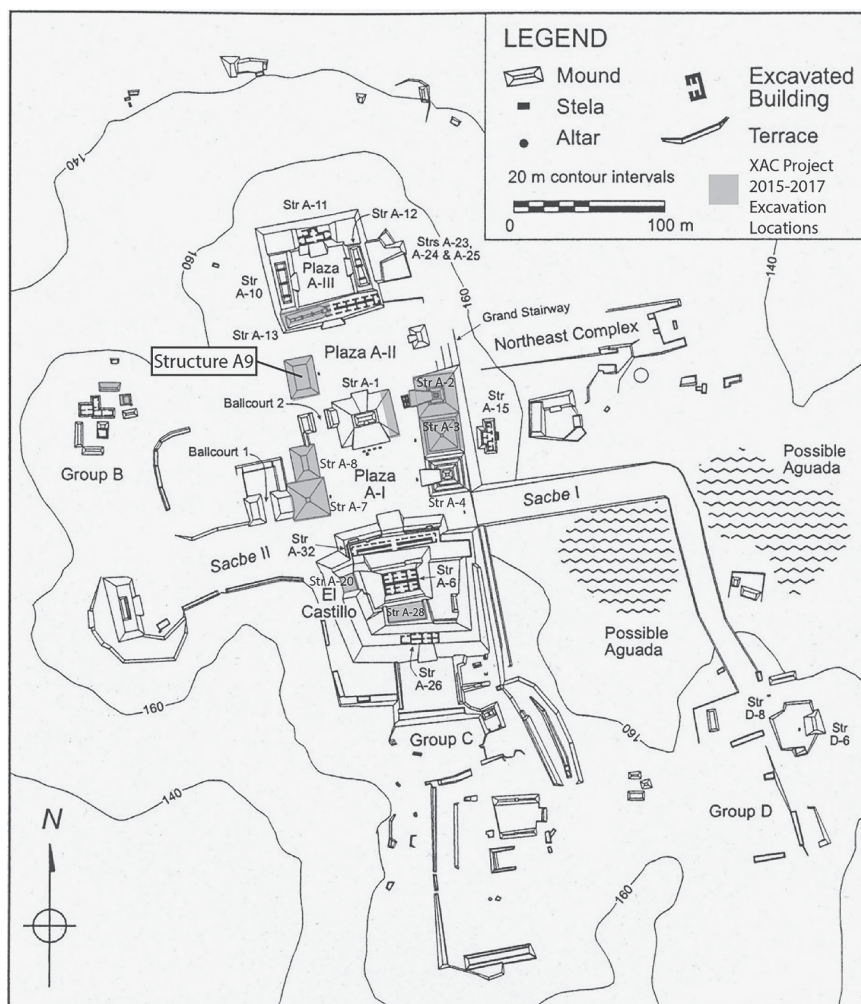


FIGURE 8.6. Map of Xunantunich showing the location of Structure A-3.

from Structure A14, excavations along the axial base of Structure A9, and its associated stela (Stela 4), recently uncovered two other caches (Awe et al. 2019; Slocum 2018; Sullivan 2017). The first cache (A9-1), which was discovered below Stela 4, contained twenty-eight chert silhouettes. The second cache (A9-2) was located at the base of the axial stairway and contained nine obsidian silhouettes, several marine shells, a number of freshwater snail (*jute*) shells, a fragment of branch coral, and several small fragments of jadeite and pyrite, plus five pieces of a red mineral that is either hematite or cinnabar.

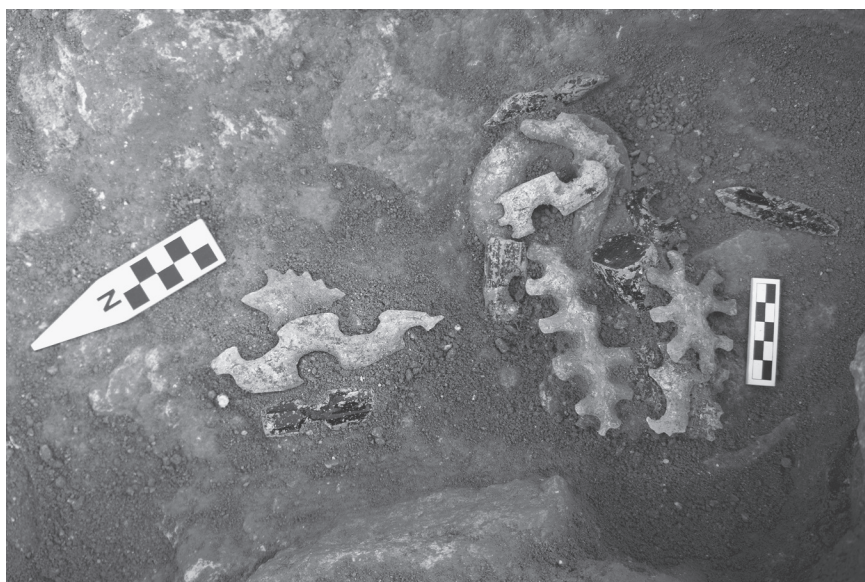


FIGURE 8.7. Position of the silhouettes in Xunantunich Cache A3-1.

JUXTAPOSITION OF THE CEREMONIAL CHERTS: SYMBOLIC, TECHNOLOGICAL, AND MATERIAL ATTRIBUTES

From a distance each group of squiggly silhouette forms seem to resemble one another. They are roughly the same size and tend to confuse our western sensibilities with their complexity, which has led some archaeologists to lump them together as lightning symbols. In fact, Karl Taube (Agurcia Fasquelle et al. 2016) has recently argued that as a general class of item, they are meant to resemble fulgurites: the glass tubes formed when lightning hits silica-rich earth. Upon closer inspection, however, details and patterns emerge.

Hruby (2006) suggests that while the Maya seem to have had a limited range of basic eccentric forms, they also conveyed more complex meanings by combining multiple forms in a single eccentric. Concepts borrowed from Maya epigraphy and iconography to describe these patterns are general *naturalistic* or *stylistic* format, and then the combination conventions of *conflation*, *superimposition*, and *infixation*. These conventions seem to support the notion that these objects are meant to be understood two-dimensionally, and not as three-dimensional sculpture, although in some cases we would argue that is not the case. *Superimposition* occurs when one form simply overlies another, as in this case from Altun Ha (figure 8.8). It is a combination of a mat or centipede form and a laurel-leaf form, one laid on top of the other but with both retaining their original full size and form (this example is quite large, at 40.4 cm).

Conflation is used to combine different forms, sometimes retaining some

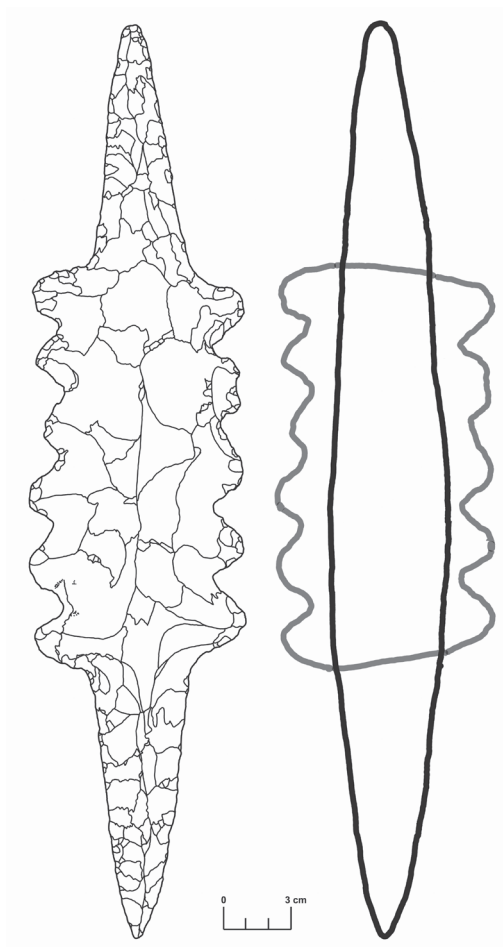


FIGURE 8.8. An example of superimposition from a chert silhouette from British Honduras (40.4 cm long, Drawing by Hruby after the British Museum).

aspects of two or more forms but clearly creating a blended “Frankenstein” of various characteristics to create a new form. We place serration in this category; for example, crescent forms may be smooth or serrated, creating two different possible meanings. Finally, *infixation* is not common but usually occurs with discoidal forms with negative space in the middle, although it may also be used more rarely with other forms. All of these combinations are found in the eccentrics of the caches presented here. In the following sections we compare the symbolic forms in each cache, and then the technology to elucidate any obvious patterns in the cached cherts.

COMPARISON OF SYMBOLIC FORMS

The Ucanal and Xunantunich caches feature silhouettes that individually do not seem to have much in common but placed in a broader framework share some

similarities (figure 8.9, please see notation next to each example for analysis that follows). The A3-1 Cache from Xunantunich actually fits into a recognizable, pan-Maya format of nine cherts with many similarities to Late and Terminal Classic Tikal caches. The format is not identical to any of the Eccentric Flint Classes 1–4 identified by Coe and Moholy-Nagy (2008) but rather shares some affinities with each, both technologically and symbolically. Shared forms include sun and moon silhouettes that refer directly to these celestial bodies but also to the gods that represent them (Moholy-Nagy and Coe 2008; Coe Types EF1 and EF2, respectively; EF, i.e., eccentric flint). They may be serrated or smooth, although there is good evidence to suggest that there are subtle or even overt differences in symbolic meaning between the two. The serrations may reflect an additional meaning of *yax*, meaning green-blue or “new,” instead of “sharpness” or “chipped stone,” since Early Classic iconographic representations of *yax* are identified by these notches or serrations (Houston 2014).

The A3-1 examples include a serrated version of the crescent and a sun form not found at Tikal, which includes a quatrefoil infixed sign that may represent a cave opening but more likely reflects the internal petaloid nature of solar imagery. The negative space in this silhouette also may be an elaborate reference to the “doughnut” or “ring” shape common at Tikal (Coe Type EF4), which may itself refer to yet another aspect of the sun. One of almost the same size, shape, and technology was found at Altar de Sacrificios (Willey 1972, 187).

Another reference to the moon may be seen in what appears to be a conflation of a crescent form and a serrated variety of the laurel-leaf form (Coe Types EF2 and EF11, respectively in figure 8.9; Artifact A4 in figure 8.10). This blending of forms may be referring to combinations of different deities or celestial bodies in different positions or states in the sky. It should be noted that a number of caches at Xunantunich and Naranjo feature this serrated laurel-leaf form and often have multiple varieties of the lunar crescent in the same cache (Carreño S. 2013; Salas, personal communication, 2019). There is also a clear Type 8 form in the cache as well (figure 8.10, Artifact A2), likely signifying the *pop*, or mat, sign, which overlaps with centipede symbolism (Hruby 2007) and may be a reference to the Milky Way. What appears to be a serrated projectile point may be a stylized version of Coe’s Type EF3, which he interpreted as a *Spondylus* shell but has not been demonstrated iconographically as such. A typical and easily identifiable scorpion form (figure 8.10, Artifact A5)—a likely reference to the Scorpius constellation—was included (Coe Type EF5) as was a serpent form (figure 8.10, Artifact A3; Coe Type EF12), which was probably meant to evoke lightning or one of the Maya embodiments of lightning: God K or K’awiil. There is also a possible serrated disc in A3-1 (figure 8.10, Artifact A7), which Coe identified as a tick at Tikal but was not demonstrated iconographically. In this case, however, its lack of symmetry may place the Xunantunich example into the category of a

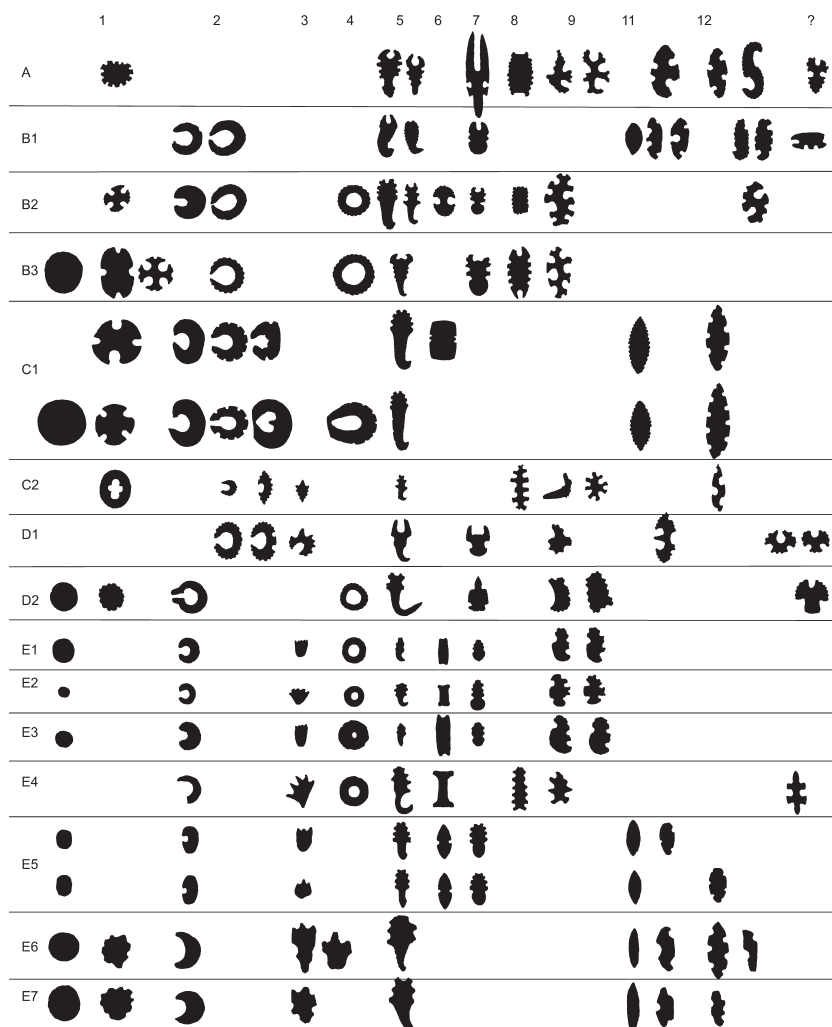


FIGURE 8.9. A cross-site comparison of cached chert silhouettes from Yaxha (Row A), Naranjo (Row B), Xunantunich (Row C), Ucanal (Row D), and Tikal (Row E) caches, organized by column according to William Coe's eccentric types (i.e., EF; Drawing by Hruby partially after Moholy-Nagy and Coe 2008).

deity portrait (Coe Type EF9). If this is true, then, in addition to another unique portrait in A-3-1, the presence of two portrait eccentrics aligns it with the Class 1 and 2 formats from Tikal.

In summary, Cache A-3-1 shows some affinities to the Tikal traditions (i.e., Classes), which were often carried out for over a century at a time, as well as other caches at Xunantunich and Naranjo. Tikal, however, boasts the greatest

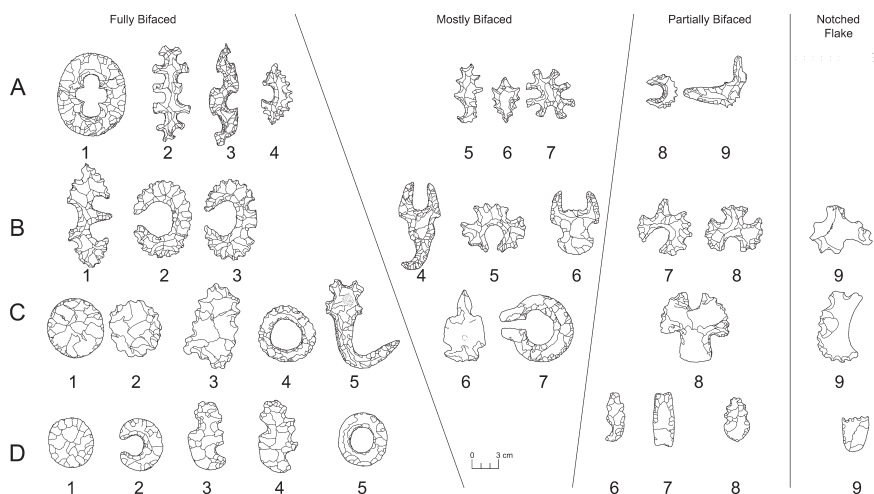


FIGURE 8.10. A comparison of technological types (column 1: fully bifaced; column 2: mostly bifaced; column 3: partially bifaced; column 4: notched flake) from Xunantunich (row A: Cache A3-1), Ucanal (row B: Cache 1-1; Row C: Cache 20-1), and Tikal (row D: Cache 56).

conservatism in chert eccentric forms of any site Hruby has studied. At Tikal knappers do not practice conflation, superimposition, or infixation of different forms, except inasmuch as they modify the basic laurel-leaf type EF11 to evoke more complicated silhouettes in EF Class 2, 3, and 4 caches (Moholy-Nagy and Coe 2008). This practice is more common in the notched core type obsidian eccentrics all over the Maya Lowlands, which are all, to a certain extent, based on the lenticular form of an exhausted blade core. Cache A-3-1 seems to follow suit, with caches found outside of Tikal and its subsidiary sites via the manufacture of greater creative and idiosyncratic forms based on infixation and conflation (see earlier). Importantly, Coe Type EF7 from Tikal, which Hruby identifies as a sacred bundle or knotted jewel with a three-dot device (see also Moholy-Nagy and Coe 2008), is not found at Xunantunich, or indeed many sites outside of Tikal (but see Willey 1973). Nevertheless, the suite of types found in Xunantunich A-3-1, and shared with many types from Classes 1 and 2 from Tikal, seem to confirm a Late Classic date. Naranjo silhouettes appear to be quite similar to those from Yaxha and Xunantunich but in at least one case adopt a modified, fine brown laurel-leaf eccentric more common at El Tigre, Campeche, Altar de Sacrificios, and more generally, Northern Belize.

The Ucanal Cache 1-1 is rather different. Since two of the silhouettes (figure 8.10, Artifacts B1 and B7) were not found in direct association with the main concentration of seven, it is possible that they were part of a different offering or

that the original cache was disturbed somehow. Either way, the suite of symbolic forms do not match any from Xunantunich or Tikal, although some individual pieces do. In general, there seems to be more conflation in the silhouettes from Ucanal Cache 1-1 than Xunantunich Cache A-3-1. The only two types that overlap between the caches are a serrated crescent form (figure 8.10, Artifacts B2, B3, and A8; Coe Type EF2) and a scorpion (figure 8.10, Artifact B4 and A5; Coe Type EF5), although in different styles. In fact there are three crescent forms identifiable in the cache; aside from the serrated crescent, there is a double-notched crescent, which may be a conflation with a sun disc form, and another that is conflated with a stemmed spear point placed away from the main concentration of silhouettes (figure 8.5). At Piedras Negras the conflation of stemmed spear points with other forms, including crescents, is common, especially in Cache O-13-57 (Escobedo and Hruby 2002). In the Ucanal case the stem juts out asymmetrically. The scorpion eccentric is a different style from that of Xunantunich A-3-1, with a much more naturalistic rather than stylistic representation, including more defined pincers and abdomen. There appears to be another scorpion included through superposition, however, where the pincers and thorax of the scorpion are attached to a disc. Hence, there are two possible, but not certain, representations of the sun in Ucanal Offering 1-1.

One type, not directly represented at Tikal, is repeated in Ucanal 1-1. It consists of a trilobed form (figure 8.10, Artifacts B5 and B8) notched out of a serrated disc form, which is also found at Piedras Negras. It is possible that this is a reference to a solar disc, but more likely it is an alternate depiction of the three-dot jewel or knotted bundle device depicted as Coe Type EF7 at Tikal. Instead of chipping the knotted attachment, these Ucanal eccentrics seem only to depict the circular three-dot device. In the incised obsidians of Tikal the three-dot device is depicted positioned in the mouth of the Principal Bird Deity and sometimes with a penitential version of Chaak, the Maya storm god. Its overall meaning remains unclear and is not clearly related to any planetary body or constellation, but it may be related to penitential acts and imbibing psychoactive substances for ritual. There is one naturalistic form (figure 8.10, Artifact B9), which probably is a deity portrait of the Tikal Type EF9 and, finally, the most complex artifact (figure 8.10, Artifact B1), which seems to conflate a number of forms. At its foundation the eccentric is based on a serrated laurel-leaf form (Coe Type EF11 or perhaps a more stylized version of Coe Type EF8), but it features an infixed spear point stem, as well as large and small notches. In that sense, this eccentric shares some affinities with the crescent and serrated laurel-leaf eccentric from A-3-1.

To summarize, Ucanal Offering 1-1 as a whole does not fit any known patterns from Tikal, Piedras Negras, or Xunantunich. There were no obsidians in this cache, which may explain the various combinations of forms, perhaps to

maintain some kind of numerology of symbols without creating separate items. This is just a hypothesis, however, which remains to be tested through comparisons with other caches. Importantly, the further away from Tikal one moves, the more arcane the symbol combinations become, which may have to do with the expression of local deities, creating local symbolic capital, or as-yet-unknown facets of local practices and traditions.

The final cache from Ucanal, Cache 20-1, conforms to a recognizable cache format, and one that is both clearly found at Tikal and Naranjo. Interestingly, while iconographic, monumental, and architectural styles across the Maya world changed significantly during the Terminal Classic, the eccentrics did not. Tikal provides the best example of this conservative aspect of Maya culture, since Coe's Class 1 caches retain the same forms as earlier periods and seem to become even more standardized over time. Although the size of the silhouettes is somewhat smaller than earlier examples, complete bifacial reduction seems more common at Tikal or Ucanal (see "Comparison of Technological and Material Attributes" section), and it most closely resembles Tikal Caches 44, 45, 56, 94, and 95. There are some differences, however, that seem to be related to style rather than symbolism. Likewise, Ucanal Cache 20-1 also shares some forms with Naranjo eccentric caches, most notably the combination of Coe Type EF1 or solar disc (figure 8.10, Artifacts C1 and C2), Type EF4 or ring form (figure 8.10, Artifact C4), Type EF2 or lunar crescent (figure 8.10, Artifact C7) and scorpion forms (figure 8.10, Artifact C5; Carreño S. 2013, fig. 5). The crescent, however, has two squared protrusions at the tips, which have not been seen elsewhere so far. There is also a serrated disc (figure 8.10, Artifact C2) or perhaps a more mildly chipped "tick" form Coe labeled Type EF14; however, it is likely that both of these forms simply represent another aspect of the sun or another shining deity. The ring form, common at Tikal as Type EF4, here is serrated as it is in at least two eccentric cherts from Naranjo (Carreño S. 2013; Miriam Salas, personal communication, 2019). All three of the circular forms from the Ucanal cache are virtually the same diameter within a matter of millimeters (figure 8.10). There are two Tikal Type EF9 portrait eccentrics (figure 8.10, Artifacts C3 and C9), as well as a rather simplified scorpion form with diminutive thoracic appendages (figure 8.10, Artifact C5; Coe Type EF5).

The two remaining forms do not fit neatly into Coe's Class 1 eccentric flint grouping. One is trilobed, which may be a more abstract, later version of the three-dot device discussed earlier. However, the notches are not radial in nature, create a primarily bilateral axis, and thus may be an unidentified form (figure 8.10, Artifact C8). The trilobed form is also present in Ucanal Cache #1-1 (figure 8.10, Artifacts B5 and B8), and differs from the common quadrilobed disc forms from caches from Xunantunich, Baking Pot, and Naranjo (Carreño S. 2013, fig. 5;

Miriam Salas, personal communication, 2019; Sullivan 2017, figs. 14, 21, 24, 25, 30). Finally, there is a pointed form (figure 8.10, Artifact C6) with bilateral symmetry, which may be an alternate version of the Tikal Type EF10. Of significance, however, Type EF10 seems to be related to early Late Classic Class 4 style caches, which also extend back in time to the Early Classic. Thus, Ucanal Cache 20-1 shares many forms with Late Classic lithic caches found elsewhere, but some of the shared types were executed in very different styles.

COMPARISON OF TECHNOLOGICAL AND MATERIAL ATTRIBUTES

Clearly there are some basic differences in symbolic forms and styles between all three caches, even if some of the symbols are quite similar to one another or at least repeat in various ways. In terms of basic technological types, production strategy, and raw material choices, however, the caches reveal further affinities (see figure 8.10). The first characteristic all three caches share is the selection of materials with a wide array of visual characteristics. Rather than automatically assume that the color of the material was of insignificance to the ancient Maya, we instead note both the surface colors of the chert as well as those that emerge in their translucency seen with backlighting. All three caches feature silhouettes made of gray, light brown, dark brown, light blue, and reddish colors. No matter the surface color, the pieces usually appear to be white to yellow to orange in color with back lighting. All of the materials are a chert-chalcedony mix, meaning that they feature characteristics of more opaque chert, as well as the clear icy appearance of chalcedony with intermittent dendrites within. These characteristics make the stone beautiful but also difficult to work, since chalcedony is more rich in silica gel, lacks opal, and is thus extremely tough. In the case of Ucanal Cache 20-1, it seems that the knappers selected and worked with inclusions within the material. While the ring forms and other eccentrics with enclosed negative spaces are generally agreed to have been created by selecting blanks with vugs, these pieces seem to indicate that inclusions were included in the overall planning as well. According to figure 8.10, Type EF10 (Artifact C6) and Type EF5 (Artifact C5) forms include a fossil inclusion and a limestone inclusion in the center mass of each piece. It should be noted that other sites do not follow this pattern. Material choice and reduction techniques change over the centuries at Tikal, while the basic symbols stay the same. Likewise, while Ucanal and Xunantunich are located along the same waterway, and there was undoubtedly communication between the two centers; also, chert resources were plentiful enough in the two regions to indicate that they had their own chert sources (Laporte and Mejía 2000).

Xunantunich A-3-1 silhouettes were made from flakes and blanks derived from five or six different nodules. This estimate is based on material similarities and could have been a lesser number if a single nodule featured a wide

variety of colors within it. At least one of the pieces was heat modified. The serrated crescent was either made from a burned piece of found chert, a purposefully heat-treated flake, or was burned after it was produced but before it was interred in the cache. It was clearly chosen for its bright red color. The scorpion and the serrated laurel leaf are partially bifaced percussion flakes, probably removed from the same nodule. The Type EF₃ eccentric and the serpent form appear to be the same material, which was a gray color. The Type EF₃ eccentric was mostly bifaced and was likely made from a nodule reduction flake removed during the production of the serpent, which was completely bifaced. The more discoidal portrait (Type EF₉) and the solar disc (Type EF₁) followed the same pattern, where debitage from an earlier stage of production was retained to create another eccentric. The other portrait bears no material resemblance to the others and appears to be a one off as a modified flake technological type. Like the discoidal portrait, the mat-style eccentric features incredibly deep notches. Since these are relatively uncommon, it is likely that these pieces were finished by the same knapper. In terms of overall difficulty, the solar disc and serpent forms required the greatest skill to produce. The remaining eccentrics do not demonstrate that knappers of different skill levels were making the pieces but rather that the blanks and flakes used to make them may have been too thin to sufficiently reduce bifacially. However, the differences in style and finishing do indicate multiple hands making these items. The fact that materials from the same nodule were used indicates that at least some of these items were made during the same knapping event.

Ucanal Offering 1-1 represents a slightly more concerted effort using a more limited number of nodules. The serrated and notched crescent, the two tripartite silhouettes, and the portrait all have identical light gray color and white or cream translucency. The fact that the notched crescent (figure 8.10, Artifact B₂) is fully bifaced, one tripartite disc is mostly bifaced (Artifact B₅), another is partially bifaced (Artifact B₈), and the Type EF₉ portrait is a modified flake (Artifact B₉) suggests that a single nodule was reduced with the primary goal of making the crescent and that the other pieces were made subsequently from the remaining debitage. In addition, the scorpion form (Artifact B₄) is made of a similar color stone but with more dendrites within. It is unclear whether this fully bifaced example was derived from the same nodule, but it is unlikely given the obvious small size of the local nodules. The serrated crescent and the conflated scorpion and disc form appear to be made from the same nodule, and the fact that the crescent is fully bifaced and the conflated piece is mostly bifaced adds credence to that interpretation. The final two eccentrics, located away from the main concentration, also appear to have been made from the same nodule of whitish cream color and white translucency. The conflated laurel-leaf form (Artifact B₁) was fully bifaced, and the conflated crescent form was partially

bifaced (Artifact B7), again indicating a sequence of production based on a central form. All of these eccentrics are relatively consistent in terms of style and manufacturing technique, leaving open the possibility that they were made by the same team of knappers.

Ucanal Cache 20-1 features a wider array of materials than Cache 1-1. A complete material comparison could not be made, since two of the pieces were left uncleaned for future analysis. However, they appear to have been produced from at least four different nodules. The serrated disc (figure 8.10, Artifact C2) and ring (Artifact C4) seem to have been made out of the same color material both on the surface and with back lighting. It would be a rare case of two fully bifaced silhouettes coming from the same nodule, but given their diminutive size it is possible. The fully bifaced scorpion (Artifact C5) and the trilobed partially bifaced (Artifact C8) eccentric appear to be from the same nodule, although the latter is a bit more rough textured. These are reddish-brown to maroon in color, and the concretions remaining in the matrix are of the same type. The portrait (Artifact C3), which appears to be a K'awiil silhouette, is singular in the cache and unique in color to any other eccentric analyzed by Hruby. It is a rainbow-colored chert-chalcedony with black dendrites and even displays some chatoyancy when placed under light. These colors do not remain with backlighting, however. Unlike the other portrait, which is simply a modified flake, this example is fully bifaced and made with a high degree of difficulty. The second portrait, although uncleaned, seems related to the ring eccentric and crescent material. However, both the ring and the crescent are fully bifaced. These are of a light cream to tan color. The Type EF14 silhouette (Artifact C6) is uncleaned and of an unknown material but was fully bifaced. As mentioned above, these cherts are notable for seven out of the nine being completely bifaced (table 7.1).

DISCUSSION AND CONCLUSIONS

According to the analyses presented here we can isolate a few loci where communities of practice may have expressed continuity: (1) symbolic type, although the expectations and requirements for different forms may have been required above and beyond the knappers; (2) technology and *chaînes opératoires*, that is, how each piece was made and how flakes and blanks were chosen for candidacy as a silhouette; and (3) what kinds of nodules, blanks, flakes, and colors were chosen based on their size and color. In this brief comparison we can say that from a synchronic perspective, knappers from Ucanal, Xunantunich and other Belize Valley sites, Naranjo, and Tikal all chose overlapping symbolic forms, but they or their patrons chose very different ways to express these symbolic forms and in different combinations. Even in the case of the most common types, such as the crescent form, no two examples had the same outline. These disjunctures between basic symbolic forms and execution suggest that different communities

of practice may be linked by shared histories and ideas tied together through brokers and boundary objects but not necessarily characterized by the same communities of practices. Such phenomenon are seen elsewhere in the Maya area, such as in the anthropomorphic eccentrics from Copan and from Altar de Sacrificios that were executed using very different techniques and raw materials but evoked the same meaning of a K'awiil Maize God (Agurcia Fasquelle et al. 2016; Willey 1972). Such constellations of practice were not shared by all sites. For example, some sites in the Maya area, such as Calakmul, Palenque, and Caracol, did not participate in chert silhouette production and caching practices to any significant degree (Chase and Chase 2017, 198).

That different symbols in different combinations were also chosen at Ucanal and Xunantunich may indicate that they were emphasizing different deities and celestial bodies in their caches, perhaps as a reflection of their own local religious traditions. Comparing A-3-1 with other caches from Xunantunich shows that different symbolic forms were chosen for different caches but some forms were more common than others, such as lunar forms and quadrilobed discs (Sullivan 2017). While the sample from Ucanal is just too small to identify broader patterns with much confidence, they appear to more loosely align with Xunantunich, Naranjo, or Tikal. In contrast, Xunantunich and Naranjo appear to have more closely aligned with each other than with Ucanal, although the published samples from Naranjo are a similarly small number.

In addition to basic symbolic forms, however, the Ucanal and Xunantunich caches share other production techniques and embodied knowledge, although close-knit communities of practice may not have been necessarily responsible for such similarities. Knappers from both sites appear to have made an effort to use various material colors for each eccentric. While it is clear that color had tremendous symbolic import among the Maya, the idea that certain colors were chosen for specific sets of form types has not been demonstrated and would require a detailed study on that topic. In addition, it is clear in all three caches that the knappers who created the pieces were adept at direct percussion, at least two separate indirect percussion techniques, and pressure flaking. Alone these techniques would have been understood and practiced by most accomplished knappers in the ancient Maya world. Using them to create detailed notches, maintaining proportions, and creating negative enclosed spaces, however, is a different level of artistry—one controlled by specialists.

Diachronically speaking, it is possible that chosen symbols may change at Ucanal and Xunantunich over time, although less so at Tikal. At Tikal there was an incredible continuity in symbolic forms for, arguably, the longest period anywhere in the Maya world. If Hruby (chapter 1) is correct that the eccentric tradition was born of a syncretic union between Maya and Teotihuacan knapping and religious practices, then it is possible that the canonization of these

forms began at Tikal. As Hruby (2002) has argued for the scribal tradition at Tikal, it may have perceived itself as a keeper of those traditions. Outside of Tikal, it is possible that knappers worked with more flexibility in design and execution of forms. Thus, while Xunantunich may feature continuity in basic symbolic forms, there was more variety in the execution of those signs in a semiotic sense. It should be noted here that cached obsidians at Tikal are a completely different story—a locus of greater creativity and experimentation.

One thing that is clear from each of these caches is that at least some of the objects were made at the same time. In other words, while some pieces may have been selected *ad hoc* to complete a set of eccentrics for a caching ritual, others were made together as part of a planned exercise. We would argue that this is the case for most eccentric caches based on pan-Maya comparative data but perhaps not all. At some sites, finished bifaces were imported long distance and then reduced, probably by local knappers (Meza Rodríguez 2008). This does not appear to be the case for the Ucanal and Xunantunich, where local materials were used. Part of the argument for this reconstruction is that some of the debitage from the production of larger eccentrics appears to have been used for making the smaller ones.

The implications of this pattern are important. First, many of the knapping techniques were probably not carried out by a single person. They were a team effort requiring at least two to three people. The same type of silhouette was sometimes executed in different styles, for example, the two tripartite eccentrics from Ucanal Cache 1-1, which might suggest that two different people were making them but from flakes of the same nodule. Thus, people in close proximity to one another, throughout the process, were likely working together toward the same goal. They must have shared the same kinds of esoteric production and religious knowledge. That some of the smaller eccentrics may be more crude than the larger pieces may also suggest a hierarchy of knowledge and practice, where perhaps apprentices were involved in the less-complicated procedures. These patterns suggest very tight, if quite restricted, communities of practice at each site. Furthermore, the process implies that the knappers were likely involved in the very early stages of production, as well as the final ones. This practice would contrast with those from other sites that imported finished bifaces that were then modified into silhouettes by specialists in religious forms (chapter 1). The group or team type of organization of production may reflect more general approaches to even utilitarian knapping, or a unique exchange occurring in this hyperspecialized setting. Only detailed analyses of workshops may resolve this question.

In summary, the caches from Xunantunich and Ucanal do not seem to indicate a form of constant or continuous information exchange between the elite knappers or elite-sponsored knappers of each site. While adhering to a basic

pan-Maya symbol system is clear, the execution of these symbols appears unique to each site, Tikal included. In addition, the Ucanal examples date to the Terminal Classic, when the site began to engage in new expressions of political identity that forged ties less with dominant powers, such as Tikal and Naranjo. In general, however, Ucanal and Xunantunich may not have been constrained by the same conservative canons of knowledge production established at Tikal. The reasons for this are unclear but may have to do with more turbulent histories and population changes over time outside of the very large cities. In addition, the benefit of using a *chaîne opératoire* and community of practice approach to understanding these objects is clear. Trying to match a particular symbolic form between caches and sites is only a single facet of the study. Instead, one must consider all stages of production, from the earliest stages of nodule selection and decortication, to the final group activities and shared practices that brought about their final form, as a way to consider the social relations within and between communities of practice. It is difficult to imagine that taste was a major factor in how these objects were made, as would be the case for a painted polychrome pot or woven pattern, given how small they were and limited their distribution. We have to wonder how big of a role aesthetics played, if any, and whether there was simply a culturally acceptable way that they had to be made to function properly as divining tools (Hruby 2007, Hruby and Ware 2009). There also is an immediacy to these items. They were not used for long, in archaeological terms, but were meant after periods of one, five, ten, or twenty years to be buried and never seen again by human eyes.

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