Architecture and Urban Design: Expressions of Kingly Power and Hegemony of the State

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1 TWENTY-FIVE (PLUS) YEARS OF SITE-PLANNING STUDIES

Brett A. Houk

In 1991, Wendy Ashmore published “Site-Planning Principles and Concepts of Directionality among the Ancient Maya.” The article, in which Ashmore defined “site planning” and proposed a template for Maya city design based on cardinal directions, is currently the most cited article in the history of Latin American Antiquity, demonstrating its tremendous impact on the field of Maya archaeology. The notion that the Maya created microcosms of their worldview—what other scholars later freely interchanged with “cosmograms”—in their city plans is perhaps the most referenced element of her article. It, however, is only one element of site planning as described by Ashmore. Her ideas and the influence they had on the field marshaled some outspoken and prominent critics, in large part because of how scholars uncritically applied the cosmogram model as an explanatory tool. This paper examines how the concept of site planning has been applied to Maya sites in Belize over the last two and half decades and looks at problems and possibilities with the approach. Ultimately, site-planning studies, as originally proposed by Ashmore, remain a viable method to investigating city planning among the ancient Maya.

Introduction

In a number of publications in the late 1980s and early 1990s, Wendy Ashmore advanced the idea that ancient Maya city planners employed a set of planning principles that were linked to cardinal directions and Mesoamerican cosmological beliefs. Her 1991 article, entitled “Site-Planning Principles and Concepts of Directionality among the Ancient Maya,” has been in print for over 25 years, and, as of April 2016, it was the most widely and most frequently cited article in the history of Latin American Antiquity (Figure 1). In it, Ashmore (1991) proposed that many Maya cities employed a particular site-planning template based on cosmological principles. We could actually look even farther back for the genesis of this idea to 1986, when Ashmore (1986) described “the use at Quirigua of site planning principles derived from both local and distant sources.” The template for building cities emphasized the north-south axis of Maya cities and the formal and functional opposition between north and south. In this template, open plazas, where community activities and public rituals took place, characterize the northern end of a site’s core, while enclosed private spaces and elite palaces occupy the southern end. In many cases, a ball court serves as an architectural transition between north and south (Ashmore 1989, 1991).

It is evident from the citation data alone that the article has had tremendous impact on the field of Maya archaeology, and Ashmore’s (1991) concepts have been widely applied by researchers working in Belize. She published a follow up article with Jeremy Sabloff in 2002 that included the site of Xunantunich, located in Belize, as an example of using a site-planning approach to interpret civic planning. That subsequent article, while not as frequently cited as Ashmore’s 1991 piece, is still one of the most frequently cited articles published by Latin American Antiquity, averaging 6.8 citations per year (see Figure 1). Ashmore’s approach, however, is not without its critics, the most vocal being Michael Smith (2003:221) who chided Ashmore and Jeremy Sabloff on the pages of Latin American Antiquity for relying “upon assertions and subjective judgments backed not by empirical evidence but by uncritical citations of the works of others who agree with them.”

This paper examines site planning as originally defined by Ashmore and look closely at the subsequent fixation other authors have had on cosmograms. It includes examples of how researchers in Belize have applied Ashmore’s model, and consider the critiques and criticisms of the approach offered by Smith (2003, 2005), before closing with examples of the three successful types of site-planning analysis.

Site Planning as Defined by Ashmore

In a series of book chapters and articles published between 1986 and 1992, Ashmore laid out her definition of site planning. In a 1989 book chapter, she defined site planning as “the deliberate, self-conscious aspect of settlement patterning, at scales from individual structures through regional landscapes” (Ashmore 1989:272). Nowhere in that definition do the words cosmogram or cosmology appear;
Ashmore’s (1989) definition of site planning is holistic in that it does not attribute one single source of site-planning ideas but encompasses a wide range of possibilities. A key element of the definition, however, is this notion of deliberate and self-conscious aspects of settlement planning. In other words, site planning reflects the decisions of individual planners. Working from the archaeological record back to those decisions is the ultimate intent of studying site planning—the goal is to determine why a site looks the way it does. Ultimately then the intent is to decipher meaning, broadly construed, from the built environment.

**Microcosms and Cosmograms**

While Ashmore’s definition of site planning allows for the fact that many different factors can influence a city’s plans, her publications have largely focused on deciphering cosmological significance. In her 1989 book chapter entitled “Construction and Cosmology: Politics and Ideology in Lowland Maya Settlement Patterns,” Ashmore (1989:272) argues that “by Classic times, Maya rulers were...using principles of site planning based in cosmology as a means to profess and reinforce their membership in the political elite.” She uses the term cosmogram in that chapter, without ever defining it, but she is clearly referring to what she calls microcosms in her 1991 *Latin American Antiquity* article: “worldview maps, providing ever-present spatial charts of the emic structure of social and ideological relationships” (Ashmore 1991:199). She notes that researchers have suggested “Maya buildings and civic centers were laid out as microcosms, arranging architecture so as to symbolically equate the architectural center of civic power with the center of the universe” (Ashmore 1991:200).

As the title of her 1991 article suggests, an important element of the site-planning template she identified, referred to by others as the Petén template (Houk 2015:265), is an apparent concern with directionality. Ashmore (1991:200) called it an “emphatic reference to a north-south axis in site organization,” which was combined with “formal and functional complementarity or dualism between north and south.” The template also includes a ball court as a transitional element between the northern and southern groups and causeways, which connect the major elements of the city plan (Ashmore 1991:200). The model also includes “the addition of elements on east and west to form a triangle with the north, and frequent suppression of marking the southern position” (Ashmore 1991:200), although this element of the template is the most subjective to identify in site maps. In her 1989 book chapter, Ashmore (1989:274) commented on the dualistic nature of the template, noting “the core of Maya centers comprised complementary paired precincts, one for public ritual, especially as devoted to veneration of the ruler's lineage (e.g., through location there of carved-stone dynastic monuments), and the other, the private residential compound or palace group of the sovereign.”

The template becomes cosmogram once the design elements are correlated to cosmological concepts, including the ideas that...
the heavens are the home of the ancestors and associated with up, and the underworld, is the location of the “primordial ordeals of mythological Hero Twins,” and associated with down (Ashmore 1991:201). Furthermore, Ashmore (1991:201) proposed that in Maya worldview, “north” equates to “up,” and the natural world and the supernatural realms are connected vertically through things like mountains, caves, and the axis mundi. Another element of worldview is the concept that the world is divided into quarters, which correspond to the cardinal directions, with a fifth, central position. In applying these notions to the site-planning template, Ashmore (1991:201) suggested the northern group of architecture equates to the heavens, which is the home of the ancestors, and the southern group equates to the underworld. Thus, she proposed that a king who chose this site-planning template converted his city into “a map of the universe, a microcosm, with the ruler placed in a position of consummate power” (Ashmore 1991:201). This is exemplified in her analysis of the Late Classic plan of Quirigua, which Ashmore (1989:279–280) describes as follows:

The counterpart to [the] public, ritual, and apotheosizing northern precinct is the enclosed, residential, administrative, and worldly southern compound of the Acropolis, home to Cauac Sky and his household. Between these two elements is a ball court…Other coeval monumental groups at Quirigua further stress the dominance of the north/ south axis; a north/open vs south/enclosed contrast when such groups are juxtaposed; and, in all monumental groups, regardless of degree of openness, the association of northern position with highest (i.e., most skyward) summit elevation.

**Applications in Belize**

As the citation data described previously indicates, Ashmore’s 1991 article has been extremely influential, and a number of scholars have applied Ashmore’s cosmological model to landscapes, sites, structures, and features in Belize. In some cases, the use of Ashmore’s model is explicit, while in others it is implicit.

**Xunantunich**

Jason Yaeger (2003:132) and Angela Keller (2006:590) analyzed the plan of Xunantunich and concluded it is a cosmogram. Yaeger (2003:132–133) proposes that the site has a cruciform pattern created by the north–south alignment of three contiguous plazas the causeways and two causeways, which enter the site core from east and west. Overall, the cruciform design “recreates the quadripartite Maya cosmos” (Yaeger 2003:133). Keller (2006:586) concludes the cruciform layout of the site core is “a clear, regular, and intentional design.” Building on the cosmological concept of vertical connections between the natural and supernatural worlds, which is an element of Ashmore’s (1991) model, Yaeger (2003:133) and Keller (2006:591) both comment on the Castillo’s central position in the city’s design. Yaeger (2003:133) proposes that the Castillo may represent “the World Tree” based on the symbolism embedded in its stucco friezes and its central position in the cosmogram.

**Minanha**

At Minanha on the Vaca Plateau, Gyles Iannone (2010:363) noted that the site’s epicenter “mimics the cosmologically-based civic plan of more potent centers in that it exhibits a strong north-south axis and follows the pattern of placing the royal residential compound . . . in the north, in association with the heavens.” This, however, is not a strict application of Ashmore’s (1991) model, but rather an alternate interpretation of it. Ashmore’s model places the ruler’s residential compound in the south and the public-ritual plaza in the north.

**Southern Belize**

Geoffrey Braswell and colleagues (2011:117) apply Ashmore’s model to the ruins in southern Belize. Braswell et al. (2011:117) note in the case of Pusilhá:

As at many other Classic Maya sites, the direction north is associated with the heavens, ancestor worship, and the sun at noon. In contrast, ballcourts are found at low elevations. The largest ballcourt at Pusilhá is located at the southern end of a sacbe. This probably reflects an association with the underworld.

At Lubaantun, Braswell et al. (2011:117) suggest a unique urban planning principle may
be at work. Although cosmologically based, this principle differs from Ashmore’s model. Based on the arrangement of buildings and platforms, they propose that three pyramidal platforms form a small triangle and the site’s three ball courts form a larger one. Harkening back to elements of Ashmore’s pan-Mesoamerican cosmological concepts, Braswell et al. (2011:117) propose that the first three structures “represent the three hearthstones of Maya creation, thought to be in the constellation Orion, and for that reason are the tallest platforms built at the site.” The ball courts, which “occupy a much lower position,” they propose “are probably associated with the underworld” (Braswell et al. 2011:117). Braswell et al. (2011:117–118) further note:

This precise pattern of two inscribed triangles is unique in the Maya world, but may serve to mark Lubaantun as an ox te tun, or three stone place, one of many in the Maya area. It is important to note that if our interpretation of site planning principles at Lubaantun is correct, this plan probably emerged late in the construction history of the site.

La Milpa

Taking the cosmogram concept to the extreme, Tourtellot and colleagues (2003:48) propose that “a vast physical cosmogram or quincunx surrounds La Milpa Centre.” This is actually one of two or three nested cosmograms they identify at the site. The larger one consists of the epicenter and minor centers found 3.5 km from the center at each cardinal direction. Within that larger cosmogram, the site core itself “was converted into the Petén cosmogram” following the construction of the southern plazas; concurrently “a miniature and perhaps original version of the cardinal cosmogram was also inscribed on Plaza A with the insertion of late structures” (Tourtellot et al. 2003:49). They view the creation of the larger cosmogram as part of a coordinated construction plan conceived and imposed by the elite that extended the ritual area of the city out to encompass half of the settlement area (Tourtellot et al. 2003:48–49). They interpret this action as indicative of “a new governing model of the universe that was not atavistic ancestor veneration but [was] based on an encompassing worldview” (Tourtellot et al. 2003:49).

Criticisms and Critiques

The year 2003, when Tourtellot and colleagues published their La Milpa book chapter, was a tipping point for cosmograms in the Maya world. To quote Michael Smith (2005:117):

In 2003, I published a comment (Smith 2003) on a report by Wendy Ashmore and Jeremy Sabloff (2002) in which I criticize their interpretations of possible cosmological influences on Maya city planning. At the time of writing (2002), I was unaware of an impending explosion of publications on Maya cosmology and city planning the following year.

This explosion resulted in another Latin American Antiquity article by Smith (2005:220) in 2005 entitled, “Did the Maya Build Architectural Cosmograms?,” in which he was highly critical of what he called “the new cosmogram studies,” noting that they often begin “with the assumption that directional cosmology must have been expressed in architectural settings” and ultimately “assert confidently that the building/compound/city/reservoir/stelae in question formed a cosmogram.” While Smith (2005:220) was “flabbergasted” at some of the new cosmogram studies “for presenting highly speculative interpretations as if they were reasoned and unproblematic conclusions based on empirical evidence,” he was particularly critical of the La Milpa example, mentioned above. He noted that the authors described the cosmogram in the present tense, and unwittingly revealed that “Maya architectural cosmograms are modern phenomena, invented by scholars to satisfy their desire to reconstruct ancient cosmology from fragmentary evidence” (Smith 2005:220). Smith (2005:221) went so far as to say that the new cosmogram studies “set a bad example by suggesting to students and the public that poorly grounded speculation can pass for acceptable scholarship in our field.”

Central to Smith’s (2005:220) criticism of the new cosmogram studies is the fact that there are no “explicit statements in the ethnohistoric or epigraphic sources for direct cosmological
influences on Mesoamerican architecture or urbanism.” Among other cultures around the world, such as in India, China, and Cambodia, ancient texts actually describe the layout of the ideal city and report that rulers employed cosmological models in designing their royal capitals (Smith 2003:222). Lacking similar lines of evidence for the Maya, Smith (2003:220) warns scholars to “approach this question cautiously with rigorous and explicit methods.” He does, however, note that “cosmology may have played a role in architectural symbolism and perhaps even in the design and layout of buildings and cities” in his 2005 article (Smith 2005:220), and in his comment on Ashmore’s and Sabloff’s (2002) article he agrees “that cosmology must have played a role in generating the layouts of cities among the Maya” (Smith 2003:221).

The Utility of Site-Planning Studies

What then is the utility of studying site planning? Without written records that tell us the ancient Maya encoded cosmological models into their city designs, is it pointless to attempt to study high-level meaning in layouts of Maya cities, when even the approach’s most outspoken critic, Michael Smith (2003, 2005), noted it was possible and even likely that cosmology played a role?

As described below, site-planning studies can provide useful information without wading into the realm of “poorly grounded speculation” (e.g., Smith 2005:221). In particular, the approach has utility in pattern recognition, detecting when symbolic communication has taken place, and identifying potential political or social relationships between sites.

Pattern Recognition

Maya cities were built using a common architectural inventory (plazas, temples, ball courts, etc.), “but the choice of specific components varies from place to place and through time” (Ashmore and Sabloff 2002:204). The choice of components was important, but how those components were arranged is equally important, because “common spatial patterns at a series of cities provides stronger evidence for urban planning than architectural inventories” (Smith 2007:26). Site-planning analysis is, at its core, about recognizing patterns at multiple archaeological sites.

Smith (2003), in his original assault on site-planning studies, challenged a fundamental component of Ashmore’s (1991) template—the pronounced north-south axis in Maya cities—questioning whether or not it is even an empirical pattern. A recent study of 14 Maya cities in Belize tested this question and concluded that “One of the most consistent features of the epicenters of the sites in [the] sample is that their monumental cores are oriented north-south or, in the case of dispersed epicenters, trend toward north–south orientation of individual groups” (Houk 2015:260). In all 14 cases, the plazas or linked groups of plazas that constitute the majority of the site core are aligned generally north-south (Figure 2). This is not to say that all the cities share the same orientation, but, as Figure 3 demonstrates, the majority of the site axes fall within 22.5 degrees of north. This supports Ashmore’s and Sabloff’s (2003:230–231) assertion “that disposition of prominent construction along a north-south line does dominate parts or all of many Maya civic precincts in Classic times.”

Although the data set in the cited study is small, it does include the largest sites in the five geographic sub-regions of Belize (Houk 2015:235) and suggests the pattern of north-south city orientation recognized by Ashmore is a valid observation for the Late Classic period for the eastern lowlands. The answer then to the question Smith (2003:223–224) asked in 2003, “Is the north-south axis an empirical phenomenon?,” is yes based on these data. What the pattern indicates, however, is open to debate, and the question Smith (2005:217) asked in 2005, “Did the Maya build architectural cosmograms?,” is much more challenging to answer.

Symbolic Communication

In a Latin American Antiquity article published in 2011, Houk and Zaro (2011) waded into the site-planning debate, acknowledging that “Maya archaeologists have been too quick to impose cosmograms on buildings and sites using less than rigorous methods, and they have often failed to recognize competing alternative explanations for architectural designs and urban
plans in ancient Maya settlement” (Houk and Zaro 2011:180). The article concludes that the city planners at La Milpa embedded high-level meaning in two distinct but related caches through a practice dubbed “ritual engineering” (Houk and Zaro 2011). The caches functioned as both dedicatory offerings for an associated building and altar, and also existed as part of a larger, ritually engineered landscape. This echoes earlier thinking by Diane Chase and Arlen Chase (1998:326) who noted, “offerings are not merely activities undertaken secondarily to define physical constructions. Not only do ritual offerings help to define architectural space, but they…may be incorporated into buildings by design and before construction.” As a site-planning study, the work responded to a call by Ashmore and Sabloff (2003:233) for archaeologists to “recognize when symbolic communication has taken place.” The two caches carried a political statement about royal involvement in the planning process, but they also conveyed additional symbolic meaning that is unclear. However, even though their meaning is unknown, a site-planning perspective allowed the researchers to recognize that communication related to political and cosmological symbolism had occurred and was a deliberately engineered component of the royal precinct plan at La Milpa (Houk and Zaro 2011:196).

Relationships Between Sites

An outgrowth of Ashmore’s original work is the emphasis on political emulation that she and Jeremy Sabloff posited in their 2002 *Latin American Antiquity* article entitled “Spatial Orders in Maya Civic Plans.” Ashmore’s and Sabloff’s (2002:202) stated their central argument as follows:

Our most fundamental guiding assumption is that the position and arrangement of civic construction was anything but random. From that base, we assert that the spatial expressions of Maya cosmology and of Maya politics constituted the most prominent ideational foundations for planning, and acknowledge that many factors have affected the clarity with which such foundations may be discerned today from archaeological site plans.
Ashmore explored the former idea in her earlier work. The latter idea, that of political emulation, is based on the notion that rulers of cities expressed their affiliation with commissioners of similar projects and their political authority by directing monumental constructions that replicated powerful sites (Ashmore and Sabloff 2002). In their article, Ashmore and Sabloff (2002:207) propose that the rulers at Xunantunich, in western Belize, emulated the plan of Naranjo in their Late Classic design of the city. In a second example, Ashmore and Sabloff (2002:207–208) compare the civic plan of Labná to its larger neighbor, Sayil. Similarities between the two sites include causeways joining residential palaces in the north to nonresidential complexes in the south. Despite differences between the two plans, Ashmore and Sabloff (2002:208) conclude the “orientations of the principal buildings at each end of the causeway are similar at the two centers, and . . . the observed buildings and spaces are broadly parallel in form and array,” and that “comparison of spatial order in the two places yields clues to political dynamics of founding order and hierarchical relations.”

The argument for political emulation can be extended great distances. For example, Ashmore and Sabloff (2002:207–208) propose that both Xunantunich and Naranjo emulate the older and more powerful city of Calakmul. They argue that the “rulers at the younger cities drew on both directional and emulation strategies to enfold their nascent civic and ritual centers in a mantle of longstanding authority” (Ashmore and Sabloff 2002:207–208). While we do not understand how the Maya shared or transmitted planning or engineering knowledge between cities, it is safe to assume the jobs of architect and engineer were elite vocations. It is not difficult to imagine kings of affiliated kingdoms, with an architect in tow, visiting Tikal or Calakmul for major political or religious ceremonies, and returning with new architectural concepts and a desire to emulate a distant center of power.

Obviously, arguments for political emulation are stronger if there are other lines artifactual or textual lines of evidence connecting two sites; such is the case for Naranjo and Xunantunich (Houk 2015:276). In cases without textual linkages, similarities in plans between nearby sites may reveal political or social connections. In the case of most Maya cities, the planners probably never went very far from home for inspiration. In this way, unusual or rare arrangements of civic architecture that show up at nearby centers may be evidence for affiliation (Houk 2015:277). An obvious example is southern Belize, where rulers clearly shared ideas about how to build their settlements.

Southern Belize, which is geographically isolated and physiographically different than much of the rest of Belize, makes an excellent laboratory in which to examine shared concepts of civic planning. Richard Leventhal (1990) noted similarities between sites and called southern Belize as “an ancient Maya region.” His work, previous research by Hammond (1975), and more recent investigations reported by Geoff Braswell and Keith Prufer (2009) reveal a high level of homogeneity among the four major southern Belize sites. The ball courts at Nim Li Punit, Pusilhá, and Uxbenka are walled enclosures and “are centrally located and mediate between two sections of the different sites” (Leventhal 1990:138). In all cases, the architects used the natural landscape to enhance the monumentality of their structures, and they made do without vaulted architecture (Leventhal 1990; Braswell and Prufer 2009:45). Furthermore, three of the four cities contain high numbers of stelae, displayed in small, intimate plazas (Leventhal 1990). The stela plazas at Nim Li Punit, Pusilhá, and Uxbenka account for only 7.9 percent, 5 percent, and 5.4 percent of the monumental area at their sites, respectively (Houk 2015:Table 10.2). In all cases, the cities of southern Belize are more similar to one another than they are to cities outside of the region.

La Milpa provides a fascinating contrast to the southern cities. It has a comparable number of stelae, with 23, and 17 come from the Great Plaza (Houk 2015:172). Although one could refer to the Great Plaza as a stela plaza, at nearly 18,000 m² it is radically larger than its southern Belize counterparts, and accounts for 21.6 percent of the monumental area at the site (Houk 2015:Table 10.2). In fact, the three stela plazas from Nim Li Punit, Pusilhá, and Uxbenka
could all fit in the Great Plaza at La Milpa and there would still be 11,000 m² of space left over (Houk 2015:240). Large plazas are not unique to La Milpa; in fact, Dos Hombres, Chan Chich, and El Pilar all have plazas covering more than 11,500 m². And, if we were to consider Xunantunich’s plan before Structure A-1 was built late in the city’s history, the original main plaza would have covered nearly 10,000m².

The La Milpa plaza example demonstrates that shared concepts of city planning can be identified in areas that are not geographically isolated, as is the case with southern Belize. These massive plazas seem to be a shared concept of city building in western and northwestern Belize, but clearly other competing influences played into the design of these cities. For example, La Milpa, Dos Hombres (Figure 4), Chan Chich, and Xunantunich are all moderate to good fits for Ashmore’s Petén template, with open public plazas at the north and restricted acropolis at the south (Houk 2015:272). El Pilar, despite its pronounced north-south orientation, is not a good fit, however, as the pattern is flipped: the public plaza is at the south and the elite acropolis is at the north (Houk 2015:272).

Cutting across the geographic range of cities with massive main plazas is another planning concept: east-west radial causeways. El Pilar, Xunantunich, and Chan Chich all have one or more causeways extending east to west from their main plazas and each has at least one causeway lined by parapets (Houk 2015:259). The use of parapets may be a trait borrowed from the style center of Tikal, where it is common (Houk 2015:277); several of Caracol’s many causeways are also parapet lined (Chase and Chase 2001:273).

These examples suggest possible political or social ties between cities, and the overlapping distributions suggest these ties may have been rather complicated and/or dynamic. We know, for example, that Xunantunich’s political relationship with Naranjo shifted several times during the Late Classic period (LeCount and Yaeger 2010), so it is easy to imagine similar changes between the other cities in these examples over the course of one or two centuries.

Conclusions

Hopefully, the examples provided here demonstrate the utility of site-planning analysis in pattern recognition, detecting when symbolic communication has taken place, and identifying potential political or social relationships between sites. While the ultimate goal of most site-planning studies is to search for “meaning” in the design of a city, Ashmore’s and Sabloff’s (2002:202) admonition “to establish the mix of ideational, social, environmental, economic, engineering, historical, and other sources in observed architectural forms and arrangements” calls for a broader consideration of site-planning influences. “Meaning,” while it may include a cosmological message, it is also about understanding the historical trajectory of an urban landscape and the myriad decisions and agendas that may have affected it. Site-planning studies, which Ashmore’s (1991) article continues to influence over 25 years after it was published, remain a viable approach to investigating Maya settlements and encourage researchers to consider factors, relationships, and influences they may have otherwise discounted in their analysis of ancient urban planning.
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Ancient Maya Architecture and Spatial Layouts: Contextualizing Caana at Caracol, Belize

Arlen F. Chase and Diane Z. Chase

Introduction

Architecture serves a variety of human purposes. Besides being functional and having a social purpose, architecture also structures space and provides symbolic meaning. While perhaps not as straightforward as the functionalist approach or the statements of Sullivan in 1896 (Sullivan 1896:408) that "form ever follows function," ancient architecture when contextually studied reveals social, symbolic, domestic, administrative, public, and private functions of constructed space. However, considerations of ancient architecture must be well grounded at several levels. The most basic analytic level is the building itself in terms of its basic plan, access patterns, the kinds of materials that were used in construction, and probable function(s). Artifactual remains recovered in association with an ancient building often permit inferences of use and function. Meaning and function can also be facilitated by a consideration of associated buildings and the spatial plan of any larger architectural complex for which it forms a part. Another level of analysis is the context and positioning of the building relative to the rest of the community or urban environment that includes a consideration of distinctiveness, replication, and scale. Finally, much ancient architecture needs to be potentially placed within ancient belief systems and worldviews in order to infer the roles and functions of that architecture in terms of social and/or religious meaning; this includes looking at deposits that may be have been purposefully included within the core of any given building or left in place on its surfaces.

At the Classic Maya site of Caracol, one architectural complex stands out as distinct from all others. Caana, Maya for “sky place,” is the tallest man-made architectural complex in Belize today, rising some 43.5 m above the public plaza to its south (Figure 1). Caana’s summit contained a centrally-located private plaza with pyramidal structures of a distinct style (Ballay 1994) on three sides and a long range building on its southern side that effectively shielded this space from public view. Also on the summit and to either side of the northern pyramid were smaller shielded plazas with associated living spaces. The layout of the buildings and rooms shows that access to Caana’s central summit plaza and particularly to its upper side plazas was tightly controlled and monitored. Caana was also a unique architectural complex within

Figure 1. Photograph of Caana, looking north.
Figure 2. Plan of Caana illustrating the potential use of the various rooms.
the Caracol metropolitan area. Not only is it not duplicated elsewhere in the region, but it is at the very center of the site and the city’s road system (all roads lead to Caana). All of this architectural information provides clues to the past Maya who once inhabited and used this complex.

How Caana Was Utilized

Caana constituted the center of Caracol. It has a long history of use and modification. As noted above, even in its ruined state without standing building and roofcomb, the complex rises 43.5 m above the plaza to its south. The version of Caana currently visible was in place during the Terminal Classic Period (C.E. 800-900). Excavations have shown that by the Late Preclassic Period, this complex was at least 34 m in height (Chase and Chase 2006). The rooms associated with the final form of this architectural complex were a mix of public meeting rooms, ritual space, guard posts, sleeping space, and quarters for the royal family (Figure 2). Access to the complex was tightly controlled and became more difficult as one increased elevation with only limited and restricted access to summit areas (Chase and Chase 2001: 108-115). As previous research has shown, benches within many of Caana’s rooms help to determine the function of the different suites: small benches that were often paired to face each other and that encompassed the entire room usually denoted guarded space; “armed” benches (termed “audencias” below) denoted formal meeting space for administrative duties; “C-shaped” benches in a room are usually publically oriented and were perhaps used for temporary meetings or displays; “L-shaped” benches within rooms signified the use of the room as sleeping space (Chase and Chase 2001: 109). Room numbers and functions are identified in Figure 2. While many of the room functions are clear from architectural features and archaeological remains, others are inferred as best possible based on parallels with more clearly defined spaces.

Three two-room temples (Figure 2: numbered 35, 37, 42) dominated the Caana summit. Two rooms that probably had some kind of ritual function (Figure 2: numbered 34, 36) were attached to the western temple and two-room shrines (Figure 2: numbered 39, 40) were placed to the sides of the central stairway to the main northern temple. All buildings at the summit were elaborately decorated with stucco, which included glyphic texts on multiple structures and mat symbols on the Structure B18 substructure. Both the northern and eastern temples were associated with a series of deposits that spanned the Late Classic Period.

Structure B19 was extensively investigated and eventually stabilized. A painted “jaguar” throne was recovered at the western base of the final version of Structure B19 (-1st) and would have served as an area for a public viewing of or meeting with the Caracol ruler in semi-private space. At the central base of Structure B19, Altar 16 had been positioned over a ritual deposit that included a skull cap, two vessels, pieces of two incensarios, and over 100 chert drills. At the building’s summit was an unsealed cache of five Terminal Classic vessels (A. Chase and D. Chase 2004: fig. 16.2). The B19 substructure was both tunneled and trench (Figure 3), resulting in the recovery of a series of caches, including one directly above the central Late Classic Period tomb described below. The temple floors of an earlier version of Structure B19 (-2nd) were associated with episodic caching. The latest deposit was sealed with a floor patch and produced a complete lidded censer set above a finger bowl cache and the body of a child. Earlier floors for Structure B19-2nd were punctuated with multiple pits that all contained caches of paired vessels, obsidian eccentrics, jadeite chips and beads, spondylus chips, stingray spines, and clay beads. The original base of Structure B19 was associated with a central shrine room that had been buried by 4 m of fill when a new elevated court surface was established at the summit of Caana in the late Late Classic Period (reconstruction drawing in D. Chase and A. Chase 1998: fig. 4). A small roofed niche in the basal stairs leading to this earlier shrine room hid a passage down to a tomb that contained the body of a woman accompanied by eight vessels and dated by a wall text to A.D. 634 (Figure 4; see also A. Chase and D. Chase 1987: figs. 20-23; D. Chase and A. Chase 2003). Shrin added to the base of the latest version of Structure B19 (-1st), located on either side of its stairway after the
plaza was elevated, capped two more Late Classic tombs. Both were desecrated and then resealed at the beginning of the Terminal Classic Period.

Structure B20, the eastern pyramid (Figure 5), had been savagely looted prior to the start of our project in 1985. Like Structure B19, the buried base of Structure B20 also contained an architectural feature, in this case an elaborate earth monster mask in the middle of its stairway (A. Chase and D. Chase 1987: fig. 17). Before being buried in the new elevated plaza, a human body had been placed within the maw of this mask. Another burial was placed in the new Structure B20 access stairway some 4 m higher. An earlier version of Structure B20 contained graffiti on its interior front wall, one scene of which showed a probable ruler being carried in a palanquin (A. Chase and D. Chase 2001: fig 4.12). This buried building was accessed by an earlier stairway with another central mask that was surmounted by a small shrine room that contained a censer on its floor. The shrine room was directly above the westernmost of four tombs within the coring of the earlier structure and the only one that was recovered intact by the project. Three of these tombs contained painted texts with dates. The eastern three tombs had all been looted prior to the start of our project in 1985, although we were able to associate 17 pottery vessels, one footed marble bowl, and a small amount of human bone with one of the chambers (A. Chase and D. Chase 1987: fig. 15). In 1993, a fourth unlooted tomb was recovered, dating to A.D. 537 (Figure 6; see plan in D. Chase 1994: fig. 10.3). It contained the
body of a woman associated with 16 vessels (A. Chase 1994: fig. 13.1), spondylus shells, spindle whorls (A. Chase et al. 2008: fig. 2), and a jadeite pendent (Figure 7).

Two secluded courtyards are located to either side of Structure B19 and these were likely utilized by the ruler and the immediate family; both were entered through restricted and presumably guarded space (Figure 2: numbered 38, 41). The western courtyard was more formal and was likely used for intimate – and private – audiences with the ruler. A pair of three-room suites (Figure 2: numbered 43, 44) was situated on the northern and western side of the courtyard; both suites had a store room, a viewing area, and a formal “audencia” or meeting room with benches attached to the rear wall. The floors of these suites were also painted red. The western bench room produced a ritual incensario on its floor. At the southern side of this courtyard, the substructure for Structure B18 was decorated with a stucco mat symbol (Figure 8), symbolically emphasizing rulership. The eastern courtyard had four suites of rooms (Figure 2: numbered 47, 48, 49, 50) and was likely the residential area for the ruler’s family. The western-most suite in the eastern courtyard had two rooms that contained a sleeping area and a storage room; in its final form, this suite had been infilled and its doors blocked before abandonment; however, a series of serving vessels (consisting of footed plates and short vases) were recovered on the floor of the inner room and serving vases and a large storage vessel were also recovered on the floor of the infilled outer room. The northern suite in
the eastern courtyard had three rooms and, again, included a sleeping bench; while the innermost storage room had nothing on its floor, large storage vessels were located on the floor of the front room. The eastern suite of rooms consisted of an inner “audencia” room and an outer room that yielded many large storage vessels on its floor. An elaborate burner with attached warrior figures was recovered on the plaza floor in front of this suite. The southernmost suite of two rooms consisted of an inner sleeping room and an outer “audencia” room; the body of a 5-year old child was encountered on the floor of the inner doorway of this suite, possibly indicating a sudden and violent end to Caana’s residential occupation (D. Chase and A. Chase 2000). Two exteriorly facing audencias (numbered 45, 51) and two two-room “receiving” areas (Figure 2: numbered 46, 52) with “C-shaped” benches were located on the outside of each northern court.

The main upper courtyard had a long range building defining access to it on its southern edge. There was a large formal exterior entryway (Figure 2: numbered 22, 23, 24) to the summit complex and its temples. Two exteriorly facing audencias (Figure 2: numbered 21, 25) were located at either end of the formal entryway (Figure 2: numbered 23, 29). The western audencia had a blocked and infilled inner room (Figure 2: numbered 26) that had once been a sleeping area. A guardhouse (Figure 2: numbered 29) formed the rear room of the formal entryway to the plaza and four other rooms also faced the inner summit plaza; one of these had been used for sleeping (Figure 2: numbered 27); two were storage areas (Figure 2: numbered 28, 31), and one (Figure 2: numbered 30) was an audencia. A small private courtyard was situated just south of Structure B20. A stairway in the southwestern corner of this courtyard would have permitted entry to the roof of the upper range building that faced south. A suite of three rooms (Figure 2: numbered 32), consisting of a central audencia flanked by two storage rooms, faced south onto this courtyard; the floor of this audencia yielded an incensario and what appears to be a cache vessel and lid. Another building (Figure 2: numbered 33) defined the eastern entryway to this private courtyard and had probably been used for storage. Excavation beneath this private courtyard revealed the existence of a completely preserved earlier version of the southern range building that ran across the southern face of Caana. An elaborate stucco frieze was located on the northern upper cornice of this buried building and presented an ancestor scene complete with fish and waterlilies (Figure 9; line drawing in D. Chase and A. Chase 2009: fig. 11.3). The associated text detailed events in the life of Caracol rulers K’an II and Smoke Rabbit.

Half-way up the front face of Caana was a long range building that presented 13 doorways to the plaza south of this complex. Thirteen was a sacred number to the Maya and had cosmological meaning (Awe 2008:163, 169). Ten of the front rooms (Figure 2: numbered 1, 2, 3, 4, 5, 9, 10, 11, 12, 13) were public receiving rooms. One of these rooms yielded a footed plate and another held a water jar, an olla, and a
large platter, indicating that some consumption took place in these front units. The two rooms adjacent to the central entrance (Figure 2: numbered 6, 8) likely had multiple functions as both sleeping areas and display areas. The central doorway room (Figure 2: numbered 7) functioned as a guardhouse, complete with a rear room (Figure 2: numbered 17) that also functioned for sleeping and guarding; two modeled-carved cylinders of Terminal Classic date were located on the floor of the entryway (A. Chase and D. Chase 2004: Figure 16.7 l). Two audencias (Figure 2: numbered 14, 20) defined the eastern and western ends of the range building. Four other audencias (Figure 2: numbered 15, 16, 18, 19) faced an interior passageway, making them far more private that the exterior receiving areas. One audencia (Figure 2: numbered 15) had no added room; two audencias (Figure 2: numbered 16 and 18) were associated with storerooms; and, one audencia (Figure 2: numbered 19) was associated with a sleeping bench and another bench. Ceramic serving vessels including plates, cylinders, and barrels were recovered from the eastern alley associated with the Caana mid-level range building (A. Chase and D. Chase 2005: fig. 16.7 f,h,j,p,q,s). A battered slate axe bearing the names of K’an II also was recovered from the western alley (A. Chase and D. Chase 2001: fig. 4.5).

Caana was further articulated with the other structures that surrounded its base on the west and to its north. No evidence for day-to-day food production, or cooking, was found on Caana. Food apparently was prepared in a large royal kitchen to the west of Caana, Structure B37 (Chase and Chase 2014:10), and was carried up to the summit occupants. This facility likely served much of the Caracol epicenter (Chase et al. 2001). Thus, while it is difficult to reconstruct all the functions of architectural complexes and rooms at Caana from the archaeological data, it is clear from these data that the rooms that comprised Caana functioned as the administrative and ritual center for the immense site of Caracol and as a royal residence.

**Situating Caana in Ancient Maya Landscape and Worldview**

The use of architecture to interpret past Maya society has a long history. Pollock (1962:xi) noted that engagement with architecture “in essence summarizes the development of archaeological research in the Maya area.” The archaeological reports of the Carnegie Institution and other projects are centered on architectural studies that define both development and changes over time as well as the deposits that are associated with buildings. Architecture has also been utilized as a method for analyzing transitions in institutional complexity, especially when viewed in terms of scale. Trigger (1990:128) portrayed monumental architecture as signifying the
“control of energy” reflective of “political power.” In this light Caana is reflective of great political power.

One of the better frameworks for analyzing how architecture is reflective of social and political organization was provided by Jerry Moore (1996) for Andean monumental architecture. In his study Moore (1996:140) provided six criteria that he considered as useful in assessing transformations in the organization and form of public space from the standpoint of changes in social or political power. These criteria are: centrality, permanence, accessibility, visibility, scale, and ubiquity (see also Beck 2004:325; Smith 2011:174). The social purposes of architecture are revealed by centrality and ubiquity; these terms refer to the location of the architecture and how common it is as an architectural type. Caana is centrally located at Caracol and formed the central node for the site’s causeway system; both the Conchita and Cahal Pichik Causeways viewed Caana when entering the epicenter. It is also a unique architectural complex, although range buildings with set numbers of doors are found combined with centrally-located pyramids at other sites in western Belize (Awe 2008). Thus, the archaeological interpretation of Caana as the architectural complex associated with the ruling family and the administrative functions of the central elite (A. Chase and D. Chase 2001) is consistent with its position in the urban matrix and its distinctiveness.

The symbolic intent of Caana is both directly indicated in its front façade and in its scale and its permanence. Scale refers to the size of the architecture and how it compares to the size of other structures. The front façade of Caana presents the fronts of two range buildings, one having 13 doorways and one having seven doorways, both important numbers for the Maya in terms of their cosmology (see Awe 2008:169). The three temples on its summit during the Terminal Classic era may also have symbolically represented the three hearthstones associated with Maya origin mythology (Freidel et al. 1993; Taube 1998); this would also be consistent with the symbolic perception of Caana as a sacred mountain (witz) that literally incorporates carved bedrock on its southeast corner as part of its first terrace. Clearly, there is nothing on either a symbolic or architectural scale that is equivalent to Caana elsewhere at Caracol (A. Chase et al. 2011: 393). The next highest structure at the site is Structure A2 in the A Group, rising some 25 m above its associated plaza and forming a focal point of entry to the epicenter for pedestrians coming from the northeast; this pyramid forms the western construction of an E Group and did not support a formal construction at its summit (A. Chase and D. Chase 1995, 2017). The scale of Caana was consistently larger than other structures through time. Four kinds of architectural permanence are delineated by Moore (1996:39): ephemeral, episodic, generational, and multigenerational. There is no doubt about the permanence and multigenerational longevity of Caana. It was continually built and remodeled. Late Preclassic Caana rose some 34 m above its associated large southern plaza (Chase and Chase 2006: 41). Indications are that construction and change went on continuously over time. Among some of the last changes to Caana were the raising of the summit plaza by 4 m in conjunction with the construction of Structure B18 at the beginning of the Terminal Classic Period, suggesting an attempt at the projection of even more power and perhaps social change (see Chase and Chase 2007: 21). Thus, the symbolic message sent by the architectural complex known as Caana is riven with power and status, forming an appropriate node for the administration of the site and the location of the royal residence.

Caana’s architecture also provides information on social control through its visibility and access patterns. Moore (1996:140) uses visibility to assess public viewing of associated activities and accessibility to determine control of movement within a public space. Because of its height, Caana is widely observable from higher points at the site and would have been quite noticeable for miles if the area had been denuded of trees. Visibility is also demonstrated by causeway access and views. All causeways entering Caracol provide vistas of monumental architecture. Caana comes into view from two entry points to the site - from the northeast and from the south. However, many of the activities that would have occurred within this complex could not have been seen by the public. What they could view from the large
public plaza that Caana fronts would have been individuals within the 13 doorways (and rooms) of the mid-range buildings and individuals going up and down the frontal stairway. Awe (2008:170) has pointed out that “at least in western Belize, large range-type buildings with 13 doorways were often used to demarcate points of transition between private elite space and public access space.” Activities in many of the restricted access rooms and on the summit plazas and buildings associated with Caana would have taken place in private. As noted above, accessibility was also tightly controlled, suggesting that the occupants of Caana desired to maintain their privacy and probably the prerogatives of their higher social status. Other elite complexes in epicentral Caracol – South Acropolis, Central Acropolis, Barrio, and Northeast Acropolis – restricted access (A. Chase and D. Chase 2001); however, no other location was as protected as the Caana summit. Thus, the architectural configurations at Caana represent the clear imposition of social hierarchy and inequality at the site.

Conclusion

In sum, the functions of the architectural complex of Caana are to a large degree discernible from considering the building form and siting of the complex at the site. Following Moore (1996) Caana was central, permanent, visible, and massive in scale. The complex was both accessible and restrictive (as appropriate for its function). Its base and vista are accessible via public plazas and from causeways entrances to the site; however, befitting a royal complex, Caana also had areas where activity was obscured from public view. The existence of a palace of such scale alone suggests that Caana was the formal residential complex associated with the ruling elite. However, excavation and contextual analysis provides the proof. There is evidence for both the presence of rulers in named artifacts and stucco facades as well as evidence for the residential activity associated with food consumption and storage. Interments, graffiti, and cache offerings complete the evidence for royal occupation. Thus, architecture and its spatial location provide a significant key to functional interpretation, but archaeological excavation and context provide the full interpretation of architectural meaning.

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3 Q AND A: EXPOSING EL QUEMADO’S ARCHITECTURAL CONFIGURATION IN PLAZA A AT PACBITUN, BELIZE

George J. Micheletti, Kaitlin E. Crow and Terry G. Powis

Since the discovery of El Quemado beneath the epicentral plaza at the ancient Maya site of Pacbitun in Belize, ongoing excavations have continued to investigate the Middle Preclassic platform’s dimensions, orientation, and features. Based on excavations prior to the 2016 field season, the physical attributes of Q are suggestive of a few possible architectural configurations. Therefore, to limit these possibilities, the primary objective of the Pacbitun Regional Archaeological Project (PRAP) during the 2016 field season was to further expose the structure. After unearthing a larger portion of Q, we were able to examine additional architectural attributes which has allowed us to eliminate potential configurations and gain a better understanding of the platform’s structural composition. With a better understanding of Q’s physical configuration, the potential for eventually comprehending the platform’s spatial configuration increases. This knowledge will not only allow us to explore Q’s relationship with known structures in Plaza A, but will also aid in future explorations searching for associated architecture beneath the plaza surface. This paper will summarize our research to date on El Q and how its presence at Pacbitun shapes our perception of public activities during the Middle Preclassic.

Introduction

Over the past four years, excavations conducted by the Pacbitun Regional Archaeological Project (PRAP) have focused on a large structure found buried beneath the main plaza at the site of Pacbitun, Belize. Investigations from 2013 to 2015 have provided the project with a basic understanding of this building. Radiocarbon analysis suggests that the structure was built in the late Middle Preclassic sometime around 550 BC and was buried around the beginning of the fourth century BC. With no evidence of a superstructure, the large platform is thought to have had a public ritual/ceremonial function. The structure’s Spanish name, El Quemado, meaning “the burned one,” is indicative of its heavily burned plaster surface. This type of burning is a derivative of either long term habitual/sacramental use of the structure or of a single termination event. Although we have learned much about the platform’s physical attributes, extensive excavations have only just begun to reveal the nature of El Quemado’s architectural configuration. After the 2015 field season, we were able to begin to interpret and hypothesize Q’s structural configuration. Based on attributes such as Q’s architectural features, orientation, and plaza location, the 2015 excavations led us to determine that the platform was either a northern plaza structure or a radial pyramid. With Q narrowed down to these two architectural configurations, the goal of the 2016 field season was to test which of these hypotheses the platform best represented.

The 2013-2015 Excavations of El Quemado

Located in the southern periphery of the Belize River Valley, Pacbitun is one of just a few sites in this region thought to have had a significant Middle Preclassic occupation (Figure 1). While excavations of the monumental
architecture at Pacbitun has identified a Late Classic prominence, sub-plaza investigations in Plaza B have also suggested that the site had experienced an even earlier opulence (Hohmann and Powis 1996, 1999; Hohmann et al. 1999; Healy 1990; Powis and Healy 2012; Powis et al. 2009). In an attempt to connect the Middle Preclassic residential area found beneath Plaza B with early ceremonial architecture, investigations into Plaza A in 2013 discovered El Quemado in a test unit set to explore anomalies located by ground penetrating radar (GPR) (Skaggs and Powis 2014; Skaggs et al. 2016). The 2013 excavation continued to expose what would later be recognized as a narrow eastern staircase leading up to platform features associated with the structure’s southern face. Work in 2014 and 2015 continued to excavate the southern half of Q, partially exposing the summit and much of the southern face. Although the platform’s immensity and architectural complexity had made it difficult to fully understand the structure’s dimensions and form, considerable information had been gained through the first three years of excavation.

Q’s burned surface and ostensibly organized destruction may indicate that this structure was either abandoned and/or terminated. For example, each of the armatures are thought to have once featured plaster masks that were chopped and destroyed leaving mounds of smashed plaster on the structure’s surface. Moreover, the nose of each stair was also chopped and destroyed. Similar to burning, the partial desecration of structural features and masks is a common practice in termination events. Sometime after Q was desecrated, several task units were constructed in the area south of the structure. Likely running the length of the plaza, these task units run up the south side of Q to the structure’s summit. These were built to support an immense amount of dirt and marl fill brought in to raise and enlarge the plaza. Buried beneath the construction fill, El Quemado’s fate was sealed with a Plaza A plaster floor which would serve as the base on which the monumental constructions of the Classic period at Pacbitun would sit. Hidden from view, Q remained a secret for nearly two and a half millennia before finally being discovered in 2013.

The exposure of Q through 2015 had focused on the summit and south face of the platform which is composed of a large central staircase flanked by two other narrower staircases (Figure 2). A pair of upper and lower armature platforms (four armatures in total) divide each southern staircase into three vertical sections. A large majority of the outer staircases have been destroyed prior to the platform’s burial leaving a narrow vertical remnant of each stair. All three staircases ascend and terminate at the upper armature platform. Two more staircases ascend the east and west sides of Q and meet with their southern staircase counterparts at the upper armature platform. Unfortunately, the missing sections of the destroyed southern staircases have made it difficult to determine whether the stairs of Q’s southeast and southwest corners were adjoined by an inset or outset corner feature. One final diagnostic architectural feature on Q’s southern face is the east-west rectangular platform centered and abutted against the south edge of the structure’s summit. Set between the two staircase landings, the rectangular feature is composed of two smaller raised rectangular platforms flanking a longer, shallower platform.

### Potential Architectural Configurations of El Quemado

By the end of the 2015 field season, excavations had reached 25m east-west by 12m north-south. While the expansions continued to unearth more of the structure’s southern features, the investigation was unable to reveal any further evidence of Q’s true architectural form. Fortunately, with one whole side of Q almost completely exposed, we were able to examine the platform’s physical and spatial attributes and begin to postulate possible configurations. Attributes such as Q’s architectural symmetry, northern plaza location, and decorated southern face suggest that Q could be a northern plaza structure.

Conversely, even though Q’s attributes correspond well with northern plaza structures, many of these attributes are also associated with a common Maya Lowland archetype known as a radial pyramid. Radial pyramids are typically square in plan with stairs lining all four sides. Often centrally located within a site, radial
pyramids usually lack superstructures and can include stucco deity masks and ancillary staircases (Cohodas 1980). After examining Q in 2015, it appeared that the structure’s southern face possessed many of these attributes. In fact, Q’s features bear a striking resemblance to E-VII sub, a radial pyramid in Group E at Uaxactun. Nevertheless, Q’s similarity to northern plaza structures and radial pyramids would necessitate further archaeological testing. Armed with this new information, the excavation plans for the 2016 field season could be structured according to these two possible architectural configurations.

Knowing little of Q’s dimensions and form, excavations from 2013 to 2015 had systematically expanded in all directions. In 2016, equipped with a better understanding of Q, excavations could now be more directionally oriented. Thus, to ensure the identification of Q’s architectural form, the 2016 investigations would expand from the previous excavation limits in each cardinal direction to try and locate the corners of the building. The east-west expansion would follow the surface of the summit to locate each side of the structure. Since it was determined that Q was either a northern plaza structure or radial pyramid, the exposure of the east and west sides of the platform would provide crucial information for this investigation and would ultimately prove to be the determining factor of the structure’s configuration. Excavations would also expand to the north and south on Q’s central axis. To the south, excavations hoped to expose the structure’s basal stair(s) and associated plaza floor. Following the summit to the north, our goal was to connect the current excavation of Q with a previous excavation of Structure 3, the northern structure of Plaza A. Interestingly, the purpose of this investigation was to explore Q’s potential relationship with another early structure found buried beneath Structure 3 in 2013 (Micheletti and Stanchly 2014).

The 2016 Eastern Excavation of Q

One of the most important goals of the 2016 field season was to expose the east and west sides of Q. Regardless of whether Q is a northern plaza structure or a radial pyramid, the east and west sides of the structure would most likely be mirror images of one another. Thus, once we began to understand the architecture on the east edge, excavations attempting to expose the western edge could be organized accordingly.

Our first task was to remove back dirt from the eastern and western excavation limits to re-expose the summit and side staircases. Once complete, excavations would continue east on the east-side staircase to expose any remaining stairs down to a plaza surface. Excavations would also continue east on the poorly preserved summit surface to locate the structure’s southeastern corner. Work near the stairs would eventually come down upon a task unit wall just to the east of the lowest step. Further investigation around this area would reveal that the task unit wall abutted against the structure’s south face and aligned with the southeastern corner of the building (Figure 3). After more of the corner and eastern edge of Q had been exposed, it became apparent that the building is likely composed of two platform levels (Figure 4). If this is the case, the lower platform appears to be slightly larger than the upper platform, extending 0.5m further to the east. Much of the plaster facade appears to be missing or stripped away from the upper platform’s cut limestone blocks that formed the south and east face walls. In fact, the entire southeastern corner was stripped of its plaster facade from the summit down to a distinctly burned plaza surface. However, the eastern edge’s lower platform, standing 0.8m from the plaza surface, appears to have been left largely intact. Stones from the southeastern corner and
Figure 3. West facing photo of task unit aligning with Q’s southeastern corner. Photo courtesy of Jeff Powis.

Figure 4. West facing photo of upper and lower platform on the eastern side of Q. Photo courtesy of Jeff Powis.

Figure 5. West facing photo of appendage extending from the lower platform on the eastern side of Q. Photo courtesy of Jeff Powis.

the upper platform’s eastern edge appear to be missing, possibly robbed for the construction of the task units in Plaza A. However, measurements suggest that the building would have stood nearly 2.5m tall.

Moving north along the eastern edge of the building, an appendage measuring nearly 2m wide extends out from the lower platform 1.5m (Figure 5). The appendage appears to be bounded to the north and south by thin balustrades that have been partially destroyed. Although difficult to say with certainty, the feature’s balustrades give the impression that the appendage may have been a staircase. To the north of the appendage, only remnants of a partially dismantled lower platform remains, disappearing into the northern limits of our excavation, 7.6m from the southeastern corner.

The 2016 Western Excavation of Q

We began the western excavation by exposing more of the southern summit and the

last few stairs of the western staircase. Like much of Q’s summit, the surface in the southwest region was also very poorly preserved. Just as we had predicted, excavations continuing in this location revealed a similar pattern of architecture which essentially mirrored what had been exposed in the eastern excavations. Like the eastern staircase, the nose of each step of the western staircase was chopped revealing a similar marl fill covered by a thick layer of heavily burned plaster. However, unlike the eastern staircase, the plaster facade of the south face wall above the southwestern stairs was left partially intact. Only a few cut stones were exposed in the wall near the upper steps of the staircase.

With investigations searching for Q’s southwestern corner edging closer to Plaza A’s western structure, Structure 2, architecture thought to be associated with the western structure’s northeastern corner was found about a meter beneath the modern surface. Continuing to a depth of 2m, our first indication of nearing Q’s southwestern corner came in the form of a task unit wall found abutting the structure’s south face. Like the eastern task unit, the task unit on the west end of the structure also aligned with the structure’s southern corner (Figure 6). Mimicking the east face of Q, excavations on the western edge of the structure exposed an upper and lower platform (Figure 7). While the upper platform on the west side of Q was also stripped of its plaster facade, it differed from the east side in that it was composed of several more courses of cut stone. It is unknown whether these
additional courses represent the true height of the structure’s summit or if these stones were stacked onto the original summit during the Late Preclassic Plaza A build-up. Although only the very top of the lower platform was exposed on the west end of the structure, the stones uncovered were still faced with a thick plaster layer suggesting that the plaster facade remained intact on the west end of the building as well.

The 2016 Southern Excavation of Q

Our first objective for the excavation of the southern stairs was to remove a large area of back dirt from the previous year’s excavation. This was done so that we could locate the building’s center axis by exposing just enough of the lower armatures to use them as a guide. With the stairs exposed, we would also be able to follow the known architecture once our excavation reached down to the lowest exposed step. Again, the purpose of the excavation in this location was to search for the structure’s basal step and associated plaza surface. A 6.25m (east-west) by 3m (north-south) area composed of two units was set on the south edge of the 2015 excavation on the structure’s central axis. The south edge of these two units are approximately 2.3m from Altar 2 and Stela 4; an altar and stela pair set in the center of Plaza A on the center line of Structure 1 and Structure 2. Excavations in this area, down to a depth of 50cm, located several plaza floors. The state of preservation of each floor continued to improve at greater depths and was best preserved in the eastern unit. Beneath the final plaza floor is a 1.5m level of multiple marl and clay stratums which served as construction fill to bury Q and raise the height of the plaza. As we continued down into this construction fill, a task unit wall was found projecting from the western profile wall of our excavation unit (Figure 8). This task unit had once run up the south stairs near the west pair of upper and lower armatures but had been removed prior to the final pictures taken at the close of the 2015 field season.

Nearing the level of Q’s lowest step, excavations in both units were suspended so that the last strata of fill composed of a thin layer of white marl could be carefully removed. This marl layer has consistently been found covering the surface of Q and was likely placed over the entire building prior to the mass amount of marl and dirt construction fills that helped to build up Plaza A. As the thin layer of white marl was troweled away, it became apparent that the plaster surface would only continue a few more
centimeters before terminating at a break where the plaster had been chopped in antiquity. Exploring to the south of this break, excavations would eventually hit bedrock approximately 50cm below the broken plaster surface indicating that this was likely the southernmost extent of Q’s architecture (Figure 9). Interestingly, no plaza surface was encountered to the south of the break. This has led us to believe that the broken plaster surface was not Q’s basal step but was actually a remnant of the structure’s plaza floor.

**The 2016 Northern Excavation of Q**

Excavations would also move in a northern direction, trenching toward the previous excavation of the south face of Structure 3. While excavating the central axis of Structure 3 in 2013, the project exposed Late Preclassic Puc phase (300 BC – AD 100) architecture (Structure 3-2nd) found deeply buried beneath the Late Classic Coc phase (AD 550 – 700) north building (Micheletti and Stanchly 2014). Interestingly, the Late Preclassic architecture designated as Structure 3-2nd was constructed upon a very well preserved plaster surface closely associated with Q’s summit (Figure 10). This plaster surface was either the summit of Q or the first Plaza A floor (Floor 4) constructed directly over-top of Q after the entire structure had been buried. Thus, further exploration was necessary to identify the association between Q and Structure 3-2nd.

Structure 3-2nd and the plaster surface found beneath the basal steps of the south face of Structure 3 were re-exposed along with a small trench on Q’s summit stretching from the platform’s re-exposed southern stairs to Stela 11 at the base of Structure 3. Excavations to the east of Stela 11 would discover a south facing staircase belonging to Structure 3-2nd (Figure 11). The staircase appears to have two or more phases of construction, all of which were poorly preserved. Further exploration searching for the plaster surface between Stela 11 and Structure 3-2nd revealed a north-south stone alignment. The stone alignment is below the level of the plaster surface and runs to the south beneath the Structure 3-2nd staircase implying its earlier origin (Figure 12). Regrettably, time did not allow us to continue down and explore the stone alignment. However, upon further inspection of this area, the orientation of Structure 3-2nd appears to be more aligned with the surface...
structures (8 degrees west of north) while the stone alignment is more closely oriented with Q several more degrees west of north. Further investigation of this stone alignment will need to be conducted to identify its relationship with Q.

The last remnant of Q’s summit was found about 1.5m to the south of Stela 11. The poor preservation of the summit has made it difficult to determine whether it had once connected with the plaster surface that Structure 3-2nd was constructed upon. If the surface did at one point connect, it is conceivable that the erection of Stela 11 may have penetrated and destroyed the surface in this area. Thus, if this entire surface was the summit of Q, Structure 3-2nd would be the platform’s superstructure. However, we believe it is more likely that the structure’s foundation is a well-preserved Plaza A Floor 4, the floor that sealed Q beneath the current plaza. Nevertheless, this area will need to receive further investigation before stating anything conclusively.

Conclusion

While each of the directional excavations of the 2016 field season has provided us with more information regarding El Quemado’s dimensions and physical features, the eastern and western investigations were the most vital for understanding the structure’s configuration. After exposing the nearly vertical eastern and western facing walls extending down from the summit of Q, it is logical to assume that the building is a northern plaza structure. Although the northern portion of Q has yet to be exposed, it is likely that the stairs of the southern face were used as the structure’s primary access. While Q’s location beneath the northern portion of the artificially built-up Plaza A was suggestive of the structure’s northern plaza position, it was imperative to correlate the structure’s architecture with this assumption. Knowing the structure’s dimensions and configuration will not only help to coordinate future excavations of Q but will also aid in the search for other associated plaza structures still buried beneath the Plaza A construction fill. If present, the function, orientation, and configuration of these associated structures will help to establish a more complete understanding of the early ritual/ceremonial center at Pacbitun. PRAP is hoping to further this goal in subsequent years by excavating in plausible locations in search of other potential buildings associated with Q’s plaza scheme.

Along with the speculation of the existence of other associated sub-plaza structures, we can also begin to postulate the meaning of Q and its northern plaza position. Through the cooperation and coordination of a large labor force, the monumental construction of Q is a testament to the sacredness of this location not only to the site’s early inhabitants but also to the surrounding local communities. Q’s lack of superstructure and exposed, ornate southern facade likely indicate that the southern face acted as a stage for performance during public gatherings. Assuming Q is the most prominent public ritual/ceremonial structure in the plaza during the Middle Preclassic, the platform’s plaza position may be suggestive of the ideological significance of “north” at Pacbitun. However, this cannot be stated with confidence until after the other plaza positions have been thoroughly tested.

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4 RESIDENTIAL INEQUALITY AMONG THE ANCIENT MAYA: OPERATIONALIZING HOUSEHOLD ARCHITECTURAL VOLUME AT CARACOL, BELIZE

Adrian S. Z. Chase

The size and dominance of architecture in Caracol’s epicenter and outlying monumental nodes demonstrate, at least in part, the hegemony of the rulers who governed and administered Caracol. While Caana, with its enormous construction effort and widespread visibility, phenomenologically dominates the landscape, the actual significance of this architectural feature can best be evaluated in comparison with other structures of a similar nature. Both a residential and administrative structure, Caana is relatively unique in form and scale; however, other household structures occur in at least two distinct architectural forms at Caracol – as both acropoli and plazuelas. In order to operationalize a measurement of hegemony through architecture, energetic analyses – reduced to architectural volume – permit a comparison of wealth inequality as unequal access to labor for household construction. When viewed as a Gini Index, these data allow for a comparative measure of inequality in construction efforts among and between different cities. While other operationalizations of hegemony through architecture and urban design will be required for both a more complete picture of the ancient Maya and to facilitate comparison among Maya cities, this analysis provides one method for discussing the nuances of hegemony using architecture to answer questions of inequality, control, and power.

Introduction

Archaeological data can provide information on social inequality in the past, providing additional datasets to contrast with modern power dynamics and societal diversity. At Caracol, in modern Belize, the hegemony of the state and power of the ruler can be easily seen from the size, visibility, and monumentality exhibited by Caana – the most massive construction at the site (for in depth analysis and description of Caana see A. Chase and D. Chase 2017). In addition, the importance and centrality of Caana and the epicenter can be seen through the dendritic causeway system (A. Chase and D. Chase 2001:273), radiating from the city core to link together the city’s monumental architectural nodes (A.S.Z. Chase 2016b:figure 3). These nodes and the epicenter contain all the large architecture at Caracol, excluding one temple standing alone along the Conchita causeway. However, Caracol contained more than just these nodes of architecture. Between and among these monumental structures and white roads were the residential plazuela groups (A. Chase and D. Chase 2014), agricultural terraces (A.S.Z. Chase and Weishampel 2016; A. Chase and D. Chase 1998), and residential reservoirs (A.S.Z. Chase 2016a).

One method of investigating the roles of hegemony and power involves a consideration of social inequality. Two simple, intertwined, and commonly used methods of measuring inequality exist today: the Lorenz Curve and the Gini Index (see Gastwirth 1972). Not only are these methods used to measure modern inequality, but archaeologists have also used them to measure inequality in the past (Brown et al. 2015; Hutson 2016:153-156; Smith et al. 2014). In this analysis, the Gini Index provides a measure of the disparity in volume among residential architecture including: the ruler’s palace Caana, the large residential acropoli, and the raised plazuela house mound groups. This measurement system permits a consideration of both the elite’s ability to harness construction efforts and the ability of the average household to construct its residence.

When economists and governmental organizations use the Lorenz Curve and Gini Index measures today, they generally include more variables than just household size (Gastwirth 1972:311-312), but that is not a strict requirement. However, the methods do require that comparisons only be made when the data are measured in the same way. As such, one index of household wealth should not be directly compared with a separate index without proof of a correlation between those metrics. For example, measuring household areas and household volumes provide two distinct measures of inequality, but they are not by
necessity mutually comparable without corollary supporting data.

In this analysis we only look at household volumes. Several research projects have used area measurements to analyze inequality in the archaeological record (Brown et al. 2015; Smith et al. 2014). Other studies have attempted to measure inequality by calculating household wealth from the material remaining within the dwelling or from ritual offerings and burial goods (see Smith et al. 2014:313 and Smith 1987:301-302). Tomb volume has also been used as a measure of inequality at Caracol (A. Chase 1992; D. Chase and A. Chase 1996). Measuring material wealth in this manner is difficult. The researcher must create or determine the relative value of individual objects owned by the people who dwelt in the houses (Smith 1987:301-317), as well as separate differences in material culture from aspects of market forces (A. Chase et al. 2015; D. Chase and A. Chase 2014) or material goods related to identity (D. Chase and A. Chase 2004:142).

Studies using household areas and volumes arguably provide far easier metrics for wealth inequality because they do not require a schema of comparative wealth values of archaeological material. In addition, Smith et al. (2014:312) strongly suggest that volume can more effectively elucidate inequality than area measurements due to the vertical nature of Mesoamerican household construction. In addition wealth accumulation and inequality, as exhibited by household size, has been observed in anthropological studies (see Smith et al. 2014:312) supporting the use of household volume as a measure of wealth and inequality among various societies.

**Sampling Households at Caracol, Belize**

Caracol (figure 1) was occupied by over 100,000 people during its apogee in 650 to 700 CE (A. Chase and D. Chase 2016:1; D. Chase and A. Chase 2017) and earlier studies have documented the variability in households at Caracol including both the number of structures around the central plaza and the occurrence of special features such as kitchens or sweat baths (A. Chase and D. Chase 2014:table 1). In addition, all excavated residential groups at the site appear to have been occupied during this apogee. Thus, while the LiDAR data captures the last phases of Caracol’s occupation, excavation data suggests that each of these features would have been occupied in 700 CE. While a 200-year window exists between 700 and the collapse at approximately 900 CE, the subsequent construction activity was for the most part less than it was for earlier time periods. Therefore, I argue that this analysis provides a reasonable proxy of household volumes in the Late Classic Period toward the end of the city’s lifespan.

In order to conduct this analysis, a representative sample of 4058 elevated constructions was analyzed. This sample included 4040 raised *plazuela* groups, 17 acropoli, and Caana; all identified in the 2009 and 2013 LiDAR datasets for Caracol (A. Chase et al. 2014; A. Chase et al. 2011). This sample does not represent the complete universe of residences at Caracol. Instead, it is the result of a first pass analysis of the site dataset, which should represent relative household density across the city. Additional passes through the dataset will reveal more housing architecture in the future, which will likely change this volumetric analysis, but given the size of the sample any future variations should be subtle.

In this analysis household volumes act as a proxy for construction effort and can be considered as a reduced version of a more complex energetics analysis (Abrams 1994; Abrams and Bolland 1999; A. Chase and D. Chase 2014; Erasmus 1965), especially because this analysis utilizes the existing LiDAR dataset to provide an approximation of these values. It does not require on the ground survey and test excavations of every household at Caracol to determine and calculate the type of household construction present (A. Chase and D. Chase 2014:table 1). Actual energetics analysis of the costs of moving earth, placing limestone blocks, and plastering would provide a more accurate representation of inequality in residential construction at Caracol, but this is unlikely given the dataset. Also, we do not know exactly where the stone, plaster, and other construction materials came from for each house. Caracol has only one currently known quarry and without precise information on the sourcing of materials, such an analysis
Figure 1. The location of Caracol with its dendritic causeways connecting nodes of monumental architecture.

Figure 2. First pass representative sample of 4058 residential groups at Caracol: 4040 plazuelas, 17 acropoli, and Caana (sufficient for this analysis, but below the number of residential groups at Caracol based on survey, excavation, and local high intensity LiDAR survey).
would be flawed as the primary energetic cost for heavy materials like stone involves moving these materials to the construction site. This analysis simplifies energetics to architectural volume; nevertheless, this follows from an energetic argument of labor costs in residential construction that has previously been used to distinguish inequality and leaves room for a more comprehensive future energetics analysis.

**Obtaining Volume**

For this analysis, residential architecture was first digitized. Volumes were subsequently extracted from the LiDAR-derived DEM dataset. Thankfully, raised *plazuela* groups are distinct enough to be unambiguously identified from remote survey. In addition, several years of prior field survey had identified many households, allowing for a large sample training dataset. Potential residential groups discovered with remote survey were compared against this dataset of known ground truthed residential groups. This process of remote survey resulted in this sample of 4058 households (figure 2).

The process of obtaining the household volume was slightly more complicated. While there are methods in both ArcGIS and GRASS GIS to obtain volumes, they require a single, flat elevation to be predetermined. This relates to their primary use of gauging flood damage or the capacity of reservoirs in modern dam construction. While adding an elevation to each residential group could be accomplished, two factors complicate this analysis. First, construction at Caracol occurred on non-flat terrain, and second, a faster and easier method should encourage other researchers to repeat this methodology with their own datasets.

Determining construction volume on uneven terrain required a multi-step process. First, a new DEM was created that substituted NODATA values – null values to represent a lack of data – under the digitized household locations. Second, new elevation values were interpolated to fill those NODATA cells. This reconstructs a potential landscape that might have existed if the houses had not been built. Third, using map algebra – a GIS toolset to allow the user to add and subtract DEM maps with standard algebra expressions – the new DEM without houses was subtracted from the original DEM, creating an additional new DEM of residential architectural volume in each cell. Finally, the values under each digitized feature were added together per residential feature giving the volume of each structure.

While ArcGIS proved to be inferior to GRASS GIS for the above analysis, neither GIS package contained more than one interpolation method. GRASS has a routine, called *r.fill*, with the ability to interpolate and fill in empty DEM cells; however, it is only compatible with spline interpolation. This remains superior to ArcGIS in which a combination of map algebra and focal statistics filled empty cells without detailed interpolation methods; neither interpolation method has been shown to be superior for obtaining reconstructed volumetric data than any other potential interpolation method. As such, neither GIS package truly facilitated the above analysis with their existing tools and routines, but this analysis can be used as a first-step approximation. Future research will test a diverse set of interpolation methods – including but not limited to: inverse-distance weighting (Philip and Watson 1982; Watson and Philip 1985), natural neighbors (Sibson 1981), spline (Franke 1982; Mitáš and Mitášová 1988), and kriging (Oliver 1990; Royle et al. 1981) – and each one could fundamentally change the resulting interpolated DEM from their application.

**Lorenz Curves & Gini Indices**

The Lorenz Curve provides a graph of wealth distribution. The Gini Index is derived from the Lorenz Curve because the Gini Index is the numeric representation for the area under the Lorenz Curve. Both measures are used on an aspect of wealth, as defined by the researcher, applying both methods in units of either individuals or households. For archaeological cases, households present a more standardized unit of measurement. The researcher must also ensure that their data present a representative sample of the population under analysis.

Today these methods of measuring wealth can be determined from national tax returns or census data. For archaeologists, as indicated earlier, wealth is often determined either from some combination of the size of residences or features – often as volumes and areas – or
material goods – often as mortuary goods. In the first case of areas and volumes, wealth is simply the measurement of a given feature, while in the second case of material goods wealth requires the creation of a schema representing the value of each given artifact. The first archaeological use of the Gini Index and Lorenz Curve was by McGuire (1983), and while simple to calculate and compare, Lorenz Curves and Gini Indices have not entered mainstream archaeology in the following thirty plus years (Smith et al. 2014:320).

In order to create the Lorenz Curve, it is useful to start with a spreadsheet program such as Google Sheets or Microsoft Excel (table 1). In this analysis, all of the household volumes were arranged in order from least to greatest in the first column. The sum of all household volumes was calculated and stored in the next column. Each volume was divided by the total volume, this value is located the next column. The cumulative volumes were calculated, and the next column represents the sum of the value above it (the previous sum) with the value of the current household. This column provides the values for creating the Lorenz Curve.

In the Lorenz Curve, the x-axis shows the proportion of households while the y-axis shows the proportion of wealth represented by those households. The curve can vary between two extremes (figure 3). The first extreme is perfect inequality in which one household has all of the wealth. This would be represented by a line running parallel to the x-axis until the last household where that line would take a 90-degree right angle to represent one hundred percent of the wealth. The second extreme is perfect equality in which every individual has equal wealth. This forms a 45-degree line on the graph.

Perfect inequality has a Gini Index value of one while equality has a Gini Index value of zero; that is because the Gini Index itself is a calculation of area in the Lorenz Curve graph (figure 4). The Gini Index is the ratio of the area under the line of perfect equality but above the Lorenz Curve and the entire area under the line of perfect equality. As an equation, it is represented as $A / (A + B)$. Technically, this measure of area under a graph is by definition calculus; however, with the actual data required to make this graph no actual calculus is required in order to calculate the Gini Index. Instead, the existing data can be used similarly to Riemann sums (Stewart 2005:343-350) to approximate the area under the graph. Area A is always the same 45-degree line where one percent of households would have one percent of wealth minus the actual observed value of wealth that one percent of households had. The observed value forms the line delineating the separation between area A and area B. Also bear in mind that because of these area measurements two identical Gini indices may possess from very different Lorenz Curves.

I would argue that if we expect clearly defined social classes with large wealth disparities, then these should be shown as inflection points – also known as “kinks” – on the Lorenz curve. These inflections would be the fulcrum between the elite and non-elite. However, if there are no strict barriers between social classes, such as in modern society, then there should be a constant curve with few flat zones indicating multiple people with the same wealth levels (also see Hutson 2016:168-169). The Lorenz Curve from Caracol (figure 3) displays three interesting features: there are no “kinks” representing strict differences in wealth between classes among plazuela groups, Caana’s architectural volume alone accounts for 0.02 of...
Figure 3. Lorenz Curve of residential architecture volume at Caracol and the lines of perfect equality (Gini = 0) and perfect inequality (Gini = 1).

Figure 4. The Gini Index equals this formula with areas A and B. Gini Index = A / (A + B).
Table 2. Gini values for residential architecture areas and volumes at Caracol and elsewhere (Brown et al. 2015:316-318; Hutson et al. 2004:table 5.1; Smith et al. 2014:figure 1). Hutson also provides a Gini of 0.59 for Sayil based on a smaller sample size than Brown, and Hutson provides additional Gini Indices for Chunchucmil with separate measurements and sample sizes.

<table>
<thead>
<tr>
<th>Site</th>
<th>Period</th>
<th>Household Area Gini Index</th>
<th>Household Volume Gini Index</th>
</tr>
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<tbody>
<tr>
<td>Caracol</td>
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<td>0.34</td>
<td>0.60</td>
</tr>
<tr>
<td>Mayapan</td>
<td>Late Postclassic</td>
<td>0.32</td>
<td>?</td>
</tr>
<tr>
<td>Palenque</td>
<td>Late Classic</td>
<td>0.44</td>
<td>?</td>
</tr>
<tr>
<td>Sayil</td>
<td>Late Classic</td>
<td>0.71</td>
<td>?</td>
</tr>
<tr>
<td>Capilco</td>
<td>LPC-A</td>
<td>0.10</td>
<td>0.06</td>
</tr>
<tr>
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<td>LPC-B</td>
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<td>0.09</td>
</tr>
<tr>
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<td>LPC-A</td>
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</tr>
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<td>LPC-B</td>
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<tr>
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<td>Classic</td>
<td>0.12</td>
<td>?</td>
</tr>
<tr>
<td>Chunchucmil</td>
<td>Early Classic</td>
<td>?</td>
<td>0.63</td>
</tr>
<tr>
<td>Dzibilichaltun</td>
<td>Late Classic</td>
<td>0.39</td>
<td>?</td>
</tr>
</tbody>
</table>

From data presented in Brown et al. (2015:316-318)

From data presented in Smith et al. (2014:figure 1)

From data presented in Hutson (2016:table 5.1)

the final Gini coefficient, and the top 1% of households at Caracol possessed about 26% of the wealth as measured by household architectural volume.

It must be remembered that these Lorenz Curves and Gini Indexes have a potential pitfall; they can only be compared when the datasets are the same or have been shown to be comparable. For example, residential area and residential volume can produce vastly different curves and vastly different Gini values (table 2). That being said, any other archaeological site with a representative sample of households can follow the above steps and then compare and contrast its values with the values at Caracol. For example, data from Maya sites in the Yucatan Peninsula of Mexico (Brown et al. 2015:316-318; Hutson 2016:153-156) and data from Central Mexico (Smith et al. 2014:table 1) provide comparable data and are reproduced in table 2.

Discussion

As a result of this analysis, we can gain a slightly more nuanced picture of inequality at Caracol and the existence of political hegemony in residential construction. One of Caracol’s defining aspects is the widespread occurrence of goods at various households in a system dubbed “symbolic egalitarianism” (A. Chase and D. Chase 2009:16-18; D. Chase and A. Chase 2017) and as a result of a strict market economy (Hirth 1998:454-456). The resulting shared identity through shared access to material goods should indicate that Caracol might have other appearances of shared wealth, possibly in semi-equality among household construction.

When looking at the Lorenz curve and Gini Index, Caracol clearly exhibits inequality. However, the absence of a clear inflection point to distinguish between the elite and non-elite presents a high degree in wealth variation between households. There does not appear to be an arbitrary household distinction between the elite and non-elite although at both ends of the scale we can clearly see both elite and non-elite households.

Conclusion

This analysis of inequality in the volume of residential architecture shows that while the hegemony of the state and the power of the rulers existed at Caracol, the ruler’s power was not absolute. While there was a difference
between the uppermost elite and the rest of society, this analysis finds no clear distinction within the volumes of *plazuela* residential architecture that cleanly separates Caracol’s inhabitants into clear categories. Instead we see a wide distribution of unequal household wealth at Caracol with the top 1% of households at Caracol possessed about 26% of the wealth as measured by household architectural volume representing a Gini Index of 0.602.

Various archaeologists have used both Lorenz Curves and Gini Indices over the past thirty years, but these measures have yet to see widespread adoption in the field. These methods provide a quick method for comparing and contrasting two comparable datasets. Hopefully with the more widespread nature of LiDAR at Mesoamerican sites and the methodology presented here, new analyses of residential inequality based on architectural volume can be replicated at other cities in order to learn more about ancient inequality for the Maya and other societies.

Acknowledgements This research would not have been possible without the support and data provided by Arlen F. and Diane Z. Chase or the tutelage of Michael E. Smith. This article is a fusion of urban analysis and traditional Maya research that required ideas and techniques from a multitude of teachers, scholars, and friends.

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5 THE PLAZAS OF BUENAVISTA DEL CAYO: HISTORY, ECONOMY, AND POLITICS

Bernadette Cap, Jason Yaeger, and M. Kathryn Brown

Plazas in ancient Maya centers were venues intentionally built to host activities that integrated groups of people, created social divisions, and shaped ancient social change. In this paper, we compare findings from the three main plazas of Buenavista del Cayo, Belize, to illustrate how plazas shaped ancient Maya society. Activities in the Buenavista plazas included the burial of royalty in the Central Plaza, a marketplace in the East Plaza, and the construction of defensive works in the West Plaza. The timing of these varied activities also provides insight into the history of Buenavista, from its establishment in the Middle Preclassic to its abandonment in the Terminal Classic.

Introduction

Almost every ancient Maya site center has at least one plaza, and most have several. This fact indicates that plazas were integral features in the planning and layout of a settlement’s architectural core. Plazas are essential venues where practices and activities occur through which residents and visitors to the site center can create and maintain shared identities, establish and reinforce social differences, and renegotiate and/or reject social categories. Archaeological excavations of plazas offer insight into the specific activities conducted in them and a foundation for making inferences about their broader significance.

Over the past decade, we have investigated the three largest plazas at Buenavista del Cayo, Belize: the West, Central, and East Plazas. The data from our excavations provides evidence for the specific ways that each plaza was utilized. When examined together, the data from the three plazas reveals some of the processes and factors that contributed to the coalescence of Buenavista as a community, its emergence and roles as a major political center, and its eventual abandonment.

Plazas among the Ancient Maya

Ancient Maya plazas are intentionally built open spaces, often with prepared surfaces, that are surrounded by structures on most or all sides. The Maya sometimes placed stelae, altars, and shrines in plazas, but they are generally featureless. They were made in different shapes and sizes; they vary from relatively open to very restricted access; and any kind of built feature can demarcate their limits, including reservoirs and causeways. One of the common traits of Maya plazas, however, is that many are large enough to hold large numbers of people, usually with capacities in the thousands (Inomata and Tsukamoto 2014). Gatherings of this size could have fostered cohesion and a shared community identity that likely crosscut statuses and other social divisions (Yaeger 2003). Such activities would have been essential given the dispersed settlement pattern of Classic Maya society, where daily interaction likely was limited to small groups of people.

The placement in some plazas of carved stelae that glorified rulers can be interpreted as a statement of clear and continued authority over plaza spaces and, by extension, the activities that occurred there (Lucero 2003). We suggest that there was likely a dynamic interplay of elite and non-elite’s agendas involved in plaza activities, however. Maya ruling elites likely had a vested interest in the activities that occurred in plazas because some of those activities could have promoted beliefs, identities, social constructs, and embodied practices that reinforced their higher status (Inomata 2006a, 2006b; Inomata and Tsukamoto 2014). The participation of non-elites in plaza activities, however, would have been essential in the creation, acceptance, or rejection of the hierarchical structure of Maya society.

Extensive investigation of plazas has lagged in comparison to studies of structures in site centers, even though ethnohistoric and ethnographic studies demonstrate rich and varied use of Maya plazas in the past (e.g., Barrera Vasquez 1965; Low 2000; Malinowski and Fuentes 1982; McBryde 1945; Oviedo y Valdes 1851). The most common approaches applied in the analysis of plazas have been based on spatial
syntax and proxemics (e.g., Inomata 2006a; Looper 2001; Liendo Stuardo et al. 2014; Wildt 2015). These approaches infer plaza function from factors such as plaza footprint, the open or restricted nature of its access, its location within the larger site plan, and the nature of the structures that demarcate its edges. For example, it is inferred that plazas with small entryways have more restricted access and different use than plazas with large entryways that facilitated the entrance and egress of larger groups of people. These types of analyses provide a basis to morphologically differentiate plazas within a site. They are not as useful for inferring the activities that occurred in those plazas, however, because of the problem of equifinality.

Excavations of ancient Maya plazas have actually been quite common, but they most often take the form of a single test pit excavated to build a site’s chronology. Extensive excavations of Maya plazas have taken place at only a few sites (e.g., Brown et al. 2011; Cap 2012, 2015a; Garber and Awe 2008; Micheletti et al. 2016; Wells 2003). This is due in part to the perception that plazas are empty, inactive spaces. Further deterring excavations, many hypothesized plaza activities would not result in the deposition of many durable material objects, and trash left by plaza activities would regularly have been swept up and redeposited elsewhere, leaving little to no trace left behind. Yet another complicating factor is the fact that plazas are often multi-functional, and materials deposited during different activities could leave undecipherable palimpsests.

Each of these factors can be true, but plaza-focused excavations, including the ones we present here, have clearly shown that plazas can be rich in information. Archaeologists have investigated plazas at several sites in the upper Belize River valley (e.g., Brown et al. 2011; Garber and Awe 2008, Micheletti et al. 2016; Peniche May 2016), excavating down to bedrock and recovering information about site histories and materials dating back to the Preclassic. Furthermore, these studies have demonstrated that what appears to be a plaza today may be a relatively late feature in a site’s history, under which are buried a variety of features and structures that speak to the dynamic and changing use of space. Extensive horizontal excavations have provided empirical evidence that the ancient Maya used plazas as gathering spaces for religious activities (Cap 2012), community building feasts (Wells 2003), and marketplaces (Cap 2015a; Dahlin et al. 2007). Thanks to these excavations and others, we can begin to reconstruct the specific and variable use of plazas, and more broadly, build better understandings of the roles of plaza activities in the creation, maintenance, and transformation of ancient Maya society.

**Buenavista del Cayo**

Buenavista del Cayo (hereafter referred to as Buenavista) is a large site situated along the eastern bank of the Mopan River in west-central Belize (Figure 1). Excavations directed by Joseph Ball and Jennifer Tasheck under the Mopan-Macal Triangle (MMT) Project and Jason Yaeger under the Mopan Valley Archaeology Project (MVAP) have provided the
basis for a chronology of Buenavista. The settlement has a long history of occupation starting in the Middle Preclassic period and extending into the Terminal Classic period, spanning approximately 900 BC – AD 900. Beginning in the Early Classic period, Buenavista was a seat of political power in the Mopan Valley (Ball and Taschek 2004; LeCount and Yaeger 2010; Leventhal and Ashmore 2004; Yaeger et al. 2015), and the area around the site reached its peak population density in the Late Classic period (Peuramaki-Brown 2012).

Buenavista contains the typical suite of built features found at most Maya centers, including two temple pyramids, two ballcourts, a royal palace, several elite residential complexes, two sacbes, and four major plazas (Figure 2). Our focus here is the three largest plazas: the West, Central, and East Plazas. Our interpretation of the changing uses of these plazas relies heavily on excavation data, but it bears pointing out that analysis of morphological factors like plaza size, accessibility, and the nature of the surrounding structures was helpful for building initial hypotheses about plaza functions that guided our research.

The areal extent of a plaza reflects the scale of events that could have been held in the venue, which in turn has implications for the social impact of those activities. The East Plaza has the largest area of the three plazas (Table 1), but on a relative scale, all of them are quite large. The estimated maximum number of people that could be fit in each plaza represents a large gathering. While smaller gatherings certainly occurred in the plazas, the intentional creation of a space to accommodate many people is an indication that there was a need or desire for large-scale gatherings.

The open or closed nature of plaza entryways has implications for the ability to access and participate in plaza activities,
The Plazas of Buenavista del Cayo

Table 1. Area and capacity of Buenavista’s plazas, given different degrees of crowding.

<table>
<thead>
<tr>
<th></th>
<th>Area</th>
<th>.46 m²/person</th>
<th>1 m²/person</th>
<th>3.6 m²/person</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Plaza</td>
<td>11,414 m²</td>
<td>24,813</td>
<td>11,414</td>
<td>3,171</td>
</tr>
<tr>
<td>West Plaza</td>
<td>7,290 m²</td>
<td>15,848</td>
<td>7,290</td>
<td>2,025</td>
</tr>
<tr>
<td>Central Plaza</td>
<td>4,907 m²</td>
<td>10,667</td>
<td>4,907</td>
<td>1,363</td>
</tr>
</tbody>
</table>

Regardless of the areal size of the plaza, the East Plaza was the most accessible because it had large gaps (c. 23 – 58 m) between the structures that delimit it. Furthermore, two sacbes extend out from the plaza’s entrances. The gentle rise of the landscape surrounding the East Plaza would have permitted easy movement in and out of this space as well. The West Plaza is the most restricted with the narrowest passageways, one of which is only 6 m wide. The northern edge of the West Plaza has a steep drop off of roughly 5 m, making entry into the plaza from this side more labored than we see for any entryway in the East or Central Plazas. Given these contrasts between the East and West Plaza, we suggest that the East Plaza was less restricted or controlled, whereas access to the West Plaza was restricted, perhaps open only to certain groups or for certain events. The Central Plaza lies somewhere in between; with a combination of large and small entryways.

Finally, the form and function of the structures that demarcate a plaza and the presence of any monuments can suggest the activities that took place in a plaza. Of the three plazas, the Central Plaza is associated with the most distinctive features. These include two temple pyramids (Strs. 1 and 3) that mark its east and west edges. Str. 1 was a funerary shrine for Buenavista’s ruling elites (Taschek and Ball 1992). Within the Central Plaza are two 2 m tall structures (Strs. 5 and 6), which Ball (1993) referred to as stela platforms due to several stelae and altar fragments found near them. The erection of monuments within the plaza would have been an important event(s) and potentially marked by public gatherings. Furthermore, as symbols and visual reminders of religious order and elite political authority, the monuments were likely the focus of repeated ceremonies. Taken together, these data suggest that the primary function of the Central Plaza was to provide a space for ceremonies that aided in the creation and reiteration of political authority and social order in the Buenavista polity. This inference is reinforced by the presence of a royal burial, as discussed below.

The structures framing the West and East Plazas do not provide as much clarity on the plazas’ functions, however. Both plazas are also associated with a temple pyramid, Strs. 1 and 3 respectively, but it is not clear that these structures actually faced those plazas. The West Plaza is further delimited by the royal palace on its western and southern sides, and by the long, low Str. 43 to its north. Within the plaza are three smaller structures (Strs. 42, 44, and 45) of size and shape that are functionally indistinct. The West Plaza’s association with the royal palace complex, coupled with its restricted access, lead us to hypothesize that the plaza was used for political activities and ceremonies involving the living ruler, rather than his deified ancestors who were commemorated in the Central Plaza. West Plaza activities thus would have been a way to reproduce the hierarchical social order.

The East Plaza is delimited by Strs. 3, 15, 16, and 17. As noted above, the East Plaza’s large size and ease of access suggest it was a public gathering place. We have suggested elsewhere that Str. 16 was part of a Preclassic E-group, along with Str. 3 (Yaeger et al. 2016), and the plaza was later the location of the site’s marketplace (Cap 2015a).

Our spatial analysis of the Buenavista plazas allowed us to suggest potential uses of the plazas, but to test these hypotheses, we have engaged in excavations to collect empirical evidence relevant to plaza activities. The scale of investigation of each plaza was varied (Figure 2), but taken together, they provide a solid
foundation to discuss the dynamics of plaza activities and their roles in the growth and decline of the Buenavista settlement.

**Middle and Late Preclassic (900 BC – AD 250)**

The first traces of occupation in the Buenavista settlement date to the Middle Preclassic (900–300 BC), but they are scant and scattered across the settlement zone and site center (Ball and Taschek 2004; Cap 2015a; Peuramaki-Brown 2012). We recovered Middle Preclassic materials in our excavations in the Central Plaza, confirming Ball and Taschek’s recovery of Middle Preclassic occupation there (Ball, personal communication, 2015), albeit of uncertain function. Cap (2015a) identified a Middle Preclassic midden in the East Plaza, but our understanding of it is constrained by our limited excavations. The T-shaped footprint of Str. 16 lead us to suggest that the East Plaza was a Preclassic E-group, paired with Strs. 3, 15, and 17 (Yaeger et al. 2016). If confirmed, a Preclassic E-group would suggest that solar cycles and their relationship to agriculture were key elements in the legitimation of the authority of early rulers at Buenavista, as was the case at other major Preclassic centers in the upper Belize River valley (Brown 2017). By the end of the Late Preclassic, the basic arrangement of the site’s three major plazas was established with the initial construction of the royal palace complex, Strs. 1 and 3, and the southern ballcourt (Ball and Taschek 2004).

**Early Classic (AD 250–600)**

In the Early Classic, settlement density doubled (Peuramaki-Brown 2012) and many buildings in the site core were expanded, including the royal palace and Strs. 1 and 3. As the center was growing, two royal burials were placed in the Central Plaza, 8 m west of Str. 3 (Yaeger et al. 2015). These burials document the growing authority of the site’s rulers, while marking the Central Plaza as a politically charged and sacred location of ancestor veneration.

The lower burial (Feature 384-2) was a crypt capped with large limestone slabs (Figure 3). Within it, an adult male was interred with his head to the south, a common burial pattern for the Belize River valley. He was buried with three miniature vessels, a Pucte Brown basal flange dish, and a Balanza Black slab-footed tripod bowl with a lid. The bowl was decorated with cacao bean appliques, while its lid had a monkey head effigy handle and incised pop symbols, a reference to kingship. He was buried with a rich array of marine shell adornments, including ear flares, disks, carved stars, and a carved gorget. The gorget allows us to infer that the individual buried here was a king (Yaeger et al. 2015). Half of its concave face bears a bas-relief carving of an ancestor’s head, while the other half bears a short text that translates as “This is the pendant of Naah Utí’ K’ab, King of
The Plazas of Buenavista del Cayo

Kokom [or Komkom]” (Figure 4). The text’s Emblem Glyph reveals the presence of a royal dynasty and complex hierarchal sociopolitical organization at Buenavista by the Early Classic.

The upper burial was a four-sided masonry chamber (Feature 384-1) that measured 1.1 m by 2.5 m (Figure 5) and was 90 cm deep. It was located directly above the crypt, suggesting memorialization of this particular location within the plaza. The chamber had been reentered in antiquity and most of the contents removed, leaving a few small fragments of bone, several small jade fragments, some marine shell beads, and large fragments of Early Classic basal flange Balanza Black bowls. The fill of the chamber contained thousands of pieces of chert debitage, recalling the common practice among the ancient Maya of placing a dense layer of chert or obsidian debitage either above or below high status burials (Coe 1988). The size and formal nature of the chamber, the scattering of jade and shell artifacts within it, and the presence of the high density of chert debitage are all consistent with expectations of a royal burial (Yaeger et al. 2015). We cannot directly date the re-entry of the chamber, but it likely took place prior to the final Late Classic resurfacing of the Central Plaza.

Excavations in the East and West plazas also revealed evidence for Early Classic occupation, but our investigations were limited and we cannot speak to the specific ways in which these plazas were used in this period.

**Early Late Classic Samal Phase (AD 600–670)**

Buenavista appears to have reached its apogee during the Late Classic period, particularly in the early Late Classic Samal phase. This is reflected in the site’s monumental construction (Ball and Taschek 2004), its ties to the powerful kings of nearby Naranjo (Helmke and Awe 2013; Taschek and Ball 2004; Yaeger et al. 2015), and the peak in settlement density in the area surrounding the center (Peuramaki-Brown 2012).

Given the growing population, it is not surprising that a marketplace was established in the portion of the East Plaza (Cap 2015a). The marketplace was organized into sectors, where vendors sold different kinds of goods, including chert bifaces, limestone bifaces, and obsidian blades, as indicated by debitage, and foodstuffs and/or objects made of organic raw materials, as indicated by ceramic artifacts and high levels of phosphorus in the soil (Figure 6). These areas were separated by daub-covered wooden walls in some cases.

The marketplace provided an efficient way for consumers to obtain essential goods made with local and non-local raw materials, and for vendors to sell their products. The location of the marketplace in the East Plaza is consistent with the plaza’s high degree of accessibility, and we infer that the marketplace was generally open to the polity’s populace. It is likely that Buenavista’s rulers obtained some economic benefit from hosting the marketplace, through mechanisms such as rents, taxes, or tribute.

Although the marketplace was primarily a center for the trade of goods, it would have facilitated interactions that had repercussions that extended beyond the economy. Marketplace sessions would have provided an opportunity for people to interact with people from across the polity, fostering identities and
social differences that extended beyond kin networks and local communities. The marketplace also provided a venue for people who resided elsewhere to come to Buenavista—whether as merchants, vendors, or buyers—and interact with local people.

The East Plaza also was used for ritual/political activities during the Late Classic period, as indicated by the discovery of two stelae fragments (Ball and Taschek 2004) and two low platforms in the center of the plaza (Cap 2015a) (Figure 6). The platforms are amorphous in shape, but the northern platform may have been a platform for offerings, as indicated by a fragment of jade, a broken chert eccentric, a high frequency of micro-sized bone fragments, and the highest levels of phosphorus in the entire East Plaza (Cap 2015a). Our excavations on Str. 16 have found that the abandoned structure was an important location for rituals in Late Classic period, indicated by numerous small depressions ranging from roughly 30 cm to 75 cm in diameter that are filled with charcoal and ash. Brown (2017) has interpreted these as fire altars made by ritual practitioners revisiting the abandoned structure.

**Late Late Classic Hats’ Chaak Phase (AD 670–780)**

The decline of Buenavista as a major center in the valley began in the later part of the Late Classic period, when we see a slight decline in the settlement density around the center (Peruamaki-Brown 2012). Construction in the site center slackens, with fewer documented modifications during this period. This was also a politically dynamic period as indicated by two burning episodes found in Str. 40, an ancillary structure located in the elite residential complex (Yaeger, Batty, Bratsch, Cap, and Whitaker 2013). We have hypothesized that these episodes correspond with the sacking of Buenavista by Naranjo, as documented on the monuments at the later site (Yaeger et al. 2015).

Our initial excavations in the West Plaza were undertaken by Mark Luzmoor (2013) to test the hypothesis that the long, narrow Str. 43 was defensive in nature. The excavations focused on the narrowest access point into the plaza, the northwest entryway, revealing postholes that likely formed part of a feature to control access here. Subsequent excavations revealed that Str. 42 was built during this period and a line of posts were placed on Str. 42 and extended into the gap between Str. 42 and 43. We suggest that these posts were part of a perishable palisade or wall that further blocked entry into the West Plaza (Yaeger, Cap, Bratsch, and Luzmoor 2013).

The East Plaza marketplace continued to be active during this period, despite the increased evidence of conflict. The Central Plaza was resurfaced during this period indicating it, too, continued to be an active space. The tightening of control over the access points in the West Plaza, however, suggest that the late Late Classic was a period of increasing conflict, punctuated with episodes of violence. We believe that Xunantunich played an important role in this conflict, as it was founded in the Samal phase and eclipsed Buenavista in this period, becoming the dominant center in the Mopan valley (LeCount and Yaeger 2010).

**Terminal Classic Tsak’ Phase (AD 780–890)**

Like most sites in the upper Belize River valley, Buenavista witnessed a marked decline during the Terminal Classic period, resulting in
its abandonment by the end of this period. There is relatively little monumental construction (Ball and Taschek 2004), some areas of the site fall into disuse, and settlement densities decline significantly (Peuramaki-Brown 2012). Despite this decline, the use of Buenavista’s plazas continues to follow the patterns established in the Late Classic period. The West Plaza continues to be fortified, and sometime between the late Late Classic and Terminal Classic the gap between Str. 42 and the royal palace complex was closed-off as indicated by two postholes, one of which was placed after the dismantling of the west face of Str. 42 (Yaeger, Cap, Bratsch, and Luzmoor 2013). Radiocarbon analysis indicates this feature was burned sometime between cal AD 885-1015 (2-sigma range), indicating a continuation of conflict and an extended occupation of this sector of the site, perhaps into the Early Postclassic. A Terminal Classic conflict-related termination event at the nearby minor center of Callar Creek (Kurnick 2016) suggests that violent conflict continued to be a broader regional phenomenon.

A deposit of Terminal Classic sherds on the centerline of Str. 3’s stairway suggests that the Central Plaza may have ceased to be used to legitimate royal authority (Cap 2015b). Despite this, it seems that Buenavista was the seat of a powerful ruling family during this time, as Ball and Taschek found a burial of a man interred with a bone tube carved with a text that identifies its owner as a king (Helmke et al. 2008).

The East Plaza marketplace was still active in the Terminal Classic period although evidence from this period is sparse, suggesting a reduction in use commensurate with the dwindling population. The survival of a marketplace in a period otherwise marked by decline suggests the value of marketplaces as an exchange mechanism and raises questions about the involvement of elites in the running of the marketplace. Was the marketplace sustained because of the economic and political relationships ruling elites were able to maintain over time, or in spite of changing leadership?

**Discussion and Conclusions**

Our comparison of the physical attributes of the three plazas led us to suggest that West, Central, and East Plazas were used in different ways. Through extensive excavations in each of the plazas and analysis of the resulting materials, we can confirm these expectations.

The Central Plaza appears to have been almost singularly focused on activities that legitimated the polity’s social order and the authority of its rulers. If other activities took place here, we have not yet recovered evidence of them. In contrast, the East Plaza was more clearly a multifunctional venue in the Classic period, a site for distinct types of activities. The plaza’s central area was used for religious and, presumably, political activities, while the northern portion was the location of a marketplace. Our limited excavation of the West Plaza prevents us from knowing the specific kinds of activities conducted within it, but no matter what these activities were, by the end of the Late Classic, the wooden walls built near the northern edge of the plaza indicate purposeful restricted access to the plaza and a need for protection of the plaza and activities within it.

One of our key findings is that Buenavista’s plazas were dynamic places and their use changed over time. The East Plaza likely began its history as an E-Group in the Preclassic period, was a venue for other activities in the Early Classic period, and became the site’s marketplace in the Late Classic period. In the Central Plaza, the ways in which rulership was legitimated changed over time, as is observed by the plastering over of the Early Classic royal burial chamber and placement of stelae in the plaza during the Late Classic. The changes in these physical features likely relate to shifting notions of rulership at Buenavista and the appropriate ways to display material symbols of authority. The West Plaza apparently went through a dramatic change in the Late Classic period, as it was fortified.

The most solid evidence for elite involvement in plaza activities is found in the Central Plaza. The highest elites of Buenavista doubtless had strong control over the manner of the Early Classic royal burials and placement of the Late Classic stelae. It is also highly likely that they were involved in defending the site from attack, including building the palisades in the West Plaza. Elite involvement in the East
Plaza marketplace is less certain, however. The marketplace was geared toward the provisioning of households, which presumably included the elite. As the marketplace was a potential source of wealth, it is likely that some elites were engaged in the marketplace in capacities other than as a consumer. They would have had many options, ranging from complete management of the marketplace facility and oversight of marketplace participation rules; exacting a tax to participate in the marketplace; or lending access to the East Plaza for a fee (Cap 2015a).

More broadly, plazas were spaces for the integration of Buenavista’s society and the construction of identities. The activities conducted in the Central and East Plazas would have contributed to the integration of society, but also highlight differences among participants. The East Plaza marketplace exemplifies economic interdependence as one method for integrating a growing population that was dispersed widely over the landscape. Marketplaces are also social events that bring together people of different economic and social statuses and create shared experiences for the participants. At the same time, however, as consumers interacted in the marketplace, differences in purchasing power, age, gender, ethnicity, and other dimensions of identity would have been apparent. The Central Plaza activities focused around legitimation of elite authority and highlight hierarchical order of Maya society, but the activities also provided a method to create and maintain shared ideologies and understandings of political authority. The long history of occupation at Buenavista speaks to the strength of these shared understandings, while changes in the ways political authority was legitimated indicates flexibility and change in the system. Thus, the plazas, taken together, tell the story of the rise, florescence, and decline of the Buenavista polity.

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6 UNDERSTANDING THE PRECLASSIC RITUAL LANDSCAPE IN THE MOPAN VALLEY: A VIEW FROM EARLY XUNANTUNICH

M. Kathryn Brown, Whitney Lytle, Zoe Rawski, Victoria Ingalls, and Alessandra Villarreal

Recent investigations by the Mopan Valley Preclassic Project have shown that Xunantunich had two separate ceremonial centers, one of which dates to the Preclassic period. This location, dubbed Early Xunantunich, has three plazas, an E-Group complex, and a large, flat-topped platform located at the northern edge. Additionally, we have encountered a possible Late Preclassic hilltop shrine location associated with this center buried beneath Group D of Classic Xunantunich, as well as a Late Preclassic round platform at the hinterland site of San Lorenzo. The presence of a relatively large Preclassic ceremonial center adds significantly to our understanding of the Preclassic landscape in the Belize River valley. In this paper, we highlight new data from Early Xunantunich, Group D, and the hinterland site of San Lorenzo. We present some preliminary interpretations related to early Maya ritual practices at the site and how these practices were shaped through time and place.

Introduction

The Preclassic period in the Maya lowlands is key to understanding the establishment of political institutions that supported a hierarchical social system. Religion and ritual were utilized by emerging elites to elevate their position within society through both construction projects and ritual performance, both of which were tied to sacred places on the landscape. Early Maya community leaders legitimized their exalted social status through ritual performances at sacred and significant places on the landscape. Often, these places had a long history of ritual use and/or were places where important ancestors were buried (Brown 2013; 2017). Overseeing ritual activities on the landscape, and performances at these key locations, reinforced an emerging social hierarchy. Through time, these ritual practices were elaborated and often included the burial of important ancestors at key locations. Classic Maya rulers sanctified their power and authority through connections to these important historic places, ancestors, and deities. It is through a diachronic examination of such places that we can begin to elucidate patterns of ritual re-use and repurposing of sacred locations, that were transformed into Classic period ritual places such as ancestor shrines and temple complexes as well as small scale public complexes within hinterland communities. Additionally, intensive excavation allows us to also identify early sacred locations that were abandoned or not rebuilt for some reason, but may have continued to be significant places and venues for periodic ritual activities, suggesting social memory of their earlier sacred significance.

The site of Xunantunich is an ideal location to study the important roles of sacred places in Preclassic political dynamics. The Mopan Valley Preclassic Project (MVPP) has been investigating Xunantunich since 2008 and has confirmed that there were two separate ceremonial centers, one dating to the Preclassic and another dating to the Classic, referred to here as Early Xunantunich and Classic Xunantunich (Brown et al. 2016) (Figure 1). Early Xunantunich is located 800m east of Classic Xunantunich and has three plazas, an E-Group complex, and a large, flat-topped platform (Figure 2). Because Early Xunantunich was abandoned by the end of the Late Preclassic (perhaps ca. AD 200) and saw little subsequent construction, it provides a rare opportunity to study the layout and features of a Preclassic ceremonial center without disturbing later buildings. Despite its Terminal Preclassic abandonment, this location saw periodic ritual visitation through the Early Postclassic,
indicating the continued importance and social memory of this sacred place on the landscape (Brown 2011).

Preclassic architectural features, presumably associated with Early Xunantunich, have been found buried beneath key structures at Classic Xunantunich, including El Castillo, Structure A-2, and the central platform at Group D (Figure 1). Furthermore, a Late Preclassic round platform was found at the nearby hinterland site of San Lorenzo. In this chapter, we highlight new data from our research at Early Xunantunich, Classic Xunantunich, and San Lorenzo and present some preliminary interpretations regarding the processes outlined above.

**Early Xunantunich**

Although there are traces of Preceramic occupation, the earliest known constructions at Early Xunantunich date to the Cunil phase (1000-800 BC) when the early inhabitants modified bedrock and leveled the soil on a ridge overlooking the Mopan River. These efforts may have been associated with the construction of an E-Group complex, although the exact
timing of this needs further confirmation. E-Groups were the earliest forms of public architecture in the Maya lowlands and began as communal gathering locations for ritual celebrations (Brown 2017; Estrada-belli 2011; Inomata et al. 2013) most likely related to solar events. As the Maya became dependent upon agriculture, specifically maize cultivation, annual solar cycles were increasingly important. The E-Group complex at Early Xunantunich is the earliest E-Group documented in Belize to date, providing an unprecedented opportunity to study the roles played by ritual and ideology in the consolidation of a hierarchical political system. Thus, one of the major objectives of our fieldwork is to document the construction history of this early E-Group and its associated ritual deposits.

The eastern component of the Early Xunantunich E-Group is Structure E-2. Our work there has documented three phases and one sub-phase of construction, and we expect to find at least one earlier phase buried within the core of the mound (Brown 2017). We have published on much of these data (Brown 2013; 2017), so below we briefly summarize the architectural sequence.

The final construction phase, Structure E-2-1st, was poorly preserved, and most of the architectural stones were robbed in antiquity causing the construction fill to collapse. Although the form was difficult to reconstruct, we believe Structure E-2-1st was a Late Preclassic phase two-tiered pyramid set on a low platform. We have identified one sub-phase or modification of this phase. Within the summit of Structure E-2-1st, we encountered a burial chamber (Figure 3) (Brown 2013). The burial chamber had been re-entered in antiquity and most of the contents removed. We found one complete Middle Preclassic jar (presumably an heirloom) in the southeast corner of the chamber and three fragments of bone. The chamber was re-filled and capped with large flat stones that included a slate slab incised with a male individual in profile (Brown 2013).

Our excavations were able to reveal more about the penultimate phase (Structure E-2-2nd), which dates to the Middle Preclassic (ca. 600 BC). This phase was also a two-tiered pyramid placed on a low platform that had wings extending to the north and south (Figure 4). In its form, Structure E-2-2nd resembles a Cenote-style E-Group (Chase and Chase 1995). Structure E-2-2nd was associated with several constructions located just to the west. The area between Structure E-1—the E-Group’s western pyramid—and Structure E-2 is sloped, and our excavations revealed that this area was not a simple open plaza. Instead, the ancient inhabitants constructed a terraced platform leading up to a flat area in the center of the space. The east face of this plaza platform was well constructed. Rather than a central staircase, two paved ramps, roughly 6m wide, provided access to Structure E-2-2nd from the plaza. The plaza platform had two phases; both appear to date to the Middle Preclassic, coeval with Structure E-2-2nd. Notably, Structure E-2-2nd was the earliest phase of the eastern architectural
complex that had a western facing staircase, and was therefore associated with the plaza platform and western pyramid, Structure E-1.

Our excavations between Structure E-2-2nd and the base of the plaza platform did not reveal any formal dedicatory caches as is seen at other early E-Groups such as those at Cival and Ceibal (Estrada-Belli 2011; Inomata et al. 2013). We did encounter a cluster of roughly 40 small postholes concentrated on centerline within 3m of the basal step of Structure E-2-2nd, most of which were covered with a thin layer of white marl, suggesting that the thick marl floor in front of Structure E-2-2nd was patched after the posts were removed. This evidence suggests that a small wooden perishable structure was erected repeatedly in this location (Figure 5), which I have suggested was a wooden altar or mesa for periodic ritual celebrations (Brown 2017).

A penetrating centerline trench into Structure E-2-2nd revealed an earlier construction phase, Structure E-2-3rd. Although we originally thought this was a simple platform just under 1.5 meters tall without a central staircase (Brown 2017), our 2016 excavations, discussed in more detail below, have shown that this phase was a platform with three tiers. Structure E-2-3rd was built on a sticky, black paleosol which dates to the Early Preclassic and Preceramic periods and was intentionally levelled prior to construction (Brown et al. 2011).

Our 2016 excavations of Structure E-2-3rd yielded surprising results. As we cleared down in front of the basal tread of the platform wall, we encountered a line of stones that were parallel to the platform. We excavated the face of this line of stones and discovered that this was actually a lower terrace wall. Excavations within this area were extremely difficult due to the thick, white marl construction fill that was the predominate type of fill used within the early phases of Structure E-2. Once we exposed this portion of the building, we began to follow the summit of the upper terrace to the east to better understand the nature of the building, look for postholes and/or stone features on the summit. As we cleared back the thick white marl construction fill, we encountered several large stones that were not in their original placement. These cut and shaped stones were the same size and shape as the stones used in the lower two tiers of Structure E-2-3rd. Our excavations in this area also encountered dry laid cobble fill that extended above and below the level of the upper tier. This indicated to us that there had actually been a third tier that had been dismantled when Structure E-2-2nd was constructed. The builders utilized dry-laid cobble fill for the core of the building and wet-laid marl was used as a foundation below and behind the stone walls and steps. Wet-laid marl of this type solidifies and provides a solid foundation for building, making shifting less likely. At the nearby site of Blackman Eddy, similar construction and materials were used and cobble fill was found within the core of the earliest platforms (Brown 2003). The dry-laid cobble fill contained high densities of early Maya ceramics, Pre-Mamom in date (ca. 800-700 BC), many with post slipped incised designs.

The fact that Structure E-2-3rd may have been a three-tiered platform without a central staircase on the western face has challenged us to rethink the form and nature of this particular building phase for several reasons. First, the size of this building is much larger than expected for the early time period (ca. 800-700 BC). Assuming that the dismantled uppermost terrace was roughly the same height as the lower two terraces, the overall height of this building would be approximately 4-4.5m. Although this
may not seem lofty by Classic period standards, this would be the tallest Pre-Mamom structure documented in Belize, rivaling architectural features found at Nakbe, Guatemala. Second, the three-tiered form of this building is quite complex for this early period in Maya history and has not been found at other contemporary sites. Third, our excavations did not encounter a central staircase leading to the summit suggesting to us that either the staircase was outside of our excavation area or that we were excavating on the backside of the building. Both of these scenarios are interesting and suggest that the nature of the building changed significantly from the early Middle Preclassic to the late Middle Preclassic with either a shift in centerline or a complete re-orientation of the building to face towards the west.

The latter scenario is particularly intriguing due to the presence of a long, narrow feature just east of Structure E-2 (see Figure 2). Investigation of this feature where it was cut during the construction of the road leading to Xunantunich reveals that it was a natural bedrock outcrop that was modified by the ancient Maya to create a long platform (see Figure 2). In the earliest E-Groups at Cival and Ceibal, the first eastern architectural complexes were made by modifying bedrock to form a long, low platform (Estrada-belli 2011; Inomata et al. 2013). It seems plausible that the same was true at Early Xunantunich, and that Structure E-2-3rd was actually the western building in the earliest version of the E-Group coupled with the modified bedrock platform to the east. If this scenario is correct, then we might not expect to have a central staircase on the west face of the structure. This also might explain why we have not found a foundational E-Group plaza offering in front of Structure E-2, as it may be located in front of the modified bedrock structure. We plan to investigate this eastern structure more in the 2017 field season.

In order to gain a more robust understanding of the range of Preclassic ritual practices, it is necessary to investigate different kinds of early monumental buildings. To that end, we have been investigating the large flat-topped platform (see Figure 2) that forms the northern complex of Early Xunantunich, investigations that are the focus of Zoe Rawski’s dissertation. Designated Platform F1 of Group O/A2-1, this platform measures 100m by 115m and is almost 13m tall on the north side (Robin et al.1994). The platform was constructed on an elevated bedrock outcrop, taking advantage of this natural topography. Due to the size and form of this enormous platform, we suspect that this was a location for public performance and rituals. We began intensive investigations on this platform in 2015 with a 2m by 17m centerline trench on the southern face. These excavations revealed two construction phases, the earliest of which likely dates to the late Middle Preclassic or the beginning of the Late Preclassic period. We anticipate earlier phases buried within the mound and will conduct more intensive penetrating excavations during the 2017 field season to further document the construction sequence.

Our excavations revealed an important consecration cache placed within the final phase platform’s southern central staircase. This offering consisted of two small Terminal Preclassic ceramic bowls placed lip to lip that contained two greenstone effigies (Figure 6) (Rawski and Brown 2016). One of the effigies may be an heirloom piece, given that it has Middle Preclassic stylistic attributes. The second carved greenstone effigy more closely resembles other Late Preclassic effigies that have been identified as the Jester God. It is important to note that Jester God greenstone effigies and other related forms are often interpreted as diadem jewels that symbolize kingship (Freidel and Schele 1988). Although this cache only contained two greenstone effigies, it has affinities to a Late Preclassic cache found at the site of Cerros, Belize (Freidel and Schele 1988). This important lip to lip cache indicates that this platform was indeed targeted for focal ritual activities that may have been associated with the institution of kingship (Rawski and Brown 2016).

During the 2016 field season, we expanded our investigations on the southern face of Platform F1 to further document the evolving form of this enormous platform. One of the most exciting discoveries was a tiered stair block flanking the central staircase of Platform F1-2nd. Stair blocks of this nature are interpreted as performance spaces on Late Preclassic pyramids,
and we believe it functioned as a ritual performance location here, albeit earlier in date and different in nature than those on later pyramids. Additionally, these tiered stair blocks indicate that the central staircase was narrower than we anticipated, suggesting that access to the summit of the platform may have been somewhat restricted. Furthermore, we encountered evidence of stucco architectural decoration, quite possibly fragments of a deity mask façade. A sculpted semi-circular element was found adhering to the base of the upper stair block. Unfortunately, additional iconographic detail was not present as the upper portion of the tiered stair block was dismantled in antiquity, possibly to accommodate a wider staircase for the final phase.

Another interesting discovery that Rawski documented in the 2015 and 2016 field seasons was evidence that the early inhabitants intentionally covered the central staircase of Platform F1-2\textsuperscript{nd} in order to avoid damaging the stairs. A layer of clay fill was purposely placed above the stairs. Above this fill, the early inhabitants elevated the area with large limestone cobbles to increase the platform’s height and horizontal expanse. It was during this episode of architectural expansion that they dismantled the tiered stair blocks attached to the staircase. It is interesting to note that the ancient builders took great care to preserve the staircase but destroyed the stucco decorations that may have displayed significant symbolic meaning.

In addition to our work on the central staircase of Platform F1, we placed excavation units to locate the platform’s corner so that we could accurately determine the length of the southern face and better understand the ancient form of the platform. This operation was successful in locating the penultimate corner, however, the final phase corner appears to have collapsed or been dismantled in antiquity. In the upcoming field season, Rawski plans to mirror this operation on the east side of the platform in order to locate the southeast corner. These data will greatly enhance our ability to estimate labor investment in monumental building during the Middle Preclassic by allowing a more accurate estimate of total building volume. Rawski also plans to begin excavations on the platform’s significantly taller northern face in order to identify the form which would have been visible to nearby hinterland community of San Lorenzo, as this structure would have served as a powerful and highly visible symbol on the regional landscape. Our planned work for 2017 will allow Rawski to better interpret the function of this large platform and shed light on the types of public ritual and religious activities that the Preclassic Maya were conducting within the formal setting of Early Xunantunich.
Preclassic Occupation at Classic Xunantunich

Our investigations have shown that the Preclassic ceremonial center of Early Xunantunich was associated with other Preclassic settlement and ritual locations. The high Xunantunich ridgetop appears to have been home to a small settlement in the early Middle Preclassic period, when Early Xunantunich was growing into a center of ritual and political authority 800m to the east. Excavations by the Xunantunich Archaeological Project in the 1990s in Classic Xunantunich uncovered Preclassic features buried under El Castillo (LeCount and Yaeger 2010; Leventhal 2010), Structure A-11 (Yaeger 2010), and in Plaza A-II. Furthermore, excavations by MVPP in Plaza A-III in 2008 uncovered steps cut into bedrock that were associated with large numbers of Middle Preclassic ceramic sherds, suggesting that this location may have been occupied as early as the Middle Preclassic (McCurdy et al. 2011).

In 2015 and 2016, excavations by Jason Yaeger in Structure A-2 sought to delineate the pyramid’s Classic period construction phase. In an axial trench that extended below the central stairway, he found buried Middle Preclassic material and a badly eroded and disturbed marl floor. Excavations through this floor revealed an even earlier marl surface. The latter is associated with sherds dating to the Cunil period, ca. 1000-800 BC. This is further evidence that the Xunantunich ridgetop had a more extensive Preclassic settlement than previously known during the early Middle Preclassic time period.

Since 2012, MVPP has been investigating Group D, a group connected to the Classic Xunantunich site core by a sacbe (Figure 1). Group D was previously studied by Jennifer Braswell (1998) as part of the Xunantunich Archaeological Project. Whitney Lytle is investigating this group for her dissertation research focusing on ancestor veneration. Our work at this location has examined the occupation history of the eastern pyramidal shrine labelled Structure D-6 and central platform complex (McCurdy et al. 2014).

During the 2012 and 2013 field seasons, we discovered a low Terminal Preclassic platform measuring 3.5 meters by 6 meters under the plaza in front of Structure D-6. This platform had two construction phases. The earlier phase exhibited burning on the summit, which was covered with a dense layer of Terminal Preclassic ceramics. The ceramic fragments were predominately from serving vessels, and they were large with sharp angular breaks, suggesting that they were not redeposited from a midden or refuse. This deposit is likely the result of ritual activities. Furthermore, it is important to note that this platform aligns with the sacbe, suggesting the possibility that the sacbe may have been in use much earlier than previously determined.

Analysis of LiDAR data (Brown et al. 2016; Yaeger et al. 2016) indicates that Group D and the buried Preclassic platform shrine is directly aligned with the central axis of the Early Xunantunich E-Group (Figure 7). The fact that this platform was placed on a prominent hilltop aligned with the central east-west axis of the E-Group does not seem to be a coincidence. We argue that the Group D platform was a hilltop shrine and part of a larger Preclassic ritual landscape. Furthermore, the large quantities of smashed serving vessels on the platform may indicate a pilgrimage destination.

Lytle believes that this Late Preclassic hilltop shrine was chosen specifically for re-use by the Late Classic inhabitants. Evidence suggests that this sacred place on the landscape was repurposed and transformed into an ancestor shrine—Structure D-6—in the Late Classic. Lytle uncovered several elaborate Late to Terminal Classic interments in Structure D-6, one of which may have been the remains of a ritual specialist or shaman (Lytle 2017). Additionally, several eccentric cache offerings were found on centerline of the structure, further
supporting the ritual significance of this location. Two of the Late Classic eccentric caches appear to be dedicatory in nature and placed during periods of construction or expansion of Structure D-6, one at the base of the structure and one near the summit doorway (Figure 8). Other eccentric offerings were placed in association with an elaborate interment located near the summit. This crypt burial included a primary individual and several secondary burials. Full analysis of these burials and ritual offerings is ongoing, but preliminary analysis of the eccentrics shows the use of obsidian and chert as well as a variety of forms including scorpions, centipedes, rings, disks, and bundle forms. These forms are similar to other eccentric forms found in Belize (Meadows 2001; Iannone 1993).

Lytle suggests the re-use of this special location may reflect a strategy by Late Classic elites to intentionally repurpose historic sacred and/or ancestral locations. The appropriation of sacred places on the landscape for the construction of an eastern shrine may have enhanced the status of the Late Classic Group D residents and/or legitimized their elevated position within the Xunantunich polity.

**Hinterland Community of San Lorenzo**

To add to our understanding of the Preclassic settlement associated with the ceremonial center of Early Xunantunich, we have been conducting investigations at the nearby hinterland site of San Lorenzo. Located approximately 1.5km northeast of Early Xunantunich (Figure 9), San Lorenzo is best known for its Late Classic settlement, which consisted of five discrete settlement clusters and SL-13, a centrally located ritual-administrative complex (Yaeger 2000). MVPP’s investigations of San Lorenzo have uncovered evidence of both Middle and Late Preclassic occupation.

In 2014, during his dissertation research on Late Classic household economy, Jason Whitaker encountered a collapsed Middle Preclassic chultun within the San Lorenzo settlement cluster. This chultun contained a dense deposit of ceramics dating to the early facet of the Jenney Creek complex, coeval with the earliest known version of the E-Group at Early Xunantunich (Structure E-2-3rd, discussed above). Ceramic analysis of the chultun deposit is ongoing as part of Alessandra Villarreal’s dissertation research. To date, this is the only Middle Preclassic domestic feature found at San Lorenzo, although high densities of Middle Preclassic ceramic material in SL-13 and other Late Classic contexts suggest a scattered Middle Preclassic settlement in this location.

Structure 7 as part of a larger program of dissertation research designed to understand the nature of the area’s Late Preclassic community and its relationship with Early Xunantunich. This research is important, as Maya archaeologists have traditionally focused much of their attention on public ritual activities within formally organized ceremonial centers and due to this, we know less about public ritual activities within smaller communities. This is especially true for the Preclassic period and, thus, our research at San Lorenzo provides an opportunity to shed light on Preclassic hinterland settlement dynamics and ritual activities.

Ingalls excavations revealed that SL-13 Structure 7 was a Late Preclassic round platform that was 4.7m in diameter, much smaller than a typical house platform (Figure 10) (Ingalls 2016). Furthermore, she found no evidence that the platform had a superstructure; instead, it was likely a small stage for community centered rituals. Data from other sites in the Maya lowlands has shown that some round platforms functioned as ritual places and were associated with nearby Late Preclassic household groups (Aimers et al. 2000). This raises the possibility that Late Preclassic households will be found near SL-13 Structure 7, a possibility that will be investigated in future seasons.

It is important to note that the Classic Maya chose this location to build the area’s largest and most important ritual-administrative complex directly above SL-13 Structure 7. Artifact analysis clearly shows that while the types of ritual events enacted at this location changed over time, the importance of this sacred place persisted from the Late Preclassic to the Terminal Classic. In its earliest form, the round SL-13 Structure 7 platform would have served as a stage for ritual spectacles supported and attended by the surrounding community (Ingalls 2016). Later structures served a similar ritual function, while also serving as a space for feasting and explicit political displays of power (Yaeger 2000).

The continual reconstruction of ritual space over centuries provides another example of appropriation and re-use of a sacred location, similar to the case of Group D discussed above. The south patio of SL-13 functioned as a burial place for certain members of the San Lorenzo community during the Late Classic and Terminal Classic periods. To date, nine primary burials have been encountered, with two showing signs of reentry and postmortem manipulation, possibly indicating ancestor veneration activities. The fact that certain members of this hinterland community were buried within a public-ritual complex is interesting. Future research at this location promises to shed light on the importance of public rituals in the formation and integration of a small Preclassic hinterland community, as well as the reuse and transformation of a Preclassic sacred place to a Late Classic ceremonial complex.
Summary and Conclusion

In this chapter we have presented a summary of our recent research related to Preclassic ritual and religious practices at Early Xunantunich and the surrounding settlement zone. At Early Xunantunich, we have documented the history of a Preclassic E-Group complex and its associated ritual features. It represents the earliest public ritual space created by the inhabitants of this area. Although this E-Group was abandoned at the end of the Terminal Preclassic, it remained a sacred place that was periodically revisited for ritual purposes through the Early Postclassic. Associated with this E-Group complex was a large, flat-topped platform that also was a venue for ritual activities. The penultimate phase of this platform exhibited stucco decorations flanking the central staircase. The final construction event was consecrated with a lip to lip cache containing two greenstone effigies of the type often identified as royal diadem jewels.

Early Xunantunich was also associated with a Late Preclassic hilltop shrine in Classic Xunantunich’s Group D, where a small rectangular platform was built on a hilltop in direct east/west alignment with the early E-Group. The presence of large amounts of broken Late Preclassic serving vessels suggests that this platform was a venue for ritual pilgrimages or feasts. During the Late Classic period, this hilltop shrine was transformed into an eastern ancestor shrine and remained an important ritual place on the landscape. A similar process of appropriation of earlier sacred spaces occurred in the hinterland site of San Lorenzo. There, a small Late Preclassic round platform that likely served as the ritual focus of an early community was the location chosen for a ritual and administrative complex in the Classic period.

These data demonstrate that a diachronic and holistic approach to the study of early sacred places and ritual practices helps us understand the changing roles that those places play in ancient political dynamics. Such an approach also reveals the ways in which some places, like Structure E-2 in Early Xunantunich, continue to be active sacred spaces in social memories through repeated ritual events. In other places, like those discussed in Group D and San Lorenzo, these processes are more intensive, and involve the appropriation of earlier sacred spaces through the construction of new venues for ritual practices. These often involve a transformation or repurposing of the earlier sacred spaces within a new social and political setting, grafting new institutions and practices onto ancient sacred spaces as a way of legitimating them.

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7 POLITICAL CHANGE EXPRESSED IN PUBLIC ARCHITECTURE: THE TERMINAL CLASSIC MAYA CIVIC COMPLEX AT ACTUNCAN, BELIZE

David W. Mixter

In contrast to the longstanding focus on the 9th century political and demographic collapse in the southern Maya Lowlands, little attention has focused on the strategies of remnant groups in the immediate aftermath of this collapse. In the absence of divine kings, individual communities first negotiated new forms of political authority and legitimacy at the local level. One such community was located at the site of Actuncan in the lower Mopan River Valley of western Belize. In contrast to this regional trend, the population of Actuncan’s site core remained steady throughout the Terminal Classic period (A.D. 780 to 1000). Terminal Classic political life at the site is marked by the construction of a large public platform (Group 4) placed in the middle of the site’s Classic period core. In this paper, I compare Group 4 to Actuncan’s Late Classic noble palace using three criteria: access; each space’s potential to be used for state performance; and daily use. During the Terminal Classic period, the open architectural form and evidence for public events at Group 4 indicate a shift from the exclusionary power strategies that took place in the Late Classic palace to more integrative practices after the collapse of divine kingship.

Introduction

Near the end of the Late Classic period, the use of Actuncan’s palace came to a dramatic end (Mixter et al. 2013). Its vaulted roof was collapsed, vault stones were placed in the room’s doors, and the rooms were filled in with rubble. Finally, a plaster cap was placed over the rubble fill, effectively ending the building’s period of use. Previously, this palace had served as a noble residence, a stage for political spectacle, and the primary location of civic administration. Soon after, during the Terminal Classic period (A.D. 780 to 1000), many of the building’s cut stones were stripped and repurposed in the construction of Group 4, a new civic center that replaced many of the administrative and performative functions of the Classic period palace, but in a very different architectural package.

In 2010, researchers on the Actuncan Archaeological Project (AAP) were surprised to encounter a substantial Terminal Classic period occupation at the site of Actuncan (LeCount et al. 2011), located in western Belize (Figure 1). Previous research by James McGovern (2004) had indicated that the site’s major monumental construction dated to the Late Preclassic (400 to 150 B.C.), Terminal Preclassic (150 B.C. to A.D. 250), and Early Classic (A.D. 250 to 600) periods, with only limited renovation in the Late Classic period (A.D. 600 to 780) and a single ritual deposit dating to the Terminal Classic period. Additionally, earlier AAP testing in household contexts had identified an expected Late Classic period occupation, but little evidence for Terminal Classic occupation (LeCount 2004; LeCount and Blitz 2005). Although our subsequent research has confirmed that most of Actuncan’s monumental architecture was constructed during the site’s Late Preclassic to Early Classic apogee (Donohue 2014; Heindel 2016; Mixter et al. 2013; Simova and Mixter 2016), the Terminal Classic period resumption of monumental construction complicates an already complex
Figure 2. Map of Actuncan’s site core. Note the location of Structure 19a, Group 4, and Group 8.
local political landscape during the Late and Terminal Classic periods. Actuncan’s urban plan reflects the final result of this palimpsest construction process (Figure 2).

Late Classic period politics in the upper Belize River Valley were dominated by the hegemonic rulers centered at the site of Xunantunich, located just 2 km south of Actuncan (LeCount and Yaeger 2010; LeCount et al. 2002). However, by the Terminal Classic period, the power of Xunantunich’s king had begun to erode (Ashmore et al. 2004; Yaeger 2008). Residents of the hinterlands emigrated and elites at other local centers, including Buenavista del Cayo and Cahal Pech, began to bury their dead in the manner of divine kings (Awe 2013; Helmke et al. 2008). Similarly, the re-initiation of monumental construction at Actuncan seems to reflect a return to local rule at a time when Xunantunich was contracting. Within the Xunantunich site center, activities became increasingly focused on a single public plaza as the Late Classic period ruler’s palace was sacked and other sections of the site center fell out of use (Jamison 2010; Yaeger 2010).

Of course, the diminution of Xunantunich’s ruler fits within the broader pattern of social change known as the Classic Maya Collapse evident across the Maya world at this time. Across the southern Lowlands, royal regimes collapsed and large proportions of the population emigrated to permanent water sources and more stable regions. As divine kingship in the Classic period model was slowly abandoned as a political institution (Demarest et al. 2004; Iannone et al. 2016), leaders and communities adopted new political organizations anchored around different kinds of political strategies.

My research at Actuncan aims to understand changing political strategies evident at the site in the Terminal Classic period. In this paper, I compare public architecture used during the Late and Terminal Classic periods to explore how political strategies differed between the Late Classic period, when the site was part of the Xunantunich polity, and the Terminal Classic period, when authority appears to have been resituated at Actuncan. In the context of the broader known shifts in ancient Maya political organization, the differences between Structure 19a and Group 4 are illustrative of how political strategies may have changed in many places during the Maya Collapse.

Architecture as Instruments of Power

For the ancient Maya, monumental buildings were important instruments of power that reproduced social positions within Maya society. Classic period palaces, in particular, promoted the hegemony of rulers and the royal courts that lived and worked in them. These large, sprawling complexes emphasized the integral link between power and ruling courts by locating the practical center of power within an elite residence (Christie 2003; Inomata and Houston 2001b).

However, before and after the Classic period, key political functions were often not located within a residence. Indeed, any monumental space that serves as a venue for political action or political administration is instrumental to the exertion and legitimation of power; as such, variations in the spatial distribution of political functions and residences of the powerful speak strongly to variability in political organization and the political strategies of the powerful.

During the Terminal Classic period, a time of known political rupture, changes in the spatial arrangement of political functions provide important clues into changing political strategies adopted by individual communities during this time. Here, I focus on three aspects of civic architecture that point to changing political strategies from the Late Classic to Terminal Classic periods: 1) access to spaces of political significance; 2) the public performance of authority; and 3) the location of the day-to-day business of polity administration.

Access. Maya palaces were typically complex spaces composed of multiple patios formed by monumental range structures. They often had only a single public entrance at the top of a steep staircase. For most Maya, access to the palace would only have been granted when they had special business. As a result, palaces’ impressive facades would have shielded occupants of inner courtyards and rooms from the prying eyes of Maya commoners passing nearby. Because of their dramatic form, palaces
were well suited to emphasize the formal social elevation of those who had access.

**Performance.** In addition, monumental architecture serves as a primary performance where individuals could be elevated over a gathered crowd either to perform or observe from an elevated locale (Reese-Taylor and Koontz 2001). Monumental staircases that fronted many Classic period palaces provided one such venue. These staircases often overlooked broad plazas and provided a form of stage (Inomata 2006). Whether the ruler was speaking from the stairs or watching a performance in the plaza below, his position above the crowd would have emphasized his social separation from the masses. The particular activities that took place in these spaces point to the level of social cooperation inherent in each form of political rule.

**Daily Use.** In addition to serving as royal residences and symbols of royal power, palaces were the primary location of civic administration within Maya polities. There, the king and his administrators held audiences with foreign dignitaries, adjudicated differences between members of the polity, and collected tribute (Inomata and Houston 2001a). Palaces also hosted courtly artisans who produced goods for elite or ritual consumption, which were then stored within the palace complex to restrict access (Inomata 2001). Each of these activities was critical to day-to-day administration of the polity and reflects the pragmatic deployment of power to facilitate the operations of the state.

Although the performative aspects of public architecture have often been emphasized because of their obvious awe-inspiring monumentality, the daily operations of the state may have been more essential to maintaining the division of power and ensuring the continuity of Maya polities. As such, it would not be surprising if the daily functioning of state spaces changed fundamentally after the Classic period ended and political systems transformed. How these transformations happened speak to which aspects of state apparatus retained significance after the collapse.

The particulars of how each of these political tools were deployed may vary between centers, but what is clear is that Classic period palaces served as critical instruments for the exertion and maintenance of courtly power. As I will show, the Terminal Classic Maya at Actuncan drew on these political tools in a different set of ways to deploy an inclusive political strategy.

**Actuncan’s Urban Landscape**

Located along the lower Mopan River Valley of western Belize, Actuncan is a long-lived site situated within a dynamic landscape of competing city-states. From the Middle Preclassic to the Terminal Classic period, Actuncan and its neighbors, Xunantunich and Buenavista del Cayo, each served as the local capital during different time periods.

In the Late Classic period, Actuncan was a secondary center within the Xunantunich polity. At this time, Actuncan’s largest range structure, Structure 19a, was renovated into a noble palace, likely occupied by a noble vassal of the king of Xunantunich (Mixer et al. 2013). To do this, Group 8, a multi-patio residential complex, was added to the north side of Structure 19a (Figure 3). This transformed Structure 19a from a single range structure into a modest palace.

During this time, Actuncan’s center was organized as it had been originally laid out during the Preclassic period. Structure 19a overlooked the broad Plaza C to its south and south east. This space is the largest plaza in the Actuncan core and as such could have been occupied by the largest number of constituents. Additionally, this space is directly accessible from the formal entrance to the Actuncan site core, located to the east of Structure 15.

The space directly to the south of Structure 19a forms a particularly important ceremonial district occupied by a ball court (Structures 13 and 14). From the top of Structure 19a, leaders could have easily observed ceremonial ball games (and been observed watching those games). Additionally, from the Structure 19a central staircase, ritual processions could have passed on a straight line south through the ball court, along a formal sacbe, into Plaza A, the group’s primary triadic temple group (Figure 4). When constructed during the Preclassic period, this processional
pathway may have created a metaphorical connection between the ruler’s center of worldly, administrative power to the center of supernatural power, focused in the triadic temple group (Mixter 2016). Along the way, the ball court may have served as a metaphorical portal connecting the ruler’s everyday power and the supernatural source of that power’s legitimation.

In the Late Classic period, this space appears to be relatively unmodified. Indeed, evidence for minor renovations within Plaza A paired with construction in the ball court and on Structure 19a indicate that the local rulers used or at least alluded to this old metaphorical connection. However, with the addition of a multi-patio residence to Structure 19a, the connotations associated with this space may have been much different. I suggest that rather than simply connecting the ruler’s office with supernatural legitimacy, the creation of a palace at the northern end of this processional path would have connected its residents, likely a noble lineage, with the same supernatural connections.

In the Terminal Classic period, the kings of Xunantunich were diminished in power as the authority of divine kings gradually collapsed across the Maya world. In contrast to the regional trend of depopulation, Actuncan’s population remained comparatively stable (Mixter et al. 2014). Members of the Actuncan community chose to remain and the evidence indicates that the site center was revived as a local capital. Unlike the Terminal Classic period revivals at Buenavista and Cahal Pech where royal-style burials have been identified, Actuncan’s residents seem to have tried something different. They appear to have rejected sacred kingship in favor of some new kind of political organization.

This shift in political legitimation is evident in the reorganization of Actuncan’s urban core. In the Terminal Classic period, changes to the urban plan mark the broader rejection of divine rule. By dismantling Structure 19a and constructing a building across the entrance of the triadic temple group, the community cut off the Classic period processional path. Furthermore, Preclassic and Classic period monumental architecture in the northern part of the site was dismantled, leaving Group 4 as the only operational civic space. Plaza A remained in use as a ritual locale, but it was spatially separate from Group 4. This separation demarcated distinct civic and ritual zones, a rejection of the spatial integration that symbolized divine kings’ melding of political and cosmological duties.

Structure 19a and Group 4 are clearly very different kinds of civic spaces, each adapted to the political institutions in place when
it was in use. In the section that follows, I will compare Actuncan’s palace and Group 4 along the three dimensions described above. Because we have previously published on the details of Actuncan’s palace in this venue (Mixter et al. 2012), I will only briefly review our understanding of this structure and then consider Group 4 in greater detail.

**Structure 19a**

Although Structure 19a and Group 8 form a relatively small ruler’s palace that likely housed a noble administrator, our investigations indicate that the space served all the functions that typically took place in a royal palace.

**Access.** Like larger Classic period palaces, access was limited to the interior of Actuncan’s palace. Structure 19a was only accessible by a steep staircase on the building’s south side. The primary courtyard of Group 8 was only accessible through a small private back entrance identified in the group’s northwest corner (Figure 5). Furthermore, Group 8 would have been lined by perishable structures that limited visibility of things going on inside the group’s courtyards. Masonry post braces along the group’s northern edge point to the presence of perishable curtain walls constructed of wooden posts that would have prevented outsiders from seeing activities inside (Figure 6).

**Performance.** Structure 19a and Plaza C to the south provided a monumental venue where the ruler could host spectacles. From the summit of Structure 19a, the ruler and his court could have been seen by the entire community gathered in the plaza and alley of the ballcourt below. Furthermore, the ruler could have sat at the summit and observed ceremonial ballgames taking place right at the base of his home. He would have been observed by the gathered masses sitting in full splendor at the building’s summit. Finally, as already discussed, Structure 19a would have been the starting point for ritual processions. These kinds of performances would have emphasized the court’s social elevation and the ruler’s cosmological role.

**Pragmatics of Daily Use.** Actuncan’s palace was also an important center for the day-to-day administration of the polity. Group 8 was likely primarily used as residence for the noble lord and his family. A previous study indicated that the surface of Group 8’s patio featured an un-patterned distribution of geochemical signatures that indicate this space was used for generalized residential activities (LeCount et al. 2016).

In contrast, Structure 19a served as the site’s primary administrative and audience space. Room 3, Structure 19a’s central room contained a broad L-shaped bench that likely served as a venue for the ruler to hold audiences (Figure 7). Evidence of discrete deposits of phosphorous on the bench point to the repeated placement of organics, likely dishes containing food, in specific places on this bench. This pattern may point to shared meals following specific ritualized protocols as might be expected if a leader were meeting with courtiers.
or visiting dignitaries (LeCount et al. 2016). In contrast, in Room 2 the distribution of phosphorous around the foot of the bench in combination with the presence of heavy metals used in pigments indicates that this space was multifunctional. This space could have been used for storage of organics, such as food, pelts, or feathers, and ritual paraphernalia decorated in bright colors (LeCount et al. 2016). One possibility is that this room was used for the reception and storage of tribute goods.

Even though Actuncan’s palace was likely occupied by a noble vassal, the noble palace likely fulfilled many of the functions typically found in royal palaces. In addition to serving as a residence, Structure 19a and Group 8 likely served as a center of political meeting and polity administration. Additionally, its size and exclusivity created a clear message of difference between Actuncan’s ordinary residences and the lineage that occupied Group 8. Through performance, Structure 19a elevated the residents of Group 8 and linked them metaphorically to a source of supernatural legitimacy. In other words, Structure 19a formed the lynchpin that connected Actuncan’s leading family to polity administration and a deeper cosmological form of legitimacy.

**Group 4**

In 2013, I directed extensive excavations at Group 4 to evaluate how Terminal Classic political strategies differed from those utilized by Classic period kings. Preliminary research by the AAP in 2010 revealed that Group 4 is one of the few examples of Terminal Classic monumental architecture in the region (LeCount et al. 2011; Mendelsohn and Keller 2011). Group 4 is arranged on a broad platform with an area of about 800 square meters. Buildings on the north, west, and south sides of the platform surround a central patio (Figure 8). The eastern side of the patio is open and overlooks Plaza D.

Group 4’s size and consequent effort in construction imply that this complex was likely the primary location for the performance and practice of political authority at Actuncan and, possibly, the lower Mopan Valley. Based on the C-shaped arrangement of these buildings and the general paucity of artifacts, Keller (LeCount et al. 2011) hypothesized that this complex may have been a popol nah or council house, following identifications elsewhere (Bey et al. 1997; Fash et al. 1992). While I will not directly address their council house hypothesis here, Mendelsohn and Keller’s (2011; LeCount et al. 2011) research did raise the question whether the

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**Figure 7.** Figure showing the arrangement of Structure 19a’s eastern three rooms (Mixter et al. 2013: Figure 4).
construction of Group 4 reflected a shift from the exclusionary power strategies common to the Classic period to a more corporate power strategy, with greater power sharing (following Blanton et al. 1996). In contrast to the exclusionary power embodied by Structure 19a, I would expect a corporate power structure to be based around an easily accessible civic space that hosted inclusive performances. Additionally, I would expect the day-to-day civic functions to be inclusive in nature. The data I present below indicate that more inclusive political principles were at play in Terminal Classic Actuncan as compared to the Late Classic period.

To this end, I undertook extensive excavations of Group 4 to define its surface architecture and identify activity areas. In total, 354 square meters were excavated, partially uncovering the plans of the group’s bounding structures. To look for direct evidence of the activities that took place in this space, 132 microartifact samples were collected and analyzed along with 279 geochemical samples. These data are directly comparable to the chemical data from the Classic period palace summarized above (see also LeCount et al. 2016). These data will be discussed in summary here. A full description of these data can be found elsewhere (Mixter 2016).

**Access.** The first communal aspect of Group 4, is its accessibility. In contrast to the closed courtyards of the Classic period palace, Group 4’s buildings were built around a large, elevated patio. A broad staircase allowed unfettered access to Group 4’s low patio from the large public plaza to the east. In effect, Group 4 and Plaza D formed a single broad continuous open space. Once within the plaza, community members would have had full access to Group 4 and all of its constituent buildings. Given declining regional populations during the Terminal Classic period and the low population of Actuncan’s urban core, it seems likely that Group 4 and Plaza D could have accommodated the entire population of the polity.

**Performance.** Several lines of evidence point to Group 4’s use as a venue for performance and periodic community gatherings. First, excavations revealed that the group featured a slightly pitched patio surface that rose from east to west and resulted in a total difference in elevation of over 80 cm. This pitch may reflect the use of the platform as a stage. The raised western portion of the platform would have allowed performers in the back to be seen by an audience located on the ground. Performance events would have included the participation of part of the community as performers and the remainder as an audience.

Additionally, chemical and microartefact data indicate that the Group 4 patio was a venue for food production and consumption. These data provide evidence for two discreet activity zones, one associated with the Group 4 patio and a second associated with structures. The concurrent high densities of phosphorous, potassium, magnesium, and strontium in the northeast quadrant of Group 4’s patio point to the presence of wood ash and organics. The ceramics may have been the remains of those broken in the food service process. One interpretation of these data is that food...
production and consumption were going on in this space. Given the public nature of this location, I suggest that this food production was likely ceremonial. The low elevation of Group 4’s patio suggests that those in Plaza D participated in these food production and consumption ceremonies. These kinds of activities point to inclusive feasts and performances aimed at encouraging participation in Actuncan’s Terminal Classic public life.

In contrast to the Classic period palace, there is no architectural evidence to indicate that performances at Group 4 were presided over by a single leader. Only one bench was encountered on the entire platform, located in a secluded corner. We found no evidence for a visible and centrally located bench or platform appropriate to elevate a presiding lord. Instead, the group’s wide accessible space likely encouraged broad participation in political life.

Pragmatics of Daily Use. Like the Classic period palace, Group 4 was a venue for day-to-day civic administration; however, the kinds of activities that took place inside buildings differ.

Within Group 4’s interior spaces, we encountered very low chemical enrichment. This indicates that these spaces were not used intensively for production or consumption activities. This pattern contrasts with spaces in the Classic period palace, where high concentrations of heavy metals point to elite crafting or the storage of ritual regalia (LeCount et al. 2016). The lack of enrichment inside Group 4’s buildings indicates that these spaces may have been used primarily for gathering, meeting, or storage, not activities such as food consumption and craft production.

Excavations of Structure 34a in Group 4’s south-east corner revealed two rooms separated by a masonry wall. These rooms are the only known example of private space within Group 4. The small southern room contains a small bench and can be accessed by two 1 m wide doors located to the east and the south. The superstructure is anchored by a single square column in the southeast corner, leaving the space quite open to the outside. Given these rooms’ small size and quiet chemical signatures, they could have served as storage or administrative space.

Structure 35 on Group 4’s south edge was the most thoroughly investigated of all the buildings on the platform’s surface. Our excavations revealed that the building was a tandem structure with a long open front gallery and a closed back room covered by a perishable superstructure. The front room would have been suitable for small gatherings or public audiences, while the back room would have provided space for private meetings. This spatial arrangement is similar to the cabildo described at Zinacantán (Vogt 1969).

Conclusions

Group 4’s open layout and evidence of communal activities indicate a shift in the kinds of political strategies deployed at Actuncan in the Terminal Classic period. In contrast to the earlier palace, Group 4 was open to the entire community. By allowing access to the patio, the civic business taking place in the group’s buildings would have been visible to all. Similarly, performances and feasts that took place within Group 4 appear to have emphasized inclusivity rather than exclusivity, with gatherings moving freely from Group 4 to Plaza D below. Finally, Group 4’s interior spaces facilitated gathering and cooperation. Unlike the Classic period palaces, we found no evidence that Group 4 was used as a residence or to produce ritual objects.

The short-lived renaissance at Actuncan during the Terminal Classic period was important because it provides evidence for the transition away from divine kingship to new forms of authority. The architecture and activity patterns uncovered on Group 4 show how new political strategies were adopted in the wake of the failing divine kings. Importantly, the trend towards more corporate decision-making foreshadowed the greater flexibility of Postclassic Maya political structures and the council-based rule of Postclassic multepal councils. Furthermore, principles of egalitarianism and kin-based leadership continue to be important to the organization of Maya communities today. Sites like Actuncan provide a window into how more egalitarian principles emerged from the stark hierarchy of the Classic period.
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AND NOW FOR SOMETHING COMPLETELY DIFFERENT: ARCHITECTURAL VARIABILITY AS A SIGNATURE OF DYNAMIC SOCIAL RELATIONS AT MIDDLE PRECLASSIC CAHAL PECH

Sherman W. Horn III, James F. Garber and Jaime J. Awe

Investigations of Middle Preclassic communities in Belize rely heavily on architectural analysis, as the remains of ancient structures represent one of the largest and most durable categories of material culture from this period. Architecture can reflect patterns in social organization and interaction, and comparisons of architectural investment have frequently been used to identify differences in status among social groups. Excavations at Cahal Pech by the Belize Valley Archaeological Project revealed an unexpected level of variability among several Middle Preclassic architectural features and construction sequences beneath Plaza B. Construction activity in Plaza B resembled neither the carefully planned monumental templates of Middle Preclassic Petén communities nor the incremental superposition of domestic platforms found in northern Belize, but was rather a punctuated equilibrium of building “events” that occurred at different tempos in different areas. Differential investment in architecture suggests that social relationships at Middle Preclassic Cahal Pech may have been more fluid and dynamic than would be expected in a community where social rank was hereditary and well established. This paper synthesizes Middle Preclassic architectural data from beneath Plaza B and explores their implications for understanding the development of social complexity in the Maya Lowlands.

Introduction

Investigations in the Belize Valley document the deep roots of settlement in the Maya Lowlands, where several Classic-period centers were founded around 1000 BC and continuously occupied for nearly 2000 years. Middle Preclassic (c. 900 – 400 BC) architectural features constitute some of the best-preserved remains from these initial settlements, and archaeologists have recognized their potential to illuminate aspects of early Maya social organization and community structure (e.g., Doyle 2012; Estrada Belli 2011; Inomata et al. 2013). Potential differences in access to labor, resources, and specialized construction knowledge among social groups can be investigated by examining building materials and technologies, and changing architectural sequences provide clues to social relations and community structure.

The Middle Preclassic was a critical period in the rise of complex societies throughout Mesoamerica. Research in the Belize Valley has generated a large dataset of Middle Preclassic architecture from multiple settlements (e.g., Awe 1992; Brown 2003; Healy et al. 2004), facilitating comparisons of architecture and syntheses of community development at the local and regional scales (e.g., Horn 2015). Work at Cahal Pech, a medium-sized hilltop center near the confluence of the Mopan and Macal Rivers, has contributed substantially to this growing corpus of Middle Preclassic architectural data.

This paper summarizes architectural data recovered from six excavation seasons at Cahal Pech by the Texas State University Belize Valley Archaeological Project. We examine Middle Preclassic construction sequences across Plaza B to produce a synthetic picture of social development in an early Maya community. Architectural variability beneath Plaza B suggests Cahal Pech was a dynamic landscape of shifting social relations from the earliest days of its settlement. We offer a short introduction to Middle Preclassic Maya architecture to place the data from Cahal Pech in a broader context.

Middle Preclassic Maya Architecture: A Brief Introduction

Archaeologists had few examples of Middle Preclassic architecture to examine prior to the 1970s, which led to interpretations of the Maya Lowlands as a “cultural backwater” in comparison to precocious monumental developments in neighboring regions of Mesoamerica (Lowe 1977:198). Subsequent work across the region has led to the revision of this view. Large Middle Preclassic public structures were discovered in southern and central Petén, Guatemala (e.g., Doyle 2012; Hansen 2005; Inomata et al. 2013), across the
Architectural Variability at Middle Preclassic Cahal Pech

Yucatán Peninsula of Mexico (e.g., Anderson 2011; Andrews V et al. 2015; Stanton and Ardren 2005), in the Belize Valley (e.g., Awe 1992; Brown 2003; Garber et al. 2004; Michelleti and Powis 2015), and in northern Belize (e.g., Horn et al. 2016; Pendergast 1981). Construction materials, sizes, shapes, and configurations varied among these early public structures, but their distribution across the Maya Lowlands was widespread.

Researchers in northern Belize have compiled an impressive dataset of Middle Preclassic residential architecture, which provides information on the daily lives and social organization of early community members. Large-scale excavations at Cuello documented the development of a domestic patio group throughout the Middle Preclassic, which included extensive renovations and expansion of several residential and ancillary structures (e.g., Gerhardt 1988; Gerhardt and Hammond 1991). Excavations at Altun Ha (Pendergast 1982), Colha (e.g., King and Potter 1994; Sullivan 1991), and K’axob (McAnany 2004) also produced stratified sequences of architectural renewal that suggested residential stability and growth through time. Domiciles in northern Belize were relatively simple structures, consisting of plaster-floored living surfaces cut by postholes, hearths, and burials, which were gradually elevated into stone-faced platforms as households grew and prospered. The earliest examples tended to have apsidal plans, which were replaced by rectangular structures in later times. Patterns of steady, sequential residential growth were so well-defined in this area that they have become something of an expectation among researchers investigating Middle Preclassic communities (Horn et al. 2016).

Sites in the Belize Valley have also yielded Middle Preclassic domestic structures, although construction patterns and materials differ from those recorded in northern Belize. The oldest domestic structures known from Cahal Pech (Awe 1992) and Blackman Eddy (Brown 2003; Garber et al. 2004) were demolished early in their respective sequences and covered by public platforms, which were then expanded and renovated for centuries. At Pacbitun, new residential platforms were built atop existing structures but were realigned to different orientations (Healy et al. 2004; Hohmann and Powis 1996). Plaster was not uniformly used as a flooring material in Belize Valley domiciles, and few examples of associated postholes or hearths have been discovered. Local builders used limestone cobbles, cut limestone blocks, and different colored marls to construct residential platforms and associated surfaces, which they built in different shapes and sizes that changed through time (Horn 2015; Peniche-May 2014). The emerging picture of variability in early Belize Valley residential architecture diverges significantly from patterns in northern Belize, which suggests different trajectories toward social complexity were followed in the two areas. We emphasize architectural variability,
and its possible social correlates, throughout the remainder of this paper.

The Belize Valley Archaeology Project: Overview

The Belize Valley Archaeological Project (BVAP) excavated in Plaza B from 2004 to 2009 (Figure 1). Previous testing in Plaza B by Jaime Awe (1992) and David Cheatham (1996) identified Terminal Early Preclassic and Middle Preclassic architectural features buried by later plaza floors, which suggested a small village existed at Cahal Pech by at least 1000 BC. Trenching operations greatly expanded this dataset, and descriptions of architecture and caches from these excavations have been published (Garber and Awe 2008; Garber et al. 2006, 2007).

Forty-five units of varying sizes were excavated by BVAP in Plaza B, covering a total area of 159 m², and approximately 85% of this area (135 m²) exposed and/or penetrated Middle Preclassic occupation levels. These excavations documented numerous architectural features, construction sequences, bedrock modifications, and special deposits, and they produced a wealth of material culture comprising exotic materials, personal adornments, ceremonial objects, and quotidian tools (Figure 2). Large quantities of discarded pottery fragments, lithic production debris, and faunal remains were also recovered. The composition of these artifact assemblages suggested to Horn (2015) that most of the platforms beneath Plaza B were residential, with some possible exceptions that will be discussed below.

Figure 2. Middle Preclassic artifacts (clockwise from upper left): Ceramic earspools, green-stone triangulates, chert drills, stone grinding implements, obsidian blades and flake, marine shell ornaments, ceramic figurine heads.
Table 1. Correspondence of new architectural phases to existing sequences.

<table>
<thead>
<tr>
<th>Phase</th>
<th>Horn Phase</th>
<th>Cahal Pech Sequence</th>
<th>Barton Ramie Sequence</th>
<th>Approximate Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early</td>
<td>0, I</td>
<td>Terminal Cunil/Early Kanluk</td>
<td>Early Facet Jenney Creek</td>
<td>1000/900 BC</td>
</tr>
<tr>
<td>Middle</td>
<td>II, III</td>
<td>Early Kanluk</td>
<td>Late Facet Jenney Creek</td>
<td>900 – 600 BC</td>
</tr>
<tr>
<td>Late</td>
<td>IV</td>
<td>Late Kanluk</td>
<td>Late Facet Jenney Creek</td>
<td>600 – 400 BC</td>
</tr>
</tbody>
</table>

**Middle Preclassic Architecture at Cahal Pech**

Horn (2015) used stratigraphic data and associated ceramics, with temporal assessments provided by project ceramicist Lauren Sullivan, to develop a five-phase construction sequence for architectural development beneath Plaza B. We conflate some of these phases (and numerous sub-phases) due to space constraints and to align them with local ceramic sequences (Table 1). The architectural phases presented below capture material variability across space and important changes through time.

**Early Phase**

The fragmented remains of Early Phase features were located in multiple excavation units across Plaza B (Figure 3). Several of these features were cut into bedrock, including a large pit at the northern end of the trench and a two-step stair at its southern limit. A series of postholes, placed in no discernible pattern, were cut into bedrock in the south-central area of the trench and were covered by a limestone cobble surface later in the phase. Sections of cobble surfaces were uncovered in additional trench units and may represent paved outdoor surfaces. Two sequential plaster floors were built in the northwest area of Plaza B. The lower floor was heavily burned, and both were partially destroyed by a later refuse pit (Figure 4A).

We discovered evidence of intensive and prolonged early construction in the far southern end of the trench, directly overlying the steps cut into bedrock. Sequential sediment fill layers elevated two limestone cobble platforms above the steps, and the uppermost platform was abutted by a hard plaster sill that may have been a step or water-control feature.

The best candidate for an Early Phase residence comes from a pair of trench extension units in the north area of the plaza. These units revealed a small section of hard, tamped marl floor slightly elevated above bedrock and abutted by a limestone cobble surface. A concentration of domestic debris, including pottery and mano fragments, was deposited on the bedrock surface immediately to the east of the marl floor (Figure 4B), and two caches were discovered in the adjacent trench units containing limestone, slate, and marine shell artifacts. Further east, a thin layer of tamped marl was probably part of this architectural assemblage, although excavators did not locate it in the trench. This marl surface was covered with freshwater mussel and jute shells and had a small partial bowl embedded in its surface. Horn (2015:183-85) interprets these features as elements of a single residence, comprising the hard marl floor of a roofed dwelling and...
Figure 4. Early Phase architectural features: A) Burned plaster floor; B) Marl floor and domestic refuse deposit.

different outdoor living spaces paved with cobbles or marl. An isolated stone alignment and large carbon stains about five meters west of the marl floor may relate to this domestic group.

We can draw few solid conclusions about the Early Phase built environment due to the fragmentary nature of the dataset, although some aspects are worth highlighting. The earliest settlement likely comprised a small number of residences scattered across the hilltop, with at least three such structures present in the BVAP excavations. Different building materials were used to build these structures and associated features, and some variability in form existed between low floors and raised cobbled platforms. Builders knew of plaster but used it only in certain structures, whereas marl and limestone cobbles were more commonly employed. Plaster was not the prerogative of any single social group, as it was used as construction material at opposite ends of the plaza. The relative intensity and larger scale of construction at the southern end of our trench suggests the group inhabiting those structures had greater access to labor than their northern neighbors.

Middle Phase

Architectural expansion in the Middle Phase was characterized by continuity and dramatic change in different sequences. Excavations uncovered three distinct architectural sequences in the northwest, north, and south areas of Plaza B (Figure 5). Areas between the north and south architectural groups were left open, and the older cobbled pavements remained in use.

Minimal expansion occurred in the northwest group, where the second plaster floor continued to be used. A soft, tan marl surface was uncovered at a lower elevation to the west of this floor, but associated ceramics suggested this was a later addition to the residence. Like other soft marl floors, this likely represents an outdoor space connected to the dwelling.

The Early Phase domestic assemblage in the north trench was buried by sediment fill and replaced by new architectural forms. The
sequence above the marl dwelling floor was difficult to decipher due to later demolition, but this probably included a small cobble platform and associated floor surface. Across the trench to the east, a repetitive sequence of white marl patio floors topped by stone platforms was initiated that spanned the Middle Phase (Figure 6). This began with a relatively thin marl floor and a small limestone cobble platform, but later patio floors grew in thickness and length, and the final platform was faced by two courses of roughly cut limestone blocks. The white marl floors were probably outdoor surfaces separating domestic structures in a patio group (Horn 2015:607).

Architecture at the south end of Plaza B showed a sharply different pattern of development. Two soft, gray marl floors covered the raised cobble platforms of the preceding phase, and a hard pebble-and-marl floor surface was built to the east. A tan marl platform topped by a small alignment of uncut stones, probably representing the wall brace of a dwelling, rose above the pebble-and-marl floor and continued beyond our southern excavation limits. A cache containing three slate plaques, an obsidian flake, and a partial vessel was placed on top of the pebble-and-marl floor north of the raised platform (Figure 7). These features were later engulfed by a rectangular platform measuring at least 52m². This platform had a gray marl floor and was faced with large, rectangular limestone slabs that were covered with white marl. Gray marl perimeter floors extended beyond its northwestern and southern boundaries. Associated artifacts indicate these
The Middle Phase architectural sequences differed in several respects, suggesting differential investment and access to labor among different social groups. The northern and northwestern sequences were relatively repetitive, with similar structures built and rebuilt with similar materials. The increasing size of the white marl patio floors and use of coursed limestone blocks by the northern group suggests increased investment in labor and materials, but the overall construction sequence indicates relatively steady growth. This contrasts with the different building materials that were used to build different platform shapes in the southern sequence, which suggests a complete replacement of older structures rather than their refurbishment. The extent of this change, along with the expansion of platform size and the incorporation of more costly building materials, suggests more labor and resources were available to the southern group.

Late Phase

Architectural development in the Late Phase was significant, with a flurry of construction activity and shifts in investment indicating rapid social change. Building continued in both the north and south group areas, and a third architectural assemblage was constructed almost equidistant between these two groups (Figure 8). We know little about this central group, which comprised a section of plaster floor abutting an ovoid cobble feature, but its central position and association with several ceramic censer fragments suggest a ceremonial function.

The rectangular platform in the south was partially dismantled replaced by a round or apsidal structure. We could not discern the precise shape and area of this platform due to later modifications, but an apsidal plan with an estimated area of 54 m² appears to best fit the remains (Horn 2015:249). A single course of small, roughly cut limestone blocks served as platform facing, and a plaster floor covered its surface (Figure 9). This floor was poorly preserved in all but one area and no postholes were observed. Associated domestic debris suggests a residential function despite lack of evidence for a superstructure (Horn 2015:644).

The most significant Late Phase construction occurred in the northern area and comprised a complex series of building and demolition episodes. A round platform faced with large, cut-stone blocks was built atop the older plaster floors in the northwest. Our excavations could not define the size and shape of this platform, as sections of it were dismantled and incorporated into at least one later structure. This round platform, along with other early structures and patio floors, were razed to make way for a large square platform.
Architectural Variability at Middle Preclassic Cahal Pech

(Platform B) that covered approximately 307m² (Figure 10). The eastern face of Platform B was revealed in the trench and measured 17.72m north to south, and two additional corners were encountered in test units. A series of caches and a burial were placed in its corners during construction, which were interpreted as a ritual circuit venerating an important ancestor (Garber and Awe 2008; Garber et al. 2007). At least two structures were built atop Platform B, and Horn (2015:645) suggests it was an elevated terrace that supported multiple residences. The northeastern corner of Platform B was dismantled and covered by another large stone-faced structure near the end of the phase, around the same time a pit was dug near its northeastern corner and filled with domestic debris.

The focus of architectural investment shifted from south to north in the Late Phase, with substantial effort expended to build Platform B. The demolition of earlier structures and construction of a large residential terrace required a massive investment in labor and new building materials. This large-scale change broke with established patterns of steady growth reflected in repetitive architectural sequences, and the residents of Platform B likely enjoyed a new level of prosperity and status within the community. Construction in the south group continued an established pattern of changing platform shapes and building materials, although architectural investment was relatively low compared to developments in the north.

Discussion and Conclusions

Middle Preclassic architecture at Cahal Pech presents a complicated picture of variability and uneven change that does not neatly fit sequences from other lowland sites. Trends in the use of building materials, structure form, rates of platform construction, and site planning defy simple explanations, suggesting that complex social relationships shaped the development of this early community.

Building materials varied among architectural groups since the earliest phases of occupation, which suggests that group choices to invest in architecture and construction requirements were more important factors than restricted access to specific materials. There was also no clear evolution of building materials from the less-formal to the costly. Large, well-cut limestone platform facings were replaced by smaller, cruder stones in the south group, which would not be expected if material quality followed a continuous upward trajectory. Plaster was used early on in architectural groups across Plaza B, but durable plaster floors gave way to marl-surfaced platforms in two sequences. More detailed studies of the technological and performance characteristics of these different surfaces are required to understand their differential use.

The shapes of platforms similarly varied among sequences. Rounded platforms co-existed with rectangular structures, and instances where one form replaced the other were documented. Platform shape was likely dictated by the perceived needs of domestic groups rather than broad societal trends.

Architectural expansion and change did not occur at the same rate across all sequences, and construction tempo varied by group. Rates of change and growth were higher in the south sequence through the Early and Middle Phases, but architectural investment in the north sequence dramatically increased during the Late Phase. This suggests that the ability of different groups to marshal labor and resources was not fixed from the earliest occupation of Cahal Pech; it was instead fluid and dynamic, changing along with the positions of different social groups.

Finally, we can discern little in the way of formalized site planning beyond the level of architectural sequences. Both the north and

Figure 10. Architectural features in north group: A) Platform B, eastern face; B) Platform B, northwest corner with earlier rounded platform face extending west; C) Later refuse pit dug near northwest corner, Platform B.
south groups adopted different platform orientations during the Middle Phase which were continued to the end of the Middle Preclassic sequence, but these remained distinct from one another. No formal site layout centered on a monumental structure has yet been discovered, and the complex sequences of platform demolition and renewal indicate little top-down direction from a centralized authority. Unified site planning principles were developed in the Late Preclassic (Smith 2007), when the architecture in Plaza B was buried and covered by a thick plaster plaza floor.

Variability in Middle Preclassic construction practices at Cahal Pech does not fit easily into models of steady growth over time or early monumental site planning. We should not expect it to do so, given the dynamic social changes taking place across the Maya Lowlands at this time. Only by recognizing this variability, and designing better means to study it, can we begin to understand the nascent complexity that underlies the achievements of later Maya civilization.

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09 EL PILAR MONUMENTS RETROSPECTIVE & PROSPECTIVE: RE-DISCOVERING EL PILAR

Anabel Ford and Sherman Horn III

Archaeological investigations at the major center of El Pilar have revealed a complex archaeological history. Since its rediscovery, not only has there been research, but this year we celebrate 1 baktun, 20 years, of protection and the development of institutional management featuring “Archaeology Under the Canopy.” The research contributions include surface surveys, excavations, consolidation of buildings, and the study of vegetation. Prehispanic occupation of the area dates from the Middle Preclassic to the Terminal Classic with vestiges of Postclassic. Today, a contiguous reserve in Belize and Guatemala incorporate 20 km². The use of traditional techniques in research and the implementation of modern LiDAR technology, allow us to review interpretative models for the study of ancient settlements and monuments as well as the use and management of natural resources. We present a summary of the research and development carried out to date on and the results that contribute to the understanding of the past and present of the El Pilar Archaeological Reserve for Maya Flora and Fauna.

Introduction: Thirty-Three Years at El Pilar

The rediscovery of El Pilar provides an opportunity to evaluate ancient Maya settlement hierarchies in the eastern Maya Lowlands (Figure 1). The prevailing assumption was that settlement was ribbon-like, matching the sinuous Belize River Valley (Flannery 1976), but the northern ridges, which bore such similarities to the interior areas dominated by Tikal, remained largely unexplored. Settlements were abundant around Tikal despite the lack of surface water (Puleston 1973; Ford 1986), and Ford’s original settlement pattern study was designed to assess the influence of the Belize River on settlement in the northern ridge-lands (Ford 1988). Finding El Pilar, which contains more than 150 ha of monuments across nearly 1.8 km east to west (Figure 2), dispelled the myth of river attraction. The Maya managed water in different ways, as revealed by the reservoirs always associated with monumental architecture (e.g., Scarborough 2003).

Situated at the eastern edge of the uplifted limestone ridge-lands that typify the interior of the greater Petén, El Pilar dominates the horizon from the north and east. Today it lies beneath a verdant forest canopy and is dramatically visible from the foothills of Spanish Lookout. Massive in presentation, the center is a mere 10 km from the river and less than 50 km from Tikal. Our first map (1984-86) registered 65 looter’s trenches (Ford 1984), some of which were expanded before concerted fieldwork began at the site in 1993. The El Pilar program assessed the extent of the site for 12 years, determining that an offset causeway linked the east and west public plazas, but it was not until LiDAR data were obtained in 2013 that the details of this causeway system became apparent (Ford 2014).

The El Pilar project partnered with the Belize Tourism Industry Association and the Government of Belize to define the reserve boundaries and to initiate our unique Archaeology Under the Canopy conservation program (Ford and Havrda 2006, Ford and Knapp 2014). We developed the Mesa Redonda El Pilar with government archaeologists after recognizing the extent of major architecture, and have worked to build awareness of ancient Maya culture and the nature of the Maya forest (Ford 1998). Authorities and non-governmental agencies were included in these efforts as well as communities in Belize and Guatemala, and together we created a management planning process that could be implemented in both countries (MARC 2016). This process engendered an inclusive community participation program that continues to grow today.

This article outlines the multi-year survey and excavation program at El Pilar and summarizes significant results. Chronologies from ancient monuments at El Pilar and local residences provide a solid foundation for
exploring regional-scale settlement patterns (Egerer 2008; Ford 1985), but the impact of developments at El Pilar, a large and powerful center, and its relationships to smaller Belize River sites has not been fully explored.

**El Pilar Research Overview**

Our survey, mapping, and looter trench investigations in the 1980s set the stage for excavations at El Pilar (Figure 3). We principally focused on domestic areas but also investigated monumental architecture (Fedick and Ford 1992; Ford 1992). Surveys to define the city dimensions and locate distant monumental groups were incorporated into the research program, with fieldwork concentrated in Belize and more limited investigations in Guatemala (Ford et al. 2001; Ford et al. 2015, Wilma’s project).

Beginning in 1993/94, we worked to understand access-ways, stairs, and corners of monumental structures, which produced a more detailed map of the El Pilar epicenter (Figure 4). Fieldwork in 1995/96 focused primarily in the

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**Figure 2.** Downtown El Pilar from Citadel to Pilar Poniente.

**Figure 3.** El Pilar Working Map of 1986.
south of this area (Pilar Nohol) around the major Plaza Copal (see Figure 4, south), comprising a tunnel through the eastern temple (EP7) and excavations into corners and stairs of structures bordering this plaza (Ford et al. 1995; Ford et al. 1996). From 1997-99 (Ford et al. 1997; Ford et al. 1998; Ford et al. 1999), we investigated an ancient Maya elite residence (Tzunu’un; see Figure 4, east) and the northern acropolis (Xaman Pilar, see Figure 4, north). Excavations in these areas were followed by stabilization and consolidation of architectural features. From 2000 through 2004, our attention shifted from monuments to the city residents, and we developed a settlement study and excavated two domestic areas to investigate questions of daily life in the El Pilar site core (Ford et al. 2000-01; Ford and Wernecke 2002; Ford 2004).

By 2005, El Pilar had established park boundaries stretching across the Belize/Guatemala border, with homologous approved management plans for a total protected area to just over 20 km². The main site, with ranger housing in Belize, boasts about 10 km of interpretive trails with signage, consolidated areas that showcase the magnificent architecture, rest stops and picnic areas, and on-site lavatories. Later, with maps of Pilar Poniente, Guatemalan archaeologists consolidated the looter’s trench and façade of the main eastern temple of that plaza group (Ramirez Baldizón and Montejo Diaz 2008), bringing western El Pilar into the interpretive realm and presenting a great example of Archaeology Under the Canopy (Ford 2016). The efforts included the improvement of the access road and the construction of an entry kiosk, picnic area, and public lavatories.

Following the management planning process, our attention once again shifted to the community and traditional Maya forest gardeners. This involved identification and inventorying of economically useful plants in the village communities of Santa Familia and Bullet Tree in Cayo, Belize, and Santa Teresa La Zarca in Melchor, Guatemala. In collaboration with Maya Forest Gardeners, we developed a school garden program in Santa Familia based on this research, which was named Känan K’aa’x by Alcario Cano. Established in 2009 by the El Pilar Maya Forest Garden Network, a registered Community Based Organization, this local group of forest gardeners and volunteers began the selective clearing, identifying, and planting of economically important plant species for instruction at the primary school. This collective work produced a publication by NICH, The El Pilar Forest Garden Color Book (distributed to all Standard 4 students in Belize that year; Ford 2006; Ford and Ellis 2013).

While our work continues with Maya forest gardeners to this day, the main thrust of
our current research focuses on assessing the cultural and natural resources of the El Pilar Archaeological Reserve for Maya Flora and Fauna. The appreciation of resources encompassed in the reserve area is critical to the management plan. With the acquisition of LiDAR data, we now have a means of assessing the topography and features of the El Pilar city and its immediate surroundings. This important phase of the project is about 30% complete (Figure 5). Survey and mapping of the whole 20 km² reserve area will provide an important foundation for resource management as well as future research (Ford 2014).

**Highlights of Investigations at El Pilar**

Nohol Pilar, focused around the massive Plaza Copal in the south, was clearly a significant civic area in the ancient city center (Figure 4). Excavations concentrated on the eastern temple (EP7), called Xik Na for the platform wings that flank the central structure. A center-line tunnel and a deep pit were the main efforts of this investigation. Other
excavations included tests units placed across the plaza, excavations into the corners of the two temples that frame the northern entrance to Plaza Copal, and exposure of the stairs of the western temple (EP10), called Nohoch Aak for its massive size (see Figure 4), EP10.

These excavations revealed the deep history of occupation and construction at El Pilar. Surface and collapse deposits yielded diagnostic ceramics indicative of vibrant Terminal Classic activities. The EP7 tunnel, which probed the center of the eastern temple for 35 meters, revealed a complex construction history spanning the entire sequence of occupation that began with 2 plaza floors and a clay-core platform built during Middle Preclassic times (Figure 6). Middle Preclassic architecture was also discovered below EP9 on the north side of the plaza, presenting part of a circular platform. Architectural features beneath Plaza Copal indicate a considerable time depth of construction spanning at least 1800 years.

Research in northern El Pilar (Xaman Pilar), clearly the seat of power within the city center, included excavations in most plazas. This work documents a long architectural sequence beginning by the Late Preclassic at the latest and culminating in the Terminal Classic/Postclassic. Our research concentrated on the Zotz Na corridor, the Jobo patio complex (Figure 7), and the façade and roof of EP25, located on the eastern side of the northernmost Plaza Lec (Figure 8). This fieldwork allowed us to consolidate the three main target areas, to control the escalation of damage originating with looting, and to promote the visual experience of *Archaeology Under the Canopy* for visitors.

Archaeological investigations were also conducted outside the major Classic-period monuments of El Pilar. We excavated three exemplary domestic areas to compare aspects of everyday life among different groups of El Pilar residents: 1) the elite Maya house and forest garden 272-025 (Tzunu‘un) was mapped, excavated, and consolidated as the first house site open to visitors (Figure 9); 2) a small structure, 272-032, was excavated for comparison with the larger Tzunu‘un residence; and 3) the LDF Chert site, comprising a chert tool working platform adjacent to a 50 m² debitage dump (see Figure 4 west). Construction at the elite residence spans the Late Preclassic to the Terminal Classic, with most building activity dated to the Late Classic, while occupation at the smaller domestic site was principally limited to the Late Classic. Approximately 800,000 debitage flakes/m² were recovered from the LDF Chert tool production site, which represent the byproducts of bifacial tool production by Late Classic period occupations (Whittaker et al. 2009).

Temporal assessments of ceramics provide construction chronologies for monumental structures and residential units at El Pilar. With 16 structural excavations in all the major plazas as well as excavations at three domestic areas, we have developed a construction sequence that began in the Middle Preclassic and continued through the Terminal Classic (Table 1). It is significant that no pauses in construction, as would be indicated by a break in the ceramic sequence, were noted in any of the building excavations. As observed in the local area where the paucity of Early Classic diagnostics has been noted, the presence of Early Classic chronological markers at El Pilar are slight (see Table 1). Significantly more
Re-discovering El Pilar

Table 1. Frequencies and percentages of recovered ceramics from El Pilar by period.

<table>
<thead>
<tr>
<th>Time Period Counts and Percentages</th>
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<tr>
<td>Recorded Sherds</td>
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<td>Unidentified Time Period</td>
</tr>
<tr>
<td>Identified Time Period</td>
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<tr>
<td><strong>Total</strong></td>
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<table>
<thead>
<tr>
<th>Identified Time Period</th>
<th>Frequency</th>
<th>Percent of Total</th>
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<tr>
<td>Middle Preclassic</td>
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<tr>
<td>Late Preclassic</td>
<td>672</td>
<td>8.79%</td>
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<td>4.34%</td>
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<tr>
<td>Late Classic</td>
<td>3,975</td>
<td>52.00%</td>
</tr>
<tr>
<td>Terminal Classic</td>
<td>217</td>
<td>2.84%</td>
</tr>
<tr>
<td>Late/Terminal Classic</td>
<td>1,200</td>
<td>15.70%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>7,644</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Identifiable sherds dated to the Late Classic than any other period, which is in line with all other major sites in the local area and region.

In addition to investigating domestic architecture within the El Pilar site core, the discovery of the Citadel (Figure 2, east; Figure 10) in LiDAR imagery required detailed structure mapping and profiling of two looter’s trenches dug into the main temples atop the complex. The illicit excavations damaged the temples but allowed us to examine their construction histories. Building sequences were dynamic and extensive, but construction efforts were largely restricted to Late Preclassic times (Ford 2016). This complex was established early in the history of the El Pilar site center, yet unlike the rest of the El Pilar monuments and, in fact, most Maya structures, the Citadel temples were completed before the Early Classic and were not modified or expanded by subsequent Classic-period construction. Determination of
the reasons behind this curious treatment of monumental structures awaits future investigations.

Mapping the Great Maya City of El Pilar

Our current fieldwork is designed to create a complete map of the 20 km² of the El Pilar Archaeological Reserve for Maya Flora and Fauna. We covered most of the central area and identified features linked to the causeway system with traditional transect survey methods begun in 2000-1 (Ford et al. 2000; 2001). These maps were integrated into the Maya Forest GIS and, with the acquisition of the LiDAR imagery, we were able to validate the survey and compare mapping strategies. Once our mapping protocol was established, we developed a system for validating features identified in LiDAR images and testing the effectiveness of different surface visualizations. We divided the reserve into segments of 200 by 250 meters (printable at 1:1500) and have covered 135 of a total of 475 segments (Figure 5), or about 30% of the total reserve area. In the 7 km² of surveyed area at the core of El Pilar (see Figure 2), we have documented 475 residential units (141 elevated on plazas), 39 chultunob, 35 looter’s trenches, 113 quarries, 45 aguadas/depressions, and 3 areas of terraces. A number of large monumental features were also identified in the LiDAR imagery, several of which have been mapped and georeferenced. These include the offset causeways and a connected, sunken plaza containing a ball court, the massive Citadel to the east, the Kum monumental group in the northwest, and the minor center Chorro north east beyond the Citadel. The LiDAR images suggest that several more mounds await discovery and exploration. This component of the El Pilar project is planned to be completed in the following years.

El Pilar and the Context of Maya Lowlands

Our research at El Pilar suggests its significance within the ancient Maya social landscape. El Pilar is a major center with more than 30 plazas and monumental structures spread across 1.75 km and covering more than 100 ha (see Figure 2). On the east, the Preclassic Citadel stands alone without a clear connection to the Classic-period monuments. El Pilar has three major monumental groups of structures and plazas: Nohol in the south, Xaman in the north, and Poniente to the west (Figure 2). Nohol and Xaman are closely integrated and Poniente is linked to them via a complex and massive causeway system spanning 930 meters between the sectors. Construction at the monumental core of El Pilar demonstrates a consistent and continual building sequence that began in the Middle Preclassic (c. 800 BCE), blossomed in the Late Preclassic (c. 250 BCE), and was continuously expanded and renovated into the Terminal Classic (after 1000 CE).

The role of El Pilar is clearly that of a local power, with influence spreading from the interior of the Petén into the Belize River Valley. Large and medium-size neighboring sites, such as Naranjo, Holmul, Xunantunich, Cahal Pech, and Baking Pot all lie approximately 16 km away, suggesting El Pilar’s central position in the Late Classic regional settlement hierarchy (Figure 1). El Pilar’s setting, atop a ridge at the edge of a limestone escarpment, geographically dominates the open plains north of the Belize River. This ecotone setting puts El Pilar in a pivotal point of control associated with both the central core area west to Tikal and south/east into the Belize River drainage. As the story of the Central Maya Lowlands unfolds, the critical position of El Pilar and its inhabitant will take on greater importance.

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10 IN THE SHADOW OF YALBAC: HINTERLAND SETTLEMENT BETWEEN YALBAC AND THE CARA BLANCA POOLS

Erin M. Benson

In 2011 Yalbac Ranch, a sustainable logging company, sold over 30,000 acres of land to the Spanish Lookout Corporation (SPLC). With the land slated for agricultural pursuits, SPLC began clearing the existing jungle and plowing fields, exposing hundreds of Maya domestic structures in the process. During the 2014 and 2016 field seasons, the Valley of Peace Archaeology Project embarked on a salvage archaeology program, seeking to recover what information it could from lands subjected to agricultural development. Working between the secondary center Yalbac and the ceremonially important Cara Blanca Pools, the project recorded over 150 distinct Maya mounds of various sizes. Eight mounds were sampled, revealing structures, features, and burials that provide important insight into Maya settlement in the region. The information garnered from the survey and excavations helps not only to salvage data, but also provides valuable information on Maya life, particularly in this unique location within a politically and ceremonially important region. This paper presents the results of these salvage excavations and discusses the settlements in terms of the broader religious and political landscape.

Introduction

Over the past decade, the Valley of Peace Archaeology (VOPA) Project, led by Dr. Lisa Lucero, has witnessed the dramatic transformation of the project area around the medium-sized center Yalbac and the Cara Blanca pools in central Belize, from dense jungle to massive clearing for agriculture. While the clearing contributes to the destruction of natural and archaeological resources, it also exposed hundreds of Maya mounds formerly hidden. Because of their position between the center of Yalbac and the ceremonially charged Cara Blanca pools, these sites have the potential to provide valuable information regarding how the Maya lived their everyday lives, differentially interacting with and relating to these two important, but different areas. In 2014 and 2016, the VOPA project explored cleared fields as part of a salvage archaeology program, surveying and then excavating a sample of the mounds. The results have provided us with useful insight into the lives of those living within this important landscape. In this paper, I detail 2014 and 2016 results of the salvage archaeology program of an agricultural and residential landscape between Cara Blanca and Yalbac.

The Yalbac Hinterlands

The project area was formerly located on Yalbac Ranch property between Yalbac, the Cara Blanca pools, and the cliffs that give the pools their name (Figures 1, 2). Yalbac is a medium sized center with several large constructions, including temples, plazas, a ballcourt and an acropolis occupied from 300 BCE through c. 900 CE (Lucero 2011). The Cara Blanca pools are important ceremonial features of the landscape located to the northeast of Yalbac and run east-west along the base of a limestone escarpment. VOPA excavations thus far have focused largely on buildings near Pool 1, including a water temple, a sweatbath, and a puzzling platform blanketed with sherds in a...
termination ritual (Lucero and Kinkella 2015; Lucero et al. 2016). This pool appears to have been a locus for water-related ritual, especially as the region became ever more dry during the Terminal Classic droughts. The salvage project area sits in a unique position between these two important places, occupying a landscape with rich agricultural soils.

As mentioned, the project area formerly was part of Yalbac Ranch; however, in October of 2010, Hurricane Richard devastated the jungle, wiping out most of the primary growth and destroying much of the hardwoods logged by Yalbac Ranch. The following dry season, wildfires ravaged the land and the combined effects of these natural disasters led to Yalbac Ranch selling over 30,000 acres of land to the Spanish Lookout Corporation (SPLC), a Mennonite community corporation. This land was slated for agricultural development, ranching and/or homesteading, which is visible in aerial/satellite photography programs such as Google Earth (Figure 2). It was witnessing this destruction firsthand that led Dr. Lucero and her team to undertake a season of salvage work, making an effort to gather what information we could before more was lost to the plows of progress.

The 2014 Survey

During the 2014 field season, Dr. John Morris of the Belize Institute of Archaeology (IA) requested that the VOPA project conduct survey of some of the recently cleared areas. The project was eager to comply, and Lucero identified three fields, Mound Fields (MFs) 1, 2, and 3 to survey. MF 1 is located at the base of the limestone escarpment; MFs 2 and 3 are nearer to the south entrance to the Yalbac Ranch property, almost immediately next to Yalbac itself (Figure 2).

We began in MF 1, where piles of white limestone and plaster stood out starkly against the surrounding brown soils, and rows of burnt logs provided us with easy transects to follow. Initially we recorded a variety of data points for

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**Figure 2.** Mound Field locations in relation to Yalbac and the western edge of the Cara Blanca Pools, with 2014 field locations labeled, and the extent of clearing in the 2016 fields outlined (note: fields were cleared beyond these boundaries, however these areas were not visited).
Table 1. Type system used in VOPA survey.

<table>
<thead>
<tr>
<th>Type</th>
<th>Height (m)</th>
<th>Cut Stone</th>
<th>Artifacts</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>&lt;.5</td>
<td>No</td>
<td>Few</td>
<td>Generally smaller than 2x2 m in area</td>
</tr>
<tr>
<td>2</td>
<td>.5 - 1.5</td>
<td>Not Likely</td>
<td>Few</td>
<td>Vary in size</td>
</tr>
<tr>
<td>3</td>
<td>&gt;1.5</td>
<td>Likely</td>
<td>Many</td>
<td>Relatively large, single structure</td>
</tr>
<tr>
<td>4</td>
<td>&gt;1.5</td>
<td>Likely</td>
<td>Many</td>
<td>Multi-structure group</td>
</tr>
<tr>
<td>5</td>
<td>&lt;.5</td>
<td>No</td>
<td>Few</td>
<td>Daub scatter</td>
</tr>
</tbody>
</table>

Table 2. Results of the 2014 and 2016 Mound Field surveys.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type 1</th>
<th>Type 2</th>
<th>Type 3</th>
<th>Type 4</th>
<th>Type 5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>MF 1</td>
<td>33</td>
<td>34</td>
<td>18</td>
<td>3</td>
<td>2</td>
<td>90</td>
</tr>
<tr>
<td>MF 2</td>
<td>1</td>
<td>13</td>
<td>12</td>
<td>3</td>
<td>0</td>
<td>29</td>
</tr>
<tr>
<td>MF 3</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Pool 7 MF (East Section)</td>
<td>10</td>
<td>14</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>28</td>
</tr>
<tr>
<td>Total</td>
<td>45</td>
<td>65</td>
<td>38</td>
<td>7</td>
<td>2</td>
<td>157</td>
</tr>
</tbody>
</table>

Each mound located; however, it soon became apparent that our survey methods, though thorough, were not conducive to covering a large area in the short amount of time that we had. In order to expedite the survey, I created a simple type system, similar to, but on a much smaller scale than, type systems used in surveys at Xunantunich and Chan (Ashmore et al. 1994; Robin 2013). The primary criteria used to create the type system were based on size; mound height, area, and number of structures. The presence and density of artifacts and cut limestone was also noted. Four types of mounds were identified, as well as a fifth type comprised of scatters of burnt daub (Benson 2015) (Table 1). It is important to note that although the type system relies heavily on height, these heights are not necessarily true reflections of the mounds as they once stood. The continued plowing and driving of machinery over the mounds strips off the tops, layer by layer. Thus, the heights we record are, to some degree, shorter than the true heights of these mounds. Using the type system significantly increased the area the survey teams were able to cover and also simplified the analyses of the resulting data.

Over the course of four days, a small crew explored MFs 1, 2, and 3, and recorded 129 mounds of varying sizes and types (Benson 2015) (Table 2, Figures 3, 4). In each field and overall, Type 2 mounds were the most prevalent. In MF 1, Type 1 followed in frequency, however, MF 2 and 3 each only recorded one Type 1 mound. This is almost certainly because at the time of the survey of MFs 2 and 3, the trees had been felled but the debris had not yet been cleared. In contrast, MF 1 was completely cleared and plowed. It would have been near impossible to see any Type 1 mounds in these conditions. The same can be said for Type 5, which is only represented by two sites in MF 1. The results provided us an idea on hinterland settlement, as well as the basis to help us select mounds for excavations in 2016.

The 2016 Salvage Excavations

Between 2014 and May 2016, the VOPA landscape changed significantly, with substantially more land cleared for agriculture. Our goal was to excavate a sample of the exposed mounds in an effort to salvage what information we could. While plowing and other mechanized agricultural practices strip away the smaller mounds layer by layer, there is some protection for the larger sites. Yalbac itself is completely protected from any development and
the Belize IA recommends that mounds over 2 m in height are not plowed. With this in mind, we excavated a sample of mound types, focusing on the smaller mounds because they would soon disappear with continued plowing. We also were interested in excavating in these areas because of their locations between Yalbac and the sacred Cara Blanca pools. Though politics and ritual are always intertwined, these two areas, one more heavily political and the other more ceremonial, held very different places within the meshwork of Maya relationships within the region. Furthermore, Yalbac had been occupied over a thousand years, whereas activity around the pools seems to focus more towards the later end of that time span, when water-related ritual became increasingly important (Lucero et al. 2016). With this understanding, we can begin to ask more targeted questions about the spatial organization and timing of hinterland settlement between Yalbac and Cara Blanca. Was settlement closer to the pools intensified during the Late and Terminal Classic? Did wealthier Maya tend to live in closer proximity to either Yalbac or Cara Blanca? Where did people live in relation to each other and how does that vary across the landscape?

In order to answer these questions, we focused excavations in several different areas. First, we excavated near Pool 7, a shallow lake that is the westernmost of the Cara Blanca pools. Survey reported by Andrew Kinkella (2009)
Table 3. Mounds excavated in the 2016 salvage project.

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Pool 7 Mound Field</th>
<th>Mound Field 4</th>
<th>Mound Field 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mound ID</td>
<td>M1 M2 M3 M4</td>
<td>M1 M2</td>
<td>M32 M33</td>
</tr>
<tr>
<td>Mound Type</td>
<td>2 1 2 2</td>
<td>4 1</td>
<td>2 2/4</td>
</tr>
<tr>
<td>Mound Height (m)</td>
<td>.52 0 .62 .73</td>
<td>4.13 &amp; 5.01 .21 - .41</td>
<td>.6 .66 &amp; .76</td>
</tr>
<tr>
<td>Stone Architecture Present?</td>
<td>Yes No No Yes</td>
<td>Yes No</td>
<td>Yes Yes</td>
</tr>
<tr>
<td>Burials Present?</td>
<td>Yes No No Yes</td>
<td>Yes No</td>
<td>No No</td>
</tr>
</tbody>
</table>

suggests that the occupation in this area is largely residential rather than ceremonial and his survey identified both large multi-structure compounds and many smaller structures. The clearing of the fields exposed many additional small mounds. We also focused excavations near Yalbac, to the south and west of the pools, and finally at a location that was spatially intermediate between the two. We excavated a sample of different Types of structures from each area, ultimately excavating two Type 1 mounds, four Type 2 mounds, one Type 4 mound, and one Type 2/Type 4 mix, which was a small mound with two structures. Only one of the MFs we worked in in 2014 was included in the 2016 excavations, MF 2 (Table 3).

Because we were working under salvage conditions, our methods differed than other more systematic procedures, such as those used at Cara Blanca Pool 1. The extent and method of excavation depended largely on the mound we excavated. Once the mound was measured and GPS coordinates recorded, a crew began excavating a center trench or unit. When we exposed architectural features, we followed them to find their limits. Because excavating the entirety of the mounds was beyond the scope of our project, our goals were simply to expose architecture and to find edges of the structures to provide at least an idea of structure layout and size. Only a sample of diagnostic artifacts were collected for processing in the lab, and all artifacts that were not collected were inventoried in the field and re-buried. All open units were backfilled. We encountered several human burials; all burials were analyzed in situ or in the field lab by Illinois State Certified Skeletal Analyst Aimée Carbaugh of the University of Illinois at Urbana-Champaign (Carbaugh and Bhattacharya 2016). Other than bone samples from four individuals and 11 total teeth samples, all excavated human remains are curated in the VOPA container at the Yalbac Sawmill. All ceramics were assessed by Laura Kosakowsky (Kosakowsky n.d.).

Pool 7 Mound Field

Pool 7 MF is located immediately south of Cara Blanca Pool 7 at the base of the escarpment and is divided into an eastern and western section by a road, which was built as we excavated. To the north and east the field was bordered by jungle, and to the west by MF 1. The south was bordered mostly by jungle, with a section of cleared jungle on the western side. The entire field was well plowed, and farmers planted corn while we excavated. The density of mounds was fairly high, though it dropped off a bit to the south, possibly following a change in the quality of soils. We excavated a total of four
mounds in Pool 7 MF, one Type 1 and three Type 2s (Table 3).

**Mound 1.** Excavations into Mound 1 revealed a structure with at least two rooms defined by cut limestone walls with degraded plaster floors. Two walls were exposed, one running north to south, and one running east to west that protruded northward from a point on the N-S wall, dividing the two rooms (Figure 5). The N-S wall may have been an exterior wall, as the south face was fairly rough and unfinished, whereas the north face, which was exposed in the two rooms, was clean cut. The two rooms, dubbed the East Room and the West Room, each contained one prepared plaster floor at different levels, and the West Room may have had a second degraded plaster floor at a higher elevation. The confirmed floors in each of the rooms were at slightly different elevations, and we did not expose a doorway between the two, nor were we able to find any other walls enclosing the rooms before halting excavations. Under the floor in the eastern room, we uncovered Burial 2 (Table 4). The individual was an adolescent of indeterminate sex, and had modified incisors on both the top and bottom teeth. Over the individual, but not immediately upon them, was a deposit of at least two vessels, with a small number of other sherds not associated with a specific vessel. There also seemed to be a concentrated area of cobbles over the individual. The individual was completely excavated prior to backfilling the mound, and a sample of bone was collected for further aDNA and isotope analysis.

**Mound 2.** Located just a few meters to the south of Mound 1, Mound 2 was a much different feature. On the surface, Mound 2 had no

### Table 4. Burial data.

<table>
<thead>
<tr>
<th>Field</th>
<th>Mound Type</th>
<th>Burial</th>
<th>Individual</th>
<th>Age (years)</th>
<th>Sex</th>
<th>Modified Teeth?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pool 7 MF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 (East Structure)</td>
<td>4</td>
<td>6</td>
<td>A</td>
<td>Young Adult (24-30)</td>
<td>Male ?</td>
<td>Yes</td>
</tr>
<tr>
<td>1 (North Structure)</td>
<td>4</td>
<td>8</td>
<td>A</td>
<td>Young Adult (18-22)</td>
<td>Male ?</td>
<td>No</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>1</td>
<td>D</td>
<td>Young Child (3-4)</td>
<td>Indeterminate</td>
<td>No</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>3</td>
<td>A</td>
<td>Fetus (~8 lunar months)</td>
<td>Indeterminate</td>
<td>No</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>4</td>
<td>A</td>
<td>Infant (3 +/- 1)</td>
<td>Indeterminate</td>
<td>No</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>5</td>
<td>A</td>
<td>Adolescent (15 +/- 3)</td>
<td>Indeterminate</td>
<td>No</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>2</td>
<td>A</td>
<td>Adolescent (16-22)</td>
<td>Indeterminate</td>
<td>Yes</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>1</td>
<td>B</td>
<td>Mid Adult (35-40)</td>
<td>Indeterminate</td>
<td>No</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>2</td>
<td>A</td>
<td>Adolescent (16-22)</td>
<td>Indeterminate</td>
<td>Yes</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>1</td>
<td>A</td>
<td>Young Adult (18-24)</td>
<td>Male</td>
<td>No</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>1</td>
<td>D</td>
<td>Adolescent (12-15)</td>
<td>Indeterminate</td>
<td>No</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>1</td>
<td>C</td>
<td>Adolescent (16-20)</td>
<td>Indeterminate</td>
<td>No</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>1</td>
<td>E</td>
<td>Adolescent (3-4)</td>
<td>Indeterminate</td>
<td>No</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>1</td>
<td>F</td>
<td>Young Child (3-4)</td>
<td>Indeterminate</td>
<td>No</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>1</td>
<td>G</td>
<td>Young Child (15-18)</td>
<td>Indeterminate</td>
<td>No</td>
</tr>
</tbody>
</table>
perceptible rise in elevation. We encountered two possible surfaces and no walls. At the bottom of our excavations was a southeast to northwest oriented deposit of artifacts, including two heavily fragmented ceramic figurines, one of which was painted with Maya Blue paint, as well as sherds from several different vessels (Figure 6). To the north of this line of artifacts, we came upon a gray, cobble fill and a very dark, almost sterile fill. To the south, the fill was a lighter grey. In the plowzone, we found two small Postclassic projectile points, as well as obsidian blades and ceramics. The projectile points are of particular interest as they are the only Postclassic materials encountered. This may suggest that either the Postclassic occupation was limited, or that modern agricultural development has already stripped away later occupation events. We did not reach sterile soil before ceasing excavations.

**Mound 3.** Mound 3 was located in the eastern section of Pool 7 MF, and yielded only boulders, topsoil, and a handful of ceramics. The mound was profoundly different than what we had encountered previously, and after a day of digging, we halted excavations. It appears that Mound 3 was just a pile of boulders and dirt.

**Mound 4.** Mound 4 is just east of Mound 3 and it consumed most of our time at Pool 7 MF. Excavations almost immediately hit a low wall running east to west dividing two plaster floors. The wall ended on the western end of the excavations, however the southern floor continued. To the south of the wall, the floor sat atop a layer of ballast fill, followed by a thick layer of cobbles then a layer of large boulders. Beneath the boulders were one or two degraded floors. These floors were significantly lower than the original floor encountered, indicating that the room was filled, then built upon again. Another interesting feature found while excavating to the south of the E-W wall was an empty room or chamber. The entrance to the chamber was in line with the E-W wall, but was just west, beyond where the wall stopped. The chamber itself extended north of the wall, beneath where a large burial feature was encountered (Burial 1, see below) (Figure 7). The chamber was not dug into subsoil or bedrock, but was rather built up, surrounded by very large boulders, ballast and cobble fills, and topped with at least a partial dome. We began excavations in the chamber but found it to be empty, consisting mainly of a fine fill layer
towards the bottom, perhaps just dirt that fell or washed through the cracks. Whether the chamber was just an empty room, or had some other purpose, functionally or otherwise, remains unknown. We did collect a sample of the sediment from within the chamber for potential pollen or phytolith analysis.

Excavation of the north side of the E-W wall was dominated by burial features. Soon after the initial discovery of the floors, the crew encountered three burials – Burial 1, 3, and 4 (Table 4). Burials 3 and 4 were a fetus and an infant respectively, both placed on top of the floor on the north side of the wall. Burial 3 contained no artifacts, however Burial 4 included two pieces of marine shell; a tinkler and a carved skull (Figure 8). The artifacts were found together, however both individuals were too crushed to determine position or where the artifacts were originally located. Burial 1 was drastically different; it was contained within the floor north of the E-W wall and contained mostly rocky fill. We found a minimum of seven individuals, as determined by the number of sets of teeth, including one set with modifications. The most complete skeleton recovered belonged to Individual A, a young adult male. The remaining six individuals were of indeterminate sex, and ranged in age from a young child to an adult. All skeletal elements encountered were collected; however, due to the fragmentary nature of the remains, it was impossible to determine whether we had completely collected all individuals in the field. Teeth and bone samples from five of the seven individuals for aDNA and isotopic analyses to determine health, relationality, and mobility of the individuals were collected. Unlike Burials 3 and 4, which had few to no artifacts, Burial 1 was full of ceramics, including at least 10 partial or complete vessels, 1 partial or complete incensario, and over a thousand other sherds that could not be placed with a more complete vessel. Included in the vessels collected from Burial 1 are two Achote Black Cubeta Incised vessels, a Tinaja Red Group gouged and incised vessel, a Roaring Creek Red dish, a Cameron Incised pyriform vessel, and a drum. Though the burial vessels vary in type, most date to c. 700 to 900 CE.

In addition to testing a sample of mounds, a small crew surveyed the eastern section of the Pool 7 Mound Field, recording an additional 28 mounds (Table 2). Mound types were retroactively assigned based on the data collected; some difficulty was encountered as the recorded areas of the mounds are likely much greater than their actual extents. The ongoing plowing has significantly spread artifacts and stone associated with the mounds and the resulting areas recorded are far more sprawling than expected. Only excavations can confirm the actual extent of features. As noted in Figure 4, Type 2 mounds were most prevalent in this section of the field, followed by Type 1 and then Type 3. Of the larger Type 2 and 3 mounds, six were covered in moderate vegetation, and five in heavy vegetation. This impeded the identification of multiple structures, and I cannot confidently assign any structures to Type 4 based on the collected data, though this
does not mean there were no multi-structure mounds.

**Mound Field 4**

MF 4 is located to the south and west of Pool 7 MF, between Yalbac and Cara Blanca, bordered to the east and west by unexplored fields, to the north by MF 1, and to the south by a road. The overall mound density of this cleared field was lower than in the fields to the north. We excavated two mounds, one Type 1, and one large three-structure Type 4 complex (Table 3).

**Mound 1.** Mound 1 is a large platform complex, which consisted of a nearly 2.5 m tall platform, two tall structures to the north and east, a lower structure to the west, and a possible hallway or walkway in the Northeast corner that connects the North and East Structures. The structures form a U-shape, opening to the south. A large looters trench was cut in to the northwest corner of the complex, revealing nothing but solid fill. We excavated two trenches, one running east to west in the East Structure, and one north to south in the North Structure (Figure 9). We also put a small unit in the plaza to determine what we could about its construction. The plaza unit, as well as the inner ends of the two structure trenches, showed that the top surface of the platform was a minimum of 30 cm of a hard, clean, yellowish-white plaster. The plaster continued deeper, but we were unable to continue excavating due to time constraints.

The North Structure appeared to have a residential function; the trench exposed three floors and two walls running east-west dividing the fills. Domestic artifacts were collected from the North Structure, including mano and metate fragments, and jar, bowl, and plate sherds. We came upon Burial 8 just below and behind one of the walls in cobble fill (Table 4). The individual was a young adult, possibly male, with a large Tau-footed plate from the Roaring Creek Red group inverted over the cranium and a miniature jar next to it (Figure 10). We were unable to completely collect the individual as the post-cranial elements extended beyond the limits of what we could excavate; however, Carbaugh did collect two teeth for aDNA analysis from this individual.

In the East Structure we found several artifact clusters and two burials. The stratigraphy and building sequences of the East Structure were also more complex. The architecture of the North Structure did not necessarily indicate rebuilding or additions over time, whereas the East Structure had several modifications over time, indicated by buried walls, floors, and steps. We found a minimum of three different floors, with an additional two possible floors. Floors were particularly difficult to identify because the fill was incredibly white, fine, and consistent, making it difficult to identify plaster. We also exposed a
set of steps towards the inner edge of the structure and five walls, one of which ran east to west. Also notable is what seems to be an ancient re-excavation, as the south side of the trench exposed sections of the structure that had been disturbed and filled with a rocky fill (Figure 9). There was a lack of cut stone in the collapse fill in both the East and North Structures, so perhaps the ancient Maya were removing architectural components of the buildings for re-use elsewhere—a sort of ancient recycling, or potentially ancient looting.

As mentioned, there were two burials (Burials 5 and 6) found in the East Structure (Table 4). Burial 5, an adolescent of indeterminate sex, was found in cobble fill well below a floor. A complete bowl was inverted over the cranium (Figure 11), and a complete Zacatel cream polychrome vase was found just to the southeast of the individual. Although the bowl and the vase were both complete upon their deposition, they had since broken; the bowl may have been terminated prior to its interment, as suggested by an eroded hole in its base. Carbaugh collected bone samples for analysis from Burial 5. Burial 6, a young adult possibly a male with modified teeth, was located below the entire structure, under an interface between two floors, and placed within the platform. This individual was interred early in the life of this structure, if not at its initial construction. Two ceramic vessels were placed over the individual; a large ring-base dish and a Duck Run Incised pyriform jar that had been intentionally broken at the base and placed in two pieces (Figure 10). Like Burial 8 from the North Structure, this individual had a miniature jar placed at their cranium. A third burial, Burial 9, which we did not completely expose, was found in the platform fill at the west end of the East Structure trench in the excavation wall. We confirmed it as human remains due to a single phalanx that fell out of the wall.

Mound 2. Although Mound 2, a Type 1 mound, was unimpressive at first glance, it yielded a horde of domestic artifacts, including jars, bowls, and dishes ranging a wide timespan reaching as far back as the Preclassic. In terms of architecture, neither limestone nor plaster were found and we suspect that this structure was a thatch residential building with a dirt floor. Towards the bottom of our excavations, an inverted vessel was found on a probable dirt
surface, however, unlike the inverted vessels in Mound 1, there were no associated human remains. We reached a sterile subsoil approximately 0.4m below surface (Figure 12).

**Mound Field 2**

MF 2 is the only field visited in both 2014 and 2016. The field was expanded significantly, thus the 2014 survey only represents a portion of the 2016 MF 2 (Figure 2). MF 2 is located just northwest of Yalbac and mound density is comparable to Pool 7 MF. We noted at least one large multi-structure complex, which time constraints did not allow us to explore. We excavated one Type 2 structure and one Type 2/Type 4 structure (Table 3).

**Mound 32.** Excavations exposed a solid plaster floor just below the plow zone. We spent some time expanding this area, trying to find corners or walls, but it appeared that the plow destroyed the corners, as the floor disappeared as the mound started to slope downward around the sides. To further explore the mound, we put in a T-shaped trench oriented cardinally (Figure 13). There was a thick layer of ballast and cobble fill below the floor, but no other floors were encountered and only a handful of artifacts were collected, mostly consisting of plain body sherds.

**Mound 33.** Mound 33 was a small L-shaped platform complex with two structures, the East Structure and the South Structure, that opened to the southeast. Unlike the other Type 4 mounds, its size is more similar to that of a Type 2. We placed a unit each into the East Structure, what we called the South Structure, and a center unit in the area between the two. The South Structure was a mystery throughout its excavation. Though it started as a mound similar to the East Structure, we dug down over 1.5 m to an unexpectedly sandy, sterile subsoil without hitting a floor or walls. Instead we exposed a huge boulder (approximately 1.2 x 0.4 x 0.5 m) sitting upon seemingly intentionally placed stones (Figure 14). The stones appear to form an arc, and in the profile there is a vertical change between the soils on either side of the stones. This, perhaps, could be the edge of a platform or other designated area in the residential unit.

The East Structure was a bit clearer, as we uncovered at least one floor, an east to west oriented wall, and a stepped porch along the external south face of the wall. While the wall and porch were fairly obvious, the floors were very degraded, making them difficult to distinguish. We cleared a larger unit following the architectural features, and then trenched the structure north to south, reaching the same sandy subsoil exposed in the South Structure and center unit excavations (Figure 15). This structure was the only one for which we were able to complete a trench through the entire structure, showing the complete profile of the cross-section of the structure, from plow zone to sterile. The trench profile of this structure, as
well as the excavations in the south structure, suggest that the sandy soil is sterile, and the Maya brought in other fill to level out a building surface for the East Structure. While the East Structure produced a relatively large number of artifacts including red slip and plain jar, bowl, and dish sherds, as well as one polychrome and one bi-chrome sherd, there were no burials or artifacts of note.

Discussion and Concluding Remarks

The eight mounds excavated in the cleared areas, as well as the mounds surveyed in 2014, provide interesting insight into how people organized themselves between Yalbac and Cara Blanca. The mound types we excavated were spread across the three MFs relatively evenly. Pool 7 MF and MF 2 contained three and one Type 2 mound, respectively, and Pool 7 MF and MF 4 each had one Type 1 mound. MF 4 and MF 2 each contained one multi-structure mound, though they were of considerably different size. Despite the differences in where these structures were located, and in their sizes and types, they shared many features. First, though some stratigraphic contexts contained materials dating back to the Preclassic, as indicated by occasional Sierra Red group sherds, and particularly in MF 4 Mound 2, overall the ceramics suggest that the most recent occupation of the area dated to the Early Late Classic through the Terminal Classic, with some Late Early Classic presence. The only hint of a Postclassic occupation comes from the two small projectile points found in Pool 7 MF. The uniformity of temporal occupation across the entire project area, regardless of proximity to Yalbac or Cara Blanca, suggests that although the relationships with pools intensified during the Late Classic, this did not seem to affect settlement as it near the western edge of the pools.

Another important aspect is that all the former occupants seem to have relatively equal access to “wealth” items. All structures contained typical artifact deposits, with no major differences in ceramics across the different contexts (Kosakowsky n.d.). It seems that while the size of the mounds differed, the materials their occupants were using did not. Furthermore, though we only excavated a sample, all the mound Types are represented in each of the fields, thus we cannot say that larger or smaller buildings are only built near Yalbac, or vice versa. This information suggests that when considering both artifacts and architecture, we cannot say that there were any significant differences in who lived where in relation to Yalbac and Cara Blanca.

Perhaps a more interesting way to look at the hinterland settlement is not in terms of Maya relationships with Yalbac or the Cara Blanca pools, but rather in terms of Maya relationships with each other. Using the data from the 2014 survey, I completed an informal spatial analysis in ArcMap of the spatial arrangement of recorded structures and found that the larger the mound type, the farther away it tends to be from other mounds (Benson 2015). In other words, as mounds get larger, they become more isolated. It is important to note that the data from 2014 is somewhat flawed due to potential problems with visibility in Fields 2 and 3; however, the trend holds true in Field 1, which was completely cleared. Additionally, I was able to informally observe this trend in Field 4 during this year’s excavations. There were several isolated Type 4 mounds in this field, and they were noticeably separated from other mounds. So perhaps there is not as much of a difference in where people were living in relation to the pools or to Yalbac, but there was a difference in where they were living in relation to each other.

There are differences in where burial features were located across the fields. Four burials consisting of 10 individuals were found in Pool 7 MF, the field nearest to the Cara Blanca pools, and all were found in Type 2 mounds. Three additional burials were found in the large Type 4 mound in MF 4. No burials were located in MF 2, the field nearest to Yalbac. This information may suggest two things; that burials do not only occur in certain size buildings, and that burials became more common as we moved nearer to the Cara Blanca pools. Given the small sample size, particularly in MF 2, and the incomplete nature of our excavations, I would be hesitant to draw any firm conclusions from this information, and it is worth pursuing in future seasons.

Though we recorded over 150 mounds, and sampled and excavated eight, hundreds of
others still populate the agricultural fields, and much work must still be done to answer the project’s questions. Continuing to survey and salvage these mounds will provide further information about ancient Maya settlement around Yalbac and the Cara Blanca pools, further informing the preliminary conclusions presented in here. Additionally, aDNA and isotopic analysis of the teeth and bone samples will tell us more about the individuals who lived in these spaces. In addition to the archaeological value of continuing our work, it is also important for the preservation and recording of the cultural heritage of the Maya still living in the area today. Finally, it is critical to continue to educate the public about the importance of these cultural resources. Continued engagement with the SPLC and the farmers who plant the fields can perhaps help to protect mounds. Even if farming continues, maybe mounds can be more carefully avoided and artifacts preserved instead of collected. It is also important to continue working with the local Maya population, helping to convey the depth of Maya history and provide tools for all Belizeans to protect their heritage.

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SUSTAINED RESEARCH: THEORY, METHOD, AND DISCOVERIES OF THE PFBAP OF NW BELIZE

Debora C. Trein, Lauren A. Sullivan and Fred Valdez

The Programme for Belize Archaeological Project was initiated with the 1992 field season. The 2016 field season represents the 25th consecutive research year for the PFBAP. A summary of the cumulative results is herein presented. We begin with the initial model of what the PFBAP, as a regional endeavor, was intended to address and gain with accumulated data and analyses. A general background/history, theoretical interests, proposed methods, and some discoveries/findings are discussed. Summary connections are made between early systems of research and how some remain the same, while others have been significantly modified with advancing technologies.

Sustained Research: Theory, Method, and Discoveries of the PFBAP of NW Belize.

In 2016, the Programme for Belize Archaeological Project (PFBAP) celebrated the completion of the 25th year of continuous research in northwest Belize. PFBAP is a broad and extensive research program that has promoted a regional approach to examining ancient Maya urban centers and hinterland settlements in the Rio Bravo Conservation and Management Area (RBCMA) in the Three Rivers Region of northwest Belize. This viewpoint is only possible by the continuing collaborative work conducted by several research programs and specialists, who each have their own theoretical perspectives to different questions about ancient Maya life in this region of Belize.

In this paper we provide a synthesis of the initial goals of the project and cumulative research that has taken place in the PFBAP over the past quarter century. We also briefly discuss some ongoing projects, highlighting the diverse and complex character of ancient Maya communities present in the region.

Geographical Location

The Three Rivers Region is a large environmental and cultural domain occupying a nearly 2,000km² area, geographically defined on its northern and western borders by Rio Azul and its floodplains, on the east by Booth’s River and its associated floodplains, and on the south by the archaeological site of Chan Chich (Figure 1). The PFBAP operates in its majority in the area of the Three Rivers Region that is enveloped by the RBCMA, a 1,200km² reserve of protected forest. The Three Rivers Region is situated on the fractured eastern margin of the Petén Karst Plateau in the Yucatán peninsula, and is marked by three steep escarpments and terraces oriented northeast-to-southwest, produced when this region rose from the bottom of the ocean in the Pliocene (Brokaw and Mallory 1993; Dunning et al. 2003). The Three Rivers Region contains various environmental settings from scrub brush areas and bajos to stands of tall forest, a product of the variable topography, soil variability, and local hydrological patterns. Prehistoric Maya sites or at least evidence of ancient Maya activity can be found in each of these environments. Over 70 archaeological sites have been identified within the RBCMA alone, with sites ranging from the large centers of La Milpa and Maax Na, to the more numerous mid-level sites, smaller

Figure 1. Map of the Three Rivers Region, adapted from Houk 2010, iv.
settlements, and agricultural features dotted throughout the region.

History and Purpose of PfBAP

Regional examinations of the ancient populations of the Three Rivers Region provide the opportunity to understand not only the cultural trajectory of distinct communities, but how these communities related to each other over a period of almost 2,000 years within a highly environmentally-diverse region. Initial projects that employed a regional perspective to the study of the archaeology of the Three Rivers Region include the Río Azul Project (1983-1987), followed by the Ixcanrío Regional Project (1990-1991), both on the Guatemalan side of the Three Rivers Region (Adams 1989; 1990). In both these projects, an emphasis was placed on understanding the communities within the region and the various social institutions between small and large settlements. After the Ixcanrío Project ended in 1991, the PfBAP was started in 1992 with the express goal to continue the regionally-focused research that took place on the Guatemalan side of the Three Rivers Region (Adams and Valdez 1993).

The initial field seasons of the PfBAP were dedicated to the survey of the RBCMA and the compilation of a comprehensive regional chronology for the settlement of the area by the ancient Maya and possibly Paleoindian and Archaic populations (Adams and Valdez 1993). Surveys and excavations were conducted at several sites, including Gran Cacao, Las Abejas, and Chawak But’o’ob, among many others (Adams and Valdez 1994; Sullivan 1997; Walling 2005). Surveys of the RBCMA also discovered numerous previously unknown sites, most notably Dos Hombres and Maax Na (Barnhart and Ross 1997; Houk 1994).

Since the start of the PfBAP, several other archaeological sites have been investigated, from regional urban centers such as La Milpa (Aylesworth et al 2011; Grazioso 2008; Hammond and Bobo 1994; Houk 2010; Lewis 2009; Martinez 2013; Trein 2015; 2016a), and medium-sized urban centers such as Say Kah (Jackson et al 2010). Smaller satellite centers comprising of a few courtyards and groups such as Medicinal Trail (Hyde et al. 2015), La Milpa North (Heller 2011), Hun Tun (Dodge 2015), and Wari Camp (Levi 2011) have also received considerable archaeological attention.

From these investigations, the complex inter-settlement relationships that informed the socio-political, economic, and cosmological structures present in the region have become evident. Communities in the Three Rivers Region, particularly from the Early Classic period to the end of the Terminal Classic period were organized within a graded hierarchy framed by a flow of authority and power originating from several densely populated, highly complex urban centers such as Río Azul, La Milpa, La Honradez, Dos Hombres, Chan Chich, and Kinal (Adams et al. 2004). These cities and their leaderships shaped and directed sociopolitical and economic structures that informed regional networks of goods and information exchange, organization of political authority, and production and consumption practices, impacting the lives of all communities within these cities’ large administrative footprints.

Nevertheless, while approaches that stress a hierarchical framework to the organization of ancient Maya sociopolitical structures may foreground the strategies large cities employed to compete with each other and dominate smaller communities, data gathered over the last 25 years indicates that power in the Three Rivers Region may have been “counterpoised rather than [simply] ranked” (Crumley 1995, 5). Settlements in the Three Rivers Region participated in a complex network of horizontal relationships that were established and maintained to ensure institutional and operational security for all settlements across the entire region (King and Shaw 2003; Scarborough et al. 2003). Information, goods, or services moved horizontally across settlements as well as along established vertical pathways between members of a group or between settlements (Scarborough et al. 2003). From this conceptual framework, a model of community resource specialization was developed, where complex networks of vertical and horizontal interactions between different communities were predicated on the particular goods or services (be they material or immaterial) that a settlement contributed to the maintenance and sustainability
of the polity as a whole (Scarborough et al. 2003, xv).

This paper discusses some of the research at the PfBAP at the regional level, with the understanding that what is presented here is but a fraction of the information gathered in the past 25 years. We discuss the results of recent investigations at sites of various sizes and position on the regional sociopolitical and economic scale in the Three Rivers Region to illustrate how an awareness of the various horizontal and vertical relationships between sites could enhance and refine our understanding of regional inter-site interactions. More detailed perspectives on individual sites within the RBCMA are presented in Cortes-Rincon et al. (2017), Trachman (2017), and Hyde and Power (2017), in this volume.

**Large Urban Centers**

*La Milpa*

La Milpa is the largest known site in the Belize side of the Three Rivers Region, and the third largest Maya site in Belize. The largest public space, Plaza A, encompasses 18,730m² of open space and makes up the northern half of the site core, while the southern half of site core is composed of Plazas B and C, Courtyard D, the Southern Acropolis, and several elevated courtyards (Figure 2). Much of the research conducted by the PfBAP at La Milpa is focused on the site core area, with excavations and remote sensing efforts over the past 15 years taking place mostly in Plaza A (Aylesworth et al. 2011; Grazioso 2008; Martinez 2013; Trachman 2009; Trein 2015; 2016b). Extensive excavations have also been conducted in Plazas B and D to the south (Houk 2010; Houk and Zaro 2012; Trein 2016a), as well as on two small auxiliary courtyards on each side of the Southern Acropolis (Lewis 2009).

La Milpa’s regional trajectory is well-charted (Adams et al. 2004; Sullivan and Sagebiel 2003; Sullivan and Valdez 2006). While a Middle Preclassic start is hypothesized (Sullivan and Sagebiel 2003), the first evidence for the presence of a stratified community at La Milpa comes from the Late Preclassic period, with the construction of many core public ritual and elite residential and administrative structures (Aylesworth et al. 2011; Martinez 2013; Trein 2016b). The construction of the monumental core continues into the Early Classic period, with the expansion of core architecture (Houk and Zaro 2012; Trein 2016a; 2016b); construction of new public monumental and elite structures (Hammond et al. 1996); and the setting of several stelae in Plaza A (Hammond and Tourtellot 2004). The Early Classic building program at La Milpa is associated with a high index of imported goods and styles found in elite contexts, originating particularly from the large Petén centers of Tikal and Uaxactún (Sullivan and Sagebiel 2003; Sullivan and Valdez 2006). The presence of imported goods and styles in elite contexts at La Milpa, like in many other growing urban centers in the region, suggests that political authority stemmed from the creation of lateral political relationships with larger centers such as Tikal (Sullivan and Sagebiel 2003). The Early Classic externally-oriented political strategies of many of the urban centers in the Three Rivers Region contrasts markedly with a climate of regional independence that characterized the Three Rivers Region in the second half of the Late
Figure 3. Topographic map of Structure 3. Area where a platform was built and used in the Late Classic period highlighted to the northeast of Structure 3. Map by Eric Wettengel, with overlay from Hammond and Tourtellot 1993, 72.

Classic to Terminal Classic. This period is defined by unprecedented architectural expansion of the public monumental core of many Three Rivers Region sites, a dramatic increase in the region’s population, and a reliance on locally-made and locally-traded items, even within elite contexts (Sullivan and Sagebiel 2003, 33). During this period, La Milpa becomes the largest urban center in the Three Rivers Region and is a prominent political force in the region (Hammond et al. 1996).

La Milpa’s prominence as one of the most politically powerful urban centers in the Three Rivers Region coincides with a marked diversification in the ways in which La Milpa’s monumental core was accessed and used. Archaeological investigations in the open areas around Structure 3, one of the central temple structures in Plaza A, show that the spaces around Structure 3 were used for a variety of activities in the second half of the Late Classic to the Terminal Classic period, where previously no landscape modification features or occupational assemblages were identified around the already-present temple structure (Figure 3) (Trein 2016b). In addition to ritual-political activities indicated by the architectural design of one of the largest temples at La Milpa, these activities include late-stage manufacture of chert stone tools, possible manufacture of adornos and beads, possible exchange activities, agricultural practices, limestone quarrying, and architectural construction and maintenance activities (Figure 4) (Trein 2016b). These activities are not all associated with the practices of an elite group, but some, such as limestone quarrying and agricultural practices, can be associated with “commoners” as part of an undefined, low-status, tribute-paying population who may have originated from various communities in the region (Robin 2003). While meriting further study, the variability of activities taking place at the monumental core of La Milpa during the second half of the Late Classic to the Terminal Classic period could indicate a high degree of regional centrality for La Milpa. People from potentially different communities from across the region came
together at La Milpa to not only supply the increasingly powerful La Milpa leadership with rare items, but also to participate in the manufacture and possible exchange of mundane goods, extract raw materials, trade information, and create and maintain alliances, in essence making the core of La Milpa a “hub for the exchange spokes of a regional wheel” (Scarborough and Valdez 2003, 8). The increase in intensity and variability of activities in La Milpa’s public monumental core during its period of regional prominence suggests that the mechanisms for the creation and legitimization of authority consisted not only of the ability of an elite to successfully materialize and express ideas of political power, divine knowledge, and sacred cosmic orders through public architecture and elite practices, but crucially also to create opportunities and foster an environment that enabled the formation and maintenance of lateral relationships among communities under La Milpa’s oversight.

Maax Na

The site of Maax Na is a prominent ceremonial center located in the La Lucha Uplands in the Three Rivers Region, situated within seven kilometers of the large urban settlements of La Milpa to the north and Dos Hombres to the southeast. The core architecture of Maax Na differs from that of the aforementioned sites by being organized around three openly configured plazas in an east-west orientation as opposed to the tightly assembled, north-south oriented plaza configurations of La Milpa and Dos Hombres (King and Shaw 2003) (Figure 5). Maax Na’s largest plaza is the North Plaza, and is comparable in area to La Milpa’s Plaza A, indicating the potential of this public space to accommodate large numbers of people (King and Shaw 2003, 70). Late Preclassic and Early Classic materials have been identified throughout the site, but, like most sites in the Three Rivers Region, an extensive construction program was initiated for Maax Na in the Late Classic period, which included the expansion of public ceremonial architecture, elaborate elite residences, administrative structures, and a marketplace (King and Shaw 2007; Shaw and King 2015). This architectural program was accompanied by a parallel development of neighboring hinterland settlements, and agricultural intensification and water management projects, extending to the western edge of the La Lucha Bajo over 4.5km to the west (King and Shaw 2003, 73). Surveys and excavations conducted in areas surrounding Maax Na indicate that the concentration of settlement in the vicinity of Maax Na is such that it rivals La Milpa’s settlement sprawl in size and density during the Late Classic period (King and Shaw 2007, 115). Interestingly, the La Lucha Bajo was also developed and exploited for agricultural purposes on its northern edge by hinterland settlements aligned with La Milpa (Kunen 2004). It is yet unknown whether Maax Na was politically subordinate to La Milpa, or whether Maax Na occupied a position of relative independence based on its high level of economic and religious autonomy as suggested by the development of Maax Na’s neighboring areas for agricultural purposes and the presence of a marketplace (King and Shaw 2003, 115; Shaw and King 2015).

Maax Na is distinguished by the presence of a number of caves in its architectural core, which are among some of the largest caves identified in the Three Rivers Region (King et al. 2012). Spider Cave is the principal cave identified at Maax Na is, measuring 8m by 7.5m in internal space. It is located along the south wall of the main entrance to the North Plaza, adjacent to Structures IA-8 and IA-9, both

Figure 4. Some of the artifacts found in the Late Classic occupational surface to the northeast (behind) Structure 3. Photos by Debora C. Trein.
pyramidal temple structures (Figure 6) (King and Shaw 2003). At the cave entrance a dense concentration of over 1,000 Late to Terminal Classic (Tepeu 2 and 3) unslipped and monochrome ceramic vessel fragments was recovered, originating from jars, bowls, plates, and censer vessels. Many sherds were blackened on the interior, and may have been used for burning copal (King et al. 2012; Lauren Sullivan personal communication 2016). The North Plaza and its monumental structures seem to have been designed and built at least partially to enable ritual practices taking place in Spider Cave. The presence of caves and the assemblages contained therein suggest that Maax Na may have played a critical role in Maya cosmology in the region (King and Shaw 2003; King et al. 2012). The Maax Na leadership may have been disposed and able to fulfill alternative and/or complementary ritual events in the lives of the regional population by developing and employing localized resources in ways that other large ceremonial centers were not equipped to do (King and Shaw 2003).

While the North Plaza seems to have functioned as a regional focal point for religious activity, the West Plaza was designed to serve a non-ceremonial function. The last construction phase of the West Plaza, in the Late Classic, is defined on all four sides by a series of long, low, and narrow buildings with multiple rooms that were likely built as low-profile masonry walls that supported perishable walls and roofs (Figure 5) (Shaw and King 2015, 183). A 6m-tall multi-roomed structure is integrated onto the plaza’s perimeter on its southern side, flanked by similarly tall long structures that likely also supported multiple rooms (Shaw and King 2015, 180). Shaw and King suggest that the West Plaza was designed and used as a marketplace: the long narrow buildings functioned as market stalls, and the large structure on the southern side of the West Plaza served administrative or judicial functions (Shaw and King 2015, 182). While possibly having Late Preclassic or Early Classic beginnings, the Maax Na market was developed and enclosed during the Late Classic period, likely as a response to increased marketing demands fueled by higher population densities and socioeconomic prominence of Maax Na and various urban settlements in the region (Shaw and King 2015, 187-8). The Maax Na market was integrated into a regional exchange system that may have been structured around “market days alternating at different sites” (Shaw and King 2015, 181), where participants from various communities and socioeconomic backgrounds could engage in the production and exchange of goods, trade information, and settle issues that may have required judicial or administrative support (Shaw and King 2015, 191).

While Maax Na may have competed with La Milpa on the political stage and in the
development of agricultural resources in the La Lucha Bajo, Maax Na seems to have developed close relationships with powerful neighbors by adopting a ceremonial and economic strategy that augmented the lived experiences of communities living within and beyond the Maax Na administration (King and Shaw 2003, 67). Future research seeks to examine the nature and degree of the elite management of the Maax Na marketplace, and the nature of relationships between Maax Na and its hinterland settlements (King and Shaw 2013, 150; Shaw and King 2015, 193).

**High-Status Specialized Communities**

*La Milpa North*

High status peripheral communities offer a different and significant perspective to regional interactions in the Three Rivers Region. Research at the site of La Milpa North, 3.5km north of La Milpa, indicates that some stratified communities within the La Milpa sphere may have specialized in the production and exchange of rare and elite goods, and as such may have achieved a degree of political and economic prominence. The site of La Milpa North consists of a palatial compound located on a karst hilltop, composed of one raised pyramid complex flanked by two enclosed plazas, surrounded by several smaller domestic groups downslope overlooking the Dumbbell Bajo (Heller 2011) (Figure 7). La Milpa North was first identified in survey efforts to test the hypothesis that La Milpa represented the center of a four-point cosmogram (Tourtellot et al. 2002), with La Milpa North, La Milpa East, and La Milpa South representing three of these four points, all within 3.5km of La Milpa’s central precinct (Tourtellot et al. 2002). Investigations conducted by Eric Heller since 2010 utilize a “biography of place” approach to build a broad understanding of the trajectory of use, modification, and cognizance of La Milpa North by its inhabitants and visitors from its founding to its abandonment and beyond (Heller 2011; Heller and Burns 2014; Heller et al. 2015). Heller’s approach is designed to integrate practices observable at La Milpa North to the larger “social, political, and economic circumstances of the Three Rivers Region” (Heller and Burns 2014, 85). Using this approach, Heller also aims to test the cosmogram model proposed by Tourtellot et al. (2002) by examining the character of the relationship of La Milpa North residents with the larger La Milpa administration (Heller 2011).

From these investigations, La Milpa North emerges as a community with a distinct elite identity, based on the elaborate architecture built in one or two phases in the second half of the Late Classic period. The members of the La Milpa North community engaged directly in economic production through activities that appear to be oriented toward elite networks of consumption and exchange. These include the
production of specular dyes, as suggested by the presence of red and yellow ochres, hematite, and marine shell, which could be combined to produce pigments (Heller et al. 2015, 78; Heller and Burns 2014, 87); cloth manufacture, as evidenced by the finds of spindle whorls and obsidian blade fragments (Figure 8) (Heller and Burns 2014, 89); marine shell adorno production (Heller and Burns 2014, 95); and ceramic production, based on a tool kit of chert blade and scraper tools, ceramic sherds of various types, and a granite mano and fragmentary granite metates, with ground red and orange materials settled into the granite crevices (Heller et al. 2015, 85-86), all found within the patio area of the palatial compound at the center of La Milpa North. Further, inhabitants of the palatial compound of La Milpa North may have also directed and overseen agricultural production in the Dumbbell Bajo directly below (Heller et al. 2015, 79), as well as the production of chipped chert tools, the raw materials for which are still found present in the areas immediately surrounding the central precinct of La Milpa North (Heller and Burns 2014, 86; Heller et al. 2015, 77, 90). Heller has suggested that the production of high-quality dyes, cloth, and adornos formed the backbone of the economic strategy of La Milpa North, contributing towards the political and economic prosperity of this high-status community while satisfying at least some of the regional demands for high-quality textiles. The success of this strategy speaks to the ability of La Milpa North inhabitants to access long-distance trade networks for materials such as obsidian, granite, and marine shell, which, when combined with locally-sourced chert, iron oxides, plant fibers, and clay, could be processed into finished goods (Heller et al. 2015, 90).

Continuing research at La Milpa North will expand interpretations of La Milpa North’s role within the regional sociopolitical and economic landscape, and shed light on how the growth and persistence of this high-status, likely resource-specialized, community contributed to the enhancement of the larger regional political system (Scarborough and Valdez 2003, 6).

**Hinterland Communities**

**Medicinal Trail and Hun Tun**

The sites of Medicinal Trail and Hun Tun are examples of the numerous stratified agricultural hinterland sites identified in the Three Rivers Region that supported the day-to-day operations of large urban centers such as La Milpa, Maax Na, and Dos Hombres. Medicinal Trail and Hun Tun are dispersed hinterland communities composed of a few formal courtyard groups, numerous informal clusters of mounds and multiple landscape modifications such as terraces, depressions, and linear features (Figure 9) (Hyde et al. 2015, 97). Both sites are situated between the La Lucha Uplands and the Rio Bravo Escarpment atop a ridge within 5km from La Milpa (Dodge 2015; Hyde and Stowe 2015). While Medicinal Trail is a community with a long history of habitation, from the Middle Preclassic to the Terminal Classic periods, Hun Tun is representative of many small hinterland sites in the Three Rivers Region, which was founded, inhabited, and subsequently abandoned between the second half of the Late Classic period to the Terminal
Classic period, reflecting the large-scale demographic fluctuations observed in the Three Rivers Region during this period (Dodge 2015; Hyde and Stowe 2015).

Both sites are characterized by differentiated architectural arrangements. Large formal courtyard groups built on artificial platforms form the center of these hinterland sites, characterized by masonry dwellings and small temple structures surrounding shared central spaces. These large groups can be conceptualized as “expensive settlements” as they have artificial plaza platforms, plastered plaza floors, benches, and even corbel vaulted roofs in the case of some of the structures at Medicinal Trail (Hyde and Stowe 2015, 56). These groups also represent the sole areas of the site where items such as Spondylus shell ear spools and incised jadeite pieces are identified in the artifact assemblage, indicating that the residents of these courtyards had access to rare items and were of higher socio-economic status in comparison with the residents of less elaborate mound groups at these same sites (Figure 10) (Hyde and Stowe 2015).

At both Medicinal Trail and Hun Tun, the formal courtyard groups are flanked by smaller structure groups that are simpler in architectural complexity. Structures may have been built on individual platforms but were not situated on courtyard-sized elevated platforms like their more elaborate neighbors, and structures may have been built using perishable materials rather than cut-stone (Hyde and Stowe 2015, 60). Further, artifact assemblages at these smaller groups are characterized by materials consisting of utilitarian ceramics and lithic tools such as oval bifaces, which, in the context of the terraces that are present throughout these communities, reflect an economic focus on agricultural production. In the context of the proximity of Hun Tun and Medicinal Trail to La Milpa, sites such as Hun Tun and Medicinal Trail are interpreted to be organized as stratified corporate groups, with an internal hierarchy manifested through differentiated habitation and associated material culture (Hyde and Stowe 2015). As a stratified corporate group, the community leadership is responsible for controlling collectively-held land or resources and the production and processing of products grown or manufactured in them (Hyde and Stowe 2015, 55). In the case of Medicinal Trail and Hun Tun, agricultural produce – whether these be foodstuffs, raw material for further processing (such as cotton), or medicinal or ornamental plants – is the suggested product offered by these communities to support large urban centers such as La Milpa (Hyde and Stowe 2015, 63). Future research at these sites will investigate the character of macro and micro botanical remains present in the sediment profiles of the terraces associated with these sites to determine what crops were grown, processed, and distributed from Medicinal Trail and Hun Tun (David Hyde, 2016 personal communication). The identification of these crops will lead to a better understanding of the nature of the relationship between small stratified hinterland communities and the large urban centers they supported (Hyde and Stowe 2015, 63).

Conclusion

The work briefly discussed in this presentation is but a fraction of the regionally-focused research conducted at PfBAP over the past 25 years. The archaeological research taking place at PfBAP is further enhanced by the work of geologists, geoarchaeologists, bioarchaeologists, and geographers, who have been a part of this project since its inception. Sustained archaeological research throughout the RBCMA, in both large sites and small, will continue to add information to the present body of archaeological data of northwestern Belize, allowing for a more nuanced interpretation of the various horizontal and vertical relationships that link communities of diverse scales and complexity in the Three Rivers Region.

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IS AND ISN’T PRODUCE EACH OTHER: AN UNUSUAL ARCHITECTURAL AMALGAMATION AT KA’KABISH

Helen R. Haines, Kerry L. Sagebiel and Claude Belanger

Monumental architecture forms a visible marker symbolising the state power and ideologies. Large pyramid temples encoded the concept of witz’, or sacred mountain, and were a focus of Southern Lowland Maya ritual and mortuary activities from the Late Formative through the Terminal Classic period. Round structures, although considerably rarer, share a similar time-span as their temple pyramid companions. These structures appear in the Middle Formative and continue into the Post-classic where they are associated with the ideology of Ehecatl – the Wind God. Round structures are often typified by a flat-topped platform to which a square flight of steps is appended, thereby assuming a distinctive ‘key hole’ shape. At Ka’kabish we have the startling combination of a tall pyramid temple with a round structure appended to the front, thus combining the two normally discrete forms into a single architectural programme. This odd amalgamation occurred during a remodelling of the front staircase of Structure FA-8, likely to accommodate the placement of the tombs that were discovered in the platform. This paper will provide a preliminary summary of Structure FA-8 discussing its unusual remodelling and associated architectural features and material culture.

Introduction

Maya sites are traditionally identified, and defined, by their built environment. Within these constructed landscapes monumental architecture forms a visible marker symbolising state power and ideologies. Architectural forms also can encode identity through regional stylistic variations and unique decorative elements. Over the life-time of a city structures were often refurbished, remodelled, or completely rebuilt with a newer building completely encasing the original structure. These remodelling attempts could radically alter the form and function of a structure, changes that are often attributed to concomitant changes in intra-polity power structures and political alliances.

In this paper we present evidence on an unusual remodelling of a structure at Ka’kabish. The structure, FA-8, reveals evidence of a conflations of what are typically two separate architectural forms; pyramid temples and round structures. We provide a brief overview of these two building types before discussing the construction history of Structure FA-8. In concluding our discussion of the structure we note potential reasons for the creation of this amalgamation that provides a more prosaic approach to architectural variability. This research is based on preliminary analysis of the structure which was excavated as part of the 2015 KARP field season.

Relevant Architectural Forms

Architecture in the Maya world can be classified into a variety of function-based forms (i.e., temples, palaces, ball courts [Andrews 1975]) as well as shape-based designs (i.e., range building, [Coe 1967:55]). The two relevant forms for this paper are the ubiquitous pyramid-temple and rarer round structure (Pollock 1936).

Pyramid temples vary widely in size and distribution, ranging from small single pyramids found as part of courtyards and assumed to be lineage shrines, to groupings of large pyramid temples forming acropolis clusters such as the North Group at Tikal. Regardless of size or quantity, pyramid temples are found at virtually all Maya centres whether they be major cities or minor centres. These structures formed the focus of Southern Lowland Maya ritual and mortuary activities from Late Formative through the Terminal Classic period and frequently were rebuilt or remodelled by later rulers. Remodelling could take the form of small changes or minor modifications, ranging from replastering episodes to extending the lower few steps of the staircases. More sweeping changes also could be made to these structures and examples exist of rebuilt staircases, the addition of stair-side outsets, extensions to the lower front steps to form a frontal platform, and alterations to the front of the structure to include a room partway up the substructure. While minor modifications many have been required for maintaining the integrity and appearance of

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the building, most major changes frequently occurred due to the desire to incorporate a newly deceased individual into the structure.

Round structures are considerably rarer than pyramid temples. Pollock originally identified nine types of round building forms spanning all of Mesoamerica (Pollock 1936). These architectural oddities long have held the fascination of archaeologists, and Pollock’s inaugural work has been followed by several studies focusing on round buildings (Aimers et al. 2000; Kangas 2015; Szymanski 2010). Combining data from these studies, at total of 70 Maya round structures were identified (Table 1). Although round structures were constructed throughout Maya history, the greatest number of these structures (n=42; 56.0%) were identified as being Middle to Late Formative in origin. Only three structures (4.0%) were securely dated to the Early Classic period, and only 14 structures (18.6%) in total to the Classic Period.

These structures appear to have varied in form through time. Formative period round structures were low flat platforms with no superstructures and an outset staircase consisting of two or three steps in what Glass dubbed ‘keyhole’ shape (Glass 1965:51-59). The Classic period round structure at Nohmul consisted of a low platform with circular structure constructed with a low wall only a few courses high and, based on the paucity of stone in the collapse, likely sported a perishable superstructure (Chase and Chase 1982). This round structure form also has been documented in the Sibun area (Harrison-Buck 2012; Harrison-Buck and McAnany 2013). Post-Classic round structures vary widely in size. Structure N13-9 at Lamanai was a small two-tiered round structure with outset stair situated upon a small square platform (Pendergast 1986:11). Beyond the use of a square substructure platform, the Lamanai structure contrasts significantly with the more famous large Post-Classic Caracol structure at Chichen Itza which Thompson once described as a “2-decker wedding cake on the square carton in which it came” (Thompson 1994: 37; see also Ruppert 1935).

Although the size and form of the structure may have varied through time, it is believed that the general function these buildings served, that of ritual, remained relatively consistent. In the Formative Period, round structures in the Belize Valley at least, according to Aimers and colleagues (2000:83) “appear to have been used as stages for performance activities, related to their role as burial shrines”, and were likely used “for performances related to ancestor worship”. Lohse and Sagebiel (2006) note that in the Early Classic round structures at many sites “were important for fomenting group identity at both the household and public scale”. They speculate that the round structure at Gran Cacao “was used for public integrative events and ceremonies” and as such it was an “important architectural component in the Early Classic Gran Cacao community” (Lohse and Sagebiel 2006). A continuation of the ritual function for round structures into the Terminal Classic period is supported by Harrison-Buck’s and McAnany’s work in the Sibun area (2006) where they note that “material culture from the Sibun settlements lends support to the theory that circular shrines were ritual in function”. These Terminal Classic round structures as well as later Post-Classic structures are believed to be associated with the wind God, Ehecatl (Bruhns and Amaroli 2009;
Brief Overview of Ka’kabish

Ka’kabish is a moderate site located in northcentral Belize approximately 10 km northeast of Lamanai, between the New River Lagoon and the Rio Bravo Escarpment (Figure 1). The city was built on a limestone ridge, one of several that extend roughly from the Bay of Chetumal to the Belize River valley (Hammond 1973; Wright 1959). It’s location on this rise makes it clearly visible from the escarpment and likely also provided a clear view of the immediately adjacent countryside.

Previous research indicates that the area was initially settled in the Middle Formative period (ca. 800-600 BC) and that the city was occupied well into the Post Classic period. Evidence of the earliest occupation comes from a Middle Formative ritual deposit discovered beneath the Group-D plaza that consisted of a cist containing a secondary burial, over 500 marine shell beads comprising at least three discrete necklaces, 17 pieces of jade; another 30 pieces of jade were distributed in 18 smaller pits adjacent to the burial. The position of the burial and wealth of mortuary goods suggests that this was an important individual, possibly one of the founders of the sites.

Ka’kabish continued to flourish through the Early Classic period (AD 250-600), when the city was inhabited by a high-status population, as evinced by courtyard complexes, lineage temples, corbel-vaulted residences, and formal tombs visible in looters’ trenches (Haines 2005, 2008a, 2011a, 2011b; see Andres 2005; Becker 2003:258-262; Ball & Taschek 1991; Chase & Chase 1996; de Montmollion 1995; Pyburn 1997). Participation in long-distance trade networks, first evinced in the Middle Formative period, and evidence of the economic success of the centre is manifested in the Early Classic period through the consumption of large quantities of obsidian in the construction of tombs around the centre (Haines 2000; Haines and Glascock 2012). Early Classic ceramic vessels, discarded by looters’ due to their broken state, also reveal strong ties to the Central Petén, most notably with the site of Tikal.

At the end of the Early Classic period (ca. AD 600) monumental construction at Ka’Kabish diminishes, possibly ceasing completely. Activity at the city resumed during the Terminal Classic period (AD 750-900), and the site continued to flourish into the Post-Classic period (ca. AD 900-1500). At Ka’Kabish, Post-Classic occupation at the site is documented from a number of locations, including refurbishment of the main temple, the presence of low domestic platforms in the Group D plaza, and the use of chultuns to the south of the plaza for burials. One chultun yielded a wealth of copper artefacts associated with a multi-individual interment.

The site currently consists of eight plazas and courtyards, identified as Groups A through H (Figure 2). It is likely that the site was larger during the Classic period as two courtyard groups are known to have been lost due to agricultural development. A modern road bisects the site between Group D, the largest plaza and Group F, and anecdotal accounts combined with survey work suggest that at least one building was destroyed during the creation of the road. Group D forms the core area with the largest, and greatest number of, monumental buildings. However, Group F, which likely was originally connected to Group D, contains the greatest number of pyramid temples. There are
eight structures at Ka’kabish that conform to the pyramid shape and are likely temples; two are in Group D (Strs. D-4 and D-9), two are conjoined (Strs. F1 and F2), while the remaining four (FA-5, FA-6, FA-8, and FA-9) are arranged along the east side of a raised platform forming what we believe was the site acropolis, all facing westward. It is structure FA-8 that is central to this discussion and upon which we will focus the rest of this paper.

**Structure FA-8**

Structure FA-8 was one of the structures originally identified in the initial survey of the site in 1995 (Guderjan 1996). The early mapping project identified the structure as having a large frontal modification which was recorded as a rectangular platform (see Guderjan 1996: 118). The structure was later remapped in 2009 as part of the KARP survey, at which time the convention of mapping the frontal protuberance as a rectangular platform was
continued. The structure did not garner additional attention until 2015, when it was discovered that looting on the structure had occurred between the 2014 and 2015 field seasons.

Two trenches were discovered in the building; Trench 1 penetrated the building along the primary access starting at the front of FA-8-1st (the front platform) and extending through the platform. Trench 2 penetrated the building from the south-side at the juncture of the front platform and the larger pyramid structure. Examination of Trench 2 revealed that the looters had hit a north-south wall in the initial section of the trench, likely that of the pyramid structure, before changing course and heading north-east. No other features of note were present in this trench. Of particular interest in regards to Trench 1, was the fact that the looters had deliberately attempted to disguise their tunneling with the strategic placement of rocks at the bottom of the trench. Removal of the rocks revealed they had discovered three tombs, although it was uncertain if they had completely looted the third burial due to the damage to the ceiling which made the area extremely narrow and very dangerous.

We started investigations in 2015 to determine the extent of looting damage, document tombs, and to recover materials left behind in the backdirt and tombs. Clearing of the backdirt from in front of the structure, the trench, and initial two tombs (Tombs FA-8/1 and FA-8/2) yield a wealth of Early Classic material. A number of sherds from censers as well as pieces of Yaloche Cream Polychromes were recovered from the inter-tomb tunnel, likely originating in the platform fill. These materials, as well as others from additional excavations, help place the construction of the platform in the Early Classic. Additionally, 19 reconstructible, although incomplete, vessels dating to the Early Classic were also recovered. These vessels range in type and include Aguila Orange, San Blas Red-on-Orange, Dos Arroyos Orange Polychromes, and Balanza Black as well as Unnamed Early Classic Incised Red, and unnamed Early Classic Cream vessels. The forms included typical Early Classic ‘cream pitchers’ and flanged plates. Of particular interest were at least four (likely more given the number of foot fragments) Teotihuacan-style tripod cylinders with feet sporting a variety of cut-out designs. These vessels likely came from the tombs and were abandoned by the looters due to damage that would have rendered them unsellable.

It was during the course of these investigations – cleaning up around the entrance to tunnel that we discovered that the design of the platform was “distinctly odd” and warranted fuller investigation. In the course of these investigations we discovered that FA-8 had undergone at least four modifications and rebuilding episodes. To put the structure, and the final front platform, into meaningful context it is necessary to discuss these construction episodes in historical, rather than excavation, sequence.

Structure FA-8-4th

Due to the depth of the succeeding construction phases, little is known about FA-8-4th. In correlating information between the two looter’s trenches it appears that the wall pierced by the looters belonged to the front of this building. We also encountered the front step in our excavation unit on the top of the platform; however, no datable materials were recovered from either area. The basal step identified in the excavation unit suggests that the structure was similar in design to the succeeding FA-8-3rd in that it was a relatively standard pyramid-temple structure with a single front staircase. This excavation also revealed that the staircase had been cut into for the creation of Tomb FA-8/3, and it appears that this mortuary event was the impetus for the construction of FA-8-3rd (Figure 3).

Structure FA-8-3rd

As noted, the basal steps of FA-8-4th were removed to lay Tomb FA-8/3 (Figure 3). We had hoped that the looters had not fully cleared this tomb, hence the reason for our upper excavation unit, regrettably, our excavations revealed that the looters had in fact cleared this tomb. The chamber was scarcely larger than an individual measuring roughly 75 cm wide and 1.5 metres long. The mortuary construction for the feature better conforms to the definition of a crypt (Chase and Chase 1987:57; Welsh 1988).
An Unusual Architectural Amalgamation at Ka’kabish

Figure 3. Profile Map of Structure FA-8.

The sides and ceiling were comprised of flat slabs, of which several of the latter had cracked and were canted downwards at a disturbing angle likely due to the weight of later remodellings and one of the ceiling slabs collapsed while we were examining it.

The succeeding structure, FA-8-3rd, was constructed above Tomb FA-8/3 and conforms to the archetypal pyramid substructure. The face of the structure contained beautiful terrace facings consisting of six wide stepped panels coated with heavy stucco coating (Figure 4). The terrace had an overhanging superior moulding and an extended basal moulding, with no evidence of stucco modelling to suggest decoration leading to the conclusion that the stepped design was the intended decoration. A single frontal staircase with wide, rounded steps, typical of Early Classic structures at Lamanai, was placed along the central axis of the building. As with the staircase of FA-8-4th, the lower steps were destroyed when Tomb FA-8/2 was constructed as part of, and likely the reason for, the succeeding FA-8-2nd build phase.

Structure FA-8-2nd

The lower centre section of the FA-8-3rd steps were removed for inclusion of Tomb FA-8/2, which is similar in construction to Tomb FA-8/3, in that it more closely conforms to a crypt in design. While the building was remodelled to accommodate the addition of the burial, it was not rebuilt to the same scale as the earlier FA-8-3rd. The side terraces were built over with a simple flat face made from cut
stones that may have been plastered smooth. No stucco was discovered in the collapse in front of the terrace that would suggest it supported a frieze, although it is possible that it was painted. In place of a new staircase, the mortuary chamber was covered with a stairblock made from shaped stones (Figure 5). However, the stairblock was never properly finished, but appears to have been extended prior to its completion to encompass the addition of Tomb FA-8/1. The extension of the stairblock was made from roughly shaped stones. It not only incorporated the new tomb but it also extended to cover an altar stone, that sits on Floor 2 in front of the building. It is probable, based on its location that the altar was meant to be associated with the FA-8-2nd stair block.

We hypothesize that the individual who was interned in Tomb FA-8/1 died unexpectedly, before construction of FA-8-2nd was complete. Their interment in FA-8 was hastily contrived resulting in the need to attempt to stretch the stairblock to cover both tombs. However, the resulting proportions created a distended platform, not unlike a thrust stage. This platform was never finished but was remodelled to create FA-8-1st.

Structure FA-8-1st

In order to accommodate the disproportions arising from the inclusion of Tomb FA-8/1 in the stairblock, the builders changed the form of the extension from rectangular to round, thereby creating a quasi-round structure (Figure 6). The new frontal addition, which looks rather more like a vase than a circle, completely covered the central portion of the original staircase and included a rectangular outset at the front. New staircases, incorporating parts of the original steps, were constructed on the northeast and southeast quadrants of the platform. These steps were completely obscured from view from the front of the platform.

Tomb FA-8/1 is distinct from the previous two mortuary chambers. Rather than the large slabs that formed the walls and ceilings of the previous burial chambers, this tomb was constructed from small stones. While similar in dimensions to the previous two tombs, it was constructed with a corbel vaulted roof. A small piece of modelled stucco was found incorporated into the ceiling as one of the building blocks suggesting that at some point a frieze did exist, possibly on the structure itself, but that it had been destroyed.

The altar stone was round with a diameter of approximately 1.75 metres and a thickness of 0.5 metres. Only the northern third of the stone was exposed in the initial looters’ trench making a complete exploration of the stone untenable without removing a significant portion of the platform. The looters had broken the altar and the northwestern quarter of the stone was found outside of the structure in the backfill. Investigations below the stone revealed that it was flat on the bottom and no caches were located beneath it. The surface was smooth with no indications of having been carved.

Excavation of the surface of the structure revealed evidence in the northeast area (a section undisturbed by looters or trees) of a low circular wall. Like Nohmul Structure 9, excavated by Diane Chase and Alren Chase (1982), there is not enough debris to suggest that the wall extended to any great height, and it is likely that the structure had perishable upper walls and roof.

Two stone-lined pits were also found on the upper surface of the platform; one pit in the southeast quadrant and the second feature in the northeast quadrant. The southeast pit was circular and extend down to the surface of Floor 1. Interred within the pit was a lidded God Pot. Regrettably, as the vessel was incomplete it is hard to date although the paste of the vessel suggests an Early Classic period manufacture. The pit in the northeast is oval in shape and slightly larger than the first feature. It contained two highly eroded Aguila Orange flanged plates dated to the Early Classic period and a shell labret. The overall shape of the feature, combined with the labret suggests that at one point the pit contained a burial.

Summary of Structure FA-8

Excavation indicates that Structure FA-8 was initially designed as a traditional pyramid temple sub-structure, and that it retained this form throughout its two earliest known incarnations (FA-8-4th and FA-8-3rd). During its penultimate form it appears that the builders
**An Unusual Architectural Amalgamation at Ka’kabish**

**Figure 5.** Plan map of Structure FA-8-2nd.

**Figure 6.** Plan map of Structure FA-8-1st.
intended to retain the pyramid-temple form with the addition of a stairblock. These additions are well documented at neighboring sites such as Structure 9 at Blue Creek and Structure B-4 at Altun Ha, where they also were used to house burials and caches (Haines 1995; Pendergast 1982).

Structure FA-8 is also, in its final form, a round structure. The construction episode that created FA-8-1st is too large and too complex to be considered a ‘modification’. This construction involved the creation of a distinct platform almost one-third the height of the pyramid substructure behind it and nearly as wide. This platform shares the round structure characteristics found at Structure 9, at Nohmul (Chase and Chase 1982) and the three round structures identified in the Sibun area (Harrison-Buck and McAnany at BAAS 10 years ago).

It clearly isn’t either a pyramid-temple or a round structure, but rather an amalgamation of the two forms. The closest similar ‘amalgamation’ is Structure D in Sistema del Templo Mayor, Cempoala (Pollock 1936, Figure 36); however, in this case the round structure is appended to a rectangular, flat-topped platform of equal height with the staircase on the opposite side of the platform from the round building. By using the Daoist tenet “what is and isn’t produce each other” we are able to build a definitional dialect that allows us to state that Structure FA-8-1st currently seems to be unique in the lexicon of Maya architecture.

**Conclusion**

Our conclusions regarding this structure are based not only on the structure itself and its composition, but also its placement in the larger built landscape. We know that it was used for burials and contained at least three mortuary constructions. It is highly plausible that Structure FA-8-4th was also constructed to house a mortuary chamber. The consecutive use of the structure for interments, coupled with its location adjacent to other temples with mortuary functions (Haines and Helmke 2016), supports the idea that Structure FA-8 was a lineage temple. The position of the structure on the acropolis also serves as a likely indicator that both the original pyramid structure, as well as the later building on top of the round platform, may have served as a locus for ancestor veneration rituals. The discrete building and distinctive nature of the addition may have been used as a means for the lineage who commissioned and used the building to differentiate themselves from other lineages or groups at Ka’kabish (see Hendon 2000). Regardless of its possibly use for crafting a familial identity, all of the other identified functions – mortuary, ritual, and ancestor veneration – fit with what we know about the purpose of both pyramid-temple and round structure architectural forms. However, we have found no evidence beyond the shape of the platform to securely connect the building to Ehecatl.

Our decision to present on this structure, despite the preliminary nature of our data was two-fold. First, we wanted to bring this odd form to the attention of the Maya archaeological community so that it could be added to the present lexicon on Maya architecture. This addition can thereby expand the conventions we use for conceptualising unexcavated structures. Second, we are hoping that by bringing this odd form forward for discussion that we might obtain help identifying other similar pyramid/round structure combinations or, conversely, securely ascertain the unusualness of this structure.

Through discussing this structure and the unusual process by which the ultimate form was achieved, we put forth the plausibility that Maya structures were not always built with considerable forethought. The grossly disproportionate nature of the original modification to the FA-8-2nd stairblock and the clear altering of the form from rectangular to round to salvage the visual design aesthetics of the buildings indicates a flexible and highly adaptive construction process, a behaviour not generally attributed to Maya architectural projects. As to why the ancient builders chose not to construct a complete pyramid temple, as had been the case for FA-3rd, to bring the building back into harmonious proportions remains unclear. As such a structure would have involved an extensive investment of labour and material, it is possible that the decision to not build another pyramid was related to larger issues of polity politics, lineage power, and/or
resource availability. What is clear is that Ka’kabish continues to yield as many perplexing questions as answers.

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Numerous quantified site ranking systems have been developed to produce a settlement hierarchy for Maya sites. The assumption behind these ranking methods is that the size and internal configuration of a site is related to the size of its population and, by extension, the size of the population is a reflection of the political authority that a site possesses. These methods of ranking sites are based on numerous features including the number of courtyards and acropolises present, as well as the presence of ballcourts, stelae, large monumental buildings, plazas with temples. Most of these features are not found at small commoner hinterland sites and therefore are not applicable. The purpose of this paper is to present a ranking system that will provide insight into the relationship that exists between residential architecture and social status for non-elites settlements. Individual residential groups will be analyzed using a dual approach: construction method and settlement location. The construction method will focus on the energy and labor expended, materials used, roofing, flooring, platforms, and layout. The settlement location will focus on the physical and social landscapes. A point value system will be applied to these architectural features and will provide an estimation of a specific group’s social status within the community.

Introduction

In this paper we present a preliminary version of a ranking system that will provide insight into the relationship that exists between residential architecture and social status within non-elite settlements. To accomplish this, we will examine individual residential groups by analyzing construction methods with a focus on the energy and labor expended, materials used, type of roofing, flooring, and platforms, and overall layout. Additionally, we analyze settlement location with a focus on the physical and social landscapes. A point value system will be applied to these variables which will provide an estimation of a specific residential group’s social status within the community. Residential groups are made up of house mounds which are typically rectangular and tend to be grouped either formally or casually around a courtyard or plazuela. They provide evidence of domestic life and typically contain burials, caches, and other offerings (Witschey and Brown 2012).

The Medicinal Trail Community

The ranking system is applied to five residential groups at The Medicinal Trail Hinterland Community, which is located in the Belize portion of the Three Rivers Region, in the Rio Bravo Conservation and Management Area, owned and operated by the Programme for Belize (PfB) (Figure 1). Archaeological work on the property is conducted under a permit issued by the Institute of Archaeology to Dr. Fred Valdez of the University of Texas at Austin. It is approximately 5 km east of the major site of La Milpa, between the La Lucha uplands and the Rio Bravo Escarpment, along a ridge and extending downslope in each direction, and is best characterized as a dispersed hinterland terraced community (Hyde 2011; Scarborough and Valdez 2003). It consists of a couple of formal residential groups, a few semi-formal residential groups, and numerous informal clusters of mounds, as well as many non-residential groups and landscape modifications such as terraces, depressions, and linear features. Of the numerous groups that have been identified from the various survey seasons, we will be applying the ranking system...
Figure 2. Map of the Medicinal Trail community, with residential groups mentioned in text labeled.

Figure 3. Plan and topographic maps of Group A of the Medicinal Trail community.
to five residential groups that have been excavated (Figure 2).

**Group A**

Group A is the largest residential group so far identified and consists of three contiguous courtyards (Figure 3). The Northern Courtyard contains four mounds identifiable on the surface with two more structures found completely below the surface of the Northern Courtyard. The Middle Courtyard consists of two structures on an artificially elevated platform. Structure A-4 is a large shrine-like structure located on the east side of the courtyard facing west, but is not pyramidal. At the south end of the Middle Courtyard, instead of a staircase, a vertical wall was uncovered consisting of well-cut limestone blocks and a thick retaining wall made from unshaped stones, behind which was fill material. The access therefore to the Middle Courtyard was restricted and limited to the northern side. The Southern Courtyard consists of a single mound on the west side of the courtyard below the Middle Courtyard.

**Group B**

Group B is an east-focused Plaza Plan 2 formal group, as described by Becker (2003), located approximately 200 m north-northeast of Group A (Figures 3 and 4). The group was built on an artificial platform and consists of four mounds, surrounding a shared central space with the eastern Structure B-1 being the largest and pyramidal in shape (Martin 2009). Structure B-1 had been looted, with a large intrusive trench penetrating the front center of the building (Hyde 2013; Martin 2009). The trench was excavated into (Martin 2009) and was later profiled and backfilled (Hyde 2013).

**Group C**

Group C was excavated by Maia Dedrick (2009) and is located about 50m south of Group B and is associated with numerous landscape modifications such as terraces, berms, and depressions, all likely related to agricultural activities (Figure 3 and 5). The group consists of three mounds, organized around a courtyard space, with the east side of the courtyard open. Structures C-1 and C-2 are closely associated with each other and appear to face onto the same patio area. Structure C-3 is south of both of these, and faces north. Structures C-1 and C-2 were constructed on an artificial square platform. Later, the platform was extended off the open southeast corner and connecting it to Structure C-3. Later still, additional patio space was constructed off the eastern wall of the original platform, immediately north of Structure C-3.

**Group D**

Group D is located 450m east of Group A and consists of 11 mounds distributed across an approximately 2000m² area (Figures 3 and 6). Most of the mounds at the northern end (Mounds D-1 through D-7) are relatively small and poorly constructed, appearing to not have supported any kind of masonry or permanent superstructures (Hyde and Casias 2011). Mounds D-8 through D-11 are similar but slightly larger. All the mounds likely had pole- and-thatch perishable structures on top of these platforms.

**Group E**

Group E was excavated by Jason Whitaker (2007) and is located 90m southeast of Group A, and is a residential group consisting of five mounds, loosely organized around a courtyard (Figures 3 and 7). Structure E-1 is the largest mound of the group and consists of a platform with a plaster surface and is likely the principal residence of this group. Two separate mounds, Structures E-2 and E-3, abut Structure E-1, but are not connected, and are no more than 15cm tall. The other two mounds are located south of the Structure E-1 cluster, creating an informal courtyard space between them (Whitaker 2007).

**Elite Site Ranking Systems**

A quantified site ranking system, first developed by Adams (Adams and Jones 1981) and later modified by Guderjan (1991), was used to develop settlement hierarchies – to compare sites across a landscape. The assumption behind these ranking methods is that the size and internal configuration of a site is related to the size of its population and, by extension, the size of the population is a reflection of the political authority that a site possesses (Adams and Jones...
Figure 4. Plan and topographic maps of Group B of the Medicinal Trail community.

Figure 5. Plan and topographic maps of Group C of the Medicinal Trail community.
Figure 6. Plan and topographic maps of Group D of the Medicinal Trail community.

Figure 7. Plan and topographic maps of Group E of the Medicinal Trail community.
Adams’ method of ranking sites is based on the number of courtyards and acropolises present at a particular site (Adams and Jones 1981). Because the estimated energy required to construct an acropolis is at least twice that of the courtyard, this value is multiplied by two. The formula for ranking a site according to Adams (Adams and Jones 1981:309) is as follows:

\[
\text{(number of courtyards) + (number of acropolises x 2) = site score}
\]

Guderjan (1991:104) modified this because many material indicators of power were not included. Added to the formula were such signs of authority as ballcourts, stelae, and monumental architecture. Guderjan (1991:104) also makes a distinction between a courtyard and a plaza, with a plaza performing a religious and political function for people in addition to being a residence for those living in the courtyard. A plaza must include at least one temple and have a formal entrance. Therefore, each courtyard is given a value of 1 whereas a plaza is assigned a value of 2. Each ballcourt and stela present at a site are given a value of 1, since these are clear indicators of authority. All structures greater than 10m in height are given a value of 0.5. The formula for Guderjan’s (1991:104) site ranking method is as follows:

\[
\text{(number of courtyards) + (number of ballcourts) + (number of stela) + (number of plazas x 2) + (number of structures ≥ 10 m x 0.5) = site score}
\]

A Non-Elite Site Ranking System

While these systems can be beneficial for comparing various sites, centers, and communities to each other, they are not beneficial for examining internal variation, that is between group variation, at small sites that lack most of these indicators of authority. Small rural communities, such as Medicinal Trail generally do not have ballcourts or stelae, but do contain many residential groups that exhibit tremendous variation in size, configuration, and degree of elaboration however.

Abrams and Bolland’s (1999:264) “architectural energetics is a method through which buildings are quantified in terms of cost, with cost serving as the analytic unit of measurement upon which comparative assessments of power or status within (emphasis added) and among archaeological societies are based.” In this sense, for Abrams and Bolland (1999), following Shimada (1978), cost is the same as expenditure of human energy. So, social power can be achieved, as least in part, through differential access to human labor and a household with the access uses it to construct their residence and therefore are demonstrating their elevated social power (Abrams and Bolland 1999:268). Furthermore, elaborate architectural ornamentation, such as dressed stones, plastering, benches, and vaulted roofs, results in a high-cost residence, but also elements which in many societies is available only through restricted access to craft specialists (Abrams and Bolland 1999).

To create a ranking system that will provide insight into the relationship that exists between residential architecture and social status within non-elites settlements, we first analyze construction methods with a focus on the energy and labor expended, which includes materials used, type of roofing and flooring, platforms, and layout. Points are given to those groups that show evidence for a number of architectural indicators of high social status, which we will discuss momentarily. The combined score from each variable will provide a way of hierarchically estimating a specific residential group’s relative social status within the community. In essence, the higher a group’s score, the higher their social status and prestige.

Construction Method Variables

Energy and Labor. Based on his ethnographic and experimental work into the architectural energetics of Maya structures, Elliot M. Abrams (1987, 1998) has demonstrated that the more costly a structure is to build the greater the status of the occupants. Variables we use to demonstrate high energy expenditures include: a) number of formal courtyards/plazuelas; b) whether the courtyard/plazuela is raised; c) presence of plaster flooring in courtyard and/or residences; d) presence of shaped, or dressed, facing stones; e) masonry structures; f) substructures; g)
Table 1. List of variable and values for each Group.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group A</th>
<th>Group B</th>
<th>Group C</th>
<th>Group D</th>
<th>Group E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of formal courtyards/plazuelas</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Raised Plazuela</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Plaster Floor - plazuela/courtyard &amp; Residences</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Plazuela/Courtyard</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Residences</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Shaped Facing Stones</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Masonry Structure</td>
<td>3.5</td>
<td>1.5</td>
<td>1.5</td>
<td>0</td>
<td>0.5</td>
</tr>
<tr>
<td>Substructures</td>
<td>2.5</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Benches</td>
<td>1.5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Vaulted Roof</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>High Ground</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ceremonial Structure</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>18.5</td>
<td>14.5</td>
<td>8.5</td>
<td>2</td>
<td>3.5</td>
</tr>
</tbody>
</table>

We begin by providing points for each formal courtyard or plazuela present for each residential group. According to Ashmore (1981:49), a formal group consists of several structures arranged in a planned manner with a central ambient space that is shared by the residences of the structures. According to Loten and Pendergast (1984), a courtyard is a relatively small exterior space bounded by either the wings of a single structure or the contiguous parts of different but conglomerated structures. In contrast, a plaza is generally larger than a courtyard, but the principal distinction between the two consists in the wider spacing of structures around a plaza. A plazuela is an exterior space that resembles a plaza, but is of smaller size. Since there is no apparent significant difference in person hours of labor to construct a courtyard or a plazuela (according the definitions cited above), a group is given 1 point for each courtyard or plazuela (Figures 3-7; Table 1).

An additional consideration is whether or not the courtyard or plazuela is situated on an artificially constructed elevated platform, which would be considerably more costly in terms of human labor as measured by person hours, the specialists required for the masonry walls, construction pens walls for the internal fill, and surfacing. Some groups, such as Group B, were built entirely on top of an elevated plaza platform, and were given a score of 2. Others, such as Group A, were only partially constructed on a platform, and were given a score of 1. Still others showed no sign of a plaza platform, and were assigned a score of 0 (Figures 3-7; Table 1).
Villaseñor Alonso’s (2009:45) review of the ethnographic literature on lime production in the Maya area demonstrates that it is a highly sophisticated process, especially regarding the construction of open pyres for lime burning. Lime plasters are mixtures of burnt lime, aggregates like sascab, and other materials that are employed in masonry architecture (Villaseñor Alonso 2009). Plaster was produced slightly before, and during the building process and required a certain level of specialized knowledge (Abrams 1998). Lime plasters constitute important elements of ancient Maya material culture and were widely used in public monumental buildings, and less frequently, in non-monumental buildings among non-elite household groups. This specialized production and high energy cost combine to illustrate a use of skilled labor, which relates to high social status (Abrams 1987). Due to the high cost associated with the production and application of plaster, 1 point is given to courtyards and
Figure 11. Exposed bench from Structure A-1.

Figure 12. Photos and illustrations of beveled stones from vaulted roofs.

Facing Stones are stones that make up the outermost element of a facing, as opposed to specialized stones such as base courses, levelling courses, corner stones, corbels, and sculptural stones (Loten and Pendergast 1984). Types of facing stones reflect the degree of precision employed in shaping the exterior surfaces of the stones and are either "unshaped", "subrectangular", and "rectangular". Facings made either of unmodified stone or of unshaped broken stone are termed rubble facings, and are not dressed. Since dressed stones require more labor and expertise, groups with dressed facing stones receive 1 point (Figures 3-9; Table 1).

Masonry refers to stonework that may or may not have mortar, in which the elements are placed individually rather than as a mass (Loten and Pendergast 1984). As with facing stones, masonry structure walls require greater labor, energy, and expertise. For each masonry structure at a group, 0.5 points is given (Figures 3-9; Table 1).

A substructure refers to a complete set of components supporting a building. The same set of components may exist as an entity without a building at the summit, in which case it would just be a platform since there would be a lack of
a “superstructure”. Given the extra labor required for their construction, each masonry substructure at a group, is given 0.5 points (Figures 3-7, and Figure 10; Table 1).

Benches are small platform-like features usually (but not always) within the room of a structure (Loten and Pendergast 1984). Benches vary in their form, contents, and locations and likely saw a wide range of uses. Often consisting of dressed stones and covered in plaster, they also demonstrate a costly building feature and therefore 0.5 points is given per bench at each group (Figures 3-7, and Figure 11; Table 1).

A vault refers to the entire assemblage of masonry that constitutes the vault construction (Loten and Pendergast 1984). Most vaults consist of two half-vaults that run the length of the space covered, and two end-vaults that close the space at its ends. The large beveled stones that form the vault soffits are called vault stones. Relative to wood beams or a thatched roof, a vaulted roof required substantial amounts of stone to be quarried and specialized architectural engineering knowledge, and therefore was very costly. A point of 1 is given for each structure with a vaulted roof at each group (Figures 3-7, and Figure 12; Table 1).

Settlement

A second line of analysis we utilize is an examination of the settlement location, both in terms of the physical and social landscapes. The physical landscape refers to the relative elevation of the residential groups, with those on the higher ground being considered better due to drainage, breezes, and view sheds (Hyde 2011; Hyde and Martin 2009; McAnany 1995). Higher ground is likely to be occupied first with relatively lower areas being occupied later. Those groups that are on high ground, either a ridge top or a knoll, are given 1 point. Relatively speaking, Groups A and B are the only groups on high ground. Both occupy the same ridge line and are within a meter of each other in terms of elevation and therefore each receives a score of 1. All the other groups are relatively lower than Groups A and B and receive a score of 0 (Figure 2; Table 1).

The social landscape refers to the presence of non-residential ceremonial structures within the residential group. Proximity to such non-residential structures as temples and ballcourts can indicate differences in social status among residential groups (Killion 1990, 1992). Therefore, the presence of “meaning heavy” structures within a residential group is worth 2 points (Table 1).

Conclusion

Table 1 summarizes the variables and how points are distributed for each group. There is a clear, three-tiered residential hierarchy, and by extension, social hierarchy. Groups A and B have scores well over 10, while the much more modest Groups D and E score under 5. Even though Group D has many more structures, it has a much lower score. Group C lies between the two. A plan map comparison of these groups would likely have led to the same conclusion regarding the three-tiered hierarchy, however, this method allows for a quantification of the perceived differences in social status between these groups, and degree to which groups differ.

This system is in the process of being refined and still needs modifications that we will continue to work on. Issues of concern include what value to place on certain architectural features, how should variables be weighted, should a point be given for each bench, each structure with a vault and just a point for the group no matter how many are present. It also must be pointed out that this system can be used on structures that were occupied at the same time. Given that often all structures are not excavated equally or completely these are real issues that need serious and careful consideration. This is simply the first step and it will continue to evolve.

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14 SYMBOLISM, SPACE, AND POLITICAL ECONOMIES IN THE HINTERLANDS: NEW INSIGHTS FROM N950

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This paper examines the dynamics of the sociopolitical and ritualistic developmental processes which characterize the nature and function of the cultural landscape of the N950 site and its surrounding community through an intensive study of symbolism, architecture and space use patterns. The N950 site is a medium-sized elite settlement located 1.2 kilometers northeast of Dos Hombres in northwestern Belize. Research at N950 is focused on defining architectural, social, political and economic aspects of community organization. Additionally, the site’s occupational history allows for an investigation of site formation processes and functionality. An examination of archaeological evidence from the study area demonstrates close relationships between the locations of major architectural features and natural landmarks that may have served as “emergence shrines”. Both mortuary and ritual offerings were documented at N950 within a small architectural shrine and a culturally modified cave system. Furthermore, recent investigations document evidence of strategic monument placing, craft production, agricultural systems, and resource exploitation. Communal groups are linked via a rural sacbeob system. Understanding interactions occurring in the marginal areas between groups of varying scale and architectural arrangement is especially important to infer intra-regional cultural trends and locally-based networks.

Introduction

Field work for the Dos Hombres to Gran Cacao Archaeology Project (DH2GC) has been carried out under the auspices of the Programme for Belize Archaeological Project (PfBAP) which is currently under the direction of Dr. Fred Valdez, Jr (Figure 1). The PfBAP is a long term multidisciplinary research which operates in northwestern Belize (Adams et al 2004; Valdez 2005). Since its founding, as a long term archaeological project in 1992, PfBAP has been an umbrella for a variety of sub-projects which have ushered the continuation and success of archaeological research in the region (Valdez 2007). The programme sponsors a variety of projects that include graduate theses, dissertations, and independent research.

The DH2GC is a 12 km transect survey between the sites of Dos Hombres and Gran Cacao (Figure 2). A transect involves setting a straight line between two sites, placing benchmarks at regular intervals and surveying for settlement within a set distance from either side of the baseline. The transect will connect the two sites and provide invaluable insight concerning the vast array of terrain, vegetation types, as well as settlement patterns throughout these previously unrecorded marginal areas. Current research by DH2GC is descendant from the long history of interdisciplinary research in the fields of archaeological settlement patterns, environmental studies and remote sensing carried out in the Three Rivers Region. The DH2GC blends traditional survey methodologies with state of the art technologies and techniques to provide a comprehensive survey strategy designed to reflect the micro-environmental composition of the area as well as to provide a representative sample of the settlement.

The availability and application of remote sensing technologies have developed significantly over the last few decades. In order to efficiently analyze the landscape in thick vegetation and low visibility, archaeologists use Geographical Information Systems (GIS) and remote sensing to map and examine an area (Morales-Aguilar et al. 2015). By analyzing the vegetation on satellite imagery, researchers can...
locate evidence of past human uses such as agriculture and development by unique surface reflectance values influenced by their content (Brokaw and Mallory 1993). Geoeye satellite high resolutions files were purchased for much of the greater PfBAP and the vegetation differences in satellite imagery are quite striking. Narrow logging roads and survey brechas can be seen in the imagery. The two meter spatial resolution imagery was utilized to remotely assess potential areas of interest which were ground truthed during the 2016 field season, specifically the extent of a causeway system. These datasets will be used to further enhance our comprehension of the visual imagery for future field seasons.

The integration of environmental, artifactual, architectural and landscape modification datasets permits a broader understanding of the nature of the core-periphery economic linkages, and allows for an evaluation between different elite and non-elite areas in the project area. Field methods utilized are directed toward questions of structure demography, patterns of growth, subsistence, political economy, administration, and social organization. In the project area, resource exploitation, craft production, and technological knowledge at household levels continues to help determine the extent and influence that domestic economic systems impact regional sociopolitical and economic infrastructure. This paper examines the dynamics of the sociopolitical and ritualistic developmental processes that characterizes the nature and function of the cultural landscape of the N950 site and its surrounding community through an intensive study of symbolism, architecture and space use patterns. The N950 site is a medium-sized elite settlement located 1.2 kilometers northeast of Dos Hombres.

Research at N950 is focused on defining architectural, social, political and economic aspects of community organization. This work
also investigates the nature of interaction between large scale sites and supporting communities. Additionally, the site’s occupational history allows for an investigation of site formation processes and functionality. An examination of archaeological evidence from the study area demonstrates close relationships between the locations of major architectural features and natural landmarks that may have served as “emergence shrines”. Both mortuary and ritual offerings were documented at N950 within a small architectural shrine, a culturally modified cave system and a symbolic ballcourt. Furthermore, recent investigations document evidence of strategic monument placing, craft production, agricultural systems, and resource exploitation. Communal groups are linked via a local intrasite causeway system.

Understanding interactions occurring in the marginal areas between groups of varying scale and architectural arrangement is especially important to infer intra-regional cultural trends and locally-based networks. Scales of analysis in archaeological interpretation allow certain cultural phenomena to be contained within their appropriate level of influence. Detailed analysis demonstrates the extent that craft production took place, and how those areas were integrated within an economic system via some form of exchange network, such as local causeways and or formalized market areas.

**Survey Methods and Results**

Total station survey has been conducted since the inception of DH2GC in 2009. Following methods developed during the intersite survey, Mobile Mapper high-resolution GPS units were used to establish survey benchmarks for the total station. The accuracy of the Mobile Mappers meant that any total station survey data could be tied into the aforementioned satellite imagery just as accurately as if it were off of a baseline survey. These goals developed dynamically in response to new technological developments and obstacles encountered during the field process and have allowed us to survey and accurately document vast portions of previously unrecorded terrain. One area of particular interest is located around the N950 benchmark.

**N950 Site**

The N950 group is situated atop a modified knoll which was rediscovered during the 2010 field season (Figure 3). N950 is an elite group with a shrine, designated as structure 36, and a small ritual ballcourt, consisting of structures 30 and 32. Structure 36 is located along the eastern edge of the top of knoll. The shrine resembles a Plaza Plan Two (PP2) layout, as defined by Becker (1982) and overlooks a ritualistic ballcourt located at the northeastern base of the knoll (Cortes-Rincon and Boudreaux 2013). The largest cave, number four, is located north of structure 36. East of the cave is a platform that contains two small superstructures and a chultun (Cortes-Rincon 2013). To the north of this platform, there are artificial water channels cut into the bedrock leading down the slope. On the north and eastern side of the N950 hill, the slope was artificially terraced. Located amongst the terracing on the north side of the knoll are two small inter-connected cave openings and a modest monument at the base of the hill (Boudreaux 2013; Ports 2013, 2015).
Cave number nine is located along the eastern slope of the N950 knoll. It is hypothesized that it is connected to cave number four, in a way that allows water to cascade from the top through a karstic vein where it exits at the base of the knoll and flows through the middle of the ballcourt. A similar water channeling cave and ballcourt system is located at Chawak But’o’ob, approximately 2 km southwest of Dos Hombres. The engineered environment of channels and modified caves, which symbolically direct the flow of water, and the positioning of monumental architecture atop the knoll constitute a centralized area of power which may have served to strengthen sociopolitical and economic ties between the surrounding communities of N950 and larger regional polities.

**Occupational History**

Shovel test pits, extensive excavations at N950 and its surrounding community have yielded substantial data which aid in our understanding of occupational history as well as architectural construction and landscape modification techniques. Structure 36 has a Late Preclassic construction; it was built with large high quality masonry blocks –roughly ½ a meter to one meter long and wide. The building has apron moldings similar to what is seen at other Late Preclassic sites. Large stones were placed at a pronounced sloped angle. This could have been for hydraulic purposes; there are depressions in close proximity to this building which could have functioned as water catchment areas. The building has an outset staircase which faced the plaza. The architectural fill of the structure is composed of large stones that have been loosely dumped in the structure. A thick plaster floor roughly 20 cm thick was exposed on the eastern side of the structure. The majority of the ceramics date to the Late Preclassic and some were found sealed within the plaster floor. One of the ceramic vessels excavated had a shell deposit within – perhaps as an offering.

During the Early Classic, the building was enlarged and the orientation of the building was altered. The builders used lower quality limestone blocks to enlarge the structure. During the Late/Terminal Classic, another remodeling episode occurred (Figure 4). Large cobbles were placed around the building along with high quantities of ceramic and lithic material. This episode was not finished and was encountered roughly 35 cm below the surface. We have begun the process of analyzing lithic material along with limestone masonry flakes to identify methods of extraction from the local quarry and the breakage and wear patterns on the tools themselves. Another significant architectural feature located at the N950 group is a symbolic ballcourt which sits at the base of the eastern side of the knoll.

**Ballcourt**

The symbolic ballcourt is comprised of structures 30 and 32; these are separated by a narrow playing alley approximately four meters wide. A plaster floor was exposed within the playing alley; it was uncovered all the way to the northern wall of structure 30 where an additional plaster floor was unearthed within the structure itself. The interior plaster floor was completely exposed; the excavation trench was extended to an interior wall within the structure which ran parallel to the northern wall.

The interior plaster floor of structure 30 dates to the Late Classic period. The floor was very well preserved and expansive; it stretched from the northern wall towards the south wall. Various polychrome vessels fragments were recovered from the surface of this feature. It is hypothesized that these vessels were hanging from the rafter of the structure and scattered upon the surface when the roof collapsed. Two additional units were expanded perpendicular to the north-south trench; the plaster floor extended along the 3.5 m length of these units without encountering any additional walls.

An ancient cut was present in the floor towards the rear and southern portion of the structure. At first, it was assumed the feature was a burial because the placement of the stones appeared to be positioned in a cyst pattern. Once we delineated the ancient intrusion – the discovery of three teeth placed atop a ceramic vessel clearly indicated that it was a tooth cache. Further investigation revealed that the teeth belonged to three different individuals. Soils were collected to ascertain the presence of any
additional organic material and testing is underway.

Excavations on this structure continued and encountered a similar stone layout less than one meter to the north of the tooth cache (Figure 5). This sealed deposit was below the plaster floor and its construction fill. Below the feature was a series of flat small granite stones laid in an intentional pattern atop a ceramic vessel. The excavators encountered flat pieces of limestone with blue pigment still visible on the tops and edges. Below the modest granite mosaic pattern was a ceramic vessel with bones and charcoal on top. The bones appear to be human but osteological analysis is needed to fully verify. Soils were collected from this deposit and
testing is also ongoing. The symbolic ballcourt is physically and symbolically connected to the knoll via the ritualistic passage of water through the knolls’ eastern facing cave system.

**Cave Symbolism**

Within the Maya cultural landscape, caves “were the loci for important rituals and served to situate sites within a cosmological framework that legitimized space and the ruler ship of the elite who controlled that space” (King et al. 2012:624). Caves can also be associated with fertility and rebirth, ceremonies, and burials (McNatt 2006; Thompson 1970). Throughout the Maya region, caves hold significant ceremonial and symbolic power among its numerous communities.

The cave features investigated along the DH2GC transect are concentrated around the N950 site. There are a few subterranean features that were found a few hundred meters to the north of N950 within small residential groups but have yet to be investigated. The majority of the subterranean features that have been researched are relatively small in comparison to caves outside of northwestern Belize. An examination of the material culture found within a cave was utilized for tying these activities into larger social, economic, and political trends. At N950, cave number four has three burials, faunal remains, incense burners, obsidian blades, and other ritual deposits (Ports 2015). These cultural deposits offer a framework for understanding the role these caves played in the development of this site and its surrounding community. In addition, it allows us to see how the natural and cultural worlds interacted. Within this area, a variety of monuments have been documented which may have served to solidify power by enhancing the prestige of monumental architecture and the modified landscape and communicating sociopolitical and economic ties with other communities and regional site centers.

**Monuments**

Since the 2012 field season, a total of eight modest stone monuments have been documented at the N950 site. During the 2015 field season, excavations were conducted to understand the ritual functions, spatial orientations and erection methods for these monuments. Five of the monuments are positioned in a cardinal axis around structure 36. Monuments two, four, five, and eight were potentially erected as place markers; a spatial arrangement that may have delineated the site’s ceremonial space.

Interestingly, three of the four monuments are within close proximity to a cave and or chultun. Monument eight was placed between the eastern shrine, structure 36, and cave number four. Unfortunately, the monument is heavily degraded and no decipherable patterns have been observed. Despite this dilemma, it is hypothesized that the placement of the monument would have created a connection between the shrine and the ritualistic activities at the cave. There is a chultun located due west of both structure 36 and monument four. East of monument two, a cave was documented but has yet to be excavated. Presently, no cave feature has been discovered in direct relationship to monument five, located to the south of structure 36. However, the southern portion of the knoll is heavily modified with channeling systems and water basins. It is possible that a cave system is present, yet unidentified in the area.

The Maya typically arranged their spaces to reflect their cosmogony (Aveni 2001:261). The Maya conceptualized their world as a quadripartite space. According to Taube, squared spaces were crucial for ritual performances and processions during which the participants would move in a clockwise circuit (Scherer 2015:106). The Classic Maya understood the earth to be composed of a massive quadrilateral plane supported by four trees or pillars all centered on an axis mundi (Zaro and Lohse 2005:84). At the N950 site, monuments two, four, five, and eight may represent the stone trees, while structure 36 serves as the axis mundi.

Additional examples of the quadripartite layout can be seen in the surrounding area. The neighboring center of La Milpa is designed as a quincunx. Four monumental components are found 3.5 km away from Temple 1 located in the site’s center (Zaro and Lohse 2005:88). The cardinal markers at N950 vary in distance from structure 36, which can be explained by the incorporation of natural and preexisting ritual
features within the sacred landscape. Furthermore, the Quincunx Group located in the hinterlands of Blue Creek possessed a similar five-part design (Zaro and Lohse 2005:89). Overlapping occupational history for N950, La Milpa, and the Quincunx Group suggests that these areas would have shared similar beliefs and concepts. These ideals were projected into their constructed ritual landscapes through the arrangement of structures and monuments to emphasize the power of the existing natural features. These centralized areas of power and symbolism would have been connected to their outlier communities via formalized causeways systems.

**Causeway System**

Roads serve as a variety of functions within and between communities. They often serve to facilitate the circulation of ideas and practices as well as the transportation of physical goods and peoples. Other significant functions of roadways include the administration and management of outlier communities within a larger polity’s sphere of influence and the delineation of boundaries. Another noteworthy aspect of roadways for ancient Maya populations was the spiritual and or ceremonial use of causeways as sacred landscapes. The causeway system located within the N950 site and its community may have satisfied a variety of functional and symbolic needs for the ancient inhabitants of this area.

The full extent of the causeway system has not yet been completely mapped. Our preliminary understanding of the spatial layout, chronology and construction methodology suggests that it is characterized by a series of local intrasite causeways which may radiate from a single dendritic roadway around the N950 knoll. There are platform remains positioned along the causeway starting from N1000 towards the N1250 area. These platforms are manifested in two different forms. First, there are stand-alone platforms, often supporting one or more superstructures. Second, there are leveling platforms. These platforms serve to flatten the natural slope of the terrain, either to support superstructures, or perhaps to provide a level surface for agricultural or economic activities. Both platform types are generally composed of loose cobble fill over a base layer of crushed gravel. Excavations and shovel test pits were placed on top of and around three platforms near the N1000 section, the intersection of the road by the N1250 group, and one between these two sections. The central platform yielded a substantial amount of lithic data: large amounts of debitage, exhausted cores, drills and four prismatic obsidian blade fragments. Lithic analysis indicates that tool production is represented in the varying sizes of debitage deposit.

Excavations along the causeway have revealed a grid construction pattern at two separate sections of the road: at the crossroads near the N1250 household group and near the group’s ramp. At both of these sections, the interior sustaining surface consisted of tightly arranged stones in a polygonal rubble style that was vertically aligned with the top of the outer basal stones. This formed a grid cell pattern of construction that is repeatedly found in large scale Maya monumental constructions (Wernecke 2005).

Construction fills were compressed within the architectural core. The architectural surface layer showed no signs of plastering but this could be due to excessive degradation. A limestone stone roller fragment was positioned at the crossroad’s excavation unit. The fragment was placed on its lateral side with its interior edges aligned with the north and south primary axis of the intersection. Shaw (2008) suggests that construction methods and techniques vary according to a variety of factors including available resources and terrain and may not necessarily represent a sufficient means by which to identify causeways. Despite this concern, significant attention to construction materials and methods has been applied to this part of the research. A detailed assessment of construction materials and methods may reveal which parties controlled the commissioning of construction and maintenance along the roadway system. Additionally, it could aid in delineating sociopolitical boundaries within the marginal areas between Dos Hombres and Gran Cacao.

Further investigation of the causeway system will allow analytical assessment of the political economy and exchange networks. Normalized Difference Vegetation Index
(NDVI) is underway to fully assess the extent of the causeway. The method reveals different surface reflectance values through shades of red based on the varying levels of health and type of vegetation. By analyzing the NDVI values of the different vegetation and the classes, we will be able to identify the vegetation that is growing on top of settlements, and in turn, find correlations between site location, site size, and vegetation. Statistical correlations will be ranked in an effort to isolate potential areas of interest which can be groundtruthed in upcoming field seasons.

**Conclusion**

While subsistence strategies are significant to ancient Maya populations as a whole, the performance of self-aggrandizing ritual activity and monumental development was especially important to elite populations. The commission of monumental architecture and other laborious endeavors often served to solidify authority and perpetuate elite status. The symbolically infused landscape and structural labor requirements at the N950 site are manifested at structure 36, the symbolic ballcourt, strategically placed monuments, and cave number four. The multi-relational study of monumental and symbolic architecture, caves, culturally modified landscapes, and causeways provides immeasurable insight into the development and significance of the diverse aspects of the sociopolitical and cosmological environments of the ancient Maya.

Looking at different spatial scales and temporal trends is one of the ways in which archaeologists can reconcile culture history with cultural process. Transitional periods such as the Late Preclassic to Early Classic transition or the Late Classic to Terminal Classic transition were transcendental events that affected all scales; this area needs to be further analyzed. Hinterland communities, such as N950, represent prime examples by which to effectively assess these transmutations to get a better understanding of the macropolitical interactions that took place.

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15 A VIEW TOWARDS THE HORIZON: ONGOING INVESTIGATIONS AT THE SITE OF DOS HOMBRES

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Investigations at the ancient Maya city of Dos Hombres have been guided by an interest in social, political and economic organization, based on architecture and material culture remains. Excavations in the civic ceremonial center of Dos Hombres have provided insight into understanding the architectural expressions of power by the Dos Hombres polity and the role it played in the regional economy. Current efforts are focused in the northern plaza, a very public space that likely was a place of commerce, public ritual and sacred space, thereby the prime backdrop for publicly legitimizing authority. New excavated data, especially architectural exposures as well as material culture deposits are presented. These new data are rich with information about public activities and architectural programming at the ancient city. New material culture analyses, including that of the ceramic deposit unearthed from a range structure in the northern plaza may be related to public ritual. Additionally, recent XRF data reveal that most of the obsidian found thus far at Dos Hombres originated at El Chayal, both in the Early Classic and in the Late/Terminal Classic. As a result, these data have begun to elucidate various social and economic relationships, both individually and collectively, of the ancient Maya at Dos Hombres and northwestern Belize.

Introduction

Recent investigations at the ancient Maya site of Dos Hombres have been guided by an interest in social, political and economic organization, based on architecture and material culture remains. Excavations in the northern plaza of the civic ceremonial center are beginning to provide important insight into understanding the architectural expressions of power by the Dos Hombres polity and the role this polity may have played in the regional economy. The northern plaza, a very public space that likely was a place of commerce, public ritual and sacred space, was thereby the prime backdrop for publicly legitimizing authority. Some newly excavated data, especially architectural exposures as well as material culture deposits are the primary focus of this presentation. These new data are rich with information about public activities, economy, and architectural programming at the site. As a result the culmination of these data compiled with previous research at the site have begun to reveal important social, political and economic information about the ancient Maya living in and around the ancient city of Dos Hombres.

The site of Dos Hombres, located in northwestern Belize (Figure 1), is a medium sized ancient Maya site with a robust settlement in its hinterlands. The site of Dos Hombres is located just below the Rio Bravo Escarpment, east of the Rio Bravo, within the Rio Bravo

Figure 1. Map of the RBCMA with Dos Hombres noted (©PfBAP, map compiled by Rissa Trachman).

Conservation and Management Area. Ancient settlement in the area extends in each direction past the limits of the Dos Hombres site proper and notably to the west much settlement is located on the face of the Rio Bravo Escarpment itself (Lohse 2001; Trachman 2003; Walling et al 2005; Walling et al 2006).

Much of the previous investigations in the hinterlands of Dos Hombres have been in the form of household archaeology conducted towards a microscale analysis of household organization (Trachman 2006, 2007, 2009 and 2010a; Trachman et al. 2011; Trachman and
Valdez 2006), but also include macroscale studies of settlement patterns (Hageman and Lohse 2003; Lohse 2001). Excavated data from hinterland household occupations from the Late Preclassic through the Late to Terminal Classic indicate much about the ways in which households negotiated their material world, access to goods, and their diversity related to social status and identity. Investigations are continuing in the settlement east and west of Dos Hombres and include a focus on the management of resources across the landscape such as water in addition to expanding the sample of household data. In addition, Marisol Cortes-Rincon is investigating the settlement to the northeast of Dos Hombres through a transect survey situated between Dos Hombres and Gran Cacao (see Cortes-Rincon 2014).

The Dos Hombres civic ceremonial center (Figure 2) is comprised of 4 primary plaza groups each of which is set on its own modified hill. The site was initially investigated in the early 1990’s by Brett Houk (1996). He endeavored to establish the initial chronology of the site and to analyze the layout of the site comparing its layout and size to other contemporaneous sites in the region. Houk found that the site was similar in layout to other major sites in the area such as La Milpa and proposed the possibility that many of the sites in the Petén were laid out according to templates related to Maya cosmology.

Two other investigations were carried out in specific architectural groups associated with the Dos Hombres center in the 1990s. Brown (1995) conducted excavations into the A-2 courtyard group located adjacent to Plaza A and determined this to be residential. Subsequently, Durst (1998) initiated an investigation of an elite residential courtyard group, Group B-4 (Figure 2), just west of the ballcourt. The excavations revealed the first documentation of Early Classic (CE 250–600) household in the Dos Hombres civic ceremonial center. Durst’s (1998 a, 1998 b) excavations were focused on Structure B-16. While excavating the fill from inside the room of this Early Classic structure, a patch was encountered in the plaster floor. Further investigation of the patch led to the discovery of an Early Classic tomb with a lens of obsidian artifacts found in the stratigraphy above the tomb architecture (Figure 3; see Trachman 1999a; 1999b; 2002).

The analysis of Durst’s excavated obsidian collection from the Early Classic contexts revealed the total number of obsidian artifacts was 23,074 recovered (Trachman 2002). The collection of obsidian artifacts included percussion cores, exhausted pressure cores, first and second series blades, core rejuvenation flakes, and an assortment of flakes,
all indicative of prismatic blade production. I conducted a preliminary sourcing study through INAA of the material with results indicating predominantly El Chayal obsidian present, though it was an extremely small sample size. Recently Manda Adam (2016) further sampled the collection for XRF analysis and the El Chayal predominant source was corroborated by her research. The tomb itself (Figure 4) located below the layer of obsidian contained numerous artifacts accompanying the individual buried in the tomb including ten Early Classic vessels, at least 8 Spondylus shells, two greenstone ear spools, obsidian blades, cores and debitage, hematite fragments and a spherical ball (Durst 1998b).

Additional pXRF obsidian sourcing conducted recently by Beckwith of the Dos Hombres obsidian recovered outside of the B-4 Group tomb context also revealed a heavy predominance of the utilization of El Chayal obsidian through the Late and Terminal Classic at the site. The primary difference from my many years of obsidian technological analysis of the obsidian from Dos Hombres (and many other sites in the region) is the form in which the obsidian is being traded into Dos Hombres. In the Early Classic, macrocore stage II cores are being imported and prismatic blades produced by the craft specialist onsite at Dos Hombres. By the Late/Terminal Classic, finished blades are being imported into the ancient city and it seems there is no local producer of prismatic blades, at least as of yet, future research may indicate otherwise.

My current research in the Dos Hombres civic ceremonial center utilizes the lens of “everyday life” (or activity-based approach) in order to understand the internal ritual, economic, social, and ideological activities of this ancient city, how it interacted with the surrounding household hinterlands, and the socio-political and economic role this large city played in the region. To these ends the DHAP began with excavations in Plaza A of Dos Hombres (see Figure 2) with the first of three phases of...
research, each focused on the primary plaza groups (N=3) of the site core. The Research Goals for Phase 1 of the site center investigations are: 1) to refine the chronology of the site as related to Plaza A; 2) to determine the economic organization of the site and test Scarborough and Valdez’ (2003, 2014) “resource specialized community” model in a city/state context; 3) determine the presence or absence of a “market” in Plaza A; 4) to elucidate the ancient city’s socio-political organization and its boundaries of ideological and economic influence.

Dos Hombres Culture History

Chronologically what we know thus far about the occupation history of Dos Hombres stems from Houk’s (1996) previous investigations along with the current Dos Hombres Archaeological Project’s efforts (Trachman 2010 b; Trachman and Canterbury 2014; Trachman and MacDonald 2013). The site was occupied from the Middle Preclassic (±800–600 BCE) to the Terminal Classic (CE 800/850–900) with only visitations to the site in the Postclassic as evidenced by surface finds. After the initial settlement in the Middle Preclassic, the population grew enough in the early part of the Late Preclassic (400 BCE–CE 100) to form a village positioned in the northern portion of the site (Houk 1996). Houk (1996) also suggests that there was a slight population decline at the end of the Late Preclassic and it stayed low during the Early Classic (CE 250–600). Two temples, C-2 and C-3 were built in the Early Classic (Houk 1996) as well as the B-4 Group, an elite residential group just west of the ballcourt (Durst 1998), and there was a significant Early Classic occupation documented in Group D (Aylesworth 2005).

Major construction was obvious at the site at the beginning of the Late Classic (Tepeu 1, CE 600–700) with a major expansion of Plaza A then subsequent construction projects in Groups B and C, as well as the construction of the ballcourt (Houk 1996). Group D also underwent an expansion in the Late to Terminal Classic (Tepeu 2-3, CE 700–900) as exemplified by the very large structure D-1 (Aylesworth 2005) (see Figure 2). In addition to expansions in the civic ceremonial center, there appears to have been a significant population growth in the settlement areas as most of these residences date to the Late to Terminal Classic (Tepeu 1-3, CE 600–900) (Lohse 2001; Robichaux 1995). It was in the Terminal Classic that the site core of Dos Hombres was abandoned and the Acropolis, Group C terminated.

Architecturally, Dos Hombres has typical construction for the terminal occupation phase (Tepeu 2-3), vaulted structures, as well as some with perishable roofs, red plaster on both interior and exterior of walls, and dry laid construction fill (Houk 1996; Trachman 2010b; Trachman and Canterbury 20114; Trachman and MacDonald 2013). These architectural elements were combined to create complexes of range and temple structures intermingled with elite residences and the elaborate Acropolis configuration of the southern group C (Houk 1996; see also Trachman 2010b).

Dos Hombres Plaza A Architecture

I have been conducting ongoing excavations at Dos Hombres including architectural excavations of both Structures A-4 and A-7 (Figure 5) in the vast and open layout of Plaza A, the northernmost plaza of the Dos Hombres site core. Structure A-4 is extremely well preserved and faces the open space in center of the plaza in front of Temple A-1 and the triadic Temple A-7. Structure A-4 is a large range structure consisting of a large basal platform approximately 13 meters in height with what is likely a multi-roomed structure (now around 70% collapsed) at the top, putting the overall height of what is still standing at between 14 and 16 meters. It is actually the tallest of the ruined structures in the northern plaza today, though it likely was not at the time of the terminal occupation phase. That position would have been held by Structure A-7 prior to its architectural collapse.

Structure A-4 (Figure 6) also appears to have had at least 3 construction phases, or more likely refurbishing episodes, though I have not yet placed excavations into the basal platform as of yet. These refurbishments are all late, Tepeu 2-3. In addition the architecture is very typically Late Classic with a stepped basal platform holding an outset staircase on the lower 2/3 of it. The steps are steeper in the upper 1/3
approaching the entryway of the structure above. The entryway is 2.2 meters wide, while the depth of the interior space of this structure is only 1.4 meters. Interestingly there is an opening in the back wall of the structure that is smaller than the primary entryway and slightly offset from it (Figure 7). The opening to the back is approximately 1.3 meters wide and opens onto a terrace feature. Below this terrace is a very steep platform retaining wall hence no actual access from the back or north side of the structure, only the terrace feature.

Even though there was not access to the structure from the back, there was indeed visibility from the terrace across the horizon as well as down below to the base of the structure, and below that even, to the bottom of the modified hill on which Plaza A is set. Visibility would also have been possible from below up to the activity taking place in and around the structure from both the plaza floor on the south and off the plaza to the north. Therefore both the front and the back of the structure would have been included in public pageantry and ritual for those who were standing on the plaza floor in front of the structure and those on the opposite side outside of the plaza looking up. This architectural programming would have played well with the space in front of both Temple 1 and structure A-7, the triadic temple in the plaza open space.

**Ceramic Deposit, Structure A-4**

During the excavation of the interior space of Structure A-4, I encountered numerous ceramic vessels that are partly or mostly whole, deposited from just inside and to the east of the entryway extending back to the south wall of the structure above the well preserved plaster floor. The depth of the deposit ranges from 1.5 meters above the floor all the way to the floor itself. The deposition of the vessels indicates that they likely fell from a short distance and broke in place. The majority of the deposit was situated within the collapse of the upper portion of this building’s interior space. The matrix that many
of the vessels were subsumed in was dark gray with a heavy content of very small bits of charcoal. This season and last season, I was able to isolate many of the vessels including several bowls, jars, and a buff polychrome vase in situ (Figure 8) and excavate them either somewhat articulated or in layers as with many of the jars. The jars were the most difficult to control for, considering the difference in form and how they fell or broke in the depositional process. In this case I was able to maintain control of layers of large and small sections of these jars. Methodologically, I collected many ceramic residue samples for possible trace element analysis and matrix samples for further analysis in the upcoming year to determine more about the nature of this deposit.

The ceramic analysis is ongoing by Dr. Lauren Sullivan (2016), but preliminarily, there are more than 60 vessels with some semblance of articulation in the deposit, mostly jars of varying sizes and thickness (Lemonal cream, Cayo unslipped, Tinaja Red to name a few types), numerous Achote Black bowls of varying sizes, along with very few plates (Daylight Darknight), a Torro-gouged incised vase and a buff polychrome vase, in very small pieces, with an extremely eroded painted courtly scene. One of the vessels included in this year’s excavations was an Achote Black bowl with blue pigment on the interior (Figure 9).

Subsequent to these excavations, I am able to complete the range of hypotheses regarding the deposit this year after finishing the careful excavation of these this season. One possible hypothesis is that the vessels were stored in the structure for use during periodic public feasting. However most of the collection is very functional, almost utilitarian in nature, with the one exception of the buff polychrome. It is still highly likely that the vessels were stacked and stored, possibly on a shelf or scaffold inside the structure given the depositional pattern. But given the range of sizes and abundance of jars and basic bowls, another interesting hypothesis emerges. The ceramic deposit may actually have economic significance and be more related to market activity within the northern plaza of Dos Hombres and controlled by the Dos Hombres polity.

One vessel in particular has shed light on the economic nature of the deposit and that is the Achote Black bowl with blue paint or pigment inside the bowl (see Figure 9). This may represent evidence that Maya blue was being processed at the site and contained in this bowl, or that the blue paint was being traded or marketed at the site, or finally that the use of Maya blue at the site was by craft specialists actually living in the city of Dos Hombres, for example possibly producing decorative painted ceramics such as one example that was excavated in the Acropolis, Group C (exterior space C-7) by Houk in 1993 (Figure 10). This could be a very important example of the use of and decoration of ceramics taking place at Dos Hombres. The ceramic residue, trace element, and matrix sample analyses will be critical to answering questions about what the deposit may...
represent in terms of activity, economic or otherwise, deriving from this excavated sample.

Given the nature of this deposit, it’s characteristics in deposition, I would be remiss not to address an important issue, which is, why? Why were these ceramics left behind? The deposit does not have the signature characteristics of termination as has been uncovered and extensively discussed by Houk in the Acropolis, plaza C. As such, the deposit itself may be significant in determining the rate of abandonment of the site. Was the site abandoned rapidly? Why? If it was, then I would expect to see burning or other indications of this in the excavation of other structures in the northern plaza. The burning related to the matrix and subsequently indicated by staining on the stucco on the interior of the back wall of structure A-4 may be related but, its limited nature is inconclusive on its own.

Structure A-7

Preliminary excavations of the triadic pyramid, Structure A-7 have revealed much of the front of the staircase to the top of the basal platform. The structure is focused to the west but not directly in front of Temple 1. Even so, it is clear from the excavations of important architectural features from Structures A-4 and A-7, that the architecture is situated to focus activity on the eastern half of the plaza. In addition, in some instances the architectural layout may also have engaged those outside of the plaza at times again demonstrating the reach of power beyond the site proper boundaries.

Future Research and Conclusions

Clearly important ritual, social, and economic activity took place in Plaza A, of the civic ceremonial center. Much more about these activities and the relationship of the ceramic deposit to them may be revealed by the results of the ceramic residue, and other analyses pending, including radiocarbon dates from samples collected over the past 3 years. In the next phase of research at the site, I am planning a test pitting program both across the plaza floor and around the perimeter of the plaza away from architectural features in order to determine whether there was market activity taking place in Plaza A and the exact location of that activity.

Until then, the ongoing research has been important in uncovering the unexpected and begun to reveal new avenues of research. The monumental architectural forms and layout clearly provided an important backdrop for demonstrating the power, wealth, and legitimacy of the Dos Hombres polity to those associated with the ancient city. Such that the use of space by that polity in the open public northern plaza is not bounded necessarily internally or by the landscape or built environment and the vantage of Plaza A on its hilltop. Instead much is visible from outside the plaza, and down the hill, symbolizing the reach of hegemonic influence politically, ideologically, and economically.

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This paper examines the development and design of Aventura's urban core through the presentation of the results of the inaugural 2015 season of the Aventura Archaeology Project. In the summer of 2015 the Aventura Archaeology Project surveyed the central 0.5 square kilometers of the site identifying 104 mounds, 3 pocket bajos, 1 possible sacbe, and 42 other features. Aventura’s ceremonial complex consists of 6 plaza groups with 7 temples ranging in height from 6 to 20 meters. Aventura’s long history spanning the Preclassic, Classic, and Postclassic periods (650 BC – AD 1500), was known from previous research, but the 2015 research extended the site’s chronology back in time to the Archaic period (ca. 3400 BC) and forward in time to the British colonial and Caste War periods (19th and 20th centuries). Two key questions can be answered through future research at Aventura. What made the place of Aventura a prime location for forager-horticulturalists, urban city dwellers, and Caste War refugees alike? Given that the city of Aventura survived the so called Maya collapse, what did its residents do to ensure the longevity of their city?

Introduction

The Maya designed their cities in intentional ways to convey meaning and messages to those who would view them. The design of Maya cities is still visible today, and when archaeologists and others begin to understand the cultural logic that went into the designing of ancient cities, they can better understand their meaning. We begin this paper with a brief overview of the history of research on urban design in Maya archaeology starting with the “vacant ceremonial center model” and leading up to settlement and household research. We then provide an overview of what was known about the Maya city of Aventura prior to the inaugural 2015 season of the Aventura archaeology project, highlighting contemporary conceptions of Aventura as a temple site located along Belize’s northern highway. We then illustrate Aventura’s urban design and the implications of its longevity through the results of the 2015 settlement survey research.

From Vacant Ceremonial Centers to Urban Centers: Settlement and Household Archaeology

Initial archaeological research in the Maya area, as with the study of all of the world’s ancient civilizations, focused on the most prominent architecture, temples. A focus on temples combined with an absence of study of smaller architectural remains, such as houses, led to a skewed understanding of the design of Maya places, as places filled with temples, priests, and only small populations. Beginning as early as 1931 and continuing into the 1960’s, leading Maya archaeologist, John Eric Sydney Thompson developed what has been referred to as the “vacant ceremonial center model.” In this model of the Maya world there were no Maya cities with urban populations, just “vacant ceremonial centers” made up of temple complexes with no other buildings around them. The “vacant ceremonial center” model fit the available data that archaeologists had collected at the time and was a pivotal element of Thompson’s (1954) influential The Rise and Fall of Maya Civilization. The notion that ancient Maya society was designed as “vacant ceremonial centers” came with a host of other implications about Maya society. Maya society had a very low population of priests who worshiped at the temples who, in turn were supported by a few peasants. While the “vacant ceremonial center” model is now just a historical footnote in the development of Maya archaeology, it serves to illustrate how important understanding the design of Maya places is, and the erroneous interpretations that may follow if archaeologists or others incorrectly identify design elements in the ancient world.

This old view of the ancient Maya began to be shattered with the advent of settlement and household archaeology in the 1950’s and 1960’s, fields of research pioneered by archaeologists Gordon Willey (1953) and Wendy Ashmore (1981). Settlement and household archaeology asked archaeologists to step beyond the temples
and look for the smaller architectural remains which are often the remains of the ancient houses that we now know surround Maya temples and turn “vacant ceremonial centers” into villages, towns, and cities. The new design revealed by settlement and household archaeology tells the story of expansive populations, true cities, and urbanism in the Maya area. It is a testament to the important work of settlement and household archaeology that this volume is dedicated to urban design.

Settlement and household archaeology revolutionized the study of the world’s ancient civilizations by demonstrating that to fully understand human societies researchers needed to investigate a complete range of settlements, especially settlement beyond the monumental cores of cities. Settlement archaeology ushered in a new era of research that expanded upon the range of settlement types explored by archaeologists, and research on cities moved beyond the largest cities and monumental cores of cities (e.g., Creekmore and Fischer 2014; Foias and Emery 2012; Marken and Fitzsimmons 2015; M. L. Smith 2010). Settlement research brings together an understanding of the communities’ people built and the environments which they inherited, lived with, and modified (e.g., Ashmore 1981, 2007; D. Z. Chase and A. F. Chase 1988; Dunning 1992; Fedick 1996; Freidel and Sabloff 1984; Lucero et al. 2015; McKillop and Winemiller 2004; Pyburn 1989; Scarborough, Valdez, and Dunning 2003).

Cities are as much made up by their households as they are by their centers. A focus on the households of a city allows archaeologists to develop peopled understandings of cities. It is within this intellectual milieu that the Aventura Archaeology Project began.

**The Aventura Archaeology Project**

The initial season of the Aventura Archaeology Project was 2015. The Aventura site is located 10km southwest of contemporary Corozal town and adjacent to the village of San Joaquin, 10km southwest and 10km west, respectively, of the better known sites of Santa Rita and Cerros (Figure 1).

Previous research at Aventura includes a rough map of the site core and eight tests pits conducted by Raymond Sidrys of UCLA in 1974 (Sidrys 1983) and excavation of three residences by Rafael Guerra, Sherilyne Jones, and Melissa Badillo of the Institute of Archaeology in 2007. Aventura has never been the subject of a large scale research project and is in need of archaeological attention to document and preserve the site.

Based on the previous research of Sidrys (1983) and the Institute of Archaeology, Aventura had a long occupation history spanning the Middle Preclassic to the Spanish Conquest. Sidrys identified occupation and use of Aventura spanning the Middle Preclassic to the Late Postclassic and identified Aventura's peak in the Late Classic to Early Postclassic periods. The 2015 research of the Aventura Archaeology Project added further chronological depth to the history of the site with the identification of Archaic artifacts and Historic Era sites. This evidence suggests the potential for an even longer five millennia occupation of the site potentially going back to the Late Archaic around 3400 BC.

Aventura's long occupation history is a critical aspect of the new research at the site. Aventura survived the so called Classic Maya collapse, and even thrived and potentially reached its fullest extent in the Terminal Classic period just as the major Classic Maya centers of the Peten were undergoing abandonment. Aventura was home to forager-horticulturalists, urban city dwellers, and indigenous people living under colonial rule. By mapping the city and landscape of Aventura, the Aventura Archaeology Project will be able to document...
the history, development, and landscape positioning of the city. New research at Aventura will ask: what did this city and its residents do to enable the longevity of their city? As a place that saw human occupation across five millennia, research at Aventura can examine the environmental, social, and political opportunities and constraints that can enable occupation across differing types of societies. Additionally, it will assess the extent to which Aventura’s long occupation history was continuous or discontinuous with periods of occupation, abandonment, and re-occupation.

The 2015 Survey Season

The initial field season at Aventura conducted four weeks of survey and surface analysis in July 2015. The survey team completed a survey of a 0.5sq km area around the site core of Aventura to produce the first accurate map of the site through Global Positioning System (GPS), Total Station, and Geographical Information System (GIS) technology, and to develop 2D and 3D georeferenced digital imagery of cultural and natural features.

The Aventura survey was designed to enable systematic and full-coverage survey in an area of predominantly cane farming and some forest canopy above the largest mounds. The full-coverage survey was designed to collect information on natural features (land formations, vegetation, environment), cultural features (architecture, agricultural fields, other human constructions), and chronology (relative dating of archaeological features through surface ceramic analysis). The survey utilized three survey techniques to achieve its goals: (1) topographic mapping, (2) archaeological reconnaissance, and (3) surface ceramic analysis.

The survey began with pedestrian survey. The survey team walked the cane fields and forests of Aventura’s central precinct. All cultural and natural features and topography encountered on survey were recorded using a combination of a Topcon GTS-605 Total Station and a Trimble Juno GPS to produce an accurate and georeferenced map in a GIS. Surveyors also conducted surface collections from all mapped features. Diagnostic artifacts from each feature were collected, analyzed, photographed (if necessary) in the field, and only those artifacts that were unique or required further analysis were bagged and removed for further study in the laboratory. The remaining identified artifacts were replaced on the archaeological feature from which they were originally collected. This technique proved quite successful and negated the necessity for storage of surface collections from season to season. All the survey and surface collection data were entered into a GIS database in the field lab to create 2D and 3D models of Aventura and assess urban design and the growth and development of the city through time.

Aventura: Temple Site or City?

Given the limited nature of previous research at Aventura, the site is best known as the ancient Maya site whose main temple is easily visible as you drive up the northern highway approaching Corozal town, roughly 10km southwest of Corozal, and adjacent to San Joaquin. Aventura is situated today in an area of sugar cane farming. As the largest architecture at the site is inaccessible for sugar cane farming, it remains shrouded in forest canopy standing in clear contrast with the cane fields that surround it. Figure 2 shows a panoramic view of Aventura as seen from the northern highway. Most visible is Aventura’s main temple,
Structure 1 in Group A, which stands 20 meters or 66 feet in height. Less visible from the northern highway perspective on Aventura, in the treeline seen in Figure 2 is Aventura’s six central groups, Groups A to F, which house seven temples that stand 6 meters to 20 meters in height.

Just as the urban design of Maya cities was not visible to early archaeologists who focused their research on monumental architecture, the urban designs of unexcavated and unstudied sites are often masked today by the trees that now cover abandoned cities, and their largest architectural remains that are unsuitable for modern farming thus remain shrouded in the forest canopy. Figure 2 is taken from the northern highway, and given how the highway cuts across the site of Aventura, certain parts of the site, particularly Structure 1 in Group A, dominate the contemporary viewer’s perception of this ancient place, rendering an image of Aventura as a lone temple along the highway.

The 2015 Aventura survey presents a different perspective on Aventura’s urban design. The survey identified 149 archaeological features in a 0.5sq km survey area, including 103 mounds, 19 platforms, 1 possible sacbe, 3 pocket bajos, 4 chultuns, 15 “additive others”, and 4 “subtractive others” (Figure 3). Additive and subtractive others are cultural features that are either elevated above or depressed into the ground and have an unknown function at the time of survey.

With a density of roughly 206 buildings per square kilometer, settlement density in Aventura’s central precincts falls in the mid-range of settlement densities for Maya urban centers, which range from dense settlements such as Caracol with a settlement density of over 300 buildings per square kilometer and centers such as Xunantunich with a settlement density of 88 buildings per square kilometer (Yaeger 2010). Thus Aventura certainly is a city, but the elements of the design of that city are obscured for the casual viewer today through design elements of our modern cities and agrarian basis: the highway, sugar cane fields, and the forest canopy.

The 2015 topographic mapping illustrated that the terrain around Aventura is relatively flat as would be expected for this limestone plateau region of the Yucatan peninsula (Figure 4). Over the roughly 1 km N-S extent of the 2015 survey area there is only 8 meters of elevation change and most of this is due to the depressions in the terrain from pocket bajos. Pocket bajos are non-draining low-lying areas that may have been used for water management or agriculture in the past (Dunning et. al. 2006). The term “bajo” has been used to refer to a variety of types of depressions in the land in Mesoamerica, and the pocket bajos at Aventura are distinct from the larger karstic depressions known as bajos found further inland, as well as the low-lying wetlands that drain into the New River to the east.

Aventura’s central architecture is located around three large pocket bajos and additional pocket bajos extend across unmapped areas of the city. The pocket bajos may have been a reason why people initially settled at Aventura, as has been documented elsewhere in the Maya Lowlands (e.g. Dunning et al. 2002).

Aventura’s Five Millenia History

A total of 121 surface collections were undertaken during the 2015 survey (Kosakowsky 2015), of which 118 were made within the 0.5sq km survey area just discussed. Three additional surface collections were undertaken at the three historic sites identified within the area of the pre-Columbian site of Aventura but east of the northern highway that now artificially divides the site (Figure 5).

The first evidence of a human presence at Aventura comes from the Late Archaic (post 3400 BC) period. An Archaic Lowe point was found near Group 20, Mound 1 (Figure 6 and Figure 7) and an Archaic constricted adze was found on the north side of Mound 9 in Group 10 (Figure 6 and Figure 8). Although the evidence for the Late Archaic at Aventura is currently limited, and further research is needed to ascertain the nature of the human presence at Aventura in the Archaic, it is not surprising that Archaic material was found at Aventura, given that northern Belize is the region of Mesoamerica with the densest concentration of Archaic sites (Lohse et. al. 2006; Rosenswig 2015). Future research at Aventura may provide a window into the lives of forager-
Figure 3. Results of the 2015 Aventura settlement survey. Map by Roberto Rosado Ramirez.

Figure 4. Topographic map of the 2015 Aventura survey area. Map by Roberto Rosado Ramirez.

Figure 5. Location of Caste War Church and two Sugar Mills in relation to the site core of Aventura. Map by Melissa Jones.

Figure 6. Location of Archaic surface finds at Aventura. Map by Jennifer Reese.
horticulturalists who inhabited Aventura long before a city was built there.

The Pre-Columbian city of Aventura had a long history from roughly 600 BCE to 1500 CE, spanning the Preclassic, Classic, and Postclassic periods of Maya history. The chronological findings of the 2015 survey season parallel the findings of previous researchers, Raymond Sidrys of UCLA in 1974 and the Institute of Archaeology, Rafael Guerra, Sherlyne Jones, and Melissa Badillo in 2007. It is certainly worth mentioning here that even the combined chronological work of these three projects should still be considered preliminary, and future research could and likely will alter our understanding of the history of Aventura, just as the 2015 field season significantly extended the evidence for Aventura’s occupation into both the Archaic and Historic periods.

Based on current data Aventura appears to be only a small community during the Preclassic period between 600 BCE and 250 CE. The earliest ceramics identified in surface collections in 2015 date to the Late Preclassic period and were identified in four surface collections. Sidrys (1983) did identify Middle Preclassic material in one excavation context.

Aventura first begins its expansion in the Early Classic period beginning in 250 CE. Thirty-one surface collections yielded Early Classic material. As previous researchers had found, the best represented period at Aventura is the Terminal Classic to Early Postclassic period (750 – 1100 CE), and 62 surface collections yielded diagnostic ceramics from this period. As was reported by Sidrys (1983) the “Aventura Double Mouth Jar,” Buyuk Striated, a diagnostic of the Terminal Classic to Early Postclassic period, is found everywhere at Aventura (Figure 9). The ubiquity of the double mouth jar at Aventura led Sidrys and others to postulate that...
it was manufactured at Aventura, a point for future investigations. Two features yielded Late Postclassic diagnostics, and in both cases these were incensario fragments. This finding from the 2015 Aventura survey parallels Sidrys’ (1983) finding from surface collection and excavation contexts that Late Postclassic material at Aventura is largely restricted to ritual material. Future research will likely complement our understanding of the Late Postclassic.

There is significant evidence for occupation at Aventura in the British Colonial and Caste War periods (Jones 2015). The 2015 survey identified two sugar mills and one Caste War church at Aventura (Figures 5 and 10-12). The Caste War church was built on top of a Pre-Columbian mound which yielded surface evidence of Early Classic and Terminal Classic to Early Postclassic material. Sugar Mill 1, located within the town limits of San Joaquin, and situated ¾ kilometer northeast of the site core of the Pre-Columbian city of Aventura, has long been a local landmark on the northern highway. Sugar Mill 2 and the Caste War church are located adjacent to one another roughly ¾ kilometer southeast of the site core of Pre-Columbian Aventura. Given the large tanks and boilers visible at both sugar mills, they were likely used for the crushing and liquefying processing of sugar cane to make rum.

All three historic sites yielded significant amounts of British colonial material: ceramics, glass, and bricks. The surface analysis found British Willow wares (Figure 13) dated to between the 1780s and 1870s, and glass bottles produced between 1850 and 1910 with most clustering around 1880. Thus, the 19th century is another important period of occupation at Aventura.
While it is clear that Aventura has a lengthy occupation history, significant research lies ahead to establish a chronology for Aventura. Questions that we will need to answer include:

1) When was Aventura first occupied and when was it abandoned?
2) Is there a significant Archaic occupation at Aventura and is there a gap or continuity between that Archaic occupation and Preclassic occupation at Aventura?
3) To what extent is Aventura’s occupation continuous or does the site see periods of occupation, abandonment, and reoccupation?

Gaps that may be present based on the limited chronological work to date include between the Archaic and Preclassic, a possible gap in occupation, but not ritual use, in the Late Postclassic, and an absence of evidence for the Spanish Colonial period.

Conclusion
The survey and surface dating of the city of Aventura provides the initial data needed to assess the longevity of the city, its development, and landscape positioning and begin to answer the questions about the site's longevity. Survey is a necessary first step to produce an accurate map of the city before a larger project can be undertaken.

Aventura clearly had a long history of occupation and use that may have lasted over 5000 years based on current evidence. This occupation and use likely included mobile forager-horticulturalists, the development of a Pre-Columbian city, and Caste War refugees. It is not clear at this time if Aventura’s long, over 5000 year, history was a continuous one, or if the site saw periods of occupation, abandonment, and reoccupation. What would have made the place of Aventura a prime location for forager-horticulturalists, urban city dwellers, and Caste War refugees alike? As Aventura is a city that survived the collapse, what did its residents do to enable the longevity of their city? These and other intriguing questions are ones upon which we hope future research at Aventura will shed light.

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Urbanism continues to be a contentious topic when discussing the lowland Maya. This is mostly due to the neo-evolutionary and overly demographic models that have been applied as archaeological tests. Examining two Petén sub-regions and the cities that evolved in them, Tikal and El Peru, we describe how city form and structure reflects core information about the regional landscape and natural systems. For Tikal, emerging regional data offer a complex and nuanced perspective of settlement counter to earlier models that described the city of Tikal as a tightly bounded, both politically and ecologically. Overlapping networks of settlement densities and hierarchies, along with evidence for past agricultural production are best described as a coupled natural and human mosaic. Emergent research at El Peru, evidences a similarly complex expression of a city on the landscape. The escarpment, pocket bajos and variable availability of water clearly influence regional settlement patterns and city form. Combined, the information from Tikal and El Peru offer a new perspective on Maya cities, not grounded on demographic reconstructions. Maya cities and settlements are complex expressions of history, human agency, climate, environment and perhaps most importantly, region.

Introduction

Archaeologists in the Maya lowlands have spent the last five decades investigating the shape, form and structural density of Classic Maya sites, testing neo-evolutionary models and conceptualizations of urban. Because of this, Maya cities, clearly structured as low-density urban places, are often considered anthropological and cross-cultural anomalies, i.e., functionally urban places thriving in an otherwise challenging environment. This paper offers a different perspective on the design and planning of Maya cities, by emphasizing the role of household, region, and ecology to understanding Classic Maya urbanism, or simply, a coupled natural and human study of Maya cities. To do so, we examine two Petén sub-regions and the cities that evolved in them (Figure 1), thereby introducing how urban theory could be better integrated within archaeological research.

First, we examine the structure and distribution of settlement at Tikal as it compares to evidence for past agrarian activities through stable carbon isotope analysis of soils and hydrological surveys. Second, we describe results from recent settlement survey and hinterland excavations at El Peru-Waka’ that suggest hinterland households were relatively well-provisioned materially and engaged in a variety of economic activities. This comparative examination indicates that the development and evolution of Maya cities were place-based regional processes, best understood, at least at

Figure 1. Map of the Southern Maya Lowlands highlighting sites discussed in the text.

first, from the bottom up. Methodologically, we emphasize that such efforts are bolstered by intensive settlement pattern studies, integrated with household and landscape archaeology.

Tikal, Guatemala

Tikal is located in the Central Petén, north of the modern cities of Flores and Santa Elena, Guatemala. The city center is composed of thousands of structures, including palaces, ball courts, reservoirs and temples. Thanks to Haviland (1963) and Puleston (1983) and later research by Ford (1986), a regional perspective for Tikal has always been present. It has however been overshadowed by a tightly bounded urban, engineered and centrally administered model percolating from the sheer monumentality of epicentral Tikal, along with some observations about settlement patterns
limited in spatial scope. Simply put, many archaeologists perceived Tikal to be a tightly bounded polity, as defined by Haviland (1981:89, see also Culbert et al. 1990) thirty-five years ago:

[Tikal] was bounded on the east and west by *bajo* and on the north and south by artificially constructed earthworks running between the *bajos*. There is a direct and significant correlation between these two boundaries and settlement density.

This tightly bounded urban model led to increasingly formal urban expectations, likely driven by competitive comparisons to urban counterparts in the highlands (i.e., Teotihuacan). What we came to expect from Tikal was an urban core with decreasing densities of populations along with limited agrarian landscapes within the core. Beyond the urban boundaries, expectations for shifting cultivation, broad open agrarian landscapes, and low densities predominated.

Beginning in 2003, a Penn State project focused on re-studying Tikal’s region from both a cultural and ecological perspective, relying on traditional settlement pattern survey, soil sampling and analysis, coupled to forest monitoring and hydrological modeling. Some of our observations about Tikal’s region follows:

**Settlement and Households at Tikal**

Settlement beyond the center is not evenly dispersed in a continuum from the center, but fragmented and clustered around upland soils and *bajo* margins (Murtha 2015). Household remains are distributed in fragmented clusters throughout the Tikal region. There are small spaces immediately surrounding each household, but the spatial patterning leaves large tracts of uninhabited and prime agricultural areas interspersed between settlement clusters (Murtha 2015). Larger regional sites are often spatially adjacent to high densities of households, indicating important intra-regional variation in settlement densities, scale and intensity. The earthwork as described by Haviland attempts to define the boundaries of Tikal, but exhibits significant variability in form and completedness from place to place (Puleston and Callendar 1967; Webster et al. 2004, 2007, 2008). Construction was unfinished, and while perhaps centrally planned, the feature was implemented locally. Additionally, in contrast to early observations correlating the earthwork to settlement density, there is no consistent drop off in settlement density outside of the earthwork (Webster et al. 2004, 2007, 2008). Based on settlement and the earthworks, Tikal’s landscape can only be described as a regionally negotiated space where clear boundaries between the beginning and ending of the polity were not static and where the line between residential areas and agrarian areas was not clearly defined. Moreover, the scale and intensity of integration clearly varied temporally in addition to the observed spatial variability.

**Agriculture and Land Use at Tikal**

The agrarian landscape was described early and often by formal models of in-fields and out-fields, but also exhibits regional variation and is best described as an agrarian mosaic. Despite substantial evidence of erosion, there is no evidence of terracing at Tikal. In fact, it was through erosion that the earliest residents of the Tikal region had the most significant impact on their landscape. This transformation shifted a rather well distributed natural resource (productive upland soil) to large contiguous tracts of productive land at *bajo* margins, footslopes and toeslopes (Balzotti et al. 2013). At Tikal the Classic Period was spent managing this anthropogenic regional landscape.

Recent carbon isotope studies led by Richard Terry further demonstrate a complex arrangement of agricultural land surrounding Tikal. Similar to ethnographically observed lowland agricultural systems, the regional agrarian landscape was not monolithic, but carefully cultivated responding to local topography, annual changes in precipitation and demographic needs. As an example, for many years, Tikal’s *bajos* were perceived as either unproductive or potentially the proverbial breadbasket that Tikal’s urban center relied upon. Not surprisingly, the system was more complex. Not only do we have evidence for some past maize production in Tikal’s *bajos*, but also we tested dozens of other pocket *bajos*, which show similar evidence of past production,
especially on their margins and in all probability responding to receding water based on annual precipitation (Parker 2015).

**Water and Hydrology at Tikal**

Recent studies of Tikal’s reservoirs and water are fascinating, but regionally incomplete. They demonstrate how Tikal’s reservoirs were designed to capture and store runoff near the site center and perhaps even influence water flow from the center to the Santa Fe Bajo. But even these exceptional studies of Tikal’s reservoirs are limited by central Tikal observations and a tightly bounded model. When viewed at the site scale (essentially the central 16km² or 1% of the Tikal region), it is easy to see how urban models ‘fit’ Tikal. But when viewed at the scale of the region (784 km² or 99% of the Tikal region) a more complex pattern emerges. Moreover, questions of power and authority that are reasonably simple and clean to perceive in the central 16 km² are messy and fuzzy in the context of the region. Regional water surveys from 2015 coupled to hydrologic modeling suggest a diverse availability of water throughout Tikal’s landscape (Figure 2).

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**Figure 2.** Map of Tikal National Park illustrating the locations of regional sites (black triangles), the earthwork (black line), and the locations and photographs of significant natural water sources.
Summary of Tikal

Whether it is the earthworks, densities of households or natural features like the bajos the regional Tikal data now reveals a highly dynamic and complex system (or network) of households, past land use and ecological patterns influencing the form and structure of Tikal as a city.

El Perú-Waka’

Since 2003, archaeologists of the Waka’ Archaeological Project (PAW, formerly the El Perú-Waka’ Regional Archaeological Project), have been investigating the ruins of the Classic Maya city of Waka’, also referred to as El Perú, the name given to it by oil prospectors in the 1960s. Project research has focused on connecting architectural and dynastic history, predominantly through monumental excavations, reconstructing the local and inter-regional political economy through epicentral household excavations and materials analysis, and the structure and organization of the urban landscape, primarily through settlement surveys and test excavations.

The site core itself is located in the southwestern corner of the Classic Maya heartland, with its urban core perched at the edge of the escarpment that forms the southern and western limits of the Petén Karst Plateau (Marken 2011). Its defensible location on top of a 80m high escarpment, and advantageous
position near the juncture of the San Pedro River and its tributary San Juan River likely fostered the city’s role in both east-west and north-south overland trade (Eppich et al. 2012). This combination of geographic factors may have also contributed to the historical importance of the city as one of the first places visited by Siyah K’ak’ in the Early Classic and whose dynastic loyalty was highly contested during the Late Classic regional conflicts between the dynasties of Tikal and Calakmul (Freidel & Escobedo 2014; Freidel et al. 2007).

Features reflecting patterns of land-use within the core are varied, and include the four public plazas, many massive monumental complexes, a few medium-sized reservoirs, and several “natural” canals that diverted water to the urban peripheries (and to several interconnected basins that potentially served as reservoirs and/or urban gardens along the way) (Figure 3). The most striking aspect of the Waka’ urban settlement, however, is the packed nature of its “residential” surface remains; few Classic Maya sites (Copan, Palenque) exhibit such a high structure density (Marken, Maxson, & Pérez 2016). Surrounding this highly nucleated urban core is not a swath of “dispersed” rural settlement as seen at many Maya monumental centers; it is instead ringed by a still rather dense, multi-purpose, ‘periurban’ zone (Marken 2015). As identified by archaeological survey and mapping, a variety of landscape features spill out from the urban core and clearly integrate the city’s hinterlands into the urban fabric of El Perú-Waka’. Beyond the core, the PAW survey team has conducted over 12km² of full-coverage pedestrian survey and settlement mapping since 2007 (Figure 4; Marken 2008, 2009, 2010, 2013a, 2013b). Limited mapping and reconnaissance outside this 12km² indicates that ancient Maya settlement was continuous both to the north and south, extending at least to the minor centers of Yala, 18km to the east, and El Burral, 10km to the north (Marken & Castaneda 2014).

Settlement chronologies derived from the analysis of ceramics recovered from 220 test excavations indicate that hinterland settlement began in the Late Preclassic, coeval with the earliest construction evidence from the ceremonial center. Hinterland settlement was continually shifting, however, with patios being founded, occupied, abandoned, and reoccupied throughout the Classic period. Beginning in the Terminal Classic, widespread abandonment of hinterland groups effectively caused occupation to nucleate within the urban core, within the context of an overall population decline (Marken 2015).

Settlement and Households at El Perú-Waka’

To date, three localities within the Waka’ urban core have been subject to horizontal investigation (Arroyave 2006; Eppich 2007, 2009, 2011), as have six in the Tres Hermanas District of its hinterlands (Figure 5). Artifacts
from horizontal and test excavations in the Tres Hermanas indicate that the inhabitants of these groups engaged in a variety of economic activities during the Late Classic, including craft manufacturing on at least a limited scale.

The Tres Hermanas District, also sometimes referred to as the Southeast Tingal Margin District (Marken 2011, 2015), lies approximately 2km southeast of the central urban plazas and consists of 65 structures organized in 11 patio groups occupying a 1.2km stretch of uplands between the escarpment and the edge of the large tingal bajo that straddles the San Juan River. The district is marked by a set of three roughly equidistant temple patios aligned to Maya north (Grps. R18-1, S20-1, and T22-1, see Marken 2014 for discussion of the implications of this orientation). The temple patio groups are situated half a kilometer apart, each occupying topographic grades extending into the tingal bajo margin from the escarpment. District settlement structure and group layouts, as well as test and horizontal excavation chronologies, suggest that rural pyramid construction and use were linked to Late Classic resettlement of the area and possible efforts to incorporate its inhabitants’ participation into urban-based political and ritual networks (Eppich et al. 2016; Marken 2015).

The Tres Hermanas settlements are of additional interest as the locations of, at least limited, craft activities as evidenced by the artifacts recovered from excavations. Other hinterland groups exhibit similarly strong evidence of lithic tool refurbishing (and possible production), but artifacts recovered from certain Tres Hermanas groups also indicate the occurrence of craft activities not often evidenced at El Perú-Waka’. Besides various chert bifaces and a high quantity of chert debitage, obsidian blades and blade fragments, and a “bark beater” (to make bark paper), a set of four bead polishing stones and a handful of quartzite fragments were recovered from Grp. T22-1. Test excavations at Grp. T19-1 also documented substantial quantities of chert debitage and obsidian blade fragments, as well as high concentration of worked shell and debitage, and two spindle whorls, one of which broke during manufacture. The more recent, more intensive investigations of T19-1 recovered a bead polishing stone similar to the set from T22-1, as well as a bark beater and numerous additional chert bifaces and tools and substantial quantities of shell debitage. Damaris Menéndez also discovered a limestone quarry in the vicinity of T19-1, consisting of 5 individual borrow pits.

Additional craft activities suggested by the hinterland test data include paper making, as well as widespread subsistence-oriented unifacial (chert) tool production and grinding stone surface rejuvenation. In contrast to the specialized production artifacts from T22-1 and T19-1 which hint at some form of participation in a wider “penny economy,” several hinterland lithic assemblages, such as that from the horizontal excavations at S21-1, suggest that many hinterland residents instead primarily produced stone tools for their own consumption (Eppich & Austin 2016). Overall, the material evidence from the Waka’ hinterland settlement indicates that peripheral households engaged in a variety of economic activities besides farming that were likely enacted through multiple socioeconomic networks.

**Water Management at El Perú-Waka’**

GIS analyses of the hydrology of El Perú-Waka’ have been carried out at the city, local and regional scales. During the 2016 field season, a program of reservoir investigation was initiated by Marken and Matthew Ricker of Bloomsburg University. These investigations included the description of 87 soil core augers and two 2m+ deep excavation units within a single hydrological system and an additional reservoir within the city core. Although soil samples have yet to be analyzed and the subsurface data remains to be plotted out, the GIS analyses and geomorphological investigations, combined with observations collected during survey and mapping, enable preliminary classification of water catchment features (ie. reservoirs) across the urban landscape, which may have similar implications as the three-tiered hierarchy in the management of irrigation systems in Arequipa, Peru as described by Ersten (2010).

Living atop the escarpment, the ancient Maya inhabitants of the Waka’ urban core had limited access to water resources and therefore focused much of their efforts to direct and store...
rainwater for consumption. While certain management features, such as channels and potential canals, served to also direct water to potential agricultural areas, all the investigated water storage features at Waka’ would have likely been managed as artificial ponds, where a variety of plant and animal life, such as water-lilies, fish, and turtles would have been cultivated to sustain the drinkable quality of collected surface water. At present, the observed water storage features at Waka’ include (Figure 6):

1) Household *aguadas*, which are small, pool-sized depressions that remain to be investigated beyond mapping, but are ubiquitous with residential groups within the urban core and across the surveyed hinterlands. These have small capacities and many appear to have originated as borrow pits for household construction. Some of these small depressions may have functioned as silting pools, as hypothesized by Scarborough and colleagues (Scarborough, Dunning et al. 2012; Scarborough & Grazioso 2015) at Tikal, as many often ring the edges of larger basins and/or pocket bajos.

2) Larger household reservoirs, such as the Xucub, Ical, and M13-1 Reservoirs are often spatially associated with elite groups or neighborhoods, although some functioned as parts of larger hydrological systems. Individually, these reservoirs exhibit medium-sized capacities, based on surface data, but soil coring of the Xucub Reservoir demonstrates that pond management included periodic dredging and the maintenance of a fill-and-sherd layer above the bottom which likely served to anchor plant roots, such as water-lilies. The Xucub Reservoir also contained a corner platform to facilitate access to water as levels fluctuated seasonally.

3) Community or district tanks, which have higher capacities and form critical nodes within larger pond and drainage systems. While several potential district tanks have been identified by mapping and hydrological analyses, only the Northeast Tank has been investigated more intensively.

The Northeast Tank is part of an interconnected system of water storage features referred to as the Northeast Basin Hydrological System (Figure 7). This west to east to north flowing system consists of the Xucub Reservoir, a small sluice way, and the Northeast Tank, as well as an outlet from which excess water could be released to the north. Within the north outlet a large limestone boulder in its center and two smaller boulders on its east and west sides may have functioned as the frame for wooden slats to directly control water flow. While we are still reconstructing its formation and construction history, we can say that the Northeast Tank itself was highly engineered to store a certain kind of water. Today, ground water seasonally rises within the Tank, although it barely reaches the surface. This ground water, however, is not potable as it contains high concentrations of gypsum salts. In order to prevent the local ground water from contaminating their clean surface water, city inhabitants laid limestone slabs across the tank floor and maintained a fill-and-sherd layer atop that slab base. A “retaining wall” was also constructed along the eastern edge of the tank, where gypsum concentrations increase (gypsum is absent from the Xucub Reservoir and sluice way soils to the west). Finally, a series of low “terraces” were constructed around the footslopes of the tank to ease access during times of lower water levels. The positioning of these terraces suggests that the inhabitants of all the groups surrounding the pond were allowed access to its water.

Lastly, the Plaza 1 Reservoir appears to have primarily served to collect runoff from Plazas 1 and 2, as indicated by the flow
accumulation analysis of the site core. Soil core augers within the reservoir only recovered washed-in fill and artifacts to a depth of over 2 m, suggesting that the reservoir continues to serve a similar purpose today.

The preliminary findings from the recent hydrological and soil auger coring investigations at Waka indicate that even when part of a larger water management system, each tank within the core was different, engineered and managed to meet local specific requirements and challenges. This highlights the fact that while some infrastructural landscape features within Classic Maya cities may have, at times, been regulated by “centralized” authorities, many others were built and managed, in practice, by households and local communities who maintained and managed their own resources.

**Discussion and Summary**

Recent evaluations of Classic Maya urbanism features and variability have tended to emphasize those characteristics that appear to denote “centralization,” whether of political, economic, or social power. However, as Foias & Emery (2012:10) note, the use of the term “centralization” is often varied. From a strict neo-evolutionary perspective such as that of Flannery (e.g. 1998) and Marcus (e.g. Marcus & Feinman 1998), “centralization” refers to the consolidation of decision-making in the hands of fewer individuals, which they directly connect to regional settlement hierarchies (see also Spencer & Redmond 2004). For others, “centralization” carries connotations of sociopolitical integration. This meaning is evident in Fletcher’s (2009, 2012) conception of low-density, agrarian urbanism and can be simplistically be illustrated by the perceived differences between a “strong” vs. a “weak” state (e.g. Chase & Chase 1996; Fox et al. 1996). While a centralized decision-making administration can correlate with a highly integrated socioeconomic system, these two variables are not necessarily linked. For example modern dictatorships are highly autocratic in terms of decision-making, but that extremely centralized government apparatus often heads poorly integrated administrative and/or socioeconomic systems (Foias & Emery 2012).
When uncoupled from previous epicenter-focused models of functional urbanism and viewed from a regional perspective, the settlement and land-use data from Tikal reveal a much more varied, and likely intersecting and overlapping, set of networks of social interaction and resource management. The less mature data sets from El Perú-Waka’, which were explicitly collected to eventually form a regional perspective, support this viewpoint. Classic Maya cities were not simply the expressions of dynastic authority, although that was certainly one of their probable functions. Instead Classic Maya urban landscapes exhibit highly varied patterns of land-use and resource management tightly linked to settlement and that were organized and distributed at multiple social and spatial scales, all the way from the household to the region.

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Pacbitun: Rectangular building [Sub-Structure B-2] dating to the late Middle Preclassic (600-400 BC) with beads, drills, and shell detritus found embedded in the floor. Photograph courtesy of Terry G. Powis.

Pacbitun: A reconstruction of El Quemado, or Q, in Plaza A. Image courtesy of George Micheletti.
Drawing of Pabintun Altar 3, largest fragment recovered from Structure 1 cache, smaller fragment from Late Classic period wall, Structure 25. Drawing by Christophe Helmke.
This paper is a comprehensive overview of nearly four decades of archaeological investigations at the medium-sized Maya center of Pacbitun. Since the initial explorations in the 1980s, Pacbitun’s Epicenter, Core, and Periphery Zones have been the subject of three major archaeological studies and several targeted investigations, together producing a narrative of a pre-Hispanic Maya community that lasted for nearly two millennia. From humble beginnings as a small village first settled around 900 BC, the site grew into regional prominence by the end of the Middle Preclassic (300 BC). Signaling the onset of the Late Preclassic period, Pacbitun’s Core Zone underwent a significant transformation, encapsulating the entire Middle Preclassic settlement beneath artificially constructed plazas topped with architecture common to the Classic period (AD 250-900). Southern Lowlands. The site’s prosperity and prominence continued throughout the Classic period as it grew in both size and population, spreading from the Core Zone into the Periphery Zone. Social status also became more apparent during the Classic period with the emergence of a wealthy, powerful class of ruling elite whose origins likely lie in the transformations of the preceding period. The Late Classic period (AD 550-800) ended as Pacbitun’s most opulent era, in terms of construction projects, industrial craft production, population expansion, long-distance trade, and landscape ritual performance. This opulence was short lived and likely helped to usher in the social and political decline of the Terminal Classic period (AD 800-900). Although intensified methods of agricultural production were developed to sustain an exploding population, an untimely drought, archaeologically evident in increased ritual cave use, likely negated these efforts, leading to large-scale socio-political dissolution by AD 900. A population remained in the area through the Early Postclassic period (AD 900-1000), but their presence is marked only by a scattering of artifacts through the site and ritual landscape, thus the ultimate end of Pacbitun yet remains unclear.

Introduction

The pre-Hispanic Maya settlement of Pacbitun, in the Cayo District, Belize, has been the subject of three major archaeological projects, and several targeted studies over the last four decades. The first two major projects, the Trent University Pacbitun Archaeology Project (TUPAP), and the Belize Valley Preclassic Maya Project (BVPMP), were directed by Paul Healy, with the latter co-directed by Jaime Awe. These projects revealed a great deal about Pacbitun, successfully outlining its origins, major chronological periods, their overall development, and the settlement pattern (Healy 1990a; Healy and Awe 1995; Healy et al. 2004; Healy et al. 2007). Limited survey and excavations by the Belize Valley Archaeology Project were also conducted in 2003 and 2004 (Helmke et al. 2006; see also Healy et al. 2007). The Pacbitun Regional Archaeological Project (PRAP), directed by Terry Powis, grew out of the BVPMP, and has been ongoing since 2008. With an original focus on the developments of the Preclassic period, later combined with an interest in the Late Classic period landscape, Core Zone, and Periphery Zone settlement, the PRAP has refined our understanding of Pacbitun’s culture history. Considering these new data, we present here a refined culture history of Pacbitun, following an updated description of the site and a brief history of investigations there.

Description of Pacbitun

Pacbitun is a medium-sized pre-Hispanic Maya site geographically situated on the southern rim of the Belize Valley, and in the northern limestone foothills of the Maya Mountains, approximately three kilometers to the east of San Antonio village in the Cayo District, Belize (Figure 1). Its position was
Figure 2. Map of the Pacbitun region.

Figure 3. Map of Pacbitun Site Core showing both structures and carved monuments. Map courtesy of Nicaela Cartagena and Sheldon Skaggs.
likely chosen because two eco-zones intersect there, and a wide variety of important economic and ritual resources are locally available, including granite, slate, pine, springs, and fertile agricultural land (Healy 1990a:248).

Settlement is divided into three areas, the Epicenter, Core and Periphery Zones (Healy et al. 2007:17). The Epicenter is the main “downtown” area, the location of the main religious and administrative structures (Figure 2; Healy et al. 2007:17). It sits on an artificially leveled hill, oriented east-west, and has 41 known masonry buildings comprising three main plazas, and an additional two that are adjacent to the north side. Plazas A, B, and C run east to west, as do the two northern plazas, D and E (Figure 3; Healy 1990a:250). An additional architectural group located to the northeast of Plaza A was dubbed the Eastern Court (Cheong 2013). A large reservoir, or possible spring, is located just north of the architectural complex.

Pacbitun hosts a network of five causeways comprising a system of roads connecting the Epicenter to an isolated platform-pyramid-temple (Structure 10) to the east, an unnamed group to the north, and another at the foot of the hill on which the large secondary center, Sak Pol Pak, sits. Another road network in the Periphery Zone connects a patio group with an uncarved stela to a pyramidal structure (Chase et al. 2014:8683; Healy 1990a:257; Weber 2011:91-95, 2012, 2013:148-149; Weber and Kieffer 2013; Weber and Powis 2012:123).

The Core Zone includes the Epicenter and a one square kilometer buffer around it (Campbell-Trithart 1990). The area beyond the Epicenter is dotted with small mounds, although a few larger structures, courtyard groups, agricultural terraces, spring or reservoirs, and four sinkholes are also known (Healy et al. 2007:18, Figure 3; Richie 1990; Spenard et al. 2012; Sunahara 1995). The Periphery Zone is the sustaining area for the site, consisting of several hundred small house mounds spread over the landscape, as well as several smaller (~5 m tall), hill-top pyramidal structures, plaza groups, minor centers, and terraces (Spenard 2011; Turner et al. 2015; Ward 2013; Weber and Micheletti 2016; Weber and Powis 2014). The area of the Periphery Zone was conservatively estimated to extend nine square kilometers beyond the Core Zone, yet settlement continues unbroken, although less dense in all directions but south, from the Periphery Zone into the vicinity of other nearby major centers making hinterland socio-political affiliations difficult to identify (Conlon 1999; Healy 1990a:251; Reece 2012; Spenard 2011; Spenard, Mai, and Mai 2012; Spenard, Reece, and Powis 2012; Weber 2011). Lastly, caves, rockshelters, bedrock outcrops, sinkholes, and other karstic landmarks, springs, and agricultural terraces abound in the southern and eastern areas of the Periphery Zone.

A Brief History of Archaeological Research at Pacbitun

Since being reported to the Belize government in 1971, Pacbitun has been the subject of three systematic archaeological investigations and a series of smaller research projects (Healy 1990a; Healy et al. 1980; Healy et al. 1983; Helmke et al. 2006; Snow 1969). The first, the Trent University Pacbitun Archaeology Project (TUPAP) ran from 1984 to 1987, and was an extensive survey of the three zones of settlement, outlining the evolution of Pacbitun’s settlement pattern, determined the function of several buildings in the Epicenter, established the regional chronology, and produced focused studies of particular artifact and material classes (Awe and Healy 1994; Bill 1987; Campbell-Trithart 1990; Healy 1988, 1990a, 1990b, 1992; Healy et al. 1995; Healy et al. 1990; Healy et al. 2004; Healy et al. 2009; Helmke and Awe 2012; Helmke et al. 2006; Richie 1990; Sunahara 1995).

The second systematic project, the Belize Valley Preclassic Maya Project (BVPMP) ran from 1994 to 1997 (Healy 1999; Healy and Awe 1995, 1996). These investigations were largely restricted to the plazas in the Core Zone, and petrographic ceramic analysis (Arendt et al. 1996; Hohmann 2002; Hohmann and Powis 1996, 1997, 1999; Hohmann et al. 1999; Sunahara 2003). Nevertheless, investigations also included short reconnaissance mapping trips to the minor hilltop center of Sak Pol Pak, and Actun Pech cave (Conlon 1999; Healy et al. 1996).

The 1997 investigations marked the final
The Culture History of Pacbitun, Belize

year of major study at Pacbitun until 2008 when the Pacbitun Regional Archaeological Project (PRAP) was initiated (Powis 2009). Its initial focus was the shell bead industry of the Preclassic period (Hohmann et al., in press; Powis 2009, 2010a; 2011; Powis and Healy 2012). Research soon expanded into topics little investigated by the TUPAP and BVPMP, including ritual landmarks (caves, rockshelters, and bedrock outcrops), the causeway system (Powis 2009, 2010b, Spenard 2011, 2012, 2013, 2014; Spenard and Powis 2014; Spenard et al. 2013; Weber 2011, 2012, 2013, 2014; Weber and Powis 2010, 2014), larger settlement surveys of the Periphery Zone and beyond (Spenard, Mai, and Mai 2012; Turner et al. 2016; Ward 2013), excavations at the minor center, Sak Pol Pak (Reece 2012; Spenard et al. 2011), and poorly understood areas of the site core, including the Eastern Court, Structure 10, Structure 3 (the northern bounding range building in Plaza A), and Structure 5 (the southernmost structure of the eastern triadic assemblage also in Plaza A) (Cheong 2013; Micheletti 2016; Micheletti et al. 2015; Micheletti and Stanchly 2014; Weber 2014; Weber and Kieffer 2013; Weber and Powis 2013). Landmark investigations focused on excavating the cave named Actun Lak, and the many rockshelters and other geological features of the Nohoch Tunich Bedrock Outcrop Complex (NTC), both located two kilometers from Pacbitun. Approximately 60 other ritual landmarks have been documented in varying levels of detail, and are awaiting further study.

Middle Preclassic period (Mai phase 900 – 300 BC)

To date, the earliest occupation at Pacbitun can be dated to the Middle Preclassic period, which Healy (1990) defined as dating from 900-300 BC. Other sites in the Belize Valley have earlier occupation dating back to the terminal Early Preclassic (ca. 1200-1000 BC). Based on ceramic and radiocarbon dating, sites like Actuncan, Blackman Eddy, Cahal Pech, and Xunantunich have sealed deposits dating to this Cunil period. The Cunil period represents the earliest sedentary agricultural communities in the Maya lowlands (Awe 1992; Sullivan et al. 2009) and, while a number of valley sites are occupied at this time, there are no pure Cunil deposits found at Pacbitun. However, Cunil sherds have been found at Pacbitun in mixed deposits in Plazas A and B.

Pacbitun’s Middle Preclassic was identified locally as the Mai phase, and is comparable ceramically to the Jenney Creek phase at Barton Ramie (Gifford 1976: 61-83). Throughout the 1990s, archaeological investigations in the site core were able to further refine the Mai phase into an early facet (900-650 BC) and a late facet (650-300 BC). The early and late facets are based on both ceramic cross ties with other valley sites like Barton Ramie (Gifford 1976) and Cahal Pech (Awe 1992) and radiocarbon dates obtained from stratigraphic contexts in Plaza B. Four radiocarbon dates fall between 620-450 BC (cal BC 905-375, 2 sigma, 95 percent probability), which not only securely set the date for initial habitation of Pacbitun but also enable a division of the Mai phase into early and late facets (Healy et al. 2004:224).

The Middle Preclassic period settlement at Pacbitun is restricted to the site core. There is considerable architectural and artifactual evidence for occupation in the majority of plazas dating to both the early and late facets of the Mai phase. However, in the periphery only ceramic material has been found (Healy et al. 2007:23). Despite testing 50 out of 396 sampled mounds within one square kilometer of the site core only occasional traces of pottery, belonging mainly to the Jocote and Savana Groups, were identified (Healy et al., 2004:24). At present, it appears that the earliest occupation remains are confined to the site core. Future investigations in the Periphery Zone, however, will help to clarify this.

Plaza B Investigations

In the site core, early Mai phase occupation is found at 1.25 meters below Plaza B. Through large scale horizontal excavations by the BVPMP, co-led by the primary author, portions of two basal platforms (Sub-Structures B-1 and B-4) were found dating back to ca. 900 BC. Neither structure has been completely exposed. Sub-Structures B-1 and B-4, identified as domestic structures, are dated by both ceramic and radiocarbon dating (Hohmann and Powis...
Figure 4. Rectangular building [Sub-Structure B-2] dating to the late Middle Preclassic (600-400 BC) with beads, drills, and shell detritus found embedded in the floor. Photograph courtesy of Terry G. Powis.

Table 1. Refined Pacbitun chronology and ceramic sequence of Pacbitun (adapted from Healy et al. 2004:208).

<table>
<thead>
<tr>
<th>Date range</th>
<th>Period name</th>
<th>Phase name</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD 900–1000</td>
<td>Early Postclassic</td>
<td>Canto phase</td>
</tr>
<tr>
<td>AD 800–900</td>
<td>Terminal Classic</td>
<td>Tzib phase</td>
</tr>
<tr>
<td>AD 550–800</td>
<td>Late Classic</td>
<td>Coc phase</td>
</tr>
<tr>
<td>AD 300–550</td>
<td>Early Classic</td>
<td>Tzul phase</td>
</tr>
<tr>
<td>100 BC–AD 300</td>
<td>Terminal Preclassic</td>
<td>Ku phase</td>
</tr>
<tr>
<td>300–100 BC</td>
<td>Late Preclassic</td>
<td>Puc phase</td>
</tr>
<tr>
<td>900-300 BC</td>
<td>Middle Preclassic</td>
<td>Mai phase</td>
</tr>
</tbody>
</table>

1996:Table 1). Test units penetrating to bedrock in each structure has identified early Mai/early Jenney Creek pottery sherds only, with over 90% of the sherd material belonging to the Jocote and Savana Groups. Both platforms consisted of a single wall each and measured approximately 6-6.5 meters long (no corners were observed on either structure to determine whether they are square or rectangular in shape). The wall of each platform was oriented in a northeast-southwest position (29 degrees east of north). Both walls were constructed of two courses of roughly hewn limestone blocks and separated by a meter-wide alleyway made of white tamped marl. The overall height of each platform measured approximately 40cm high above bedrock with a floor thickness of 2-3cm. Sub-Structure B-1 exhibited a western entry or porch area facing Sub-Structure B-4. At the level of decomposed bedrock, several postholes were detected running parallel to the wall of Sub-Structure B-4 indicating this platform likely
supported a perishable superstructure. Within one posthole were 50 intact marine (Strombidae) shell beads clumped in a row as if they were once strung together (Hohmann and Powis 1999:4). This bead cache represents the earliest offering at Pacbitun.

Sometime around 650-600 BC, Structures B-1 and B-4 were abandoned with some of the limestone blocks removed for later construction efforts. Both structures were then partially covered by the construction of five additional platforms (Sub-Structures Structures B-2, B-3, B-5, B-11, and B-13). Of note, prior to the building of these late Mai platforms, the inhabitants laid down a thin layer of marl over the top of them to level off their living area prior to the construction of Sub-Structures B-2 and B-3.

These five platforms, like their predecessors, likely would have supported perishable, wattle-and-daub structures. However, these late Mai phase platforms were larger and more elaborate than their earlier counterparts. Despite these differences, similarities did persist. Like the early Mai platforms, these late Mai structures also ran parallel to each other and were separated by a one-meter wide alleyway. The close proximity and common extramural areas suggest that the structures were organized as a small plazuela group with several structures situated around an open patio area, a pattern that continues to this day in most traditional Maya communities (Hohmann et al., n.d; Vogt 1964). The tamped marl alleyways between these platforms provide additional evidence that these architectural features were associated and contemporaneous. The exposed walls of Sub-Structures B-2 and B-3 were made of well-dressed limestone blocks 20cm wide and at least three courses high. Both were aligned 20 degrees west of north, a major reorientation/realignment from early Mai times. Tamped marl floors were present in each, measuring 2-3cm in thickness. PRAP excavations fully exposed Sub-Structure B-2 as well as the alleyway separating it from Sub-Structure B-3 (Figure 4). Sub-Structure B-2 was rectangular in shape and measured nine meters by six meters (or at least 54m² of living/working space) (Powis 2009, 2010). To date, this structure represents the largest late Middle

Figure 5. A reconstruction of El Quemado, or Q, in Plaza A. Image courtesy of George Micheletti. Preclassic example of Maya domestic architecture unearthed in the Belize Valley.

Associated with all seven platforms (Sub-Structures B-1, B-5, B-11, and B-13) in Plaza B was evidence of early and late Middle Preclassic shell ornament production. Investigations into the floors and alleyways revealed large quantities of shell ornaments in various stages of production, marine shell detritus, and chert microdrills and burin spalls spanning the entire Middle Preclassic period. The Pacbitun shell assemblage (n=8,783) represents the largest Preclassic collection in the Belize Valley, consisting of 5,670 modified shell specimens and 3,113 pieces of marine shell detritus, which is defined as fragmented shell that has not been intentionally shaped or worked (Hohmann et al., in press). The formal tool assemblage shows clear evidence of burin spall technology, including both burin spalls and microdrills (n=390).

By the end of the late Middle Preclassic (ca. 400-300 BC), a thick midden was deposited over the top of the late Mai structures in Plaza B. The deposit consisted of dark, organic soil densely packed with domestic refuse (ceramics, lithics, animal remains, plant remains), as well as shell ornaments in various stages of production, marine shell macro-detritus and chert microdrills and burin spalls. Additionally, tens of thousands, perhaps hundreds of thousands, of jute were also found in this midden. The presence of the midden over top the Middle Preclassic community signifies a change of space in this part of the site. This late Mai phase community of houses and associated shell workshops was replaced with the first lime-plastered plaza floor in Plaza B. Similar
changes occurred in Plaza A but this involved covering a monumental structure, designated as El Quemado, with successive plaza floors at the end of the late Middle Preclassic period.

**Plaza A Investigations**

With the complete exposure of one late Middle Preclassic platform below Plaza B, along with portions of several others, PRAP’s investigations shifted to sub-plaza investigations in Plaza A. The purpose of this research was to connect the residential area found in Plaza B with early ceremonial architecture in Plaza A. Our main goal was to gain a more complete (and comprehensive) understanding of the entire Middle Preclassic community at Pacbitun. Up to this point, our view of this early period was defined by domestic structures.

A geophysical survey using magnetometry and ground penetrating radar revealed several anomalies buried below Plaza A (Skaggs and Powis 2014; Skaggs et al. 2016). One test unit adjacent to Structures 3 and 4, and horizontal revealed one of those anomalies to be the summit of a late Middle Preclassic temple buried approximately 50cm below the main plaza of the site. Extensive burning was encountered on all surfaces of the temple, which led to the building being called El Quemado, or the Burned One. The extensive burning helped to preserve this building.

Investigations have shown that El Quemado, also known as Q, is a large, non-radial pyramidal structure measuring 32m long (east-west) x 12m wide (north-south) x 2m high (Figure 5); however, it extends under Structure 3 and therefore the north-south dimension is approximate. Ceramics and radiocarbon assays from inside three excavation units that penetrated Q’s summit indicate it was built sometime around 550 BC and was buried by 400-300 BC. No evidence of a superstructure is present on the summit of Q, suggesting it had a public ritual/ceremonial function.

El Quemado is oriented to the south, aligned 16 degrees west of north. The main stairs leading up the south face consist of five inset stairs each measuring six meters wide. These stairs rise to two sets of terraces before one reaches the summit of the building. Two sets of upper and lower armatures flank the large central staircase. There is no evidence they were adorned with stucco masks. Adjacent to the armatures on the east and west sides are a pair of small inset stairs that are reminiscent of Structure E-VII-Sub at Uaxactun (Ricketson and Ricketson 1937). We have found several pieces of sculptural plaster located on the small inset stairs located on the southeastern and southwestern sides indicating that masks may have once adorned the corner facades of the temple.

The masks appear to have been chopped off the corners of the building, as were the terraces, armatures, and corners (and noses) of each stair. Coupled with the extensive burning across the entire surface of Q (an indication it was calcified or calcined), the temple appears to have been partially destroyed (terminated?) at the end of the late Middle Preclassic (ca. 400-300 BC). Prior to the act, its surface had been swept clean of artifactual material, save for two caches/offerings. Cache Q-1 was found on the summit of Q along the centerline. It consisted of a single ceramic dish, which has been identified as a Savana Orange: Rejolla Variety vessel. Cache Q-2 was found along the traverse line of the building. It consisted of a single ceramic spouted jar, which has been identified as a Savana Orange: Rejolla Variety vessel.

Other than these two vessels it appears the temple was prepared for burial. It was first covered in a thin layer (3-5cm) of light brown marl and then covered with a thick layer of muck. This was done before four task units, measuring the length of Plaza A, were laid down in a north-south alignment. The task units were used to divide Q’s plaza area into manageable sections prior to the construction of successive plaza floors beginning in the early Late Preclassic period. These plaza floors would serve as the base on which the monumental constructions of the Classic period would sit.

To date, little comparable architecture has been found in the Belize River Valley and elsewhere in the Maya area. In the Belize Valley, Structure B1-3rd-g at Blackman Eddy (Garber et al. 2004:43) looks like Q. If future testing can confirm that the architecture beneath Structure 3 belongs to Q, then its architectural design would bear a striking resemblance to Tikal’s Lost World Pyramid and Uaxactun’s E-
VII Sub, although at a smaller scale. Both of these structures share a similar architectural style with Q. Both structures were adorned by stucco masks; also thought to be present on Q. Interestingly, the Lost World Pyramid and E-VII sub had earlier buildings within them dating back to the Middle Preclassic periods (Laporte and Fialko 1994:336; Rickerson and Rickerson 1937), which look like Q in some way. This suggests to us that perhaps the form of Q may have been similar to Preclassic precursors of the Tikal and Uaxactun buildings.

Aside from the structure’s architectural uniqueness, what further distinguishes Q from other architecture in the Belize Valley is the method of its abandonment. Evidence suggests that Q was abandoned around 400-300 BC. Rather than razing and incorporating elements of Q as core within a later building construction, a common practice throughout Mesoamerica, the inhabitants of Pacbitun decided to bury this monumental building virtually intact to start anew. Evidence such as chopped corners, extensive burning, ceramic offerings, and the possible destruction of masks suggest that the platform may have been ritually terminated. The platform was then covered in a thick layer of muck aiding in its preservation. Task units were set to build up and enlarge the plaza to its maximum extent, ultimately covering the massive early platform with a floor just above its summit, thereby sealing Q below what became the main plaza during Pacbitun’s subsequent Classic period apogee.

Late Preclassic period (Puc phase [400/300 – 100 BC] and Ku Phase [100 BC – AD 300])

The Late Preclassic period represents one of the most dynamic in Pacbitun’s history. Healy (1990a:256) originally divided it into two phases represented by distinct pottery types; however, most notable activity began in the Ku phase, thus the phases are combined here for ease of discussion. Construction events occurring in the Epicenter include the renovation of the Eastern Court (Cheong 2013:89). In Plaza A, a trio of aligned platform structures on the eastern edge of the plaza (Structures 1, 4 and 5), were constructed along with a single platform structure, Structure 2, centered on the plaza’s western edge. Although with some idiosyncrasies, the architectural configuration of Plaza A resembles a variant form of an E Group, a ceremonial architectural complex (Aimers and Rice 2006; Micheletti 2016; Micheletti et al. 2015; Micheletti and Stanchly 2014). The ceremonial assemblage of Plaza A was accompanied by the initial version of Structure 3, the plaza’s northern structure (Micheletti and Stanchly 2014). This period also witnessed the first iteration of the site’s ballcourt, another Late Preclassic Mesoamerican architectural archetype (Healy 1992).

Plaza A’s Late Preclassic transformation, which entombs the Middle Preclassic ceremonial structure El Quemado, is clearly indicative of an ideological shift at Pacbitun. Together, the construction projects in Pacbitun’s Epicenter suggests a move towards social inequality, with an elite class capable of expressing control over the population, convincing or coercing them to abandon and bury their homes after generations, ultimately making a space for the ensuing monumental constructions (Micheletti 2016; Micheletti et al. 2016; Spenard 2014:62). Obsidian from the Guatemalan highlands and shell from the Caribbean Sea appear in deposits from this period, and the ballcourt and E Group-like arrangement suggests connections to greater Mesoamerica, which surely brought further prestige to those commissioning its construction (Scarborough 1991; Taladoire 2001).

Stone walls set onto the limestone bedrock and a midden deposit with ceramics dating from both the Middle and Late Preclassic periods were found at the north end of what later becomes Courtyards 1 and 2 (Bill 1987; Skaggs et al. in press). The midden is most likely a continuation of the Plaza B midden deposit noted earlier, but it is uncertain if the walls are platform edges or simply to retain the midden deposit. The first floor in both of these courtyards occurs above the midden deposit dating to the Early Classic (Bill 1987; Skaggs et al. in press).

With estimates ranging between 550 and 700 inhabitants, population expanded both in terms of the number of inhabitants and areas where they lived (Healy et al. 2007:32-33). Most habitation growth appears in the Periphery Zone, presumably resulting from the village being buried, forcing population
decentralization. Limited excavations suggest 11 percent of all recorded mounds in the Periphery Zone, and only 5 percent of recorded mounds in the southeast quadrant within the Core Zone were established at this time (Healy et al. 2007:23-24).

The first definitive evidence of ritual landmark use in the Pacbitun region comes from this period. Late Preclassic period ceramics were recovered in mixed contexts from the cave of Actun Pech, as well as the rockshelters of Actun Subuul and Actun Xtuyul in the NTC (Healy et al. 1996; Spenard 2014). Yet another cavern, Actun Lak was a major focus of local community ritual (Figure 6).

The ceremonial activities in Actun Lak were largely restricted to a cluster of stalagmitic columns in the center of the cave, in front of which the Maya constructed a cobble altar (Figure 7). Smashed remains of thousands of bowls of the Hewlett Bank Unslipped type, many smudged or burned, littered the altar and comprised the entire matrix of the floor surrounding it (Spencer 2012; 2014). Throughout Pre-Hispanic Mesoamerica, cave formations were worshipped as the physical manifestations of the rain god, Chaahk, thus the rituals performed in this part of the cave were likely rain-related (Stone 2005b; Spenard 2014:421). Although the landmarks in the NTC area and in Actun Lak held the largest collection of Late Preclassic period ritual landscape ceramics, they were also the most intensively investigated in the Pacbitun region. Thus, future excavations may reveal broader use at this time.

Early Classic Period (Tzul phase AD 300 – 550)

The two-and-a-half centuries of the Early Classic period were a prosperous time for Pacbitun, and included several updates to the Epicenter, the earliest known record of a divine royal lineage, increased external connections, and a further geographic expansion of Periphery Zone settlement. Updates to the Epicenter include modifications and enlargements to the E Group and multiple plastering events of the ballcourt (Healy 1990a:256, 1990b, 1992:234). A small shrine, likely dedicated to a simple crypt burial dating to the Ku phase, was added to Structure 1 (Healy 1990a:256). A second burial placed in the same structure, but dating to the Tzul phase may be indicative of the growing importance of ancestor veneration; a common practice associated with E Groups at this time (Chase and Chase 1995). Ritual landmark use also became more common as indicated by the regular presence of ceramics stylistically dated to the period noted within many of them (Spenard 2014:Table 6.2).
The remains of at least 20 monuments have been recovered at Pacbitun, 13 stelae and 7 altars (Healy et al. 2004:213). Three retain evidence of being carved, of which two date stylistically to the Early Classic, Altar 3 and Stela 6 (Figure 8; Helmke and Awe 2012). Both monuments had been removed from their primary contexts and redeposited at various locations within the site in at least two events, one in the latter portion of the Early Classic period (ca. AD 400-550), and again at the onset of the Late Classic period (ca. AD 700); they likely originally formed a paired set (Healy et al. 2004; Skaggs et al. in press). Portions of Altar 3 and pieces of another altar—too fragmented for identification—were cached during renovations of Structures 1, 5, and 25, whereas Stela 6 was placed on the terminal floor of Plaza A at the base of Structure 5 (Helmke et al. 2006, Skaggs et al. in press). The text and imagery of Stela 6 records a royal accession on 9.2.10.0.0 (22 March AD 485), while Altar 3 may depict the same ruler holding a ceremonial bar, standing on a short glyphic caption, containing the logogram of the site, possibly read Bajniil, which can be translated as ‘Where there are Gophers,’ or ‘Place of Gophers’ (Helmke et al. 2006; Helmke and Awe 2006; Skaggs et al. in press). Aside from the developments of Pacbitun’s Core Zone ceremonial architecture, residential areas, including Structures 23, 25, 36 and 37, were expanded (Bill, 1987; Cheong 2013; Skaggs et al. in press).

Pacbitun’s Early Classic period prosperity is not only suggested by the expansion of the monumental and royal architecture in the Core Zone, but also in the presence of exotic goods found in the one burial and three caches from this time. From them, obsidian from highland Guatemala and Hidalgo, Mexico, chert from northern Belize, jadeite from highland Guatemala, and shells from the Caribbean were recovered (Healy 1990a:259-260, 1992:234; Healy et al. 2004).

In the Periphery Zone, limited excavations revealed a slight increase in the geographic footprint of the polity with 14 percent of known mounds occupied during this time, while 10 percent of mounds in the Core Zone contain evidence of occupation (Healy et al. 2007). Population estimates indicate between 700 to 900 people inhabiting the broader Pacbitun settlement, with the Core Zone population doubling from the previous period (Healy et al. 2007).

In addition to an increase in scattered settlement, the Early Classic period witnessed a major construction boom, if not the initial settlement, at Sak Pol Pak, the earliest known satellite center of Pacbitun (Figure 9; Conlon 1999; Reece 2012; Spenard et al. 2012). With a population of 50 individuals at its height, this center consists of three interconnected court yards around which the Maya constructed 14 structures, two of which are ceremonial (Conlon 1999:32). The ceremonial structures include an 11 m-tall pyramid (Structure 1), nearly the same height as Pacbitun Structure 1, and a round structure (Structure 4), similar to those commonly constructed elsewhere in the Maya area during the Terminal Classic period. The site sits on an isolated hilltop in the otherwise undifferentiated span of foothills to the south of Pacbitun. At the foot of the hill is a complex series of massive caves that drain runoff from the surrounding landscape into the hill itself. Limited excavations by the PRAP team revealed
the pyramid and the plaza in front of it (Plaza A) to be the earliest structure at the site; ceramics recovered from structures surrounding the other two plazas, B and C, stylistically date to the Late Classic period, indicating they were constructed at that later date. Thus, this hill was likely selected for settlement due to its status as a landmark of ceremonial significance, perhaps as another water shrine for the inhabitants of Pacbitun (Spenard et al. 2012).

**Late Classic Period (Coc phase AD 550–800)**

Healy (1990a) originally identified Pacbitun’s Late Classic period as the Coc phase, comparable ceramically to the Tiger Run phase at Barton Ramie (Gifford 1976: 191-225). PRAP’s investigations allow us to further refine the Coc phase into an early facet (AD 550-700) and a late facet (AD 700-800). We maintain Healy’s association of the early Coc phase with Barton Ramie’s Tiger Run phase, while associating the late Coc phase with Barton Ramie’s Spanish Lookout phase (Gifford 1976:225-288). Both facets are based on ceramic cross ties with other valley sites, particularly Barton Ramie (Gifford 1976) and Xunantunich (LeCount et al. 2002). Architectural construction and renewal continued in the Late Classic period (AD 550-800) though on a much grander scale than occurred in previous phases. These construction efforts greatly altered the appearance of the Epicenter, Core, and Periphery Zones, and were accompanied by a doubling of the sustaining population. Ten rich burials were also interred in the Core Zone, a class of sub-royal elites emerged, and new specialized craft production appeared in the Periphery Zone (Cheong 2013; Healy 1988, 1990a:255; Healy et al. 2004:229; White et al. 1993). The construction boom

**Early Coc phase (AD 550-700)**

Around the onset of the Coc phase, Pacbitun experienced a site-wide construction event, ultimately transforming much of the architecture in the Epicenter and Core Zones. Modifications to the E Group complex varied greatly from the previous pattern of construction and seemed to disregard the physical attributes typically associated with this archetype (Micheletti 2016). The placement of several elaborate and well-furnished elite graves into each of the four structures of the complex supports the idea of the assemblage’s physical and functional conversion to an Eastern Triadic Assemblage, a recently described architectural archetype under investigation in the Belize River Valley (Awe et al. 2016). The ramifications of a physical and functional transformation of an assemblage known to be associated with both communal reverence and elite aggrandizement is almost surely evidence of sociopolitical change. Supporting evidence of sociopolitical unrest may also be exhibited in the reconfiguration of the site’s ballcourt, an architectural archetype known to have both ritual and political affiliations (Fox et al. 1996; Healy 1990, 1992:234-235).

Early Coc phase burials are the richest yet found at the site, the most prominent of which is a vaulted royal tomb found within Structure 1 (Healy 1990a:255; Healy et al. 2004:229). In the tomb, the regent’s body was laid to rest in an elaborately executed, oval-shaped cavity, excavated via a shaft into the preexisting structure. The cavity was then capped with slate slabs, and buried under a dense lens of thousands of chert flakes (Healy et al. 2004:230). The body was covered in red pigment, and then 19 painted vessels, jadeite and pyrite beads, shell ear ornaments, a series of bone tubes, a slate mirror backing, and a *Spondylus* shell with a painted hieroglyph on its interior, were included as burial costume and furniture (Healy et al. 2004:231-232; Helmke et al. 2015). After the tomb was sealed, the entire structure was reshaped with a special stair block added to the central stairway, placed above the in-filled shaft. Lastly, a stela and altar complex was erected at the foot of the structure (Healy et al. 2004:233).

Evidence of specialized craft production is seen in a slate workshop attached to Structure 23 in Plaza B (Bill 1987; Healy et al. 1995). While slate appears in the earliest dated deposits at Pacbitun, it was most frequently used for artifacts throughout the Late Classic period (Healy et al. 1995:343). Worked slate was regularly encountered in ritually-charged, elite spaces, including caches, caves, and burials throughout Pacbitun, while a low densitydebitage scatter litters the surface of the Epicenter (Healy et al. 1995:340; Spenard 2014).

A trend in settlement distribution during this period suggests greater elite control over the Epicenter than in previous periods. Overall population expanded to between 1400 and 1800 persons, inhabiting roughly 31 percent of the periphery mounds tested, but only 5 percent of the structures in the Core area continued to be occupied (Healy et al. 2007:33). This population movement out of the Epicenter and into the periphery suggests habitation of the Central Zone may have been restricted to the royal family and court (Healy et al. 2007:33). A similar centralization of elite and concomitant expulsion of non-elite from core areas may account for the disparity in dates between the ceremonial and habitation areas of Sak Pol Pak.

Although the Early Classic period is well represented ceramically in the ritual landscape, pottery dating to the Early Coc phase appears in fewer ritual landmarks. This change in ceramic distributions may suggest a decrease in ceremonial activity, possibly related to a cessation of ritual caused by external warfare (Moyes 2006). Alternatively, due to the conservative nature of ritual practice, use of ceramics of earlier periods may have continued.
Late Coc phase (AD 700-800)

The late Coc phase of the Late Classic period (AD 700-800) began as the most lavish time in Pacbitun’s history, but this success also quickly led to the demise of the community; by AD 900, at the end of the following Terminal Classic period, the site was nearly completely depopulated, its Epicentral structures abandoned (Healy 1990a:259; Healy et al. 2004; Skaggs and Powis 2014; Weber 2014). During this century, the Epicenter was renovated for a final time, accompanied by an increase in caching behavior throughout the site, and burial practices continued (Healy 1990a:259; Healy et al. 2004:215). An increase in specialized craft production is seen in the development of a ground stone production industry in the Periphery Zone (Ward 2013). Additionally, the periphery settlement quintupled, necessitating experimentation with agricultural technologies, primarily in the form of terracing to feed the newly expanded population, and a spike in ritual landmark use and modification occurred (Healy et al. 1980; Healy et al. 2007:33; Spenard 2014; Weber 2011b:90). In the case of the NTC, its features were heavily, yet subtly modified with crude architectural constructions, seemingly in an effort to enhance the natural beauty of the place, ultimately transforming it into a pleasure garden (see Spenard this volume).

Epicenter renovations at Pacbitun involved the enlargement of the structures in Plaza A including the massive expansion of Structure 3, a final renovation to the ballcourt, and an update to the palace complex (Healy 1992:235; Healy 1990a:251-253; Micheletti and Stanchly 2014). Ballcourt modifications included the addition of a low-platform superstructure and stairs along the rear of each of the buildings. Final updates to the palace complex added a series of interior and exterior chambers topping range structures, several containing masonry benches (Bill 1987; Healy 1990a:253). Many of these renovations included lavish burials (n=7), and caches, although, except for a single Spondylus shell, all the latter contained only local or regionally manufactured items, indicating a disruption of long-distance exchange contacts (Healy 1990a:256; Healy et al. 2004:215-2166).

Although the breakdown of some external ties is suggested in the changes in caching behavior, others arose. PRAP investigations of the Tzib Group in the Periphery Zone resulted in the excavation of a ground stone workshop focused on granite mano and metate production (Skaggs et al. 2016; Ward 2013). A total of 146 mano fragments, the majority being ends of mano preforms, 72 metate fragments, and 109 chert hammer stones were found in the 21.75 square meters excavated. Additionally, this single mound contained 1099kg of excavated granite flakes and an estimated 9 cubic meters (10,800kg) of anthropogenic granite sand. Although most of the ceramics recovered from excavations indicate a primarily Late Classic period occupation (AD 700-800), some Late Preclassic period material was recovered (Ward 2013: Appendix A, Appendix B). Shovel testing of the area surrounding the mound revealed two other mounds with granite sand debris, suggesting a community of crafters (Skaggs et al. 2016). Located near the granite source, Pacbitun may have been a hub of a regional ground stone production network emerging in the late Coc phase, and continuing into the following Tzib phase of the Terminal Classic period that included harvesting granite from the nearby Mountain Pine Ridge, creating preforms in the outlying settlements, and then exporting the objects to markets yet to be identified (Skaggs et al. 2016).

Several of the other late Coc phase burials from Plaza A and the North Group of the Eastern Court were accompanied by a variety of

Figure 10. Photograph of mold-made ocarinas, and a large palanquin-shaped whistle from Pacbitun’s Eastern Court. Photograph by Kong Cheong.
The Culture History of Pacbitun, Belize

figurines and musical instruments (Cheong 2013; Cheong et al. 2014; Healy 1988, 1990a:255; Healy et al. 2004:214-215, White et al. 1993). These objects include a drum, figurine ocarinas, flutes, flute-maracas, and flute-rattles (Cheong 2013:C1-C16; Healy 1988; Healy et al. 2009). Among the instruments from the Eastern Court were a series eight mold-made, seated-figure ocarinas, likely pressed from the same cast, and a large palanquin-shaped whistle (Figure 10; Cheong 2013:Figure C5, Figure C16-C18). The presence of burials with instruments and high quality jadeite artifacts in the North Group, in addition to its position adjacent to and on the same elevated platform as Plaza A, strongly indicate secondary or sub-royal elites likely inhabited the group (Cheong 2013:92).

Other notable changes during this time include a geographic expansion with all known mounds tested in the Core and Periphery Zones having evidence of habitation (Healy et al. 2007). Accompanying this geographic expansion was a population explosion of several thousand people to between 4000 and 7000 (Healy et al. 2007:33; Weber 2011:90). One of the outcomes of this unprecedented population boom was a need for greater agricultural production. Experiments with intensification in the form of hillside terrace agriculture were made around Pacbitun; they were made necessary because much of the area’s prime farmland was likely already in use, and the more established fields had been unable to accommodate the increased demand for food (Healy et al. 1980; Healy et al. 2004:222; McAnany 1995:95-96).

All but one of the approximately 70 ritual landmarks known in the Pacbitun region contains extensive ceramic evidence of use during this period. Unfortunately, most artifacts were recovered from mixed contexts—a common occurrence in cave archeology—and are insufficiently temporally diagnostic for placing them in either the late Coc or Tzib phases; they compare ceramically to the Spanish Lookout phase (AD 700-900) at Barton Ramie (Gifford 1976:225-288). Nevertheless, Mount Maloney Black type bowl fragments were frequently encountered in the ritual landscape artifact assemblage, and Spenard has observed it regularly in the settlement ceramic assemblage although its presence has yet to be formally described there. On the one hand, the presence of this pottery type at Pacbitun verifies a heretofore only speculated connection between Pacbitun and western Belizean sites, such as Xunantunich, where the type has strong affiliations (LeCount et al. 2002). On the other hand, and more pertinent to the present discussion, this ceramic type is a highly sensitive chronological marker at Xunantunich (LeCount et al. 2002). Although the type has yet to be quantified from Pacbitun’s settlement ceramic assemblage, 23 percent of identifiable pieces of the type from Pacbitun’s ritual landmarks belong to Xunantunich’s Samal phase (AD 600-670), 36 percent to the Hats’ Chaak phase (AD 670-780), and 14 percent to the Tsak’ phase (AD 780-890), while the remaining 27 percent are indeterminate (Spenard 2014:329). While we acknowledge LeCount and colleague’s (2002) chronology for the type may not align perfectly with that of Pacbitun, it has offered us a starting point for refining the Late Classic and Terminal Classic period chronology at Pacbitun. In short, the Samal phase at Xunantunich is roughly equivalent to the early Coc phase, the Hats’ Chaak to the late Coc phase, whereas Tsak’ aligns to the following Tzib phase.

Terminal Classic period (Tzib Phase AD 800-900)

Healy (1990a) originally identified Pacbitun’s Terminal Classic period as the Tzib phase, ceramically associated with the Spanish Lookout phase at Barton Ramie (Gifford 1976:225-288); however, this period is recognized throughout the Maya Lowlands as one of great social and political upheaval and change (Rice et al. 2004), prompting our revision of the site’s chronology. Although this period remains poorly understood at Pacbitun, PRAP’s ceramic research and investigations in the Periphery Zone has begun to shed some light on it.

Molded-carved ceramics are a diagnostic marker of the Terminal Classic period, and the transition to Early Postclassic, throughout Belize and are common to terminal occupation deposits in the Core and Periphery Zones at Pacbitun (Helmke 2000:5-6). Most of this material can be
identified as Ahk’utu’ Molded-carved, a ceramic type with an iconographic program dated stylistically to between AD 840-879 (Helmke 2000; Helmke and Reents-Budet 2008). This pottery type was largely restricted to the Belize River and its tributaries, and the accompanying texts always refer to a Lady Olom, who is cited in the texts of Uaxactun between AD 810 and 830, with what may be a posthumous reference at Jimbal in AD 879 (Helmke and Reents-Budet 2008). These vessels were intended as objects to be gifted, with Lady Olom as the patron of these gifts (Helmke 2001). Additionally, a fragment of a production mold whose iconographic program indicates it was used to make Sahcaba Molded-carved vessels, was recovered in a small rockshelter in the NTC, suggesting Pacbitun may have been involved in the production of such vessels in some capacity (Spenard 2014, n.d.).

Regional paleoclimatological data points to two multidecadal droughts between AD 800 – 900, which would have affected Terminal Classic period food production at this time, and coupled with an exploding population, caused great social stress (Kennett et al. 2012; Webster et al. 2007). In fact, isotopic data collected from both human and faunal remains demonstrate differential access to maize by age, sex, and class at this time. Overall, the agricultural intensification developed in the previous period was insufficient to meet the needs of the recently expanded population, and the site experienced a demographic collapse at the close of the Tzib phase (White et al. 1993:366-370).

Relatedly, ritual landmark use peaks during this time, likely in response to the changing climate, a pattern common throughout Belize (Kennett et al. 2012:791; Moyes et al. 2009; Spenard 2014). One of the primary functions of Maya rulers was the successful performance of water and agricultural cave rituals. Thus, curing the droughts and supplying adequate food for the community would have been the purview of the royal lineage. Actun Lak cave was subject to an extensive construction program that created an elevated, stone-lined earthen platform just outside the cave’s entrance. A cobble stairway, leading 90 m downhill to the entrance of another massive cavern acting as a landscape drain for the region connected to the front of the platform. Adjoining its rear, the entire entrance area was raised over three meters, and a small terrace was constructed on the artificial floor, passively restricting access to all but ritual performers (Spenard 2014). Excavations revealed these features to have been the result of a single construction event. Moreover, an Altar Orange type bowl was recovered from beneath an artificial slate floor below the terrace surface. This ceramic type is a highly sensitive chronological marker, appearing rapidly throughout the Maya Lowlands between AD 820 and 830, thus providing a terminus post quem date for the modifications (Foisas and Bishop 1997).

A heavily burned chamber in the rear of the cave contains a cave formation altar, and the matrix surrounding it is comprised completely of ceramics and raw pine charcoal (Figure 11; Parker 2014; Spenard 2014). One radiocarbon

Figure 11. Photograph of Actun Lak speleothem altar. Map courtesy of Jon Spenard.
assay of cal AD 770-940, was collected from a piece of partially burned wood recovered from the floor near the altar. This date range closely overlaps with the appearance of Altar Orange pottery in the Maya Lowlands, as well as molded-carved ceramics, indicating significant social-political changes were underway in the Terminal Classic period. Moreover, the use of raw pine would have created high volumes of smoke (Parker 2014), suggesting ritual activities. Excavations at the foot of the altar uncovered over 100 jadeite beads and other objects, and three earspool fragments of the same material. This assemblage represents the largest collection of jadeite objects yet found in Pacbitun, indicating the ritual practitioners were high-level elites, if not royalty (Spenard 2014). In addition to its ties to the elite, jadeite, as well as aromatic pine smoke, had strong symbolic connections to rain in pre-Hispanic Maya thought (Taube 2001). Taken together the Terminal Classic period data from Actun Lak suggests the Pacbitun elite co-opted a community rain shrine during the climatically tumultuous times to ritually stave off the drought (Spenard 2014). They were unsuccessful, and only a few short decades later most of the site was largely abandoned.

Early Postclassic period (Canto phase AD 900-1000)

Although Pacbitun experienced a demographic and political collapse at the end of the Terminal Classic period, recent PRAP investigations have revealed some continued habitation and ritual landmark use. One flexed burial found in the site core may date to this period, as it was found in an abandonment context; however, it lacked diagnostic artifacts to help date the interment (Healy et al. 2004:215). While the purpose of the landmark ritual activities are unknown, investigations in Actun Lak Cave, and the NTC recovered from mixed contexts several sherds belonging to the Augustine Group, and a fragment of a More Fore Unslipped Type teecomate-style bowl. Moreover, although common to the Terminal Classic period, Fine Orange and molded-carved pottery continue to be produced into the Early Postclassic period throughout the populated Maya Lowlands (Helmke 2000), thus some of that recovered material from Pacbitun may have been deposited by a remnant population sometime after AD 900, but prior to AD 1000.

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19  THE DEAD DO TELL TALES: UNRAVELLING THE CASE OF CAHAL PECH’S JANE OR JOHN DOE

Jaime J. Awe, Claire E. Ebert, Carolyn Freiwald, and Kirsten Green

This paper reports on a burial discovered in 2000 by the BVAR project in Plaza G of the Cahal Pech site core. Our stratigraphic data indicated that the grave had penetrated the last two plaza floors in the courtyard. The fact that neither of these floors were subsequently resurfaced strongly suggested that the burial was intrusive. The grave contained the remains of a young individual in fetal position and with no grave goods. Ever since its discovery in 2000, we had generally assumed that this interment, like several other intrusive burials at Cahal Pech, dated to the Terminal Classic period (~AD 750-900). Recent radiocarbon dating of purified bone collagen, combined with geochemical analysis of the skeletal remains, however, negate our previous assumptions and suggest that the individual in Plaza G Burial 1 is neither local nor ancient. In this paper, we present results of our attempts to unravel the mystery of the burial we have come to call Cahal Pech’s Jane or John Doe.

Introduction

Although Cahal Pech is particularly well-known for its Preclassic occupation that began prior to the start of the first millennium B.C., recent investigations by the Belize Valley Archaeological Reconnaissance (BVAR) project have produced considerable evidence for Terminal Classic (~AD 750-900) activity at the site. This late phase of occupation has been especially evident in the site core, specifically in Plazas A and H, and to a lesser degree in Plaza B and C (Figure 1).

Evidence for Terminal Classic activity in Plaza A consisted of large, midden-like, deposits of cultural remains that we recovered on the flanks of the stairside outsets of Structures A2 and A3, and in the northeast corner of Plaza A where these two structures are adjoined. Our investigations further revealed that the cultural remains had been deposited above a thin layer of collapsed debris which had accumulated on top of the last plastered surface of Plaza A sometime after the buildings had been abandoned. Inside a bench within the central room of Structure A3, we also discovered an intrusive burial that contained the remains of a child approximately seven to nine years of age (Figure 2). It was apparent that the Maya had cut into the bench to deposit the burial and grave goods, then filled the cavity with dirt to the level of the bench’s surface. The surface of the bench, however, was never resealed, but had been capped by two large limestone slabs that may have fallen off, or removed from, the wall or roof of Structure A3. In association with the interment, we recovered three Jaina-style ocarinas, two flutes, and four Spanish Lookout phase ceramic vessels, including an imitation slate ware vase (Figure 3). The relative date of the grave goods, the intrusive nature of the burial, and the fact that the surface of the bench was not re-plastered after the grave had been filled with dirt, all suggested a Terminal Classic date for the burial.

In Plaza B, we recovered evidence for Terminal Classic activity at the summit of Structure B1, and in front of the central stairway and the southwestern flank of the stairside outset of Structure B3. The deposits associated with Structure B3 shared a similar depositional pattern to that observed in Plaza A, reinforcing our interpretation that the Maya had deposited these cultural remains sometime after the site had fallen into disrepair. On Structure B1, we recovered contemporaneous remains in a special
The Dead Do Tell Tales

Figure 2. Photo of CHP Str. A3-Burial 1.

Figure 3. Collage of ceramic artifacts found with CHP Str. A3-Burial 1.

deposit and in a burial at the summit of this pyramidal structure. The burial, which was excavated by Peter Schmidt in 1969 (Awe 1992), contained several ceramic vessels (Figure 4). Two of these vessels, both modeled censers diagnostic of the Terminal Classic period, share close affinity to Cayo Unslipped ceramics from the Belize Valley, and with the Cambio Ceramic Group from the Peten (Adams 1971:57; Gifford 1976; Sabloff 1973, 1975:114-116). We identified the other vessels as Belize Red bowls which also date to the Terminal Classic Spanish Lookout phase in the Belize Valley.

The special deposit in Structure B1 was recovered along the primary axis of the structure, a few centimeters below surface and just above the area where the Str. B1-2nd stair block is located. The deposit covered an area 60 x 45cm north-south and was 26cm thick (Ishihara et al. 2013:75-70). It contained two laurel leaf blades of fine-quality chert, with an upside-down skull placed on top of them. Around the skull were several disarticulated fragments of human bone that were capped by a bed of eroded potsherds and a large fragment of a Mount Maloney bowl.

In Plaza C and H, we recovered Terminal Classic period remains in Structures C2, H1 and H2. The data from Structure C2 included a shallow grave (a few centimeters below modern ground surface) containing the disarticulated remains of a young individual and a few potsherds (Awe and Schwanke 2006). In contrast to Structure C2, coeval remains in Plaza H were represented by occupational debris in several areas of the courtyard, by a large tomb that had been constructed with cut stones scavenged from Structure H1/2nd, and by construction activity associated with the last phase of occupation on both Structures H1 and H2 (Awe 2013; Douglas and Brown 2013; Douglas et al. 2015; Santasilia 2012). The large tomb adjacent to Structure H1 contained the remains of an adult male. Associated grave goods included 13 ceramic vessels, five obsidian blades, greenstone jewelry and several modified animal remains (Figure 5; Awe 2013). The ceramic vessels were all diagnostic of the Terminal Classic period, a temporal assignment supported by an AMS 14C date of cal AD 710-875 acquired from the phalanx of a deer bone that was in the tomb.

Having recovered all these intrusive burials across the Cahal Pech site core, we were therefore not surprised with the discovery of yet another intrusive burial in Plaza G. For these same reasons, we initially assumed that this
interment likely dated to the Terminal Classic period. As we note below, however, this was not the case with the Plaza G burial, and subsequent scientific analyses produced a wealth of surprising and unexpected results.

**Context of Plaza G Burial 1**

During our excavation of Structure F2, and prior to the conservation of this building in 2001, we uncovered a poorly preserved stairway on the southeastern flank of the building (Audet 2001). The stairway, which provided access from Plaza G to the summit of Structure F2 (Figure 6), was mostly destroyed, seemingly by a large tree that had been brought down by a previous tropical storm. After clearing the collapsed stairway, we noted that there was a depression in Plaza G about 3 meters east of the destroyed stairway. In an effort to investigate the depression in the plaza, and to search for an axial cache in the stairway, we decided to excavate both features.

The Plaza G excavation (Unit 51) measured 2m x 3m and completely encompassed the depression to the east of the Str. F2 stairway (Figure 6). The unit descended 3.4m from surface and exposed five plaza floors in the area outside of the depression. The lowermost plaza floor (Plaza G/1st) abutted a low, single course, wall. Below the floor, we recovered several fragments of Middle Preclassic pottery. We located a second, 10 course and 186cm high, wall resting on the floor of Plaza G/2nd. This wall was constructed of large limestone blocks (exceeding 20 x 30cm in size) and was raised at an angle of approximately 30 degrees. It is possible that this wall is part of a larger retaining wall that previously marked the southern edge of Plaza G. The fill associated with the wall contained a mixture of Middle and Late Preclassic pottery. In the area not directly below the depression, we recorded three more plaza surfaces. We designated the latter as Plaza G/3rd, Plaza G/4th, and Plaza G/5th. The latter (Plaza G/5th) was poorly preserved and represented the final plaza surface in the courtyard.

Interestingly, neither the plastered surface of Plaza G/5th nor that of Plaza G/4th were present in the area immediately below the depression in the courtyard. The earliest preserved plaza floor that we recorded in this area was that representing Plaza G/3rd. A few centimeters above this floor, and approximately 50cm to 70cm below modern ground surface, we also uncovered two burials, designated as Plaza G Burial 1 and Plaza G Burial 2. The absence of the last two plaza floors above the burials...
indicated that both floors were likely destroyed during excavation of the graves. This stratigraphic record further indicated that the two uppermost Plaza G floors were never re-plastered following the interment of either individual, and that the graves were simply filled in with dirt following their interment.

**Description of Plaza G Burials 1 and 2**

Plaza G Burial 1 was located at the north side of the depression in excavation Unit 51. The grave contained the relatively well-preserved remains of a subadult, sex indeterminate, who was approximately 9-12 years old at the time of death (Figure 7). The right mandibular first molar was erupted with partial root completion (9-12 years old), the right mandibular second molar was erupted with no root completion (less than 12 years old) and the distal fibula was unfused (less than 14 years old). The individual was interred in a fetal position lying on the left side in a simple grave. The burial was axially aligned north south with the individual’s head to the south. The burial was also a primary and intrusive interment, and had no associated grave goods.

We recovered Burial 2 on the southeastern side of the unit. Very few of the skeletal elements of Burial 2 were preserved, with only a few skull fragments and teeth remaining. The developmental stage and location of the teeth suggested that this individual was a young child and that s/he had been buried with head to the south, feet to the north and possibly in flexed position. Like Burial 1, no grave goods were associated with Plaza G Burial 2.

Given the better state of preservation of Plaza G Burial 1, we decided to conduct stable isotopic and strontium analysis on the remains of this individual, and to submit fragments of the skeleton for AMS $^{14}$C dating.

**Biological and Isotopic Analyses**

Multiple isotopic analyses were conducted on tooth enamel, dentin, and bone to reconstruct the life history of the individual in Plaza G Burial 1, from where s/he was born, to dietary patterns during infancy and childhood, to when the child died and was buried.

Each isotope tells a different story: the ratios of two strontium isotopes ($^{87}$Sr to $^{86}$Sr) identifies where an individual lived because it varies regionally in the Maya lowlands, based on the principle that most food and water are locally obtained. Oxygen isotope values ($\delta^{18}$O) also vary regionally, though the differences are based on many factors, including individual physiology and rainfall and evaporation patterns. $^{87}$Sr/$^{86}$Sr values decrease from the north to the south in the Maya region, with the exception of the Maya Mountains, while oxygen isotope values decrease from the Caribbean to the Pacific Coast and Guatemalan Highlands (Bentley 2006; Freiwald 2011a, 2011b; Freiwald et al. 2014; Hodell et al. 2004; Lachniet and Patterson 2009; Marfia et al. 2004; Mitchell 2006; Price et al. 2010; Wright 2005, 2012; Wrobel et al. 2014, 2017).

Stable carbon ($\delta^{13}$C) and nitrogen ($\delta^{15}$N) isotope measurements of human bone collagen and apatite are widely used as a proxy for prehistoric human diet (Ambrose and Krigbaum 2003; DeNiro and Epstein 1978, 1981). Values for $\delta^{13}$C are determined by photosynthetic pathways used by C3 (trees, shrubs) and C4 (grasses) plants. Maize is the most common C4 plant consumed across the Maya lowlands from prehistoric times into the present, and $\delta^{13}$C values of bone collagen document the importance of this domesticate as a staple crop. Nitrogen isotope ratios in human bone are introduced in the process of protein digestion, increasing incrementally by 3-5‰ between trophic levels (Hedges and Reynard 2007). Stable isotope data from a sample of Preclassic and Classic Period (~1200 BC-AD 900) individuals from Cahal Pech ($n=45$) indicate an
increased reliance on diets composed primarily of maize-based protein through time (Ebert et al. n.d.; Green 2016; Pichl 2006; Powis et al. 1999). Green (2016) is piloting the use of sulfur (δ²⁴S) isotope ratios that can serve as proxies for both migration and diet (Richards et al. 2001; also see Rand et al. 2015). Elemental analysis also may vary regionally, and the ratio of strontium and barium to calcium might serve as locational indicators as each element is incorporated into body tissues as food and water are consumed (Burton and Price 2003; Kohn et al. 2013; Novotny 2015).

The Plaza G burial also was analyzed for AMS ¹⁴C dating using standard procedures for bone collagen extraction and purification at the Human Paleoecology and Isotope Geochemistry Laboratory at the Pennsylvania State University by Claire Ebert (Ebert et al., n.d.). Julie Hoggarth also dated a white-tailed deer (Odocoileus virginianus) phalanx from a terminal deposit associated with Structure G2, since these deposits represent some of the final activities that occurred in the Cahal Pech site core (Hoggarth personal communication; also see Hoggarth et al. 2016).

For other isotopic analyses, the skeletal elements sampled include the left distal radius, the left maxillary premolar (P), and the left mandibulary first molar (M1), each of which were well-preserved. Childhood diet and mobility can be captured at different stages of the child’s life because the M1 enamel forms before birth and during early infancy (~6 mo.); premolar enamel begins forming during infancy and finishes by age 6 during early childhood, and bone remodels constantly hence capturing the final years of an individual’s life. Samples were taken at multiple intervals along the tooth root to identify specific nitrogen isotope values during the development of the tooth.

**Method**

Cortical bone was preferentially sampled to maximize collagen yield for the radiocarbon dating supervised by Ebert. Approximately 100g of dry bone from each sample was cleaned of adhering sediment with an X-acto® blade. Bone collagen was extracted and purified using the modified Longin (1971) method with ultrafiltration (Brown et al. 1988). Samples were demineralized for 24–48 hours in 0.5 N HCl at 5 °C, followed by a brief (<1 h) alkali bath in 0.1 N NaOH at room temperature to remove humates. Ultrafiltered collagen was lyophilized and weighed to determine percent yield as a first evaluation of the degree of bone collagen preservation. Carbon and nitrogen concentrations and stable isotope ratios were measured at the Yale Analytical and Stable Isotope Center with a Costech ECS 4010 Elemental Analyzer with Conflo III interface. Sample quality was evaluated by % crude gelatin yield, %C, %N, and C:N ratios. C:N ratios for the Plaza G burial was 3.4 and for the Structure G2 terminal deposit deer bone was 3.8, indicating good collagen preservation (van Klinken 1999). AMS radiocarbon samples were analyzed at KCCAMS (University of California, Irvine), and ¹⁴C ages were corrected for mass-dependent fractionation with measured δ¹³C values (Stuiver and Polach 1977). Green, cleaned and powdered the Cahal Pech tooth enamel and bone samples, and isotope processing details for all but one of the human bone collagen and apatite samples can be found in Green (2016). Freiwald, further prepared 10mg of the same tooth enamel and bone samples, along with tooth enamel from the M1 (see preparation in Freiwald 2011) for processing at the UNC at Chapel Hill Department of Geosciences (Sr) and the University of Arizona (C and O).

**Results**

All dates are reported as conventional ¹⁴C ages corrected for fractionation (Table 1). Date calibrations were produced in OxCal v.4.3 (Bronk Ramsey 2009) using the IntCal13 Northern Hemisphere atmospheric curve (Reimer et al. 2013). Values for δ¹³C and δ¹⁵N for the human and deer sample are also reported. These δ¹³C and δ¹⁵N values for Plaza G Burial 1 are consistent with expected range for Maya populations consuming maize along with other terrestrial plant and meat resources (see following section; Somerville et al. 2013).

The ¹⁴C measurement for the Plaza G burial is associated with a period with several steep slopes and plateaus (less steep) in the radiocarbon curve, resulting in a wide probability distribution for the calibrated dates.
Table 1. Calibrated AMS 14C dates and stable carbon (δ13C) and nitrogen (δ15N) isotope values from Plaza G human burial and deer remains from Terminal Deposit (Structure G2) at Cahal Pech.

<table>
<thead>
<tr>
<th>Provenience</th>
<th>UCIAMS#</th>
<th>14C age (BP)</th>
<th>2σ range (BC/AD)</th>
<th>δ13C (% VPDB)</th>
<th>δ15N (% Atm N2)</th>
<th>C:N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plaza G Unit 51, Lvl 2</td>
<td>166050</td>
<td>190 ± 15</td>
<td>AD 1660-1950</td>
<td>-9.3</td>
<td>8.7</td>
<td>3.4</td>
</tr>
<tr>
<td>Str. G2 Terminal Deposit</td>
<td>174164</td>
<td>395 ± 15</td>
<td>AD 1440-1615</td>
<td>-22.5</td>
<td>2.9</td>
<td>3.8</td>
</tr>
</tbody>
</table>

(Figure 8). The results place the interment of the burial within three different intervals: cal AD 1660-1685 (20.7% probability), cal AD 1735-1805 (49.4% probability), or cal AD 1935-1950 (25.3% probability). The deer bone sampled from Structure G2 dates to cal AD 1440-1615, indicating activity at the site during the Late Postclassic/Colonial Periods. While the Plaza G burial dates slightly later, the close association between these two contexts suggests the placement of the intrusive burial likely occurred during the Colonial period. The placement of the body, with the head to the south, also supports the earlier date as this was a longstanding tradition in the region and at Cahal Pech (Freiwald 2011a; Novotny 2015).

The carbon and nitrogen isotope values (Table 2) fall within the range of those from...
Table 2. Strontium, carbon (δ13C), nitrogen (δ15N), oxygen (δ18O), and sulfur (δ34S) isotope values for Plaza G Burial 1 compared to local and regional isotopic data. Values that are statistical outliers are in bold. Strontium values are indicated as ratios (87Sr/86Sr). All other isotopic values are in parts per mil (‰).

<table>
<thead>
<tr>
<th>Plaza G Burial 1 isotope values</th>
<th>Local and regional values</th>
</tr>
</thead>
<tbody>
<tr>
<td>87Sr/86Sr bone apatite (UM31)</td>
<td>0.708253</td>
</tr>
<tr>
<td>87Sr/86Sr M1 tooth enamel (UM70)</td>
<td><strong>0.707651</strong></td>
</tr>
<tr>
<td>87Sr/86Sr P3 tooth enamel (UM15)</td>
<td>No data</td>
</tr>
<tr>
<td>δ13C bone collagen</td>
<td>-8.53</td>
</tr>
<tr>
<td>δ13C dentin collagen</td>
<td>avg. -8.48 (-9.79 to -7.84)</td>
</tr>
<tr>
<td>δ15N bone collagen</td>
<td>9.92‰</td>
</tr>
<tr>
<td>δ15N dentin collagen</td>
<td>avg. 9.13 (8.41 to 10.59)</td>
</tr>
<tr>
<td>δ13C bone apatite</td>
<td>-8.55</td>
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<tr>
<td>δ13C enamel apatite</td>
<td>UM15 (P3) -1.69</td>
</tr>
<tr>
<td></td>
<td>UM70 (M1) -2.83</td>
</tr>
<tr>
<td>δ34S bone collagen</td>
<td>6.89</td>
</tr>
<tr>
<td>δ18O bone apatite</td>
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<tr>
<td>δ18O enamel apatite</td>
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<tr>
<td></td>
<td>UM70 (M1) -2.29</td>
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<tr>
<td>Sr/Ca elemental analysis (ppm)</td>
<td>UM15 (P3) -4.33</td>
</tr>
<tr>
<td></td>
<td>UM70 (M1) -3.76</td>
</tr>
<tr>
<td>Ba/Ca elemental analysis (ppm)</td>
<td>IM15 -4.56</td>
</tr>
<tr>
<td></td>
<td>UM70 -5.37</td>
</tr>
</tbody>
</table>

Classic period Maya burials (Piehl 2006), but additional isotope values provide more of the life history of this individual. First, the strontium isotope values more closely resemble those identified in Late Postclassic burials at Baking Pot (Hoggarth et al. 2017) than Classic or Preclassic period Cahal Pech populations. The first molar tooth enamel value, UM70 0.707651 87Sr/86Sr, which represents the residence at near time of birth, is lower than the range of local values identified along the Belize or Macal River floodplains (Table 2). It more closely resembles values to the west in the Petén or to the south in the Vaca Plateau (Freiwald 2011a; Freiwald et al. 2016; Patterson and Freiwald 2015; Thornton 2011; Trask et al. 2012; Wright 2012). In contrast, the bone sample (UM31 0.708253 87Sr/86Sr) shows a value within the range of local values in the Belize Valley; however, this may result in part because of diagenetic contamination as samples were not pretreated before analysis and bone is
more prone to elemental exchange with surrounding soil matrix than enamel tissues.

The oxygen and carbon isotope values in tooth enamel are more enriched than the other Cahal Pech samples (Green 2016), but are not statistical outliers from the Cahal Pech dataset. This comparison is somewhat problematic because both premolars and molars were sampled and values for teeth that form post-weaning differ from those formed during infancy because of trophic-level fractionation. However, the elemental data include an outlier value that like the strontium isotope results, suggests a non-local place of birth. The UM70 -5.37 Ba/Ca value is a statistical outlier from the Cahal Pech dataset and shows that this individual’s diet during infancy consisted of foods not acquired near Cahal Pech. At present the elemental data cannot be directly compared with other published datasets (i.e. Novotny 2015) until more research is done on comparability among labs and instrument runs.

Other aspects of diet suggest that the types of food consumed were similar to those of earlier Cahal Pech populations. The δ¹³C collagen values show an individual that relied mainly on a maize diet while the δ¹⁵N collagen values indicate a diet with terrestrial proteins. None of the values are statistical outliers from the sample published by Piehl (2006) for other Cahal Pech individuals (also see Green 2016). Values from tooth enamel, which represents two earlier periods in time (UM70 early infancy childhood and UM15 early childhood) also fall within the range of other Cahal Pech values (Table 2; Green 2016). The tooth serial sample also showed consistent δ¹³C and δ¹⁵N consumption over the course of their childhood and provide no evidence of dietary stress or major fluctuations (Figure 9).

The sample also has a δ³⁴S value that fell outside the cluster of individuals that likely indicate the local expected values, showing that even if the types of foods consumed were similar, they were not from the Cahal Pech region. Green (2016) sampled five burials that yielded enough collagen to run δ³⁴S, one of which was the Plaza G burial. The four Classic era Maya burials clustered together giving a likely δ³⁴S range for this area of 11.5 – 12.6. In comparison, the Plaza G burial had a δ³⁴S value of 6.89. While little is known about δ³⁴S and no baseline data is available as of yet, this supports the interpretation that the individual buried in Plaza G was not from Cahal Pech or the surrounding area.

Discussion

The radiocarbon date on the Plaza G burial offers several temporal possibilities, since the AMS ¹⁴C distribution spans the Colonial and modern eras. Here we explore the historical background of the early Colonial period in the Belize Valley, as well as subsequent modern development in the San Ignacio area, to inform our temporal context for the Jane/John Doe of Cahal Pech. The largest portion of the radiocarbon probabilities fall within the period between cal AD 1660-1805. Together these two (of three) discontinuous intervals for the AMS ¹⁴C date constitutes 70.1% probability of the 95.4% two sigma distribution. An additional radiocarbon date on a deer bone from a deposit near Structure G2 in the site core at Cahal Pech dates to the period between cal AD 1440-1615 (95.4%). This sample suggests that there were low-level activities occurring near Cahal Pech during the Colonial Period, supporting the notion that the Jane/John Doe of Cahal Pech likely dates to this time rather than the past 50 years. The final possibility is that this was a modern burial, interred at the site in the mid-twentieth century. The latter, however, seems unlikely as Plaza G Burial 1 is not atypical when compared to Postclassic/Early Historic burial patterns in the Belize Valley. Its intrusive-style also reflects a tradition that began back in the Terminal Classic period, and continued into early Historic times at several sites in western Belize. Given these patterns, and the date of the burial, we believe that the evidence strongly suggests that this individual dates to the Colonial period, likely prior to the abandonment of Tipu and the Spanish resettlement of local populations in the Petén Lakes region of Guatemala. The stable isotope data is also in-line with a more traditional maize-based diet, further eliminating the possibility that the Plaza G burial dates to the twentieth century.

The archaeological record indicates that the Belize Valley was largely depopulated following the collapse of Classic Maya
Civilization (~AD 800-1000) (Awe and Helmke 2007; Yaeger 2008). Small populations lived at Tipu (Graham 2011), as well as Baking Pot (Hoggarth et al. 2014) and Barton Ramie (Willey et al. 1965) during the Late Postclassic period (AD 1200-1500). After Spanish colonization the Christian church and cemetery at Tipu served as a political and religious focal point in the interior of the region (Graham 2011; Jones 1989). However, the strontium isotope value is not consistent with an origin near Tipu or elsewhere in the Belize Valley (Freiwald 2011a, 2011b; Freiwald et al. 2014; Wrobel et al. 2014, 2017). The value instead suggests an origin to the west in the central Petén or to the south in the Vaca Plateau (Freiwald et al. 2016; Patterson and Freiwald 2015). Similar values also are found in the western Maya lowlands and Chiapas, as well as other locations in Central America. The closest locations include the Petén Lakes region, which was populated throughout the Postclassic, Contact, and Colonial periods, and mobility, including intermarriage, migration, trade, and hostilities connected the Petén and the Tipu regions (Awe and Helmke 2015; Caso Barrera 2002; Freiwald et al. 2016; Graham 2011; Jones 1989). The non-local strontium isotope value is even more notable because earlier populations at Cahal Pech had values found in the Belize Valley (Freiwald 2011a; Green 2006; Mitchell 2006; Novotny 2015).

**Conclusion**

In this paper, we describe the discovery of two burials in Plaza G at Cahal Pech. Because the manner of their disposal reflected a pattern similar to that observed in several late and intrusive burials in the Belize River Valley, we initially assumed that both burials were Terminal Classic period in date. Subsequent scientific analysis of the human remains in Plaza G - Burial 1, including AMS 14C dating, plus isotope and strontium analyses, produced compelling evidence indicating that this individual was neither local nor prehistoric. Results of our analyses further indicated that s/he was likely born in the Petén where s/he spent their early childhood before migrating to Belize sometime around cal AD 1660-1805. This early Historic period was marked by continuous migration of people in the central Maya lowlands as a result of the bellicose relationship that existed between the Maya and Spanish in the years leading up to the conquest of the Itza in 1697. When considered within this historical context, it allows us to more accurately and logically explain the discovery of an intrusive, historic burial of a non-local Jane/John Doe in Plaza G at Cahal Pech. Besides negating our earlier
assumptions about Plaza G Burial 1, our research further demonstrates the value of applying sound scientific analyses to the study of the past, and provides an important caveat that relative dating of archaeological data should never be assumed as either absolute or accurate.

Acknowledgements

We would like to thank our colleagues at the Institute of Archaeology in Belize for permission to excavate at Cahal Pech and to analyze the remains from Plaza G-Burial 1. We are also grateful for the laboratory assistance and analyses conducted by colleagues at Penn State Human Ecology and Isotope Geochemistry Lab, including Doug Kennett, Brendan Culleton, and Laurie Eccles; Paul Fullagar at UNC at Chapel Hill; David Dettman of the University of Arizona. The archaeological investigations reported in this paper were made possible by the financial support from the Tilden Family Foundation, the Tourism Development Project and the Belize Valley Archaeological Reconnaissance (BVAR) Project. The radiocarbon dating component was funded by the National Science Foundation (BCS-1460369, Kennett/Culleton/Hoggarth & Awe; DGE-1255832, Ebert & Kennett). We are particularly grateful to the many members of the BVAR Project who participated in the excavations of Str. F1 and Plaza G at Cahal Pech, especially Carolyn Audet, Juan Luis Bonor, Jorge Can, Alfredo (Jim) Puc Sr., Antonio Itza, Eduardo Cunil, Merle Alfaro, Antonio Beardal and Nancy Peniche-May. We also extend special gratitude to our colleague and BVAR Co-Director Julie Hoggarth for her insightful and constructive comments to our research. Her various contributions made this paper considerably more scientifically sound.

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Yaeger, Jason
20 SOME INITIAL COMMENTS ON THE KOMKOM VASE DISCOVERED AT BAKING POT, BELIZE

Christophe Helmke, Julie A. Hoggarth, Jaime J. Awe, Sarah E. Bednar, and Amber L. Johnson

In 2015 and 2016 the Belize Valley Archaeological Reconnaissance (BVAR) project recovered a remarkable polychrome vase through its excavations of artifact-rich deposits besides stairside outsets and within corners of courtyards and plazas, both within the royal palace and adjoining plaza of Group B, at the site of Baking Pot in western Belize. Whereas many questions still surround the nature of these deposits, their formation appears to coincide with peri-abandonment events and the materials they contain shed light on the last inhabitants of these palaces. Here we describe the fragmentary vase that bears a long glyphic text found in one of these deposits, which we have named the Komkom Vase. This vase and its context have a bearing on the nature and formation of these artifactual deposits as well as broader processes of the Terminal Classic period across the central Maya lowlands.

Introduction

The astounding and unique ceramic vessel, designated as the Komkom Vase (Figure 1), was found in an artifact-rich deposit at the archaeological site of Baking Pot in western Belize. The other ceramic remains of this deposit can be assigned typologically, on the basis of form and decorative modes, to the late facet of the Spanish Lookout ceramic complex (Gifford 1976: 225-227) and as such can be said to date to the Terminal Classic, the period associated with the Classic Maya “Collapse”, which spans from the ninth century onwards. Based on some of the titles found on the vessel we have named it the Komkom Vase in reference to a locality of that name in the eastern central Lowlands that is cited in the texts of the nearby site of Naranjo in the Peten, as well as on portable objects found at Buenavista del Cayo, in western Belize (see Houston et al. 1992: 507-508; Yaeger et al. 2015: 185-188). As a status object that dates to the Terminal Classic period, the Komkom Vase is an exceptional piece of evidence, produced during the precarious final decades of centralized rule of ‘godly kings’. Its archaeological context testifies to the social upheavals and eventual abandonment of the royal courts and entire settlements. Here we will introduce this remarkable vase, as well as describe its physical properties and the context and circumstances of its discovery, but devote most attention to the glyphic text that adorns it.

Context

The BVAR project has been conducting extensive settlement surveys and excavations at the major center of Baking Pot since 1992 (e.g. Conlon 1993; Audet 2006; Helmke et al. 2015; Hoggarth 2012; Hoggarth et al. 2014b, 2016) (Figure 2). Since 2013, Julie Hoggarth and Jaime Awe—Co-Director and Director of BVAR, respectively—as well as collaborators (Kennett et al. 2015; Hoggarth et al. 2016) have initiated a
research program that is focused on better understanding the timing and nature of the Classic Maya ‘Collapse’. To elucidate the timing of the final activities occurring in the monumental epicenter, research at Baking Pot was initiated to identify peri-abandonment deposits, which represent the final activities within the monumental epicenter (Hoggarth et al. 2014b, 2015, 2016; Kennett et al. 2015). These features consist of large quantities of broken ceramics

Figure 2. Plan of the monumental epicenter of Baking Pot showing the extent of Group B and the location of Str. B7, the audiencia (plan by Christophe Helmke).

Figure 3. Plan of Group B with the location of the peri-abandonment deposit containing the Komkom Vase indicated. Courtyard designations are provided in parentheses (plan by Christophe Helmke).

(including a large number of polychrome vessels), faunal remains, human remains and other materials found above the terminal floors of plazas and courtyards. Despite the growing literature on the subject, the activities that these features represent have been greatly debated. Scholars view these features as being re-deposited materials from rituals or feasts (Clayton et al. 2005; Garber et al. 1998), the materials from final use of ceremonial public spaces (Guderjan 2004), de facto evidence of rapid abandonment (Chase and Chase 2004), domestic middens from post-abandonment squatters (Harrison 1999), and the remains of ritual activities from post-abandonment populations (Awe 2012). As Awe has noted (see also Pendergast and Graham 1981: 17), thin lenses (~2-5 cm) of matrix overlying the terminal plaza floors are often present in the Belize Valley, with materials of such deposits directly above the matrix. This evidence suggests that these palatial spaces were abandoned or fell into disuse for some time prior to the events that formed these peri-abandonment deposits. The radiocarbon research program that has recently been launched by BVAR aims to systematically test all of these hypotheses.

Based on a regional study by Awe (2012) and his colleagues (Awe et al. 2009) on the spatial patterns associated with peri-abandonment deposits at sites across the Belize Valley, excavations were strategically placed in
the plaza and courtyards of Group B at Baking Pot to identify deposits and to recover dateable materials therein. The deposit that interests us here is that of Excavation Unit B7-100 (and its extensions) in 2015 and B7-102 in 2016. These units were placed in the northeastern corner of Plaza B, at the intersection of Structures B6 and B7 (Figure 3). Structure B7 is a multi-room range structure with a central passageway, known as an audiencia, which served as the primary and formal entrance into the royal palace of Group B (Hoggarth et al. 2016: 246-255; Helmke 2008: 125-127). The deposit covered an area of approximately 11 m² and spanned the area between the axial stairs, along the south face of Str. B6 and the west face of the audiencia, Str. B7 (Figure 4). The feature consisted primarily of ceramic artifacts, including sherds of ceramic serving vessels, two small inkpots, ocarina and flute fragments, in addition to chertolithics, obsidian blades, granite metate fragments, a fragmentary slate mace, and faunal remains including animal bone and worked shell, such as a Caribbean conch pendant, mother of pearl adornos of freshwater mussels (Nephronais sp.) as well as three perforated dwarf olive shells (Olivella sp.) (Hoggarth et al. 2016: 255-256) and a carved jadeite pendant. The quantity, diversity of materials, and their quality imply that these materials were elite paraphernalia. Within the peri-abandonment deposit were also three human inhumations, two primary male individuals and one secondary burial (Hoggarth et al. 2016: 250-252). Faunal remains were also noted throughout the deposit, as were human remains, including the cranium of a (likely) male individual (Roseanne Bongiovanni, pers. comm., 2016).

Greatly contributing to the chronology-building research program is the discovery of the Komkom Vase, an elaborate polychrome serving vessel that bears a clear calendrical date and lengthy associated text. As the Long Count date probably refers to its date of manufacture, we are provided with a definite terminus post quem for the formation of the deposit. Considering that the vase is not local, but appears to originate from workshops associated with the greater Naranjo court, the presence of this vase at Baking Pot represents a concrete material link between these royal courts, and testifies to an alliance, link of vassalage or matrimony, on par with similar vases recovered at Buenavista del Cayo (Houston et al. 1992; Reents-Budet et al. 2000) and Baking Pot (Helmke and Awe 2012: 75-80; Reents-Budet et al. 2005). Other glyphic texts that reflect ties to Naranjo have been recovered from other sites in the greater Belize Valley, such as at Xunantunich to the west and Hershey to the east (e.g. Helmke and Awe 2012: 61, 75, 78; McAnany et al. 2004: 297, Fig. 3). The discovery of the Komkom vase suggests that the site of Baking Pot, and/or individuals visiting the site, played important roles within the broader geopolitical context of the Classic Maya ‘Collapse’ in the eastern Maya lowlands.

The Vase

We recovered the vase as a series of 82 sherds, over the course of two field seasons between the 7th of July 2015 and the 30th of July.

Figure 4. a) Exposing the peri-abandonment deposit containing sherds of the Komkom Vase in Excavation Unit B7-102, at the foot of Str. B7 (photograph by Julie Hoggarth).
2016. Preliminary curation and reconstruction of the vessel indicates that the vase now stands to c. 20.3 cm in height. The rim has suffered chipping and was eventually trimmed in antiquity with a sharp object in an attempt to roughly fix the rim of the vase. As a result, the total original height of the vessel remains indeterminate, but based on surviving features we estimate it at c. 21.7 cm. The base has a diameter of 15.1 cm and tapers slightly inwards towards the rim, producing lightly insloping sides (Figure 1). Based on interior measurements the vase could have contained as much as 3 liters (c. 100 fl. oz.) and based on surface area, as much as 62% of the original vase is preserved.

While the interior is unslipped, the exterior is evenly applied with a cream slip and is decorated with a very extensive glyphic text, rendered in dark brown-to-black paint. Several glyphs are also accentuated by the use of red slip, and the base is delineated by an orange band, which we surmise would also have been applied along the original rim. Based on these features the vase can be identified as a Chinos Black-on-cream, a type established by Robert E. Smith and James C. Gifford (1966: 156) that is well known from a series of workshops associated with Naranjo and Holmul in the eastern Peten (see Ball 1993: 262). Prominent find spots of Chinos Black-on-cream in the western Belize Valley include Buenavista del Cayo (Reents-Budet et al. 2000: 101-106) and to a lesser degree Cahal Pech, and now evidently Baking Pot as well. The presence of these imported ceramics testifies to connections and possible alliances between Belize Valley sites and foreign city-states in antiquity, and the discovery of the Komkom Vase reiterates these relationships.

### The Text

The glyphic text adorning the Komkom Vase has several peculiarities that distinguish it from other known ceramic objects. For one, the length of the text marks it as truly one of a kind. As far as we are aware, its 202 glyph blocks may well be the longest glyphic text on any ceramic object discovered. Two other ceramic vessels—unfortunately both without archaeological provenience—have texts comprising 88 glyphs (these are designated as K1440 and K6571 in the photographic archives of Justin Kerr, see [http://research.mayavase.com/kerrmaya.html](http://research.mayavase.com/kerrmaya.html)).

One additional ceramic object without archaeological provenience, but which may originally stem from the greater Tikal area, is said to be adorned with 144 glyphs (Guido Krempel, pers. comm. 2016). These lengthy texts are clearly exceptions to the rule, since most ceramics that bear texts usually record no more than the dedicatory expression (known as the Primary Standard Sequence) as well as a record of ownership, essentially an extensive name-tag, specifying the names and titles of the original owner (MacLeod and Reents-Budet 1994).

<table>
<thead>
<tr>
<th>Site</th>
<th>Text</th>
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<td>Copan</td>
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<td>Stela 31</td>
<td>&gt; 221</td>
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<td>Bench, Temple 19</td>
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<td>Komkom Vase</td>
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<td>Stela 93</td>
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<td>Stela 24</td>
<td>c. 136</td>
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<tr>
<td>Caracol (?)</td>
<td>Hieroglyphic Stair of K’an 11, Str. 857</td>
<td>&gt; 78</td>
</tr>
</tbody>
</table>

One additional ceramic object without archaeological provenience, but which may originally stem from the greater Tikal area, is said to be adorned with 144 glyphs (Guido Krempel, pers. comm. 2016). These lengthy texts are clearly exceptions to the rule, since most ceramics that bear texts usually record no more than the dedicatory expression (known as the Primary Standard Sequence) as well as a record of ownership, essentially an extensive name-tag, specifying the names and titles of the original owner (MacLeod and Reents-Budet 1994).

Given its extraordinary long text, the Komkom Vase is thus on par, in terms of length,
with the texts on the hieroglyphic stairs at Yaxchilan, the lengthy panels at Palenque and some of the longest stelae texts at Tikal, Naranjo and Caracol (see Table 1). The discovery of the Komkom Vase therefore represents an amazing find for all the wealth of information that this text contains. In addition, the text distinguishes itself from the more common format of Classic Maya narratives, since it is not focused on the life, times and deeds of a principal individual or royal actor. Instead, a whole array of different agents and patients are introduced and none distinguish themselves as primary in any way. One further feature is that the text is initiated by a lengthy calendrical record, thereby duplicating the format of monumental texts. This too is rather unusual since only very few ceramic texts are known to bear calendrical records.

Based on the size of the glyphs employed, and the thematic content, the entire text can be sub-divided into three major sections (Figure 5). The first entails the calendrical record and assumes 8% of the text by number of glyph blocks. The second, and most substantial portion of the text is given over to the lengthy historical narrative. This occupies as much as 74% of the text (again by number of glyph blocks). This leaves the third and final portion (18%) to provide a lengthy parentage statement, or pedigree, of the original owner, specifying the names and titles of the mother and father, in turn (Figure 6). Below we will first present the pedigree and comment on the calendrical record in order to better situate ourselves, before reviewing the historical narrative.

Pedigree

Unusually, the names and titles of the owner are not provided in the text, suggesting that this may have been implicit, the historical narrative and pedigree together making it clear who owned this spectacular vase. The mother was clearly drawn from the royal house of Naranjo, since she bears the Sak Chuwen title that was the preserve of that dynasty (see Reents 1986: 155). In addition one of her titles, possibly read as yok’in, is qualified by the place name Wak Kabal, ‘Six Earth’, one of the territorial toponyms of Naranjo (see MacLeod and Reents-Budet 1994: 129-130). Much like her spouse, she held the title bakab, lit. ‘head-earth’ or by extension “chief”, one of the most exalted titles of ancient Maya royalty.

The father of the original owner is named Sak Witzil Baah (‘white mountain gopher’), a namesake of the king known as K’an II at Caracol, who bore precisely the same name in his youth, prior to his accession at which point he received his regnal name (see Grube 1994: 104). Interestingly, the father is also designated by a title of origin as Ajsak Nikte’ or ‘he of the white plumeria (place)’, suggesting that he originated from the locality known as Sak Nikte’.

From the many glyphic texts discovered at La Corona in the northern Peten, it is apparent that one of the principal toponyms of this site was precisely Sak Nikte’ (Stuart and Houston 1994: 39; Canuto and Barrientos Q. 2013:1). Nevertheless, since toponyms can, at times, refer to multiple localities of the same name, we assume that his origins are rather local and that this toponym also names a place in the vicinity, in the eastern Peten or western Belize. The same
The calendrical record that initiates the text, as a whole, is rather lengthy and records a complete Long Count as well as a supplementary series. Whereas most of the Long Count has been recovered, one small part has not. What remains of the Long Count is 9.19.0.15.8, wherein the pound sign marks off the missing segment. The missing coefficient designates the vague year or period of 360 days that approximates a solar year. Considering the limited amount of space provided for the numeral, the Long Count date can be correlated to a date between AD 811 and 815, using reconstructions ranging from 9.19.0.15.8 to 9.19.4.15.8. Clearly this is a very late date, at the twilight of the Terminal Classic that is traditionally considered to be in vigor by 10.0.0.0.0 or AD 830. Close examination of the remaining elements suggest that the most
The plausible Long Count date is 9.19.1.15.8, corresponding to 23rd of April AD 812 (using the 584286 GMT+1 correlation coefficient).

The Long Count is followed by additional calendrical information, including the Lord of the Night (G2), the title of this supernatural entity (Glyph F), an abbreviated lunar series, and most surprisingly of all an abridged record of the 819-day calendar. This obscure calendrical cycle is known from fewer than two dozen texts throughout the Maya lowlands. The majority are known from the western Maya area, especially from Palenque, Yaxchilan and sites in that vicinity, including Tonina and from the southeast at Copan and Quirigua (see MacLeod 1989; Valencia Rivera 2015: 214-239). As such, the discovery of another example of the 819-day calendar is unexpected to say the least, especially in this part of the Maya lowlands, on a vase, in a text that is of such late date.

Whereas the event or action that transpired on this date is not recorded, we surmise that this date records the dedication of the vase. This temporal anchor is of great significance since it provides a secure lower-end boundary for modeling the 14C AMS dates obtained from human bone samples recovered in the same artifact-rich archaeological deposits that also contained the vase at Baking Pot. We look forward to developing a Bayesian chronological model that includes stratigraphic information with direct AMS 14C dates on faunal and human remains, as well as charcoal within the deposit. The inclusion of such a late Long Count date in the text of the Komkom Vase offers a rare opportunity to model the stratigraphic deposition of the peri-abandonment deposit using the hieroglyphic date as a priori data. As the sherds from the vase were located in the medial and upper strata of the feature, we can constrain any radiocarbon distributions for the entire deposit to the period before AD 812 using that terminus post quem date.

Historical Narrative

The historical narrative is divided into ten major clauses that span from the 15th of February AD 799 to the 30th of August of the same year. These events are thus at least thirteen years prior to the Long Count date recorded at the onset of the text. This implies that the historical narrative is retrospective and it may well have been copied from another source, such as a codex providing a detailed annal or historical record. Based on the span of dates, the narrative on the vase is extremely detailed. Paradoxically, despite its length, the text covers only a very short temporal window. Whereas other texts exist that have a relatively limited time-depth and scope, this should be contrasted to contemporary monuments from nearby Naranjo (i.e. Stelae 10, 12, 13, 14, 19, 32 and 35), which in shorter texts have narratives ranging between 4 and 39 years, with a mean of 15 years per narrative. As such, the pace of the narrative on the Komkom Vase is clearly a fast one, with events developing with very small temporal intervals between them. In fact, the narrative can be divided into two major episodes, one spanning from the 15th of February until the 21st of the month and the second from 19th of July to the 30th of August. During the first episode, events are separated by only two days apiece, whereas during the second episode, events are separated by spans of only 4 to 12 days. In addition, many clauses refer to multiple events on the same date and we thereby obtain a narrative that records events at a very fast pace, and in unprecedented detail. The wealth of information makes it difficult to properly characterize the text since it is so unusually detailed, especially in comparison to contemporaneous texts of the Late-to-Terminal Classic.

To provide an overview of the text, we can present the narrative according to its constituent parts, namely 1) agents and patients, 2) verbs and actions, and 3) toponyms. We present an overview of each of these rubrics in turn.

Agents and Patients: By agents were refer to the individuals that are said to undertake various actions, or are the ones that are given credit for a particular event. In contrast, we have the patients, that is to say those that are affected by a given action. Add to that is the twist that many sentences are recorded in the intransitive, wherein the agent/patient is not specifically recorded or is missing. As such we have information as to agent/patient for fourteen cases whereas these are unspecified/known in
approximately nine cases. One additional oddity is that the majority of individuals are not named as such, but rather are referred to by title alone. Reading the text, one gets the impression that we are in the middle of a much larger narrative, wherein all the actors should be known entities, but these are discussed without the benefit of any introduction, as if this was provided in an earlier part of the narrative that has not been reiterated on the vase. Nonetheless, the primary agents include a) ‘he of the south’, b) ‘he of the north’, c) Ajwalte’ ‘he of Walte”, d) Ajbaluun Chab ‘he of nine lands’, and e) a figure named Took’ Yasta(an). The first two figures are ones that bear identical titles, and although unfortunately these resist decipherment, they are distinguished by the cardinal directions nojol ‘south’ and xaman ‘north’. The same figures, or groups of people, are named in the texts of Naranjo, perhaps populations or lesser functionaries serving their king in the southern and northern reaches of the kingdom (see Grube 2004: 208-209; Helmke and Kettunen 2011: 11-16; Tokovinine 2013: 91-97; Martin et al. 2016: 6, 11). The remaining agents are not known outside of this text and as such little more can be said about them, in terms of origin or titles. On the side of the patients we have a) K’inich Lakamtun, or ‘radiant stela’, king of Yaxa’ (present-day Yaxha in Guatemala), and b) one Ajmutu’l or ‘he of Tikal’, named at the very end of the text. In order to sketch out the agent-tracking of the narrative, we have plotted these figures out according to the clause in which they occur (Table 2). In so doing we can see that many of the actors are introduced sequentially and with little overlap. As such we can see that there is no definite protagonist, hero, or main character. Also, whereas the first half of the narrative is given over to the agents, patients are introduced in the second half, with the king of Yaxa’ at the brunt end of the martial actions inflicted upon him by Took’ Yasa(an), suggesting military forays to the west of Naranjo around Lake Yaxha. Perhaps, embrazened by these successes, the agents extended their reach further to the west, towards Tikal, which may explain why an individual bearing the title of origin Ajmutu’l appears in the penultimate sentence of the narrative.

Table 2. Agent-tracking of the narrative, plotting out actors according to the clause in which they occur. Note the coloration of agents (●) vs. patients (○).

<table>
<thead>
<tr>
<th>Clause 1</th>
<th>Clause 2</th>
<th>Clause 3</th>
<th>Clause 4</th>
<th>Clause 5</th>
<th>Clause 6</th>
<th>Clause 7</th>
<th>Clause 8</th>
<th>Clause 9</th>
<th>Clause 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>He of the south</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>He of the north</td>
<td>●</td>
<td>●</td>
<td>□</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ajwalte</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>He of nine lands</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Took’ Yasta(an)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K’inich Lakamtun</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>King Yaxa’</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ajmutu’l</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Introduced / Unknown</td>
<td>○</td>
<td>○</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Agent-tracking of the narrative, plotting out actors according to the clause in which they occur. Note the coloration of agents (●) vs. patients (○).

Verbs and Actions: With regards to the events that are related in the narrative these can be divided into three thematic categories. The first is one that we can term “War and Peace”, which covers not all too surprisingly the verbs of war and martial actions, including puluuy ‘set ablaze’ (used three times in the text) as well as ch’ahkaj ‘to axe, chop’, but also pehka ‘to call, shout, summon’, presumably to convene a meeting, parliament or a parole, in buccaneer (Houston 2014).

The second main category of verbs pertains to verbs of motion, referring to journeys and travels. These include pakxi ‘to return’ or ‘to walk to town’ (used four times in the narrative; making the Komkom Vase the written source with the largest number of instances of this verb, along with the corpus of Naj Tunich, see MacLeod and Stone 1995; Hull 2004: 92; Helmke 2009: 157-160), ahni ‘to run’, lok’ooy ‘to flee’ (used in reference to the defeated king of Yaxa’, not spoken about in flattering terms), and t’abaay literally ‘to raise, lift’ but also used in reference to ‘go up, climb’ as in ascending a prominent physiographic feature, such as an elevation, hill, or mountain (see Stuart 1998: 409-417). These evidently refer to how the various agents and patients displace themselves from one given location to another, providing a sense of movement across the landscape, from one given place to another.
Table 3. Division of the toponyms mentioned on the Komkom Vase according to narrative function and in order of appearance.

<table>
<thead>
<tr>
<th>Places of Origin</th>
<th>Places Attacked</th>
<th>Places Travelled to</th>
<th>Unclear / Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wak Kabal</td>
<td>Sak Suutz’</td>
<td>Sak Kabniil</td>
<td>Chak Mayte’</td>
</tr>
<tr>
<td>Sak Nikte’</td>
<td>...k Witz(nal)</td>
<td>Ik’ Naahb</td>
<td>Lakam Ha’ (?)</td>
</tr>
<tr>
<td>Komkom (×2)</td>
<td>Yaxa’</td>
<td>Usu’l</td>
<td></td>
</tr>
<tr>
<td>Sa’uul</td>
<td>Chan Naahb</td>
<td>Yaxa’</td>
<td></td>
</tr>
<tr>
<td>Yaxa’ (×2)</td>
<td>lb(ii)</td>
<td>eroded (×2)</td>
<td></td>
</tr>
<tr>
<td>Mutu’l</td>
<td>Pekom</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The third and last main category of verbs are those pertaining to ritual actions. Interestingly, the number of rituals celebrated and their diversity is on par with the verbs of motion in the text. As such, even though much of the narrative is given over to events of war, the movement of people and the proper celebration of rituals are all held as equally important. The first verb pertains to igniting fire by means of friction, *joch’o’w k’ahk’* ‘the fire is drilled’, and is the very first event recorded in the narrative of the vase. Once the fire is drilled we see a series of martial actions wherein rival localities are set ablaze (*puluuy*), and based on the sequential structure of the narrative one can surmise that we are seeing direct cause and effect. A fire is ritually drilled and once this pure and untainted fire has come into being it is set to the task of subduing the enemy. The start of the second episode of the narrative is tied to the very beginning, and makes reference to the same fire ritual, but here the verbal expression provided is *jatz’liiy*. This expression employs the root *jatz’* ‘to strike’, which refers to the lighting of fires by means of percussion, producing sparks by striking two stones together. Although eroded, a deity impersonation ritual may also be referred to, read *ubaa'ilan ta k'uh* ‘to be portrayed as a god’, wherein a human figure wears the attire of a particular supernatural entity and adopts some of the demeanors and traits of a deity (see Houston and Stuart 1996: 297-300; Nehammer Knub et al. 2009). Interestingly, in this passage the deities impersonated appear to be those belonging to the king of *Yaxa’*, implying that this may constitute an attempt to garner supernatural favors on the part of the victors, or alternatively to desecrate some of the local divinities. The last ritual is *yahk’ta*, ‘it is his dance’, which is also the very last event of the whole narrative. Thus, whereas it may seem odd to Western preconceptions of historical narratives, the culmination of the entire series of events appears to be a type of victory dance, celebrating the advent of a new status quo.

**Toponyms:** The text of the Komkom Vase offers an abundance of toponyms. The profusion of place names is truly remarkable since many events and actions were anchored in relation to specific locations, so as to better inform the reader of the landscape across which the story unfolds. Unfortunately, the vast majority of toponyms were unknown before the discovery of this vase and as such it is difficult to gauge where all of these events are supposed to take place. Nevertheless, the toponyms can be divided into a few higher order categories based on their function and the means by which they are introduced into the narrative. Thus, we can see that toponyms serve to designate 1) places of origin of particular actors, 2) names of localities attacked, 3) as places travelled to, and 4) a final category wherein the context is unclear due to breakage and erosion. Based on these divisions the toponyms can be presented as follows (Table 3).

This tabulation makes it clear that *Yaxa’* cross-cuts the various categories, and as such stands as one of the spatial nodes of the narrative. The toponyms occurring as places of
origin are all included into the titles of their bearers (such as the names of the mother and father of the original owner of the vase) or are prefixed by the agentive *aj*- marking folks as being from a particular place of origin, such as the ‘he of south’ and ‘he of north’ that are said to be of Naranjo when they are labeled as *Ajsa’itul* ‘Naranjeños’.

The places attacked form a diverse grouping of localities and aside from *Yaxa’*, we can comment on *Ib*—probably known more fully as *Ibil*—‘where there are lima beans’, a locality that is also known from ceramics produced at workshops tied to Motul de San José, Calakmul and from the texts of Naj Tunich (Tokovinine 2014: 11, 14). As we have proposed on earlier occasions, the location *Sak Suutz* ‘white bat’ may be same as the settlement known as *<Zaczuç>* and *<Zaczuz>* in the ethnohistoric account of Spanish incursions to this part of the Maya area by Fray Bartolomé de Fuensalidas in 1641 (López de Cogolludo 1688: 645). Based on these accounts and the detailed documentary work of France Scholes and Sir J. Eric S. Thompson (1977: 45-46, map 2-r), they have been able to suggest that this settlement may have been located at the confluence of the Roaring Creek with the Belize River, just north of present-day Belmopan. As such, the archaeological site of Saturday Creek constitutes a promising candidate for this locality (an alternate locality is the site of Hanging Rock a.k.a. Irish Creek, to the southwest of Belmopan). As to the places travelled to these remain unknown, but that named *Usu’l* is of interest, since that is where the king of *Yaxa’* is said to have fled to after his defeat. An etymology of that toponym would see it segmented as *us-u’l* wherein the initial segment is ‘fly, mosquito, gnat’ based on a variety of cognates in Ch’olan languages followed by the suffix –*u’l* that indicates that a particular trait occurs in abundance at a given location (see Lacadena and Wichmann n.d.: 21-28). As such, the text would relate that the king of *Yaxa’* fled to a mosquito infested location, suffering humiliation heaped upon defeat.

**Final Comments**

The Komkom Vase represents an extremely important find, not only within the Belize Valley, but also to the Maya lowlands as a whole. Most all of the terms that can be used to describe it are superlatives. The text is the longest known for a ceramic vessel. The text is now the longest known text from Pre-Columbian Belize and is among the longest texts anywhere in the Maya world and this despite the relative lateness of its manufacture. The text records a lengthy Initial Series with a Long Count, a Supplementary Series and even a record in the 819-day calendar, which are all rare and atypical features of ceramic texts. The text highlights an array of different actors that were mostly unknown before the discovery of the text, with the exception of two elusive figures or group from Naranjo and the king of *Yaxa’* that was the
victim of repeated attacks during this period. Interestingly, the same figure is also recorded in the texts of Naranjo, suffering at the hands of her kings also, especially one “Itzamnaaj” K’awil (r. AD 784-810+). As such the vase provides us with a view of historical events that transpired at the very end of the eighth century, as recounted from the vantage of the Komkom kings. That their account is not identical to that provided on Stela 12 at Naranjo (Figure 7), where we have a contemporaneous text that recounts similar events taking place on identical dates, is not altogether surprising since these are distinct historical records, produced at different times by different courts. As we have seen, the vase dates to around AD 812, while Stela 12 at Naranjo was commemorated in August AD 800, which is to say that the latter is as contemporaneous as a historical record can be. Nevertheless, having two parallel accounts of similar events and actions is atypical in the Maya area, and provides us with key anchors wherein the two accounts coincide. This allows us a rare opportunity to compare the degree of congruence of events recounted on two different sources. What is more surprising, however, is that both accounts at times use precisely the same wording and phraseology, which suggests that perhaps both the text of Stela 12 and that of the Komkom Vase share a similar, if not the same written historical source. On the stela, the events are presented in more summary form, whereas on the vase these are effuse with details, to such an extent that this almost becomes an heuristic impediment, since so many of the parameters remain unknown, including agents, patients and localities. In addition to its detailed historical narrative, the Komkom Vase itself represents a singular moment in time when the kings of Baking Pot and Komkom were united in a common cause and the vase was used to cement an alliance between these two courts. Considering the time of this alliance, when the rule of divine kings was rapidly eroding, the vase instead stands for the ageless execution of standard functional operations. This is made clear by its length and the presence of an extensive calendrical record at the onset, as though the vase served the same function as a historical monument raised within the monumental epicenter of a site. As such the vase, its text and its final context all speak evocatively of the socio-political reconfigurations that characterize the Terminal Classic and the cessation of the institution of kingship in this part of the Maya lowlands.

Acknowledgements First and foremost we would like to thank the Belize Institute of Archaeology for granting us permission to excavate the archaeological site of Baking Pot, and to Dr. John Morris in particular for his continued support and interest in our research. A warm thanks also to the personnel of the Central Farm Research Station and Agricultural College for being good neighbors. We thank Rafael Guerra and Niyolpaqui Moraza-Keeswood for their help in the initial photographic documentation and processing of the sherds. Funding for this research was provided by the Belize Valley Archaeological Reconnaissance project, the Tilden Family Foundation, the National Science Foundation (BCS-1460369, Hoggarth), as well as internal research grants from the University of Copenhagen, Baylor University, and Northern Arizona University. We thank Douglas J. Kennett and Brendan J. Culleton for their assistance and direction in developing the broader archaeology and radiocarbon research program at Baking Pot. A heartfelt thanks to Marc Zender, David Stuart, Alfonso Lacadena, Erik Boot, Guido Krempel, Simon Martin, and Harri Kettunen for comments on the text of the vase. Despite their insightful observations, we retain the responsibility for all shortcomings, be they empirical or interpretative.

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21 RECENT INVESTIGATIONS AT THE MAJOR CENTER OF LOWER DOVER IN THE BELIZE RIVER VALLEY

Rafael A. Guerra and Jaime J. Awe

Archaeological investigations at the previously undocumented ancient Maya site of Lower Dover, located in the Belize River Valley, began in 2010 by the BVAR project. We present the results of five years of investigations at Lower Dover, where our research has focused on constructing a site chronology and understanding the role of Lower Dover within the socio-political landscape of the Classic Period (~AD 500-900) Belize Valley. Direct dating of human remains indicates that the site was occupied initially as late as AD 650. The site subsequently experienced continuous and rapid growth extending into the Terminal Classic, with a short reoccupation during the Late Postclassic Period (~AD 1400-1550). Cultural remains recovered by our investigations indicate that Lower Dover was well connected with the broader Maya Lowlands through regional trade networks. The site’s chronology and artifact assemblage further suggest that Lower Dover reflects a similar developmental trajectory as that of Xunantunich which rapidly rose to prominence and then declined during the latter part of the Late Classic period.

Introduction

Over the past half century, archaeologists have expended considerable research effort in an attempt to understand prehistoric Maya communities in the Belize River Valley (Figure 1). Much of this work was pioneered by Gordon Willey in the 1950’s with his settlement study at Barton Ramie some 12km east of the modern town of San Ignacio. In subsequent years, various other scholars conducted research in their efforts to understand the settlement distribution and political dynamic of the numerous, closely spaced major centers along the Belize River. In 1994, the Belize Valley Archaeology Project (BVAP), headed by Jim Garber, devised a locational model to examine these centers. This model, revised in 2004 by Driver and Garber, suggests that major centers along the Belize river were equidistantly located at 9.9km between each other with smaller, possibly administrative, centers located at the overlapping spheres of political control (Garber et al. 1994, Driver and Garber 2004) (Figure 2). Driver and Garber further noted that at the west end of the Belize River Valley, these centers did not confirm to the model probably as a result of political cycling of these major centers through time (Garber and Driver 2004). In 2009, the discovery of a new major center, Lower Dover in the village of Unitedville, Cayo, in close proximity to Blackman Eddy and Barton Ramie, also suggested that the data for this area of the valley no longer supported the Driver/Garber model which may have to be revised in light of this new settlement data (Figure 2). In this paper we present the ongoing research by the BVAR Project at Lower Dover, and we briefly discuss the significance of the site within the political landscape of the Belize River Valley.

Lower Dover

In 2009, William Reynolds informed the authors that there were mounds of substantial size on his property. Later that year, we visited the property and immediately recognized that this site contained many features attributed to major centers in the Belize River Valley (see Helmke and Awe 2008). Interestingly, the center had been overlooked by Willey in the 1960's, and again by the BVAP project in the 1990's. Following its initial identification by Reynolds, preliminary mapping efforts were
Recent Investigations at Lower Dover

Figure 2. Driver and Garber’s Linear Model (after Driver and Garber 2004) with modification by Guerra.

carried out by several personnel from the Vaca Plateau Project to understand the extent of the site core. In 2010 the BVAR Project initiated an aggressive research agenda aimed at fully remapping the site and conducting archaeological excavations in order to determine the construction history and connections of Lower Dover to other Belize Valley centers (Guerra 2011, Wilkinson and Hude 2011, Guerra et al 2012).

Location and Setting

The major centre of Lower Dover is situated on the southern bank of the Belize River, approximately 15.4km downriver from San Ignacio and 18.9km upriver from Belmopan (linear distances). The monumental site core is on the property of William and Madeline Reynolds at the southwestern edge of Unitedville Village, Cayo District. At its nearest point, the Belize River courses a mere 20m from the central precinct, and average elevations of the site range between c. 14-20m above the mean elevation of the river. The site is bordered on the north by the Belize River, on the east by Lower Barton Creek and on the west by the Upper Barton Creek (Guerra and Morton 2012; Guerra 2011). The monumental architecture is located on a 50-acre parcel covered with taller trees, such as Cohune Palm (Attalea cohune) and sections of secondary growth shrub (wamil).

In relation to other ancient Maya sites, Lower Dover lies approximately 6.6km east of Baking Pot and 3km west of Blackman Eddy, the two nearest major centres (Figure 1). To the south is the medium-size centre of Lower Barton Creek, which is roughly 5.9km distant. Intermediate minor centers include Floral Park, 1.6km to the southwest and directly across the river to the north, at 1.2km, is the Barton Ramie settlement area (see Garber and Driver 2004). The site's settlement area extends to the south into the foothills of the Maya Mountains, only 300-500m. Several small formal plazuelas have been recorded in this area (Guerra 2011, Petrozza 2015, Walden 2017), mainly within the higher elevations and on the summits of limestone hills. Few mounds have been recorded in the plain between the foothills and the site core. It is possible that this area may have served as farm land to the ancient community and that it was prone to periodic flooding.

Site Description

The monumental architecture of the site covers approximately 3.0 hectares (Helmke et al. 2015). The total surface of the epicenter makes it the seventh largest known site in central Belize (after El Pilar, Buenavista del Cayo, Actuncan, Pacbitun, Xunantunich and Baking Pot) (see Helmke and Awe 2008, 2012).

The site is composed of two large primary courtyards of similar dimension (Figure 3). Plaza A to the east contains 12 structures with an attached ballcourt to the west and a single low lying structure to the northwest (Figure 3). Plaza B to west contains 17 structures that enclose four restricted access courtyards that likely functioned as an elite residential place complex. The two plazas are connected by a small low lying wall no more than four courses high (Guerra and Arksey 2012). Three (3) formal patio groups are located to the north (Plaza F, G and H) and three (3) informal groups lie to the south (Plaza C, D and E). All together a total of 52 structures have been identified thus far in the site core.

Plaza A

Plaza A is one of the two largest groups at the site with an area of ~3200 square meters. The plaza is framed by four long range structures with the eastern structure being the tallest at 10m. Two small low lying structures were also recorded in Plaza A, one at the
southeast corner and another to the northwest of the plaza. Just to the west of the courtyard, attached to the back of Str. A6, are two parallel structures of similar dimensions that represent the site’s ballcourt.

**Plaza B**

Plaza B contains the largest structures at the site. The main plaza is framed by a large pyramidal structure (B1) to the east, likely the ancestral shrine; two long range structures on the north (B4) and south (B2) and a large range structure to the west (B3) that is similar to the audiencia (or Str. A2) at Cahal Pech. To the west of Str. B3 is a large acropolis with a series of four enclosed courtyards that likely served as the primary elite residential area of the site.

**Plaza C**

Plaza C is a small informal plaza to the south of Plaza B and consists of two small low structures placed on top of a 0.75cm high platform that separates the site core from a seasonal bajo to the south. These small platforms are no higher than 20cm in height.

**Plaza D**

Plaza D is a small formal courtyard to the east of Plaza C on the same platform that forms the site core boundary to the south. This plaza consist of one larger structure to the south and 4 low structures to the west, north and east. Similar to plaza C, these low structures are no more than 25cm in height.
**Plaza E**

Plaza E is a small plazuela group attached to the south sides of Strs. A4 and A5. This small courtyard consists of three low structures on the east, south and west of the plaza. These structures are approximately 40-50cm in height.

**Plaza F**

Plaza F is a relatively large courtyard that lies approximately 100m north of Plaza A and 70m south of the Belize River. This northern group is the next largest plaza apart from Plazas A and B. The courtyard is framed by six structures. Three of these are located to the east and resemble a small eastern triadic group. The other structures are located to the south, west and north of the plaza, and another unusual structure, possibly a ramp, is situated at the southeast entrance to the plaza. This group overlooks the Belize River and Barton Ramie to the north and likely functioned as an elite residence and possible lookout.

**Plaza G**

Plaza G lies 45m to the northwest of Plaza A. This small plazuela group consists of four main structures (Strs. G1-4) and one low platform to the southwest.

**Plaza H**

Plaza H is a small group to the north of Plaza B. This informal plaza is framed by two
small low structures to the south and two range structures, in an L shape, to the west and north.

**Major Excavation**

Since 2010, the BVAR Project has conducted seven field seasons of research at Lower Dover. The major foci of these investigations are to determine the occupation history of the site, and to ascertain the role of Lower Dover within the political landscape of the Belize River Valley. To this end a series of broad horizontal excavations and stratigraphic units have been conducted in most of the central courtyards in the site core (Figure 4). Below we provide a brief description of the major excavations carried out to date.

**Ballcourt**

In 2010, a single 1m x 2m excavation unit was placed in the playing alley of the ballcourt. This unit revealed four closely spaced floors, which are likely remodeling episodes, and a small fragment of material tentatively identified as rubber (Wilkinson and Hude 2011). No ballcourt marker or caches were identified in this unit. However, none of these floors were tied in to either of the two ballcourt buildings. In 2015 a 2m x 6m east-west stratigraphic trench was excavated on the eastern structure of the Ballcourt (A10) (Guerra et al. 2016). This unit revealed that the structure was erected in one major building episode with some minor subsequent remodeling. The first construction was a 4 meter ballcourt mound with dried laid boulder fill. The ballcourt mound consisted, from west to east, of a flat bench measuring 35cm high and 2m wide. This bench connected to a slanted playing surface that was covered (or tiled) with large flat facing stones measuring roughly 60cm wide, 80cm long and 10-12cm thick. This surface is similar to the ballcourt surface in Plaza C at Cahal Pech (Awe 1992). The slanted surface abutted a vertical wall. However, the vertical wall was partially collapsed and only 4 courses of cut stones remained. The second construction episode was a remodeling of the playing alley and resulted with the floor being raised by 10cm. No other construction sequences or caches were found in the playing alley of Str. A10. All the ceramics recovered by these excavations consisted of Late Classic, particularly Spanish Lookout phase, sherds, and no organic materials were recovered for radiometric dating. Both the pottery and stratigraphic data indicate that the ballcourt was constructed rather rapidly and in a single major construction episode.

**Plaza G**

In 2011, a 2 x 6m stratigraphic trench was excavated in the eastern structure of Plaza G, a small plazuela group to the north of Plaza A (Figure 3). In this unit, we discovered several fragments of human skull(s) 10cm below modern day surface. There were no cultural remains directly associated with the skull fragments. However, they were at the same level as a crypt that we discovered in the same unit and were likely associated with that burial. The latter, Burial G4-002, was a small crypt laid out north-south with four broken capstones. Unfortunately a large cohune tree had grown to the immediate western edge of the crypt and had caused a tremendous amount of bioturbation. Very few elements of the individual(s) were uncovered in the crypt itself in part due to the clayey matrix containing the burial and the bioturbation from the cohune tree. Among the elements recovered were several fragments of long bones from the legs and arms. Additional elements of crania were recovered including four drilled incisors with jadeite inlays. Other associated cultural remains included 70 circular shell beads and a fragmented ceramic plate and cylinder jar. Based on the recovered fragments the individual is a male in his late 40's (McKeown pers. comm. 2015). Radiocarbon assays conducted on direct human bone elements indicate that a $^{14}$C age (BP) of 1495 and $2\sigma$ Range (cal BC/AD) of 470-640 AD and a high probability of 536-639 cal BC/AD. This indicates that the building dates to the later part of the Early Classic into the Early Late Classic period. So far this is the earliest date for the site and could likely be that the group may have been one of the earliest settlements within the general area of the site core.

**Courtyard 4**

In 2013 and 2014, we conducted a series of horizontal excavations in a small courtyard (Courtyard 4), attached to the south side of the
acropolis (or elite palaces) (Figure 3). Along the base of Structure B15, we uncovered a terminal (or midden-like) deposit of cultural remains spread along the face of the building and onto the staircase. The deposit consisted of 1354 ceramic sherds, with 90.39% being undecorated ceramics and 9.61% decorated jars, bowl, plates and vases (Kulig 2015). Additional artifacts recovered from this deposit included, ceramic discs, figurine fragments, Miseria Appliquéd censer fragments, obsidian, chert tools and modified animal remains (Guerra 2015; Stanchly 2015). This deposit is quite similar to Terminal Classic deposits recovered at Cahal Pech, Baking Pot and Pooks Hill, with most of the pottery dating to the Spanish Lookout phase (see Gifford 1976). A complete analysis of this deposit is pending, however the assemblage of artifacts indicate that it is likely a terminal deposit (Hoggarth et al. 2016).

Plaza B

In 2016, we conducted a salvage operation in a looter's pit in structure B1 (Figure 3) in an effort to identify building episodes and uncover additional features that may have been overlooked by the looters. On the northwestern baulk of the looter's pit, we uncovered a small room measuring 4m by 4m that showed evidence of burning (Guerra and Romih 2017). The burning has been interpreted as a termination cache in which the ancient Maya partially destroyed the room and converted it into a stair block feature at the center of the staircase (Figure 5). The top of the bench was completely burned and a small lens of charcoal was recovered from this level. The room was partially destroyed in antiquity and had a dome shaped masonry room and a small interior bench. Removal of the bench uncovered two caches that were dedicatory in nature. These caches consisted of two thin bifaces (Figure 6) made from non-local chert, probably of material originating in the Northern Belize Chert Bearing zone (Hester and Shaffer 1984). It is unclear if these bifaces were produced at Lower Dover or if they were imported as complete objects. The second cache consisted of two small lip to lip bowls and contained a single human distal phalynx. The upper vessel was adorned with appliquéd spikes similar to those found on Miseria Appliquéd incense burners (Figure 6).

The excavations revealed that the structure had one minor modification when the small room was burned, partially dismantled and infilled to create a stair block. At the same time the plaza floor was raised 35cm covering the first step of the structure. It still remains unclear what the function of the room was, but it is
likely that it may have served as a small ancestral shrine or a sweathbath.

**Discussion and Conclusions**

Over the past several seasons, our excavations at Lower Dover have revealed that the majority of the construction in the site core took place during the Late to Terminal Classic periods (AD 600-900), and that they were conducted in one or two construction episodes. We believe that this rapid development was likely a result of the decline of Blackman Eddy and the rapid rise of Lower Dover to replace the former as the polity capital in this section of the Belize River valley.

Ongoing artifact analyses indicate that the people of Lower Dover acquired exotic raw materials from diverse regions of the Maya lowlands (Ebert 2014). Our analysis of obsidian artifacts reflects a similar procurement pattern to that identified at Cahal Pech and Baking Pot. However, a distinct, yet unknown source of obsidian was identified from this analysis. In addition, several obsidian tools displayed manufacturing methods similar to objects identified in Central Mexico (Popp, pers. comm. 2015).

Our architectural data indicate that the monumental architecture in the site core was rapidly constructed during the latter part of the Late Classic period and that the site flourished as the new polity capital for this section of the Belize River valley for a rather abbreviated time. Indeed, it appears that toward the end of the Terminal Classic period, Lower Dover was already in decline. Future research at the site will serve to refine the tentative construction chronology described above, and will allow us to better understand the social and political significance of the Lower Dover within the context of the Late Classic Belize River valley.

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Recent Investigations at Lower Dover


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The Maya engaged sacred places that typically were isolated from permanent settlement, such as water bodies. They often are left largely untouched other than a minimal presence of non-residential features and buildings. Such places, which we are calling pilgrimage destinations, were connected via a ceremonial circuit, which we attempt to show was the case at the 25 pools of Cara Blanca, Belize. The Maya intensified their processions and ceremonies here during several prolonged droughts between c. 800-900 CE. Traditionally, the Maya walk ceremonial circuits to reaffirm their relationship with and rights to sacred, forested places. Pool 1 epitomizes one such destination with its Terminal Classic water temple (Str. 1), a ceremonial platform (Str. 3) with ceramic styles from throughout the Maya area and human caches, and M186, a group that includes a circular sweatbath. Excavations at Cara Blanca cenotes reveal a rich ceremonial life that appear to have revolved around water ceremonies along a ceremonial circuit. In the end, their supplications to gods and ancestors were to no avail, and Cara Blanca’s visitors became part of the diaspora out of the southern lowlands.

Introduction

Throughout their history, the Maya interwove their daily life in accordance with their cosmocentric worldview, which differs from an anthropocentric one because it situates objects, humans, animals, land, water and everything in an analogous manner (see Descola 2013), where each plays a role in maintaining their place in the world and the world itself (Lucero in press). This merged and relational worldview meant that the Maya both made use of and maintained the world, as well as relationships with other world parts—sky, soil, forests, animals, aquatic life, water and other resources. This relationship was not perfect—the Maya overused resources and deforested certain areas in various time periods. However, today millions of Maya live in Guatemala, Belize and southeastern Mexico, speaking to their sustainable worldview and way of life. Another means of engagement was through their treatment of sacred places (e.g., caves and water bodies), many of which were isolated from settlement, a fact that promoted conservation because flora and fauna flourished, unencumbered by human habitation. Lucero labels this perspective a cosmology of conservation (Lucero in press), one that leaves its own mark in the form of empty or untouched spaces connected by a particular type of built environment—in this case, non-residential features and buildings. Such places were likely connected via ceremonial circuits, which we attempt to show was the case at Cara Blanca. Traditionally, the Maya walk ceremonial circuits to reaffirm their relationship with and rights to sacred, forested places (e.g., Vogt 1969:144, 149, 390). The procession of community leaders and community members would mirror the path of the sun, going from east to west (e.g., Astor-Aguilera 2010:131-143). Pool 1 epitomizes one such destination, as we attempt to show through discussing Str. 3 and M186 sweatbath excavations.

Cara Blanca

Cara Blanca consists of 25 pools situated east-west along the base of a limestone escarpment rising up c. 100m. We have surveyed 22 of the pools (Kinkella 2009, 2015); most are cenotes 5-60+m deep, while others are lakes c. 2-18m deep. Five (Pools 1, 7, 8, 9, and 20) have associated settlement, while other pools have settlement in the vicinity (Pools 6, 14, and 15) (Figure 1). Because of their relative depth, the deepest cenotes retain water throughout the year, making them prime areas for year-round habitation and farming. However, we only find noticeable settlement near the western pools or lakes (e.g., Pools 7-9), which likely dried out during dry periods, and relatively little or no settlement near the central cenotes (e.g., nos. 1-5). In fact, it was only when the Maya experienced several prolonged droughts c. 800-900 CE (Medina-Elizalde et al. 2010) that they built anything of a substantial nature in these previously ‘untouched’ areas by constructing what we argue to be pilgrimage destinations.
Figure 1. Map showing Cara Blanca pools, as well as the proximity of Class 2 soils; these soils are excellently suited for agriculture. Generated by E. Benson and J. Larmon.

Pool 1 Str. 3

In previous works, we have shown the unique aspects of the Cara Blanca Pool 1 water temple (Str. 1) with its tufa fill, water jars, and water-laden symbolism (see Lucero and Kinkella 2015; Lucero et al. 2016). Here, we focus on Str. 3, located across a plaza from the water temple, that we argue served as a ceremonial platform based on artifact type, density and context, its temporarily constrained construction history and layout, and finally, its human caches (Figure 2). Its depositional history informs on the place it had in marking and recording a juncture along the ceremonial circuit and highlights its role in specific kinds of rituals conducted at Pool 1, as well as its unique, isolated intermingling with an animated, sacred landscape. We propose that Str. 3 acted as a “doorstep” or threshold to the otherworld, which was accessed through the cenote. It is in this charged space that the souls of venerated personages, living descendants, and materials with which humans engaged or manufactured convened since, “…the most important interaction going on in the universe is not between persons nor between persons and material objects, but rather between souls inside these persons and material objects” (Vogt 1969:371). Here, the worlds converge, showing the permeability between the worlds of the living and the dead (McAnany 1998) and otherworld elements.

Pool 1 is a 60m deep cenote with year-round water that sits at the base of a steep limestone cliff, isolated from centers and farmsteads. During the 2012-2014 field seasons, we excavated a collapsed corbel-vaulted building (Str. 1, 20 x 7.5m, 3.5m tall) atop a 2
A m wide stepped platform at the pool’s edge that we hypothesize served as a water temple (Lucero and Kinkella 2015). In 2014, we also began excavations at another possible ceremonial structure, Str. 3 (7.46 x 3.65m, 0.8m tall), a platform oriented at 15° east of north 22m to the southeast of Str. 1 (Larmon and Nissen 2015; Lucero et al. 2016).

During the 2016 field season, we excavated two 1m wide trenches (1.89m long east-west, and 4.23m long north-south) in the northern portion that met in the center to expose any features beneath the platform plaster surface, Floor 102 (Figure 3). Though the structure appears to have been constructed within a relatively short timeframe (Tepeu 2/3 or late Late Classic/Terminal Classic; Kosakowsky n.d.), there are multiple construction events (Figure 4). Underneath Floor 102 was another plaster floor (Floor 106), two ballasts (Ballasts 102, 106), and several fill layers (Fills 103, 104, and 109). The Maya had built Str. 3 directly on the natural topsoil surface, as we exposed topsoil beneath Fill 109. They also added a step (Step 108) to the center edge on the north side c. 1m from the water, from which the Maya likely made offerings into the pool. Between Ballasts 102 and Fill 103 in the north-south trench, we exposed a feature (Feature 105) of flat stones that could have served as additional support for multiple processions to the edge of the pool and concomitant rituals. We also exposed part of two plaster floors abutting the west side of Str. 3 (Floors 107 and 112), as well as a cut-limestone low wall that needs additional excavating to assist in understanding the relationship between Str. 3 and the rest of Pool 1 architecture.

We recovered 6792 ceramic sherds from Str. 3, the majority of which came from the surface in the form of several layers of burned sherds on top of a burned plaster surface. Vessel proportions and sizes are similar to those found at Str. 1 (i.e., a majority of large open mouthed jars), and also represent styles from different regions. Ceramic styles overlap with those of the Belize Valley, northern Belize, and the eastern Petén (Kosakowsky n.d.). This diversity
Figure 4. West wall profile of the east-west Str. 3 trench showing construction history.

does not necessarily indicate that the ceramics were imported, but rather that sites in the region might be peripherally linked to other regions. The low percentage of rims (8.3%, n=563) and extensive burning indicate that the Maya either smashed vessels and removed vessel parts, or brought pieces to Pool 1 from termination rituals conducted in their homes or communities. Although we cannot determine ceramic origins without petrographic analysis, the lack of complete vessels demonstrates the significance of the pieces themselves. Similarly, Moyes (2001:75) notes that 39% of the sherds recovered from Actun Tunichil Muknal, a large cave in western Belize, could not be refitted, and thus were likely “brought in as offerings in and of themselves.” This practice has continued to the present, as seen at, for example, Kankíxajá near Momostenango, Guatemala, where “(at) the close of the 260-day ritual calendar, each household ritually smashed its primary cooking vessel used for boiling maize prior to grinding. The larger fragments of the pot were then carried as a family to an ancestral shrine in the mountains and placed atop a great mound of other sherds [sic] that had accumulated over the years” (Christenson 2016:27). Pool 1 visitors likely brought connections to and representations of their home and community in the form of vessels or sherds to tie them to this threshold to the otherworld. These ceramics became “sticky” (Harris 2014:91) with the memories of a space—transporting the ceramics from different regions to Cara Blanca helped transform the space into one that incorporates or remembers different communities or households.

Before finally abandoning the area along with the majority of people by the end of the Terminal Classic period, the Maya sealed the platform with a c. 1m thick layer of massive uncut boulders (60+cm diameter), covering the blanket of sherds and blackened, burned surface in likely what was the final termination event before their permanent departure. In accordance with their cyclical worldview, this final termination event acted to release the souls held within. This act does not imply the “death” of the space, but more likely a rebirth—a different opportunity in the relations of the Maya with their environment/analogous parts. As Str. 3 became overgrown, new vegetation and souls animated the boulders, and new relations emerged through this “untouched” space, signifying a new understanding of the Cara Blanca experience. The relations that emerged are fluid, constantly adjusted and renegotiated; they differ from a Cartesian, dichotomous and linear worldview in that the Maya did not attempt to “keep out” or control nature because the human experience is just one analogous part of their cosmocentric worldview.

Similar to Str. 1, the majority of diagnostic sherds date to the Late and Terminal Classic periods. Non-ceramic artifacts from the burned surface of Str. 3 are relatively few, further signifying its specialized function: they include an obsidian core, one obsidian blade, one jute shell, four burned bone fragments, eight chert flakes, one chert biface, two fire-cracked chert chunks, three mano fragments, one metate fragment, one chert biface stem, one chert biface point, 10 pieces of chert angular shatter, three pieces of worked chert, and one shaped
quartzite. We recovered few artifacts from the rest of the structure as well: an obsidian microflake, two obsidian blades, 33 chert flakes, 16 shell fragments (likely jute), two complete jute shells, two chert angular shatter, a chert pulley, one chert biface fragment, one worked chert angular shatter, one unifacial worked chert flake, five chert flakes, two modified marine shells, and one possible primate tooth.

We also recovered three individuals buried in Str. 3 that we do not consider burials per se (Figure 5). The Maya typically bury the dead in their home along with grave goods, literally keeping their ancestors close (see McAnany 1995); when the Maya interred the dead in non-residential structures (not including shrines and funerary temples) without grave goods, we need to consider alternative explanations. At present, we refer to the interments as human caches. Human Cache (HC) 1 consists of a cranium oriented with the top of the cranium up and face likely towards the west, on top of a pile of limestone cobbles that included a shaped limestone cobble. The postcranial elements present (long bones, clavicle, metacarpal, metatarsal) under the pile of stones were in poor condition, making positioning difficult to determine; however, the location of the elements suggests a primary interment with the individual placed in a tightly flexed position. This individual is estimated to be a young adult (20-35 yrs.) of indeterminate sex. The Maya had dug into Floor 106 in the north part of the structure to place the individual just southwest of Step 108. Oriented 145° east of north, the long axis of HC 1 runs south to
north with the cranium at the southern end. HC 3, oriented 125° east of north, was found between Fill 103 and Fill 104, but not on top of a floor. HC 3 is a primary deposit of a young adult (20-35 yrs.) of indeterminate sex, tightly flexed, and placed on their right side. The long axis of HC 3 is southeast to northwest, with the cranium towards the southeast, and the top of the head oriented up with the face to the east. HC 2, oriented 102° east of north, was located beneath Fill 104 and cut into Fill 109 just southeast of a wall oriented 54° east of north. The long axis of HC 2 was west-east, with the top of the cranium oriented towards the west. This individual, another primary interment, is an adult male placed in a tightly flexed supine position with his head to the west; his legs are tightly flexed and resting on his chest, suggesting he had been bundled. The Maya placed boulders packed tightly around and over the individual, as well as a single metate fragment against the right side of his face. The HC 2 cranium is located in the center of the platform.

The interment of the three individuals in a ceremonial structure without the typical ubiquitous grave goods, suggests that the three ‘burials’ could have served as deposits or even caches—not necessarily as sacrificial ‘victims,’ but as revered personages. According to Coe (1959:77), a cache is “one or more objects found together, but apart from burials, whose grouping and situation point to intentional interment as an offering.” The placement of human remains within the sacred space of Str. 3, the threshold to the portal to the otherworld, demonstrates the blurred distinction between human interments and caches (see Kunen et al. 2002). The three interments demonstrate the qualities of Welsh’s (1988) dedicatory cache burials which, “were meant as dedication or votive offerings for the structures, stelae, or altars with which they are associated” (Kunen et al. 2002:199). We are considering them to be dedicatory offerings because they are complete and primary interments.

Recovered from different strata, the three human caches likely represent a type of dedicatory ceremony, perhaps performed at certain intervals according to the ritual calendar (Chase and Chase 2011) to establish this structure as a sacred space. Just as ancient Maya houses were imbued with the souls of the ancestors buried beneath the floor, so too was Str. 3 by the interment of three individuals (and likely more in the unexcavated portion). These dedicatory offerings further anchored the structure to the otherworld, more so than simple proximity to the cenote alone could do. As visitors to this ceremonial complex walked across its surface to throw offerings into the cenote from the step only a meter from the cenote edge, they would have passed over the three human caches, which are located close to the structure’s north-south axis. Kunen et al. (2002) point out the importance of the location of caches, especially along axial lines, and their association with the movement of people within a space; in this regard, the human caches were likely intentionally placed to trace out the path of visitors, an idea supported by Feature 105, the extra ballast support presumably for more frequent use. By walking over these interments, portals to the otherworld themselves (Chase and Chase 1998), visitors would have been traversing the liminal space beyond their world. Isolated from settlement and centers, the human remains and their context suggest that ancestor veneration may not have been the main objective of their inclusion, which makes sense if they were not establishing a connection between a specific lineage and the land.

Pool 1 has other nearby features that highlight its significance in and of itself—and for present purposes, its role as a potential stop along a ceremonial circuit, such as M186.

Pool 1 M186

Another potential stop along the ceremonial circuit includes Group M186 (see Figure 2), a cluster of Late/Terminal Classic buildings c. 400m west of Pool 1 (and c. 450m east of Pool 2) that includes a circular sweatbath oriented 10° west of north that abuts a range structure with several looters trenches. Sweatbaths were typically used for ritual cleansing and other purification rites (e.g., Vogt 1969:89, 446), and are found at several centers and ceremonial sites (Child 2007).

In 2016, we removed all the interior debris from the sweatbath room, exposing a 3.66 x 3.66m “squirele”-shaped room with the remnants of a low dome (i.e., a true arch) ceiling
c. 1.8m high (Figure 6). The small size of the room and the low ceiling would have been ideal for keeping in the steam and for seating, the latter indicated in the profile of each room corner where short sections of plaster surfaces were exposed. Unfortunately, looters had removed most of the main plaster floor; they did leave a small section intact in the southwest interior that we excavated, revealing several plastered features that may represent a seating area, as well as a floor that slopes down 19-20° toward the south wall that likely was used for drainage. While we were unable to expose the sweatbath exterior, we did expose the west entrance (where the looters entered/destroyed as well) revealing an entrance c. 0.60m side, 0.90m thick walls with a 0.50m wide porch and/or outer wall, at least on the west side. If a 0.50m wall encloses the entire building, it would measure 5.05 x 5.05m. Just as at Str. 3, the M186 sweatbath appears to have been constructed within a relatively short timeframe. Each stratum dated to Tepeu 2/3 based upon ceramic chronology (Kosakowsky n.d.), suggesting either a single construction event or multiple, rapid construction events.

Floors 102/103 yielded a Saxche Orange Polychrome sherd mixed in with later ceramic types and may have served as a bench surface. These floors abut either side of Feature 104, in which we recovered primarily Tepeu 2/3 ceramic types (including Achote Black and volcanic ash tempered sherds) (Figure 7). Feature 104 is a box-shaped feature comprised of 20-25 medium-to-large cobbles that measures 1 x 0.95m. Nine ceramic sherds, five freshwater shell fragments, seven non-human bone fragments, and one primate tooth were recovered from within the feature. It may have served as a hearth or firebox to house hot stones to create steam (see Helmk 2006). Feature 104 sits atop Floor 105, from which we recovered an Early Classic polychrome sherd (likely Saxche Orange), small everted jars dating to Tepeu 2, 14 primate bone fragments, and one primate tooth. The deepest intact context we excavated, Floor 106, contained primarily Tepeu 2/3 ceramic types, including Daylight Orange, a Late Classic deep ring base, and a possible Sibun Red jar neck. The earlier sherds in a later deposit may signify their being heirloom objects.

Figure 6. Overview shot of the M186 sweatbath looking northeast. Looters dug the hole and removed most of the plaster floor. The doorway and looter’s entrance is on the lower left.

In sum, while there was some ceramic material dating to as early as Tepeu 1, most date to Tepeu 2/3 (Kosakowsky n.d.). Though the ceramic assemblage dates to the same periods as Str. 1 and Str. 3, its composition differs; only seven of the 16 rims (or 43.8%) were jars compared to 57.7% from Str. 3 and 72.1% from Str. 1. There is inevitably a sampling bias due to the extensive looting. It is notable, however, that there is a relative dearth of large, unslipped Cayo jar rims of which we found a plethora at Str. 1 (Harrison 2015) and Str. 3, suggesting that the construction may have occurred in the Late Classic and abandonment in the Terminal Classic. That said, we did recover a Cayo Unslipped jar rim from the wall mortar in 2007 (Kinkella 2008). There also is not much variety in the ceramic assemblage when compared to assemblages from residences located between Cara Blanca and Yalbac (see Benson, this volume), suggesting that M186 was used repetitively for a specific purpose.

Until we explore the associated buildings, we can only hypothesize whether they housed people, priests and/or specialists. Results from the sweatbath excavations, while preliminary, suggest minimally that the Maya may have ritually purified themselves in preparation for visiting Pool 1. The compound also may have served as a staging area for visitors to stay and prepare for ceremonies at Pool 1. We do know that just to the west of M186 is M170, a group comprised of five low mounds, a linear feature, and a plazuela complex with three low structures (see Figure 2). We excavated a 1 x 1m test pit
Figure 7. Upper right image is the southwest corner inside the M186 sweatbath, the only part looters left intact. The water mark outlines Feature 104, the possible firebox. The other image shows the same area after excavation with construction events labeled. Floors 102/103 may represent a bench surface.

Figure 8. Test unit in eastern structure of the M170 plazuela group. The image to the right shows skull fragments and what was left of an inverted Belize Red plate. The other associated inverted vessel is the Achote Black bowl pictured in the lower left.
in the eastern structure of the plazuela complex in 2007 to gauge construction history, and came upon a burial c. 30cm below the surface (Kinkella 2008). We did not extract the remains, but did collect the broken inverted Belize Red plate and Achote Black bowl found above the cranium area (both dating to Tepeu 2/3) (Figure 8). The layout of M170 and the burial suggest a residential function; the low mounds, however, also suggest short-term occupation—perhaps visitors stayed or rested here along the ceremonial circuit.

If Cara Blanca served as a ceremonial circuit, each **cenote** along its path could have served as the focal point for the performance of water and other ceremonies (see Figure 1). Other potential stops along the ceremonial circuit may have included the escarpment above Pools 14 and 15 where the Maya built seven structures that may have served as a water shrine (Kinkella 2009:138-142). About 500m northwest of Pool 15 are small caves or rock shelters, which were used for rituals indicated by the Terminal Classic jar sherds recovered (c. 800-900 CE). In the foothills above Pool 6, a 17-18m deep lake, we found a Late/Terminal Classic six-structure compound with a plain stela (stone monument) and altar (M124) on top of a small knoll. Stela and altar complexes are rarely found outside of centers. At Pool 20, a c. 100m diameter, 40m deep **cenote** c. 3.8 km east of Pool 1, the Maya altered the hillside c. 40m north of the pool, creating a massive platform (38 x 26m) upon which they transformed a natural knoll into a pyramid structure (M208-1, 22 x 12m, 3.5m tall) that included a staircase carved into the limestone bedrock (Nissen 2015) (Figure 9). Late and Terminal Classic ceramics
and other artifacts (e.g., groundstone, obsidian) suggest residential and ceremonial functions.

Concluding Remarks
Excavations at Cara Blanca cenotes reveal a rich ceremonial life that appears to have revolved around water ceremonies along a ceremonial circuit. This type of engagement is suggested not only by the architecture and artifact assemblages, but also by how the Maya interred humans at Pool 1—not as ancestors per se, but perhaps as a means to connect different communities. While residential burials and concomitant grave goods created a genealogy of place (McAnany 1995:65), interments in Str. 3 emphasized a common plight and response. Future investigations should show if these, and possible additional interments, represent people from different places. We know that visitors brought pieces of their life from home and community in the form of the diverse ceramic styles recovered. The journey to the water temple (Str. 1) and the ceremonial platform (Str. 3), however, began earlier, likely as part of a ceremonial circuit on a set path that had been intermitting for generations, and then intensely as droughts continued between 800 and 900 CE.

The Maya lived in a different world, with which they engaged and lived a more balanced existence than we do at present. When conditions beyond their control changed, they renegotiated relations that suited their cosmocentric worldview. In the case presented here, the Maya ‘intruded’ into a previously ‘untouched’ area to intimately interact with gods and ancestors at openings in the earth in an attempt to reset relations. Their supplications to the gods and ancestors were to no avail, however, and Cara Blanca’s visitors became part of the diaspora out of the southern lowlands along with everyone else.

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23 DRONES, BONES, AND STONES: THE 2016 SEASON OF THE CHAN CHICH ARCHAEOLOGICAL PROJECT AND BELIZE ESTATES ARCHAEOLOGICAL SURVEY TEAM

Ashley Booher, Brett A. Houk, Valorie Aquino, Brooke Bonorden, and Anna Novotny

In 2016, the Chan Chich Archaeological Project (CCAP) and Belize Estates Archaeological Survey Team (BEAST) pursued multiple research agendas within the 144,000-acre permit area in Northwestern Belize. At Chan Chich, excavations in the Upper Plaza began a 3-year initiative to build a high-resolution chronology of the plaza’s and associated structures’ construction history. This multi-season effort will investigate the relationship between divine kingship and the architectural evolution of the Upper Plaza. Additionally, CCAP renewed excavations at Norman’s Temple complex, a hilltop group west of the Main Plaza, documenting ancient Maya graffiti and discovering a dense terminal artifact deposit. Under the auspices of BEAST, a drone survey mapped cleared pasturelands of Gallon Jug and a large lagoon know as Laguna Seca, and the project completed its second and final season of investigations at Kaxil Uinic, an historic period San Pedro Maya village. This paper summarizes the results of the 2016 investigations.

Introduction

Chan Chich is a moderately sized ancient Maya city located in the Three Rivers region in Northwestern Belize. The Chan Chich Archaeological Project (CCAP) and Belize Estates Archaeological Survey Team (BEAST) have a 144,000-acre permit area comprising mostly forested and unexplored terrain (Figure 1). The 2016 season investigations included four distinct research agendas aimed at understanding the development, decline, and eventual reoccupation of the area. At Chan Chich, excavations in the Upper Plaza targeted architecture and features buried in the plaza, with a focus on chronology building through stratigraphic excavations and radiocarbon dating. CCAP also renewed investigations at Norman’s Temple complex, a hilltop courtyard group in the western part of the site (Figure 2). BEAST completed drone survey of the cleared pastureland of Gallon Jug Ranch and the largest lagoon, Laguna Seca, in the permit area. BEAST also completed the second and final season of excavations at Kaxil Uinic, a historic-period San Pedro Maya village located a few kilometers west of Chan Chich.

Investigations in the Upper Plaza

The Upper Plaza is an elevated group south of the Main Plaza and has the greatest volume of monumental architecture at the site, including the tallest building at Chan Chich, Structure A-15. The construction sequence of

Figure 1. Map of the CCAP/BEAST permit area showing the areas surveyed by drone as well as the locations of Chan Chich and Kaxil Uinic village.

the Upper Plaza is long and complicated and began in the Middle Preclassic and continued through the Terminal Classic, with the complex’s final form representing a highly restricted, monumental space. In addition to its long occupation history, excavations in the 1990s uncovered the tomb of a Terminal Preclassic ruler, which represents the earliest excavated royal burial in the eastern Three Rivers region (Houk et al. 2010; Robichaux 1998).

The 2016 season continued building on work already accomplished in the Upper Plaza in the late 1990s and since 2012. In the late 1990s, CCAP conducted excavations in the Upper Plaza on Structure A-1 (Robichaux 1998,
2000; Robichaux et al. 2000), Structure A-13 (Robichaux 2000), and the southern portion of the plaza on Tomb 2 (Houk et al. 2010). Since 2012, the CCAP has spent three seasons investigating the Upper Plaza through remote sensing work (Walker 2002), Structure from Motion (SfM) mapping (Willis et al. 2014), and excavations (Herndon et al. 2014; Kelley 2014; Kelley et al. 2012, 2013). Although the Upper Plaza is the most intensively studied part of the site, we still do not know much about its complex construction history. The primary focus of the 2016–2018 research is to establish a high-precision Bayesian chronology of the plaza development from bedrock to the modern ground surface and to investigate the relationship between divine kingship and the architectural evolution of the Upper Plaza (Houk 2016a).

Excavations into the Upper Plaza surface focused largely on chronology building and revealed a complicated construction sequence (Figure 3). Excavations uncovered a terminal plaza plaster floor, which was intact at the base of the perimeter structures but completely eroded at modern ground surface in the central areas of the plaza (Houk 2016a). Beneath the terminal floor, excavations documented eight plaza plaster floors in a unit roughly at the center of the plaza, a minimum of nine plaster floors in the northern end of the plaza, and seven plaster floors in a unit placed at the base of Structure A-1.

Ceramic and radiocarbon data provide a preliminary chronological sequence for the plaza’s construction. In the southern and central parts of the plaza, ceramics associated with the terminal plaza surface suggest a Late Classic date (Kelley et al. 2013). This Late Classic construction, which raised the plaza’s surface approximately 70cm, buried a 15cm thick compact dirt surface that ceramics and a 2016 radiocarbon sample date to the Terminal Preclassic/Early Classic period. Below the dirt
The surface was a series of eroded plaster floors that continued to bedrock, which was 75cm below the dirt surface. In all cases, ceramics from the 2016 excavations suggest Late Preclassic dates for the floors. This assessment generally corresponds to Kelley et al.’s (2013:Table 2.1) sequence, although Kelley’s crews reported Middle Preclassic ages for the deepest floors. The radiocarbon dates from the 2016 season align well with Kelley et al.’s (2013:Table 2.1) assessment with Late Preclassic period dates for the upper floors and Middle Preclassic period ages for the deeper floors. The oldest radiocarbon sample determination from charcoal samples taken in the 2016 season, which came from the earliest occupation above bedrock, suggests initial activity as early as cal 911–804 BC (Houk 2016a:Table 1.4).

Additionally, the CCAP investigated the final and penultimate construction stages of the south face of Structure A-1. The excavations determined that the final phase represented a massive Late Classic building campaign as it elevated the building’s platform by 1.1–1.2 meters above the penultimate stage (Houk 2016a). Beneath the Late Classic construction fill, the project encountered what may be a buried Late Preclassic platform (Figure 4). Houk (2016a:11) reports that two radiocarbon samples provided calibrated age ranges that are firmly in the Preclassic period (cal 766–540 BC and 749–407 BC, respectively). Excavations encountered an older plaster surface below this one with an intentional cut through it; the cut penetrated four additional floors, terminating on a fifth. Radiocarbon results date the cut floor to the Late Preclassic period and those below it to the Late Preclassic and Middle Preclassic periods (Houk 2016a:Table 1.4).

Initially, the project planned an additional chronology unit at the corner of Structure A-21 and Structure A-22. The unit ultimately encountered the corner of where the two structures meet and the terminal plaza plaster floor. The collapse debris from Structure A-21 was over 4m deep, hindering further excavations. The project will revisit the unit during the 2017 season. Although the unit was not completed, it confirmed and expanded on a conclusion reached by Herndon and colleagues (2014). The excavations in 2014, which originally exposed the eastern face of Structure A-22, documented an infilled doorway. Excavations in 2016 exposed additional infilled doorways. The excavations revealed three apparent piers and two or three infilled openings. The piers are constructed of larger and cut limestone blocks, while the infilled openings have smaller and less uniform blocks. By infilling the openings, the Maya may have converted a masonry building into a
Aside from chronology building, the 2016 excavations aimed to better understand the stratigraphy in the northern part of the plaza and demonstrated a complicated sequence of construction, demolition, and renovation. Excavations encountered multiple buried walls and platform faces oriented east-west and others north-south, including a section of a slightly battered platform face, which slopes back to the north, and made of cut and shaped stone blocks (Houk 2016a). It appears to be the base of a platform that was truncated during the later plaza expansion (Houk 2016a). To the west of the truncated platform, excavators encountered a crude cyst that contained the partial remains of two individuals. An articulated right leg, an articulated right hand, and an articulated left foot represent the skeletal remains considered part of one individual, but excavators discovered the hand approximately 50cm east of the other elements (Novotny et al. 2016). Novotny et al. (2016:76, 78) conclude that “the degree of articulation of all elements suggests that they were fleshed when deposited and not disturbed during or after decomposition,” and that the remains are likely those of a sacrificial victim. Since the remains of the second individual extended south of the unit, excavators backfilled the partially exposed elements in situ and will excavate the remainder of the burial in 2017 (Houk 2016a).

**Investigations at Norman’s Temple Complex**

The Norman’s Temple complex is a hilltop group approximately 400m west of the Main Plaza. A large artificial platform, which measures 110m north-south by 65m east-west, caps the summit of the hill. The platform is surrounded by low mounds, which were initially suspected to be walls, along its edges. A tightly enclosed, elevated courtyard with restricted access, occupies the center of the platform. The courtyard itself is small, but is home to the largest, unlooted temple at Chan Chich, Structure C-1, which measures 8m tall and forms the western side of the Courtyard C-1. Structure C-2, a 5m tall range building, occupies the northern side, and Structure C-3 defines the eastern and southern sides of the courtyard (Figure 5).

CCAP conducted minor excavations of Courtyard C-1 and the surrounding structures in the late 1990s. Meadows (1998) encountered a moderately dense deposit of artifacts—including a figure fragment, a ceramic whistle, imitation Fine Orange ceramic sherds, and a thin biface fragment—on the surface of the final courtyard floor at the base of Structure C-1 in 1997. Ford and Rush (2000) encountered a smaller artifact deposit that included exotic artifacts such as a partially reconstructable Fine Orange bowl, broken on the steps to Structure C-2. These terminal deposits are likely related to the abandonment of the site (Houk 2016b). The 2016 research interest in the Norman’s Temple complex relates to these above floor artifact deposits, the platform surrounding the group, and the Terminal Classic abandonment of the site. Specifically, the 2016 research design planned to test the possibility that the group was a defensive position for members of the elite class (Booher 2016).
The final architectural form of the Norman’s Temple complex was constructed during the Late Classic period with use through to the Terminal Classic period, although earlier construction sequences were documented. Multiple test pits on the artificial platform revealed that the hill upon which the group sits has an uneven summit with bedrock shallowly buried in the north courtyard (Courtyard C-4) and covered by as much as 1.77m of fill in the south courtyard (Courtyard C-5). Excavators exposed a single, Late Classic period construction sequence for Courtyard C-4. In Courtyard C-5, excavators documented multiple construction events that took place throughout the Late Classic period and perhaps earlier, gradually raising the level of the platform (Booher 2016).

Initially, Structures C-5 and C-14 were mapped as a 2m wide wall-like feature in 1996, and it was hypothesized that the wall functioned as a defensive feature. Clearing and excavations of the structures revealed a 4- to 5-m wide, 30cm high platform, or series of discontinuous platforms, that almost completely encircles the complex (Booher 2016). In some places, the platform supports a low, 1-m wide masonry wall near the edge of the platform. Penetrating excavations into the southern side of the platform documented two phases of construction, the earliest dating to Tepeu 1 (early Late Classic period) and the second phase dating to Tepeu 2 (Late Classic period). Tepeu 3 ceramics in the topsoil above the platform indicate a continued use of the platform into the Terminal Classic period. The function of the platform and its summit wall remain unclear. Excavations did not uncover any evidence that Structures C-5 and C-14 were defensive in nature.

Based on the excavations in the late 1990s, which encountered above floor artifacts at the base of Structure C-1 (Meadows 1998), the 2016 work opened a new unit on the eastern face of the mound. Excavations this season did not uncover similar artifact deposits, although they successfully exposed portions of four badly preserved final-phase steps to the building.

Previously unplanned excavations at the base of the southern portion of Structure C-3 did encounter a dense terminal artifact deposit. The excavated portion of the 30cm thick artifact deposit extended 2.5m east-west along the platform face of the structure by 1.2m north-south. Excavations recovered a substantial amount of artifacts including ceramic sherds, a ceramic pendant, part of a ceramic whistle, obsidian blades, lithic tools, a polished stone celt, modified shell, faunal remains, and ground stone artifacts (Figure 6). The terminal artifact deposit is likely associated with the...
abandonment of the complex. The deposit is similar in composition to the deposits excavated in the late 1990s at Norman’s Temple (Meadows 1998; Ford and Rush 2000), however the densities of the deposits differ. The artifact deposit discovered in 2016 is much more dense and similar to deposits excavated at Dos Hombres (Houk 2000) and more recently at Baking Pot (Helmke et al. 2016).

Excavations on Structure C-2 exposed the western end of a collapsed room on the southwest corner of the building. The room’s bench contained a Late Classic burial (Burial CC-B15), and excavators discovered ancient Maya graffiti (Figure 7) on the preserved plaster on the western and northern walls in the room (Booher 2016). Due to poor preservation of the graffiti, it is difficult to identify specific elements confidently (Booher 2016).

**Regional Investigations (BEAST)**

**Unmanned Aerial Vehicle Surveys**

As part of our regional investigations, BEAST proposed to map the approximately 14 km² of cleared pastureland to collect data on rural settlement size and density (see Figure 1). It was hypothesized, in the case of Laguna Seca, there would be a high potential for ancient Maya agricultural fields to be present in the lagoon or around its margins (Willis 2016). Beach and colleagues (2013) documented raised or ditched fields to the east of the permit area at the base of the Booth’s River and Rio Bravo Escarpments. The project employed a MultiSpek Near-Infra Red (NIR) digital camera during the survey of Laguna Seca to aid in the search for ancient Maya agricultural fields (Willis 2016).

Mark Willis successfully mapped 14 km² of pastureland and 4.8 km² of lagoon and lagoon margins. Willis previously surveyed cleared agricultural fields at the site of Saturday Creek and discovered hundreds of ancient Maya house mounds (see Harrison-Buck et al. 2015), however the survey of Gallon Jug’s pasturelands discovered very low settlement density (Willis 2016). The drone survey documented only a few courtyards and mounds, several of which were mapped during the 2014 drone work (see Sandrock and Willis 2014), in the surveyed area (Willis 2016). The courtyard and mound structures occupy the summits of the hills that characterize the terrain of the pastures. Our results mirror that of Jason Yeager’s (1991) results from a 1990 pedestrian survey of a portion of the BEAST survey area. Yeager (1991:92) noted that indications of settlement, floors, and artifact scatters “were clustered on ridges and hilltops, while the low-lying areas were generally devoid of archaeological material.” Yeager’s (1991:92) conclusion that the hilltops offered better drainages and breezes, while the flat low-lying areas had better agricultural potential, is entirely reasonable as modern settlement and land use follow similar patterns.

Additionally, the drone data documented the bed of the historic logging railroad that once connected Gallon Jug to Hill Bank (Willis 2016). Unfortunately, the NIR data collected at Laguna Seca did not reveal any agricultural fields. The only anomaly noted is a linear feature running due north-south near the northeastern end of the lagoon, which proved to be the recently cleared property line between Gallon Jug Ranch and Laguna Seca Ranch (Willis 2016).

**Kaxil Uinic Village**

The 2016 season marked the second season of archaeological investigations at Kaxil Uinic village, which was settled by San Pedro Maya in the 1880s, located west of Chan Chich. In 2015, BEAST identified and sampled 36 surface scatters of historic artifacts and completed nine excavation units. Artifacts visible on the ground surface and collected from excavation units included numerous glass bottles, small cosmetic jars, medicine bottles, metal cooking utensils, chiclero equipment, imported metal corn grinders, a lantern, parts of a cart wheel, and more modern items likely associated with individuals who camped at the village site in 1980s (Bonorden and Kilgore 2015). Seven three-stone rock clusters characteristic of Maya hearths were also discovered, which usually represent the center of Maya dwellings, so it is likely each hearth represents a household (Bonorden 2016).

At the end of the 2015 field season, Bonorden had surveyed approximately 25 percent of the site, and even a smaller
percentage of the site was excavated. The 2016 season excavated additional three-stone hearths, investigated several cobble mounds to determine if they are ancient Maya constructions with historic reoccupation or if they are entirely historic Maya platforms, and excavated control units away from surface artifact scatters (Bonorden and Kilgore 2016).

As an initial step, a square transect was cut around the aguada at the site to facilitate survey and mapping of the historic village (Figure 8). Surveying the transect discovered an additional 20 surface artifact scatters, three more three-stone hearths, one multi-stone hearth, and four previously undocumented mounds, including Structures 1 and 2, which form Courtyard 1 (Bonorden and Kilgore 2016).

Excavators placed four control units in areas devoid of surface artifacts and encountered buried cultural material in all of them, which is in line with Ng’s (2007) findings at Holotunich. One control unit discovered an apparent chiclero activity area, yielding machetes, part of a shotgun, chiclero spurs, and chicle pots. Based upon the manufacturing age ranges of associated shotgun shells, Bonorden and Kilgore (2016) attributed the activity area to the San Pedro Maya occupation and not more recent chicleros.

Excavations of the three stone hearths encountered evidence of recent overprinting and disturbance. Two hearths located in the southwest area of the site encountered fairly recent debris around and below the hearth stones, which are likely associated with looters who occupied the site in the 1980s, indicating the features are either modern or disturbed. Two hearths produced results with evidence of colonial Maya domestic activities and associated house floors (Bonorden and Kilgore 2016).

Excavations on two prehistoric Maya mounds and the floor of Courtyard 1 determined the constructions are prehistoric platforms.
and/or buildings that had collapsed long before
the San Pedro settled around the aguada. There
is evidence that the San Pedro Maya reoccupied
or at least re-used the prehistoric features as
evidence of historic artifacts in the topsoil
around the mounds (Bonorden and Kilgore
2016).

Excavations at Kaxil Uinic village
concluded that the San Pedro Maya were never
fully integrated into the British colonial
economy. The San Pedro Maya interacted with
the colonial agents including loggers, chicleros,
and government officials as needed to acquire
imported goods and cash. Until they were
forcibly removed from their homes, the villagers
at Kaxil Uinic remained largely autonomous,
socially, politically, and economically. Religious artifacts (Figure 9) collected from
Kaxil Uinic village suggest that the inhabitants
practiced a syncretized version of Catholicism
observed historically and archaeologically at
other San Pedro Maya villages (Bonorden and
Kilgore 2016).

Summary

The 2016 season of the CCAP
successfully addressed several of its research
goals. Excavations along with radiocarbon
analysis added to our overall understanding of
the complex construction sequence of the plaza.
With additional work, it will be possible to
produce a high-resolution chronology for the
plaza’s construction history. Additionally,
excavations revealed a series of buried features
and deposits in the northern part of the plaza that
may date to the time of the founding of a royal
dynasty at the site (Houk 2016).

Excavation of the “wall” surrounding
Norman’s Temple complex actually proved it to
be a series of low platforms. Excavations did
not find any evidence that the platform was built
or served as a defensive feature. The function of
the platform and masonry wall near the edge of
the platform remains unclear. The terminal
artifact deposit at the base of Structure C-3 is
associated with the abandonment of the
complex. Additional excavations are planned
for the rooms on Structure C-2 to expose more
graffiti and for the terminal deposit at the base of
Structure C-3.

As part of our regional investigations,
 drone survey conducted by BEAST successfully
mapped 14 km² of pastureland and 4.8 km²
around Laguna Seca. The survey identified
hilltop courtyards and mound structures within
the pastureland and identified the bed the
historic Gallon Jug-Hillbank logging railroad.
Unfortunately, the drone data collected at
Laguna Seca did not reveal any agricultural
fields.

Investigations at Kaxil Uinic village
successfully surveyed and mapped a larger part
of the site, which lead to additional discoveries
of surface artifact deposits, three-stone hearths,
and prehistoric mounds. Based upon the
excavations, it appears the villagers of Kaxil
Unic turned to wage labors as chicleros to
participate in the cash economy of British
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EXTENT OF BRINE ENRICHMENT FOR SALT PRODUCTION AT THE ANCIENT MAYA PLACENCIA LAGOON SALT WORKS, BELIZE

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The Placencia Lagoon Salt Works in southern Belize are examined based on 2015 field work, building on previous research by Dr. J. Jefferson MacKinnon. The salt works have earthen mounds that are discarded soil from the process of enriching brine by pouring salty water through salt laden soil prior to evaporation over a fire. At Sacapulas in the highlands of Guatemala and elsewhere, the salt content of brine is enriched by pouring salty water through salty soil prior to the evaporation process—in order to reduce fuel consumption. The Placencia Lagoon Salt Works are compared with other known salt works including the well-established Paynes Creek Salt Works where earthen mounds are scarce. Only two of the Paynes Creek Salt Works have earthen mounds, since the other salt works were submerged by sea-level rise and any earthen mounds would have been deflated by wave action. However, earthen mounds are plentiful at the Placencia Salt Works. Analysis of the earthen mounds provides new insights into salt production in the area and provides an indication of the ancient extent of brine enrichment.

Introduction

Eight ancient Maya salt production areas are part of the Placencia Lagoon Salt Works located along the western shore of Placencia Lagoon, Belize (Figure 1). Previous investigations directed by the late Dr. J. Jefferson MacKinnon as part of the “Point Placencia Archaeological Project” indicates these sites were salt works that produced salt for trade to inland cities where salt was scarce (MacKinnon and Kepecs 1989). The Placencia Lagoon Salt Works are part of a Classic period (A.D. 300-900) salt industry along the coast of Belize that began in the Early Classic (A.D. 300-600) and expanded during the Classic period to meet the dietary need and appetites of the interior Maya. The salt industry along the coast of Belize was abandoned at the end of the Classic period coinciding with the abandonment of the inland cities. There is an extensive scale of salt production along the coast of Belize from Northern River Lagoon (Valdez and Mock 1991), to the Colson Point sites (Graham 1994), Marco Gonzalez on Ambergris Caye (Graham and Pendergast 1989), Moho Cay (McKillop 2002), the Placencia Lagoon Salt Works (MacKinnon and Kepecs 1989; Sills 2016) and the Paynes Creek Salt Works (McKillop 1995; 2002; 2005; McKillop and Sills 2016; Sills and McKillop 2010, 2013; Watson et al. 2013). Often the only visible expression of salt production on the environment, the earthen mounds aid in the interpretation of the ancient extent of brine enrichment in the Maya area.

Enriching Salt Content in the Maya Area

Coastal areas are dynamic environments that undergo constant change through tides, waves, sediment accumulation, tropical storms, and hurricanes. In addition to natural impacts, human use of coastal areas for settlement, recreation, and subsistence activities have created anthropogenic impacts to the
Figure 1. Map showing location of Placencia Lagoon Salt Works in Belize. Left image is of the north part of the lagoon and right image is of the south portion of the lagoon.

environment. The importance of the coast for the ancient Maya has been the focus of numerous investigations (Andrews 1990; Guderjan and Garber 1995; Hamblin 1985; Healy et al. 1984; McKillop 1984, 1996, 2002, 2005; McKillop and Healy 1989). The ancient Maya acquired many goods including fish, turtle, shell, sting ray spines, and salt from coastal environments. The Placencia Lagoon salt makers utilized a salt water lagoon to produce salt, a geographically restricted resource. Activities such as cutting of trees for fire to evaporate salt in pots over fires, the discard of leached soil that form earthen mounds, and the construction of buildings to house salt production left impressions on the environment (Andrews 1983; MacKinnon and Kepecs 1989; Reina and Monaghan 1981; Sills and McKillop 2010; Sills 2016; Watson et al. 2013).

Salt is made using two methods, both common in the Maya area and within Mesoamerica. Each method leaves specific artifacts, site organization patterns, and visible expressions in the archaeological record. These two methods are solar evaporation and the briquetage method. Solar evaporation uses the sun to evaporate salty water to make salt and is commonly found along the northern coast of the Yucatán (Andrews 1983). Visible expressions left behind on the environment include the borders of shallow drying pans and tools such as rakes. The briquetage method is a technique of salt production where salty water is evaporated slowly in pots over fires to make salt. Visible expressions left behind in the archaeological record and the environment include charcoal from the fires to evaporate salty water, the outlines of buildings such as the wooden architecture preserved in mangrove peat at the Paynes Creek Salt Works, earthen mounds, and briquetage—the broken bits of pottery (MacKinnon and Kepecs 1989; McKillop 2005; Robinson and McKillop 2014; Sills and McKillop 2010; Watson et al. 2013).

At the coastal salt works of Placencia Lagoon and Paynes Creek, salty water from the lagoon system or ocean was enriched by leaching through salt laden soil/sediment. The source of the soil/sediment was acquired from the sea floor. Salt enrichment has been documented through ethnographic analogs at the site of Sacapulas, Guatemala (Reina and Monaghan 1981), Coasta Chica, Mexico (Good 1995), and at Nexquipayac, Mexico (Parsons 2001). The process of salt enrichment begins by
excavating the soil/sediment and placing the soil/sediment onto a raised platform with holes in the bottom that is lined with material to filter the salty water. Underneath the platform is a collection apparatus. Salty water is then poured on top of the soil/sediment, drains through the material to filter any debris, and is collected below. This process can be repeated many times until the desired salinity is acquired. The collected salty water is then evaporated slowly over a fire until no more water remains. This process is well documented from the salt works at Sacapulas (Reina and Monaghan 1981), and at Nessequiyac (Parsons 2001). The leached soil/sediment is discarded along with broken bits of briquetage that form earthen mounds.

Numerous earthen mounds that are left over from the salt evaporation process are located at the Placencia Lagoon Salt Works. All seven terrestrial sites contain earthen mounds. The only exception is the submerged salt work which likely contained earthen mounds in the past but have been deflated due to erosion caused by sea-level rise. More than 100 of the Paynes Creek Salt Works have also been submerged due to sea-level rise (McKillop 2002). Currently, there are only two sites, Witz Naab and Killer Bee, that are terrestrial with earthen mounds (McKillop 2002; Watson et al. 2013). Both the Paynes Creek and Placencia Lagoon Salt Works use the same method of brine enrichment and briquetage indicating a shared technology among coastal peoples in this area.

Investigations at the Placencia Lagoon Salt Works

The Placencia Lagoon Salt Works are accessible only by boat along the western shore of Placencia Lagoon (Figure 2). The vegetation consists of red mangrove (Rhizophora mangle) black mangrove (Avicennia germinans), white mangrove (Laguncularia racemosa), and Palmetto palms (Acceloracea wightii) (Figure 3). The shoreline is inundated daily by tides.

The Placencia Lagoon Salt Works consist of seven sites with earthen mounds (Pl-3, PL-10, PL-14, PL-32, PL-34, PL-36, and PL-37) located along the western shore of Placencia Lagoon and one submerged salt work (PL-7) (MacKinnon and Kepecs 1989) (see Figure 1).
briquetage. Charcoal obtained from the test excavations on the earthen mounds was radiocarbon to the Late to Terminal Classic period. This timeframe corresponds to the Paynes Creek Salt Works. However, salt production began during the Early Classic at the Paynes Creek Salt Works (Sills and McKillop 2013). During the Classic period, these salt works were optimally positioned near the source of salty water required to evaporate in pots over fires to make salt. More permanent settlements associated with the Placencia Lagoon Salt Works were likely located on Placencia peninsula, off-shore cays such as False Caye and Placencia Caye, and at inland city centers such as Alabama, Nim li Punit, and Lubanntun.

In 2015, the earthen mounds at PL-14 were assessed to evaluate any impact from development, looting, and Hurricane Iris that made landfall nearby in 2001 (Sills 2016). The earthen mounds at PL-14 are located in both inundated and well-drained land. The current use for the property is a garden nursery that supplies developments on the peninsula with ornamental plants. An original map from the previous excavations developed by Dr. MacKinnon was used to relocate the earthen mounds. All relocated earthen mounds were recorded using a Garmin handheld Global Positioning System. Mounds 4 and 5 could not be relocated due to dense vegetation. Artifacts were collected only from the surface. No subsurface testing was conducted.

All of the relocated earthen mounds range from 1 to 1.5 meters (m) in height. Mound 1 is currently being used as a platform for a storage shed. Mounds 2 and 3 are located near the coastline and surrounded by mangroves and palmetto palm. These earthen mounds become partially inundated during high tide. Briquetage is visible on the surface. A large tree fall on Mound 2 exposed the side of the earthen mound showing a sandy clay soil with briquetage as described by MacKinnon and Kepecs (1989). Briquetage was visible embedded in tree roots (Figure 5).

Mounds 6, 7, and 8 are clustered 200 m to the northwest of Mound 1 and further inland than the other earthen mounds (Figure 6). These mounds are spaced apart by 20 to 30 m and do not form a plazuela group. Ornamental trees including coconut palm trees, avocado trees, breadfruit trees, and mango trees are planted in this area.

Artifacts on the Ground Surface at PL-14

Artifacts associated with salt production were recovered and noted on the surface at PL-14. These artifacts include jar and bowl rims that are smooth on the interior and rough on the exterior. One jar rim has a square grooved lip that is time sensitive to the Terminal Classic. Other salt making artifacts include clay cylinder vessel supports all of which are broken with a few complete ends. Clay sockets, that adhere the clay cylinder vessel supports to the pots, were recovered as well. There was a plethora of unidentified pieces of briquetage known as amorphous clay lumps noted on the surface (Figure 7).
Salt production artifacts are known as briquetage which consists of jars, basins, and bowls that were placed onto clay cylinder vessel supports, inserted into clumps of clay bases with clay sockets placed at the top of the vessel support and connected to the pot. Clay spacers were placed between the pots to ensure standardization and to steady them over the fire to evaporate the salty water to produce salt cakes. Amorphous clay lumps are the broken pieces of cylinders, sockets, spacers, and bases, as well as other salt making debris that cannot be typed to their original form. This technology is commonly found at salt production sites in Mesoamerica including the Paynes Creek Salt Works and at Sacapulas (McKillop 1995, 2002; Reina and Monaghan 1981).

Previous excavations by MacKinnon and Kepecs (1989) report minor amounts of artifacts such as fishing weights, spindle whorls, and stone tools typically found at Maya settlements indicating that additional activities in addition to salt making activities occurred. However, there was not an abundance of household artifacts. Excavations at the Paynes Creek Salt Works have yielded an abundance of briquetage with minor amounts of artifacts suggesting additional activities similar to what was recovered at the Placencia Lagoon Salt Works (McKillop 1995, 2002; Sills and McKillop 2010, 2013).

At two sites, Chan b’i and Atz’aam Na excavated at the Paynes Creek Salt Works, approximately 85% of all artifacts recovered were briquetage with minor amounts of water jars and finer ware (Sills and McKillop 2013). All of the salt making artifacts were typed according to the type-variety for salt production established for southern Belize (McKillop 2002). Punta Ycacos Unslipped is the primary type used for briquetage and is smooth on the interior and rough on the exterior. Mangrove Unslipped and Warrie Red are water jars and Moho Red, also known as Belize Red, are finer ware. Using the ceramic assemblage at Chan b’i and Atz’aam Na as a comparison, the Placencia Lagoon Salt Works likely engaged in the single activity of salt production and was not involved with a household workshop. Instead, artifacts such as fishing weights and spindle whorls were associated with additional activities such as fishing and spinning fabric that occurred while the main activity of salt production was taking place.

Discussion

The production of salt is often viewed as part of the household economy where salt is produced for household and not for market (Netting et al. 1984; Reina and Monaghan 1981). The household economy is juxtaposed by workshop production where goods and services are manufactured by a group for use outside of the household by others (Emery and Aoyama 2007; Inomata 2001; Shafer and Hester 1983). Both types of production, household and workshop, are connected to the greater economy by the distribution and consumption of goods and services (Costin 1991). The Placencia Lagoon Salt Works are indicative of workshop production that produced salt for distribution similar to the Paynes Creek Salt Works.

The Belize model of salt production developed for the Paynes Creek Salt Works is useful for evaluating salt production at the Placencia Lagoon Salt Works (McKillop and Sills 2017). This model depends on the following criteria which includes (1) the scale of production; (2) the number of salt works; (3) the infrastructure of production; and (4) the infrastructure of distribution. The scale of production is evaluated based on the degree of craft specialization in salt production such as standardization of pots to evaporate salt and the conformity of workshops in terms of architecture. The scale of production is currently unknown for the Placencia Lagoon.
Salt Works. However, the salt works have a shared technology to the Paynes Creek Salt Works. The number of workshops simply refers to the density of salt production locations in a small geographical area. There are at least eight salt workshops along the western shore of Placencia Lagoon. This is considerably less than the 100 or more salt works in Paynes Creek.

The infrastructure of production refers to the establishment or investment of significant infrastructure such as buildings and/or structures. The establishment of permanent shelters or buildings could indicate that salt production at the Placencia Lagoon Salt Works was occurring indoors as at Sacapulas in Guatemala and Nexquipayac in Mexico (Parsons 2001; Reina and Monaghan 1981) and at the Paynes Creek Salt Works with the discovery of wooden buildings associated briquetage (McKillop 2005). The addition of infrastructure indicates that salt could have been produced year round at the Placencia Lagoon Salt Works and not just in the dry season as proposed by McKinnon and Kepecs (1989). There is no evidence of wooden buildings at Placencia Lagoon like those at Paynes Creek since the environmental conditions that preserved the wooden architecture are different. This does not mean that wooden buildings did not exist, just that they did not preserve in the sandy soil. The investment of permanent structures does not indicate that the Placencia Lagoon salt makers were living at their salt works. Instead, based on ethnographic records the salt makers likely resided away but near their salt works (Reina and Monaghan 1981; Williams 1999). Possible locations include the Classic period settlements on Placencia Peninsula. Also, as with the Paynes Creek Salt Works, the Placencia Lagoon Salt Works do not form plazuela groups. The earthen mounds are aligned to follow an ancient shoreline near the source of salty water needed to evaporate in pots over fires to make salt (Sills and McKillop 2013).

Finally, the infrastructure of distribution refers to where the finished product of salt was traded or distributed. Evidence of a canoe paddle recovered from the Paynes Creek Salt Works suggests salt was transported by river and sea (McKillop 2005). Evidence of where salt produced at the Placencia Lagoon Salt Works was distributed or traded is lacking. Nearby cities such as Alabama, Nim Li Punit, and Lubaantun are likely candidates and clearly would have benefitted from the localized production of salt. Ongoing analysis of pottery from the salt works will clarify the infrastructure of distribution at the Placencia Lagoon Salt Works.

Conclusion

PL-14 was one of many salt production sites located on the coast that developed during the Classic period to meet the needs and demands for salt by the inland Maya. The Placencia Lagoon Salt Works and the Paynes Creek Salt Works share numerous similarities such as a similar salt water lagoon environment, shared salt-production artifacts such as clay vessel supports, socket, spacers, bases, and amorphous clay lumps. Both sites have earthen mounds, even though they are limited at Paynes Creek as sea-level rise submerged the mounds and they were deflated by wave action. The only difference between the two is the absence of preserved wooden architecture. Wooden buildings for salt production may have been constructed in open spaces between earthen mounds. Future research will include off-mound excavation to evaluate the spatial extent of production at the Placencia Lagoon Salt Works.

Today, Placencia peninsula is a growing Caribbean tourist destination. The impacts of tourism on the infrastructure of this coastal area are many including road construction, dredging of the Placencia Lagoon for fill, mangrove removal and beach stabilization for residential and commercial construction. These various activities have damaged or destroyed many of the smaller Maya settlements recorded by Dr. MacKinnon and others on the peninsula. Norwegian Cruise Lines has constructed a tourist welcome center on Harvest Cay, located at the mouth of the lagoon near Placencia Village that recently began receiving visitors. In contrast, at this time the western shore of the lagoon, where the salt works are located, has received little development except for shrimp farms. However, this is expected to change as more land is developed, especially water front property. Unfortunately, the salt production
sites will be destroyed in due time as development extends to the western portion of the lagoon.

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25 **DIVING DEEPER IN PUNTA YCACOS LAGOON AT THE PAYNES CREEK SALT WORKS, BELIZE**

Heather McKillop, Thomas and Lillian Landrum

Underwater archaeology in Paynes Creek National Park is discussed within a framework of other investigations by the author of submerged archaeological sites in the nearby Port Honduras Marine Reserve, both in the Toledo District of southern Belize. A survey of research at underwater Maya sites elsewhere in Belize, Guatemala, and Mexico reveals a focus on cenotes and caves, shipwrecks, and inland lakes. Since Edward Thompson’s dredging of the Cenote of Sacrifice at Chichen Itza in the early 20th century, investigation of submerged cultural deposits has advanced to using free-diving, scuba diving, systematic survey on Research Flotation Devices (RFDs), and the Airline system with a gas-powered compressor forcing air through air hoses to divers for the Paynes Creek Salt Works. A case study using the Airline System focuses on underwater salt works with wooden architecture, briquetage (salt-making pottery), as well as large oyster shell deposits. The sites were in water too deep for RFD flotation survey, but the Airline system allowed divers to stay at the sea floor and investigate and excavate five of the sites with shell deposits. With global climate change causing submergence of low-lying areas due to sea-level rise, increased attention to underwater archaeology is anticipated.

**Introduction**

With global warming and the inundation of low-lying coastal areas along the Belize coast and elsewhere around the Yucatan, the potential for underwater Maya archaeology of submerged sites is increasing. Coastal Maya sites known to have submerged components include Isla Cerritos (Andrews et al. 1988), Cerros, Moho Cay by Belize City (now destroyed), Wild Cane Cay, Frenchman’s Cay, and Pork and Doughboy Point (Figure 1). Some of the sites were submerged by sea-level rise in antiquity. The response of the ancient Maya to this climate change varied: Pelican Cay, a small settlement near Wild Cane Cay, was abandoned and now is buried below mangrove peat and below the water (McKillop 2002: 156-159; Figs 5.5-5.6). The Maya on Wild Cane Cay and Frenchman’s Cay built stone platforms for perishable structures (McKillop 2002: 154; McKillop 2005a). Underwater sites with no dry land component are common in Punta Yucacos Lagoon in Paynes Creek National Park (McKillop 1995; 2005b), underwater wooden buildings are arranged in linear patterns that may represent ancient shorelines (McKillop 2010). The buildings were located adjacent to the salty lagoon waters for making salt. However, as sea-level rose, buildings were flooded and new structures were built farther from the water.

Survey and excavation underwater present challenges not experienced on dry-land research, but can reveal well-preserved organic material not normally found on land sites, as well as shipwrecks and submerged terrestrial sites that expand our knowledge of the past. In addition, underwater sites are protected from many post-depositional site transformation processes, so the artifacts are larger. Some underwater sites, such as Port Royal in Jamaica (Hamilton 2008), which was submerged rapidly by an earthquake in 1692, so the material is preserved in situ.

Underwater sites in the Maya area have been investigated, mainly using scuba gear, and most in Mexico, including cenotes, submerged land sites, and shipwrecks (Gonzalez et al. 2008; Leshikar-Denton and Luna 2008). The first underwater Maya research—dredging of the
Cenote at Chichen Itza by Edward Thompson between 1904 and 1911-included offerings thrown into the cenote that were recovered in good condition, including metal, wood, and copal (Coggins 1992). Cenotes in Belize at Cara Blanca (Lucero et al. 2011) and in the Yucatan of Mexico (Luna 2008, 2013; Rojas et al. 2008) have been investigated by teams of scuba divers. A freshwater lake in central Mexico yielded organic material dating to the Postclassic (Junco 2009). The underwater archaeology branch of INAH has documented shipwrecks and other historic underwater finds off the coast of Quintana Roo and worked with other groups, making underwater archaeology in Mexico more scientific and organized since about 1980 (Carrillo 2012; Galindo 2008; Irion 1980; Leshikar-Denton and Luna 2008; Luna 2008:57; Meehan and Trejo 2008; Moya 2008). A major problem is treasure-hunting at underwater sites in Campeche, Yucatan, and at freshwater lakes (Luna 2013).

A number of inland lakes have been the subject of underwater archaeology in Guatemala. Divers began investigating Lake Amatitlan, a freshwater lake in the highlands of Guatemala, in 1959, recovering many pottery objects suggesting ritual (Borhegyi 1959). Borhegyi also worked on Cenote Azul in 1969 and 1979 where dredging and pumps were used to recover material, as well as at other inland lakes. More details on the work are available in a summary of underwater archaeology in the Maya area (Andrews and Corletta 1995). More recently, Samabaj, 50 feet below the water surface in Lake Atitlan, Guatemala (possibly submerged in the Early Classic by an earthquake), has been investigated using scuba equipment (Grainge 2009).

Some underwater Maya sites in Paynes Creek National Park and Port Honduras Marine Reserve are in shallow water, which makes mapping and excavation difficult due to the close proximity of the site and lack of room for maneuvering. Depending on the matrix of the sea floor, shallow underwater sites have been excavated using land-based methods. Underwater sites with land components were excavated using lines of shovel tests measured using a survey instrument, in order to define the ancient size of the sites. For example, the offshore area around Wild Cane Cay was excavated by 170 shovel tests in arbitrary 20 cm levels to a maximum depth of 1 m below the sea floor (McKillop 2002: Map 5.4, 5.6). Shovel-testing was possible since the marine sediment was firm mangrove mud and peat. Offshore shovel tests were also used at Frenchman’s Cay, Green Vine Snake, and Tiger Mound site in the Port Hondurans (McKillop 2002). Offshore 1x1 m excavation units were used at Pork and Doughboy Point, a technique that confirmed that the offshore deposits were in situ and were not the result of re-deposition from shoreline erosion (McKillop 2002: 160, Fig 5.7, Map 5.9).

Land-based excavation methods were used in Punta Ycacos Lagoon before the discovery of wooden buildings below the sea floor. Shovel tests at the David Westby site (McKillop 2002: Fig. 2.15, Map 2.3), as well as 1x1 m excavation units were carried out at Stingray Lagoon (McKillop 1995) and Orlando’s (McKillop 2002: 42, Figs. 2.19-2.24). Depths were maintained by measuring from the water surface to the sea floor. Shovels were used to excavate into screens, with material screened in the sea off site. Excavations were carried out as if the water was not present, with teams standing in the water, shoveling into screens, screening, and mapping with a survey instrument in the water.

Techniques changed from land-based to underwater archaeological methods in Punta Ycacos Lagoon with the discovery of the wooden architecture in 2004 (McKillop 2005b). Shallow underwater sites are known as difficult to investigate due to the lack of distance between the diver and site (Green 2004). Underwater techniques were modified for Punta Ycacos Lagoon. Traversing Punta Ycacos Lagoon on Research Flotation Devices (RFDs) works well in shallow water for discovering, mapping, and excavating underwater sites. The snorkeling archaeologists are able to locate wooden posts and artifacts on the sea floor through the water, by reaching out to touch potential finds, and mark the locations of finds (McKillop 2005b; Sills and McKillop 2010). Several underwater sites had been located by free-diving to a depth of 7 feet, but with no success in relocating posts or mapping finds. Beginning in 2015, deeper underwater sites were found and excavated using
the Airline system of air forced through hoses from a gas-powered compressor. This system is ideal also for deep excavations at shallow-water sites in order to stay underwater. The system also will be used to continue survey at sites in the main channel of Punta Ycacos Lagoon that extend into deeper water. The Airline system of diving using hoses has a long history of use in Historical archaeology. For example, this system was used at the Jamaican port city of Port Royal (Hamilton 2008: Fig. 16.4). A modified system known as “snuba” is popular for tourism diving.

The advantage of the Airline system is that it is low-tech, not dependent on refilling dive tanks, is energy-efficient since little fuel is needed to operate the compressor, and the system can be transported on airlines as luggage since it weighs about 50 pounds. An added advantage is that divers are limited by the length of the air hose, so wandering is limited. Although the underwater Maya team used the Airline system in relatively shallow water, divers can go beyond the 30 foot depth where it may be necessary to decompress before rising to the water surface, underscoring the importance of scuba certification.

Diving Deeper for Salt

The ancient Maya, like other ancient civilizations, were based on carbohydrate staples in their diet that were deficient in basic daily salt requirements. Salt production was an industry with infrastructure for the production and distribution of this commodity, as indicated by excavations at the Paynes Creek Salt Works, where wooden buildings with salt production equipment were preserved in a mangrove peat below the seafloor and a wooden canoe and canoe paddle were recovered (McKillop 2015, 2017; McKillop and Sills 2016, 2017; McKillop, Sills, and Celluci 2014; Sills and McKillop 2010, 2013). Several of the deeper-water sites had large deposits of mangrove oyster shells, as well as wooden posts defining buildings, and briquetage, so we knew the sites were salt works. The presence of large shell deposits, lacking at the shallow-water sites, apart from a shell lens at the Eleanor Betty site, was perplexing: Were the shell deposits natural deposits or were they cultural middens? Were they contemporary with the salt works or later deposits? Since none of the pottery was shell-tempered, the presence of shell deposits left the possibility that the shell was used for food or an undefined crafting activity.

Several deeper-water salt works had been discovered but not investigated more than free-diving to identify that briquetage and wooden posts were present. In 2003, pedestrian survey revealed shell middens at the Schmidt Site (site 63) and Mudshell (Site 65), in the main channel of Punta Ycacos Lagoon. Return survey to the Schmidt site in 2007 revealed wooden posts. A grab sample of shells from the surface of the underwater shell deposit were identified as mangrove oysters (Crassostrea rhizophora, Figure 2). Free-diving in 2008 revealed deeper-water shell middens near islands in the main channel, identified as Sites 98, 99, and 100 (Figure 3). Briquetage was found at all the salt works, with figurine whistles also found at the Schmidt Site.

The presence of large shell deposits also raised the possibility of preservation of human bones in burials and animal bones in midden deposits, both lacking in the acidic mangrove peat at the shallow-water sites that had preserved wooden posts and other wooden artifacts. Since human burials and animal bones are typically found associated with Maya residences, searching in a location conducive to preservation of bone was important for determining the kind of workshop—residential or independent. The calcium carbonate in the shell may have made the sediment matrix more alkaline, thus providing an ideal location for bone preservation.

The question of whether the salt works were residential or independent workshops was a continuing discussion based on several lines of evidence (McKillop 2010, 2015, 2017). Evidence against household workshops was the lack of burials or animal food remains, as well as a lack of diversity of pottery shapes and types. In fact, the bulk of the pottery was briquetage: broken pots used in the evaporation of brine over fires to make salt (McKillop 2002). Additional pottery included two types of water storage vessels that could have been used to collect and store brine before it was evaporated and also to store loose salt after the brine evaporation.
Diving Deeper in Punta Ycacos Lagoon

Figure 2. Photo at the Schmidt Underwater site showing a grab sample of oysters from the shell deposit.

Figure 3. Oblique Air View of the Main Channel of Punta Ycacos Lagoon showing locations of underwater sites excavated in 2015. Photo by H. McKillop.

process. Mangrove Unslipped includes large, round-side jars with outcurving walls, direct rims, and square lips often with a single groove. They are calcite-tempered, so not made in the immediate lagoon system, where sand temper is available. The other kind of water storage vessel is Warrie Red, which is a red-slipped jar with a distinctive outcurved wall and direct rim, often round. Warrie Red jars often have “unit-stamped,” comb-stamped, or other impressed decorations around the shoulder of jars. The decorations include monkey motifs similar to Lubaantun vessels, but also more abstract motifs similar to sites in the Petex-batun and Pasión area of adjacent Guatemala at such sites as Seibal and Altar de Sacrificios. The pots are calcite-tempered and more finely made than Mangrove Unslipped pots.

Apart from the pottery associated with brine evaporation (briquetage and water jars), there is a minor amount of red-slipped, ash-tempered open serving bowls, as well as ocarinas. The serving bowls are designated Moho Red, but are identical to Belize Red pottery from the Belize Valley and Caracol. The figurine whistles include mold-made figures of ball players and also women with infants or children. They resemble ocarinas from Lubaantun. As an ensemble, the ocarinas and serving vessels, which were concentrated at some salt works, may have been used in a salt ritual at the opening of the salt season, as occurs in modern salt works.

If the salt works were not residential, where did the salt workers live and did they commute daily, perhaps on a seasonal basis, or year-round to the Paynes Creek Salt Works? The possibility that the Paynes Creek Salt Works was an intensive, year-round activity is supported by several lines of evidence: Measurements of the briquetage indicated it was standardized in dimensions, suggesting mass-production of the product, salt. The statistic, average median variation (AMV) was used to record the variation from a median value. This statistic is better than the coefficient of variation (CV) which often is used, but is not good for many archaeological samples that have outliers or do not have a bell curve distribution of measurements. Using the average median variation, briquetage was found to be standardized, but also there were statistically significant differences among some of the salt works, suggesting work parties made the salt production pottery and then made the salt at the Stingray Lagoon site, David Westby Site, and Orlando’s Site (McKillop 2002: Table 4.4).

Further supporting evidence for intensive, year-round salt production at the PCSW was the infrastructure for production and distribution of salt: Salt was mass-produced inside wooden
buildings, where storage of wood fuel, brine in pots, loose salt, salt cakes, and other equipment could be safely stored (McKillop 2005b, 2015). The salt content of the brine was concentrated by pouring it through salty soil, as evidenced by leaching mounds (Watson et al. 2013). The discovery of the K’ak’ Naab’ canoe paddle and subsequent discovery of additional fragmentary canoe paddles at sites 7, 74, and 83, as well as the discovery and excavation of a canoe from the Eleanor Betty site indicate there was an infrastructure of distribution of salt (McKillop 2017; McKillop, Sills, and Celluci 2014). Further evidence for year-round salt production was the extensive area of the salt works, that includes 110 separate workshops. The viability of year-round production inside buildings was important especially in southern Belize where rain is common throughout the dry season.

The demand for salt by the inland Maya in southern Belize and adjacent Guatemala was year-round. The presence of inland trade goods, including Warrie Red unit-stamped pots, Moho Red serving vessels, and ocarinas, underscores the ongoing ties between the Maya at the Paynes Creek Salt Works and the inland Maya consumers (McKillop 2002, 2015).

2015 Field Season: Diving Using the Airline System

In 2015, a diving project was carried out in Punta Ycacos Lagoon at underwater sites previously inaccessible to us with our flotation survey methods. The dive team consisted of Val Feathers, Rachel Watson, Cory Sills, Kurt Dilores, and Heather McKillop, as well as Belizean boat captain John Young. The dive team traveled by plane to Punta Gorda, Belize and then 15 miles north along the coast to our host family’s farm (accessible only by boat). Each day we travelled by boat a further 20 miles north along the coast to Paynes Creek National Park, where we carried out the field research. For the first week of our field research, there was an extreme water shortage at our host family’s farm, which meant we brought water from town in camp bags and bathed and washed equipment at an abandoned well near Paynes Creek. Fortunately the lack of water was found to have been due to a broken pipe, which was repaired, and the water tanks were filled from the well, as the rainy season also began.

We used the Airline System of hoses using a gas-powered engine to run a compressor to force air through 60 foot airhoses to special regulators for divers (Figure 4). In addition to allowing us to investigate the deeper-water sites with shell deposits, we wanted to evaluate whether this low-tech system was feasible for underwater survey and excavation at various sites in the remote lagoon system. Even shallow-water sites such as Site 74 (McKillop and Sills 2016), have deeply-buried archaeological deposits and wooden posts sunk deeply into the mangrove peat, that are difficult to excavate without diving gear that allows the team to stay underwater. In addition to four previously-known, deep-underwater workshops with shell deposits, we discovered new underwater workshops in the deep water of the main channel of the salt-water lagoon system, including some with shell deposits. In this paper, we describe the underwater archaeology methods using diving equipment and our finds.

The airline system allowed researchers to stay underwater for extended periods of time at the seafloor for site survey, to cut samples of wooden building posts, to excavate marine
sediment samples for environmental reconstruction, and to excavate. Each diver had a “tender” whose task was to watch for bubbles (to ensure the diver was breathing) and to assist with taking bags, providing bags, and reading notes from the divers on dive boards (Figure 5). The maximum time length divers stayed underwater was 1 ½ hours, at a depth of about 7 feet below the water surface (to the seafloor). This arbitrary time was established to provide breaks for the divers, who otherwise would have stayed underwater much longer. Plastic dive boards were used to pass notes from the diver to the tender, so the divers could stay underwater, which was less disruptive to the diving than coming up to talk. One person operated the dive system on board the boat and watched the divers and tenders. The dive system required specific procedures for operating and post-dive maintenance, as well as safety rules to follow. For example, the exhaust outtake tube needs to be directed away from the divers; the black air hose from the compressor to the yellow airline hoses needs to be kept cool, by placing the black hose in a tub of cool water. (For ease of operation, we opted for placing the dive unit on board the boat instead of in the supplied air tube for floating in the water, in which case the black tube would be cooled in the sea). The gas-powered engine is noisy, which requires ear protection.

Excavations were carried out at five sites, including the Schmidt Site, Mudshell, Site 99, Site 100, and newly-discovered Site 110 (Figure 5). A PVC grid frame was constructed and weighted down with dive weights (Figure 6). We excavated 50 x 50cm units by 10cm excavation levels, as measured from the sea floor down. Plastic sewing tapes were used to take measurements. Excavated material was placed in flour sacs underwater, using trowels to excavate. A hard lens with charcoal, briquetage was found at Site 100. This lens resembles a similar feature at Stingray Lagoon site, that was interpreted as a fire hearth (McKillop 2002: 38). Material was screened off-site in the water. Artifacts, shell, and charcoal were sorted, identified, weighed, and counted. Samples were cut from the tops of wooden posts to identify the species and for radiocarbon dating. Exported wood post samples were unpacked and placed in plastic containers and filled with deionized water from the filtration system in the LSU Archaeology Lab. The samples are being desalinized by periodic water changing.

Marine sediment samples were taken from each level of each unit and exported to LSU for loss-on ignition and identification of the organic component to see whether the marine sediment was mangrove peat as at the shallow underwater salt works (Figure 7). The analyses of marine sediment are part of Kurt Diores’ LSU MA thesis. Elsewhere in the lagoon, marine sediment was found by loss-on ignition to be highly organic, with the organic component primarily fine roots of red mangroves, indicating the mangrove sediment was indeed red mangrove peat (McKillop, Sills, and Harrison 2010a, 2010b). Mangrove peat is formed as red
mangroves keep pace with sea-level rise, in order to keep their leaves above water. Leaves, silt, and other detritus are trapped in the mangrove prop roots, forming the peat (Figure 7). Dating the fine red mangrove roots has been used to date sea-level rise (McKillop et al. 2010a, 2010b). The fine red mangrove roots are sorted in a petrie dish in water, under a microscope. The roots are collected with twizzers and placed in a glass vial with water, until a sufficient-sized sample for AMS radiocarbon dating is acquired.

Shells consisted primarily of one species of mangrove oysters, *Crassostrea rhizophora*, which grew on the prop roots of red mangroves, *Rhizophora mangle*. We measured length, height, and width of the mangrove oysters in the field to evaluate differences in size among the sites and with depth of the excavations. Uniform size would support single deposition, whereas a diminution in size by depth might support over-use of the mangrove oysters over time. Shell samples exported from the field research were sorted in the LSU Archaeology lab. Five shells with the best preservation selected for further sampling in the pilot study. The umbo, attachment end of the shell, was cut and mounted on a slide for observing growth bands by Val Feathers. Photos were taken using a Dino light microscope. Then a micro-drill was used to select multiple samples of material from each of the growth bands for oxygen isotope analysis. The powdered samples were stored in glass vials and sent in mid-September 2015 to the University of Texas to be analyzed for oxygen isotopes using a mass spectrometer. Unfortunately, there was insufficient material for analysis, so new samples will be prepared.

**Conclusions**

Submerged archaeological sites present challenges for survey and excavation that call for innovative methods suited to the particular sites (Green 2004). For survey and excavation in the Port Honduras Marine Reserve and Paynes Creek National Park, both land-based and underwater archaeological methods have been used. In the remote coastal setting of southern Belize, the Airline system of hoses forcing air from a gas-powered compressor was successfully used to locate and excavate underwater Maya sites inaccessible with our flotation survey methods at the water surface. This technique is popular in historical archaeology and especially useful in remote areas where refilling dive tanks can be an issue.

The coastal Maya sites were inundated by rising seas after the Pleistocene, creating the Belize barrier reef system, but also submerged coastal sites later in the Holocene. What can be gained from studying submerged underwater Maya sites? Mangrove peat has spectacularly preserved wooden architecture, the K’ak’ Naab’ canoe paddle (McKillop 2005b, 2017; McKillop et al. 2014), and other wooden artifacts not found at land sites. Evidence of earlier Maya settlement has been found buried under later cultural deposits below the water table on cays such as Wild Cane Cay and Frenchman’s Cay (McKillop 2005a).

Understanding the complex interplay between cultural and environmental factors in ancient Maya society can be evaluated by investigating submerged sites. At Pelican Cay (Figure 1), Early Classic cultural deposits are buried below red mangrove peat, which itself is underwater (McKillop 2002: 156-159, Figs. 5.5-5.6). Sea levels evidently rose too quickly for the Maya living at that small community. By way of contrast, at the larger (10 ha) community on nearby Wild Cane Cay, the Postclassic Maya built coral rock foundations for some buildings, as well as accumulating significantly more cultural material that kept pace with sea-level rise (McKillop 2002: 148-154). Similar
inundation occurred at Frenchman’s Cay, a trading port found on the outer range of Port Honduras cays (Figure 1), where even the lower levels of coral rock building foundations are submerged (McKillop 2002: 154-156, Fig. 5.7). Underwater Maya archaeology will become valuable for investigating low-lying areas such as the coast of Belize, as they are inundated by ongoing sea-level rise related to global climate change (McKillop 2002: 163-174: Figs 5.1-5.3).

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2013 “Underwater Excavations of Classic Period Salt Works, Paynes Creek National Park, Belize.”

Excavations in the spring of 2013 were carried out at an underwater ancient Maya salt work in Punta Ycacos Lagoon, Paynes Creek National Park, Belize. Eleanor Betty is one of the Paynes Creek Salt Works, which provided salt to the inland Maya during the Classic period (AD 300-900). Excavations were carried out to expose a shell deposit discovered in 2011, with the expectation of better preservation of bone than in the acidic peat elsewhere at the salt works. Sediment samples were recovered to evaluate whether Eleanor Betty was submerged by sea-level rise. Abundant shell was recovered, including mangrove oysters, providing both environmental and dietary information. The virtual lack of bone indicates either bone was absent or not preserved by the shell. Recovered material from the excavations was analyzed. Approximately 215,991 g of briquetage – pottery used for the evaporation of brine over fire to make salt – was recovered along with over 16,000 g of charcoal. Units 2-3 m and 3-4 m across all transects contained the highest concentration of briquetage. The absence of residential and household materials and the abundance of briquetage indicate activities were dedicated to salt production.

**Introduction**

Excavations of a shell deposit at the Eleanor Betty site in 2013 were carried out to investigate if the shell was a natural or cultural feature and what the shell could tell about ancient Maya salt production. The underwater site of Eleanor Betty is part of the Classic period (AD 300-900) Paynes Creek Salt Works located in Punta Ycacos Lagoon, a shallow salt-water lagoon in Paynes Creek National Park, Belize (Figure 1). Salt flats on the north coast of the Yucatán Peninsula were once thought to have produced salt for the entire Maya area during the Classic period (Andrews 1983). However, the discovery of salt production on the coast of Belize changed that view (MacKinnon and Kepecs 1989; McKillop 1995, 2002, 2004b; Valdez and Mock 1991). MacKinnon and Kepecs (1989) hypothesized that Placencia was involved in seasonal salt production for local consumption. They suggest high-quality salt was imported from the Yucatan for the Maya elite. New River Lagoon was viewed as a permanent Maya settlement where salt was used as a preservative for fish to be traded to inland sites (Valdez and Mock 1991).

At the Paynes Creek Salt Works, salt was produced inside wooden buildings preserved in a peat bog below the sea floor (McKillop 2005a). The acidic peat at the Paynes Creek Salt Works did not preserve bone. However, the shell deposit at the Eleanor Betty site was an ideal matrix for bone preservation due to the calcium carbonate (CaCO₃) in the shell, so there was a possibility of identifying human burials and/or food remains. Since burials and animal food remains are typical of Maya residences, the search for bone would help answer if the Paynes Creek salt works were also residential. If human bone was present within the wooden structure located at the site, then Eleanor Betty could have been a coastal residence, perhaps a residential workshop. The presence of bone at the site could be used as a model for excavating other salt works where bone was not preserved due to the acidic peat. The extent and nature of the shell deposit (natural or cultural) and the...
accompanying preserved wooden architecture were investigated.

Heather McKillop and her team discovered the salt works during regional survey in Punta Ycacos lagoon (McKillop 1995, 2002). Underwater excavations of the salt-making sites began in 1991. The excavation of four sites (Killer Bee, Stingray Lagoon, Orlando’s and David Westby) led to a comprehensive underwater survey of the lagoon. Survey and excavation in Paynes Creek National Park underscore the production of salt during the Classic period (McKillop 1995, 2002, 2004b, 2005a, 2007a; Sills and McKillop 2010). This production is mirrored by the increase in inland Maya population and concomitant demand for dietary salt (McKillop 2002). After the Classic Maya collapse, settlement along the coastline increased. The Paynes Creek salt works collapsed due to the disappearance of the inland demand for salt with the abandonment of the inland cities (McKillop 2009b). Salt was made at the household level in the Postclassic period (A.D. 900 – A.D. 1550) at Wild Cane Cay and Frenchman’s Cay (McKillop 2002).


Unlike other ancient Maya sites where materials such as thatching for roofs and wooden posts for residential dwelling and other wooden structures decayed, the Paynes Creek Salt Works have wooden posts preserved by the anaerobic mangrove peat matrix (McKillop 2005a, 2009a, 2010; McKillop et al. 2010a, 2010b; Sills and McKillop 2010). Post locations were mapped and recorded in a geographic information system (McKillop 2002, 2004b, 2007a, 2009a; McKillop et al. 2010a, 2010b; Sills and McKillop 2010). Radiocarbon (14C) dates obtained from wooden structures date to the Classic period (AD 300-900; McKillop 2005a). The finding of the preserved K’ak’ Naab’ paddle supports evidence of inland salt trade (McKillop 2005a, 2007a, 2007b).

Mangrove peat is an acidic environment and, therefore, does not preserve bone. However, the peat is ideal for the preservation of wood. The shell deposit contained within the structure contains CaCO3 from the shells which would preserve bone, if present.

**Research Questions**

The shell deposit was unexpected, so we were interested to discover if it was a post-inundation deposit or cultural and if cultural, how did it relate to salt production? If the shell deposit was a natural deposit, then there would be paired valves along with an absence of butcher marks, burned shell, faunal remains, charcoal, hearths, ash, or other artifacts, such as ceramics (Marquardt 2010). Alternatively, if the shell deposit was the result of deposition by the ancient Maya, then some or all of the following items would be present: burned shell, charcoal, ash, butchering marks on the shells, a lack of paired valves, and artifacts (Marquardt 2010).

If cultural, was the shell deposit associated with a residence, production workshop, or household workshop? If the area was residential, then human and animal bone (within the shell deposit) would be expected as the Maya buried their dead beneath household floors. Other household materials such as storage containers also would be expected. If the site was used solely for the production of salt, then production refuse material would be found, but animal, human, and other household cultural remains would be absent. If the site was a household workshop, then both household materials and production refuse materials would be expected.

Artifact analysis at other Paynes Creek Salt Works indicates they were not residential areas, but workshops for salt production due to the abundance of briquetage (McKillop 2005c; Sills and McKillop 2010). The trade of salt produced from these coastal workshops to inland communities (along with other marine resources) during the Classic (A.D. 300 – 900) may have been controlled by Wild Cane Cay (McKillop 2005b, 2008, 2009b). Salt likely was traded for
inland items such as ocarinas and serving vessels, ritualistic objects which have been recovered at the Paynes Creek Salt Works (McKillop 1995, 2002, 2009b).

**Underwater Excavations**

During the 2013 field season, systematic flotation survey was used to relocate and mark previously-mapped wooden posts at the Eleanor Betty site and to locate new posts. Each post was marked with a pin flag. The acidic mangrove peat below the sea floor preserved hardwood and palmetto palm posts (*Acoelorraphe wrightii*). Palmetto palm posts are small in diameter with a hard exterior. Hardwood posts are solid and large in diameter. Palmetto palm posts were marked with red flags whereas hardwoods were marked with yellow flags (Figure 2). Previously-discovered posts were easier to locate as they had small PVC pipe markers that had been placed on their north and northeast sides. The PVCs were labeled with the post number. New wooden posts at the site were recorded and mapped (Figure 3). All posts had been vertically placed in the mangrove peat. A curved line of palmetto palms runs north to south along the western edge of the site forming a wall. The curved line of palmetto palm posts surrounding a wooden structure is found at other sites in the lagoon, such as Chac Sak Ha Nal (McKillop 2008; Sills and McKillop 2010; Sills and McKillop 2013).

Upon completion of the systematic survey, the team uncovered the shell deposit in Transect 4 from the 2011 excavations (Aucoin 2012). After the 2011 excavations, the transect had been lined with plastic sheeting and weighted down with sandbags. They were removed along with silt that had washed into the transect. The silt was screened off-site in the water.

Four new transects were set out to horizontally expose the shell deposit (Figure 4). A total of 19 units were excavated (Figure 5). Each 1x1 m unit was marked with a yellow flag (labeled with the Transect and Unit numbers) and a quarter inch PVC pipe. Transects were placed north and south of the 2011 Transect 4, each seven meters in length. Excavations were placed to define the boundaries of the shell deposit and recover organic material, botanical remains, and microfossils, such as ostracods and foraminifera to inform of sea-level rise and the paleoenvironment.

Each unit was excavated in 10 cm levels to 30 cm depth below the sea floor. The sea floor was 55 cm below the water surface during the 2013 excavations. Levels were measured using a plastic sewing tape. The first level, 0-10 cm depth, was the silt layer above the mangrove peat. The layer was comprised of sand, small shells, and briquetage. The second and third layers were composed of solid mangrove peat. Using a trowel, the peat was excavated, placed in the sandbag without loss of material or
sediment, and secured with ties. A Ziploc bag with the transect number, unit number, level, date, and excavator’s name was placed in the sandbag along with the sediment. The bags were ferried off-site in the Marine Transportation Devices (MTDs) which were connected by a pulley system to a screening station.

The screener used a wooden screen box lined with 1/8th inch screen. The material was placed into the screen one bag at a time. The screener pushed the material through the screen and shook it in the water to remove the excess mangrove peat. Items were sorted into material classes (obsidian, chert, charcoal, shell, and pottery). Excavated ceramics were placed in the empty sandbag along with a new label. Smaller labeled bags were placed inside for other materials.

The horizontal extent of the shell deposit measured 5 m in length by 0.5 to 1 m in width whereas the vertical extent was 12 cm thick. The deposit was concentrated in Unit 3-4 m and 4-5 m of all transects and was excavated as a separate feature. After Transect 4 was exposed, the shell deposit was visible in the walls of unit 3-4 m. The north wall of unit 3-4 m was cleaned using a trowel. The profile was drawn and photographed. A transect placed beside Transect 4 to the north was labeled Transect 6. The shell deposit in Transect 6, Unit 3-4 m, was excavated in 2 cm levels. The shell reached a maximum depth of 12 cm. The deposit contained more shell toward the surface of the mangrove peat and less shell as the depth increased. In the mangrove peat surrounding the shell deposit, there was an abundance of briquetage—the remains of pots used to evaporate brine over fires to make salt.

Sediment samples were collected in all levels throughout the shell deposit to evaluate the composition of the marine sediment, if it was marine or terrestrial in origin, and to assess sea-level rise. Sediment samples were taken in the southwest corner of each excavated unit. All samples were placed into whirl pack bags and labeled.

Methods

All recovered ceramics were sorted into type-varieties, drawn, photographed, weighed, and counted during the 2013 and 2014 field season to examine site chronology (following the type-variety system or Maya ceramic classification) and site function (attribute analysis). At the field station at Village Farm, selected rim sherds and other artifacts were scanned using a portable NextEngine 3D Laser scanner from the LSU Digital Imaging and Visualization in Archaeology (DIVA) Lab. The type-varieties include Punta Ycacos Unslipped (sherds from jars, basins, bowls), two types of water jars – Mangrove Unslipped (jars with incurved walls and outcurved necks, with round, square or grooved lips) and Warrie Red (jars and open bowls) as well as Moho Red pottery (open serving bowls; McKillop 2002).

Punta Ycacos Unslipped refers to all salt-making ceramics (briquetage) recovered from the ancient Paynes Creek National Park Salt Works.
Types and varieties include: sherds from jars, basins, and bowls as well as whole and fragmentary vessel supports, including cylinders, spacers, sockets, and bases (McKillop 2002:54,55). Mangrove Unslipped jars were used to house and pour brine into Punta Ycacos vessels (McKillop 2002:77). Warrie Red jars were red-slipped with some of the shoulders of the jar having unit-stamped, impressed, or incised decorations. Other decorations included incised decoration on the exterior of some bowls (McKillop 2002:77). Although smaller in form than Mangrove Unslipped, Warrie Red also was used to store and pour brine into salt-making vessels. McKillop (2002:86) suggests Warrie Red jars may also have been used in salt rituals at Punta Ycacos Salt Works. Warrie Red was found mapped on the sea floor at the site but was not found in the excavations, which were dominated by briquetage. Moho Red consists of red-slipped, yellow paste bowls or dishes with tripod bases that are tempered with volcanic ash (McKillop 2002:86, 87). They were not part of the salt-making process. However, they likely were used as serving vessels in salt production rituals.

Shell and sediment samples were exported to the Archaeology Lab at LSU where wet weights were obtained for all recovered, exported material. Weights were obtained for all shells, charcoal, and botanicals by using a Taylor Glass LED digital scale in the field and Delta Range® Mettler PE 3600 in the Archaeology Lab at LSU. A plastic Tupperware container was used to hold items on the scale during this process. The material was then dried in a low-heat drying oven (64°C) and sorted into groups consisting of charcoal, shell, botanicals, and a miscellaneous group of rocks and coral. The materials were reweighed to obtain a dry weight. Fragmentary counts and weights were obtained for the macrobotanical remains of edible tree fruits, which were sorted into species: crabao (Byrsonima crassifolia), coyol (Acrocomia mexicana), and cohune (Orbignya cohune).

Results

Two types of shell were discovered. The first type of shell was small and mixed with sand and silt and was found in several of the excavated units close to the surface layer. The second type of shell consisted of one species of mangrove oyster: Crassostrea rhizophorae (Figure 6).

Approximately 5,518 pieces of briquetage and 16,262 g of charcoal were recovered from the excavations. A total of 104 Mangrove Unslipped sherds, 266 Warrie Red sherds, and 47 Moho Red sherds were recovered (Figure 7) in addition to eight Paynes Creek sherds, 14 chert fragments, and 21 obsidian fragments (Table 1). Clay and ash features were encountered in Transects 5 and 6. Transect 5, Unit 2-3 m, contained a clay feature in level 10-20 cm. The clay was grey, soft, and malleable. Transect 5, Unit 5-6 m, 10-20 cm, contained an ash feature in the northeast corner of the unit. The ash had hardened into amorphous lumps. The outside was a white-grey color which rubbed off when dried. A clay and ash feature was encountered in the same designation starting at 20 cm and extended to 25 cm. The feature was not excavated.
Excavating the Underwater Shell Deposit at Eleanor Betty Site

Table 1. Quantity, Use, and Origins of Artifacts recovered from the 2013 excavations.

<table>
<thead>
<tr>
<th>Items</th>
<th>Quantity</th>
<th>Uses</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Punta Ycacos Unslipped Rims</td>
<td>391</td>
<td>Salt-making</td>
<td>Paynes Creek</td>
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<tr>
<td>Punta Ycacos Unslipped Body Sherds</td>
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<td>Salt-making</td>
<td>Paynes Creek</td>
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<tr>
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<td>Salt-making</td>
<td>Paynes Creek</td>
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<td>Paynes Creek</td>
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<tr>
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<td>Paynes Creek</td>
</tr>
<tr>
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<td>Inland?</td>
</tr>
<tr>
<td>Warrie Red Body Sherds</td>
<td>265</td>
<td>Salt-making</td>
<td>Inland?</td>
</tr>
<tr>
<td>Moho Red Rims</td>
<td>1</td>
<td>Serving vessels</td>
<td>Inland?</td>
</tr>
<tr>
<td>Moho Red Body Sherds</td>
<td>46</td>
<td>Serving vessels</td>
<td>Inland?</td>
</tr>
<tr>
<td>Paynes Creek Rims</td>
<td>4</td>
<td>Water Jar</td>
<td>Unknown</td>
</tr>
<tr>
<td>Paynes Creek Body Sherds</td>
<td>4</td>
<td>Water Jar</td>
<td>Unknown</td>
</tr>
<tr>
<td>Chert flake and biface fragments</td>
<td>14</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
<tr>
<td>Obsidian flake and biface fragments</td>
<td>21</td>
<td>Unknown</td>
<td>Volcanic Highlands</td>
</tr>
</tbody>
</table>

The ash extended into the southwest corner of Transect 6, Unit 6-7 m, at the 25 cm depth. The feature was not excavated. Transect 6, Unit 6-7 m, contained a separate ash feature in the northeast corner at the 27 cm depth. Transect 6, Units 1-2 m and 2-3 m contained clay features. Clay was found throughout Unit 1-2 m at a depth of 15 cm. The clay was not excavated. Unit 2-3 m contained a concentrated clay feature along the north, west, and south wall and in the center of the unit between 15 and 18 cm. The feature continued to 20 cm depth and was not excavated.

Discussion

The excavated material, in particular the abundance of briquetage and the lack of household material, indicates that Eleanor Betty is not a household workshop, but rather a salt production workshop. The Mangrove and Warrie sherds were from jars used to store brine or loose salt. The paucity of Moho Red sherds indicates they were for serving vessels probably used in ceremonies related to opening the salt making season. No household items, such as pots used for food storage or figurine whistles, were recovered from the underwater excavations.

Approximately 376 macrobotanical remains were recovered during excavations, including 338 endocarp fragments for *A. mexicana*, the majority of which were found in Transect 7, 3-4 m (n=91; Figure 8). Fragments of endocarps for *O. cohune* and seeds for *B. crassifolia* also were present. The macrobotanicals could have been used as part of the ritualistic feast during the opening ceremony. Alternatively, they could have been snacks or simply fallen onto the ground from nearby trees. The excavated units at Eleanor Betty yielded a large amount of charcoal (~16,262 g). Of this amount, 6,248.48 g were recovered from the shell deposit (Units 3-4 m and 4-5 m of all transects) with the largest concentration in Transect 6, 3-4 m.

The obsidian fragments consisted of proximal (n=7), medial (n=8), and distal (n=6) fragments recovered from Transects 5, 6, and 7. No complete obsidian blades were recovered. The blades could have been used as part of the opening ceremony. Additionally, the blades could have been utilitarian items used to process fish for consumption. The small amount of recovered chert flakes (primarily found in Transects 5 and 6) could indicate the reworking of stone tools that perhaps were used in the modification of post ends.
The palmetto palm posts on the western edge of the site form a curved line, suggesting the Maya were trying to hold back the rising seas. The location of the hardwood posts to the east of the palmetto palm comprised a rectangular structure. This structure could have been the location of the salt production workshop.

The shell deposit measured 5 m in length by 0.5–to–1 m in width, depending on the location. The deposit was mainly in level 10-20 cm depth in Units 3-4 m and 4-5 m. The maximum thickness was 12 cm. The deposit extended both inside and outside the wooden architecture. Transect 7, 3-4 m and Unit 4-5 m of Transects 4, 5, 6, and 7 were outside the wooden architecture.

The shell deposit was determined to be a midden: Charcoal, clay, and briquetage were intermixed with the shell midden. Briquetage, charcoal, and clay were recovered in levels above and below the shell midden. None of the pottery was shell tempered. The briquetage has sand temper. The Maya at this site probably were eating oysters which were likely available on red mangrove roots as they are today.

Despite the favorable conditions for the preservation of bone due to the CaCO3 from the shell, no human bone and only two unidentified animal bones were recovered. The lack of bones and household refuse supports our interpretation that the area was used for salt making. Briquetage was abundant in all units. Several units contained clay and ash features. The abundance of clay suggests the salt makers were making or repairing the salt making vessels on-site. The ash features could indicate possible firing episodes of either the pottery or are the remnants of hearths used to boil brine. Charcoal was present in all units.

Based on the weight of briquetage, water jars, Moho Red, utilitarian items, and ceramics likely were stored in the western portion of the building (Units 0-1 m and 1-2 m). The primary location for salt production was located in the middle of the wooden structure (Units 3-4 m and 4-5 m). Items which could no longer be used (broken pots/water jars and spent charcoal) were disposed of at the eastern edges of the building (Units 4-5 m, 5-6 m, and 6-7 m). The evidence garnered from excavations indicates the area was a salt workshop.

**Conclusions**

Eleanor Betty was a Classic period ancient Maya salt production workshop which was once situated on the shore of a lagoon. Rising seas and subsidence activities have inundated this site and others in the area (McKillop 2002, 2004b, 2005a, 2005b, 2008, 2009a; McKillop et al. 2010a, 2010b). Excavations of a shell midden associated with a wooden building at the Eleanor Betty salt work indicate the area was used for salt production and not habitation. The presence of briquetage indicates salt production. The absence of household refuse supports the interpretation that Eleanor Betty was a production workshop as evidenced by the presence of briquetage and charcoal. The shells were not used as temper for ceramics, but likely were dietary.

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Excavating the Underwater Shell Deposit at Eleanor Betty Site

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Meaghan M. Peuramaki-Brown, Shawn G. Morton, Tawny L.B. Tibbits, and Lisa Green

From 2014 to 2015, a Phase I Reconnaissance program was conducted at the site of Alabama by the Stann Creek Regional Archaeology Project (SCRAP). Alabama is a major ceremonial centre located in the southern portion of the Stann Creek District, nestled up against the eastern slopes of the Maya Mountains, approximately 20 km inland from the Placencia Lagoon. The site was first located by the Stann Creek Project in the 1970s and later investigated by the Point Placencia Archaeological Project in the 1980s, which determined the epicentre to have been constructed and occupied during the late facet of the Late Classic to Terminal Classic periods (ca. 700-900 AD). SCRAP members returned to the site in order to investigate settlement development at Alabama and its relationship to local resource extraction and trade within and beyond the East-Central Belize region. Our Phase I Reconnaissance had three goals: 1) to assess the Alabama epicenter, 2) to initiate a systematic settlement survey and surface collection, and 3) to initiate studies of resource development and use by the ancient Maya of the area. This paper summarizes the research goals and results of the 2014-2015 investigations.

Introduction

In July 2015, the Stann Creek Regional Archaeology Project (SCRAP) completed its Phase I Reconnaissance at the site of Alabama in the southern portion of the Stann Creek District. This first phase would serve as the foundation for what is hoped to be a long-term archaeology program in the area, with future expansion into neighbouring parts of the region. This paper introduces the reader to the setting, outlines the goals of SCRAP research, and summarizes the Phase I Reconnaissance.

Setting

Region

East-Central Belize (Figure 1) is a dramatic geographic region, roughly delineated to the north by the north-western extension of the Maya Mountains and the beginning of relatively flat landscapes with bigger and longer rivers; to the west by the highest peaks of the Maya Mountains; to the east by the Caribbean Sea; and to the south by the north end of the Bladen Formation (south of the Swasey Branch of the Monkey River). This is roughly the area of modern-day Stann Creek District. Within a span of about 20 km, one can move from the coast and lagoons in the east, through the flat coastal pine savannah (pine ridge), into the broadleaf forests of the fertile alluvial valleys, and up into the foothills of the Maya Mountains and beyond.

Many of the larger, more nucleated settlements and likely civic-ceremonial centres of the region are located in upper alluvial valleys and pockets, and the eastern foothills of the Maya Mountains. These major and minor centres share a number of common material culture patterns, which may serve to identify the uniqueness of the region in a manner similar to neighbouring Southern Belize:

• Low, large, non-vaulted architecture, which includes masonry substructures and perishable superstructures.
• Non-limestone architectural facing blocks and ‘megalithic’ features (Figure 2).
• Alluvial clays and sands used for construction core fills.
• Large borrow pits surrounding monumental architecture, formed by excavation for fill and serving as...
possible landscape modification (water management, and defense, etc.) and augmentation of architectural perspective.

- Granite and slate stelae and altars.
- Special context use of limestone (tomb walls, ball court markers and corner stones, etc.).

Area

The area in which Alabama is located is roughly 20km west of the Placencia Lagoon, along the upper tributaries of the Waha Leaf Creek. This creek is navigable by canoe all the way to the lagoon in the rainy season, where many of the Late to Terminal Classic salt-making sites of the region were located (Graham 1994; MacKinnon 1989); the walk across the flat savannah can be done in a few hours during the dry season (Maya Mopan resident, personal communication, 2016). The monumental epicenter and associated settlement is surrounded on three sides by the foothills, with a passage north that connects the area to the Cockscomb Basin and upper reaches of the South Stann Creek, near the Late to Terminal Classic major ceremonial centre of Pearce (a.k.a. Kuchil Balum in Rabinowitz 1986; Dunham et al. 1995; Joyce 1931). Alabama is also situated along the southern margins of the Cockscomb Basin Pluton – a large granitic body (Cornec 2008). Surrounding this igneous pluton are zones of metamorphic rocks, including quartzite, slate, and phyllite, all of which the residents of Alabama made use of for various tools in the absence of chert-bearing limestones in the region.

The modern property area on which Alabama is situated has belonged to a number of companies and individuals since World War II (Peuramaki-Brown 2015). It is possible that in the late 1800s the area was occupied by American Confederate settlers, as such settlements are known to have existed to the north (South Stann Creek, Sittee River) and south (Monkey River) of the Waha Leaf Creek; however, no documents currently place these groups in the Alabama area, despite popular allusions to the site name. In the 1950s and 60s, the Waha Leaf Banana Company (a.k.a. Alabama Plantation), operated by Greene & Atkins Banana Co., was active in this area. The owners were based out of Mobile, Alabama, and newspaper articles from the time discuss the naming of the now abandoned village/barracks (the remains of which were located by SCRAP in 2015) associated with the operation as “Alabama” in honour of their home. Currently, the valley area consists primarily of citrus orchards, although the site epicentre is surrounded by broadleaf forest.

Site

The monumental epicentre of Alabama consists of 20 major structures – including a ball court, temple-pyramid(s), and a ‘simple’ palace complex – built of granite facing blocks and sandy clay fill with minimal to no artifact debris within. The structures are distributed over 24,785m² (2.48ha, not including Str. 19 and 20) and arranged around four plazas with a sacbe leading into the epicentre from surrounding settlement. It has been variously classified as a Level 7 small major ceremonial centre or Level 8 medium major ceremonial centre in Hammond’s (1975) hierarchy model by previous archaeologists (discussed below); the total area falls between that of Nim Li Punit and Lubaantun (Houk 2015: Table 10.2). Absolute dates (radiocarbon and obsidian hydration) from work in the 1980s on the single-phase architecture span from AD 760 ± 80 yrs. to AD 874 ± 77 yrs., with artifacts assigned to the Late...
to Terminal Classic, and with possible Early Postclassic materials. Two grooved, everted rim jar fragments found at surface in the nearby settlement were identified as possible Early Classic materials, but no contexts excavated in the epicenter in the 1980s were found to date to this early time.

Research Focus
Over the past century, various investigations have been conducted in and around Alabama and neighbouring areas (e.g. Dunham et al. 1995; Graham 1994; Joyce 1931; MacKinnon 1989; Stomper et al. 2004). Since 2014, SCRAP has built from the foundations of these works, in an attempt to further understand the life history of the area prior to the historic period (Peuramaki-Brown 2015, 2016; Peuramaki-Brown and Schwake 2014).

Compared to other areas of the Maya world, East-Central Belize remains one of the most poorly understood regions, particularly in terms of ancient settlement (where, when, why and how individuals and groups settled on a landscape (Rockman 2003), relational economic geography (the relationships between people, space, and economy (things), closely entangled with social and political processes; (Bathelt and Glückler 2003), and incipient urbanism. Increasing urban tendencies include the relative nucleation of populations (increasing population densities and diversification, relative to surrounding areas); the increasing presence and intensity of multiple and diverse activities and services; and central-place relationships along a continuum of rural-to-urban localities, all of which emphasize “urban-ness” and “rural-ness” to varying degrees (Figure 3; Peuramaki-Brown 2012).

Notions of urban development as processes associated with relational continuums are reflected in various concepts such as “rural complexity” – diminutive village sites that exemplify social institutions normally interpreted as “urban” in distinctly “rural” settings – and the complex relationships between agricultural and non-agricultural pursuits, as well as core-periphery world systems (Leeds 1980; see also Middle Level Settlement in Iannone and Connell 2003 and community interdependency discussions in Scarborough and Valdez 2003). Thus, any archaeological attempt to understand such complex processes and relations must not only examine the end results, but also their beginnings and developments over time; ideally leading to an understanding of particular settlement tendencies, the development of associated socio-environmental networks, and their ultimate undoing.

In the humid neotropics in general, the relationships between humans and environments are distinctive enough to lead to unique forms of rural-urban continuums and, hence, diverse forms of urban, near-urban, and urban-like centres. We argue that East-Central Belize presents one such distinct region, with unique forms of settlement and urban-ness development dependent on local geology; significant micro-management of local environments; and the integration of residents within multiple social, political, and economic spheres related to resident agency and local biography, and access to diverse transportation and communication corridors. The following diachronic elements are thus considered in our archaeological investigations:

1. Population development (chronology) and scale of land conversion.
2. Social fabric of resident populations (consideration of individual households and groups).
3. Integration beyond the individual household (networks, infrastructure, services, etc.).
4. Situation in larger social, economic, and political relationships.

At Alabama, we have been examining the development of the site as a possible example of
the aforementioned rural complexity and “boomtown”: settlement areas that flower rapidly in response to resource development, economic fluctuations, and/or political tendencies, including the outcomes of centralizing, decentralizing, colonizing, and/or defense strategies (Barth 1975; Peuramaki-Brown 2016). Such settlement realities typically emerge in severely disadvantaged or isolated frontier zones, often on the boundary between shifting geo-political entities. This framework is shaping our avenues of investigation and is couched within the four aforementioned diachronic elements.

Phase I Reconnaissance

The SCRAP 2014-2015 Phase I Reconnaissance consisted of three primary research components at Alabama: epicentre, settlement, and resource development. Each were directed toward understanding the rapid emerging “urban-ness” of the area, despite its seemingly rural nature, originally noted in the 1980s when test excavations by the Point Placencia Archaeology Project (PPAP) revealed the single-phase construction of the epicenter architecture in the late facet of the Late Classic period (ca. AD 700).

Our aim is to continue outlining a comprehensive biography for Alabama, and to begin conducting diachronic analyses of material assemblages through a lens of social, economic, and political independence and dependence, and comparison with long-term research trends from adjacent regions. The goals for the Phase I Reconnaissance were as follows:

1. To clear, assess, and topographically map the monumental architecture of the epicenter, as well as the looting activity first documented in the 1980s.
2. To complete a comprehensive, systematic GPS survey of the Alabama settlement in order to map mounds, scatters, resource zones; to surface collect materials from these features to begin building a settlement chronology and to gain a preliminary understanding
of resident populations and associated activities.

3. To begin characterizing and sourcing various resources, including granite materials, artifacts, and architecture; daub and pottery wares; and obsidian artifacts.

**Epicentre Program**

Morton (2015) topographically remapped the Alabama epicenter (finalized in 2016 and created using a Nikon DTM-322+ total station, with point coverage following a roughly 2m x 2m grid), both correcting and adding to previous PPAP maps (see Peuramaki-Brown and Schwake 2014 for summary) that were missing architecture and exaggerated the scale of many structures and features (Figure 4). While adequate for a general understanding of the site and for planning and presentation purposes, the inaccuracies present in the previous PPAP maps and absence of digital topographic data made its use in our current investigations limited. This work is helping us to better understand the layout and configurations of monumental construction and infrastructure at the site, and is building toward our ongoing assessment of Maya urban ‘hallmarks’ represented at Alabama (Houk 2015:27-39).

The topographic mapping captured significant disturbance in the North and East Plazas caused by banana plantation activity (previously noted in Walters 1988), which will help when selecting (or avoiding) excavation locations for the epicenter in Phase II Testing. Re-mapping has also afforded us a better understanding of previous descriptions of the site; for example, in PPAP reports the presence of architecture over 10m tall at Alabama is suggested, which we have determined is true only if measurements were taken from the bottom of surrounding borrow pits as opposed to plaza level, and may have been a way to conveniently fit Alabama into Hammond’s typology (which it does not).

Epicentre survey activities have also yielded several observations that will help to further direct investigations, particularly with reference to the construction history. Not least among these is the location of the epicentre itself within the broad valley, atop the west bank and above the main branch of the Waha Leaf Creek. This valley-bottom site stands in sharp contrast to neighbouring Southern Belize sites such as Lubaantun and Nim Li Punit, where restricted hilltops served to limit lateral core expansion, and presumably encouraged the development of a relatively dense monumental fabric that conformed to a significant degree with natural topography. In contrast, the Alabama epicentre, in its dense jungle shroud amongst sprawling orange groves, is remarkable for its regularity of plan, massive if not unusually tall structures, and spacious plazas. However, if examined more closely, a number of inconsistencies in this regularity are quickly noticed; for instance, the North and South Plazas are unusually long and narrow. Looking at the site plan, a potential explanation for this arrangement is suggested. While the truth of the matter must wait for excavation, it is difficult not to make comparisons between the central placement of Alabama Str. 10, effectively bisecting an otherwise conventional plaza space, and that of Str. A1 at Xunantunich. As at Xunantunich, it seems reasonable to suggest that this structure was added during a later phase of monumental construction within the Alabama site core. A second, and glaringly visible inconsistency is associated with the causeway extending off the southwest corner of the site core. Walking in this direction, through the South Plaza and into the orange groves, one is struck by the sharp break in the style, orientation, and scale of the surrounding architecture. From the strict orthogonal layout of the North and East Plazas, one is suddenly walking past low platforms that flank the causeway and define the South Plaza, oriented more-or-less to the causeway and flanking terraces. Again, it seems reasonable to suggest that these structures, along with the associated causeway that threads awkwardly between borrow pits on the west and south periphery of the epicentre, are the product of construction efforts following the initial establishment of the monumental core. Test excavations in both areas in the 1980s were unable to chronologically distinguish the two areas due to limited carbon and artifact materials within fills. The similarly non-orthogonally arranged Str. 17 through 20 off the east flank of the epicentre are
perhaps likewise suggestive of multiple phases of epicentral construction. A secondary question emerges from these observations: if Str. 13, 14, and 16 through 20 represent later additions to the monumental site core, and if Str. 10, likewise, represents a later phase of construction, then is the orientation, scale, and placement of Str. 10 – notably in harmony with Str. 1 through 9 and 15 – anachronistic, or does it represent specific planning concerns or historical developments? These are questions that will be considered in future investigations.

Our ongoing studies are using the epicentre mapping data to conduct volumetric and spatial movement analyses. The seemingly rapid development of the epicentre also makes it an ideal candidate for space syntax and urban planning studies to contrast against site epicentres that developed over a thousand years or more (see examples in Morton et al. 2014).

**Settlement Program**

A full GPS survey was conducted over 2.47km² around the Alabama epicenter. Survey method involved the systematic walking of orchard rows in all property blocks to locate mounds and artifact scatters at surface. Opportunistic coverage occurred in the heavily bushed areas and the milpas of the surrounding foothills, as invited to visit by various community members. Adopting a ‘traditional’ approach to survey (vs. aerial drone) allowed us to experience the landscape firsthand, as well as engage with community members as we encountered them during our walks, which was also helpful in better knowing the Alabama area and its modern-day residents. It also allowed us to assess on-ground conditions at individual settlement sites, particularly those lower than 50 cm in height, and to identify artifact scatters. In total, 158 mounds (128 groups), 42 artifact scatters (pre-Columbian and historic), and numerous granite and clay source zones were identified (Figure 5).

Some preliminary observations can be made regarding settlement character (to be further examined in upcoming seasons and publications). The percentage of individual mounds (Type I settlement sites, following the typology presented in Ashmore et al. 1994) is considerably higher than all other types (Table 1). This observation confirms PPAP initial impressions that the settlement surrounding the site centre consisted primarily of solitary mounds (only minimal settlement investigations were pursued in the 1980s), as opposed to mounds arranged in formal or informal groupings. Although this is interesting and possibly represents a different form of social organization and/or integration as compared to other areas in the lowlands where much higher percentages of Types II and III often exist, we must also consider that the spacing requirements for the assignment of groups (mounds within 30m of each other, assumed to be part of the same houselot if residential) may not be valid in this area. It may be that a spacing of 40-50m is more typical; however, this is difficult to assess only by using GPS mapping among disturbed sites.

Based on the current distribution of known sites, many Alabama residents were locating their homes nearby water sources (streams), as well as seeking higher ground locations within the valley, particularly along the margins of the upper alluvial terraces. It is
Table 1. Alabama settlement site classifications.

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>n*</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Isolated mound less than 2m high.</td>
<td>104</td>
<td>81.25</td>
</tr>
<tr>
<td>II</td>
<td>2-4 mounds, informally arranged, all less than 2m high and within 30m of each other.</td>
<td>12</td>
<td>9.38</td>
</tr>
<tr>
<td>III</td>
<td>2-4 mounds, orthogonally arranged, all less than 2m high and within 30m of each other.</td>
<td>8</td>
<td>6.25</td>
</tr>
<tr>
<td>VI</td>
<td>1 or more mounds, at least 1 being 2-5m high and within 30m of each other.</td>
<td>4</td>
<td>3.13</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL # GROUPS</strong></td>
<td><strong>128</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

*these group counts are updated since 2015 based on new mound identifications in 2016

likely that agricultural pursuits were occurring both in the valley bottom as well as in the lower foothills, dependent on crops – the soils of the Waha Leaf Creek valley are fertile and well drained (Graham 1994:17). Additionally, many of the mounds recorded appear to be oriented slightly east of True North, similar to half the orientations observed in the epicentre.

We have also noted (Peuramaki-Brown et al. 2015) that the clustering of mounds at Alabama is not nearly as clear as has been observed of settlement in other areas of the lowlands – the occurrence of spatial clustering in the distribution of houses, with large open areas between clusters, being a feature of the low-density urban patterns expressed in many areas of the Maya lowlands, comparable to neighbourhoods in other areas of the world (Peuramaki-Brown 2014; Smith 2011). Such patterns typically involve the grouping of 12-15 settlement sites/groups (Type C settlement patterns in Willey 1956). The possible clusters at Alabama are relatively small in number of included groups. The smaller clusters and/or lack of clustering are interesting when viewed from a possible “boomtown” perspective, where a lack of neighbouring tendencies (compared to more long-term urban processes) is the norm.

Surface collection in the settlement resulted in over 4000 artifacts recovered, and are being used to begin building preliminary chronologies, and characterizations of resident populations and activities. Materials included pottery (vessel fragments, figurines, whistles, candeleros, handled censers, etc.); daub (with wattle impressions); granite groundstone items; chipped stone tools and debitage of local quartzite, quartz, phyllite, as well as imported obsidian and chert; various slate artifacts; unidentified greenstone and jadeite pieces; and marine shell. Identifiable surface collected ceramics (although slips are usually absent or extremely poor) have been predominantly assigned to the late facet of the Late Classic to Terminal Classic, including British Honduras ashwares (later forms and Belize Red when slips survive), a single Mt. Maloney LCII bowl sherd, and moulded-carved materials identified as Ahk’utu’ and possibly Pabellon (C. Helmke, personal communication, 2015).

Some Early Classic ceramics and Terminal Classic to Early Postclassic lithic candidates were also present. The identified Early Classic materials consisted of additional
The aforementioned grooved, everted rim jar fragments (Figure 6). This form was originally classified as Late Preclassic-Protoclassic by Graham (1994:219), but later designated as Early Classic by MacKinnon (1989:712) based on associated absolute carbon dates from coastal sites. From surface collection, a total of eight such sherds were recovered – four from four separate mounds (Type I or II sites) in Property Block D (settlement immediately surrounding the epicentre, see map in Peuramaki-Brown et al. 2015:30), and one from each of Blocks C2, C1, 2, and E immediately surrounding Block D. The property blocks most distant from the epicentre, Blocks 1, A1, and A2, have as of yet yielded no such sherds. Although this radiating distribution may simply be reflective of the overall number of occupied mounds in each block (more mounds closer to the epicentre), it might also suggest a temporal growth to Alabama, with the earliest occupation being closest to where the epicentre eventually emerged (a typical concentric growth pattern). No other typical Early Classic types or forms were encountered. A stemmed, straight base, side-notched chert biface/point (Figure 7; also referred to as an “expanded stem type” in Willey 1972:161-163 and “side-notched dart points” in Shafer and Hester 1983) dates to the Terminal Classic to early facet of the Early Postclassic (J. Stemp, personal communication, 2015) and was found in Block E, one of the furthest from the epicentre. In addition to providing temporal markers to begin building chronologies, these surface collected materials are also providing preliminary ideas of economic networks represented at Alabama.

Resources Program
During our settlement survey, in addition to surface collected materials, we located source zones for granite used for construction material and artifacts, as well as clays that would have been acceptable (given demonstrated characteristics) for pottery manufacture. The proximity of granite and clay resources designates these materials as “local” resources at Alabama (within 0-10km), and are contrasted against “mesolocal” salt (10-50km away); “regional” or “extended” chert and limestone (50-100km); and “exotic” basalt, jadeite, and obsidian (>200km away). Full results of our recent resource studies will be presented in upcoming presentations and publications.

Granite. The inhabitants of Alabama were extensively using local Cockscomb granites for tools (both formal and expedient) and building material, as well as importing a small amount from the Mountain Pine Ridge for mano use. During our survey we located a series of primary and secondary granite source zones, as well as a possible collection pen feature (see Tibbits and Peuramaki-Brown 2015). Tibbits (2016) has also created a visual and geochemical characterization (pXRF) database for the Cockscomb granites, and subsurface zones within the pluton are becoming readily apparent through both studies. This is particularly exciting as we may be able to eventually source settlement architectural elements and artifacts to particular areas in the foothills surrounding Alabama, which can lead to discussions of resource acquisition, distribution, and control.

Clay. Another focus of research has involved clay characterization studies to determine where and with what the ancient Maya of Alabama may have been making their pottery. The alluvial valleys of the Stann Creek District have long been noted as areas of productive soils for agricultural purposes, particularly fruit (including cacao), as well as the source of high-quality, volcanic clays for ceramic manufacture (both ancient and commercially-viable modern). Six clay source
samples were collected from throughout the settlement area; test briquettes were fashioned from these samples; clay properties at the wet, dry, and fired stages were recorded; and firing was conducted in an open “tipi-style” fire. Along with samples of possible ‘local’ pottery wares (based purely on represented quantities and tentatively identified inclusions) and daub, the briquettes were subject to petrographic analysis in collaboration with Dr. Linda Howie of HD Analytical Solutions in London, Ontario. This initial study, though small, has proved successful in terms of the new information it has revealed, building on earlier studies of Maya communities in East-Central Belize by Graham and colleagues. Our data sheds light on geological variability in local raw materials; common pottery and daub fabrics; as well as local, mesolocal, extended-regional, and long-distance interactions of the Alabama Maya (Peuramaki-Brown and Howie 2017).

Obsidian. EDXRF sourcing analysis of 55 pieces of obsidian recovered from settlement surface collection was conducted in collaboration with Dr. Tristan Carter at McMaster University, Hamilton, Ontario. Preliminary results showed that over 60% of the material was of Ixtepeque origin, which is intriguing given the current dating of the site (primarily Late to Terminal Classic) and known obsidian ratios from neighbouring areas for these periods (Gotlitko et al. 2012), which led us to expect a higher representation of El Chayal. What it might suggest is a larger Early Postclassic occupation than previously believed, as well as limited subsurface disturbance in many areas of the orchard. Or, alternatively, a less common trade relationship that favoured Ixtepeque material early on over the more common El Chayal. Similarities with patterns recently identified from Southern Belize (A. Thompson, personal communication, 2016) will be further investigated.

Conclusion

Over a total of 7 weeks from 2014 to 2015, the SCRAP team completed a Phase I Reconnaissance at Alabama. We topographically mapped the epicentre, which is helping to better understand the layout, configurations, and possible chronology of monumental construction at the site. This map will also form the foundation for a GIS that will incorporate previous qualitative and quantitative data collected by PPAP and future data collected by SCRAP for the epicentre. We also completed a GPS settlement survey for the orchard portions of the property/permit area, confirming the presence of over 150 visible mounds surrounding the epicentre. We also surface collected from all settlement sites, recovering over 4000 artifacts to begin building a better understanding of relative settlement chronology, population, and activities. Geochemical-geological sourcing and characterization studies for granite, clays, and obsidian at the site are also helping to outline Alabama resident involvement in various economic systems. Finally, our 2015 season involved our first community outreach activities, including a breakfast and “research update” morning talk with members of the nearby community, as well as cataloguing and recording found artifacts brought to us by community members. The 2016 season will see the initiation of Phase II Testing to begin addressing the many questions that have emerged from the first two years of SCRAP investigations at Alabama.

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INTRODUCTION

Central Belize has been the focus of intensive research on Maya ritual cave use. A current debate among Mayanists’ is how well the variety of caves and rockshelters used for ritual reflects socioeconomic and political divisions within society. The more popular view is that "size matters" and states that larger, more complex caves were appropriated by elites and used for ritual related to the maintenance of the social hierarchy and for public performance. This view is based in part on case studies, such as Naj Tunich, which contains unusual evidence of elite use in the form of constructed tombs and a hieroglyphic inscription mentioning a visit by royals. In this model, smaller caves and rockshelters were left to commoners for smaller-scale ritual. However, analyses of artifact assemblages in central Belize and elsewhere do not appear to support this generalization, with caves and rockshelters of diverse size often containing similar material culture and evidence of constructed or modified features (Rissolo 2003).

While most of the focus of these studies has been on dark zone caves, rockshelters have also been investigated, with the most intensive research on rockshelters in the Maya area conducted in west-central Belize (Figure 1). In this paper we review published literature on Maya rockshelters in the Caves Branch and Roaring Creek River Valleys, highlighting variability in associated assemblages of material culture and human remains. In particular, we seek to contextualize these data within both temporal and regional frameworks to discuss the mortuary context of rockshelter use in the region.

A REVIEW OF ARCHAEOLOGICAL INVESTIGATIONS OF ROCKSHELTERS IN CENTRAL BELIZE

Caves Branch River Valley

Research on rockshelters in the Caves Branch River Valley has been conducted by several projects. The earliest of these efforts was during the summers of 1994 and 1995 by Juan Luis Bonor of the Belize Department of Archaeology at Caves Branch Rockshelter (CBR), a site first reported to the Belize Department of Archaeology in 1994 following a series of looting activities. Bonor’s salvage operations were expanded to include a nearby plazuela group and several other small caves in the vicinity (Bonor 1995, Bonor and Martínez Klemm 1995). CBR is currently the most intensively investigated rockshelter in the Maya area. Burial activities and looting were concentrated around the entrance to the site’s small cave entrance, but burials have been found throughout the entire light zone area beneath the dripline. In addition to the material culture, which includes ceramic sherds, small lithics, faunal bone, freshwater jute shell, carved marine shell, and several complete vessels, Bonor’s excavations identified 32 primary burials and scattered bone. A detailed analysis of the burials clearly showed that the skeletal population was not restrictive, since it was made up of individuals of all ages and both sexes (Glassman, 2003).
Based on the material culture and the relatively simple and consistent burial treatment, they suggest the site was used by a local commoner community (see also Scott and Brady 2005).

Subsequent excavations by the Belize Valley Archaeological Reconnaissance Project in 2005-2007 (Wrobel et al. 2006) and by the Central Belize Archaeological Survey in 2015 (Biggs and Michael 2017) expanded excavations in different areas of the site, uncovering more burials and doubling the estimate of minimum number of individuals to approximately 400-500. The skeletons from these later excavations also continued to conform to a sex and age distributions consistent with a normal mortality profile, suggesting unrestricted use by a local community (see also Saul et al 2005). Currently, over 100 primary burials have been excavated, as well as thousands of human bone fragments. Many of the individuals were buried with complete diagnostic vessels, all of which dated to the Protoclassic period; however, direct AMS dating of bones showed that the site’s mortuary use continued into the Late to Terminal Classic period. Due to the limited dates and the lack of clear stratigraphy, relative changes in the intensity of mortuary ritual at CBR over time is still not well understood at present.

CBR has also been the subject of several targeted analyses. Stemp et al. (2013) conducted a use-wear analysis of the chipped chert and obsidian assemblages and provided a reconstruction of the patterns of lithic reduction and tool use. They found that most of the tools, some of which showed evidence for formal repair and expedient production, appear to have been used for a variety of primarily daily tasks...
domestic functions, though some appear to have been manufactured as ritual objects, such as grave goods, offerings, and for blood-letting. Analysis of faunal remains at CBR by Kavountzis (2009) identified 20 taxonomic groups, including crustaceans, fish, frogs, lizards, snakes, turtles, birds, and a wide variety of mammals, demonstrating that local communities exploited a great diversity of animal resources. Finally, in a recent MA thesis, Isaacs (2016) attempted to seriate burials by assigning relative dates using fluorine analysis of bone. The results were promising, though will benefit eventually from validation through comparison to AMS dating of the same individuals.

In conjunction with the BVAR research program at CBR, Hardy (2009) carried out a survey and ceramic analysis of rockshelter sites in the Caves Branch Valley. Her survey included test pit excavations at five new rockshelter sites, including Caves Branch Rockshelters 2, 3 and 4, and Deep Valley Rockshelters 1 and 2. Hardy carried out slightly larger excavations at the biggest of these sites, Deep Valley Rockshelter 1 (DVR-1). In her ceramic analyses of these sites and CBR, Hardy found types with dates ranging from the Protoclassic through the Terminal Classic periods. Quite to our surprise, none of the new sites in her survey contained a burial assemblage, though deposits included several human bone fragments found mixed within the deposits consisting mostly of ceramics and jute shells. Stemp et al. (2015) conducted a technological and microscopic use-wear analyses on the chert debitage from DVR-1, finding that it was most likely deposited secondarily at the site, and accumulated gradually over time. The rockshelter did not appear to be adjacent to any settlement, begging the question of why lithic debris was deposited there at all. It is thus possible that deposition of lithic debitage at this out of the way site, rather than being functional, may have been imbued with ritual meaning.

Located approximately 1 kilometer from CBR, the Sapodilla Rockshelter (SDR) appears to have served a similar ritual function, containing dense deposits of mostly ceramic sherds and jute, and a relatively large number of primary burials. SDR was extensively looted, with the worst damage affecting the main burial area. The preliminary work at SDR in 2010 by the Central Belize Archaeological Survey focused on recovering human remains and material culture from the looters spoil (Wrobel and Shelton 2011), while work in 2011 mapped the site, including the small dark zone cave, and focused excavations in areas unaffected by looters (Michael and Burbank 2013). Ceramics at SDR are predominantly limited to the Protoclassic and Early Classic periods, standing in contrast to the more temporally expansive use of CBR (Shelton 2013).

The SDR excavations revealed eighteen primary and secondary burials in various states of preservation, though it is estimated that 40 – 50 individuals were buried within the light and liminal zones of the rockshelter. Like at other rockshelters with associated caves, all burials were placed in the light or liminal zones around the cave entrance; test pits placed in the dark zone caves of CBR and SDR have not revealed primary burials. There was little evidence for post-mortem secondary manipulation of remains, though one burial (Burial 13) was complete with the exception of the skull and two skulls were found un-associated with any post-cranial elements. Though preservation is generally poor, there is no evidence of decapitation or other type of peri-mortem violence, and the most likely explanation is post-depositional movement related to disturbance by subsequent burials, or perhaps ancestor veneration. Similar, Cucina and colleagues (2015) have documented that the modern Maya in Chiapas revisit rockshelter burial sites and rearrange bones to form altars.

As at CBR, attendant grave goods at SDR were utilitarian and all ages and sexes were represented in the skeletal assemblage. Of the 18 burials, only seven were interred with grave goods. Although the percentage of associated grave goods recovered from SDR is markedly higher than at CBR, this difference is not necessarily significant given the comparatively small sample size of SDR. In contrast with CBR, none of the burials excavated at SDR were interred with complete vessels, but instead with obsidian, jadeite, carved bone and various types of drilled shell beads and pendants. However,
whole vessels were found in the looter’s backfill that are similar to those found at CBR within burials, and thus it is likely these originated from graves prior to the looting.

The Overlook Rockshelter (OVR) contained numerous ceramic sherds and a partial, secondarily-deposited human skeleton (Wrobel et al. 2013). Complete excavation of the small site by the CBAS project aimed to understand the nature of depositional practices, providing a model for understanding assemblages from larger rockshelters. A direct AMS date on the skeleton provided a calibrated 2σ date of AD 260 - 315 (PSU#7157, UCIAMS#179792), placing it within the Protoclassic/Early Classic periods. Diagnostic ceramics spanned the Late Preclassic through Late to Terminal Classic period. Among nearly 1700 ceramics sherds recovered at OVR, almost none showed refits, demonstrating that they were deposited at the site individually, rather than as complete vessels. This pattern is consistent with accounts of ritual circuits, in which fragments of complete items such as ceramic vessels and secondary burials were spread across multiple locations, including small rockshelters like OVR. It seems likely that the large deposits of ceramic sherds found at other rockshelters are similar in nature, suggesting that they too were part of these ritual circuits.

Roaring Creek River Valley

Awe’s (1998) Western Belize Regional Cave Project (WBRCP) was initiated in an effort to investigate different subterranean archaeological sites within a regional framework, specifically the Roaring Creek and Macal River Valleys. In addition to the numerous dark zone caves discovered, several small rockshelters were also documented in the Roaring Creek Valley. Uayek Na Rockshelter contained a plastered masonry platform with at least two phases of construction, as well as a cut-stone retaining wall resembling a bench (Awe et al 1998: 226-9). The location, the consistent Late Classic date of the ceramics, and the presence of fragments of imported slate, suggest that the rockshelter was used by a population affiliated with the nearby site of Cahal Uitz Na. However, the lack of prestige items or specialty wares was interpreted to mean that the site was most likely utilized by a non-elite segment of the population. Similarly, Chanchan Ootocho is a small rockshelter located 50 meters from Uayek Na and also appears to date to the Late Classic, based on the surface collection of Cayo Unslipped jar and olla fragments (Awe et al 1998: 229).

Mirro et al. (1999) expanded the WBRCP survey and reported several more rockshelters located within the Roaring Creek River Valley. These include Dave's Hethel Tunich, Amelia's Homil, Actun Zac Thul, unnamed rockshelters west of Actun Uayuazba Kab, a small unnamed rockshelter near Actun Tunichil Muknal, two small rockshelters adjacent to Actun Coo Mac, and Actun Nak Beh. The rockshelters were only reported as present, and described as having varying amounts of ceramic and other cultural materials located on the surface. Dave's Hethel Tunich included only of a small concentration of jute shells and a few ceramic sherds identified as Mount Maloney Black and Garbutt Creek Red, both of which are Late Classic types (Mirro et al 1999: 13).

Of the sites in Mirro et al’s study, the only one to be later excavated was Actun Nak Beh, a small cave near the monumental center of Cahal Uitz Na. Actun Nak Beh has two entrances. Entrance 2 and the cave interior are small and restrictive, but Entrance 1 is a rockshelter and is connected to Cahal Uitz Na by a 240-meter sacbe (Halperin 2005). With the exception of two Preclassic sherds, the cave's ceramic assemblage is completely limited to the Classic period. Hecker’s (2001) preliminary analysis of the faunal assemblage found an overwhelming dominance of mollusks. Curiously, despite the proximity to Cahal Uitz Na and the presence of a sacbe connecting the large open rockshelter to the site's ceremonial center, there was very little material culture. Only 71 diagnostic sherds were found in 7 excavations units. Halperin (2005: 80) interprets this to possibly mean that "the ritual site was swept clean.” Actun Nak Beh does seem to have been an important ritual site, however, because of the presence of three burials, all of which were secondary and incomplete. Burial 1 was located within a small chamber of the cave, and consisted of human bone from a single individual piled with speleothems, a jade bead,
broken obsidian blades, sherds of an Early Classic dish, and charcoal. Burials 2 and 3 were both within the rockshelter-like area of Entrance 1. Burial 2 was capped by river cobbles and limestone rocks, and consisted only of a single thoracic vertebra and a few ribs mixed with a quartz crystal, a slate pendant, obsidian, and parts of a Late to Terminal Classic Belize molded-carved vase. Burial 3 contained partial remains of an adult and an infant, which were found among chert flakes, a sliver of quartz crystal, and pieces of Late Classic polychrome and monochrome serving vessels. Though these are clearly not primary burials, they do appear to be intentional deposits and thus related to the public ritual implied by the site's connection to Cahal Uitz Na and the ceramic fragments littering the cave floor (Halperin 2005: 80).

Another intriguing rockshelter in the Roaring Creek Valley is Actun Uayazba Kab (AUK). The site, which was heavily looted prior to its excavation by the WBRCP, is composed of two rockshelters joined by a passageway, with a cave radiating off of the southern entrance. The Handprint Chamber within the cave has a series of pictographs, including handprints, triangular prints, a schematic drawing, and charcoal smudges (Helmke 2009). Surface collections from the light and dark zones revealed dense concentrations of artifacts, including fragments of faunal remains, lithics, obsidian blades, modified slate, manos and metates, and both freshwater and marine shell. Over 2000 ceramic sherds were collected from the surface and these provided dates spanning the Late Preclassic through Late Classic periods. Excavations revealed seven primary burials, and scattered bone, only some of which came from the burials that were disturbed by looting. The burials were arranged in such a way that they filled the entire chamber without intruding upon one another. The graves seem to have been marked by stones and possibly capstones, and all intruded through a plaster floor. Material culture found nearby the burials included obsidian blades, slate, pyrite, litchi flakes and bifaces, crystal quartzite, jadeite, oliva tinklers and a plethora of jute shell. The pieces of pyrite, quartz and slate may have been part of a mosaic mirror.

Analysis of the AUK burials includes an original analysis by Gibbs (2000) and a comparative discussion of the mortuary practices between AUK and the dark zone mortuary component of nearby Actun Tunichil Muknal by Lucero and Gibbs (2007). A recent case study of one individual (Burial 98-3), which identified evidence of metabolic disease in the form of scurvy, likely indicating some sort of relatively brief but intense environmental disruption (Wrobel 2014). Most recently, a broadly focused contextual analysis of social identity of the seven primary burials recovered from AUK's rockshelter included direct AMS dating of the bone, and found that mortuary use of the site was predominantly during the Late Preclassic and Early Classic period, with the exception of a neonate buried in the same space during the Terminal Classic period (Wrobel et al. 2017). Unlike CBR and SDR, AUK's restricted space contained a small number of individuals (< 20), and the Protoclassic burials uncovered so far appear to demonstrate a somewhat restricted age range, with no children or infants represented. However, around and above the burials were found scattered bone that included sub-adults, presumably secondarily deposited at a later date along with ceramics, jute, and other small pieces of material culture. Human bones recovered from the dark zone were limited to a few scattered fragments of at least 2 individuals, a child and an infant, and it is unknown whether the space was used for primary interment. The restrictive mortuary use is partly contextualized by petroglyphs at the site, which suggest ritual use during this time was by a kin group. Changes in the nature of the site’s use around the 6th century AD appear to coincide with the construction of urban centers in the surrounding area, after which the imagery suggests use in rain-related ritual.

The Emerging Picture of Maya Rockshelter Use in Central Belize

Through ongoing surveys and intensive excavations, central Belize is providing a unique understanding of the role rockshelters played for the ancient Maya. Here we summarize evidence from central Belize related to the social identity of those who used them. First, the current model of rockshelters suggests that they were used by commoners, deriving support primarily from limited studies of artifact assemblages. Indeed,
Recent work appears to largely conform to this assessment, as even the most extensive deposits consistently hold few, if any, exotic items. Additionally, burials rarely show any sort of elaboration, indicating simple mortuary treatments typically associated with Maya commoners. However, it should also be noted that evidence of specialized use suggest that this simplistic characterization may be more complicated; examples include the restricted burial assemblage and rock art of Uayazba Kab; architectural elaborations including walls, platforms, walls, terraces, platforms, and crude alters found at many rockshelter sites (Rissolo 2003, Prufer 2002); and Actun Nak Beh’s secondary burials and direct association with the site center of Cahal Uitz Na.

A second issue is the notion that use of rockshelters was static over time. Problematic in the investigation of this idea is the general lack of stratigraphy at most sites resulting from complex taphonomic processes. At CBR, for instance, the recurrent burial activity acts to disturb and mix prior features, and this problem has been compounded by disturbances to the talcum powder-like matrix by the activity of water, burrowing animals, insects, and looters (Wrobel et al. 2006). Hardy’s (2009) ceramic analysis demonstrated that diagnostic sherds spanning the millennium-long use of the site were present in every level. Similar patterns of mixing have been found at other sites as well, and this acts to confuse the issue of when ceramics were deposited – i.e., whether or not the date of diagnostic ceramics indicates the timing of their deposition. A recent paper on Actun Uayazba Kab specifically addressed this issue, and demonstrated a significant change in the ritual role of the site corresponding with the rise of new urban centers nearby (Wrobel et al. 2017). Transitions in mortuary use are perhaps our most promising indicator of ritual changes, since burials can be directly dated. It is clear that most burials from rockshelters date to prior to the Late Classic period. However, direct AMS dates from bones at CBR and AUK have provided Late Classic dates, indicating that the mortuary ritual remained one of their functions. We await further AMS dates, and the discovery and excavation of other mortuary rockshelters in the region to understand changing patterns of use.

Finally, osteological studies have provided a number of interesting perspectives on social identity. For instance, a forthcoming regional study of cranial and dental modifications found that, while they are almost completely absent in rockshelters, both types of modifications are found in high frequencies in dark zone caves (Wrobel, in press). These clear distinctions suggest differences in behavior related to social identity between groups using caves and rockshelters for mortuary ritual. This may relate to temporal differences, as the cave burials appear to be Late Classic while the rockshelter burials may be dominated by earlier burials. In another forthcoming paper, comparisons of health of individuals buried in caves and in rockshelters show that, in general, individuals in caves tend to have better oral health because they contain a younger selection of the population, while rockshelters contain a wider variety of ages, including older individuals, who tend to accumulate pathologies (Michael 2016; Michael et al., in press).

However, comparison of individuals of similar ages between site types shows no significant difference in health experience, and indicates that all groups living in the region were relatively healthy. Limited isotopic studies thus far show their great promise. At AUK, the consistent combination of strontium, oxygen, and carbon isotope values are found only in the vicinity of the Maya Mountains, lending support to the notion that the site served a local community or family group (Jack 2004; Wrobel et al. 2017).

Conclusions

A recurrent observation among archaeologists is that regardless of size, shape, or location, rockshelters, like any other cave-like space, inevitably demonstrates evidence of human activity in the form of deposited items, such as ceramic sherds, jute shells, or a variety of other objects typically found in association with cave spaces. In this way, all of these spaces seem to be conceptually linked in ancient Maya thought and practice. In central Belize this principle has been demonstrated in the extreme and with respect to the deposition of human
remains in many of the rockshelters that dot the landscape. Finally, intense research on rockshelters in central Belize has demonstrated that their use was characterized by diversity and that the intensity and nature of that use seems to have changed over time, and that these changes are not independent of the social, economic, and political developments of the nearby communities using them.

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THE PALEOINDIAN CHRONOLOGY OF TZIB TE YUX ROCKSHELTER IN THE RIO BLANCO VALLEY OF SOUTHERN BELIZE

Keith M. Prufer, Clayton R. Meredith, Asia Alsgaard, Timothy Dennehy and Douglas Kennett

With very little known about preceramic occupations in Belize we present the chronology of a small rockshelter in southern Belize that has clear evidence of human activity extending back to the late Pleistocene. The shelter is located along the Rio Blanco valley less than 2 km from the site of Uxbenká. Data collected from four seasons of excavation indicate that the first humans began exploiting local resources, including freshwater snails (jute) by 10,500 BC and were drawn to the rockshelter by its location near fresh water and stone tool resources. Jute processing was a major part of the use of the shelter and continued likely through the Classic Period. Unfortunately, the upper levels of the archaic and Classic Maya period are mixed or were removed, possibly for the carbonate jute shells, likely during the occupation of Uxbenká.

Regional Setting

As part of a decade of research in the region the Uxbenká Archaeological Project (UAP) has examined a number of cave and small rockshelter sites in the Rio Blanco river valley (e.g. Moyes et al. 2016; Moyes and Prufer 2014). Like our studies at Uxbenká a major focus of this research has been to better define the sequence, or chronology, of occupations as well as human impact on the landscape (Culleton et al. 2012; Prufer et al. 2015; Prufer and Thompson 2016).

This paper specifically discusses the chronology of Tzib Te Yux (TY) a small rockshelter first discovered in 2009 by the UAP and subsequently excavated in 2012-2015 (Figure 2). In a region with few known preceramic occupation sites, and even fewer Archaic and Paleoindian contexts, this paper demonstrates that there were active populations of hunter-gatherers in the Rio Blanco valley...
Figure 2. Photograph of excavations at Tzib Te Yux showing the flat surface and significant overhang that offers protection from the elements. Note that this is not a very large shelter, but provides direct access to the river below.

Figure 3. Plan view of the surface of Tzib Te Yux and the locations of excavation units from 2012-2015.

Throughout the Paleoindian period and well into the Archaic.

The Rio Blanco valley is defined by a shallow waterway that originates in the interbedded tertiary sand- and siltstone formations known as the Toledo Uplands (Wright et al. 1959). The Rio Blanco flows southward before sharply diverting eastward as it intersects the Xpicilha Hills, a Cretaceous limestone section of the Campur formation consisting of craggy karst hills (King et al. 1986) known locally as the Rock Patch. After intersecting the Xpicilha Hills the river follows a fault eastward until it submerges into a massive cave known locally as Okebl’ha, reemerging south of the limestone hills near the village of Blue Creek. The fault that runs along an east to west trend is visible at least 500 m to the west of TY and continues east of the river for some distance though it reaches its steepest point above a pool in the Rio Blanco where the rockshelter is located. The river is highly sensitive to precipitation changes, making it very active in a region of over 4000 mm of rainfall annually. During major rainy season storms we have observed the river rise over 6 m in less than 12 hours. The pool below the rockshelter is filled with water-rounded cobbles many of which are silicified limestone or chert. Some of these are likely transported downstream during flood events, but others are likely eroding from the fault zone and may be parts of coarse massive conglomerates deposited during the lower Paleocene (Keller et al. 2003).

Rockshelter Description

TY was first excavated during geoarchaeological investigations at the Rio Blanco in 2012. The rockshelter sits at the base of a cliff and is 8 meters above the river during low flow. It is 37m long and 4.5m wide at its widest point and is protected by a silicified limestone and conglomerate overhang (Figure 3). Due to piping along the fault, the matrix and clasts of this conglomerate have taken a siliceous texture such that they are workable and
produce sharp, though coarsely textured cutting edges. The floor of the rockshelter is relatively flat and composed of sediments dominated by culturally deposited *Pachychilus spp.* (jute) shells, found in abundance in the river below, interrupted only by large breakdown from the rock face above. The vast majority of the jute shells were culturally modified in the past as evidenced by the removal of the distal end spire of the shells to facilitate consumption, as detailed in Halperin (et al. 2003). While jute densities vary from >50% of the matrix to less abundant, they are found in significant numbers in every level of the excavations.

**Excavations**

Initial excavations in 2012 focused on exploring the chronology of TY and determining if deposits were intact and had stratigraphic integrity. We were also interested in whether TY functioned as a mortuary site, as has been the case for rockshelters in the Bladen Branch of the Monkey River, some 50km to the north of TY (Saul et al. 2005). While the site is not a cemetery per se, some human remains have been recovered from what do not appear to be formal burials. A full discussion of the nature of rockshelter mortuary behavior is outside the scope of this paper.

The single test unit (Unit 1) excavated in 2012 produced a depositional sequence that in general reflects the overall history of the use of the rockshelter (Figure 4). The uppermost layers consist of unconsolidated sediments over a jute midden deposit that is > 40cm in thickness. This midden deposit has a consistent density throughout of approximately 60% jute shell by volume, and contains an abundance of animal bone and lithic material. Below this sequence is a red clay-rich layer that contains fewer jute. The contact between the layers is indistinct and some mixing may have occurred. Shell material from this level shows more evidence of terrestrial snails, though it is still dominated by jute. Lithic materials, faunal bone, and charcoal are abundant in these layers. Below the red clay and above decaying limestone bedrock is a yellow clay layer with fewer cultural materials. A single date run on charcoal from the interface of the yellow/red clay layers, at 58cm below surface in Unit 1, produced a date of cal. 10,571 - 10,526 BC.

In 2013-1015 a UAP team led by C. Meredith, A. Alsgaard, and T. Dennehy returned to TY for more extensive excavations, opening an additional six 2 x 2m trenches and three 1 x 1m units. Excavations were all conducted in 5cm arbitrary levels (or less when natural sediment changes were observed) to maintain careful stratigraphic control. Artifacts, including lithic, faunal, and organic (burned plant) materials were point plotted and collected and labeled separately. Materials were screened in ¼” mesh, and subsamples of sediments floated. The stratigraphy in these units was comparable to Unit 1, but the lowest, basal, clay layer was not always distinct.

**Chronology of Tzib Te Yux Rockshelter**

Understanding the modern through Middle Archaic human presence at the rockshelter is confounded by several taphonomic and cultural factors. The upper 20cm of deposits are mixed and represent the remnants of
The Paleoindian Chronology of Tzib Te Yux Rockshelter

Figure 5. Chronology of Tzib Te Yux, by unit. These dates suggest intensive use between 6500-10500 BC, making TY one of the oldest known sites in Mesoamerica. Depths shown are below the surface as measured for each unit. All errors are two standard deviations.

the last 6000 years of use. A date obtained for unit 7 at 47cm below the ground surface produced a Postclassic date (cal. AD 890-975) just below an intrusive pit containing partial human remains in unconsolidated sediments. Our chronological work has focused primarily on sections of the excavations that were either within the densely packed jute midden or below it in the red and yellow clay layers. In Unit 8 this densely packed midden begins just 25cm below the ground surface, where we obtained the first of a series of dates starting at Cal. 8768-8629 BC.

Our overall observations are that either the rockshelter was not heavily utilized during the Middle to Late Archaic or the Classic Maya period (hence there was little aggradation of sediments). It is also possible that blocks of jute rich sediments were mined from the rockshelter floor, perhaps during the occupation of Uxbenka, located just 2km to the north, perhaps for plaster production, soil conditioning, or food processing. While additional focused radiocarbon studies might better clarify the upper levels, it may be of limited interpretive value considering they contain mixed Classic Period ceramic and pre-ceramic Archaic materials.

Below the disturbed upper levels, in the dense jute midden and continuing to the yellow clay layers the dates are remarkably consistent in suggesting intensive and sustained activity from the Early Archaic through the initial habitation of the Rio Blanco valley sometime prior to 10,500 BC. We note that there are no intrusive recent dates into the midden or below. A series of 17 high precision AMS radiocarbon dates on charcoal suggest that TY was intensively used as a hunting and animal processing site, and likely a shelter, over a period of at least 4,500 to 5,000 years (Figure 5), based only on intact deposits. These dates suggest that the upper levels of the intact jute midden date to approximately 6000 – 7000 BC, with the lower levels dating to as early as 10,500 BC. While there are some reversals within individual units, they are generally between dates within 1-3cm of each other vertically.

Discussion

Analyses of the lithics, animal remains, and paleobotanical samples from TY are still ongoing. They represent some of the best preserved and oldest products of human culture ever recovered in Belize or tropical Central America. The only comparable published site is El Gigante rockshelter, located in central Honduras (Scheffler et al. 2012) which has evidence of a similar early occupation date.

Initial Paleoamericans are generally believed to have been exclusive hunters and gathers, relying on mobility to acquire seasonally available wild resources (Wheat 1967). It has also been assumed that they were primarily big game hunters, relying on large animals for subsistence and hunting with sophisticated stone spear point. More recent assessments suggest a wider diet-breadth and a more diverse toolkit for exploiting smaller animals and plant (Speth et al. 2013), consistent with the idea of groups of Mesoamerican hunters using expedient technology and non-diagnostic tools composing one of several cultures in the Americas at the end of the Pleistocene (Ochoa 2012). This is supported by our preliminary findings in southern Belize of expedient blades
and scrapers and a paucity of diagnostic tools, and consistent use of jute in well-dated late Pleistocene contexts (Meredith 2014).

Establishing the antiquity of human presence in Belize and in the tropics of Central America is the first step in understanding the long duration of occupation and adaptation that preceded the first sedentary communities and development of food production. The goal of identifying and dating stratified sites from the Paleoindian period has been an elusive target for archaeologists. This paper documents the chronology for the somewhat truncated history of Tzib Te Yux rockshelter and places humans in southern Belize during the terminal Pleistocene serving as an initial step towards a broader understanding of the first peopling of the tropics of Central America.

Acknowledgements We are grateful to the Institute of Archaeology for permissions to conduct excavations in the Rio Blanco Valley and for their enthusiastic support of our research. Funding for this study has been provided by generous grants from the Alphawood Foundation (Prufer) and the National Science Foundation (Prufer and Kennett). This project would not have been possible with the support and assistance of the people of the village of Santa Cruz, on whose traditional lands Tzib Te Yux is located. We thank them, as well as John Southon (UCI-KECK AMS), the late Ugo Zoppi (DirectAMS), Seth Newsome, Zach Sharp, and Nicu-Viorel Atudorei (UNM Center for Stable Isotopes) and Brendan J. Culleton (Penn State University AMS Facility).

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The prevalence of Late Classic cultural material in ancient Maya ritual cave sites has led both researchers and lay people to characterize cave use as a Late or Terminal Classic phenomenon; yet, data collected by the Belize Cave Research Project demonstrate that many if not most caves were initially used during earlier temporal periods and many sites demonstrate continued use beginning in the Preclassic period. From 2011 to 2015, the Belize Cave Research Project (BCRP) has explored caves in northern, western, and central Belize. In this paper, we discuss these and other sites that have been intensively investigated over the last 20 years. Here, we present the preliminary results of our analysis of the spatial/temporal aspects of ancient Maya cave use in Belize.

Introduction

The Belize Cave Research Project (BCRP) under the direction of Holley Moyes and Jaime Awe systematically collected data from ancient Maya ritual cave sites in Belize from 2012-2016. The goal of the project is to investigate the role of ritual, religion, and ideology in complex society to better understand how beliefs and practices affect political processes and decision-making. Talcott Parsons (1951:24) defines ideologies as “the shared framework of mental models that groups of individuals possess that provide both an interpretation of the environment and a prescription as to how that environment should be structured.” Not only do ideologies aid in interpreting and understanding the world, but they serve to crystallize and communicate shared beliefs, opinions and values (Jost 2008; Jost et al. 2009). Because ideologies can be fundamental belief systems based on visions, and are often existential in nature, they can have far-reaching, long-term, and sometimes catastrophic effects on socio/political and economic systems (Weber 2005 [1930]).

When studying the past archaeologists are presented with the opportunity to view history from a long term perspective and bear witness to extended cultural and environmental processes and their ultimate outcomes. Through our work on the ancient Maya cave sites, we understand the artifact record in caves to be one of the myriad of ways that the Maya “materialized” (Demarrais 1996) ideologies. We follow Demarrais and her colleagues who argue that ideologies, be they religious, cosmological, or political, are effective means used by those in power to establish and maintain their hegemony. From a Durkheimian perspective, religious ideologies help to maintain political solidarity in times of external stress. Alternatively they may be used to foment change in times of uncertainty. Understanding ritual cave use is crucial in evaluating ancient Maya political strategies that include the manipulation of ideologies and religious practices.

In our work, we hope to illustrate how changing worldviews affected decision-making over time and ultimately impacted Maya historical trajectories. Cave sites provide an unambiguous context for studying ritual practices in the archaeological record. Caves were not "convenient cavities" as some have proposed (Stauss 1997), but were symbolic spaces instantiating Maya cosmology (Brady 1989; Brady and Ashmore 1999; Moyes and Brady 2012; Prufer and Brady 2005). They were not simply representations of entrances to the underworld, but were those spaces. Throughout Mesoamerica, even today, caves are viewed as ritual spaces (Christenson 2008; Scott 2009; Vogt and Stuart 2005), but there is little textual data concerning ritual cave practices in the deep past. However, the archaeological record attests to their importance as ritual venues. It is the purview of cave archaeologists to work toward understanding how and when these sites were used, who was using them, and how caves as sacred spaces could be manipulated in political contests in the acquisition and maintenance of power. In this project we examine how Maya ritual has developed historically so that we may correlate changes in ritual practices with evolving socio/political structures both in the development of social complexity and its
subsequent Late Classic transformations, so that we better understand the role that ritual may have played in these processes. Therefore, we argue that ritual practices manifest in material form in the retrospective archaeological record, but that this record is not a reflection of social change, but represents the dynamic role of ritual practice in the transformation process itself.

The BCRP has been investigating the most endangered and archaeologically intact caves in multiple regions of Belize. The project is designed to record cave contents and conduct basic analyses to better understand variation in cave usage on regional and sub-regional scales. Multiscalar investigations allow us to address local and regional differences in ritual cave use such as patterning in chronologies, changes in artifact assemblages, and variation in constructed spaces. We can then evaluate these variations over space. These data allow us to articulate cave use with social developments and environmental circumstances in different political spheres as well as ecological zones in Belize where there is variation in terms of rainfall, ecology, and geographic topography. In this paper we examine the chronology of cave use for 28 caves based on their ceramic chronologies. We focus primarily on the earliest evidence for use of each site and trace cave usage over time. This work also allows us to investigate the spatial aspects of initial usage and develop models of how cave use develops. Our sample is by no means complete and literally hundreds of caves remain unrecorded, therefore these results are, as all archaeological data, subject to future change. However, we feel confident that our data set is a good representative sample that reflects robust patterns of cave use at a regional scale.

Methods

The BCRP visited 75 caves throughout Belize, of which 25 were chosen for intensive recording and analyses. We also include in our analyses caves that were previously investigated by Moyes and Awe increasing the sample size presented here to 28. Chechem Ha (Moyes 2006a; Moyes 2006b) and Actun Tunichil Muknal (Awe et al. 2005; Moyes 2001) were investigated by Moyes and Awe during the Western Belize Regional Cave Project, and U Mehen Sek was investigated with the Minanha Cave Project (Moyes and Awe 2011). We consider data collected from these sites commensurate with the BCRP data because they were recorded using the same methods. Data collected from all sites have been consistently and systematically recorded and all field work was supervised by Moyes.

The caves reported here were mapped, photographed, excavated, artifacts inventoried, ceramics analyzed, and organic materials collected for AMS dating. We have divided the sites into 8 regions (based primarily on river drainages), covering northern and western Belize north of the Maya Mountains. Our areas include 4 caves in northern Belize near the site of Blue Creek (Alvin’s Cave, Rice Mill Caves 1, 2, and 3); 7 caves on the west side of the Macal river in western Belize near the site of Minanha (Horno, Trumpet Tree, Isabella, Moth Cave, Lubuul Actun, U Mehen Tsek’, and Chechem Ha); 3 caves located on the Vaca Plateau near the site Ix Chel abutting the Guatemalan border (Pottery Cave, Xai’be, Ch’en P’ix); 4 caves on the eastern side of the Macal near the Maya village of San Antonio in the Eljio Panti Forest Reserve closest to the surface sites of Guacamayo or Pacbitun (Ka’am Be’en, Sayab’ak, Cormorant, K’aana); 4 caves in the Mountain Pine Ridge near the site of Mahogany (Tan Che’, Actun Am Actun, Yax Moch, Nohoch Ka’); 1 cave in the Chiquibul Forest Reserve (Las Cuevas); 1 cave in the Roaring Creek drainage near the site of Cahal Witz Na (Actun Tunichil Muknal); and 4 caves in the Middle Sibun drainage near Hell’s Gate (Che Kom, Chawak Actun, Ceremonial Cave, and Sak Tuch).

At this point we must note that with the exceptions of Actun Tunichil Muknal and Chechem Ha, all sites exhibited some evidence of looting. Though the project has taken pains to record sites that were not heavily vandalized, there is no doubt that intact polychromes and other whole vessels were likely removed long before we began investigations. However, we feel that ceramic sherds and broken vessels provide a good chronological framework because these less valuable or collectible artifacts are the least affected by looting. Although archaeologists value discovering whole vessels and indeed polychrome images
are interesting for study, when evaluating assemblages in caves, whole vessels account for little statistically (Moyes et al. 2015). For instance at Chechem Ha Cave, there were 2074 ceramic artifacts consisting of sherds, whole, and partial vessels. Of these, 563 were diagnostics. Therefore, only 51, or about 2.5% of the entire assemblage was comprised of whole vessels which accounted for 9% of the diagnostics (Moyes 2006: 187), suggesting that large and intact vessels collected by looters are likely to have only a modest influence on artifact counts and subsequent analyses. Although recording ceramic sherds is tedious, requiring a "high definition" approach as discussed by J. Gowlett (1997), it allows us to view the archaeological record in high resolution, focusing on details. Most of the ceramic sherds in the caves were located in surface scatters as palimpsests. This was to be expected as caves rarely contain deep subsurface deposits. The most notable exception is Chechem Ha cave, where deep subsurface deposits dated to the Pleistocene period (Moyes 2006).

In this paper, we report the results of our ceramic analyses for the 28-cave sample. Ceramics are the most abundant artifact class at most sites, aside from caves in northern Belize, where lithic artifacts outnumber ceramic artifacts. Ceramic chronology building is the most cost-effective and in many instances, more precise than radiocarbon assays due to the plateaus in the calibration curve, particularly during the Late Classic period. This complication affects precision, particularly in Late Classic contexts, by increasing the size of date ranges or by not allowing for ranges to be trimmed. Therefore, ceramic chronologies that have been established based on stratigraphic contexts can provide more precise dating.

One of the strengths of the project is that our chronological designations were calibrated and overseen by ceramicist Laura Kosakowsky to insure data quality. Therefore, each of our crew members received training in ceramic recording and analyses in a series of workshops conducted at the beginning of each field season. This allowed us to conduct reliable analyses of diagnostic ceramics using the standard Type: Variety Mode method (Gifford 1976). We use Gifford’s chronology for consistency for western and central Belize, and have updated some of his designations. For instance, it is clear from recent research and radiocarbon dating that the Daylight Orange type found in western Belize originally classified as Postclassic, fits squarely into the late part of the Late Classic period (Spanish Lookout I and II) (for example see Moyes 2001; Hoggarth et al. 2014). Additionally, we modified Gifford’s Belize Valley ceramic typology to represent the more commonly used framework of Petén type names for the caves in northern Belize.

We chose not to collect ceramics for chronological analyses in the laboratory and our methodology dictated that all ceramics in surface contexts in each cave (not random samples), were recorded in situ. In our study, each individual rim, refitted rims, whole or partially intact vessels was assigned an artifact number and attributes recorded on data sheets in the field. Rim profiles were drawn for each sherd or complete vessel. In most cases, the crew supervisor assigned the type-variety designation in the field. Problematic examples were recorded and photographed, and in rare cases collected and analyzed by Kosakowsky, then returned to the cave. Table 1 describes the number of vessels analyzed for each cave. To quantify our data, we counted all sherds located at the site, but only conducted chronological analysis on rim sherds and whole or partially intact vessels. Rims were refitted in situ where possible. In situ refitting was an important part of our methodology because we did not want to inflate our data by counting the same vessel more than once. While this was indeed an onerous task, prior research suggests that few rims located in sherd scatters refit. In her study at Actun Tunchil Muknal, Moyes found that in many cases, sherds from the same vessel that refit were stacked together. Out of the entire assemblage of 1501 diagnostic and non-diagnostic entities, sherds from the same vessel were located no more than a few centimeters apart, with few exceptions (2001: 73-75). Our refitting studies also benefitted because the Maya only produced hand-made vessels introducing a great deal of variation, even within a specific type. Consequently, no two vessels were exactly alike making it possible to fairly easily determine whether rims refit.
Also of interest is that in cases of in situ breakage, we found no instances in which vessels refit completely and invariably missing fragments were not located within the cave. Single sherds of rare or distinctive ceramic types that were easily identified in field recording did not refit with each other or any other vessel, indicating that these sherds were imported into the cave as offerings in and of themselves. By this sort of high definition work at Actun Tunichil Muknal, Moyes (2001) demonstrated that parts of vessels were removed from the site following ritual breakage, and that single or “orphaned” sherds were brought into the cave as offerings. This agrees with James Brady’s findings from Naj Tunich cave in Guatemala, where he noted that a portion of smashed vessels was always missing (1989:86). It begs the question of where sherds were obtained for importation into the cave. It is possible that sherds were curated for these occasions, were gathered from middens as Hayden and Cannon’s (1984) ethnographic work suggests, or may have been collected from smashed vessels at other rituals, thus linking the events.

Radiocarbon dates were processed by Erin Ray at the Center for Accelerated Mass Spectrometry at the Lawrence Livermore Laboratory in Livermore, California. Due to the prohibitive cost of AMS dating, the project was unable to obtain a full suite of dates for each of the 25 caves. Our goal for these absolute dates was not only to correlate them with ceramic chronologies but also to date architectural features. However, because most of the samples collected directly from architecture were

### Table 1

Table shows temporal aspects of 28 caves in study based on ceramic chronology and AMS dating. Number of diagnostic ceramics indicated by “n.”

<table>
<thead>
<tr>
<th>Cave Name</th>
<th>Early Preclassic (1200-800 BC)</th>
<th>Middle Preclassic (650 - 350 BC)</th>
<th>Late Preclassic (350 BC - AD 100/150)</th>
<th>Terminal Preclassic (AD 100/150-250)</th>
<th>Early Classic (AD 250-600)</th>
<th>Early Late Classic (AD 600-700)</th>
<th>Late Late Classic (AD 700-950)</th>
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<td>Northern Belize</td>
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<td></td>
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<td>x</td>
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<td>x</td>
<td>x</td>
<td>x</td>
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<td>x</td>
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<tr>
<td>Macal Drainage West</td>
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<td></td>
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<tr>
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<td>U Menen Tiek’ (Son of Skull)</td>
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<td>Chechem Ha (Poisonwood Water)</td>
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<tr>
<td>Mountain Pine Ridge</td>
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<td>Tan Che’ (Roof Beam)</td>
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<td>Pax Moch (Green Frog)</td>
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<td>Actun Tunichil Muknal (Cave of the Crystal Sepulcher)</td>
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palimpsests and therefore problematic, we will reserve a thorough discussion of our AMS dating results for a future publication.

Results

Table 1 shows the time periods during which the caves in our survey were utilized. Figure 1 is a color-coded map of these results. The earliest calibrated dates we have for ritual cave use (not only in Belize but anywhere else in the Maya Lowlands) are found at Actun Chechem Ha on the west side of the Macal River in western Belize near the Guatemala border (Moyes et al. 2009; Moyes 2006a; Moyes 2006b). Early Preclassic (1200-800BC) dates obtained from AMS assays were reported at a 2-sigma probability range calibrated using OxCal 3.9. The earliest cultural levels were excavated from well-stratified deep deposits in Chamber 2 of the cave. Lower levels of these deposits dated to the Pleistocene period, but these contained only two or three tiny fragments of charcoal and there was no other evidence for human usage. Sparse layers of charcoal fragments begin to appear later in levels that dated 1320-910BC and 1320-930BC respectively, which may suggest that people began to visit the cave more regularly, though this is uncertain. Carpets of thick charcoal appeared in the excavations dating from 1190-920BC, which clearly indicates human usage, but the first Cunil-like ceramics were found in higher levels dating to 1100-820BC. Because this is the first undeniable evidence of human activity, the cave is known to date to this time, though ancient preceramic hunter/gatherers/foragers may have explored or conducted more ephemeral rites for hundreds of years prior to the deposition of ceramic offerings. Similar early AMS dates have also been obtained from bedrock at nearby Actun Isabella and Moth Cave but these were not associated with cultural materials. Chechem Ha is also the only cave in our study to exhibit Middle Preclassic (650-350BC) usage as evidenced by both AMS dates and Savana Group ceramics.

Based on ceramic chronologies, in the Late Preclassic (350BC-AD100) period cave use expands to include nearby Actun Isabella and Moth Cave, and on the east side of the Macal River, Ka’am Be’en. The earliest cave usage in northern Belize Rice Mill III Cave also occurs at this time. All of these sites continue to be used in the Terminal Preclassic (AD 100-250) when U Mehen Tsek’ near Minanha and Lubuul Actun located in the Minanha site core come into use. On the east side of the Macal very near Ka’am Be’en, Sayab Ak and Cormorant Cave begin to be used as well.

In the Early Classic (250AD-600AD) period three caves in northern Belize, Alvin’s Cave, Rice Mill 2 and Rice Mill 3 contain evidence for initial use. Horno Cave near Chechem Ha comes into use at this time as well. Although there are no ceramics dating to this period in Moth Cave near Minanha, a single AMS date (250-390AD) from excavated features suggests that the cave was still active. On the east side of the Macal, K’aana Actun near Ka’am Be’en is heavily used in the Early Classic. Actun Tunichil Muknal in the Roaring Creek drainage is also first used in the Early Classic, though it is the chambers at the entrance of the cave that were employed, not the famous Main Chamber deep in the cave’s interior that is visited by tourists today, which dates solely to the late facet of the Late Classic period. The Early Late Classic period (600-700AD) has four caves that come into use in western Belize, Las Cuevas in the Chiquibul Forest Reserve and the three caves that we investigated in the Vaca Plateau near the site of Ixchel. In the late Late and Terminal Classic (700-900AD), the four caves that we investigated in the Mountain Pine Ridge and four caves in the Sibun near Hell’s Gate first began to be used.

Discussion

The most striking pattern in ritual cave use is that once rites begin to be conducted in caves, the sites are then used continually through the late Late and Terminal Classic periods. The only exception in our data set is Moth Cave, which contains no ceramics dating to the Early Late Classic period and no radiocarbon dates spanning that time. It is possible that this is a sampling error or that looting has eliminated these data. One problem could be that Moth was originally recorded by the Minanha Cave Project in 2010 and re-located in 2015 by the BRCP to record the ceramics. To our disappointment, the forest surrounding the site had been cleared and...
burned, so that the cave now sat in the middle of a milpa. Therefore, many of the artifacts that were present in 2010 had likely been removed.

When viewed collectively there are an increasing number of caves being used over time (See Figure 1). In our sample only Chechem Ha is used in the Early and Middle Preclassic, but following this, 28% of all caves come into use in the Late (14%) to Terminal (14%) Preclassic periods and another 22% are added in the Early Classic. Therefore more than half of all caves in our sample (54%) were used before the Late Classic period.

Early cave use does not necessarily map on to early occupations of an area. For instance, although Chechem Ha cave was used in the Early Preclassic, the nearby site of Minanha (6.5km distant) and its surrounds dated to the Middle Preclassic period (Iannone et al. 2014:283). The closest sites with Early
Preclassic occupations are Xunantunich (Brown et al. 2011) located 9.7 km northwest of the cave, Chan Nòohol 9 km northwest (Robin et al. 2004) and Cahal Pech 12 km northeast (Awe 1992; Garber and Awe 2009). These sites are all at least a ½ day to a day’s walk from the cave. Additionally, at the site of Las Cuevas, both ceramics and a suite of 20 AMS dates demonstrate that cave use began in the Early Late Classic and continued through latter half of the Late Classic. However, excavated buildings in the site core directly above the cave entrance date only to the late facet of the Late Classic (Kosakowsky 2013) suggesting that the cave was used before the site was constructed. Both of these instances suggest that some caves were distant pilgrimage places well before they were surrounded by population centers.

Every cave in our study is used in the second half of the Late Classic to Terminal Classic periods and there is a 32% increase in cave use overall. The two geographic areas in which we see this Late Classic expansion are the Mountain Pine Ridge and Sibun drainage. With the exception of the upper Macal River drainage (see Awe 1985 and Awe et al. 2005), which was predominantly occupied during the Terminal Classic period, we know little of the surface sites around the Pine Ridge in terms of chronology. The Mahogany site, which is the largest in the region, has not been surveyed or excavated. But in the Sibun, there has been a great deal of research conducted most recently by the Xibun Archaeological Research Project lead by Patricia McAnany. Working with this project, Polly Peterson (2006) surveyed 15 caves and 2 rock shelters. She reported Middle Preclassic sherds at Actun Chanona near the Hershey site as well as at two other caves further north- Ek’ Waynal near Tiger Sandy Bay and Actun Ibach in what the project refers to as the “Thumb” cave district. While Peterson argues that people were living in the area at this early time period, McAnany and her colleagues (2004:296–297) suggest that cave use was a result of long-distance pilgrimage. Peterson also reports a number of caves with continuous usage from the Late Preclassic to the Postclassic. Her chronology is a bit problematic in terms of comparison with our data because her Postclassic temporal designation spans the period of 850-1200AD. This is a bit troublesome as this would subsume what many archaeologists, including Gifford, would consider to be the later part of the Late Classic or Terminal Classic period (850-950/1000AD). Therefore Peterson considers ceramics such as Roaring Creek Red high pedestal vases to be “Postclassic.” At Actun Tunichil Muknal, these are designated as late facet Late Classic to Terminal Classic with associated AMS dates of 760-910AD.

But despite any quibbles with Peterson’s chronology, her data illustrate that there is more time depth in the area than our data set predict. In fact, of the 8 caves in which Peterson conducted a chronological analysis, none dated solely to the Late Classic. According to McAnany and her colleagues (2003:77), the evidence recovered from surface sites points to a rapid settlement of the Sibun valley during the Late/Terminal Classic and test excavations did not yield evidence of occupation before or after this time. She suspects that the demand for cacao brought colonists to the area. If so, this late fluorescence could help explain why the BCRP discovered sites containing few artifacts dating solely to this temporal period.

Many of the caves that we investigated with smaller entrances were blocked up with medium to large-sized limestone boulders in the later part of the Late Classic period. For instance, the entrance to Chechem Ha Cave was reported to have been blocked with medium to large-sized boulders when it was discovered by William Pleitez (2006a:174). Consequently, the family removed the blockage to create access for tourists. Both the ceramic chronology and AMS dates from the cave’s interior suggest that the entrance was blocked off no later than 960AD. Other caves were closed in a similar manner in at the end of the Late Classic period as well, including Moth Cave, Lubuul, and Pottery Hill Cave whose entrances were opened recently by looters. In the case of Trumpet Tree cave, the entrance blockage remained intact. The reason for this was that the cave was originally accessed via a small squeeze, which had been easily covered over by the ancient users with small boulders. However, recently a Trumpet Tree had grown through the roof of the tunnel system creating hole that looters could use to enter the
cave, avoiding the original squeeze. Otherwise the site might not have been discovered. Formal walls with built doorways constructed at entrances to tunnel systems were also “closed” with rocks and later reopened by looters at K’aana and Cormorant Cave.

Note that there are no Postclassic ceramics in the BCRP data sets. We have yet to locate a single Postclassic sherd in any of the cave sites we have investigated thus far. Peterson found 9 Early Postclassic sherds (Papacal Incised) in Actun Ibach, the only ones from her study. If these data are correct it would be one of the few instances of known Early Postclassic cave use in Belize. Peterson also reports one “Early Postclassic” radiocarbon date (cal 890-1030AD) collected from carbon on a wall at the entrance to Actun Ik. This date could easily fall into the Terminal Classic at its early end and, is reported for some reason at 1σ, which is a bit puzzling because her other dates are 2σ. Her other evidence for Postclassic usage is a Late Postclassic date from a splinter of pine torch found in a rock shelter, but none of her data suggest any sort of sustained or continuous Postclassic cave use.

The BCRP has evidence of possible Early Postclassic use from Las Cuevas based on 2 AMS dates collected the exterior of Wall 2, located deep in the cave’s interior (Figure 2). The wall is a substantial construction of small to medium sized boulders and speleothems that completely occludes the tunnel passage. A constructed doorway was blocked in antiquity with loose rocks that were found strewn on the floor in front of the wall’s exterior indicating that looters pulled away the blockage. The construction was plastered with mud containing charcoal that appeared to have been collected from the cave floor (Figure 3). To date the construction we ran 10 charcoal samples from the plaster to ascertain a terminus ante quem date. Of the 10 returns, all fell into the Late Classic periods and two were possibly Postclassic with overlap in the late Late to Terminal Classic. There is a 99% certainty that the first falls between 870-1012 AD and a 91% certainty that the second falls between 971-1047 AD. These date ranges postdate all others collected in the cave or from the surface above and are the latest Classic period dates we have for any of the caves in our study. If the wall was indeed constructed at this late date, it is tempting to suggest that it represents a termination event; but, the constructed doorway in the feature makes little sense if one were walling off the site. It is also possible that these dates represent some sort of late stage repair to the wall, though there is no direct evidence for this. The complete lack of ceramic sherds in the cave dating to the Postclassic period casts doubt on Postclassic cave use, but a single Miseria Appliqué incensario from Structure 2 on the surface above the cave reported by Digby (1958) and three Miseria Appliqué censer fragments found in the final collapse of Structure 1, the eastern temple (Kosakowsky et al. 2013) suggests Terminal Classic use of the site.
Another possibility is that the many walls and blockages in the Las Cuevas tunnel system were “closed off” or terminated at this time, though it is unclear as to why they would add mud plaster to the wall.

Evidence for Late Postclassic cave use is practically absent in our survey area. The one exception is Actun Uchentzub in the Macal River valley near the Postclassic site of Tipu. At Uchentzub, Peter Schmidt (1976) discovered several fragmented pedestal censers which he noted shared considerable similarities to censers from Mayapan in the Yucatan. Schmidt further noted that these censers dated to the Late Postclassic period, and he suggested that they may have been introduced into the area by northern migrants who were reoccupying western Belize at this time.

The latest cave use reported in the literature for Belize occurs in the Spanish Colonial period (Awe and Helmke 2015). A Spanish-manufactured olive jar accompanied by a Maya wide-mouthed vessel both dating between the late 16th to early 17th centuries were discovered in Olive Jar Cave in the Roaring Creek valley. Also in this area, a European rapier was found cached in a nearby rockshelter. Awe and Helmke suggest that these objects were offerings made to Maya deities as a form of resistance to Spanish incursions. Additionally, Peterson (2006:108) reported that, a fragment of a Spanish Colonial period effigy spout of an open-mouthed lion that was collected from Actun Chanona by members of the Belize Department of Archaeology (DOA site file 32/189–5:2). While we know that well-documented cave use continues into the historic period in Yucatan (See Awe and Helmke for discussion 2015:351-352; Stone 1995), in Belize our knowledge of Postclassic rituals is limited and reports are rare.

Conclusion

If one walks into a cave and notices large jars dating to the late facet of the Late Classic period, it is easy to jump to the conclusion that the cave is a Late Classic site. In fact, in Belize, almost all caves contain these jars located in high places or placed along the back walls. What we do not find in our sample are many whole or partially intact vessels dating prior to this Late Classic period. Moyes and her colleagues have suggested that this particular pattern of use first identified at Actun Chechhem Ha, constitutes a change in ritual practice that, based on concurrent drying conditions, population decline, and subsequent abandonment of the area is the manifestation of a Late Classic Drought Cult (Moyes 2006a; Moyes et al. 2009). However, contrary to the obvious evidence for Late Classic usage, using a high definition approach that includes ceramic analyses, data from excavations, and AMS dating, our project demonstrated that over half of the caves surveyed contained substantial evidence for sustained use beginning in the Preclassic or Early Classic periods.

The paucity of Postclassic cave use, particularly in the Early to Late Postclassic periods is also telling. In previous work Moyes and her colleagues (2009) have attributed this cessation in use to ritual failure and outright rejection of the institution of Classic period kingship. New evidence from Baking Pot (Hoggarth et al. 2014) suggests that people moved out of the area during the Early Postclassic and returned in the Late Postclassic, which could explain why caves were abandoned and not reused until later on. But, there are only isolated cases of either Late Postclassic or Colonial period cave use in Belize with no sustained ritual practice. This suggests that caves were intentionally avoided, though it is possible that this reflects limited use by very low and ephemeral populations in the region. However, the large accessible caves with long histories of ritual activity were never revisited. Connections of cave rites with a failed institution of kingship and state ritual, or even lesser-elite associations with caves would help to explain this result. Our findings suggest that at the end of the Classic period, we are possibly witnessing not just a change in ritual practice but a change in the religion itself.

Acknowledgments

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A JAUNT THROUGH THE CONSTRUCTED WILDERNESS: THE NOHOCH TUNICH RITUAL BEDROCK OUTCROP AND LATE CLASSIC PERIOD URBANISM AT PACBITUN, CAYO DISTRICT, BELIZE

Jon Spenard

Ethnographic and ethnohistoric accounts from throughout Mesoamerica demonstrate indigenous perceptions of urbanism emphasized geographic landmarks – caves, rockshelters, mountains – as features of prime importance for community organization. Through regular ritual performances, such landmarks became socially and symbolically significant locations of the urban landscape, acting as boundary markers, community origin places, and the homes of various gods and ancestors. Yet, archaeological discussions of Maya urbanism regularly focus on the profane – built environments of site cores, agricultural and economic relationships between settlements, and land management. In this paper, I suggest discussions of Maya urbanism must include ritually-charged landmarks located within and around settlements, and pre-Hispanic strategies for their incorporation into urban designs. As an example, I discuss the Nohoch Tunich Bedrock Outcrop Complex (NTC), a hilltop bedrock outcrop located near Pacbitun. The NTC is replete with a variety of karst features – rockshelters, small caves, boulders, etc. – all heavily, yet subtly modified during the Late Classic period with crude architectural constructions, likely designed to enhance the “naturalness” of the outcrop. Drawing on analogies from the Late Postclassic period Aztec urban designs in central Mexico, I propose the NTC, a purposefully constructed “wilderness” place, was designed as a pleasure garden for the Pacbitun Maya.

Introduction

In this paper, I review common archaeological approaches to cities for demonstrating how symbolically charged ritual landmarks have commonly been overlooked as urban components. Yet, pre-Hispanic Mesoamerican conceptions of urbanism indicates the built environment was inextricably interwoven with the symbolically charged landscape surrounding it. Thus, I propose for achieving a clearer understanding of Mesoamerican urbanism, archaeologists must consider the landscape and ritual landmarks surrounding settlements. To that end, I discuss the relationship between the urban core of Late Classic period Pacbitun, Cayo District, Belize and the Nohoch Tunich Bedrock Complex (NTC), a geologically complex, hilltop outcrop 1.5km from downtown Pacbitun (Figures 1 and 2). Specifically, I discuss how this seemingly natural place was extensively, yet subtly modified following a wilderness aesthetic of beautiful unruliness. Comparisons with similar ritual landmarks documented from the Late Postclassic period in central Mexico, particularly those commissioned by Aztec lords, suggest these modifications were intended to transform the outcrop into a pleasure garden, an urban feature heretofore unrecognized in the Maya region.

Archaeological Approaches to Cities and Urbanism

Hirth (2008) notes archaeologists working in Mesoamerica regularly study cities and urbanism from two perspectives. One is functional, whereby archaeologists hierarchically rank settlements within a region, determining which are dominant, which are subordinate, which are the core settlements, and which belong to the periphery (Hirth 2008:276). A primary deficiency of this approach is its inability to provide a clear-cut definition of any settlement type, whether it be a hamlet, village, town, or city; instead, each site is defined on a case-by-case basis in relation to their

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Figure 1. Map of Belize Valley showing locations of Pacbitun and the NTC (drafted by J. Spenard).
interactions with others. Hirth (2008) also defines the typological perspective, which is among the longest lasting approaches to urbanism in archaeology, and the most commonly employed by archaeologists worldwide. Under this approach, the archaeologist defines a set of criteria for defining a city against which they compare the archaeological site under study. V. Gordon Childe (1950) was the first to approach archaeological cities this way in his seminal paper, *The Urban Revolution*, in which he presented a suite of traits shared among the world’s first cities, several of which have since been rejected. More recently, Houk (2015) uses a variety of this typological approach, identifying the various components of large-scale public architecture and urban features, or what is commonly called the “built environment” of site cores (Hirth 2008:277). Among the architectural components and urban features common to Maya cities Houk (2015) discusses are plazas and courtyards, causeway networks, temple pyramids, range buildings,
palaces, acropolises, ball courts, stone monuments, quarries, reservoirs, and water management features.

While these features discussed by Houk (2015) are undoubtedly urban components, attempting to understand Maya cities only in terms of components of the built environment familiar to Western thought decontextualizes them from the surrounding landscape, and the ritual landmarks found there. Doing so thus overlooks any possibility that geographic features may have been considered vital components of urban design in Maya thought.

I define ritual landmarks as mountains, caves, rockshelters, and other cave-like karst features. These are places on the landscape the Maya believed were homes of, or portals to, animate Earth forces and other supernatural beings to who they performed rituals; features referred to as ch’een in Classic period hieroglyphic texts (Tokovinine 2013; Vogt and Stuart 2005:157-163). Not only are pre-Hispanic Maya cities commonly divorced from such places in the archaeological literature, these ritual landmarks are often perceived and discussed as far from city centers when acknowledged, and thus unimportant in any capacity for understanding Maya urbanism. For example, generalizing about southern Lowland Preclassic period cities, Ringle (1999:202) notes, “Central to the process of experiencing or propitiating the forces dwelling in these remote natural spots [mountaintops, caves, and cenotes] was the journey. Such pilgrimages mark a transition from the protective sphere of culture to the very edges of the world” (emphasis added).

Yet, ritual landmarks were active aspects of pre-Hispanic urban experience throughout the Maya area and broader Mesoamerica. For example, the Olmec site of San Lorenzo, the Formative period Mexican sites of Chalcatzingo and Monte Alban, and Classic period Maya cities such as Pacbitun, Raxruja Viejo, Tikal, Xunantunich, and Yaxchilan are directly affiliated with mountains or located on artificially leveled hilltops (Ashmore 1998; Blanton and Kowalewski 1981; Coe and Diehl 1980; Grove 1987; Healy 1990; LeCount and Yaeger 2010; Puleston 1983; Spenard 2006; Tate 1992; Woodfill et al. 2002). Elite components of sites in the southern Peten and highland regions of Guatemala, and Classic period Central Mexico, in particular, Teotihuacan, are closely affiliated with caves, and other cave-like features (Brady 1997; Brady and Ashmore 1999; Brady et al. 1997; Heyden 1975). Moreover, early colonial records documenting indigenous rituals of community foundation from throughout Mesoamerica discuss the primary importance of mountains and caves for founding new settlements. These records tell that settlers searched for a vacant plot of land with five cave-filled mountains, one at the center, and the other four at the cardinal directions. The central cave-mountain complex became the symbolic heart of the community and the settlement was constructed on and around it (García-Zambrano 1994, 2007, 2012).

The need for such a landscape arrangement when establishing settlements was so prevalent in pre-Hispanic Mesoamerica that artificial caves were often excavated into the hills surrounding the site of the new town, when the local geology was prohibitive to natural cave formation processes (Brady and Veni 1992; Manzanilla 2000; Manzanilla et al. 1994; Woodfill 2014). As with previously existing caverns, artificial caves are closely affiliated with public architecture, and the layouts of the plazas and other buildings above frequently align with the excavated passages below indicating the influence of these landmarks on settlement patterns (Brady 1997; Heyden 1975; Woodfill et al. 2002).

Before continuing, it is worth mentioning the current study also demonstrates the need for caution when distinguishing between the so-called built and “natural” environments in Mesoamerican archaeology, and thus the need to consider the entire surrounding landscape in discussions of urbanism (e.g. Ashmore 2015). As will become clear below, and counter to the common assumption that caves and other cave-like features are natural places the Maya only brought artifacts to or performed rituals in, most caverns throughout the Maya area have been modified with architectural constructions. Thus, what appears at first glance to be unaltered spaces beyond the “built environment” may, in fact, be the result of human agency. For example, crude terraced areas in open chambers...
used as spaces of large public performances are commonly encountered in large caves (Brady 1989; Ferguson 2000; Halperin and Spenard 2015; Moyes 2012:96; Prufer 2002). Just outside the entrance of Actun Lak cave, downhill from the NTC, the Pacbitun Maya constructed a 3m tall elevated platform with a staircase leading 90m downhill to the entrance of another large cavern below, all dry laid and using uncut stone (Spenard 2014; Weber et al. 2012). Several of the caves in the Sibun region, and in the southern Maya Mountains, Belize were modified with constructions for facilitating traffic flow through them, and to indicate a prescribed set of rules for moving through them (Kenward 2005:254; Peterson 2006:263; Prufer 2002:604-613). Throughout Quintana Roo, caves contain multiple terraces, walls, and a pyramidal structure, and a solar observatory platform (Rissolo 2005; Slater 2014).

**Mesoamerican Perspectives of Urbanism**

There is merit to contextualizing Maya cities within their surrounding landscapes for understanding pre-Hispanic urbanism, as doing so reflects a Mesoamerican perspective of urbanism. Specifically, languages throughout pre-Hispanic Mesoamerica often lacked distinct terms for settlements based on size, such as hamlets, villages, towns, and cities as found in Western discourse, but instead they classified settlements of all sizes as components of *altepetl* in the case of Central Mexico, or cognates of the term *kaah* in Mayan languages (Hanks 1990:306; Hirth 2008; Lockhart 1992; Marcus 2000[1983]; Stone 1995:16). These terms and their cognates, referred to a ruler’s household, all the people ruled regardless of where they lived, and all the land of the ruler including that used for agricultural and ritual purposes. In other words, for the people of pre-Hispanic Mesoamerica, the built environment, community and the land together defined urbanness; they were inextricably interwoven in thought and practice.

Hieroglyphic names and iconographic toponyms further demonstrate the elemental role geographic landmarks played in pre-Hispanic Mesoamerican conceptions of urbanism. For example, the term *altepetl* translates literally to water-mountain, depicted iconographically as a hill with a cave at its feet, oftentimes spewing water. Topping the hill is a variable symbol signifying the community’s name (Lockhart 1992:14). For the Maya, major ritual landmarks associated with settlements often provided the impetus for the site’s toponym (Stuart and Houston 1994). Among the best-known examples of this practice is the place name of the Late Classic period site of Aguateca, situated on either side of a large chasm (Stuart and Houston 1994). The hieroglyphic toponym of this site is an earth sign with a large crack running down it. Investigations in the chasm demonstrated it was a major focus of ritual for the Aguateca community (Ishihara-Brito 2008). The Classic period toponym for Palenque, *Lakamha*, translates to “large waters,” or “wide waters,” a likely reference to the Otolum River flowing through the center of the site (Stuart 2005:90). Not only did this river give the site its name, texts describe the spring (*ch’een*) from which it flowed as the place the world and first gods were created (Stuart 2005:90). Nevertheless, of all known place names mentioned in Classic period Maya texts, most refer to *ch’een* of some sort, indicating ritual landmarks were regarded as the primary source of community identity and urbanness (Vogt and Stuart 2005:162).

The central importance of landmarks for community identity is still prevalent among the Maya today. For example, for the Tzotzil of Zinacantan, Chiapas, a small hill near the center of the community is considered the “naval of the world,” and the community itself is surrounded by several mountains, believed to be the physical embodiments of gods (Vogt 1969:157, 375). Processions to these mountains are made annually, functioning to encircle the community and reinforce its boundaries (Vogt 1969:391). Among the Q’eqchi’ of Guatemala, each community has one or several primary mountains around which its identity is formed, although there are 13 primary mountains shared by all communities (Adams and Brady 2005:304-305; Wilson 1995). Similar to the Tzotzil of Zinacantan, Q’eqchi’ Maya of Guatemala believe that most of the hills and mountains surrounding them are sentient, and they make ritual pilgrimage circuits to them for
integrating local communities (Adams and Brady 2005:311).

Description of the Nohoch Tunich Bedrock Complex

Located 1.5km from Pacbitun’s site core, the NTC is a geologically structurally complex limestone bedrock outcrop composed of boulders, rockshelters, bedrock faces, and an array of other diminutive karst features, all covering an area of approximately 50,000m², most of which the Pacbitun Maya altered with subtle, yet extensive architectural modifications (Figure 2). I propose these modifications were designed specifically to enhance the essence of the place by employing an intentionally crude aesthetic mimicking Maya perceptions of “nature,” as the forest – unruly, unkempt, but beautiful and paradisiacal – diametrically opposed to the measured and straight space of the town or lived space (Hanks 1990:306-308; Stone 1995; Taube 2004). By architecture, I mean here coarse masonry constructions added to various components of the NTC. I employ this broad definition for ease of discussion while recognizing the modifications served distinct purposes. Moreover, while the spaces they created undoubtedly had their own unique functions, I treat them here as a cohesive unit for contextualizing them in a larger framework. In other words, I understand the NTC as a unique, socially significant place on the Late Classic Pacbitun landscape, rather than a series of small, isolated ritual places.

Many classes of architectural modifications are present in the NTC, including simple alignments, terraces, surface and buried deposits, and a small seasonal dam. Simple alignments are single-course frames made from uncut stone, arranged below unusual parts of bedrock faces (Figure 3). Terraces are multicourse, above ground constructions with a variety of functions. Some were designed to passively prohibit and restrict access to cave components of the outcrop, while others functioned as retaining walls, and delimiters of

![Figure 3. Oblique and head-on views of simple alignment in NTC framing a cave-like crack at base of a large boulder. Colored lines used to highlight same alignments in two images (Photos by M. Mirro and J. Spenard).](image-url)
Figure 4. Retaining and space delineating terrace seen from inside and outside small room below collapsed natural bridge in NTC (photos by J. Spenard).

Figure 5. Example of limestone and slate manuport surface deposit in shallow rockshelter entrance in NTC (photo by M. Mirro).

interior and exterior spaces beneath a collapsed natural karst bridge (Figure 4). Surface deposits are clusters of unmodified rock manuports placed on floors and ledges (Figure 5). Such modifications were ubiquitous in the NTC, and were made with imported slate, river cobbles, small limestone boulders, and other rocks.

As mentioned earlier, even seemingly unmodified spaces within the outcrop could be the product of human agency. This leads to the next category of architectural modification, buried structured deposits, left unmarked on the surface in any discernable way, even though creating them required excavating deep pits then refilling them by carefully layering different materials. For example, in Actun Naj Che, one of the largest rockshelters in the NTC, the Maya buried a north-south running cobble wall, approximately 0.3m below the surface deep, on top of which they placed a granite mano. Twenty centimeters beneath that wall was another, arranged east-west (Figure 6). The largest buried deposit yet encountered in the NTC was placed in the Nohoch Tunich rockshelter, the namesake feature of the NTC. This deposit was buried in a pit measuring over 5m long and 2m wide, excavated to bedrock 1.5m below the surface. After excavating the pit, the Maya placed thousands of jute snail shells and chert flakes onto the exposed bedrock, which they subsequently burned. Next, the burned shell-and-flake cache was capped with flat limestone boulders, and then the remainder of the pit was refilled with the originally excavated matrix, mixed with ceramic sherds. The result in both the Naj Che and Nohoch Tunich rockshelter was completely artificial, yet seemingly “natural” floors (Figure 7).

The small dam, which I was unable to photograph due to equipment failure, is at the base of a small, seasonally active drainage extending down from the NTC. It is approximately 2.5m² and was constructed from uncut boulders, similar to the other architectural constructions documented in the NTC. The feature was choked with vegetal debris during my investigations, but it would have created a small, shallow pool, and a tiny waterfall when maintained during the rainy season.
Figure 6. Series of buried overlapping walls in Actun Naj Che rockshelter in NTC. Note mano (circled) had been placed on top of north-south running wall (photos by J. Spenard).

Figure 7. Actun Naj Che showing PRAP members in constructed, yet seemingly “natural” area of rockshelter (photo by C.L. Kieffer).

Discussion

As described above, much of the appearance of the NTC was largely the result of human endeavors, yet the construction materials used and the execution of the modifications themselves were crude. I propose here that this crudeness was purposeful; the design was intended to conform to a wilderness aesthetic that conceived of nature as unruly and dangerous, but that also considered it to be the source of beauty and eternal paradise, symbolized by the concept of Flower Mountain (Stone 1995; Taube 2004). I propose the Pacbitun Maya intended to accentuate these characteristics of the NTC with the modifications they made to it. But, more than simply modifying it according to this wilderness aesthetic, I propose doing so was an effort to transform the NTC into a cultivated pleasure park or garden, similar to those later commissioned by the Aztec throughout the Basin of Mexico, albeit on a much less grandiose scale.

Much has been written during the early period of Spanish colonization of Central Mexico about the Aztec royal court, and recent research has demonstrated a significant overlap with the functions and characteristics of Classic period Maya royal courts recorded in hieroglyphic texts and depicted in iconography (Evans 2001). Thus, the ethnohistoric material from Aztec Mexico can provide a basis for understanding and interpreting the archaeological remains of the Maya.

The pursuit of beauty and pleasure was a major concern among the Aztec, and recent research has demonstrated this was also a central concern for the pre-Hispanic Maya (Evans 2001; Houston 2014; Taube and Taube 2009). Gardening and landscape design were highly sought occupations for Aztec nobles and were favored pastimes for kings. As such, recreational and contemplative pleasure palaces and parks, generally referred to in Nahuatl as xochitla, or “flower place,” were constructed throughout the Basin of Mexico (Evans 2004:46). That the Maya held similar appreciations of nature is evidenced in courtly scenes on polychrome vessels, such as on a vessel from Dos Pilas, Guatemala, on which...
The Nohoch Tunich Ritual Bedrock Outcrop and Late Classic Urbanism at Paabitun

Figure 8. Polychrome vase from Dos Pilas showing individuals on left smelling and holding flower bouquets (www.mayavase.com K1599 © Justin Kerr).

Figure 9. Sample of the various ritual karst features found in the NTC (photos by J. Spenard).
several lords are depicted sniffing wrapped flower bouquets, likely harvested from nearby gardens (Figure 8). Moreover, archaeobotanical research demonstrates Maya cities were replete with cultivated vegetation, with orchards of fruit-bearing trees, shrubs, herbs, root crops, and other plants growing throughout the urban landscape (Fedick 2010).

Unfortunately, most Aztec pleasure parks were destroyed by Spanish colonial endeavors and little material evidence of their past splendor remains. Nevertheless, both native chroniclers and the Spanish wrote about them extensively, and their accounts tell of beautiful, awe-inspiring tracks of land both within the cities and in their hinterlands, designed specifically to appreciate and accentuate the natural world. A common pattern emerging from these Colonial period accounts is the lords chose settings for their pleasure parks specifically for their natural beauty and the ritual landmarks they contained, with cave-life features particularly favored. These places were then enhanced with masonry constructions, water features, rock art, and exotic plants and animals, and modified to appreciate better their natural essence (Evans 2000:206; Nuttall 1925:456). For example, the mountaintop royal retreat, Tetzcotzingo, was modified with an elaborate water system of channels, pools encircling the entire mountain. It also held a royal palace, a botanical garden, a rockshelter, and several carved boulder monuments designed by the king of Texcoco, Nezahualcoyotl, to be a microcosm of the universe (Townsend 1979:757). Moreover, it was the primary rain and water shrine for the Texcoco polity (Schaafsma and Taube 2006:242).

Located on the mainland lakeshore, southwest of Tenochtitlan, Chapultepec (Grasshopper Hill) is another Aztec pleasure garden. This park has a spring emerging from a cave, which was the primary source of freshwater for the inhabitants of Tenochtitlan in the early 15th century (Duran 1994:66-67). In addition to being the king of Texcoco, Nezahualcoyotl was also a famed landscape architect, and he improved that construction as part of a larger engineering effort, also designing a royal retreat on Chapultepec in the mid-15th century (Umberger 1996:253). Like Tetzcotzingo, another royal retreat included a botanic garden populated with ornamental and medicinal plants imported from throughout the empire, but it was also a water shrine, commemorative park for Montezuma I, and significant ritual location for healers and midwives (Duran 1994; Nicholson 1961:380; Sahagún 1981:14; Umberger 1996:253).

Conclusion

Returning to the NTC, we see a picturesque and striking location, with an abundance of ritually charged, modified landmarks and a constructed water feature (Figure 9). While it remains unclear how these spaces were used individually, the unruly condition of the materials used to create them suggests they were designed to enhance the natural beauty of the outcrop. Moreover, their concentration on a hilltop, coupled with the proximity to Pacbitun 1.5km away, suggests this extensively modified outcropping was a pleasure garden for the inhabitants of that site, similar in concept, but much less elaborate than those built by the later Aztecs of central Mexico.

To conclude, I discussed at the start of this paper that archaeologists studying Maya cities have often overlooked ritual landmarks as urban components, and proposed that to get a more complete understanding of Maya urbanism, one that is more in line with an emic perspective, we must begin to consider such ritually and symbolically-charged features in our studies. I have attempted to do this with my ritual landscape work at Paabitun, and in doing so have identified a heretofore previously unrecognized urban feature in the Maya area – a pleasure garden – located within the constructed wilderness of that city.

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FROM ANCIENT MAYA TO KRIOL CULTURE: INVESTIGATING THE DEEP HISTORY OF THE EASTERN BELIZE WATERSHED

Eleanor Harrison-Buck, Jessica Craig, Satoru Murata, and Adam Kaeding

Our investigations of the Belize River East Archaeology (BREA) project have identified a long history of settlement in the eastern Belize Watershed. During our January field season we carried out survey, mapping and test excavation at the Classic Maya site of Chikin Chi’Ha on Colorado Lagoon in the middle Belize Valley. We also conducted test excavations at the nearby Maya site of Saturday Creek to further investigate a Spanish Colonial component identified in previous seasons. In the lower Belize Watershed we continued to perform survey and reconnaissance, specifically in the area around Crooked Tree—one of the oldest Kriol African-descendant communities in Belize. An important component of our current work involves a Kriol Public History project, which combines traditional archaeological survey methods and “heritage mapping” techniques as a means of recording ancient, historic, and contemporary places of significance in and around the village of Crooked Tree. Heritage mapping relies on oral histories and memories of local community members who serve as both informants and also as active participants in the collection, recording, and presentation of their community’s “deep” history. Through this unique collaboration, our aim is to record both tangible and intangible heritage and develop a model of community-based heritage engagement that actively incorporates Kriol voices and perspectives into the broader historical narratives of Belize.

Introduction

The eastern Belize River valley appears to have a long history that extends from the Formative period through Colonial times. Here, we report on our most recent archaeological investigations carried out during a three-week season in January 2016 and a five-week season in the summer of 2016, which marks the sixth year of the Belize River East Archaeology (BREA) project. The BREA project study area encompasses the eastern Belize watershed between Belmopan and Belize City, a roughly 6000 sq. km area (Figure 1). Our investigations over the last six years have mostly focused on recording sites in the middle Belize Valley, which has kept us busy as we have found it is an area of dense settlement, particularly along the main trunk of the Belize River (Figure 2). We have mapped a number of sites in the middle Belize Valley, including the hilltop site of Kaax Tsaabil, the minor ceremonial center of More Tomorrow, and the site of Saturday Creek, which we have presented elsewhere (Brouwer Burg et al. 2014, 2015; Harrison-Buck 2010; Harrison-Buck et al. 2012, 2013, 2015, 2016; Runggaldier et al. 2013). During the 2016 field season, we continued to investigate the site of Saturday Creek, targeting a structure in the site center where we previously reported finding evidence of Spanish Contact (Harrison-Buck et al. 2016). Here, we discuss the results of our most recent excavations that build on our prior work. In addition, we present the results of our work at another nearby site called Chikin Chi’Ha, located on Colorado Lagoon in the middle Belize Valley (see Figure 2). This sizeable hilltop ceremonial center consists of several plaza groups containing pyramidal architecture. We provide an overview of the results of our investigations, including the map
of the site and a test excavation on the eastern structure at Chikin Chi’Ha, which we reopened and expanded during the first half of our summer season to complete a burial excavation. Finally, during the summer 2016 season, BREA also participated in a Kriol Public History Project in the communities of Crooked Tree and Biscayne. Part of this community outreach project involved archival research, archaeological survey, and mapping of both ancient Maya and colonial settlement in the area. So, we briefly discuss the results of these investigations as well.

Mapping and Excavation at Chikin Chi’Ha in the Middle Reaches

In prior field seasons, we explored portions of the Chikin Chi’Ha site, located on two adjacent hilltops and the intervening low-lying areas just west of Colorado Lagoon (Figure 3 [Gantos 2015; Kaeding and Murata 2011]). In more recent years, portions of the site on the northern hilltop were cleared, revealing a sizeable mound group we refer to as the “North Complex” that is visible from a new road that cuts just south of this hilltop (Figures 3 and 4).
A dirt road runs roughly east-west and cut through portions of the site on the northern hilltop, although mostly cuts through a low saddle that exists between the northern and southern hilltops. During the January 2016 season, we explored the southern hilltop and identified another sizeable mound group—what we refer to as the “South Complex”—which consists of several large pyramidal structures. Ultimately, we were prohibited by the landowner from fully mapping the North Complex with a Total Station during the January 2016 season but produced a sketch map (Figure 5). The other landowner of the southern hilltop did permit us to map and excavate the portion of the site that is on his property, which we refer to as the South Complex of Chikin Chi’Ha. We mapped the site with a Total Station during the January 2016 season and produced a rectified map (Figure 6). Two pyramidal structures are positioned around a main plaza area, which is built up onto the slope of the hilltop.

Several smaller groups were also mapped in the South Complex, including an eastern shrine group. During the January 2016 season, we placed a test excavation (Operation 30) on the easternmost platform of this eastern shrine group (see Figure 6). Here, we identified a platform structure with at least four different phases of construction. At the end of the January season a portion of a burial features was exposed and we returned during the summer season to conduct further excavation. Our investigations yielded a complex burial feature that comprised an adult flanked by three infants all under the age of two years old (Figure 7). A preliminary analysis indicates that the main interment is likely a young male adult who is seated in a reclining position with legs crossed at the feet, head to the east and feet to the west (Worbel personal communication, June 2016). Three infants flank the adult, two to the east and one to the west of the main interment. Infant #1 (Zone 13) to the west was poorly preserved, but the teeth indicate an age estimate of around 6 months old. Infant #2 (Zone 26) to the east has yet to be analyzed but is most certainly under the age of two. Two *Spondylus* shell beads were
found around the head of Infant #2 and may have formed a necklace that adorned the infant. Infant #3 (Zone 23 in the wall) located also to the east is 18 months old. This individual is a little more difficult to make out in the plan view but is clearly visible in the profile. Age estimations are based on dental eruption of the deciduous teeth (Worbel personal communication, June 2016). This infant was the most well preserved overall, perhaps due to its slightly more advanced age as compared to Infant #1 or due to its positioning, which appears to be seated with legs flexed. Infant #3 had a fairly intact mandible where the canine 1st and 2nd deciduous teeth can be seen erupting. Notably, over the head of this infant was an inverted painted bowl with nubbin feet.

The adult male interment also was associated with two ceramic vessels, including a large Daylight Orange: Darknight dish inverted over the head (Figure 8a). A second vessel was found to the west roughly over the left lower arm, which I have identified as a type belonging to the San Pablo Glossware (Figure 8b). This type is found at other sites in north-central Belize and is often referred to as Achote Black. Elsewhere, I have suggested re-naming the type San Pablo Black because I believe those found in Belize are distinctive from the Achote Black of the Peten Glosswares (see Harrison-Buck...
Although we plan to radiocarbon date the burial deposit in the future, these ceramic types typically date to the Terminal Classic period so we are inclined to date the deposit to around the ninth century AD.

The burial deposits cut into a lower floor surface and was probably interred when a new construction phase was being built. The burial was interred when a 50cm thick fill layer was being added, which was topped by a plaza floor (Zone 6) and a three-course high basal platform (Zone 5) that was 40-50cm thick. This is pretty substantial construction for the Terminal Classic and suggests Chikin Chi’Ha was an active settlement during this so-called “collapse” period. The basal platform covering the burial deposit supported at least three later construction phases, including a final bench that may date to the Late Postclassic based on the construction technique and associated Late Postclassic terminal debris found on the surface. A full ceramic analysis, however, has not yet been conducted, but is planned for future seasons and will help to refine the construction sequence.

Further Excavation at the Saturday Creek Site

During January 2016, BREA conducted additional investigations not only at Chikin Chi Ha, but also the nearby site of Saturday Creek located about a kilometer to the south (see Figure 2). In the Southwestern Plaza, we continued investigating Structure 10, a long platform with two superstructures on the far eastern and western ends and opened up Operation 29 (Figure 9). In previous seasons, excavations of the eastern superstructure in Operations 23 and 24 yielded two exciting caches in the northeast and southeast corners of the platform (see Harrison-Buck et al. 2015; Harrison-Buck et al. 2016: Figs. 5-7). These caches were remarkable not only because they expressed directionality and Maya cosmological concerns, but also because of what they contained. The cache in the southeast corner consisted of a high density of burned faunal remains (primarily marine shell) resting on an elaborately decorated Postclassic ceramic sherd (Harrison-Buck et al. 2015:Fig. 10). Sealed

Figure 8. a. Ceramic vessels associated with the burial at Chikin Chi’Ha, including a Daylight Orange: Darknight Variety; b. San Pablo Black: Incised Variety (photos by L. Phillips).

Figure 9. Location of excavations at Saturday Creek (map by S. Murata).
inside the concentration of burned bone and shell were three jade beads and a bone pendant and, perhaps most significantly, an historic piece of quartz crystal in the form of a bottle stopper (Harrison-Buck et al. 2016:Fig. 6). The cache in the northeast corner was equally remarkable. A small Postclassic incised bowl containing three jade beads and another large chunk of quartz crystal (Harrison-Buck et al. 2016:Fig. 7). Though the nature of these two caches was clearly and undeniably Pre-Columbian, the quartz crystal objects are undeniably post-Contact artifacts. The glass artifact appears to be the top of a glass stopper and may have been brought here by the Spanish friars to hold communion wine or holy water for baptisms. These types of bottles have a long history and are still used today.

After our finds in the eastern superstructure we thought surely the western superstructure would yield equally exciting results of Contact period caches in the corners of the structure. Therefore, in January 2016 we opened up Operation 29 over the top of the western superstructure and tested the four corners of this poorly preserved structure. In the last days of the season, we identified what appears to be a cache in the southeast corner, although the corner of the structure was not all together clear. The cache consists of a bifacial spear point and the presence of a high density of burned bone (Figure 10). Unfortunately, the cache did not contain any quartz crystal or other preserved artifacts that are clearly Spanish in nature, but the burned bone does resemble what we found in the cache in the southeast corner of
the eastern superstructure. We are hopeful that we can radicarbon date these deposits to secure the chronology.

### Reconnaissance in the Lower Reaches

During the summer 2016 season, we continued east down river and expanded our reconnaissance efforts in the lower half of the Belize Watershed. The survey team reported high density household settlement between 8-12km south of Altun Ha and in and around Biscayne circumscribing the Flowers site and at Blackburn, which is about 1-2km north of the Chau Hiix site center. Here, large mounds between 8-10 meters tall were recorded and a sacbe was reported heading south from this group in the direction of Chau Hiix. We also recorded a number of sites that were seemingly isolated and some distance from the river and creeks, but as we fill in the gaps on our survey perhaps we will see that they are not so isolated, but part of an overland network of sites.

The area around Crooked Tree has a large number of modified features in the Western Lagoon wetlands that have been discussed elsewhere (Harrison-Buck 2014; Pyburn 2003). The channels that cross-cut the Western Lagoon wetlands are even more obvious in modern satellite imagery, but the ideal would be to map the fields with a drone at the onset of the rainy season, which we are hoping to do in 2017.

Around the end of one long canal that cuts through the southern end of Crooked Tree island we found one site that is particularly interesting, which we call Chulub but is locally referred to as Hole in the Wall. Chulub is by no means a monumental site; there is only one formal plaza group. What is noteworthy about Chulub are a series of water features in the form of ponds and channels found throughout the site that are arguably artificial. While there has been some modern disturbance the landowners confirmed that most of these features pre-date the contemporary occupation. Many of the features appear to be associated with the mounds. The structures look less like habitation mounds and more production-oriented in their relation to the water features. We plan to return here in January 2017 and hopefully map the site and do some test excavations.

### Kriol Public History and Outreach Project

Another objective of the 2016 summer season was to assist in a community outreach project in Crooked Tree and Biscayne villages involving a Kriol (Creole) public history project. One of the overall goals of the initiative was to develop, in partnership with these communities, a public history exhibition within the Crooked Tree village visitor center. Through an interdisciplinary collaboration with ethnographer Dr. Alicia McGill, we employed a combination of ethnographic, archival, and archaeological research, aimed to actively engage the local communities through educational exchange among community participants and students at the local public schools and through other outreach activities, culminating in the temporary exhibition in Crooked Tree village (Figure 11). We were assisted by several graduate students from NC State as well as several undergraduate students from University of New Hampshire and Galen University in Belize. McGill’s long-term work in these communities has shown that as many young Kriols move out of the rural communities to be closer to the cities, there are legitimate concerns about “cultural loss” of traditional heritage and the sustainability of Kriol cultural knowledge (McGill 2012a, 2012b, 2014). As such, we organized this event not only as a means of documenting this important cultural heritage of Belize, but also to provide an
opportunity for the Kriol themselves to share and celebrate their rich cultural heritage with one another.

For BREA, our role was to help reconstruct the “deep history” of these communities through a combination of archaeological investigation, archival research, and oral histories provided by locals. We engaged with community members who were particularly knowledgeable about the history of the area and tailored our archaeological survey based on the results of these interviews with local community members who could show us historic sites and/or have found artifacts over the years. Archaeological reconnaissance was focused in and around the villages of Crooked Tree and Biscayne and both ancient and historic sites were recorded using a hand-held GPS unit and sketch maps were produced by our team. Our survey methods employed a mix of traditional archaeological survey methods and so-called “Heritage Mapping” which relies on interviews with local informants who hold a great deal of historical knowledge and could identify important historic and contemporary locations that might otherwise be unknown without recorded commentary from informants on the history and uses of these places. Working with the community, we designed informational panels about ancient Maya archaeology in this area, as well as a display of historic artifacts, BREA maps of Colonial sites that we have identified in the vicinity of Crooked Tree, and findings from BREA archival research in Belmopan. The temporary exhibition was held on June 25, 2016 and the turnout at the opening surpassed all our expectations. The exhibition was a huge success because it was a social gathering that engaged community participants of all ages (from school-age children to elders) and provided an opportunity for them to share what Kriol heritage means to them, recording valuable oral histories of people, places, and things from both the present and the past.

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This paper reviews and contextualizes recent research on the ceramics from Marco Gonzalez (Ambergris Caye). The pottery of Marco Gonzalez provides details on the activities conducted at the site, such as salt production, but also reflects the site’s occupational history and changing trade and exchange relationships over time.

Introduction
The site of Marco Gonzalez lies at the southern tip of Ambergris Caye, about 8 km south of San Pedro Town (Figure 1). Reconnaissance in 1984 led to excavations carried out in 1986 and 1990 (Graham 1989; Graham and Pendergast 1987, 1989; Pendergast and Graham 1987, 1990). Further excavations were organized in 2010 in response to a developer’s plans to build on the site (Simmons and Graham 2017). Research aimed specifically at soil formation processes and the study of Maya Dark Earths was initiated in 2013 (Graham et al. 2015, 2016; Macphail et al. 2016). Here, we review the site’s occupation history based on pottery data. We remain uncertain, based on present evidence, whether or not pottery was produced on the caye. Information from petrographic studies such as pottery temper and clay inclusions (Ting 2013) suggests strongly that most if not all ceramics were imported and/or passed through Marco Gonzalez as items of trade; the pottery is thus a good indicator of the site’s connections to other sites and regions.

Aimers examined pottery from both San Pedro and Marco Gonzalez in 2012 and 2013, and spent three weeks classifying ceramics in the Marco Gonzalez lab in January and February of 2016 with the assistance of Kay McCarron and Jan Brown. Although a number of contexts were examined, most of the time over the three weeks was dedicated to examination of pottery from Structures 14 and 19 (profiles are shown in Graham et al. 2016). Of particular interest from these two excavation units were 256 Coconut Walk Unslipped sherds (Graham 1994: 153-156), associated with Late Classic salt production (Graham et al. 2016: 9-16). With the help of Kay McCarron, Jan Brown, and Jerry Choco, Aimers examined and classified 2,872 sherds from these deposits, of which 619 (22%) could be classified to type and/or variety. The remaining sherds were classified to the Group or Ware level.

Late Preclassic and Terminal Preclassic
The known use of the site began sometime in the Late Preclassic (300 BC to AD 1). The 2016 research added more evidence of Preclassic occupation in the form of sherds of the types Sierra Red, Polvero Black, Flor Cream, Iguana Creek White, Laguna Verde Incised, Happy Home Orange, Repasto Black-on-red, and Puletan Red-and-unslipped. Two preserved...
mammiform supports (from different vessels) are typically classified as Aguacate Orange and are normally dated to between 100 B.C.-A.D. 400 (Brady, et al. 1998:22). Sea level is known to have risen by about 60cm over the last 2000 years or so (Dunn and Mazzullo 1993) explaining the inundation of the earliest levels of the site. By the Terminal Preclassic (ca. A.D. 1 - 250), the site was intensively used with evidence of fishing and occupation-related activities such as midden accumulation, cooking, and fish and shellfish processing (Graham et al 2015: 4).

An interesting aspect of the Terminal Preclassic to Early Classic occupation is remains of maize (Zea mays) and craboo (Byrsonima sp.). These suggest: “that the community at the site was engaged in exchange activities. Neither of these species grows naturally under conditions in which coral sand forms the soil parent material, and imported food had to be stored. Both of these factors suggest that networks of exchange were regular and wide-ranging.” (Graham et al 2015: 24).

**Early Classic**

Platform construction and midden accumulation continued into the Early Classic (A.D. 250- 550) (Graham et al. 2015:4) but only very limited areas were exposed in test pits and we cannot yet bracket this period with confidence. As in other areas of the lowlands, however, polychrome pottery in the form of basal-flanged bowls with distinctive geometric designs makes its appearance (Graham et al. 2015: 14, Fig. 16). A good example of the quality of these imports are two bowls which are definitely imported from the mainland and are generally thought of as Petén-related. These would normally be classified as Actuncan Orange-polychrome or Dos Arroyos Orange-polychrome —types that are so similar that some people simply “lump” or hyphenate these two types.

An Early Classic Pucte Brown globular jar and a miniature Pucte Brown vessel are also evidence of trade with the mainland. Although the forms from Marco Gonzalez are somewhat unusual, the finish and fabric look much like Pucte Brown from other parts of Belize such as the Belize Valley. A Protoclassic Chan Pond Unslipped: Chan Pond Variety shoulder (MG 386) with vestigial strap handle that matches exactly the description and illustrations in the Barton Ramie ceramic monograph (Gifford 1976: Fig 77 i-k) (Floral Park phase), has a distinctive micaceous fabric that Aimers has seen frequently in the Belize Valley. This suggests that even relatively utilitarian, unslipped vessels were imported to Marco Gonzalez.

**Late Classic and Terminal Classic**

We do not yet have enough information to say when the focus changed to the intensive salt processing that characterizes the Late Classic period at the site. Intensive processing could have begun in the 6th century or early in the 7th century. Based on information from the Colson Point sites, we provisionally place the start of the salt industry at about A.D. 600/650 with termination at around A.D. 750. The pace of construction activity was most intense at Marco Gonzalez from about A.D. 750/800 to 950 (Graham et al 2015:4), when most of the structures that appear on the map (Figure 2) were built. Construction began, however, before the end of the 8th century, when polychromes were still being produced (the latter part of the Late Classic), and continued through the time when monochrome ceramics came to dominate in the Terminal Classic. Thus the activities at Marco Gonzalez do not match mainland divisions between the Late and Terminal Classic, because the salt processing ends in the 8th century.

A Saxche Orange-polychrome with an interior that is more tan than orange matches a varietal description in Gifford well (Gifford 1976: 207 Catalogue no. 21411). Most of the Late Classic polychromes from Tikal were Saxche Orange-polychrome so, again, we seem to be seeing a connection to the Peten region. A Uacho Black-on orange dish (Saxche Ceramic Group) was the lid for a lip-to-lip cache with the Saxche Orange-polychrome vessel.

About 9% of all the sherds examined in 2016 were striated. Encanto Striated (Uaxactun Unslipped Ware) is the best typological designation for the Late Classic striated sherds (e.g., those from Lot 382) (see Ball 1990; Guderjan and Garber (1995). Encanto Striated was defined for the Terminal Classic at
Uaxactun (Smith 1955; Smith and Gifford 1966) and one broken rim from Marco Gonzalez is very similar to sherds typed as Encanto striated in the El Meco report (Robles Castellanos 1986: Fig 37 m-n). But, a similar style is found along the Caribbean coast and at Mayapan where it is also called Yokat Striated in Puuc Unslipped Ware. Therefore the Encanto Striated
identification is probably better considered a ceramic system designation (ceramic systems group stylistically analogous types that have been given different names in different places) (Aimers 2009). There are no particularly good analogues in the Barton Ramie report; Aimers has never seen this form in his work in the Belize Valley, and it is very similar to rims that he has examined from San Juan, Ek Luum and Chac Balam, all on Ambergris Caye.

One conclusion from our 2016 research is that the slipped sherds more closely resemble Belize Valley and Petén types, whereas the unslipped/striated types, including Coconut Walk Unslipped, more closely resemble coastal types. This suggests that the utilitarian types were local in inspiration and probably manufacture, whereas serving types were influenced from the Late Classic inland area, including the Belize Valley, and possibly imported from there. Encanto Striated, as a Terminal Classic type, may also indicate the reorientation of the site’s trade connections away from the troubled Petén sites in the latter part of the Late Classic to the more stable Yucatan.

The similarity of a Tunich-Red-on Orange (Late Classic) (Palmar Group) rim (MG 375) to one in Gifford’s Belize Valley report (1976:252) also suggests Classic Period connections between Marco Gonzalez and the Belize Valley/Petén. Another Petén-related Late Classic type found at Marco Gonzalez, Subin Red, is also found at Ek Luum and San Juan on Ambergris Caye.

Graham and colleagues (2015: 4) have written that beginning in the latter part of the Late Classic, “the site's occupants constructed buildings of local reef stone and wood over salt production debris, expanded the settlement, and buried their dead ... beneath the floors of successive structures.” Although the Terminal Classic saw the abandonment of many sites on the mainland, Marco Gonzalez continued to be occupied and to import pottery from other parts of the Maya world. Notably, however, the pottery at the site suggests a reorientation away from the Petén and western Belize and toward northern Belize, Quintana Roo, and Yucatan.

Carmen Ting (2013) examined Terminal Classic Molded-carved sherds from different sites in Belize including five from Marco Gonzalez that she classified as Ahk’utu’ Molded-carved, a type originally defined by Helmke and Reents-Budet (2008) based on vessel shape, foot style, iconography, and glyphs. Aimers believes that because she was working with single sherds rather than full or partial vessels, a Pabellon Molded-carved Ceramic System designation would have been more conservative. In any case, Ting found a variety of pastes that suggest a variety of production locations, with petrography suggesting northern Belize. Some of the Molded-carved types have been called “imitation Fine Orange”, but we have real Fine Orange at Marco Gonzalez in a Yalton Black-on-orange vessel, part of the Silho Group of Fine Orange ware. Fine Orange was produced in the Gulf Coast region and the similarities of some of the Postclassic pottery forms and design motifs at Lamanai, Altun Ha, Cerros, and Marco Gonzalez suggest that northern and coastal Belize had some sort of connection to the Gulf Coast (Aimers 2014). In any case, the emphasis on the salt trade in the Late Classic seems to have given way to more diversified trade and exchange in Terminal Classic times. Stemp and Graham (2006: 28) suggest that “[b]ased on the site’s location and the presence of imported goods such as black obsidian, Sierra de las Navajas green obsidian, jade, chert, granite, limestone, haematite, and the [imported] ceramic types …, Marco Gonzalez probably served as a hub in an exchange network involving both coastal and inland communities” (Stemp and Graham 2006:28). This idea has been supported by recent research on obsidian sourcing; X-Ray fluorescence analysis of 110 pieces of obsidian from various contexts at Marco Gonzalez indicates that obsidian was obtained from eight different highland sources. Just over 80% of the assemblage comes from El Chayal and Ixtepec, whereas lesser amounts of central Mexican obsidian from Pachuca and Ucareo are present (Simmons and Graham 2017).

**Dating Salt Production**

During the 2016 research at Marco Gonzalez, we were particularly interested in Coconut Walk Unslipped because we have been examining it closely for a couple of years (Aimers, et al. 2016). Due to its distinctive,
Table 1. Structure 14.

<table>
<thead>
<tr>
<th>LOT</th>
<th>Level</th>
<th># sherds</th>
<th>CWU</th>
<th>% CWU</th>
<th>Diagnostics</th>
<th>Temporal Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>MG359</td>
<td>1</td>
<td>59</td>
<td>1</td>
<td>1.69</td>
<td>Zakpah Grp., Roaring Creek Red</td>
<td>Terminal Classic-Early Postclassic</td>
</tr>
<tr>
<td>MG364</td>
<td>2</td>
<td>9</td>
<td>2</td>
<td>22.22</td>
<td>Saxche O-p, Rubber Camp Brown</td>
<td>Late Classic</td>
</tr>
<tr>
<td>MG367</td>
<td>3</td>
<td>12</td>
<td>4</td>
<td>33.33</td>
<td>Saxche O-p, Ash tempered sherd</td>
<td>Late Classic</td>
</tr>
<tr>
<td>MG369</td>
<td>4</td>
<td>12</td>
<td>5</td>
<td>41.67</td>
<td>Vaca Falls Grp, Saxche O-p, Sotero Red-brown</td>
<td>Late Classic</td>
</tr>
<tr>
<td>MG371</td>
<td>5</td>
<td>18</td>
<td>12</td>
<td>66.67</td>
<td>none; 4 Pine Ridge Carbonate are probably Classic</td>
<td></td>
</tr>
<tr>
<td>MG374</td>
<td>6</td>
<td>30</td>
<td>18</td>
<td>60.00</td>
<td>Uacho Black on orange</td>
<td>Late Classic</td>
</tr>
<tr>
<td>MG377</td>
<td>7</td>
<td>23</td>
<td>11</td>
<td>47.83</td>
<td>none; 2 Pine Ridge Carbonate are probably Classic</td>
<td></td>
</tr>
<tr>
<td>MG382</td>
<td>8</td>
<td>262</td>
<td>87</td>
<td>33.21</td>
<td>Aguacate, Sierra, Repaste Black-on red Polvero, Cabro, Encanto, Gavilan Black-on Or</td>
<td>Late Preclassic</td>
</tr>
<tr>
<td>MG390</td>
<td>9</td>
<td>2 vessels</td>
<td>0</td>
<td>0.00</td>
<td>two Actuncan O-p basal flange bowls below 382 in level 383</td>
<td>Intrusive deposit; Early Classic</td>
</tr>
<tr>
<td>MG383</td>
<td>9</td>
<td>9</td>
<td>1</td>
<td>11.11</td>
<td>Cabro Red, Dos Arroyos Grp</td>
<td>Late Preclassic-Early Classic</td>
</tr>
</tbody>
</table>

Graham (1994) was the first person to suggest that the pottery was associated with salt production, and recent evidence of tidal flat muds in deposits with Coconut Walk sherds adds support to the idea that Coconut Walk pottery was used to contain brine from which water was driven off by heating over fires (Graham et al. 2015). The pottery closely resembles McKillop’s Punta Ycacos Unslipped, which was definitely used in salt production. Graham and Pendergast (1989:6-7) describe meter-deep deposits of layers of charcoal interlaced with Coconut Walk Unslipped; sections both drawn and photographed can be viewed in Graham and colleagues' report (2015) on Maya Dark Earth at the site. Both of the units that McCarron and Aimers investigated in 2016 had areas in which Coconut Walk Unslipped and charcoal were intermixed, along with deteriorated floor surfaces.

Table 1 shows the percentage of Coconut Walk Unslipped as a percentage of sherds from each Lot in Structure 14. We based the temporal assessment for each Lot on diagnostic sherds other than Coconut Walk Unslipped. As you can see, the peak is 66.67% of all sherds from the Late Classic Lot 371. The earliest Coconut Walk Unslipped is associated with Late Preclassic types like Cabro Red (sometimes categorized as Sierra Red) from Lot 383. Notably, however, there was also an Early Classic Dos Arroyos Group sherd in this lowest lot and this draws attention to the fact there has been a great deal of mixing of levels at the site, largely the product of land crab burrowing. Still, despite some anomalies, this is a fairly tidy distribution that at least suggests that Coconut Walk Unslipped (and thus probably salt production) may have started as early as the very Early Classic, and possibly even by the end of the Preclassic. The latest context has 1.69% Coconut Walk Unslipped associated with Roaring Creek Red, and Zakpah Group sherds, normally dated to the Terminal Classic and Early Postclassic.

Structure 19 (Table 2) shows a much messier distribution of Coconut Walk Unslipped, again reflecting stratigraphic mixing. In this case, the highest percentage of Coconut Walk Unslipped is 36.59%, about half of the highest percentage from Str 14. This Lot contains a mix of Late Classic and Early Postclassic sherds such as Zalal Gouged-incised, and a Red Neck Mother jar rim. What is
### Table 2. Structure 19.

<table>
<thead>
<tr>
<th>LOT</th>
<th>Level</th>
<th># sherds</th>
<th>CWU</th>
<th>% CWU</th>
<th>Diagnostics</th>
<th>Temporal Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>MG360</td>
<td>1</td>
<td>74</td>
<td>2</td>
<td>2.70</td>
<td>Zalal G-I</td>
<td>Early Postclassic</td>
</tr>
<tr>
<td>MG361</td>
<td>2</td>
<td>59</td>
<td>13</td>
<td>22.03</td>
<td>Zakpah Grp, Red Neck Mother conjoins with 365</td>
<td>Early Postclassic</td>
</tr>
<tr>
<td>MG365</td>
<td>3</td>
<td>41</td>
<td>15</td>
<td>36.59</td>
<td>Zalal G-I, Red Neck Mother conjoins with 361 post-slip incised conjoins with 373</td>
<td>Late Classic-Early Postclassic</td>
</tr>
<tr>
<td>MG373</td>
<td>4</td>
<td>25</td>
<td>1</td>
<td>4.00</td>
<td>Saxche O-P, Tsabak Unsl, Vaca Falls, Subin Red, post-slip incised conjoins with 365</td>
<td>Late Classic</td>
</tr>
<tr>
<td>MG375</td>
<td>5</td>
<td>81</td>
<td>26</td>
<td>32.10</td>
<td>meditation black, Ttunich red-orange</td>
<td>Late Classic</td>
</tr>
<tr>
<td>MG378</td>
<td>5</td>
<td>28</td>
<td>5</td>
<td>17.86</td>
<td>Cubeta Incised</td>
<td>Late Classic</td>
</tr>
<tr>
<td>MG381</td>
<td>5</td>
<td>1 vessel</td>
<td>0</td>
<td>0.00</td>
<td>Pucte Brown vessel</td>
<td>Early Classic</td>
</tr>
<tr>
<td>MG386</td>
<td>6</td>
<td>134</td>
<td>44</td>
<td>32.84</td>
<td>Dos Arroyos O-P, Dos Hermanos Red(H), Caldero Buff-polychrome</td>
<td>Early Classic</td>
</tr>
<tr>
<td>MG389</td>
<td>7</td>
<td>156</td>
<td>9</td>
<td>5.77</td>
<td>Dos Arroyos O-P, Triunfo Stri, Chorro fluted</td>
<td>Early Classic</td>
</tr>
<tr>
<td>MG391</td>
<td>8</td>
<td>359</td>
<td>0</td>
<td>0.00</td>
<td>Actuncan O-P, Agau cate/Aguila, Balanza Black, Caldero Cream-poly, Dos Arroyos O-P, Iguana Creek White, Puletan Red-Unslipped, Sierra Red, Sapote Striated</td>
<td>Late Preclassic-Early Classic</td>
</tr>
<tr>
<td>MG392</td>
<td>9</td>
<td>148</td>
<td>0</td>
<td>0.00</td>
<td>Sierre Red, Polvero Grp, Puletan Red-unslipped</td>
<td>Late Preclassic</td>
</tr>
<tr>
<td>MG393</td>
<td>10</td>
<td>188</td>
<td>0</td>
<td>0.00</td>
<td>Sierre Red, Sarteneja Usulutan, Puletan Red-unslipped, Laguna Verde Inc, Iguana Crk White, Happy Home Orange, Flor Cream</td>
<td>Late Preclassic</td>
</tr>
</tbody>
</table>

Interesting in this case is that Coconut Walk Unslipped was not found in Late Preclassic contexts, but by the second Early Classic Lot (MG 386) Coconut Walk Unslipped accounts for 33% of sherds.

Graham is particularly concerned about the mixed nature of the levels at Marco Gonzalez, especially given that land crabs have been active from Preclassic times. Therefore more excavation is necessary to learn whether Coconut Walk is a distinctive part of the expansion of the salt industry in the 7th and 8th centuries, or whether the type had been used at the locale in earlier times to process brine. That salt processing itself had likely been carried out both prior to and long after the Late Classic, however, is not doubted. Heather McKillop (personal communication 2016) points out that salt production extended from the Early Classic to the Postclassic at Paynes Creek; most of the workshops at the Paynes Creek Salt Works date to the Late Classic, but there are a few sites, such as the Eleanor Betty site, that have longer use dating to the Early Classic. “The distribution of limited quantities of brine-boiling artifacts at Frenchman’s Cay and Wild Cane Cay suggests that household production for immediate use may have been characteristic of the Postclassic along the coast . . . The Punta Ycacos salt works were abandoned at the end of the Classic period, when the inland consumers of salt left such cities as Lubaantun, Nim Li Punit, Uxbbenka, and Pusilha” (McKillop 2002:178). Indications are, based on evidence from
McKillop's investigations as well as those at Marco Gonzalez and Colson Point, the processing of salt for local use and possibly export has a long history at sites on Belize's coast and cayes, but that processing and export became an industry in the Late Classic period. How the development of such an industry relates to mainland political dynamics has yet to be explored.

**Early Postclassic**

Occupation at Marco Gonzalez continues into the Early Postclassic period (A.D. 950 to ca. 1200). At Lamanai, the Early Postclassic Buk phase, characterized by Zakpah Group pottery, is now dated A.D. 962 to 1200/1250 and this is the time of some of the most impressive pottery at Marco Gonzalez, pottery with close stylistic connections to Lamanai. In terms of construction, platforms seem to have been added to during the Early Postclassic, and the additions are characterized by large stair risers that may have functioned as “bleachers”. Unfortunately, however, all the Zakpah and Zalal gouged-incised ceramics at Marco Gonzalez have been found in surface or non-primary deposits, whereas most of the ceramics characterizing the Terminal Classic were recovered from burials beneath the floors capping the platforms.

Two Early Postclassic Tohil Plumbate vessels were recovered from burials at Marco Gonzalez. One depicts a hunchback and a second, called a “button-face jar” by Shepard (1948) is “decorated with a face that has several bat-like features and is surrounded by appliqué bosses (Graham and Pendergast 1989: Fig. 6). The decorated area retains traces of blue paint, which was apparently not applied to the remainder of the surface” (Graham and Pendergast 1989:7). Plumbate was produced near the present Pacific coast border between Mexico and Guatemala (Neff 2003) and there are two versions of plumbate. “The hardness and unusual color of the surfaces probably led to the appellation ‘Plumbate’. However, the implication that Plumbate surfaces have a lead glaze was conclusively disproved by Shepard (1948), who found that an unusual, high alumina, high-iron slip clay combined with partial reduction firing created a vitrified surface with the unusual, grey or olive-green color (Neff 2003:21).

San Juan Plumbate is found in Late and Terminal Classic (AD 600–900) contexts in southern Chiapas, Guatemala, and El Salvador. Tohil Plumbate is generally thought to be Early Postclassic (AD 900–1200) and is found across Mesoamerica. Cobos (2004:542) associates plumbate at Chichen Itza with Late-phase Sotuta (900-1050). Tohil plumbate has now been shown to have been produced in the Rio Cahuacan drainage of Chiapas (Neff 2003:31). Neff compared Plumbate to the pottery you can buy at airports around the world—small vessels made for a multicultural market that can be easily transported. (Pool and Bey III 2007).

A similar button-face jar was published from the excavations at San Juan (Valdez, et al. 1995: Fig. 49). Aimers has part of the San Juan collection in his lab and it is interesting how much it differs from the Marco Gonzalez collection, most notably in the very high percentage of Yucatan-related trickle wares, types that are virtually absent in the Marco Gonzalez sample. This may suggest that San Juan, about as far north as you can get from Marco Gonzalez on Ambergris Caye, was dominating contact with the north. Based on the substantial quantities of Zakpah Group ceramics at the site (Graham and Pendergast 1989: Fig. 7), Marco Gonzalez clearly had closer ties to Lamanai and Cerros to the southwest than to Yucatan. As Pendergast (1990:176) noted, “despite the site’s small size, Lamanai-related ceramics occur in quantities greater than those encountered in the richest Lamanai middens; … Though the forms and decoration are generally those characteristic of Lamanai, both paste features and vessel sizes, as well as some decorative motifs, distinguish the Marco Gonzalez material from [Lamanai] …. In turn, the Lamanai collection contains very small quantities of pottery with motifs that are prevalent at [Marco Gonzalez], so that two-directional exchange may be in evidence”.

In her study of the Zakpah Group ceramics from Marco Gonzalez, Ting (2013:268) concluded: 1) that “the distribution
of the Zakpah ceramics … consisted of local and regional spheres”; 2) that the Marco Gonzalez sherds were produced at “multiple foreign sources”; and 3) that the “extent of interaction between the local and regional distribution spheres appear to have increased throughout the course of the Classic to Postclassic transition” (Ting 2013: 269):

“Unless the community at Marco Gonzalez had exceptionally high demand for chalices and jars, the large quantity of samples recovered from the site, coupled with the coexistence of products from diverse sources, and the evidence so far suggests a lack of local production, are all indicative of the potential involvement by the community at Marco Gonzalez in facilitating the movement of chalices and pedestal-based jars along the coast” (Ting 2013: 249).

Late Postclassic and colonial periods

Graham, following Dunn and Mazzullo (1993) suggests that mangrove encroachment and coastal sedimentation at about AD 1200-1250 led to a reduction in occupation at Marco Gonzalez. San Pedro has produced a large quantity of material from the Late Postclassic, and it is probable that Marco Gonzalez occupants moved north to San Pedro once their locale no longer served as a port (Graham et al 2015:4). Less intensive and apparently intermittent occupation continued, however, throughout the Postclassic (A.D.1200-1500) and early Historic periods (A.D. 1500-1650)” (Graham et al 2015:4). One indication of this limited occupation is a Late Postclassic Tulum Red vessel from Structure 12 (Graham and Pendergast 1989: Fig 12).

Also from Structure 12 is a bowl (Graham and Pendergast 1989: Fig. 11a) that is probably best categorized as part of the Chen Mul Modeled ceramic system, particularly because Chen Mul Modeled system effigy censer sherds were found near it (Graham and Pendergast 1989: 13-14). These vessels are often said to depict the diving god known at Tulum. Ringle, instead, follows Spinden (1933) and newer work by Koontz (1994) on the iconography of El Tajin to suggest "that the descending gods at Tajin, both in zoomorphic form, were the local manifestation of Quetzalcoatl" (Ringle 2004: 186). Like Spinden and Koontz, he demonstrates parallels in the sculpture of Chichen Itza. This would appear to be more evidence of Postclassic Gulf Coast connections (Aimers 2014). Some activity in the early Spanish colonial/Historic period (A.D. 1500-1650) is reflected in an offering in a late addition to the stair of Str. 12 as well as from surface scatter (Graham and Pendergast 1989: 14, Figure 11b, c). No colonial-period ceramics were examined in 2016.

Conclusion

Trade and exchange is evident from the earliest-known Preclassic levels at Marco Gonzalez. Food (maize and craboo) is first indicated, but by the Early Classic period, imported pottery is common. Mainland connections change from the Belize Valley and Peten in the Classic Period to Lamanai and the northern lowlands by Postclassic times. Although we must be cautious owing to the disturbed stratigraphy at the site, there are some indications that salt production had a long history at the site and started in the Early Classic. Production became much more than a household industry in the Late Classic, however. One hypothesis is that the demand of lowland kingdoms for salt increased in the Late Classic and was met by villages and towns situated along the coast and cayes of Belize. Why did the demand increase remains to be explored? Did populations increase exponentially? Or are we looking at the reorientation of trade networks that had operated in Early Classic times when Teotihuacan was the power in the region? Why did the industry in Belize "crash" at the end of the 8th century? Who were the people who built the town on the ruins of the salt industry? Throughout its occupation, Marco Gonzalez demonstrates the importance of trade and exchange to the ancient Maya, yet the site's history makes clear that networks fluctuated over time, sometimes dramatically. Despite such fluctuations, occupants maintained some level and kind of commercial activity along with their exploitation of marine resources. Whether these occupants were the same ethnic or cultural group over time is another critical question. Our
hope is that further investigation, including studies of the skeletal remains, will produce some answers.

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CHARMED OBJECTS AND AFRICAN INFLUENCE IN THE CEMETERY AT ST. GEORGE’S CAYE, BELIZE

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A collection of historic artifacts has been recovered from a buried deposit throughout the St. George’s Caye cemetery. This deposit contains a range of artifacts that include glass bottles, ceramics, metal hardware, buttons, animal bone, clay smoking pipes and various other artifacts. Several items are typical of those that have been found elsewhere at African-American sites in the Americas, and have been identified as conjure items or items used in Nkisi charms of African-derived folk religion. Additional artifacts have been recovered that are commonly used in African burial practices and cemetery decoration. The recovery of artifacts related to the British West India Regiments from within this deposit suggests its association with the enslaved African and African descendent soldiers who were stationed in Belize shortly after the Battle of St. George’s Caye. The combination of the above factors hints at the existence of an enigmatic belief system associated with African religious practices among the various historic inhabitants of St. Georges Caye.

Figure 1. 1764 map of St. George’s Caye (Craig 1966) with slave quarters indicated in red.

Introduction

As early as the mid-eighteenth century there was a significant African descendant population living on the island of St. George’s Caye, Belize (Gibbs 1883; Thomson 2004). However, the imprint of African derived belief and culture in the material remains present in the archaeological record on the island, and particularly in its historic cemetery, is not well understood. Certain artifacts recovered from the cemetery are associated with the British West India Regiments and some are similar to African and African-derived religious deposits at sites throughout North America, Africa and the Caribbean. These include objects such as glass bottles, smoking pipes, ceramic dishes and various animal bones that have been found together in Central African and African American cemeteries. Various other artifacts have been recovered from the cemetery that are typical of items that have been used as “Nkisi” charms by the Kongo. These items have been found in deposits at places such as African American churches and other gathering locations in the United States and Caribbean (Fennell 2013; Brown 1998; Deeley et. al. 2013). A collection of artifacts that bears similarities to these deposits has been recovered throughout the cemetery at St. George’s Caye, Belize and distributed at a range of depths above the excavated coffin burials.

Early African and African-descendant presence on St. George’s Caye

African slaves and free people of African descent have been present on St. George’s Caye and the Settlement at the mouth of the Belize River since the rise of the logwood and mahogany industries, when slaves were imported for labor (Thomson 2004). According to census records, slaves and free people of African descent outnumbered settlers of European descent at least as early as 1750.
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(Thomson 2004). In 1779 Spanish officials documented the presence of a majority slave population living on St. George’s Caye (Gibbs 1883; Thomson 2004), and a 1764 map of the island depicts a distinct section labeled as “Negro Quarters” (Figure 1). In addition, members of two British West Indian Regiments were stationed on the island following the Battle of St. George’s Caye in 1798 (Garber 2010; Thomson 2004). The enlisted men of the West India Regiments were drawn from enslaved people of African descent (Buckley 1979), and their presence on the island could have contributed to the presence of African traits in the artifact assemblage of the St. George’s Caye cemetery.

African Influence in the Cemetery at St. George’s Caye

A variety of artifacts have been recovered from the St. George’s Caye cemetery that have a connection to the West India Regiments (WIR). These include ten gunflints, 11 pieces of lead shot, and at least three identifiable components of black-powder firearms, including two barrel fragments and a firing mechanism. Most directly connected to the presence of these regiments are 15 West India Regiment uniform buttons that have been recovered throughout the cemetery. Of these buttons, 11 are labeled with a roman numeral for the number “five”, to indicate that they were issued to soldiers of the 5th regiment. Historically, regiment soldiers were recruited by drafting “the most robust and able-bodied” slaves in the British colonies, hiring free people of African descent (Buckley 1979), and purchasing newly acquired slaves from Africa to serve in units (Buckley 1979). In 1798, about 68% of the soldiers of the 5th regiment were recruited directly from Africa. Between 1798 & 1808, 745 people were captured and enlisted from 38 different ethnic regions in Africa. Individuals from Igbo, Kongo and Yoruba territories comprised the greater majority of those enlisted in the 5th during the turn of the century (Buckley 1979). During this time the Fifth WIR would have been stationed on St. George’s Caye and the mainland.

Aspects of the assemblage in the cemetery at St. George’s Caye have similarities to deposits at other African American sites that have been linked to African-derived religious practices, in particular that of the Kongo (Fennell 2013; Brown 1998; Deeley et. al. 2013; Thompson 1983). This includes individual objects called “bolongo” that are combined to create bundled “Nkisi” charms (Thompson 1983) that were used to communicate with, or trap spirits, and invoke them to carry out the will of the possessor (Fennell 2013; Brown 1998; Deeley et. al. 2013; Thompson 1983). Use of these objects has included the deposit of specific objects in symbolically organized groups, and often in patterns that have been tied to Central and West African cosmology (Fennell 2013; Brown 1998; Deeley et. al. 2013; Thompson 1983). Different types of objects can be used to symbolize different aspects of Kongo cosmology (Fennell 2013; Thompson 1983). Reflective objects such as quartz crystals and chandelier prisms were often buried to connote the shining surface of water, which is synonymous with the realm of spirits. Animal claws and teeth signify the strength and vigor of the spirit to be beckoned for help and protection (Fennell 2013). White colored items, such as white clay marbles, represent purity and the power of spirits (Fennell 2011, 2013). Virtually any item can become spiritually charged (Cooksey et. al. 2013), but the most typical items found in deposits, in addition to those mentioned above, include polished stones, pieces of chalk, bone buttons, coins, ash, bird skulls, crab claws, iron nails, blue glass beads, various metal objects, lead shot, perforated coins and metallic disks, binding vines, and raccoon bacula (Brown 1998; Deely et. al. 2013; Fennell 2011, 2013; Thompson 1983).

Metal square nails, whole and partial queen conch shell, bone buttons, and polished stones are all typical of Kongo-influenced deposits found throughout North America (Fennell 2011; Fennell 2013; Brown 1998; Deely et. al. 2013), and have been recovered from the cemetery. Crab claws, although naturally occurring around the island, are among the material in the assemblage. Four domestic pig teeth, a blue glass bead, a perforated copper disk, two white clay marbles, two crystal decanter stoppers, a fist-sized quartz crystal, a leaded glass gemstone, and the 11 pieces of lead
According to Fennell (2011), Kongo spirituality was among the most dominant of the Afro-derived spiritual practices of early African Americans. Their cosmogram (Figure 3), called “Yowa” in Kikongo (Thompson 1983), is a central concept in Kongo spirituality (Cooksey et. al. 2013; Fennell 2011, 2013, Thomson 1983) and has been most commonly represented as two crossed, perpendicular lines. At the ends of each line is a small circle, four in total. Called the “four moments”, they represent the constant cycles of the “sun, cosmos, spirit and life” (Fennell 2013; Thompson 1983). A larger circle surrounds the axis where the two lines meet at the center of the cosmogram. It symbolizes the cyclical nature of life and death, the “spiritual journey of the soul and the evolution of spirits” (Fennell 2013). Robert Thompson describes its significance as “the circular motion of human souls about the circumference of its intersecting lines”, and the intersecting lines represents the point at which individuals in the worlds of the living and the spirits come into contact (Thompson 1983). In addition to the presence of Kongo individuals, known as Bakongo, enlisted in the Fifth West India Regiment, Bakongo people made the largest contribution of people into the Trans-Atlantic slave trade. An estimated one fourth of enslaved Africans who arrived in North America were either from Kongo or acquainted with its culture (Cooksey et. al. 2013). The overwhelming physical presence of Bakongo people in both imported slaves and regiment soldiers makes it unsurprising that material traits of their culture would show up on the island.

A carved shell adorno was recovered from excavations along the inside of the west cemetery wall, in proximity to the items mentioned above (Figure 4). It is the only one...
of its kind found in the cemetery, and its basic elements are some of the main elements of the Kongo cosmogram. The carved shell from the cemetery consists of a hole engraved in the center, surrounded by a raised ring, with another outer ring with four flanges that extend outward. The flanges are all angled clockwise and provide an illusion of counter-clockwise motion of the outer section against the inner ring. Its basic elements include some of the main elements of the Kongo cosmogram: the inner circle, the rotating outer circle with the four flanges similar to the four moments. Considering the historical context and stylistic similarities between the object and the cosmogram, it is possible that this artifact was designed as a representation of the Yowa.

Another common rendition of the Kongo cosmogram are square and cross combinations that have been etched into colonoware dishes and utensil handles (Joseph 2011; Schroedl & Ahlman 2002). These have been found at African American sites in the Southern United States (Fennell 2011), and have been recovered in association with West India Regiment refuse on St. Kitts (Schroedl & Ahlman 2002). An engraved pewter spoon handle was recovered north of the cemetery boundary, and includes a single vertical line, a cross, and an enclosed square (Figure 5), which is similar to these renditions depicted elsewhere (Joseph 2011).

The most abundant types of material recovered in the cemetery at St. George’s Caye are historic whole and partial glass bottles, whole and partial ceramic vessels, conch shells, animal bone and the remains of ceramic smoking pipes (Figure 6). All of this material is similar to assemblages that have been recorded in African American cemeteries in the southern United States (Fennell 2011; King 2010; Thompson 1983) and cemeteries of the Kongo in Africa (Cooksey et. al 2013; Thompson 1983). Additionally, burial traits have been identified in the cemetery that are similar to those that have been observed in African American burials elsewhere. In the 2011, among 13 burials excavated, two had attributes that have also been found in early African American cemeteries in the United States (see Springs et al. 2015). One of them was recovered with a Spanish coin on the top of the skull (Garber et. al. 2012), a feature also seen in the First American Baptist Church cemetery, an African American cemetery in Philadelphia (Fennell 2011). The second burial was found with a tin heart-shaped plate over the body’s chest. The heart was riveted around its edges with wood particles underneath a few of the rivets, which suggests that the plate was once attached to a coffin that has since decomposed (Garber et. al. 2012).
This is similar to a colonial African American burial in New York in which the coffin lid was decorated with tin tacks (Fennell 2011).

**Conclusion**

As discussed above, the assemblage of artifacts recovered from the cemetery at St. George’s Caye contains several elements that are typically associated with deposits that have been tied to West and Central African belief system. The identity of the inhabitants that were responsible for this deposit, whether they were regiment soldiers, enslaved Africans, free people, white settlers, or any combination of the above remains in question. It is difficult, if not impossible to confidently assign belief to people long dead. However, the inclusion of these African traits along with the European style burials that have been identified in the cemetery (Elverson 2013) provokes questions about the complexity and variation of belief and religious practices among the historic inhabitants of St. George’s Caye. Further investigations into the period of manufacture of the glass and ceramic material recovered from the cemetery might provide further information on the date range in which this deposit occurred, and by effect further insight into who the deposit can be attributed to.

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