
17 AN INVESTIGATION OF MIDDLE PRECLASSIC STRUCTURES AT PACBITUN

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Limited plaza zone excavations at the medium-sized Maya site of Pacbitun have revealed well-preserved traces of Middle Preclassic (900-300 BC) structural foundations, midden deposits, extensive artifactual and faunal remains, and a human burial with offerings. Remnants of at least fourteen early house platforms were unearthed in tests conducted between 1995 and 1997, probably representing a series of Preclassic households, and perhaps the remains of an early Maya hamlet. One of the most interesting findings was the presence of more than 3,000 pieces of marine shell ornaments, shell detritus, and lithic tools associated with these platforms. Given the accessibility of the Preclassic deposits and very good preservation of the platforms, it was decided that further study was warranted. Investigations in the summer of 2008 were focused on partially exposing one of these platforms, and its associated activity areas, through large-scale horizontal excavation. Archaeological analysis of early houses, particularly non-elite residential compounds, will produce important, and badly needed, data on Preclassic Maya household organization, social structure, religion, subsistence, and craft specialization. Our current fieldwork is designed to address the issue of whether or not this was the location of a shell ornament production workshop during the Middle Preclassic period.

Introduction

Archaeological excavations conducted in 2008 by the Pacbitun Preclassic Project (PPP) focused on the Middle Preclassic architecture and associated activity areas located in Plaza B of Pacbitun's site core. Specifically, the fieldwork was centered on partially exposing one Middle Preclassic house platform (Sub-Structure B-2), which was previously identified during excavations conducted at the site during the mid-1990s (Healy et al. 2004; Healy et al. 2007; Hohmann and Powis 1996, 1999; Hohmann et al. 1999).

Data from these excavations will be used to address two research questions. The first question is directed towards understanding Middle Preclassic domestic households in terms of their organization, social structure, religion, subsistence, craft production, and political and economic organization. By looking at household size, architectural design, burial patterning, activity areas, refuse middens, and the content of the artifact assemblages associated with the individual household, we can make inferences regarding many aspects of Maya society. Individually, each of these criteria is not particularly useful for identifying household variation, but when combined into a single investigative framework they provide a powerful means for indicating variability between households. The data generated from Pacbitun can be compared to other sites in the Belize

Valley in order to reconstruct early Maya community organization in this important region. This research will provide badly needed comparative data from a region not well represented for this temporal horizon and will shed new light on what is presently one of the least known, and yet most important chronological horizons in Maya prehistory.

The second question is directed towards further clarification of the nature and extent of Maya shell production in Middle Preclassic times at Pacbitun. Excavations in the mid-1990s revealed the presence of shell working materials in all units, including a very small area (50 cm x 50 cm) of the floor of Sub-Structure B-2. A total of 3,200 worked shell artifacts, 1,500 pieces of shell detritus, 125 burin spalls, and 92 chert drills were recovered from the excavations. The partial exposure of this Middle Preclassic house platform (with a floor area measuring 45.87 square meters) has substantially increased our knowledge of early Maya craft production at the household level. Specifically, our excavations provided information that can be used to reconstruct the scale and context of shell ornament production at Pacbitun.

Location

The ancient Maya site of Pacbitun is located approximately 10 km south of the Belize River and 3-4 km north of the Maya Pine Ridge in west central Belize. The central precinct is

situated atop a limestone acropolis which provides a commanding view of the hilly, rolling terrain surrounding the site. The location of Pacbitun likely was chosen by the early Maya to take advantage of local, contrasting micro-environments and resources: limestone lowlands, with broadleaf rainforest around the site and to the north; sandy soils, pine-covered, granitic uplands to the south; and multiple water sources (springs, creeks, ponds) nearby (Healy 1990; Graham 1987).

While the site and its agricultural sustaining area likely covered a territory of at least 9 km², the epicenter covers only about 0.5 km². This “downtown” zone is marked by over 40 masonry constructions, including temple-pyramids, palace-like range structures, a ball court, five plazas, two lengthy causeways, and a number of smaller courtyard groups (Bill 1987; Healy 1992) (Figure 1). The remains of 20 stelae and altars have also been recovered in the epicenter.

Previous Investigations

Excavations in Plaza B have shown that Pacbitun was first settled in the Middle Preclassic period, ca. 900 BC. The local ceramic complex for this time, known as the Mai phase, can be divided into early and late facets of the Middle Preclassic at ca. 650 BC. The Pacbitun region was marked by a tropical forest as the initial settlers set about clearing land for swidden agriculture and the establishment of a small, farming village (Wiesen and Lentz 1999). The vast majority of standing, masonry architecture visible today dates to the Late Preclassic, Early Classic, and especially Late Classic periods. Site abandonment occurred about AD 900 (Healy 1990; Healy et al. 2007), and to date there is no sign of any significant Postclassic settlement.

While evidence is accumulating to reveal that the Belize Valley was settled by the Maya during the terminal part of the Early Preclassic (ca. 1200-900 BC), locally termed the Cunil and Kanocha phases at Cahal Pech and Blackman Eddy respectively, Pacbitun does not seem to have been permanently occupied until the subsequent Middle Preclassic (Awe 1992; Garber et al. 2004; Healy et al. 2004). However, it is quite reasonable to suggest that these first

Pacbitun inhabitants came from the Valley, located only a short distance away, and that settlement at the site on the southern rim of the Belize Valley, may have been directly related to population growth and an ongoing Preclassic process of settlement fissioning. Under such a scenario, Maya colonists, following settlement of the most productive river bottom lands by the tenth century BC, had then begun to in-fill available, adjacent lands.

Ceramics

The excavations in Plaza B have yielded more than 10,000 sherds from Mai phase deposits. Of this assemblage, approximately 300 sherds, or 3 percent of the total ceramic assemblage, have been identified as Cunil. Despite the presence of Cunil sherds in Plaza B, all of them are derived from mixed deposits. No stratigraphically sealed Cunil deposits have been found to date, but there may be a small, still unrecognized Cunil phase settlement at or near Pacbitun. It is hoped that current research will shed some light on the earliest pottery and habitation at Pacbitun and that the results will add to the growing evidence for initial colonization of the Belize Valley.

Mai phase pottery at Pacbitun is found in numerous sealed deposits associated with both early and late Middle Preclassic structures. The pottery assemblage recovered from early Mai deposits is relatively homogeneous and dominated by only two groups: Jocote (64%) and Savana (29%) (Arendt et al. 1999). These two ceramic groups account for more than 90 percent of the total early Middle Preclassic assemblage. All varieties identified by Gifford (1976) at Barton Ramie were present in these two groups of pottery. The remaining portion of the early Mai assemblage is mostly made up of Joventud (1.7%) and Chunhinta (0.4%).

The late facet of the Mai complex, which is related to the Mamom sphere, shares a greater number of types with other lowland regions than the previous early Mai sub-assemblage. There is slightly more ceramic heterogeneity during this period than early Mai times, but Jocote (58%) and Savana (27%) Group pottery continues to dominate the assemblage (Arendt et al. 1999). The diversity in the late Mai assemblage comes from the

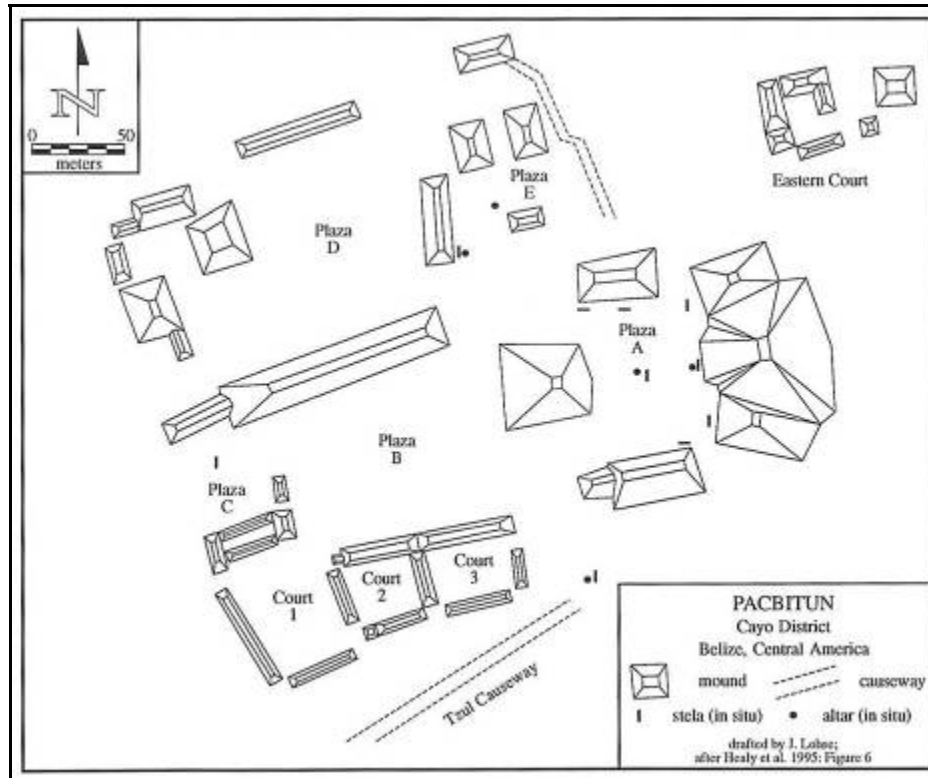


Figure 1. Plan View of the Pacbitun Site Core.

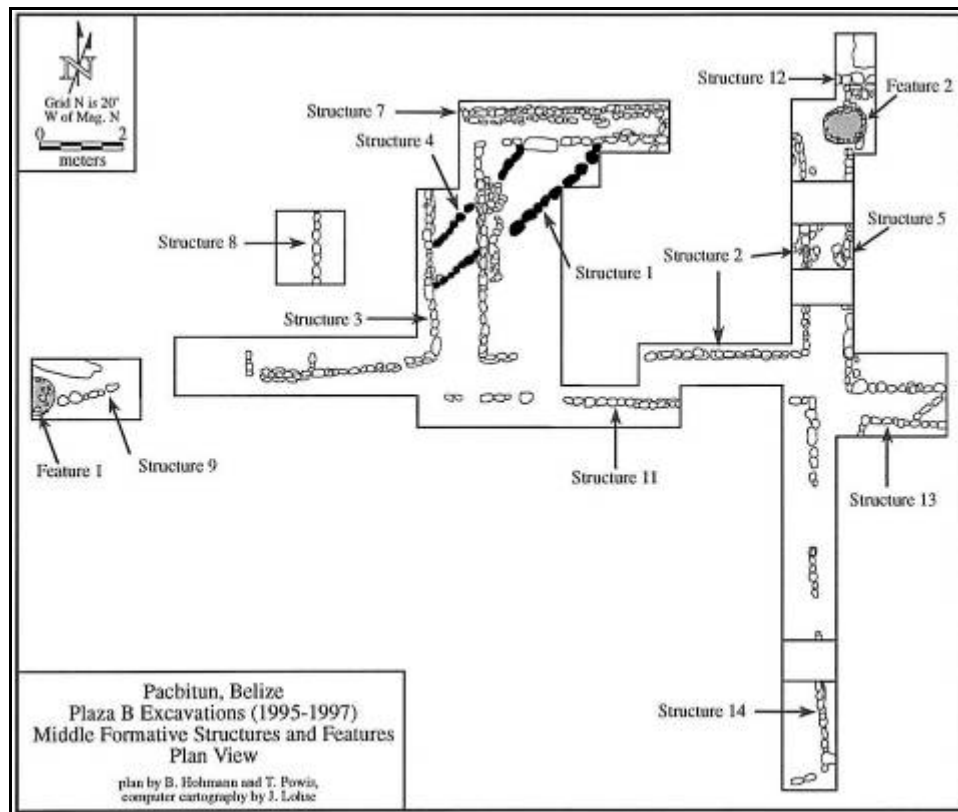


Figure 2. Original plan view of Middle Preclassic structural remains in Plaza B. Units 1 and 2 from the 2008 field season were positioned inside southwest corner of Sub-Structure B-2. Note the early Mai phase structures highlighted in black.

increased frequency in red slipped pottery belonging to the Joventud Group. While red and black slipped pottery represents approximately 2 percent of the early Mai assemblage, they increase to 4 percent during the late Mai period.

Settlement and Architecture

Excavations at Pacbitun in 1995, 1996, and 1997 focused on Plaza B, the largest open area of the epicenter. These excavations revealed substantial architectural and artifactual remains dating to both the early and late facets of the Middle Preclassic period (Arendt et al. 1996; Hohmann and Powis 1996, 1999). Our investigations on the north side of the plaza, just south of Structure 8, exposed an area of more than 54 square meters containing the architectural remains of at least nine buried platforms, all dating to the Middle Preclassic period. All of these platforms were covered by a late Middle Preclassic midden deposit approximately 50 cm thick.

The earliest architectural remains identified are the retaining walls of two partially exposed platforms (Sub-Strs. B-1 and B-4) (Figure 2). Both of these were constructed of two courses of roughly cut limestone blocks which ran parallel to one another in a northeast-to-southwest direction, and sat only 10-15 cm above bedrock. It appears that both structures were built directly on a paleosol or ground surface with little or no modification beforehand. The presence of postholes, marked by circular rings of darker soil, suggests that these stone-edged platforms once supported perishable superstructures. There are also traces of stone alignments hinting at associated structure porches or patios. The exact dimensions of these rectilinear, early Mai phase (900-650 BC) structures have not been determined, but they were at least 6.5 to 6.0 m on a side with hard-packed marl floors. Ceramics recovered from test pits into the tamped marl floors inside the structures, consisted of ash-tempered Savana Orange, Jocote Orange-brown, and Chacchinic Red-on-orange-brown types, along with a few Cunil sherds. A single radiocarbon date (Beta-93778), at CAL BC 800-770 (1 sigma), was obtained from a stratigraphic lense (Level 5) directly

above both structures, confirming the temporal assignment of Sub-Strs. B-1 and B-4 to the early Middle Preclassic (Healy 1999:Table 1). We have yet to run charcoal samples from inside these platforms, but we anticipate an even earlier date. Around 500 BC both Sub-Strs. B-1 and B-4 were abandoned and partly covered.

By the late Mai phase (650-300 BC), more substantial architecture (e.g., Sub-Strs. B-2, B-3, B-5, and B-14) was built directly over the initial early Mai phase structures. These rectilinear structures, consisting of at least three courses of cut limestone block (25 cm high), were oriented north-south (see Figure 2). Four corners were identified on Sub-Structure B-2. Calculations indicate this structure measured 37.6 square meters (8.25 m x 5.25 m). Ceramics recovered from test pits into these late Mai structures revealed primarily late varieties of Savana Orange and Jocote Orange-brown pottery types. Their stratigraphic position (above Sub-Strs. B-1 and B-4) also suggests a late Middle Preclassic date for these more substantial platforms. Finally, a radiocarbon date (Beta-93776), at CAL BC 525-395, was obtained on charcoal from a stratum (Level 4) of Sub-Str. B-3, again reinforcing the late Middle Preclassic temporal assignment.

Shell Ornament Production

Excavation of the Middle Preclassic deposits of Plaza B produced over 3,200 modified shell artifacts, including items that would have been attached to clothing or worn as jewelry items. The majority of these artifacts were made from marine species such as *Strombus*, *Marginella*, *Oliva*, *Spondylus*, and *Dentalium*, but locally abundant freshwater snails (*jute*) and mussels (*Nephronaias*) were also utilized. Disk and irregular beads dominate the worked shell assemblage. Disk beads measure between 5-10mm in diameter and are perforated with ground edges. Irregular beads are perforated, but have irregular outlines and edges that show little to no modification (Hohmann 2002). A variety of tinklers, adornos, and pendants were also identified.

In addition to the modified shell artifacts, approximately 1,500 pieces of marine shell detritus or production byproducts were also

recovered, providing evidence that the early Pacbitun Maya were producing shell ornaments on site by the early Middle Preclassic (Hohmann 2002). The concentration of production activities appears to have been restricted to Plaza B, since testing elsewhere in the central precinct and periphery has so far revealed no accumulations of shell artifacts, shell working tools or debris. The presence of shell working materials in Sub-Structure B-2 and the association of shell working debris with domestic refuse around this structure suggest that production activities were being undertaken at the household level.

That this was the home of a shell working specialist is further supported by standard deviation and coefficient of variation calculations showing increasing disk bead uniformity or standardization between the early and late Middle Preclassic periods (Hohmann 2002). The sample means of the early and late Middle Preclassic disk bead samples are similar at 7.958 and 8.123 respectively, but the standard deviations differ considerably at 3.225 for the early Middle Preclassic and 1.660 for the late Middle Preclassic. The coefficient of variation calculations used to evaluate the differences in variation between the two samples resulted in values of 40.5 percent for the early Middle Preclassic and 20.4 percent for the late Middle Preclassic, indicating that the late Middle Preclassic sample was more uniform than the earlier period.

Although shell ornaments have been found at other Middle Preclassic sites in the Belize Valley, few have produced evidence of finished and unfinished shell artifacts, production debris, and chert tools, all from primary contexts. The Cas Pek Group at Cahal Pech (Lee 1996; Lee and Awe 1995) provides one of the few examples of shell ornament production evidence outside Pacbitun, but the majority of the materials come from construction fill in Late Preclassic contexts. Finished examples of these tiny shell beads are also known from Middle Preclassic contexts at Colha (Buttles 1992; Dreiss 1982), Cuello (McSwain et al. 1991), K'axob (Isaza 1997; Isaza and McAnany 1999) and elsewhere in the lowlands. Clearly, shell beads were an important, widespread component of Middle

Preclassic Maya personal adornment, and whole marine shells were being imported to Pacbitun, roughly 100 km from the Caribbean coast, for re-working.

Lithic Production

All of the lithic material associated with the shell production has been identified as locally available chert. Willey et al. (1965) and Ford and Olson (1989) mention outcrops of chert from the Belize Valley, and this is certainly a source possibility. What is particularly interesting is that of the more than 300 formal tools (whole and fragmentary) from Middle Preclassic deposits at Pacbitun, 217 of them consisted of burin spalls (n=125) and micro-drills (n=92). As mentioned above, most of the small chert drills (presumably once hafted into wood or bone handles) were found associated with marine shell artifacts and debitage, and clearly important tools for shell bead manufacture (Hohmann 2002).

Current Investigations

During the course of our three week field season in the summer of 2008, two units (Unit 1 and Unit 2), were excavated in Plaza B. The units were placed just to the south of the base of Structure 8 (Figure 3). We relocated the units excavated in the mid-1990s, then placed the new units adjacent to them to continue exposing Sub-Structure B-2, whose corners had previously been identified. Specifically, our main goal was to expose the southwestern corner of this structure, which had not been excavated during our original investigations. Units 1 and 2 were placed adjacent to one another on the northeast side of the original unit. Unit 1 measured 1.75 meters north-south by 1.50 meters east-west, and Unit 2 measured 1.50 meters north-south by 1.50 meters east-west (Figure 4). We followed the stratigraphy that was outlined in earlier reports, and based on the ceramic material recovered we were able to confirm the temporal assignment of each cultural layer that was previously noted, particularly those related to the early and late Middle Preclassic periods. Of particular importance was the rediscovery of the 50 cm thick late Middle Preclassic midden deposit which covered Sub-Structure B-2. By knowing

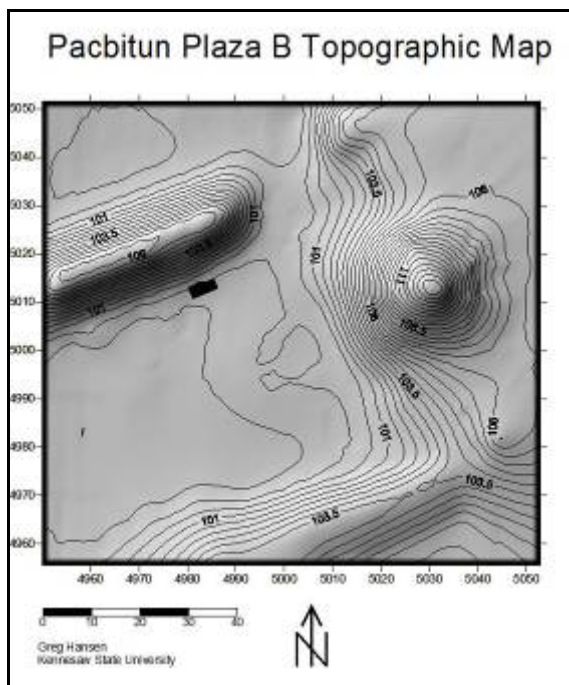


Figure 3. Topographic map showing the location (shaded black rectangle) of Units 1 and 2 at the northeastern corner of Plaza B

the stratigraphy beforehand, we were able to excavate carefully to the top of Sub-Structure B-2 without destroying the integrity of the tamped marl floor surface of the structure.

Directly below this dark, thick midden deposit we exposed the southwestern corner of Sub-Structure B-2. As with our previous excavations into this structure, the tamped marl floor surface was found intact. Through our current investigations we were able to expose about 2.5 square meters of additional floor area in Sub-Structure B-2. By digging in 5 cm intervals into the floor, we could control for the recovery of artifacts embedded in the surface of the floor, and therefore relate them directly to the manufacture of shell ornaments. Any artifacts found below this initial 5 cm depth were considered to be secondary fill and not primary floor deposits. By excavating in this manner we hoped to find primary evidence of shell working activities, which would be identified by the presence of shell beads, chert drills, and shell detritus, all lying in direct association with one another. Previously, we were unable to state conclusively that each of these materials were associated with one another on the floor surface of this structure. Based on

our current work in the southwest corner of Sub-Structure B-2, we can now confirm that shell beads, chert drills, and shell detritus did in fact co-occur on the same floor surface and are contemporaneous in date.



Figure 4. Plan view of Units 1 and 2 inside Sub-Structure B-2 in Plaza B. The orange subsoil is located at the base of Unit 1. Unit 2 is located to the east (right) of Unit 1.

The 2008 excavations in Plaza B produced an additional 239 shell beads, 30 chert micro-drills, and 38 pieces of shell detritus (Figure 5). Of this, we recovered 67 shell beads, 9 chert micro-drills, and 15 pieces of shell detritus in the floor of Sub-Structure B-2. The remaining artifacts were found either in lower levels associated with earlier structures or in the thick midden deposit which overlies Sub-Structure B-2. The overwhelming majority of the shell beads were manufactured from conch (Strombidae Family) shell, with only two being made from freshwater species. One bead was made from *jute*, a freshwater gastropod found nearby in Barton Creek, and the other was made from *Nephronaias*, a freshwater univalve also found locally in Barton Creek. Of the 67 shell beads, 57 of them were identified as being disk-shaped and the remaining 10 were irregular. All of the shell detritus was marine in origin, and

has been identified as conch. The chert drill assemblage was small, but we did find both complete (n=2) and broken pieces of drills (n=7) on the floor of the structure.



Figure 5. Representative sample of chert micro-drills (top), modified shell artifacts (middle), and shell detritus (bottom) from Units 1 and 2.

Conclusions

The 2008 excavations at Pacbitun built upon and advanced the research begun over a decade ago. The current investigations have allowed us to examine the lifeways of some of the earliest known Lowland Maya through the careful unearthing of buried architectural platforms and associated artifactual materials. Although these results are preliminary in nature, they have given us the opportunity to begin making inferences regarding the nature of Preclassic occupation of the site and, by extension, the Belize Valley in which Pacbitun is located. These excavations have provided new insights to topics such as craft production and patterns of exchange. Although we have made considerable headway towards elucidating Preclassic period occupation at Pacbitun, our

knowledge of the social, political, and economic organization at this early stage of cultural development remains underdeveloped.

The partial excavation of domestic architecture and associated artifactual assemblages from Plaza B indicates that the system may have undergone significant organizational changes throughout the Preclassic period. Artifactual and architectural evidence from the early Middle Preclassic suggests a predominantly egalitarian society. The increased frequency of long-distance exchange goods and the presence of substantial quantities of shell ornaments and shell production debris during the late Middle Preclassic indicate that the system changed, perhaps to more a hierarchical or ranked society. The continued presence of shell ornament production activities during the Middle Preclassic provides support of this notion. Through additional laboratory and distribution analyses we expect to clarify some of these issues and provide a more complete picture of the organization and evolution at Pacbitun during the Preclassic. One issue which remains to be addressed is whether Sub-Structure B-2 is a domestic structure in which a defined interior space was set aside for shell production, or if the entire structure was used exclusively for the production of these ornaments. Clearly, additional investigations of Plaza B are needed to test this hypothesis.

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References Cited

- Arendt, C., T. Powis, and P. Healy
1999 The Preclassic Ceramics at Pacbitun, Belize. Paper presented at the 64th Annual Meeting of the Society for American Archaeology, Chicago.
- Arendt, Carmen, Rhan-Ju Song, and Paul F. Healy
1996 The 1995 Excavations in Plaza C, Pacbitun, Belize: A Middle Preclassic Burial and a Late Classic Stela. In *Belize Valley Preclassic Maya Project: Report on the 1995 Field Season*, edited by Paul F. Healy and Jaime J. Awe, pp. 128-138. Trent University, Occasional Papers in Anthropology No. 12. Peterborough, ONT.
- Awe, Jaime J.
1992 *Dawn in the Land Between the Two Rivers: Formative Occupation at Cahal Pech, Belize and Its Implications for Preclassic Occupation in the Central Maya Lowlands*. Ph.D. dissertation, Institute of Archaeology, University of London. London (UK).
- Bill, Cassandra R.
1987 *Excavation of Structure 23: A Maya "Palace" at the Site of Pacbitun, Belize*. Unpublished M.A. thesis, Department of Anthropology, Trent University. Peterborough, Ontario.
- Buttles, Palma
1992 *Small Finds in Context: The Preclassic Artifacts of Colha, Belize*. M.A. thesis, Department of Anthropology, University of Texas-Austin. Austin, TX.
- Dreiss, Meredith
1982 An Initial Description of Shell Artifacts from Colha, Belize. In *Archaeology at Colha, Belize: The 1981 Interim Report* edited by Thomas R. Hester, Harry J. Shafer, and Jack Eaton, pp. 208-224. University of Texas-San Antonio, Centre for Archaeological Research. San Antonio.
- Ford, Anabel and Kirsten Olson
1989 Aspects of Ancient Maya Household Economy: Variation in Chipped Stone Production and Consumption. In *Research in Economic Anthropology, Supplement 4: 185-211*. JAI Press, CN.
- Garber, J.F., M.K. Brown, W.D. Driver, D.M. Glassman, C.J. Hartman, F.K. Reilly, and L. Sullivan
2004 Archaeological Investigations at Blackman Eddy. In *The Ancient Maya of the Belize Valley: Half a Century of Archaeological Research*, edited by J.F. Garber, pp. 48-85. University Press of Florida, Gainesville.
- Gifford, J.C.
1976 *Prehistoric Pottery Analysis and the Ceramics of Barton Ramie in the Belize Valley*. Memoirs of the Peabody Museum of Archaeology and Ethnology, Volume 18. Harvard University. Cambridge, MA.
- Graham, Elizabeth
1987 Resource Diversity in Belize and Its Implications for Models of Lowland Trade. *American Antiquity* 52 (4): 753-767.
- Healy, Paul F.
1990 Excavations at Pacbitun, Belize: Preliminary Report on the 1986 and 1987 Investigations. *Journal of Field Archaeology* 17(3): 247-262.
1992 The Ancient Maya Ballcourt at Pacbitun, Belize. *Ancient Mesoamerica* 3: 229-239.
1999 Radiocarbon Dates from Pacbitun, Belize: Results from the 1995 Field Season. In *Belize Valley Preclassic Maya Project: Report on the 1996 and 1997 Field Seasons*, edited by Paul F. Healy, pp. 69-82. Trent University, Occasional Papers in Anthropology No. 13. Peterborough, ONT.
- Healy, Paul F., David Cheetham, Terry G. Powis, and Jaime J. Awe
2004 Cahal Pech: The Middle Formative Period. In *The Ancient Maya of the Belize Valley: Half a Century of Archaeological Research*, edited by James F. Garber, pp. 103-124. University Press of Florida, Gainesville.
- Healy, Paul F., Christophe G.B. Helmke, Jaime J. Awe, and Kay S. Sunahara
2007 Survey, Settlement, and Population History at the Ancient Maya Site of Pacbitun, Belize. *Journal of Field Archaeology* 32(?): 17-39.
- Healy, Paul F., Bobbi Hohmann, and Terry G. Powis
2004 The Ancient Maya Center of Pacbitun. In *The Ancient Maya of the Belize Valley: Half a Century of Archaeological Research*, edited by James F. Garber, pp. 207-227. University Press of Florida, Gainesville.
- Hohmann, Bobbi M.
2002 *Preclassic Maya Shell Ornament Production in the Belize Valley, Belize*. Ph.D. dissertation, Department of Anthropology, University of New Mexico. Albuquerque, NM.
- Hohmann, Bobbi and Terry Powis
1996 The 1995 Excavations at Pacbitun: Investigations into the Middle Formative Occupation in Plaza B. In *Belize Valley Preclassic Maya Project: Report on the 1995 Field Season*, edited by Paul F. Healy and Jaime J. Awe, pp. 98-127. Trent University, Occasional Papers in Anthropology 12. Peterborough, ONT.
- 1999 The 1996 Excavations of Plaza B at Pacbitun, Belize. In *Belize Valley Preclassic Maya Project: Report on the 1996 and 1997*

- Field Seasons*, edited by Paul F. Healy, pp. 1-18. Trent University, Occasional Papers in Anthropology 13. Peterborough, ONT.
- Archaeology and Ethnology Paper 54. Harvard University, Cambridge, MA.
- Hohmann, Bobbi, Terry Powis, and Carmen Arendt
1999 The 1997 Investigations at Pacbitun, Belize. In *Belize Valley Preclassic Maya Project: Report on the 1996 and 1997 Field Seasons*, edited by Paul F. Healy, pp. 19-29. Trent University, Occasional Papers in Anthropology 13. Peterborough, ONT.
- Isaza Aizpurua, I.
1997 Shell Working and Social Differentiation at the Formative Maya Village of K'axob. Unpublished Master's thesis, Department of Anthropology, Boston University, Boston.
- Isaza Aizpurua, I. and Patricia M. McAnany
1999 Adornment and Identity: Shell Ornaments from Formative K'axob. *Ancient Mesoamerica* 10:117-127.
- Lee, David F.H.
1996 *Nohoch Na* (The Big House): The 1995 Excavations at the Cas Pek Group, Cahal Pech, Belize. In *Belize Valley Preclassic Maya Project: Report on the 1995 Field Season*, edited by Paul F. Healy and Jaime J. Awe, pp. 77-97. Trent University, Occasional Papers in Anthropology No. 12. Peterborough, ONT.
- Lee, David F.H., and Jaime J. Awe
1995 Middle Formative Architecture, Burials, and Craft Specialization: Report on the 1994 Investigations of the Cas Pek Group, Cahal Pech, Belize. In *Belize Valley Preclassic Maya Project: Report on the 1994 Field Season*, edited by Paul F. Healy and Jaime J. Awe, pp. 95-115. Trent University, Occasional Papers in Anthropology No. 10. Peterborough, ONT.
- McSwain, Rebecca, J.K. Johnson, Laura J. Kosakowsky, and Norman Hammond
1991 Craft Technology and Production. In *Cuello: An Early Maya Community in Belize*, edited by Norman Hammond, pp. 159-191. Cambridge University Press, New York.
- Wiesen, Anne and David L. Lentz
1999 Preclassic Floral Remains at Cahal Pech and Pacbitun, Belize: Summary Report. In *Belize Valley Preclassic Maya Project: Report on the 1996 and 1997 Field Seasons*, edited by Paul F. Healy, pp. 53-67. Trent University, Occasional Papers in Anthropology 13. Peterborough, ONT.
- Wiley, G.R., W.R. Bullard, Jr., J.B. Glass, and J.C. Gifford
1965 *Prehistoric Maya Settlements in the Belize Valley*. Memoirs of the Peabody Museum of