Early Copán Acropolis Program 2000 Field Season

Research Year: 2000
Culture: Maya
Chronology: Early Classic
Location: Copán, Honduras
Site: Hunal and Margarita tombs

Table of Contents

Goals and Results of ECAP Research

The University of Pennsylvania Museum began work at the Classic Maya center of Copán, Honduras, in 1989 with the formation of what came to be the Early Copán Acropolis program (ECAP). Phase I of this research corresponds to the active collection of archaeological data from excavation–in this case, mostly from a network of some 3 kms of tunnels ECAP has excavated beneath the Copán Acropolis. The excavation of new tunnels ended in 1996, with portions of the following three field seasons (1997-2000) devoted to completion of stratigraphic test pits, architectural probes, and the documentation, conservation, and removal of materials from two royal interments, known as the Hunal and Margarita tombs (Sharer, 1999). Overlapping with this data collection effort, Phase II of ECAP's research was undertaken to fully document, conserve, and analyze all the material remains recovered in Phase I. Much of the Phase II work has been conducted in conjunction with Phase I, but the documentation, conservation, and analysis effort accelerated considerably beginning with the 1997 field season. The greatest impetus for both the acceleration of this effort, and the successful completion of most of the Phase II objectives has been a three year grant from FAMSI aimed specifically at supporting documentation, conservation, and analysis for the years 1998-2000.

Since its beginning, ECAP's research has been directed at the origins of state systems as revealed by the conjunction of archaeology and history (Fash and Sharer, 1991; Sharer *et al.*, 1999). Copán provides a unique source of data from the time of the early development of a Maya state during the Early Classic era (usually dated at Copán as ca. A.D. 400-650). The focus of ECAP's research was the epicenter of this regional state, the Copán Acropolis, which served as the royal religious, administrative, and residential center for Copán's kings for some 400 years (ca. A.D. 400-800). At the same time, recent breakthroughs in the decipherment of Maya writing (Coe, 1999) resulted in new historical information gained from Copán's texts which greatly enhanced the archaeological data. In other words, ECAP research essentially comprises historical archaeology at Copán.

When our research began there was disagreement about the accuracy and meaning of Maya texts. At Copán a number of Late Classic (ca. A.D. 650-800) retrospective texts referred to a dynastic founder who took the royal scepter in A.D. 426 and apparently arrived at Copán in A.D. 427 (Schele, 1986; Martin and Grube, 2000; Stuart, 2000). While some scholars held that Maya accounts of founders and early kings were records of actual people and events, many others believed these retrospective accounts were mythical–created by later kings to expand their royal ancestry and enhance their prestige and authority. Until ECAP's research there was not enough archaeological data

to test the proposition that a king named K'inich Yax K'uk' Mo' ("Great Sun, First Quetzal Macaw") founded the Copán dynasty, or that he and his son and successor were even real people who lived and ruled at Copán. By excavating over 3 kms of tunnels into the earliest levels of the Copán Acropolis, we have been able to recover a wealth of evidence bearing directly on the dynastic founding era and the remainder of the Early Classic period. Twelve years of exposing and documenting the architectural development of this royal complex has provided the archaeological data which clearly supports the later Maya historical accounts, and just as clearly negates the "mythical king" thesis (Sharer *et al.*, 1999).

The disagreement over the veracity of Maya texts was also part of a larger issue involving the development of Maya sociopolitical organization. One position held that the Maya did not develop large-scale, state-type organizations until the Late Classic period, after ca. A.D. 600. The contrary position held that the Maya developed large-scale, state-type organizations long before the Late Classic era, or by the Early Classic period (ca. A.D. 300-600). One critical indicator of state systems is the appearance and scale of royal palace structures. In addition, since the size of royal architecture reflects the amount of labor and materials harnessed by Copán's rulers to construct their royal compound, a major increase in such investments is another indication of state systems. ECAP's Acropolis tunnels provided unique data which document the appearance and development of royal palaces at Copán (Traxler, 1996, in press), and the amount of architectural expenditures and their changes over time (Carrelli, 2000). Together, these lines of evidence furnish very significant support for the development of an Early Classic state system at Copán, several centuries earlier than had been proposed by earlier investigators.

Overall, ECAP's research has reinforced and expanded our knowledge of the founding events at Copán, initially revealed by decipherments of inscriptions. The system of tunnels beneath the Acropolis has documented the buildings used by the dynastic founder, K'inich Yax K'uk' Mo', and his son and successor. At the same time, the discovery of several new hieroglyphic texts dating from the founding era have added new historical information about this critical time period. ECAP also discovered three royal tombs, including the two earliest known tombs beneath the Acropolis. Various lines of evidence were gathered to propose the identities of the royal occupants of these tombs. In the case of the first of these royal burials to be excavated by ECAP, the Sub-Jaguar Tomb, the evidence suggests it is the burial place of Copán's seventh king, Waterlily Jaguar (Traxler, 1996). In the cases of the two earliest tombs, the evidence allows one, the Hunal Tomb, to be proposed as the burial place of the founder himself, and the other, the Margarita Tomb, to be the burial place of an extraordinary royal woman who was probably his queen (Bell *et al.*, 1999; Sharer *et al.*, 1999). Beyond this, analysis of the archaeological, historical, and bioanthropological data allows us to propose that K'inich Yax K'uk' Mo' came from Tikal, founding a new dynasty at Copán as part of an effort of political and economic expansion sponsored by this great Maya capital (Sharer, in press). This latter finding implies that the origin of the Copán state involved a process of royal colonization that originated at Tikal.

To summarize, ECAP's excavations beneath the Copán Acropolis provide a unique documentation of the origins and development of an Early Classic royal complex. The timing and patterning of these remains are direct evidence of the founding and growth of Copán as the capital of a Classic period polity just as was recorded on later historical texts at the site. After 12 seasons of excavation, documentation, and analysis of data we can begin to define patterns in the archaeological data that allow us to reconstruct the origins and development of the Acropolis and, by extension, the origins and development of the Copán state. For example, specific sequences of superimposed buildings reveal how Copán's rulers reinforced their power through time by venerating important ritual locations to maintain symbolic links to the past. Findings such as these certainly advance our knowledge of the origins of Copán as a Maya state, and have implications for better understanding the development of early civilizations elsewhere.

Submitted 11/01/2000 by:
Dr. Robert J. Sharer
The University of Pennsylvania Museum
rsharer@sas.upenn.edu

The 2000 ECAP Research

The 2000 ECAP field season extended from early January to the end of August. During this span two important accomplishments were realized. First, the excavation, documentation, and conservation of the last of the offerings from the Margarita Tomb were completed in early May, 2000. This marked the completion of ECAP's research efforts in the Acropolis tunnels, although recording, monitoring, and consolidation in the tunnel system will continue. Second, during 2000 ECAP also completed the bulk of the documentation, conservation, and analysis of recovered archaeological materials. As mentioned, the latter efforts comprise Phase II of our research, supported in large measure by a three year grant from the Foundation for the Advancement of Mesoamerican Studies, Inc., with support during 2000 provided by the final year of this award (Grant 99102).

The remainder of this Final Report will summarize the specific activities supported by FAMSI during the 2000 field season at Copán, Honduras (January 2 to August 29). These activities comprised the conservation of architecture and artifacts, the documentation of recovered archaeological materials, the analysis of archaeological materials (pottery, obsidian, other artifacts, archaeobotanical samples, and zooarchaeological samples), activity residues, construction materials, and human remains. It should be noted that the majority of this research was supported by FAMSI

Grant 99102, while some studies were supported by other sources such as the University of Pennsylvania Museum and funding secured by individual investigators.

Conservation of Architecture

During ECAP's 2000 field season the critical effort to preserve the Early Classic architecture of the Copán Acropolis was continued. This is an ongoing long-term process which will have to continue long after ECAP ceases its presence in Copán. Accordingly, during the 2000 field season discussions were held between the ECAP Director, Dr. Robert Sharer, and Dr. Seiichi Nakamura, Director of the Copán architectural consolidation program of the Instituto Hondureño de Antropología e Historia (IHAH), to coordinate ECAP's consolidation efforts and to ensure compliance with long term site preservation policies. In addition, these discussions also involved planning for the future of architectural consolidation at Copán. As a result it was agreed that ECAP's consolidation efforts will continue over the next three field seasons until they cease in 2003 when the current convenio with IHAH expires.

Due to the support by FAMSI, the effort to consolidate all major ECAP tunnels, and preserve the architecture exposed by these excavations, continued to make progress during the 2000 field season. Once again the overall supervisor of tunnel consolidation was Fernando Lopez. The focus of this effort in 2000 was the installation of masonry consolidation over the chamber of the Sub-Jaguar Tomb and in the tunnel that provides access to this chamber beneath the Acropolis East Court. The completion of this work in 2000 ensures the long-term security and access to this important excavation area. In addition to this effort, a number of stratigraphic test pits were backfilled. The critical effort of monitoring and periodic conservation of the modeled and painted plaster facades on several Early Classic buildings also continued during the 2000 field season. During the 2000 field season FAMSI funding continued to provide critical support to meet the continuing tunnel consolidation work necessitated by unusually heavy rains which fell on Copán in both 1998 and 1999. These disastrous rains caused water infiltration and collapse in several ECAP tunnel areas. As in 1999, FAMSI funding was used to hire extra labor crews to repair this damage during the 2000 field season.

Conservation of Artifacts

The other half of the ECAP conservation program is focused on preservation of excavated archaeological materials which are removed to the field laboratory at the Centro Regional de Investigaciones Arqueológicas (CRIA) located adjacent to the site. During the 2000 field season ECAP again benefited in countless ways from the expert work of a professional conservator, Lynn Grant of the University of Pennsylvania Museum Conservation Department. During her stay at Copán, Lynn worked as part of the research team that completed the removal of offering from the Margarita Tomb (Figure 1). In this capacity she was once again responsible for assessing the

conservation needs of all objects exposed in the excavation process, and to prepare for their removal and transport to the ECAP field laboratory. Something of the critical and demanding nature of this job can be realized by knowing that during the 2000 field season a total of 3,707 artifacts (not including unidentified clusters and samples) and 13 human bones (mostly small hand and foot bones) were removed from the Margarita Tomb floor. Only the close cooperation between archaeologists and conservator working day after day together in the tomb enabled so many ephemeral artifacts and materials to be successfully recovered.

Figure 1: Completion of the Margarita Tomb during the 2000 field season; conservator Lynn Grant preparing to remove conserved object on the tomb floor.

When especially fragile objects were encountered on the tomb floor, these were usually conserved *in situ* before their removal. The final stage in the excavation of the Margarita Tomb during the 2000 field season exposed numerous especially important and fragile artifacts, so that the presence of Lynn Grant's conservation expertise once again proved critical in the excavation and removal of these items. The largest and most complicated offering on the Margarita Tomb floor appeared to be an amorphous clump of cinnabar and debris when first cleared (Figure 2). It turned out to be a concentration of over 2,000 objects, including a painted basket and other organic objects, two pyrite mirrors, seashells, stingray spines, and a large mass of jade beads and shell rings that were probably strung together into necklaces and other adornments. These objects had originally been placed in baskets, bags, and painted gourds grouped together in the center of the floor.

Figure 2: Completion of the Margarita Tomb during the 2000 field season; excavators David Sedat (foreground) and Marcello Canuto clearing remains of offerings on the tomb floor.

One of the most remarkable of these decorated perishable containers was a stuccoed basket lid painted with a fine-line polychrome design. Careful excavation and

conservation of the lid determined that it had fallen and buckled over a neighboring object, resulting in layer after layer of friable paint flakes. When it was first discovered only a fragment of the rim and the stucco layer with well-preserved impressions of the now decayed basketry was visible. Guided by Lynn, the excavation team was able to consolidate, lift, and clean the fragment to reveal a representation of a figure in profile wearing a decorated turban headdress similar to those depicted being worn by kings on Copán' s monuments (Altar Q, for example). After the painted basket lid had been removed, work began on the rest of the central deposit. This concentration included perishable containers filled with strands of jade beads, bundles of worked bone needles, and carved shell rings. Some of the rings were carved with faces whose incised features were highlighted by a filling of bright red cinnabar, and with eyes inlaid with jade. These objects are especially interesting since such quantities of rings and needles have not been found in other Copán burials. Stingray spines that could have been used for blood-letting were found nearby, and the bases of two of the straw baskets were preserved below the strands of jade and shell beads they had held for over 1500 years.

On the eastern side of the central deposit were two slate and pyrite mirrors. Similar to mirrors found at Kaminaljuyú and other Maya sites, these were made of pieces of highly polished pyrite anchored to slate backs painted with colorful, fine-line designs. The mirrors had been wrapped in a closely woven textile and bundled into a loosely twined container before they were placed on the tomb floor. Our first indication that the slate backings of the mirrors might have been painted came as the edge of the lower mirror was cleared. This revealed a series of small painted yellow dots and stars. Further cleaning revealed the entire back was covered with a design. Unfortunately, the decay of the pyrite that made up the reflective surface of each mirror produced sulfuric acid, corroding and discoloring the slate backing and its stuccoed surface. Although difficult to see, the mirror backs are decorated in the same fine-line style seen on a vividly painted vase nick-named the "Dazzler" found in 1993 when the Margarita Tomb was first opened (see Analysis of Other Artifacts). Both mirrors were probably worn suspended from a cord.

The eastern side of the tomb floor was covered by quantities of needles in two groups bundled into an organic wrapping, probably a textile. While all of the needles are made of worked bone, the ones in the northern group are stained a bright blue-green color. While the needles may have formed part of a "tool kit," there are far more than could have been used at one time by a single woman. Several years ago noted Mayanist Linda Schele had suggested that elements of the burial costume may indicate that the woman in the Margarita Tomb was dressed as an aspect of the Moon Goddess, and the needles add support for this thesis since they would have been an important part of the weaving tools that characterized some representations of that deity.

The remainder of the tomb floor was covered with a series of deposits similar to those found in the center—concentrations of jade beads, painted gourds full of cinnabar, and two small grinding stones, possibly used to prepare pigment. A pair of jade mosaic mother-of-pearl earflares was found near the north end of the floor, while the south end contained a ceramic bowl and a few other artifacts. Disturbance of the objects on the

west side suggests that the chamber was re-entered in antiquity, consistent with earlier observations made in other areas of the tomb.

After clearing and preliminary treatment in the tomb, these delicate remains were removed to the field laboratory for further study, cleaning, and conservation. It is in the field laboratory that the second facet of Lynn's work takes place during each field season (Figure 3). Following the transport of all the artifacts from the Margarita Tomb floor to the field laboratory in 2000, each was checked to assess its conservation needs. In the cases of the two pyrite mosaic mirrors, considerable additional work was required to clean and stabilize the remains of the fragile stucco-painted designs. This effort was an outstanding success, since as a result, almost all of the design area on one mirror, and one half of the design area on the second mirror could be exposed, conserved, and documented by drawings and photographs. Many of the other highly fragile objects recovered from the Margarita Tomb, such as the basket lid with stucco-painted designs, received similar successful treatment that ensured that each was conserved, thoroughly recorded, and safely stored in secure containers.

Figure 3: Conservator Lynn Grant at work in the ECAP conservation & storage room, Centro Regional de Investigaciones Arqueológicas, during the 2000 field season.

Finally, measures were taken to ensure that one of ECAP's primary objectives will continue to be met long after the research and conservation process has ended. The goal in this case is to secure the long-term conservation of all materials recovered by ECAP's excavations over the span of its research at Copán. This goal is being met by the continued effort to rehouse all previously excavated materials in archival-quality enclosures, and by continued monitoring of all artifacts in their storage environment, with the application of additional conservation for these objects when needed. To solve the problem of a growing shortage of secure storage space, FAMSI funds were used to purchase and install two additional lockable steel artifact storage cabinets. As a result, with the end of its 2000 field season ECAP has met its obligation to provide secure storage space for all the excavated artifacts and samples.

Documentation of Archaeological Materials

The FAMSI grant allowed ECAP to complete its basic documentation program during the 2000 season, although we expect supplemental photography and other forms of artifact documentation to continue as analyses proceeds over the next several years. With the completion of the Margarita Tomb and the final architectural probes in the ECAP tunnels, the basic excavation records (scaled plans and sections) were completed by a skilled architectural drawer, Melvin Espinoza. During the 2000 field season the documentation of the last artifacts removed to the ECAP field laboratory from the Acropolis excavation area was completed. In addition, FAMSI funds supported a new documentation effort conducted in 2000, the electronic scanning of all excavation and artifact drawings to create a secure and computer-accessible copy of these irreplaceable records. Ellen Bell (Ph.D. candidate at the University of Pennsylvania) continued in her capacity as supervisor of the documentation effort in the field laboratory, in addition to her demanding duties as a member of the Margarita Tomb excavation team. The key to the documentation of all excavated materials is a computerized data base (Filemaker Pro) maintained and updated each season by Bell in the ECAP field laboratory. During the final months of the 2000 season Bell completed the cataloguing of all artifacts excavated from primary contexts, integrating these vital data into the project's computerized data base. Related to this task, Ellen also volunteered to assist a team from IHAH to catalogue the ECAP artifact collection for a Honduran government inventory of all objects under their jurisdiction (Figure 4).

In addition to cataloguing, Bell oversaw two collateral documentation efforts. The first of these was the continuation of the artifact photographic record, accomplished as in former seasons by Project photographer Eleanor Coates (M.A. candidate at the University of Pennsylvania). This record includes both conventional color and black and white photography, along with digital imagery. Most of the objects photographed in 2000 were recovered from the Margarita and Hunal tombs over the past two field seasons. The artifact photographs taken in the field laboratory completes the photographic record begun with excavation photographs made while objects were still *in situ*, prior to their removal.

Figure 4: During the 2000 field season Instituto Hondureño de Antropología e Historia employees recorded ECAP artifacts for a Honduran government inventory, assisted by Ellen Bell.

As mentioned, the other vital aspect of documenting ECAP's research was begun in 2000 with the electronic scanning of all original scaled drawings, including excavation plans and sections, and artifact drawings. The goal of this effort is to scan and digitally archive (on CD-R disks) all ECAP's paper and mylar drawings that are currently archived in the CRIA, subject to water, insect, and other damage. In 2000 this work was carried out by an ECAP staff member hired especially for this task, and successfully scanned over 3,000 original scaled drawings, thus ensuring that this essential record of ECAP's research will be preserved as a basis for interpretation and publication in the future. Multiple copies of the scanned files were made and archived in the CRIA, the IHAH offices, and at the University of Pennsylvania Museum. These disks will be checked and renewed periodically to ensure their continued viability in the face of technological change.

Analyses of Archaeological Materials

During the 2000 field season the technical analyses of all categories of archaeological materials were continued. With these efforts, FAMSI Grant 99102 directly supported the classification and sourcing of pottery, the analysis of obsidian and other artifacts, and the identification of both archaeobotanical and zooarchaeological samples. The results of these analyses, especially when combined with additional studies supported by other granting agencies, provide unique information about Early Classic Copán that is making a vital contribution to Maya studies.

The analyses of archaeological materials were conducted by different specialists working at the Centro Regional de Investigaciones Arqueológicas (CRIA) in Copán, and at laboratory facilities outside of Honduras (as in former seasons, all material samples exported from Honduras for analysis received permits from the Instituto Hondureño de Antropología e Historia). During the 2000 season the specialists who conducted their work in the field were led by Ellen Bell who continued her analysis of the ECAP artifact and pottery collections, in the latter case integrating the results of neutron activation analyses results to determine pottery sources, in addition to her work supervising the documentation program (see Documentation of Archaeological Materials). The other analysis specialists who conducted their studies in Copán were William McFarlane (Ph.D. candidate at, SUNY Buffalo), who completed an analysis of the obsidian artifacts, Cameron McNeil (Ph.D. candidate, CUNY) who is identifying pollen remains in archaeobotanical samples, and Kitty Emery (Assistant Professor of Archaeology, SUNY Potsdam) and two student assistants who began the identification of faunal remains. As in former years, in 2000 a number of laboratory analyses were conducted outside of Honduras. The archaeobotanical samples were analyzed at Fordham University (by Cameron McNeil), the Hershey Technical Laboratories (conducted by Jeffrey Hurst) and the University of Minnesota (conducted by Robert Thompson). The faunal samples are being analyzed at the zooarchaeological laboratory at SUNY Potsdam, New York.

Results of Materials Analyses Thus Far

Although the analyses of the various materials recovered by ECAP's investigations are not yet completed, some preliminary results are available and provide important new information about Copán in the Early Classic era. Accordingly, a summary of the more significant of these results will be presented here, bearing in mind that subsequent analyses may supersede or modify these findings.

Analysis of Pottery

During the 2000 field season Ellen Bell continued the analysis of ECAP's pottery collection, by means of both typological and form classifications, carried out in the CRIA (Figure 5). The comprehensive sampling of both whole vessels and sherds for neutron activation analysis begun in 1999 continued with final collection of samples from the

sherd collection. Direct funding for this study by FAMSI Grant 99102 has been through the support of Ellen Bell's research at Copán–support for the other participants in the neutron activation analysis, Dorie Reents and Ronald Bishop, has been provided by The University of Pennsylvania Museum and the Smithsonian Institution, respectively.

Figure 5: During the 2000 field season Ellen Bell continued the analysis of ECAP's pottery collection (here working with Lynn Grant in the ECAP conservation & storage room, Centro Regional de Investigaciones Arqueológicas).

Neutron activation analysis is aimed at sourcing the major components of both the pottery sherd and whole vessel collection to identify ceramic production areas, distribution networks, and patterns of use within the Copán valley and beyond. The neutron activation sourcing of Copán pottery complements both the typological and form classifications being implemented by Ellen Bell. Once they are completely integrated,

these studies will furnish significant new data on vessel functions, culture change, and patterns of redistribution and trade.

The samples collected in 1999 from both whole vessels and pottery sherds were exported to the US where they were analyzed to determine manufacturing sources by Dr. Ronald Bishop (Smithsonian Institution). Further samples were collected during the 2000 season. To date Bishop has completed the neutron activation analyses of 30 offering vessels from the Hunal and Margarita Tombs (Bell and Reents-Budet, 2000). A number of samples have yet to be analyzed, but the results available thus far, summarized in Table 1, show that both tombs contained combinations of locally-produced wares and vessels imported from several of the most important regions of Early Classic Mesoamerica: Central México (Teotihuacán), the central Maya lowlands (Tikal), and the Maya highlands (Kaminaljuyú).

Table 1. Probable Vessel Sources from Two Early Acropolis Royal Tombs
(based on Neutron Activation Analyses
performed by Dr. Ronald Bishop, Smithsonian Institution)

	Copán Region	Kaminaljuyú	Central Lowlands	Central México	Unknown
Hunal Tomb	11		2	5	1
Margarita Tomb	5	1*	1	2	1

*based on form and decoration

The Hunal Tomb is believed to contain the burial of Copán's dynastic Founder, K'inich Yax K'uk' Mo' (Sharer *et al.*, 1999). Stylistically, the Hunal offering vessels have close parallels to those from Tikal Burial 10 (Culbert, 1993), the presumed tomb of that site's king Nun Yax Ayin ("Curl Nose"), along with the Esperanza tombs at Kaminaljuyú and even Early Classic burials at Teotihuacán. Neutron activation analyses have been completed on samples from nineteen Hunal Tomb vessels recovered from beneath the burial slab (Bell and Reents-Budet, 2000). These results show that eleven vessels are of local manufacture, seven are imports, and one is unidentified. The seven imported vessels provide evidence for the far-flung connections maintained by Copán in the years following the dynastic founding. Specifically, neutron activation has identified two modeled-carved lidded tripods as being from the central Maya lowlands, five vessels being derived from Central México (two Thin Orange ring-based bowls and three stuccoed vessels), and eleven vessels being from the Copán region. The vessel from an unknown source is a large deer effigy. In form and execution it certainly recalls contemporaneous effigy vessels from Esperanza phase Kaminaljuyú (Kidder, Jennings, and Shook, 1946) and Tikal Burial 10 (Culbert, 1993: Figs. 14, 18).

The Margarita Tomb is believed to hold the burial of Copán's matriarch, the royal wife of K'inich Yax K'uk' Mo' and mother of Ruler 2 (Sharer *et al.*, 1999). Although the vessels recovered from the burial chamber floor have yet to be tested, neutron activation analyses results from ten vessel samples from the upper offering chamber of the tomb are available. These results indicate that five vessels are of local manufacture, four appear to be imports, and the source of one is unidentified (Bell and Reents-Budet, 2000). The local vessels include stucco painted tripod dishes and ring base red-orange bowls similar in form and color to Thin Orange pottery from Central México. The imports include two basal flanged polychrome dishes, one being from the central Maya lowlands and is similar to a vessel from Tikal Burial 177 (Culbert, 1993: Fig. 37). While the chemical composition of the second basal flanged polychrome does not match a known workshop signature, it appears to be from Kaminaljuyú based on its form and decoration, especially vessels from Tomb A-VI (Kidder, Jennings, and Shook, 1946: Fig. 207). It is also similar to a vessel from Tikal Burial 10 (Culbert, 1993: Fig. 18), which also may be a Kaminaljuyú import. Finally two Margarita Tomb vessels are identified as being from Central México, a Thin Orange ring base bowl, and a fine paste orange fragment.

Interestingly, neutron activation analysis of a sample from a lidded stucco-painted polychrome cylindrical tripod nick-named the "Dazzler," failed to identify a source for this, the most extraordinary vessel found in the Margarita Tomb. The chemical composition of this vessel is not similar to any of the other 14,000 samples in the Maya Survey chemical database. Reents-Budet (personal communication, 2000) points out that its proportions are like those of cylindrical tripods from Kaminaljuyú and Teotihuacán, but its cut-out, hollow slab are more like contemporaneous vessels from the Petén sites of Uaxactún and Tikal. Its painted design appears to be Teotihuacán in style, but closer examination shows that the building depicted on the vessel is Maya in style.

Reents-Budet also points out that an iconic rendition of the name of Yax K'uk' Mo' is painted at the side of the depicted building. The evidence indicates that this vessel is unusual both in its paste chemistry and style of painted imagery. Reents-Budet proposes that the potter who made the vessel mixed Teotihuacán, Kaminaljuyú and central Maya lowland forms, and that the artist who painted the scene on the vessel was schooled in Maya pictorial and glyphic systems.

Analysis of Obsidian

A total of 2,456 pieces of obsidian have been recovered and catalogued from the ECAP excavations. A sample of 191 pieces were removed prior to 1996 for hydration dating and sourcing by the abbreviated-NAA method. Of the remaining assemblage, 1,705 pieces, or 70% of all catalogued obsidian, were analyzed by William McFarlane working in the CRIA during the summer of 2000 and supported by FAMSI Grant 99102. There were three goals to this analysis. First, obsidian from different sources was identified to determine the nature of exchange networks and how these networks change through

time. For each piece, source was determined through visual analysis (Aoyama, 1996; Braswell, Andrews, and Glascock, 1994). As there is considerable variability and overlap of diagnostic characteristics between obsidian from the El Chayal source area and the Ixtepeque source area, 19 pieces that could not be conclusively sourced by visual analysis were selected for abbreviated-NAA at the University of Missouri Research Reactor. Second, the assemblage was characterized by ancient production methods. By utilizing a behavioral (Sheets, 1975) or technological (Clark, 1988; Clark and Bryant, 1997) typology, the finished products as well as the debitage generated by the production of these tools can be considered. Further, the stage of production can be identified allowing for interpretation of the organization of production and distribution. Third, using a technological typology, direct evidence of prismatic blade production was sought. While it is thought that prismatic blade production began during the Early Classic at Copán (Aoyama, 1996:190), no direct evidence for this, such as a workshop midden, has been recovered. The nature of the ECAP assemblage does not lend itself to this form of analysis, as all sampled Sub-operations contain evidence for blade production. However, it is possible to identify prismatic blade production debitage in chronologically controlled fill contexts, thus refining an inferred starting date for blade production in the Copán Acropolis area.

Further statistical interpretation is necessary to fully realize the goals of this analysis. However, gross totals of the analyzed assemblage can be presented at this time. Four obsidian sources were identified in the sample: Ixtepeque, Chayal, San Martín Jilotepeque, and Pachuca (see Table 2). The later is from Central México and is the only non-Guatemalan source in the assemblage. Pachuca obsidian only occurs as finished blades within non-tomb contexts. Obsidian from the Pachuca source area is limited to four tunnel sub-operations (1-6, 1-7, 1-20, and 1-28).

Table 2. Summary of Obsidian Sources

Ixtepeque	95.4%	(n = 1627)
El Chayal	3 %	(n = 54)
Pachuca	1 %	(n = 20)
San Martín Jilotepeque	<1 %	(n = 1)
Unidentified	<1 %	(n = 3)

Four broad technological categories can be used to describe the assemblage (see Table 3). As is common with Classic Period assemblages in Mesoamerica, the majority is comprised of prismatic blades and production debris. Expedient core/flake technologies, a non-specialized industry, is the second most common and bipolar

percussion and bifacially thinned points make up the remainder of identifiable technologies.

Table 3. Summary of Technological Categories		
Prismatic Blade	59.12 %	(n = 1008)
Expedient	24.69 %	(n = 421)
Bipolar	0.65 %	(n = 11)
Bifacial	0.23 %	(n = 4)
Indeterminate	15.30 %	(n = 261)

Obsidian from ECAP tomb contexts were also analyzed. The Hunal tomb contains an assemblage of 24 pieces. Of these pieces, 2 have been set aside for future residue analysis. The remaining 22 pieces of the assemblage are specialized tools exhibiting use-wear suggesting all were used in the same task. However, while each of these tools are morphologically similar, 4 were produced by expedient percussion. The majority (18 of the 22) are retouched prismatic blades. Compared to the 22 formal tools, the remaining two pieces were found in a different area of the tomb, do not exhibit use-wear, and are of a completely different morphology. Further, Obs-23 is made from El Chayal obsidian and Obs-24 is of Pachuca while all other pieces are of Ixtepeque. Obs-23 is a simple expedient percussion flake. Obs-24 is a small percussion blade. It should be noted that, as a rule, Pachuca obsidian is limited to finished prismatic blades or bifacially worked points within the Copán Valley (Aoyama, 1996). Obs-24 is the exception to this rule.

The Ani Structure termination cache (Offering 90-1) contained two well-formed cores of Ixtepeque obsidian. These large cores each weigh 1.5 Kg and are in the form of a half sphere. The cores are remarkably similar in form, but do not refit to complete one large sphere. While there is evidence of retouch and lip-removal scars along the platform, whether these cores were used as formal tools or especially prepared as offerings remains unclear.

Analysis of Other Artifacts

During the 2000 field season FAMSI Grant 99102 supported the efforts of Ellen Bell to catalogue all objects recovered from the floor of the Margarita Tomb (some 3,707 artifacts), completing the analysis of more than 14,000 objects from the Margarita and Hunal tombs (some of which had been lifted as part of concentrations). The cataloging

process includes measuring color, composition, size, volume, and hardness, the completion of a 1:1 scale drawing, and a detailed description of each object. Copies of all records are archived on disc in the CRIA.

In addition to portable objects made of jade, shell, and ceramic, the material from the Margarita Tomb included two pyrite and slate mirrors. The slate backings that held the reflective pyrite mosaic pieces were covered with stucco and decorated with fine-line, Teotihuacán-style, polychrome designs. The better-preserved mirror (Disk 2, Figure 6a) includes the depiction of a winged Teotihuacán figure standing in profile with a speech scroll in front of his mouth and an object dangling from his hand, which may be a trophy head (Figure 6b). The figure wears a feathered sandal on his right foot and appears to be standing in front of or seated on a small, rectangular bundle. The border of the disk is formed by a scaled serpent with water imagery along the top. The painted back of the other mirror (Disk 1) includes a geometric design that may represent a Central Mexican-style headdress, although the central portion of the headdress has been destroyed by the decaying pyrite. The border includes yellow dots and stars similar to those on a jar from Teotihuacán found in the Hunal Tomb.

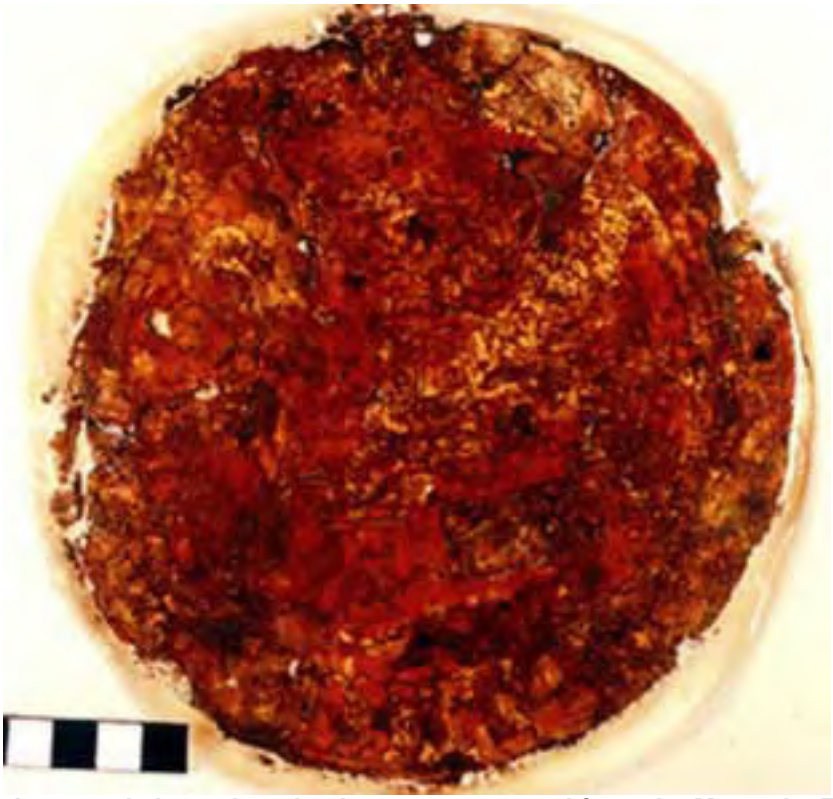

Figure 6a: Two decorated slate mirror backs were recovered from the Margarita Tomb during the 2000 field season. This field photograph of Disk 2 shows a winged Teotihuacán figure standing in profile. (See Figure 6b.)

Figure 6b: Two decorated slate mirror backs were recovered from the Margarita Tomb during the 2000 field season. This drawing of Disk 2 shows a winged Teotihuacán figure standing in profile.

A number of the pottery vessels were transferred to the lab with their contents intact (see the Archaeobotanical and Zooarchaeological analyses sections). The contents of one of these vessels, Vessel 2 from Offering 93-16, was catalogued in 2000. These items included the complete skeleton of a female turkey (*Meleagris ocellata*) along with the disarticulated head of a second turkey (also *Melagris ocellata*; see Table 5). The complete turkey had been stuffed with 10 small, unmodified rocks with the second, disarticulated head nestled near the intact cranium, and burned. David Sedat (personal communication, 2000) suggests the possibility that this deposit represents the material remains of rituals similar to those described by Girard (1962) for the Ch'orti Maya involving the sacrifice of a pair of turkeys (male and female) as part of the annual cycle of agricultural renewal. The contents of the vessel also included material that had been reduced to multicolored, friable mineral crystals, similar to those seen in other vessels in the cache. The deposit and excavation process was documented with black and white photographs, color slides, and digital images.

Archaeobotanical Analyses

The analysis of archaeobotanical samples is being conducted by Cameron McNeil to identify the plant resources utilized by Copán's ancient inhabitants for food, building materials, rituals, and other uses. This study was supported by FAMSI in full during 1999, and in part by FAMSI Grant 99102 during 2000. The samples utilized in this study were collected both in the course of the ECAP tunnel excavations and by McNeil as new samples collected in both 1999 and 2000. The archaeobotanical samples include pollen washes (recovered by standard techniques from pottery vessels), flotation samples (recovered from excavation samples, mostly from activity areas), and dry residue samples collected from floors, pottery vessels, and similar contexts (McNeil, 2000).

All samples for botanical analysis were exported to the US with permission from the Instituto Hondureño de Antropología e Historia, and during 2000 identifications were made at three different facilities. The majority are being analyzed by McNeil at the laboratory of David and Lida Burney at Fordham University, under the supervision of Dr. David Lentz of the New York Botanical Garden. Additionally, pollen wash samples from several Hunal Tomb vessels were sent to the Hershey Technical Laboratories in Hershey, Pennsylvania to be analyzed by Jeffrey Hurst to determine if any of the vessels originally contained cacao. Plans also call for samples to be analyzed by Robert Thompson at his University of Minnesota laboratory to identify food residues by recovering morphologically intact silica cells.

The results of plant identifications thus far are based on 40 pollen washes and 77 residue samples, reported by McNeil (2000). Most of the pollen washes examined thus far derive from Hunal and Margarita tomb vessels (31 samples), although a majority of these (19) are obscured by cinnabar contamination (see Table 4, below). Of the uncontaminated samples, two from Hunal have very sparse pollen content, and four samples contain pollen in quantities large enough to justify further analysis. These samples derive from three Hunal Tomb vessels along with one sample taken from beneath a Margarita Tomb vessel. Of these, the washes from Hunal Tomb vessels 9, 15, and 16 represent the greatest diversity of species. Vessel 15, contained primarily Asteraceae pollen (the daisy family). It is quite possible this pollen derives from flowers placed in the vessel as part of burial ritual activities, but of course it could also represent environmental fallout deposited prior to the placement of the vessel in the tomb. The other two vessels are twins with bean-like appliqué decorations, which could be representations of cacao. However, analysis of the vessel residues at the Hershey Technical Center did not identify cacao in these vessels (instead the results indicate traces of caffeine that could derive from another local plant species). But both vessels do contain virtually identical pollen signatures that probably reflect local environmental conditions. Since neutron activation results indicate these vessels have very different origins (VH-15 being local and VH-16 being from Central México; see Table 1), the fact that they have virtually identical pollen signatures indicates that their pollen content likely reflects Early Classic environmental conditions in the Copán Valley. Half of the pollen present in these vessels is from trees, representing a spectrum from the *Rubiaceae*, *Bignoniaceae*, *Quercus*, and *Pinus* tree groups. Herbs are also present in

the Hunal vessels in the form of *Asteraceae* (daisies), *Caryophyllaceae* (carnation family), and *Cheno/Ams* (beet and amaranth families). There is also a large amount of grass pollen in the vessels as well as a small amount of pollen from various aquatic plants.

Table 4. Pollen Wash Identifications from Two Early Acropolis Royal Tombs

Sample	Source	Pollen	Identified Plants
99M-169	VH-13	Not Present	
99M-203	VH-1	Present	
99M-190	VH-18	Present	
99M-165	VH-12	Sparse	*Moraceae*, Fern Spores
99M-181	VH-15	Present	*Asteraceae*, Fungal Spores
99M-200	VH-9	Present	*Asteraceae, Bignoniaceae, Caryophyllaceae, Cheno/Ams, Eriocaulon, Pinus, Poaceae, Rubiaceae, Quercus, Urticaceae, Zea mays*, Fungal and Fern Spores
99M-155	VH-11	Sparse	*Asteraceae, Caryophallaceae, Fabaceae, Pinus, Poaceae*
99M-175	VH-21	Not Present	
99M-207	VH-16	Present	*Asteraceae, Cheno/Ams, Eriocaulon, Pinus, Poaceae, Rubiaceae, Urticaceae,* Fungal and Fern Spores
99M-198	VH-9	Obscured by cinnabar	
99M-199	VH-9	Obscured by cinnabar	
99M-153	VH-11	Obscured by cinnabar	
99M-154	VH-11	Obscured by cinnabar	
99M-161	VH-12	Obscured by cinnabar	
99M-163	VH-12	Obscured by	

		cinnabar	
99M-166	VH-13	Obscured by cinnabar	
99M-167	VH-13	Obscured by cinnabar	
99M-178	VH-15	Obscured by cinnabar	
99M-179	VH-15	Obscured by cinnabar	
99M-206	VH-16	Obscured by cinnabar	
99M-208	VH-16	Obscured by cinnabar	
99M-194	VH-17	Obscured by cinnabar	
99M-195	VH-17	Obscured by cinnabar	
99M-187	VH-18	Obscured by cinnabar	
99M-189	VH-18	Obscured by cinnabar	
99M-172	VH-21	Obscured by cinnabar	
99M-173	VH-21	Obscured by cinnabar	
99M-121	under VH-1	Obscured by cinnabar	
99M-338	under VM-7	Present	*Bignoniaceae, Eriocaulon, Pinus, Poaceae, Typhaceae, Zea mays*, Fern spores
99M-352	under VM-12	Not Present	
Key to Sources: VH= Hunal Tomb Vessel VM= Margarita Tomb Vessel			

Apart from the pollen washes, McNeil is just beginning to examine the floor residue samples, but thus far her work verifies what had been concluded on the basis of excavation observations, namely that the Maya usually carefully cleaned the floors of

their buildings before they were ritually terminated and buried under new architecture. Nonetheless, some floor samples seem to include sufficient pollen remains for further analysis. Of these, samples from the floor of Xucpi Structure, the temple building on the summit of the Margarita substructure, have thus far yielded the most promising indications. It is anticipated that these and the other archaeobotanical samples will be analyzed in the coming year.

Zooarchaeological Analyses

During a week of concentrated effort in July of 2000, a total of more than 2000 faunal remains recovered from the ECAP excavations were analyzed by an zooarchaeological team in the ECAP/CRIA laboratory. The team was composed of three specialists, Dr. Kitty F. Emery and two of her students, Bevin Stevens and Adriaan Denkers, all from SUNY Potsdam, and was fully supported by FAMSI Grant 99102. There were two primary objectives in the first season of analysis of ECAP's faunal materials. First, to analyze the full collection of specimens stored in the CRIA recovered from the most important primary deposits excavated by ECAP. Second, to select diagnostic samples of bones and shells for later analysis in the zooarchaeological laboratory at SUNY Potsdam, New York.

The first objective was accomplished through the analysis of animal remains from the Hunal Tomb, the Margarita Tomb, Offering 92-1 (Ante dedication cache), and Offering 93-16 (Margarita mercury cache). The results of this work are summarized in Table 5. In addition, the shell specimens from other primary contexts were examined in preparation for future analysis and identifications. And a brief analysis of the types of shell found in all ECAP excavation contexts was undertaken to create an informal type collection to facilitate future non-specialist shell identifications.

Table 5. Identifications of Faunal Remains from Primary Deposits		
Context	**Total Examined**	**Identified Specimens (n)**
Hunal Tomb	1376 specimens	armadillo scutes (1,161) 3 species small birds (206)* worked bones from: *Odocoileus virginianus* (1) *Mazama americana* (1) *Artiodactyla* (1) Other large mammal (5)
Margarita Tomb	11 (MNI)	fish (Chamber 2, Vessel 3)*
	-	shrimp (Chamber 2, Vessel 4)*
Offering 92-2	303	4 species small birds (261)*
	42	shells from following genera: *Chama* (9) *Oliva* (14) *Astraea* (5) *Nephronaias* (5) *Prunum* (4) *Cittarium* (2) *Arca* (1) *Pleuroploca* (1) unidentified (1)
Offering 93-16	108	*Meleagris ocellata* (1 complete skeleton) *Meleagris ocellata* (1 disarticulated cranium)
Key: * = diagnostic samples taken for further study at SUNY Potsdam		

With permission secured from the Instituto Hondureño de Antropología e Historia to export study samples, the second objective to select bone and shell specimens for analysis in the zooarchaeological laboratory at SUNY Potsdam in New York was also completed in 2000. Diagnostic samples from the Hunal and Margarita tombs and two caches were selected and exported to SUNY Potsdam where they are currently under study (see Table 5, above). In addition, all of the animal bones recovered from all contexts in the course of ECAP excavations were selected and taken to Potsdam for analysis of diet and dietary change over time. After an initial study of 310 specimens, all

examples of the small "jute" land-snail shells (*Pachychilus indiorum*) from all ECAP excavation contexts were selected for an osteometrical study to reconstruct changes in the environment and the effect of ancient harvesting processes on snail populations. These will be exported to Potsdam in the fall of 2000 for future completion of these studies.

Analysis of Activity Residues

During the tunnel excavations a series of samples from various activity areas were taken for later analysis to assist in the reconstruction of ancient behavior. One type of residue that held considerable interest was a very dark stain found in several contexts, including the interior of several masonry drains and both the facades and fills of several structures. One hypothesis held that these dark stains were carbon residues from burning. To test this possibility, permits to export three samples were secured from the Instituto Hondureño de Antropología e Historia. With partial support from FAMSI Grant 99102, these samples were submitted to the Weizmann Institute of Science (Israel) where they were analyzed to identify their content by Ruth Shahack-Gross (one sample from an early Acropolis drain, and samples from the facades of two early Acropolis structures, Yehnal and Sapo). Shahack-Gross and the laboratory where she works at the Weizmann Institute of Science were chosen for their experience in analyzing samples from archaeological sites to distinguish between carbon-based and mineral-based (usually manganese) stains.

The results show that while all three samples contain organic matter, it is not charcoal. On the other hand, two of the three samples also contain manganese oxides which is probably the source of the dark staining. The dark staining in the sample without manganese oxides is unknown, but could be organic.

The complete results by sample were reported as follows:

Sample 99M-426 (dark stain from facade of Yehnal Structure): The sample is a light brown sediment composed mainly of calcite, clay and quartz. The sediment was dissolved in hydrochloric acid which dissolves carbonates and phosphates. The resulting insoluble fraction contained mainly clay and quartz, which are silicate minerals. In order to get to the minor components of the sample, we further dissolved it with hydrofluoric acid (which dissolves the silicate minerals). The result showed the sample contains manganese oxides and unidentified organic matter, as its minor components.

Sample 99M-427 (dark stain from the facade of Sapo Structure): The sample is a black residue on the surface of a rock. The major components of this residue are calcite, clay and quartz. Similar to the above sample, we dissolved it first in hydrochloric acid and then in hydrofluoric acid. The minor components obtained from the insoluble fraction are manganese oxides and unidentified organic matter.

Sample 93M-162 (dark stain from the eastern drain of Yune Platform): The sample is a gray-brown sediment that contains a black layer. This black layer contains, as its major

components, calcite, clay and quartz. Following the procedure of acid dissolutions as described above, the minor components found are unidentified organic matter and possible humic substances.

Plans call for additional activity area samples to be analyzed. But for the time being it seems unlikely that any of the analyzed samples represent residues from burning. Rather, the two analyzed dark facade stains seem due to natural deposition of manganese oxides, while the one drain sample seems to be composed of sediments containing minerals and small amounts of humic and other organic materials, all of which would be consistent with the drain's apparent function as a water conduit.

Analysis of Construction Materials

With partial support from FAMSI Grant 99102, in 2000 Christine Carrelli completed her collection of data and samples from the full range of construction materials exposed in the ECAP tunnel system, and is now in the final stages of her analysis of Copán Acropolis construction materials which will comprise her Ph.D. dissertation in the Department of Anthropology at Rutgers University. The goals of this study are to determine estimates of ancient labor investment and reconstruct the construction methods and task specializations used by the Maya at Copán (Carrelli, 2000). The working basis of Carrelli's research is the Copán Architecture Catalog (CAC), a systematic record of architecture, decoration, and methods of construction for all features exposed in the ECAP excavations, documented by black and white photographs and scale drawings of all architecture. By the end of the 2000 field season this record of architectural constructions in the ECAP tunnels was completed.

This detailed record is now being used as the basis for an analysis of the construction sequence and evolution of the Copán Acropolis. This descriptive record reveals the changes in stone carving techniques, plaster use, structural fill content, stone scavenging and reuse, and changing methods and styles of construction through time. These data allow an energetics analysis that estimates the number of workers and number of work days required to complete each specific building episode revealed in the ECAP tunnels.

This descriptive record is augmented by more detailed constituent analyses to identify changes in construction materials over time. Over one hundred samples of construction materials from various architectural contexts within the Copán Acropolis have been brought to the United States for analysis under permits secured from the Instituto Hondureño de Antropología e Historia. These samples are being analyzed to identify their physical, mechanical, and chemical properties, their individual components, proportions, and interrelationships at the Historic Preservation Laboratory of the University of Pennsylvania (Directed by Dr. Frank Matero). To date analyses of 49 samples of floor plasters and 5 building mortar samples have been completed. A third and final batch of building facade plaster samples is currently awaiting analysis.

Carrelli (2000) has conducted preliminary energetics calculations based on data from the earliest stages of Acropolis construction roughly corresponding to the reigns of the first two rulers. These results estimate that the initial royal center required a total of over 150,000 person-days of labor, or over 15,000 person days per year during the reign of its sponsor, the dynastic Founder, Yax K'uk' Mo' (ca. A.D. 426-437). According to Carrelli's estimates and assumptions as to Copán's total population at this time, this would translate to every adult male devoting more than three work weeks per year to K'inich Yax K'uk' Mo's royal construction projects. After his son, Ruler 2, took power in A.D. 437 construction of a major new royal center was begun. Among other things, these new constructions consumed prodigious amounts of lime plaster, the most costly material to produce and the least readily available at Copán. In the first 5 years of his reign, it is estimated that Ruler 2 commanded over 38,000 person days of labor per year. Carrelli calculates that this translates to every adult male in Copán providing more than a month and a half of labor each year to Ruler 2's royal constructions.

While the actual amounts of labor and time investments may vary depending on the assumptions defined for the study, the actual amounts of materials utilized in the Acropolis constructions can be quantified and their variations in both quantity and quality assessed across time. Carrelli's research reveals that even the earliest kings of Copán required substantial labor investments from their subjects. The complexity and ornate decoration of the initial royal constructions, the conspicuous consumption of the most costly materials, and the size of the labor investment required, all point to significant levels of task specialization, efficient labor organization, and royal power at Early Classic Copán. Although more detailed results will be presented in Carrelli's Ph.D. dissertation, it is already clear that the scale of the labor and time investments made during the reigns of Copán's first two Early Classic kings are far greater than had been assumed by prior investigators. This provides further evidence of the emergence of Copán as a preindustrial state in the Early Classic era (Sharer *et al.*, 1999).

Analysis of Human Remains

The ongoing study of human remains from the Copán Acropolis burials is being conducted by Dr. Jane Buikstra (University of New Mexico) and a series of colleagues (Buikstra *et al.*, 2000). While none of this research has been directly supported by FAMSI Grant 99102, the results are of interest here since they add another dimension to the interpretation of both the Margarita and Hunal Tombs, especially regarding the external connections seen from the neutron activation analyses of the pottery vessels from these two tombs.

The most favored current hypothesis is that the Margarita Tomb is the burial place of the royal wife of K'inich Yax K'uk' Mo', a woman of local Copán origins, who most likely represented the original established royal lineage (Sharer *et al.*, 1999). While neutron activation analyses show that about half the vessels in the Margarita upper chamber are non-local in origin (see Table 1), the strontium isotope analyses from samples of the burial itself indicate that this woman was born and raised in the Copán region, perhaps

just to the north of the Copán Valley (Buikstra *et al.*, 2000), consistent with the hypothesis.

As for the Hunal Tomb, the currently favored hypothesis is that it contains the burial of Copán's dynastic Founder, K'inich Yax K'uk' Mo' (Sharer *et al.*, 1999). There are a number of indications that during his lifetime this man had strong connections to both the Central Petén (Tikal) and Central México (Stuart, 1999). As we have seen, the neutron activation analyses show that a number of vessels in the Hunal Tomb derive from both of these same regions (see Table 1). The clues gleaned from the bones in the Hunal Tomb provide especially important support for the hypothesis that these are the remains of Yax K'uk' Mo', and reinforce a strong Tikal connection. The strontium isotope analyses of the Hunal bones indicates this man was not native to Copán but spent his early childhood and young adult years in the Tikal region, and was a resident of Copán in his final years before death. This matches historical accounts saying Yax K'uk' Mo' came to Copán in A.D. 426/27 from elsewhere to become its founding king, and a text referring to a K'uk' Mo' at Tikal that dates to A.D. 406. Interestingly, the age of the Hunal occupant at death, between 55 and 70 years, is in line with the expected age of Yax K'uk' Mo' if he was already an established leader at Tikal at least 20 years before his arrival at Copán. In addition, if the Founder was a warrior (as many later references imply), the Hunal bones certainly have the kind of serious fractures and dislocations resulting from combat, all of which healed before death (Buikstra *et al.*, 2000).

Conclusion

The 2000 field season marked the final year of the FAMSI grant supporting Phase II of the ECAP research project at Copán, Honduras. Over a period of some 8 months FAMSI Grant 99102 provided essential support for the documentation, conservation, and analysis of recovered archaeological materials recovered by ECAP. As has been described here, critical progress has been made towards completing work in all three of these areas. In some of these areas work will continue on a reduced basis supported by funds from the University of Pennsylvania Museum to ensure that ECAP's obligations to both Honduras and the scientific community are completed.

In the area of conservation, current plans call for ECAP to continue tunnel consolidation over the project's final field seasons (2001-2003), and to complete its artifact conservation effort with the 2001 field season. The basic goals for the documentation of all material remains were completed during the 2000 field season, although supplemental documentation will continue during the final phases of analyses during the next several years. Finally, in 2000 considerable progress was made in the analyses of all categories of archaeological materials. With continuing efforts aimed at identifying and sourcing construction materials and activity residues, identifying archaeobotanical and faunal remains, and classifying and sourcing pottery, it is fully expected that these and related analyses will be completed by the end of ECAP's current IHAH convenio in 2003.

Acknowledgements

Gratitude is expressed to all the colleagues whose research has provided the results summarized in this report. Special thanks go to Ellen Bell for her invaluable assistance in the preparation of this report; if any errors remain they are the author's alone. In addition to the core support from FAMSI which has made possible the activities reported here, additional funding of our Copán research has been provided by the University of Pennsylvania Museum (Boyer and Shoemaker Chair funds), the National Science Foundation, the National Geographic Society, the Selz Foundation, the Maya Workshop Foundation, the Kislak Foundation, and several private donors.

List of Figures

Sources Cited

Aoyama, Kazuo

1996 Exchange, Craft Specialization, and Ancient Maya State Formation: A Study of Chipped Stone Artifacts from the Southeast Maya Lowlands. Ph.D. Dissertation, University of Pittsburgh.

Bell, Ellen E., Loa P. Traxler, David W. Sedat, and Robert J. Sharer

1999 Uncovering Copán's Earliest Royal Tombs. *Expedition* 41(2):29-35.

Bell, Ellen E. and Dorie Reents-Budet

2000 Early Classic Ceramic Offerings at Copán: A Comparison of the Hunal and Margarita Tombs. Paper presented at the symposium "Understanding Early Classic Copán" (E. Bell, M. Canuto, and R. Sharer, organizers). 65th Annual Meetings of the Society for American Archaeology, Philadelphia.

Braswell, Geoffrey E., E. Wyllys Andrews V, and Michael D. Glascock

1994 The Obsidian Artifacts of Quelepa, El Salvador. *Ancient Mesoamerica* 5:173-192.

Buikstra, Jane, Douglas Price, James Burton, and Lori Wright

2000 The Early Classic Royal Burials at Copán: A Bioarchaeological Perspective. A paper presented at the symposium "Understanding Early Classic Copán" (E. Bell, M. Canuto, and R. Sharer, organizers). Annual Meeting of the Society for American Archaeology, Philadelphia.

Carrelli, Christine

2000 Measures of Power: The Energetics of Royal Construction at Early Classic Copán. A paper presented at the symposium "Understanding Early Classic Copán" (E. Bell, M. Canuto, and R. Sharer, organizers). Annual Meeting of the Society for American Archaeology, Philadelphia.

Clark, John E.

1988 *The Lithic Artifacts from La Libertad, Chiapas, México: An Economic Perspective*. Papers No. 52. New World Archaeological Foundation, Brigham Young University, Provo, UT.

Clark, John E. and Douglas Donne Bryant

1997 A Technological Typology of Prismatic Blades and Debitage from Ojo de Agua, Chiapas, México. *Ancient Mesoamerica* 8:111-136.

Coe, Michael D.

1999 *Breaking the Maya Code* (2nd edition). Thames and Hudson, London.

Culbert, T. Patrick
1993 *The Ceramics of Tikal: Vessels from the Burial, Caches, and Problematical Deposits*. Tikal Report No. 25A. University of Pennsylvania Museum, Philadelphia.

Fash, William L. and Robert J. Sharer
1991 Sociopolitical Developments and Methodological Issues at Copán, Honduras: A Conjunctive Perspective. *Latin American Antiquity* 2:166-187.

Girard, Raphael
1962 *Los Mayas Eternos*. Editorial México Lee, México.

Kidder, Alfred V., Jesse D. Jennings, and Edwin M. Shook
1946 *Excavations at Kaminaljuyú, Guatemala*. Publication 501, Carnegie Institution of Washington, Washington, D.C.

Martin, Simon, and Nikolai Grube
2000 *Chronicle of Maya Kings*. Thames and Hudson, London.

McNeil, Cameron
2000 Paleobotanical Remains from Early Classic Ritual Contexts at Copán. A paper presented at the 65th Annual Meeting of the Society for American Archaeology, Philadelphia.

Schele, Linda
1986 The Founders of Lineages at Copán and Other Maya Sites. Copán Note 8. Copán Mosaics Project and the Instituto Hondureño de Antropología e Historia. Austin, Texas.

Sharer, Robert J.
1999 Archaeology and History in the Royal Acropolis, Copán, Honduras. *Expedition* 41(2):8-15.

in press Tikal and the Copán Dynastic Founding. In *Changing Perspectives on Tikal and the Development of Ancient Maya Civilization*, (J. A. Sabloff, ed.) School of American Research, Santa Fe, NM.

Sharer, Robert J., Loa P. Traxler, David W. Sedat, Ellen E. Bell, Marcello. A. Canuto, and Christopher Powell
1999 Early Classic Architecture Beneath the Copán Acropolis: A Research Update. *Ancient Mesoamerica* 10:3-23.

Sheets, Payson D.
1975 Behavioral Analysis and the Structure of a Prehistoric Industry. *Current Anthropology* 16:369-391.

Stuart, David
1999 Epigraphic Evidence for Early Classic Interaction between Teotihuacán and Tikal: The "War" with Uaxactún. Paper presented at the symposium "Teotihuacán and the Maya: Reinterpreting Early Classic Interaction" (G. Braswell, organizer). 64th Annual Meeting of the Society for American Archaeology, Chicago.

2000 K'inich Yax K'uk' Mo' and the Early History of Copán. Paper presented at the symposium "Understanding Early Classic Copán" (E. Bell, M. Canuto, and R. Sharer, organizers). 65th Annual Meetings of the Society for American Archaeology, Philadelphia.

Traxler, Loa. P.
1996 Los grupos de patios tempranos de la Acrópolis de Copán. *Yaxkin* 14:35-54.

2000 Re-designing Copán: Architecture of the Polity Center and the Early Classic Kings. A paper presented at the symposium "Understanding Early Classic Copán" (E. Bell, M. Canuto, and R. Sharer, organizers). 65th Annual Meeting of the Society for American Archaeology, Philadelphia.