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Almenas Revisited: Archaeology at Cihuatán, El Salvador with observations and suggestions for further research on Roof Ornaments

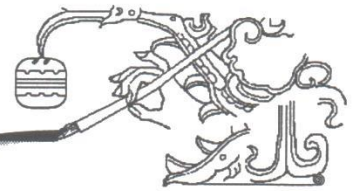
Marshall Joseph Becker

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The Codex



At the
University of Pennsylvania Museum
of Archaeology and Anthropology

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October 2019-February 2020

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Welcome to the



waxak k'atun jun tun hun

28 – year book” of *The Codex*.

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Now in its 28th year, *The Codex* continues to publish materials of substance in the world of Pre-Columbian and Mesoamerican studies. We continue that tradition in this issue.

Although we're entering a new decade in the 21st Century, it was the museum practices of the early 20th Century and the dangers they pose to those who handle the collections that drew the attention of Alice Kehoe and Marshall Becker. They explore the mysterious illness suffered by Clark Wissler at The American Museum of Natural History in the early 1900s, comparing it to what Marshall Becker experienced at the Civic Center Museum and at Tikal in 1963. (Editor's note: I do *not* know how Marshall survived!)

Almenas, or roof ornaments, have not been studied extensively in Mesoamerica, but in his paper, Marshall Becker furthers our knowledge of these unique features of buildings at sites in El Salvador, Guatemala, and Mexico.

Once again, Hutch Kinsman presents an in-depth analysis of astronomical data in association with significant Maya events and accompanying glyphs in his Grammar in the Script Column.

Although *The Codex* has become a publication of substance in the world of Pre-Columbian and Mesoamerican studies, we do not plan to rest on our laurels. We welcome suggestions for new features and ideas for future issues that will build on our success.

THE CODEX
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The Codex is a publication of the Pre-Columbian Society at the University of Pennsylvania Museum of Archaeology and Anthropology. Each volume of *The Codex* consists of 3 issues: October, February, and June.

Subscription/Pre-Columbian Society Membership information can be found on the last page of this issue.

We are proud of our tradition of publishing original papers in *The Codex* and are now soliciting contributions for future issues. Manuscripts should be no longer than 15 pages, single-spaced, including illustrations, and may be submitted on CD, on flash/thumb drive, or by e-mail. We welcome submissions on all aspects of Pre-Columbian studies and American studies as they pertain to Native American cultures. Please address all communications regarding *The Codex* to:

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ANNOUNCEMENTS:
UPCOMING MEETINGS

17th Annual Tulane Maya Symposium, "Understanding Maya Fare: Beyond Tamales and Cacao," March 5-8, 2020. New Orleans, Louisiana, Tulane University and the Contemporary Arts Center of New Orleans. For further information, see the website: <https://liberalarts.tulane.edu/mari/events/maya-symposium>

2nd Annual Meeting on Community Archaeology & Heritage: "Owning (up to) the Past." Penn Cultural Heritage Center, April 4, 2020. Philadelphia, PA, Penn Museum, For further information, see the website: <https://www.facebook.com/pennchc/>

2nd Annual Maya on the Mountain: "The Lords of Tiho' – Studying the monuments and inscriptions of Dzibilchaltun and Western Yucatan," April 13-15, 2020. Barnardsville, NC, Boundary End Center Annex. (A Boundary End Center Workshop led by David Stuart) For further information, see the website: <https://boundaryend.com/>

10th Annual Maya At The Lago Conference: "Everything Maya," April 16-19, 2020. Davidson, North Carolina. Davidson Day School, 750 Jetton Street. For further information, see the website: <https://www.goafar.org/about-maya-at-the-lago>

85th Annual Meeting, Society for American Archaeology, April 22-26, 2020. Austin, TX, Austin Convention Center and the Hilton Austin. For further information, see the website: www.saa.org

May 2020 Meeting, Northeastern Group of Nahuatl Scholars, Friday, April 24 (noon) -Sunday, April 26. Boston, MA. The meeting will be hosted by the University of Massachusetts, Boston. For further information, see the website: <https://www.facebook.com/nahuatldiscussion/posts/2591348291099045>

47th Annual American Rock Art Research Association (ARARA) Conference, June 5-8, 2020. Great Falls, MT, Holiday Inn Great Falls-Convention Center. For further information, see the website: <https://arara.wildapricot.org/Conference-Info-2020>

EXHIBITIONS:

Metropolitan Museum of Art, "Arte del mar: Artistic Exchange in the Caribbean," December 16, 2019-January 10, 2021. The exhibit explores the artistic exchange around the rim of the Caribbean Sea before the sixteenth century between the Taíno civilizations of the Antilles archipelago and their powerful peers on the continental mainland. Works of art on view in the exhibition, largely drawn from The Met collection, celebrate the region's ancestral traditions, and a twentieth-century painting by an Afro-Caribbean artist explores their enduring legacy. For further information, see the website: <https://www.metmuseum.org/exhibitions/listings/2019/arte-del-mar-caribbean>

Almenas Revisited: Archaeology at Cihuatán, El Salvador with observations and suggestions for further research on Roof Ornaments
by

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23 January 2020

CODE WORDS: *Almenas* Roof Ornaments Mesoamerican Architecture
Teotihuacan Cihuatán, El Salvador

Abstract

A focused study of *almenas*, or decorative roof ornaments, at Cihuatán in El Salvador revealed that a wide range of structures were adorned with examples in ceramic. The best known examples, from Structure Q-1, provide indications of how these decorations were arranged, but left unanswered many questions about their use. Studies of roof ornaments at other sites confirm Pre-Classic origins in the Valley of Mexico and their use well into the 1500s, and their wide use in Yucatan and elsewhere. Suggestions regarding socio-political or ideological correlates may be premature, but help to structure programs for future research.

Un estudio centrado de almenas, o adornos decorativos para techos, en Cihuatán en El Salvador reveló que una amplia gama de estructuras estaban adornadas con ejemplos en cerámica. Los ejemplos más conocidos, de la Estructura Q-1, proporcionan indicaciones de cómo se organizaron estas decoraciones, pero dejaron sin respuesta muchas preguntas sobre su uso. Los estudios de ornamentos de techo en otros sitios confirman los orígenes preclásicos en el Valle de México y su uso hasta bien entrado el siglo XIX, y su amplio uso en Yucatán y en otros lugares. Las sugerencias relativas a los correlatos sociopolíticos o ideológicos pueden ser prematuras, pero ayudan a estructurar programas para futuras investigaciones.



Figure 1. An almena from Edzná. (Photograph courtesy of Antonio Benavides Castillo.)

The backstory to any archaeological excavation may be, to some people, considerably more interesting than the piece of human history that is revealed by digging in the ruins. In fact, most archaeological excavations generate more tales about human foibles than are ever put into print; stories almost invariably too personal to reveal while the participants are still living. And perhaps not even after they are gone. Some of these stories are revealing, while others are instructive. The backstory revealed here is, I hope, in the “instructive” category. The setting involves a site in a major archaeological park dedicated by the Government of El Salvador to preserving its ancient heritage (see Amaroli 2017a).

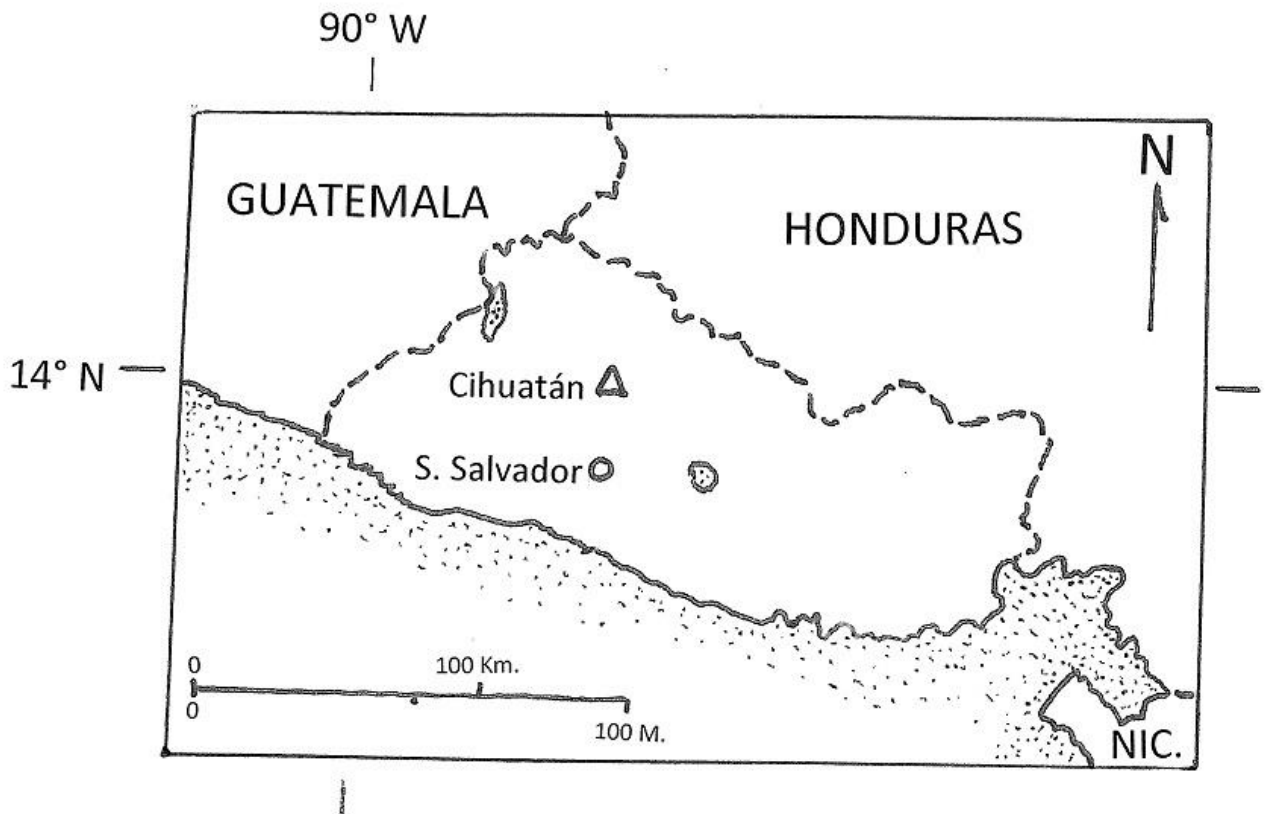


Figure 1: Map locating Cihuatán in El Salvador.

Late in 2011, I was invited to spend two weeks in the warmth of El Salvador at the archaeological site of Cihuatán (Fig. 1). When on site (January-February 2012), a co-director of *El Proyecto Arqueológico di Cihuatán* asked me to consider a brief study of an interesting ceramic form about which I knew nothing. The excavators had recovered some nearly intact examples of these large suspected roof ornaments (Fig. 2). The huge collection of fragments that they held in storage indicated a wide variety of variations in the shapes that had once adorned a single building. Assembling some examples provided insights into the range of variation that was involved in the decoration of a single building, and suggested that different makers may have been involved in the process.



Figure 2: Area in front of Cihuatán Structure Q-1, while being excavated by Pastor Gálvez. Photograph by Paul Amaroli (used with permission)

This was an interesting multi-puzzle exercise that offered the perfect focus for a brief stay at an archaeological site. Beyond my ability to assemble multiple puzzles at the same time, I know nearly nothing about ceramic artifacts in general. I once had been assigned to assist the award winning ceramicist Robert L. Rands (1922-2010), about 50 years before, in a study of some sort. What he was doing at The University Museum of The University of Pennsylvania, and what site the material he was working on was from, still elude me. All I learned was that his birthday was the day before mine. Pushing around a large selection of sherds from some site in Central America taught me that ceramic analysis was not my thing. Distantly related to that pointless endeavor in ceramic analysis is the fact that I am pretty good at jigsaw puzzles. Thus when I went to Cihuatán I thought that I might contribute to their efforts by gluing sherds into their original shapes, be they pots or whatever other objects that they had that needed to be put back together.

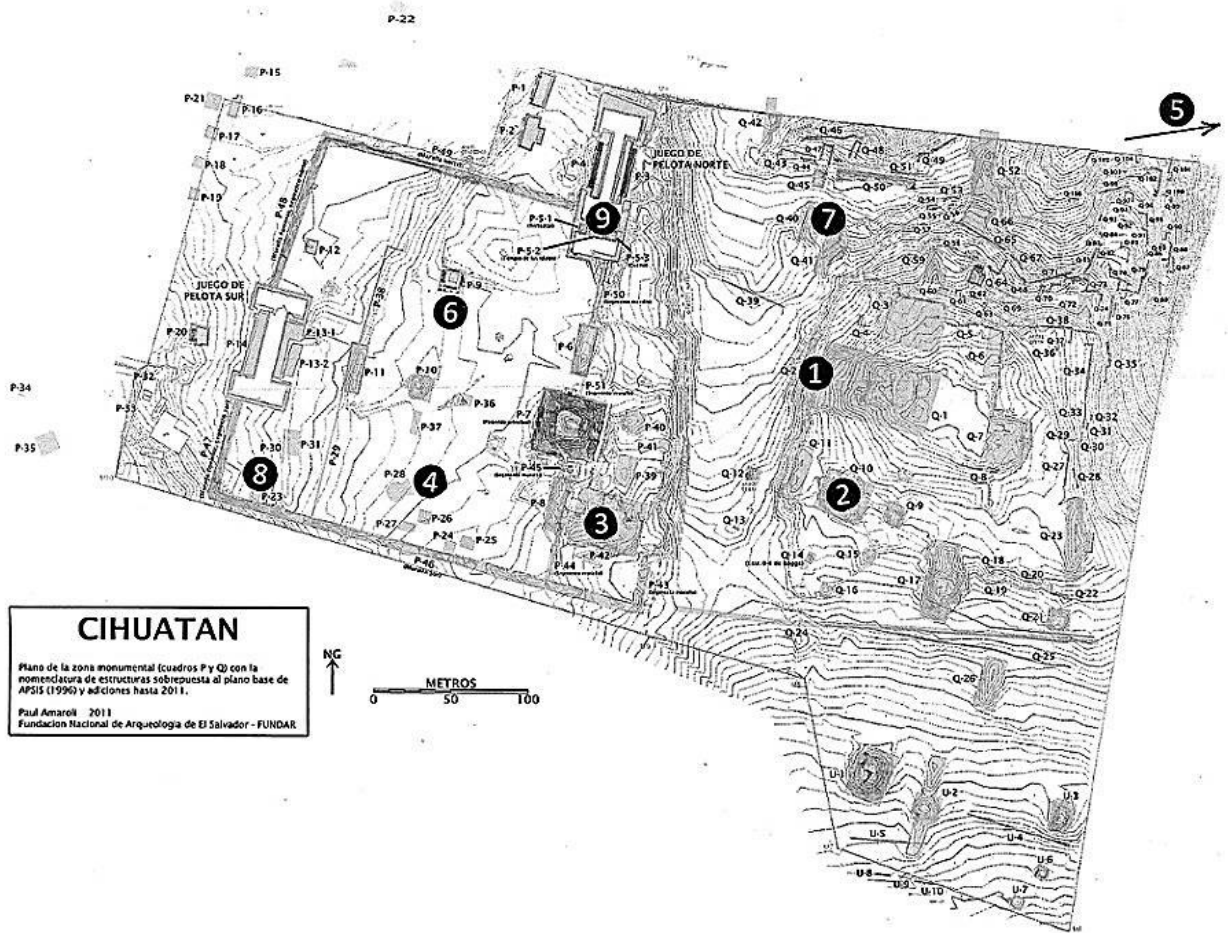


Figure 3. Cihuatán site map. Structure Q-1 is labeled as No. 1.

At Cihuatán, over the course of less than 15 days I was able to assemble fragments from a number of very large bags of sherds that had been excavated from the area in front of Structure Q-1 (Fig. 3) into their original forms. These items had been identified as roof ornaments (*almenas*, called battlements in Europe) based on some nearly intact examples that had been recovered during excavations (Fig. 4). In reconstructing a small series of examples (Fig. 5) I found that there was a remarkable range of variation in these generally “box shaped” ornaments. Following this discovery in the field, I was motivated to complete a preliminary study of these box shaped ceramic examples, associated with only one of the major structures at that early post-Classical Period site of Cihuatán. Further investigation in the site records, and re-evaluation of earlier studies led me to identify a number of structures at Cihuatán that had been decorated with *almenas* of a wide variety of shapes and sizes, each “type” specific to an individual building at the site (Becker 2017: 7-9).



Figure 4: *Almenas in situ* in front of Structure Q-1, during excavation. Photograph by Paul Amaroli (used with permission).

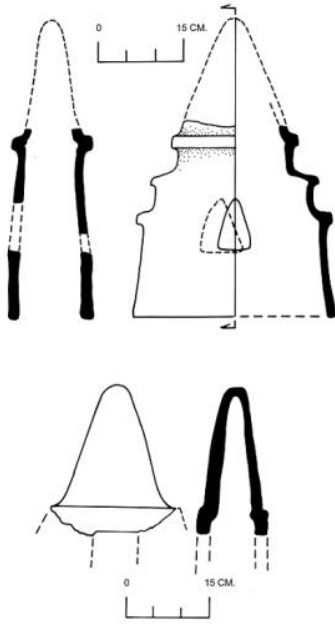


Figure 5A

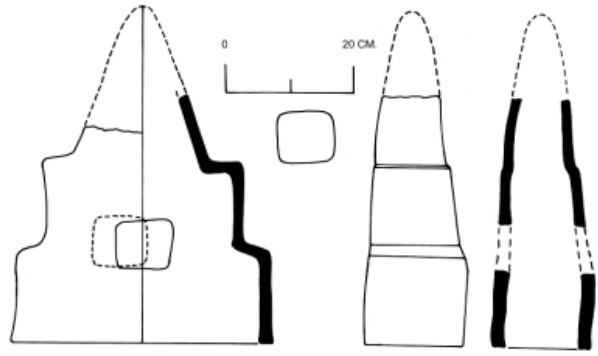


Figure 5B

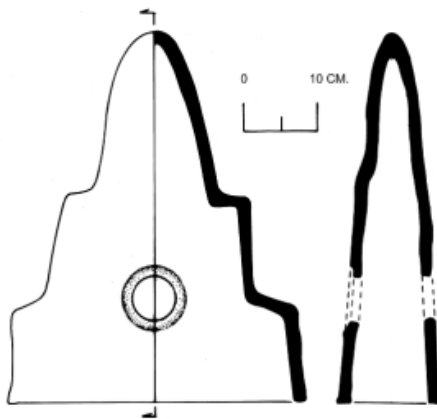


Figure 5C

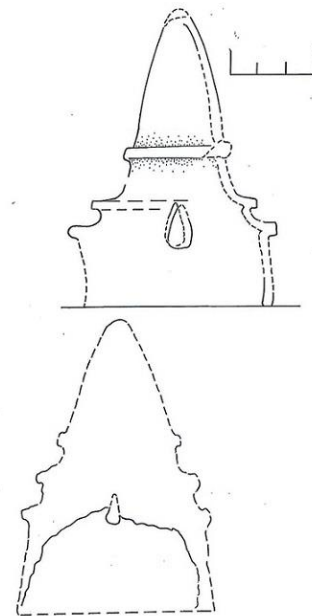


Figure 5D

Figure 5: Reconstructed *almenas* from in front of Structure Q-1; drawings by the author.

- A. Above, an *almena* with missing top and triangular openings. Below, top (only) of an *almena* with the upper margin of a square opening.
- B. *Almena* with square openings.
- C. *Almena* with circular opening.
- D. *Almenas* with “teardrop” openings.

At the beginning of 2012 the *almenas* that were best known at Cihuatán were primarily associated with a single, large flat-roofed structure (Q-1, popularly called a “Palace”) located on the “Acropolis” at the center of the site (see Amaroli 2011). This “acropolis” is a low rise overlooking a shallow valley. The structure may have been a noble’s residence (see Fowler 1981: 886-888), or perhaps the house of a relatively wealthy family (see Becker 2004). Excavations along the front of this structure had yielded fragments of large numbers of *almenas* that had been plastered in place along the front edge of the roof (Fig. 6); probably in two ranks.¹ The enormous volume and relatively large size of the sherds led the excavators to use large plastic fiber bags to collect and store these fragments. The size of these bags also allowed significant groups of these sherds to be collected together, a prescient technique that was extremely important in facilitating the assembly of these pieces. When reconstruction of individual examples of these roof ornaments was initiated, laboratory space limitations dictated that work could begin with only the pieces found in a single bag. From there, work could progress to the nearest lot, or bag of sherds, that had been recovered, to look for fits to partially assembled examples and to identify new examples. This process allowed nearly a dozen examples to be reconstructed, with relatively few missing pieces.



Figure 6: Reconstruction of Structure Q-1, with *almenas* in place; by Paul Amaroli (used with permission).

Not known at that time was whether the bags used for the task of storing these fragments at Cihuatán had previously been used for packaging fertilizer or for pesticides.² The value of these used bags as storage containers provided an effective recycling system for what otherwise would have been a plastic waste, but any possible dangers of this recycling were not considered. The toxic potential of these bags was not known prior to beginning my project, but became obvious only later. What effect the original contents of these bags might have on the field crew, museum storage staff, or any future students working with these objects should be considered.

In addition to consideration of possible toxic effects involved in the reuse of pesticide bags, there are many other serious archaeological problems to be considered. The quantities of *almenas* that were recovered from the excavation of this single structure (Q-1) reveal the extent to which architectural remains can fill storage space beyond capacity. Only once before had I encountered large ceramic architectural elements (Becker 1973). These architectural elements consisted of a pair of ceramic ornamental masks that had been made to decorate the façade of a small structure at Tikal; a Plaza Plan 2 shrine (Becker 1999). These two masks (see Moholy-Nagy 2003: Fig. 146) measure roughly 40 by 100 centimeters and form the ceramic equivalents of the huge stucco masks used to decorate the facades the major temples at Tikal, and elsewhere, during the Classic Period. These two ceramic masks at Tikal were much smaller ornaments on a much smaller structure and thus were hardly a storage problem (cf. Fig. 7, below).

However, the huge ceramic waster dump (ceramic rejects after firing) from that same residential group of structures at Tikal (Becker 2003) was composed almost entirely of fine quality painted wares. The volumes of sherds from that important waster dump at Tikal soon overwhelmed the storage facilities. The need for additional storage at Tikal became a major factor in the decision to abandon the mining of that significant ceramic deposit.³ The materials from this deposit were significant in illustrating the ceramic sequence at Tikal (Culbert 1993). That dump also suggests that some type of open firing system or “kiln” must be located nearby, probably in the *bajo* (swamp) that provided fuel for pottery production (Becker 2007). These several features, the largely intact ceramic deposit and possible “kilns,” remain attractive archaeological resources for anyone interested in pursuing the study of Classic Period ceramic development, iconography and the use of texts on fancy pottery.

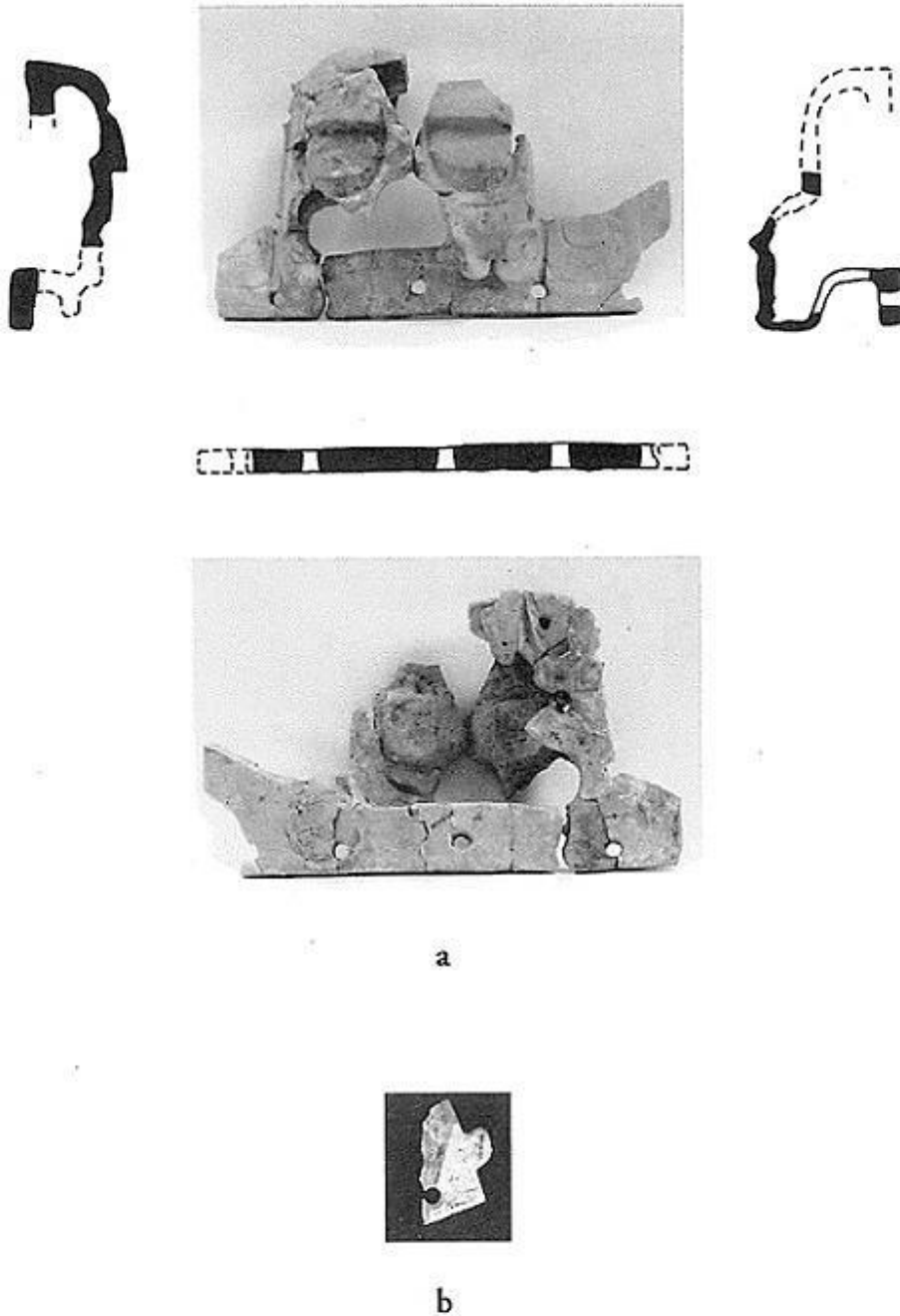


Figure 7. Pottery Architectural Elements (1:8 scale). Fragments of a ceramic mask from the façade of Structure 4H-4, Group 4H-1, 33A-126/1, 2, 4, 5, 8.
a. Partially reconstructed, but without the nose that is shown in the right-hand section.
b. The reverse side of a fragment from the lower edge with the faint impression of a woven mat.
 (From: Moholy-Nagy, Hattula. *The Artifacts of Tikal—Utilitarian Artifacts and Unworked Material Tikal Report 27B*, figure 146.)

In this example of the huge “deposit” of large ceramic sherds from Cihuatán, the *almenas* from that single area of excavation fronting Structure Q-1 rapidly filled a great deal of storage space (Fig. 8). The space devoted to *almenas* fragments far exceeded the limited space needed to store all the ceramic fragments that were derived from common pottery from the area of the same structure, Q-1. The storage of other ceramics from locations across much of the excavated parts of the site had long been a problem at Cihuatán. Specialists at archaeological excavations within any pottery producing culture usually devise techniques by which they can process and dispose of undecorated and minimally informative ceramic fragments. What to do with very large architectural elements is a question that arises less often, but the Cihuatán example provides one of those cases.



Figure 8: The storage facility at Cihuatán. Photograph by Paul Amaroli (from Website; used with permission).

As is evident in Figure 8, the storage area available at Cihuatán was near full capacity before 2011 when this picture was taken. Most of the excavated material that had been held at the site was relocated to an official *Concultura* storage facility in San Salvador before I arrived. In addition to making plans for long-term storage of excavated materials, archaeologists need to calculate into their budgets the purchase of sturdy and long lasting plastic containers of all sizes before beginning a project. To accommodate my brief field project, the remaining on-site storage space at Cihuatán also had to function as a sleeping area; one that could be used for visiting scholars. When I arrived, this secondary function required restacking and rearranging the recently filled storage containers (bags), pending relocation to a *Concultura* storage

facility. The old cardboard storage boxes in this tropical room ranged from recently filled but already limp examples, rapidly losing retention capabilities, to rotted and moldy cardboard examples requiring immediate replacement. All of the various bags and storage containers in contact with the floor had become residences for scorpions and other wildlife.

At Cihuatán, the reconfiguration of storage space to provide a dormitory function had to be achieved in a matter of hours. Arrangements also had to be negotiated with the scorpions, all of whom had prior rights of domicile in their less formal contracts. Mosquito netting imposed a contract on those winged tenants of this space, but the cloth also provided the scorpions with easy access to my intended sleeping zone. We adjusted! Regarding other dangers at the site, the Government provided 24/7 armed guards to patrol the perimeters of the site (see Figure 9) to protect us from human predation.



Figure 9: Entrance to the National Park Cihuatán. Notice the Park Guard with automatic weapon.

Planning for archaeological excavations should include appropriate laboratory and storage areas, and possibly for dormitory space for a field crew. Housing provisions for visiting scholars as well as donors might be considered. There may have been hotel facilities of some type in the immediate vicinity of Cihuatán, but we never ventured out of the fenced perimeter after dark and I never needed to inquire what facilities might be used by tourists or scholars visiting the site. Even consideration of housing for tourists may be an issue in remote locations, as it was in the early days of the Tikal Project. The many matters involved in providing for safety and health issues for project personnel certainly should consider the toxicity of possible materials such as acetone or chemical solvents. Use of pesticides in mosquito or other pest control in most countries far exceed limits that would be found in the USA. Recycling used pesticide sacks may appear to be a win-win situation, but the toxic consequences may not be immediately apparent and should be evaluated for future planning.

In researching other possible structures at Cihuatán where ceramics that appear to me to represent *almenas* of various forms, I have suggested that at least eight specific buildings should be tested. These are labeled as numbers 2 through 9 on the site map (Fig. 3). Three of the possible *almenas* associated with these buildings are of the flat variety, a form extremely common at sites in the Valley of Mexico (see Becker 2017: 10-13). Of note is that each of the nine buildings at Cihuatán that I believe to have been ornamented by *almenas* is of different form. The idea of differences in the forms of these ornaments within a site had not yet been proposed nor documented at sites in the Valley of Mexico, or at other locations from which *almenas* have been documented (but, see Benavides 2016, and below). The various forms of *almena* believed to be represented at Cihuatán are as follow:

TABLE 1: Structures at Cihuatán Ornamented with Ceramic *Almenas* (see Fig. 3).

<u>Location</u>	<u>Form</u>	<u>Number of Examples (as of 2013)</u>
1. Str. Q-1	Boxlike	50+ examples (7 now reconstructed) probably mounted in rows along the roof
2. Str. Q-10	Flat	ca 3-5 fragments only. These flat <i>almenas</i> fragments (<i>almena plana</i> : Amaroli and Bruhns (2006: 19) have a stepped outline. All were found south of Structure Q-10. The extensive archaeological data relevant to these fragments, and the surrounding buildings and features, are reviewed elsewhere (Becker 2017: 7).
3. Str. P-42	Flat	Several fragments (Fowler 1981:98-116). The <i>talud-tablero</i> architecture associated with this structure, as pointed out by Amaroli (2015b), is parallel to the architecture of Structure 5D-43A at Tikal that I believe to have been ornamented with stepped almenas (Fig. 10).
4. Str. P-28	Flat	34+ fragments
5. San Dieguito	Flat	3 fragments, among the several buildings in this area NE of the site core. ⁵
6. Str. P-9	Flat	Various “fragments” only.
7. Str. Q-40	Biznaga	22 examples (phytomorphic effigies) of this urn-like ornament, in form of the biznaga cactus (Amaroli 2013b: 5; see also Amaroli 2015a). These are all 26 to 27 cm tall.
8. Str. P-23	Felines	6 examples (guardian dogs?). One example is nearly complete (Amaroli 2015b). Kehoe (2016: 97) offers reasons why these should be identified as dogs rather than felines (see also Amaroli 2013a: 12).
9. North Ballcourt	Felines	20 examples from the southern area of the ballcourt [possibly representing dogs].

Each of these nine locations and specific information regarding the type and/or shape of *almena* that was found there is documented in detail in Becker 2017. In that overview of these roof ornaments at Cihuatán there is included a review of the data on the distribution of this category of ceramic ornament throughout Central America, but the Benavides (2016) publication had not yet come to my attention.

The only example of *almenas* at another site in El Salvador derives from Structure 2 at Carranza, a site not far from Cihuatán but apparently of an earlier date. Camilo Ravey Fonseca's reconstruction of structures at Las Mariás in Morazán, near Cihuatán, places *almenas* on all of the major buildings, but all of the same form (see Fig. 10). Certainly further excavations at other locations will turn up new examples, but for now, published reports of roof ornaments in this region remain lacking.

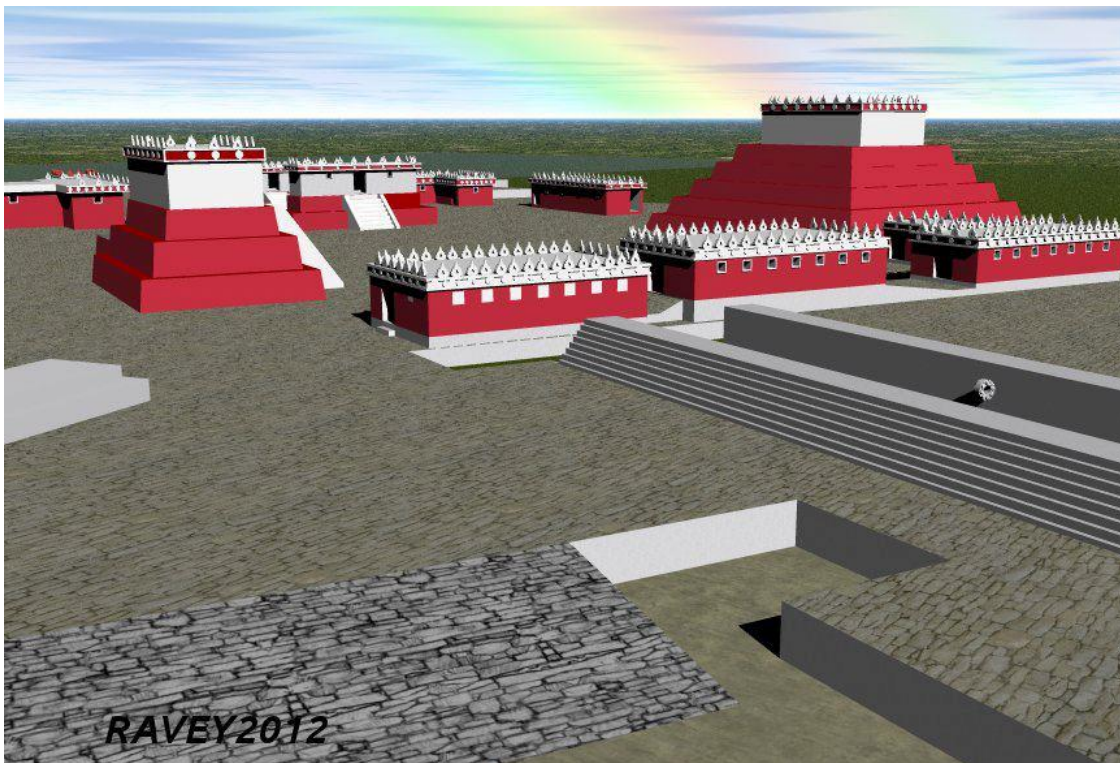


Figure 10: Reconstructed view of the major structures at Las Mariás, a major site near Cihuatán, by Camilo Ravey Fonseca (used with permission). Although there is no archaeological evidence for *almenas* at the site, Ravey Fonseca has placed *almenas*, all of exactly the same form, on all the major structures.

The best documented examples for the presence of *almenas* derive from the Valley of Mexico where examples in limestone, onyx and ceramic are known (Gendrop 1997: 16-17) and remained in common use well into the 1500s. Antecedents in both clay and stone abound (see Smith and Paz Bautista 2015). A brief review of the literature from that region is now available (Becker 2017: 10), but new evidence continues to come to my attention and should be added to the data base (e. g. Sejourné 1959 and the landmark work of Benavides 2016). Summaries of examples from Tenochtitlan and from Tula and its surrounding region, and also from the few examples known from Peten (at Tikal), Yucatan and Belize had been gathered (Becker 2017:11-14).⁴

The possible *almenas* on “The Castillo” at Chichen Itzá are a matter of interpretation (Fig.11), but Benavides (2016: 191-192) provides well documented large examples in limestone from Chichen Itzá, illustrating 7 different forms. One stepped example that had been stuccoed and painted in bright colors (Benavides 2016: 191, Cover, Fig 2) actually was found at Cerro Xoconoch, a few kilometers to the south of Teotihuacán. This painted example is in the collections of the Museo Nacional de Antropología (INAH) in Mexico City (Fig. 12).

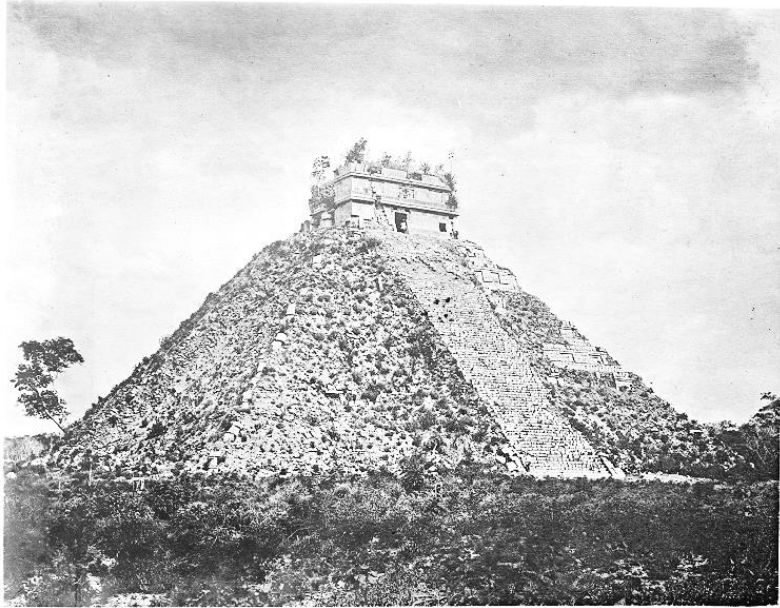


Figure 11A



Figure 11B

Figure 11: The “Castillo” at Chichen Itzá:

Figure 11A: The ancient “Castillo” at Chichen Itzá prior to “restoration,” as seen in a photograph by Graf Gelb.

Figure 11B: The ancient “Castillo” at Chichen Itzá as reconstructed by Cain.



Figure 12. Stepped, stuccoed and painted almena from Cerro Xoconoch near Teotihuacán. (Photograph courtesy of Antonio Benavides Castillo.)

Of particular interest is the incorporation of a stepped *almena* that has what I call a central “doorway” as part sign (glyph) for “house” as seen “in Teotihuacán writing” (Helmke et al. 2013: 93, Fig. 6a, 6b; see also Benavides et al 2016: 191). If “house” is the correct identification of this sign, *almenas* may have been associated with residences, and also possibly with non-residential structures

Benavides (2016: 190-196) describes and illustrates an impressive array of examples of *almenas* from a number of sites in Campeche and throughout the Yucatan peninsula. His important findings are summarized below:

1. Acanmul. One fragment from the “*edificio principal de asentamiento, hoy denominado Palacio*” (Benavides 2016: 190).
2. Chichén Itza. Benavides (2016: 191, Fig. 6) illustrates *almenas* from six structures, all carved from local limestone and with large tenons extending from their bottoms for insertion into a stone or mortar surface along the roofs of their respective buildings (see also Marquina 1964: 849, 871, 885-894) (Fig. 13, below). Benavides greatly expands on Ruppert’s two examples of *almenas* from Chichen Itzá, found in association with two major structures. One is the “roof ornament” from the Mercado, which is located at the southern end of the Court of the Thousand Columns (Ruppert 1943: Fig. 17d); 75 cm tall, of which the tenon forms the lower 15 cm. The “Roof decoration from Structure 2D6” associated with the Mercado Gallery (Ruppert 1943: Fig. 4b, 10a) is 105 cm tall; the tenon forming about 30% of the total height. This complex form has a triangular hole piercing the lower section, one of the common shapes for the holes piercing the box-like *almenas* at Cihuatán (see Fig. 5, above).



Figure 13. Illustrations of 6 forms of almenas from Chichen Itzá. (Courtesy of Antonio Benavides Castillo.)

3. Dzehkabtún. One trapezoidal *almena* and various fragments of rectangular examples (Benavides 2016: 192, Fig. 4).
4. Edzná. Three different forms of *almena* (Benavides 2016: 192-193, fig. 5; also Benavides 2014: 126 and 2001: 32. Benavides (2016: 195) suggests that we also see Becquelin (2008). (See Fig. 1, above.)
5. Ichmac. Late Classic Puuc architecture, with two types of *almenas* known (Benavides 2016: 193, Pollock 1980: 474-480).
6. Jaina. Two fragments known, one of sandstone and the other of limestone, from Late Classic structures (Benavides 2016: 193).
7. Kabah. Benavides (2016: 193-194) identified three *almenas* recovered and photographed by Pollock (1980: 183-194), but not published. Other examples have been reported to Benavides by Lourdes Toscano (see in Benavides 2016: 194, Fig. 7).
8. Kanalkú. Benavides (2016: 195) refers to Pollock's (1980: 503-504) report of one possible *almena* from this forgotten settlement.
9. Santa Rosa Xtampak. Although containing numerous monumental structures, this site in the northern Chenes region is now known to have only one *almena*, but it is a large and complex example that appears intact (Benavides 2016: 195, Fig. 8).
10. Tabasqueño. A single *almena* was found on the surface about 100 meters south of the Palace Temple (Benavides 2016: 195).

11. Tulum. According to Benavides (2016: 195) Structure 45 of this late Post-Classic site, with a circular plan, may have had small stone statues at corners (?) of the roof, as depicted by Lothrop (1924: 110, 114).
12. Xcalumkin. In the northern part of Campeche, Benavides (2016: 195) reports a lower fragment of an *almena* was discovered in 2007, similar to one from Edzná (see Becquelin 2008).
13. Xchan. Benavides (2016: 195-196, Fig. 3) reports that during consolidation of Puuc structures a lower fragment of a single *almena* was recovered, similar to a complete example from Edzná reported by Benavides (2001: 32).
14. Xcochá. Benavides (2016: 196) reports possible T-shaped *almenas* fragments noted by Pollock (1980: 514).
15. Xcochkax. Benavides (2016: 196, Fig 3) offers a single good drawing, but poor descriptions of what seem to be two types of *almena* reported from this site (Michelet *et al.* 2000).
16. Xcucsuc. Benavides (2016: 196, 192 Fig. 3) extracted the information from this site and some fragments of *almenas* from the report of Pollock (1980: 488).

In addition to the impressive Benavides inventory (see Figure 14, below, for illustrations from 7 of the above sites), Eric Taladoire reports (Pers. Comm. 14 June 2017) that he and Pierre Becquelin have found a possible example at Xculoc.

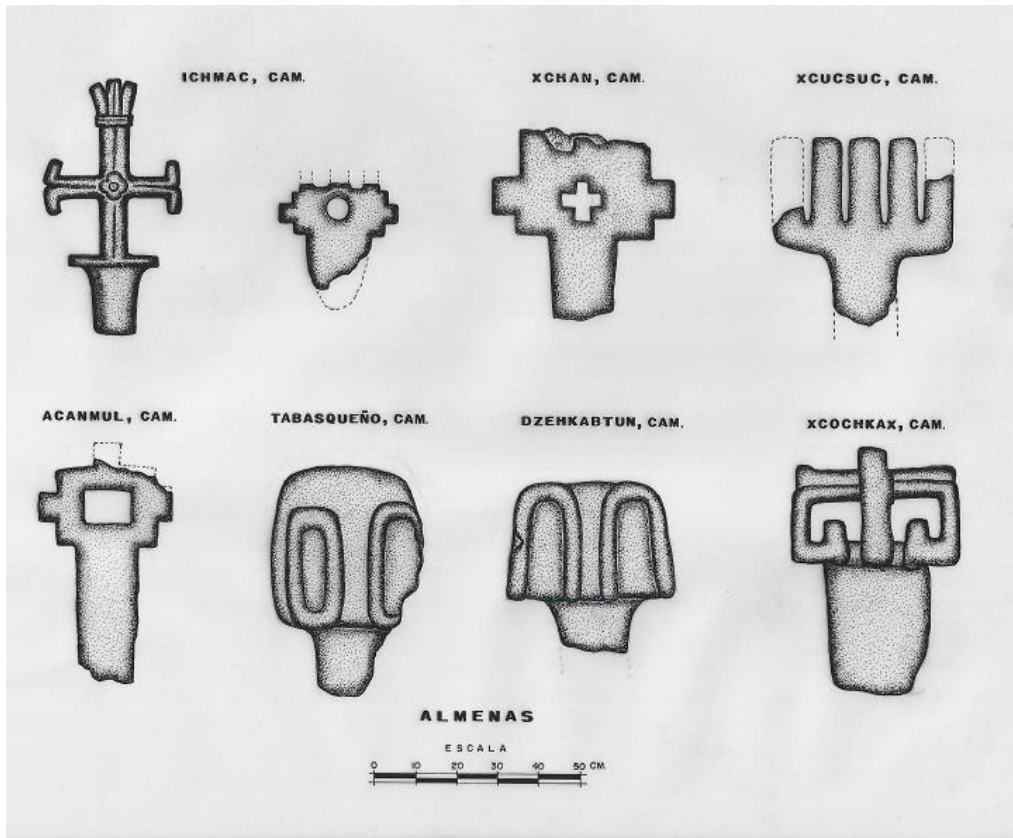


Figure 14. Illustrations of almenas from: Ichmac; Xchan; Xcucsuc; Acanmul; Tabasqueño; Dzehkabtún; and Xcochkax. (Illustration courtesy of Antonio Benavides Castillo.)

Overlooked in my original survey of *almenas* was George Kubler's important review of plans and maps from Cholula, an important site in the Puebla Valley some 125 km to the east of Mexico City (1968). The ancient documents assembled by Kubler for this work are rich in illustrations of *almenas* from this ancient city (cf. Fig. 15). William Sanders' (1971: 29-31) section on Cholula in the *Handbook* also indicates the use of these architectural features at that site.

Kubler's important review of the plan of colonial Cholula, and its relationship to the ancient city (1968: 123) makes an important reference to the dual social organization that was recorded in these ancient records (cf. Becker 1975). I suspect that the style or form of *almenas* used to ornament specific structures may have been tied to the moiety of the occupants. The possible use of *almenas* as an indicator of moiety organization might be further examined at Cihuatán, where the dichotomy between flat styles of *almenas* and *almenas* that have a box-like form or are otherwise 3-dimensional (three dimensional images of *biznagas* as well as dogs), a category of "non-flat," may have significance that enables us to better understand the ancient social organization at this and other Mesoamerican sites.

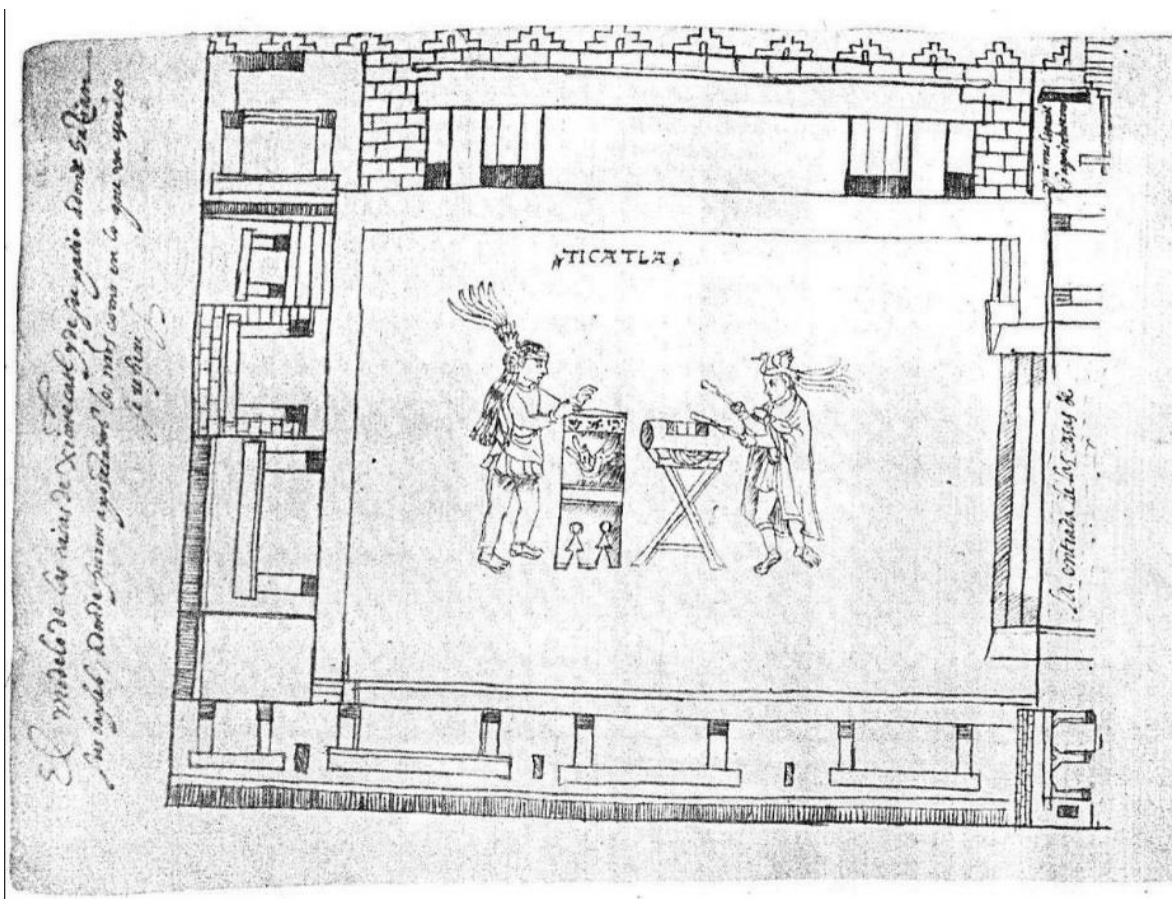


Figure 15. *Almenas* as depicted in an ancient document.

Conclusions:

1. The use of *almenas*, or decorative roof ornaments, appears to have begun in the Valley of Mexico during the Pre-Classic era and continued into the sixteenth century.
2. *Almenas* were used to provide ornamental profile variations along the leading edge of flat-topped roofs. Not yet known is whether they were used only on this front edge of a roof or if they also appeared on the sides and rear of some structures.
3. The initial use of *almenas* may have been on ritual structures, but by the Classic period (ca. 300 C.E.) their use on residences is widely documented.
4. Materials used for *almenas* include ceramic, limestone, sandstone and onyx, apparently varying according to available resources as well as the wealth of the owners of the structures for which they were commissioned. At least one stuccoed and painted example is known from the Valley of Mexico.
5. The size of *almenas* varies widely within the sites at which they are found and at sites among which they are documented. Heights range from 30 cm to well over one meter, perhaps correlating with the size of the structures on which they were ornaments.
6. The forms used for *almenas* range from flat slab-like plaques to box-like constructions and other three-dimensional forms.
7. At Cihuatán in El Salvador at least nine structures are known to have incorporated ornamental *almenas*. Each of these structures apparently utilized a single type or category of *roof ornament*, but involving significant variations on the basic or specific theme in the best documented example.
8. The specific placement of *almenas* on roofs is best indicated by ancient documents depicting actual structures in the late pre-contact and contact period in Mexico. The considerable amount of evidence for the use of *almenas* on at least one structure at Cihuatán provides hints regarding the possibility that more than a single rank of these ornaments may have been used, but whether on more than one roof edge is not known.
9. Reconstructions of structures with these roof ornaments often depict an imaginary special variation used at corners; a corner type for which no archaeological evidence is known.
10. Associations with social or political groups have been suggested for the use of *almenas*. These roof ornaments remain so infrequently reported in the literature that their actual distribution and functions continue to be uncertain. Only recently have a few examples been reported from each of a great number of sites in Yucatan, but elsewhere their appearance remains relatively unknown.

11. The single example of an *almena* that has been excavated at Tikal, El Petén, Guatemala is associated with a structure that is architecturally linked with Teotihuacán. This suggests that the distribution of these roof ornaments may reveal socio-political links among sites in Central America.

Notes:

¹ Several other structures at Cihuatán are now believed to have had *almenas* ornamenting their roofs, with the forms and sizes of these decorations varying greatly (Becker 2017). One form appeared to be a feline figure, possibly with a potbelly (cf. Amaroli 2017b).

² In June of 2017 Alice B. Kehoe and I discussed matters related to arsenic use to preserve organic remains held in museum storage (Kehoe and Becker 2017). My own exposure to arsenic that had been used to preserve pelts at the long gone Commercial Museum in Philadelphia was an instructive encounter.

³ During my year of research (2011-2012) into the distribution of *almenas* throughout Central America, my compadre Chris Jones pointed out that he had identified one from Tikal associated with Structure 5D-43 (Jones 1996). (Fig. 16) This solid limestone block carved into a shape somewhat like those from Cihuatán was associated with a Teotihuacan-like tablud-tablero structure (see Becker 2017:13-14, Fig. 13). Whether this object was retained and curated at Tikal, where storage space was ample but finite, remains unknown.

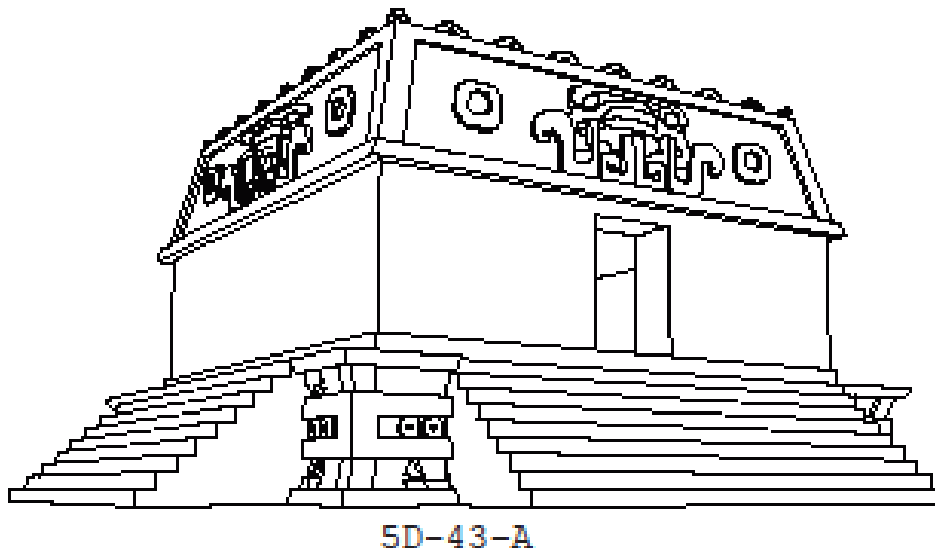


Figure 16: Tikal Structure 5D-43-a in isometric view, by H. Stanley Loten (used by permission). One example of the Teotihuacán type *almenas* on this building was recovered by Christopher Jones during the excavation of this structure. The “corner” *almenas* are hypothetical.

⁴ Amy Hirshman assures me (pers. Comm. 29 June 2016) that *almenas* remain unknown from the Tarascan region, an absence not unexpected.

⁵ The small ceramic fragments of what I believe to be from *almenas* at San Dieguito (Becker 2017) were identified by Kelley (1988: 14, also 103, 107, 176 Pl. 25a,b) as roof tiles. The ear-like fragment appears to be the upper corner of a flat example. (See Figure 17, below.)



Figure 17: Possible *almena* fragment found at San Dieguito (Kelley 1988, Becker 2017)

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