The Codex

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Welcome to the  "22 – year book" of ***The Codex.***

cha' k'atun jun tun hun

TABLE OF CONTENTS

NOTE FROM THE EDITOR 1
ANNOUNCEMENTS 2
SITE-SEEING: REPORTS FROM THE FIELD: ANCIENT MAYA MARKETS: A CRITIQUE OF METHODS FOR DETECTION
by Marshall Joseph Becker 3
GOSSIP COLUMN
by Lady Sharp Tongue 17
A DUCK-BILLED POTBELLY SCULPTURE FROM TAK'ALIK AB'AJ, GUATEMALA
by Arnaud F. Lambert 18
TAK'ALIK AB'AJ MONUMENT 14 AND THE INVERSION OF OLMEC-STYLE ART ALONG THE PACIFIC COAST
by Arnaud F. Lambert 26
PETER D'ARCY HARRISON, SEPTEMBER 19, 1937-DECEMBER 15, 2013 37
GRAMMAR IN THE SCRIPT: METEOR SHOWERS IN THE SCRIPT: PART 1
by Hutch Kinsman 40

Now 2 years after the completion of its first k'atun, The Codex continues to grow both in size and quality of material found within its pages. This trend continues in the twenty-first volume.

We lost Peter D. Harrison in December 2013, one of the early members of the Tikal Project (1959). Among his many publications, ***The Lords of Tikal*** is one many of us are familiar with, A brief obituary with photos of Peter at Tikal appears in this issue.

Marshall Becker gives a new meaning to "Site-Seeing" in his review of methods of site surveying to define marketplaces at Maya sites. Arnaud Lambert contributes two studies on duck-billed figures and Olmec-style art at Tak'alik Ab'aj' in Guatemala.

Following up on discussions of the Maya and meteors on the Aztlan listserve, Hutch Kinsman devotes his "Grammar in the Script" column in this issue and the next to that topic, "Meteor Showers in the Script."

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.

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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 3.5 disk, on CD, by e-mail, or hard copy. 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

Voices of the Past: Maya Research Today at the Penn Museum, March 15, 2014 Saturday Symposium. For more information, see the Museum's website: http://www.penn.museum

11th Annual Tulane Maya Symposium, "*On the Maya Trail: Ancient Travelers, Epic Voyages**." March 20-23, 2014. Tulane University, New Orleans, LA. The symposium will emphasize how integral long-distance communication was to ancient Maya society throughout its long history. For further information, see the website: http://www.mari.tulane.edu/TMS/

79th Annual Meeting, Society for American Archaeology, April 23 - April 27, 2014. Austin Convention Center and Hilton Austin, Austin, Texas. For more information, see the website: http://www.saa.org

Fourth Annual Conference and Workshop at Yale. Northeastern group of Nahuatl Studies, May 9-10, 2014. Yale University, New Haven, CT. The schedule will include advanced Nahuatl study, group document translation, and papers by scholars. For more information, see the website: http://www2.potsdam.edu/schwaljf/Nahuatl/Yale2014.htm

3rd Conference on Archaeoastronomy of the American Southwest: "Charting a Formal Methodology for Cultural Astronomy Research", June 6 – 8, 2014. Arizona State University School of Earth and Space Exploration Marston Exploration Theater, Tempe, Arizona. For further information, see the website: http://www.scaas.org/2014conference

EXHIBITIONS:

"Feathered Walls: Hangings from Ancient Peru," September 16, 2013–March 2, 2014, Metropolitan Museum of Art, Gallery 399, New York. Twelve spectacular feather panels—probably hangings—made by the Wari peoples of southern Peru between about 600 and 1000 comprise this installation. For more information, see the website: http://www.metmuseum.org/exhibitions/listings/2013/feathered-walls

"Gods, Kings and Artisans of Ancient Mesoamerica," Permanent exhibit. Marjorie Barrick Museum, UNLV, 4505 S Maryland Pkwy Las Vegas, NV. The exhibit includes painted vessels of the Maya elite, ceramics of ancient West Mexico and figurines that span over two thousand years**.** For more information, see the website: http://barrickmuseum.unlv.edu/collections/cultural.html

"Pre-Columbian Sacrifice: The Burden of the Elite," Ongoing exhibit. Marjorie Barrick Museum, UNLV, 4505 S Maryland Pkwy Las Vegas, NV. This exhibition explores elite class sacrifice and ritual through the themes of feasting, hallucinogens, bloodletting, and the ritual ballgame. Website: http://www.unlv.edu/node/24093?delta=27

SITE-SEEING: REPORTS FROM THE FIELD:

Ancient Maya Markets: A Critique of Methods for Detection

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ABSTRACT

During the past two decades research concerning the ancient Maya has included a growing interest in the concept of "markets" as an indicator of the complexity of their urban society. Large cities with numerous ritual structures and complex gradations of building size, plus an extremely sophisticated written language including several dialects, have long served to demonstrate the rich texture of Classic Maya society. The nature of the market economy that thrived there remains embedded in the written language, but poorly revealed in the architecture. With the exception of the market at Tikal, and possibly Calakmul, no built market is known from the entire region. Efforts to identify the locations of open-air markets, and to determine specific use-areas around private and civic buildings, have brought numerous methods into use. Some of these, and claimed results, are here reviewed.

Introduction

Fewer than 40 years ago archaeologists in the Maya area could not read the many texts long known from many sources. After 1927 two vastly different views emerged regarding the organization of Maya society. Most scholars continued to recognize the enormous extent of the largest Maya cities, the great variation in size and configurations of buildings within them, and the sophisticated calendar and written language as revealing an impressive complexity of organization. Less sophisticated students of the ancient Maya, and the general public, adopted J. Eric Thompson's popular creation; one that posited a two-tiered society consisting of peasant masses ruled by a priestly elite (see Becker 1979). Thompson (see Fig. 1) had created this popular vision, based on the recent and then still feared Communist revolution, for a guidebook in 1927. While he frequently employed that trope in his public and popular (non-academic) publications (and TV shows), he never considered what I call the "Priest-Peasant Hypothesis" in any of his scholarly writings (Becker 1979). Nevertheless, a number of academics, both archaeologists and ethnographers, employed the priest-peasant "model" to interpret or explain their findings in the field. Today this view is rarely found outside the popular literature. Other scholarly publications of recent date use the traditional model of Maya society as urban and complex that has been inferred

from the evidence for more than 150 years, as if new research by the authors had just revealed a new and exciting discovery.

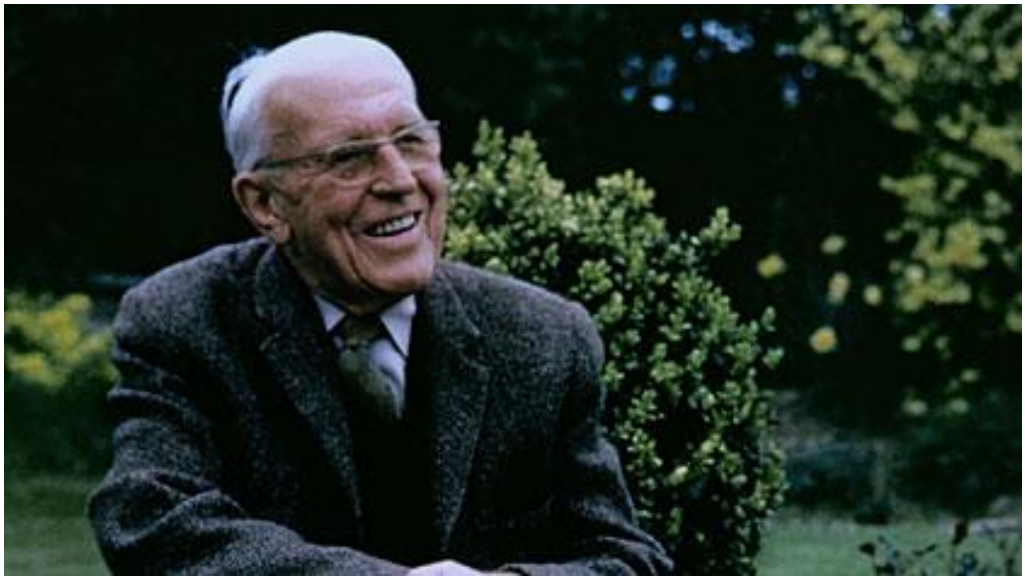
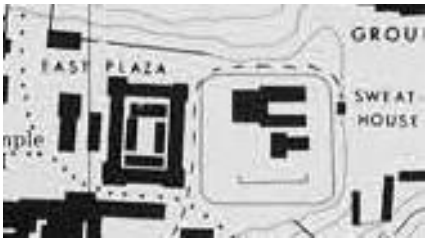


Figure 1. J. Eric S. Thompson. (photo credit: Otis Imboden,) (Mesoweb.com)

Within any complex society one can expect that most goods, both durable and comestible, are commonly sold at markets. In a market society lacking metallic coinage, determining the medium of exchange used is a major concern. Here we will assume that cacao beans served as a basic currency (Millon 1955, McNeil 2006). Those scholars who assumed technical and economic complexity in Maya society, at least as it developed by the beginning of the Classic Period (circa 250 CE), inferred that markets should be part of all large urban sites. Even smaller sites may have been the locations for markets, but of small size and presumably held less frequently. In general, any relatively large open space within the site core was taken to be a possible market area. The European model of markets being held in the open space fronting, or adjacent to cathedrals or other ritual structures, appeared to apply quite well at most Maya sites. Among the pioneering efforts of The Tikal Project of The University Museum was a major clearing and excavation of the East Plaza Group conducted by Christopher Jones (1996). His fieldwork revealed an enclosed construction, with limited access; this external wall surrounds long buildings divided into stall-like units resembling the Athenian *stoa*. The recognition of what almost certainly was a built-market at Tikal, based on location and architectural configuration, has led to consideration of similar architectural groupings that might have been used as markets at other Maya sites. Aside from a possible example recently found at Calakmul (cf. Carrasco Vargas, Vazquez and Martin 2009; Golden et al. 2013), built-markets remain rare, but sufficient to postulate a set of rules conforming to a specific Plaza Plan that I have assigned the number 9 in the series: PP9 (Becker 1971, 1972, 1991, 2003, 2009).

(2a).



(2b).

Figure 2a. Site map of Tikal showing East Plaza and location of the probable market at the center of the eastern side of this section. (Map by William Coe). Figure 2b. Close-up view of probable market (PP9). (Map by Carr and Hazard after William Coe 1967.)

Figure 3. Structure 2 at Calakmul. (http://mexico-campeche.com/)

Open air markets, using tents or perhaps no shade at all (see Fig. 5), must have been the rule in the Maya realm. Interest in confirming what may seem obvious locations for markets, at least for many scholars, has become a relatively recent goal of archaeologists. I suspect that part of this new interest derives from restrictions placed

on foreign excavators in Guatemala and Mexico, combined with the inability of these researchers to gain funding or permission to conduct the extensive work needed to search a large suspected market area. The new interest in markets also is part of an effort to use above-ground "field" research to provide clues to the past, together with or in conjunction with traditional ethnohistory (cf. Cipolla 2013). The use of surface detection to detect activity areas within houselots, or the collection of structures that form a Maya "house" (Sweely 2003) is another aspect of this approach to archaeology.

My interest in markets is an outgrowth of a methodology for understanding lowland Maya sites through categorization of related groups of structure, a categorization by which residential and ritual groups can be distinguished and by which residential groups can be differentiated. By recognizing similarities in group arrangements or configuration, different groups of buildings can be assumed to have similar function. Each specific "Plaza Plan" (PP) can be tested to determine if non-architectural elements unique to that group conform to the PP to which it had been assigned (Becker 1971, Haviland forthcoming). Recognizing different types of residential architecture also may allow identification of ethnicity (foreigners?) within a site (Becker 2009), relative wealth (social class?), and other variations that commonly form part of any complex society. I have assigned "Plaza Plan" number 9 (PP9) to the Tikal market construction that was excavated by Jones, and I continue to look for parallels in the region.

Shaw (2012) has provided an excellent review of the literature relating to markets at ancient Maya sites. She also notes the important fact that the Yucatec word for "marketplace" is the same as the word for "plaza" (*k'iwik*, see Barrera Vásquez 1980). Recently, two edited volumes (Garraty and Stark 2010, Staller and Carrasco 2010; see also King and Shaw In review) have considered various matters relating to markets in pre-modern societies. Methods used in the actual detection of markets, whether built or open air, have been considered by Stark and Garraty (2010). Correlations between architectural, linguistic and artistic elements representing a market (Golden et al. 2013) have yet to be assembled.

No architectural elements in any way similar to PP9 are associated with the postulated "market" at the Yucatecan site identified as Chunchuchmil. A few possible walls (undated) among the scattered stones have been interpreted as evidence of market stalls (Dahlin, Jensen, et al. 2007), but possible alignments are difficult to detect. They do not account for the presence of several rock outcroppings within this area. Dahlin (2009) posited a "market" at this location as part of his ideas regarding economic complexity at this minor site. Dahlin, et al (2007, cf. 2010) describe the proposed market area at Chunchucmil as having unusually dark (organically rich) soil. Basic evaluation of possible modern cultural factors leading to this subjective observation regarding this "dark" soil are wanting. Comparative data from other areas of the site also are lacking. Dahlin indirectly indicates that this suspected location has been under cultivation by milperos in recent times. Whether this open area had attracted milperos since the site center was abandoned, no one can say. I suspect that milperos would be especially drawn to pockets of rich soil, such as this location of a proposed ancient marketplace, or just to a level and open area that their modern activities caused to be "enriched." Dahlin and his team did not explore the possible effects on the soil of making milpa in recent years, and how this might alter the results of their tests.

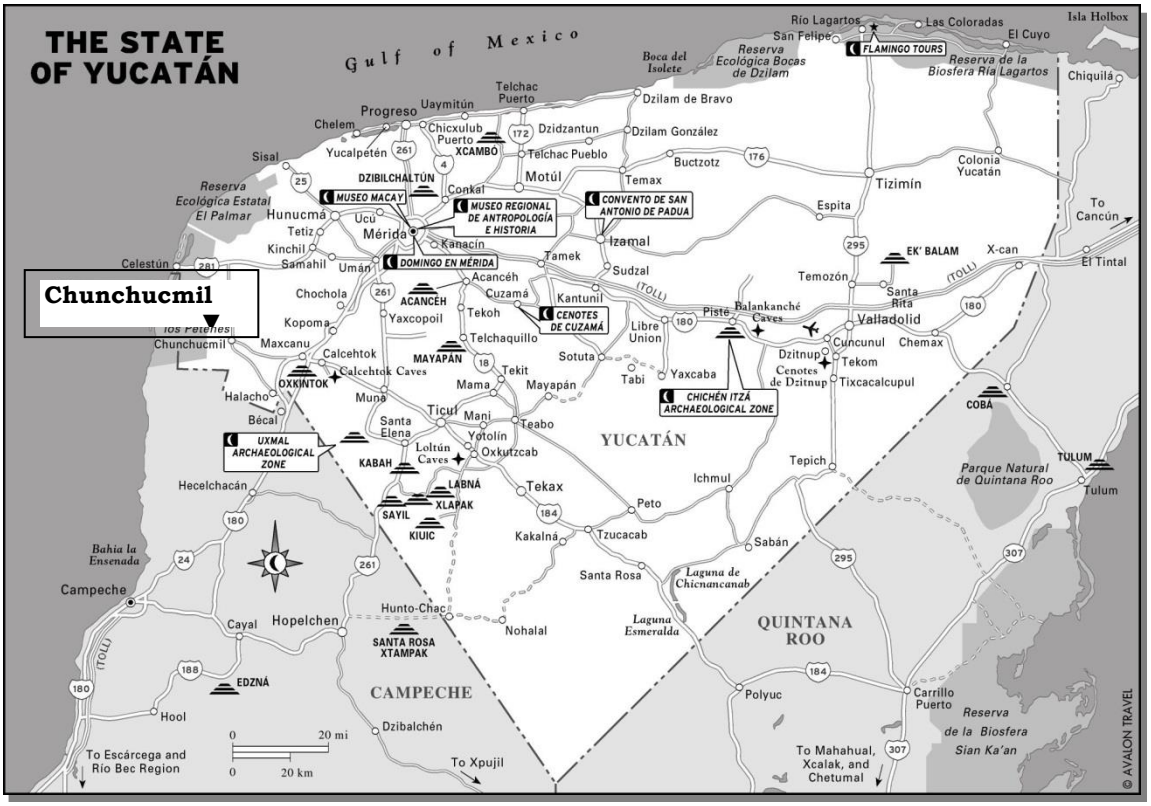


Figure 4. Map of The State of Yucatan pointing out the location of Chunchucmil. (moon.com - 2006)

Dahlin's efforts to demonstrate that a supposedly "open" area at Chunchucmil may have been used as a market turned to an area of archaeology that Garrison (2003) identifies as "shallow geophysics." Garrison's review, especially his chapter five on sediment and soil sampling, reflects efforts to use geological methods to identify and interpret human activities from archaeological contexts (see also Kraft 1994). Dahlin (et al. 2007) provide analyses conducted on soil samples from the supposed market area at Chunchucmil, comparing the results to a modern market in Antigua, Guatemala. Comparing Guatemalan highland with Yucatecan lowland soils must take into account the basic milieu. David Freidel, who plans to do soil research "at El Peru-Waka' in the future" reminds us (pers com. 18 Dec 2013) that soils within the greater Maya area, extending down to El Salvador, vary enormously. We can hope that soil studies underway at sites such as Buenavista El Cayo, Belize and elsewhere will employ tight methodological controls. Within each of these sites that range of variability is considerable, requiring tests of suspected market areas as compared with locations inferred to be different. Comparative soil tests from areas within a site that are not thought to be marketplaces should provide basic frames of reference. Tests at Motul, for example, have yet to be published. Areas cultivated by farmers in recent years are but one of many deranging factors. The numbers of deranging factors in the study of suspected market areas are enormous. A major factor at a large market such as Tikal (see Jones 1996) would be the paved surface, which may have been swept clean each day. The detritus collected from a large market would provide rich fertilizer as well as fodder for small domestic animals that have been raised locally for food.

Figure 5. • Antigua: outdoor market. Photograph. Britannica Online for Kids. Web. 15 Jan. 2014. <http://kids.britannica.com/comptons/art-117499>.

Similar questions regarding the identification of ancient market spaces also have been raised in El Salvador, where "the only market area candidates would be the usual vague passing remark about this being one of the possible functions of large plazas" (Paul Amaroli pers. Com. 18 Dec. 2013). Amaroli shares my skepticism regarding the methods used by Dahlin and his colleagues in their claims to have identified a market area at Chunchuchmil. Amaroli (pers com., 8 Dec 2013) poses a number of questions regarding the Chunchucmil study, and suggests that input from other soil experts might be helpful. Amaroli and I question Dahlin's focus on tests for elemental phosphorus (P). Becker recalls that some 40 years ago, testing for phosphorus levels were seen as providing an indication of human use of areas with higher concentrations as locations for elimination of body wastes. This idea regarding phosphorus levels in the soil as indicators of toilet areas seems to have faded for all the same reasons that Amaroli proposes for eliminating Dahlin's studies as revealing ancient market locations (see also Bair and Terry 2012). Several factors may affect soil test results in locations subject to farming in recent decades. Phosphorus (as phosphate) is a main ingredient in the most common fertilizers used in milpas in El Salvador and up into Mexico, including Yucatan. Amaroli points out that "Triple 15", with 15% each of phosphate, nitrogen, and potash, may be the most common (2013). Phosphorus also is an ingredient of Glyphosate, an herbicide commonly used by farmers in El Salvador and elsewhere. Phosphorus is also found as an ingredient for detergents, particularly since arsenic additives have been proscribed in the USA. Amaroli often finds discards of the little bags that once held detergent in milpas in the Cihuatan area. The primary use of these detergents is by farmers who use them to scrub their bodies after using pesticides. In El Salvador phosphorus is a major element used in matches, discarded after lighting cigarettes and

cigars, gas burners for cooking, and for igniting *talchinoles* (big termite nests whose smoke discourages gnats and mosquitoes), etc.

Figure 6. Talchinol.

The accumulation of phosphorus and other elements found in any traditional milpa (cf. Schwartz 1977, also 1990) also may result from the deposits of organic material containing phosphorous (for example, maize stalks, leaves, husks, discarded poorly developed maize cobs). In-field processing also adds discarded maize cobs to the stray loss of grain. These materials are also augmented by in-field urination and defecation by humans, and also by any unusual concentrations of animals feeding on the crop (cf. Forbes 2013). K. Emery (pers. Com. 16 Dec. 2013) suggests that another possible source for phosphorus and organic matter would be the planting of trees, in a row or otherwise, where night soil and/or composting would alter the chemical signature. Emery's (2003: 36-37) review and discussion of "phosphate levels" at Motul reveal her concerns with the lack of theory, standardized testing procedures, or ideas regarding what the random results indicate (see also Emery and Foias 2012). Work by Bair and Terry (2012) do not directly address Emery's concerns. Emery reminded me that open spaces in site centers are often identified as locations where celebrations and feasts were held by the ancient Maya. These activities need not be exclusive, but demonstrating actual uses are more problematical. Sometimes, the only evidence presented for such suppositions is that the space appears to have been open! The evidence for "feasting" at some Maya locations may be on-floor finds; finds that suggest to me the final activity at a locus, not long term use.

Figure 7. A typical Central American Milpa. (Note: the bananas in the background, although not native to Central America, today are commonly found). Corn stalks have been bent, and left to dry (hence the dried cobs). (Wikipedia.com)

Regarding the presence of other elements found in analysis, including zinc and cadmium, these have been found in the excrement of diverse animals, including humans, who have been exposed to heavy metal contamination. A number of these metals are also common in batteries, an item commonly discarded in milpas where over-nighting (spending the night in a field, for various purposes) is practiced. Iron is another common battery ingredient. Batteries commonly used for flashlights now include the traditional zinc-carbon D cells as well as alkaline batteries and, sometimes, rechargeable nickel-cadmium or lithium batteries. Terry et al. (2004) suggest that batteries may be a source of heavy metal contamination, and that iron levels may be elevated through constant filing of machete blades to sharpen them. Kitty F. Emery (pers. com. 17 Dec 2013) agrees that throughout the Maya lowlands all these elements may have been added by modern activities, including the common use of tin roofs, not only for structures of all types, but also as stela coverings (see also Emery and Foias 2012 for their comments on the soil chemistry studies at Motul de San José).

Blood

In B-movies and archaeological reports, nothing attracts attention like stories involving blood; particularly blood sacrifice. Slaughtering animals may not be as dramatic as human sacrifice, but the idea of a killing location does lend a sufficient amount of gore to enable a tale of "markets" to be made more exciting. For more than a decade, blood residues have been "reported" from stone tools, some of which are thousands of years old. I have yet to see one set of tests accompanied by controls of any type, a problem addressed by Stuart Fiedel (1996). Companies purporting to test artifacts for blood residues sometimes report on their methodologies, but invariably these seem to use less than standard scientific methods. Matheson, Hall and Viel (2009) provide a useful study of presumed blood residue from Maya vessels from Copán in Honduras, in a collection of papers (Haslam et al. 2009) relevant to the subject here addressed. Their effort focuses on limited possible residues and from well controlled contexts.

Can blood and other chemical residues be detected on floor surfaces or in soils in the Maya realm (cf. Fernández et al. 2002) or anywhere else? Terry et al. (2004) offer an impressive effort to conduct soil chemical analysis as part of household archaeology. Resolution of problems with methods and interpretation await further studies. These studies of samples from soils and floors differ significantly from testing focusing on protein immunoassays on encrustations (significant residues) within pots and perhaps on stone tool surfaces. I have always found these blood residue tests to be far from scientific in their methodologies, and colleagues such as Kitty Emery suggest that these methods are still in their developmental stages for archaeological applications and should be interpreted with caution. If the detection of blood residues on stone surfaces may be questioned, the discovery of evidence for blood in a soil sample may be even less likely.

Masson and Freidel (2012) recently reviewed a number of questions regarding how ancient Maya markets operated. Were all Maya markets outgrowths of simple systems of trade and exchange at convenient locations (cf. Abbott 2010), or were the built-markets under elite control? They infer, and many before them, that the major markets of the Classic and Post-classic period operated as a free enterprise system in conjunction with some form of oversight from local elites. I have always assumed that vendors rented space, or paid some sort of tax, but from whom can only be inferred from ethnographic records. Shaw's (2012) discussion of capitalism lacks details regarding how it would apply at a site such as Tikal, from which the data is not included. Simple questions regarding market economies lead us to questions involving the operation of individual polities. I believe that these can only be answered through ethnographic comparisons, if at all. At present we are still debating what mechanisms might be used to identify the locations of open spaces within a town or city that may have been used to hold markets. The identification of archaeologically regular features that are similar among all the locations believed to be markets (PP 9), possibly including causeways that might have provided access, would enable us to predict specific areas in an ancient Maya city where markets might be located. Standardization of methods and means for the analysis and interpretation of results remain basic goals.

Emery reports (pers. com. 15 Jan 2014) that the soil testing program at Motul incorporated a number of controls, including testing off site, randomized and duplicate testing, testing for a wide range of elements, plus correlation with artifactual and

architectural data. In general, however, research methods involving soil testing as a means to identify a location at which a market was held commonly lack the most elementary (no pun intended) controls. Improved research design and more carefully defined standards (cf. Couzin-Frankel 2013) will be essential to future testing. The ability to identify markets, and expand the definition of PP9 in order to better understand Classic period Maya sites of smaller size than Tikal or Calakmul would be extremely important to future research intended to answer specific questions regarding ancient Maya society.

Figure 8. Tikal Temple I, from the northwest, April 1957. (George Holton, University of Pennsylvania, All rights reserved. University of Pennsylvania Museum.) The built market at Tikal is located to the rear of this structure and to the left (north).

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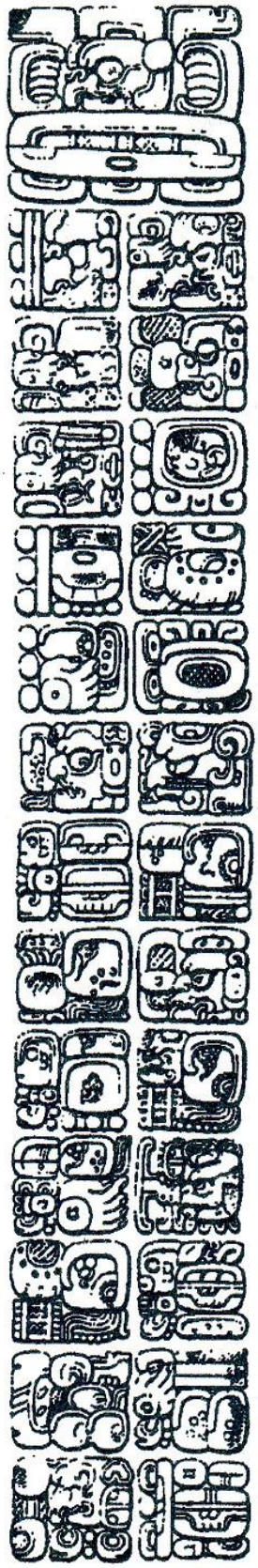
THE GOSSIP COLUMN



Dateline 9.12.6.16.17
11 Kaban 11 Zotz'
(April 30, 679)

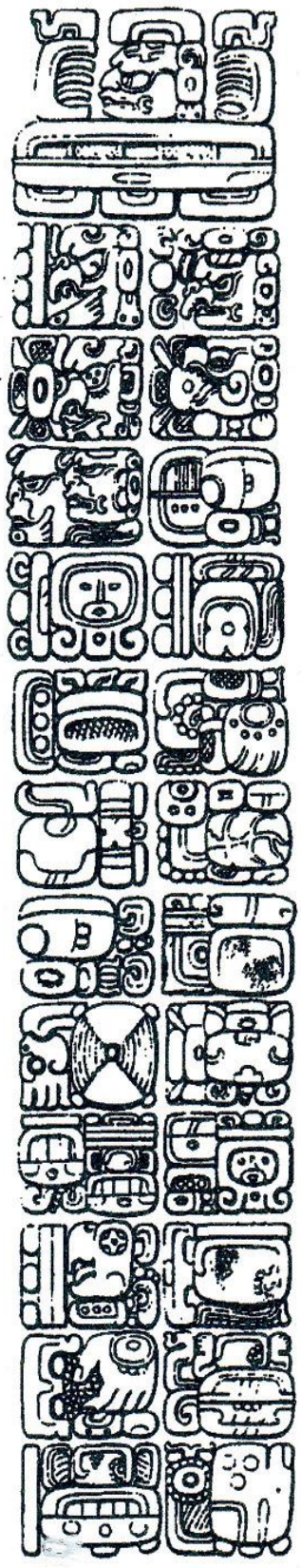
Tikal. Word has reached us that our ruler Nuuc Ujol Chaak and his brave warriors suffered a terrible defeat at the hands of his half-brother, Bajlaj Chan K'awil, lord of Dos Pilas. The reports from the battlefield are that "heads were piled up, blood was pooled." There is no word yet on the fate of Nuuc Ujol Chaak, but it does not look hopeful. Survivors say the Dos Pilas forces were aided by reinforcements from Calakmul. If true, we didn't stand a chance.

My sources in the Palace tell me that his security council advised him not to go to war against Dos Pilas, but his long-time hatred of Bajlaj Chan K'awil and the desire to avenge our loss of control over Dos Pilas two tuns ago were too strong.

Despite Nuuc Ujol Chaak's diplomatic skills (he made peace with Palenque), we've been at war forever. We've faced threats on many fronts from Yaxchilan to Calakmul to Dos Pilas. This wartime economy is taking quite a toll on our people and city. Planting has been sporadic at best, and no construction projects have been started in many kins. Regular maintenance of Tikal's municipal services has suffered, and unemployment is becoming a problem.

While we await news of Nuuc Ujol Chaak – is he alive, a prisoner, or dead – and prepare for a possible funeral, all ball games are postponed until further notice.
Tak samal, y'all.

Lady Sharp Tongue (Na Yeh Ak'il)



A DUCK-BILLED POTBELLY SCULPTURE FROM TAK'ALIK AB'AJ, GUATEMALA

by
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Key Words

Tak'alik Ab'aj, potbelly sculpture, human-duck imagery, Guatemala, Formative period

Abstract

Human-duck imagery is well-known from Middle and Late Formative period (900 BC – AD 250) contexts in both the Gulf Coast lowlands and the Pacific Coast of Mesoamerica. In this brief paper, I report on a hitherto little-known potbelly sculpture with a duck-bill mask from Tak'alik Ab'aj in Guatemala. As evidenced by other duck-billed sculptures from the Gulf Coast lowlands and Chiapas, the use of human-duck imagery appears to have alluded to water, rain-making, and agricultural fertility. These comparisons also point to the importance of examining the body adornments and ritual attire of potbelly sculptures as a key to understanding their potential significance for the ancient peoples of southeastern Mesoamerica.

INTRODUCTION

The present paper is intended to provide a brief accounting of a hitherto little-known potbelly sculpture (Monument 94) with a duck-bill mask from Tak'alik Ab'aj (Guernsey 2012:69, 72, Fig. 4.18b; Magni 2003: Color Plate; Schieber de Lavarreda and Orrego Corzo 2002:39). Although a number of scholars have sought to enumerate, define, and interpret the potbelly sculptures of Late Formative and Early Classic period Mesoamerica (e.g. Demarest 1986; Guernsey 2012; Navarrete and Hernandéz 2000; Parsons and Jensen 1965; Parsons 1986; Rodas 1993; Thompson and Valdez 2008), few have focused on body adornment as an important means by which to gain a better understanding of this widespread sculptural genre. By contrast, the following paper attempts to demonstrate that items of ritual attire, such as duck-bill masks, may provide archaeologists with new insights on the significance of potbelly sculptures in ancient Mesoamerica.

THE DUCK-MAN OF TAK'ALIK AB'AJ

Tak'alik Ab'aj Monument 94 (Figure 1) is located on the northwest side of Structure 13, a stepped platform mound situated on Terrace 2 in the Central Group of Tak'alik Ab'aj. This sculpture is situated north of a large frog-like boulder sculpture (Monument 95) on the west side of Structure 13. Both Monuments 94 and 95 are situated in a basin attached to a small canal. Other canal systems at Tak'alik Ab'aj are associated with sculptures which date stylistically to the Late Formative period (Marroquin 2005:958). Thus, its subject matter and archaeological associations place this sculpture firmly within the Late Formative period. Monument 94 is an andesitic sculpture which measures approximately 130 cm in height, 70 cm in length, and 90 cm in width. It depicts an anthropomorphic figure that bears a number of features which are common to potbelly sculptures throughout southeastern Mesoamerica, namely a bald head, distended belly, and schematically-rendered arms in low-relief (Thompson and Valdez 2008:13-18). The arms are wrapped partially around the figure's belly and end in hands with downturned digits (Figure 1, right).

Fig. 1. Front View (left) and Right Profile (right) of Tak'alik Ab'aj Monument 94. (Photographs by the author)

Fig. 2. Left Profile (left) and Posterior View (right) of Tak'alik Ab'aj Monument 94. (Photographs by the author)

This particular potbelly sculpture also has some fairly uncommon features (Figures 2 and 3). First, the figure has a hunched back -- a rare trait among potbelly sculptures in general but common to some of the sculptures of Monte Alto, Santa Leticia, and Tak'alik Ab'aj (Parsons 1986: Plates 113-115). Second, the figure appears to be partially clothed. The figure's right and left arms seem to have short-sleeves with denticulated borders. Third, and most importantly, the figure has a duck-bill mask. Although the features of the figure's face are no longer visible, it appears that the mask joins the head under the area that was occupied by the nose and the lower cheeks. The mask is incised with faint crescent-shaped lines possibly representing the nostrils of the duck-bill. The mask also has considerable depth; however this may be due to the andesitic rock media of the potbelly sculpture.

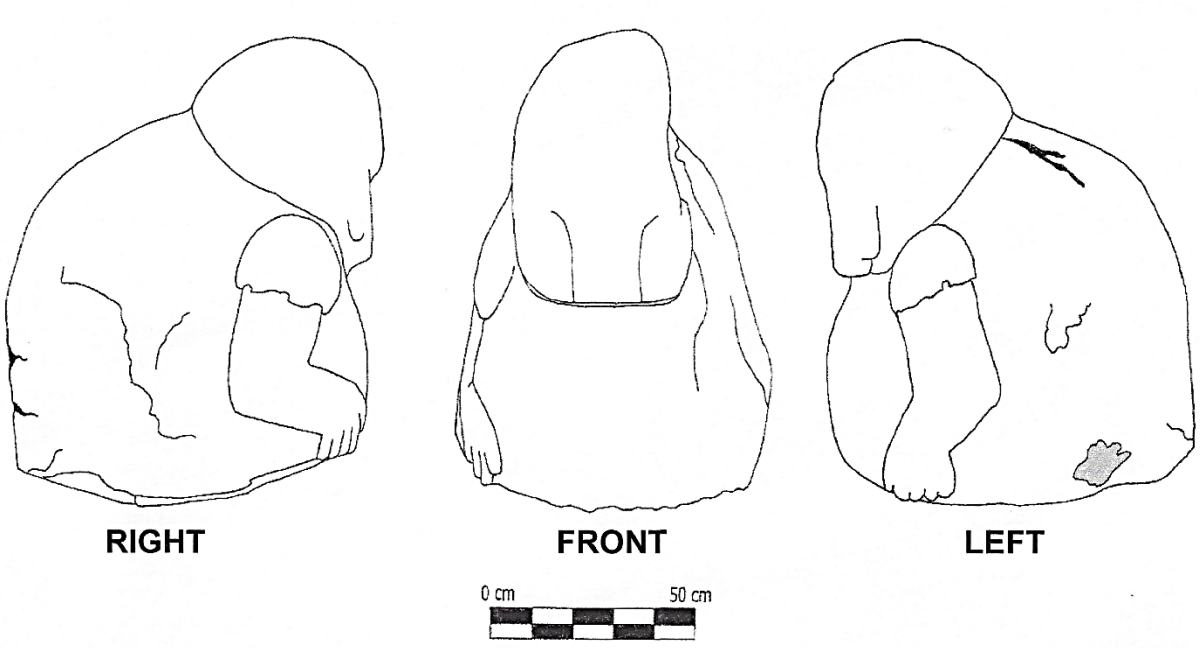

Fig. 3. Tak'alik Ab'aj Monument 94. (Scale drawings by the author)

HUMAN-DUCK IMAGERY IN ANCIENT MESOAMERICA

Similar forms of human-duck imagery are well-known from both Middle and Late Formative period (900 BC – AD 250) contexts in the Gulf Coast lowlands and the Pacific Coast of Mesoamerica and may shed light on the significance of this potbelly sculpture from Guatemala (Figure 4).

The most well-known example for the use of human-duck imagery during the Formative period is the Tuxtla statuette – a small greenstone potbelly-like carving incised with epi-Olmec script (Figure 4c). Currently on display at the National Museum of Anthropology in Mexico City, it combines human facial features with the bill, wings and feet of a duck (see Holmes 1907). However, Tak'alik Ab'aj Monument 94 differs from this sculpture in a number of ways. Rather than depicting a composite creature which fuses a human face with a duck bill, wings, and feet; the potbelly sculpture from Tak'alik Ab'aj represents a human figure wearing a duck-bill mask.

Other examples of duck-bill masks in Middle and Late Formative period art include a jadeite duck-billed pendant from Dumbarton Oaks (Figure 4b) and a Locona phase effigy vessel from Cuauhtémoc, Chiapas that depicts a human figure with a duck-bill mask (Figure 4d). These examples reveal that duck-bill masks formed part of the ritual attire of elites in ancient Mesoamerica since the Middle Formative period. In addition, recent analyses of the Late

Formative period murals on the west wall of the Las Pinturas Sub-1A structure at San Bartolo in Guatemala indicate the presence of a small dancing figure with a duck-billed mask (Taube, Saturno, Stuart, and Hurst 2010:48, Fig. 32).

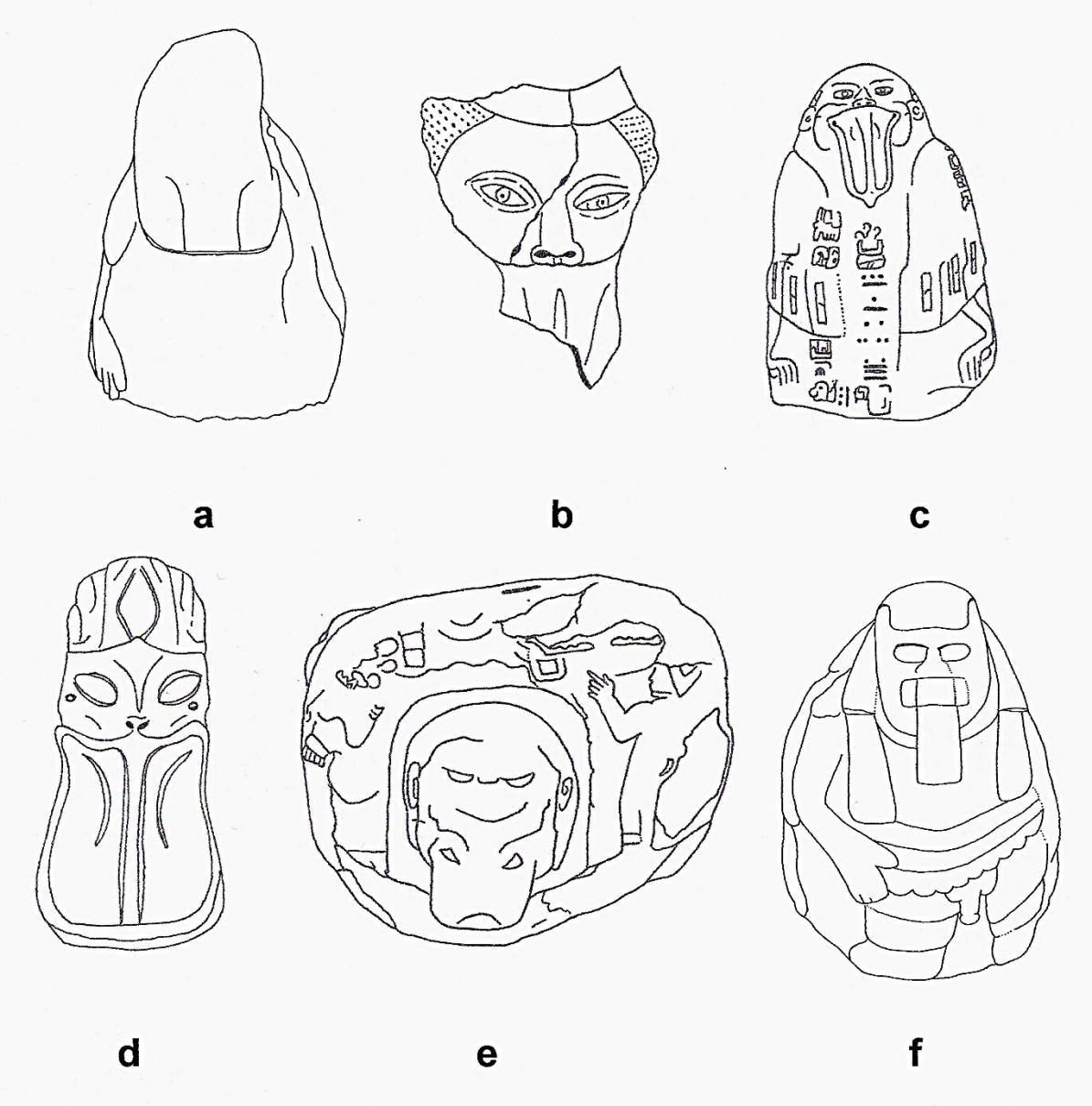

Fig. 4. Middle Formative and Late Formative Period Human-Duck Imagery: (a) Tak'alik Ab'aj Monument 94, (b) a Locona phase human-duck effigy from Cuauhtémoc, Chiapas (after Rosenswig 2003, Fig. 4), (c) the Tuxtla Statuette (National Museum of Anthropology, Mexico City), (d) a jadeite duck-billed pendant from Dumbarton Oaks, Accession No. B-22 (after Taube 2004:169, Plate 36), (e) La Venta Altar 7 (La Venta Park Museum, Villahermosa,Tabasco), and (f) Cerro de las Mesas Monument 5 (Museo de Xalapa, Xalapa, Veracruz). Drawings are not to scale. (Drawings by the author)

Interestingly, jade pendants and beads in the form of more generic duck heads were used in a number of Middle Formative period burial contexts including the Mound 11 Tomb at Chiapa de Corzo in Chiapas and Offering No. 5 of Tomb C in La Venta, Tabasco (Bachand and Lowe 2012: 55, 61; Drucker, Heizer, and Squier 1959:166). Karl Taube (2004:171) has also shown that morphologically similar pendants were used in a number of Classic period Maya

centers such as Nebaj, Uaxactun, Altun Ha, and Dzibilchaltun (Pendergast 1990:264, Fig. 120a; Smith and Kidder 1951: Plate 57e; Taschek 1994: Fig. 11b-e). In addition, representations of elite figures wearing duck-head pendants are also known in the Early Classic period sculptures and murals of Kaminaljuyu, Tikal, and Uaxactun (Jones and Satterwaite 1982: Fig. 87b; Parsons 1986: Plates 50-51; Valdés 1987: Fig. 5). The Late Formative period rock carving from the Cave of Loltun may also depict the use of a similar type of pendant by an elite figure (Proskouriakoff 1950:155). Although they do not depict a human wearing a duck-bill mask, the widespread distribution of such precious stone pendants points to the importance of the duck in expressions of elite status. Such associations may have carried over to duck-bill masks in the Maya area. Joesink-Mandeville and Meluzin (1976:98-99), for instance, have argued that the giant stucco masks from Uaxactun Structure E-VII-sub (Masks 17 and 18) and Tikal Structure 5D-sub may have been Late Formative or Early Classic period depictions of a human with a duck-bill mask, possibly a priest or astrologer, and that these individuals were linked to forms of divination associated with astronomical observation linked to the seasonal migration of birds.

Returning to the Gulf Coast lowlands, a similar relationship between rulers and the duck-bill mask is shown on La Venta Altar 7 (Figure 4e). In this monument, a human face with a duck-bill mask emerges from a shallow niche. A common trope in Olmec-style art, the niche figure was often used to represent a ruler or ancestor emerging from the underworld (see Grove 1973). By virtue of its duck-bill mask and the intimate relationship between ducks and water, this entity may share in a number of later Classic and Postclassic Maya conceptions of the underworld as a watery place and the origin point of rain. Using a number of epigraphic and codical sources, Taube (2004:173) has argued that the duck may have been associated with rain-making rituals and other agricultural rites in its role as a water-bringer. La Venta Altar 7 suggests that Mesoamerican elites may have been taking part in similar ritual practices since the Formative period. Likewise, Tak'alik Ab'aj Monument 94 may have pointed to similar symbolic relationships through its placement within an artificial basin connected to a water management system near Structure 13, Terrace 2.

Two other examples of human-duck imagery are Cerro de las Mesas Monument 5 (Figure 4f) and a recently uncovered potbelly sculpture from Teopantecuanitlán in Guerrero, Mexico. Although similar to the Tuxtla statuette, both of these sculptures seem to more closely correspond to the Tak'alik Ab'aj duck-billed potbelly sculpture. All share the attributes of potbelly sculptures and are dated to the Late Formative period (Martínez Donjuán 2010:73-74; Miller 1991:30). Moreover, although the Cerro de las Mesas figure is more richly adorned with a skull-cap, three-banded belt, and a necklace or collar; both it and the Teopantecuanitlán potbelly sculpture appear to have duck-bill masks as part of their ritual attire. However, the Cerro de las Mesas sculpture also has exposed genitalia which may allude to the aforementioned secondary associations between ducks and fertility.

Further to the north in central Veracruz, two plausible instances of duck-billed figures have also been found at El Tajín. These Epi-Classic period figures are part of the upper friezes of South Ball Court Panels 5 and 6 (Kampen 1972, Figs. 24 and 25). Characterized by the technique of split-representation, each figure consists of two profile views of a human body joining at the head to create a frontal depiction of a human face. The heads of these figures are decorated with headbands, diadems, ear spools, and a V-shaped plaque covering the mouth just under the nose. These plaques are analogous in both form and placement to the duck-billed masks of various Middle and Late Formative period sculptures (e.g. Figures 4b, 4c, and 4d). Interestingly, although the El Tajín carvings are much later in date, the panels underneath these friezes contain representations of human sacrifice, genital perforation, the watery underworld, and plant growth. This iconography suggests that the plausible duck-billed figures from El Tajín shared the same symbolism as their Middle and Late Formative period counterparts.

COMMENTS AND CONCLUSIONS

Given these comparisons with other duck-billed sculptures, including several potbelly sculptures from the Gulf Coast lowlands (i.e. the Tuxtla statuette and Cerro de las Mesas Monument 5), it is clear that Tak'alik Ab'aj Monument 94 is not the only Late Formative or Early Classic period potbelly sculpture with a duck-bill mask. Although the exact purpose of this ritual attire is not fully known, most interpretations converge on the link between duck imagery, agricultural fertility, and seasonal rituals. Karl Taube for example suggests that, as a class, these sculptures may have depicted divine impersonators, possibly a duck-billed precursor to Ehecatl-Quetzalcoatl associated with rain-making (2004:173). By contrast, L.R.V. Joesink-Mandeville and Sylvia Meluzin argue that these were representations of early courtly astrologers and priests (1976:99-100).

It appears then that like the later peoples of the Classic and Postclassic periods, the Late Formative period inhabitants of the Gulf Coast lowlands and the Pacific Coast considered the duck-billed being represented in the potbelly sculptures of Tak'alik Ab'aj, Cerro de las Mesas, and Teopantecuanitlán to be a water-bringer or rain-maker. As such, it is not surprising that the ancient rulers of these agricultural communities would be depicted wearing duck-bill masks. Far from representing a singular "fat god" (Taube 2004:156-161), it seems that the ritual attire of some potbelly sculptures may have been used to refer to other deities, divine ancestors, and/or their impersonation by rulers (Guernsey 2010:227).

ACKNOWLEDGEMENTS

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TAK'ALIK AB'AJ MONUMENT 14 AND THE INVERSION OF OLMEC-STYLE ART ALONG THE PACIFIC COAST

by
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Key Words
Tak'alik Ab'aj, Olmec, sculpture, Guatemala, Formative period

Abstract:

Archaeological work in the Pacific Coast region of southeastern Mesoamerica has repeatedly shown that this area boasts numerous examples of Olmec-style sculptures, rock carvings, and stelae dating to the Formative period. Scholars have tended to view these monuments as prestige items, acquired either directly from the Gulf Coast lowlands through trade and/or colonization, or indirectly through the selective emulation of art objects from neighboring polities. Regardless of how their presence in the Pacific Coast region is explained, relatively little work has been done to describe the regional differences between the Olmec-style art of the Pacific Coast with the monuments of the Formative Gulf Coast lowlands. In this paper, I examine Monument 14 from Tak'alik Ab'aj as an example of one such form of regional variation – the inversion of Olmec-style art.

INTRODUCTION

The ruins of Tak'alik Ab'aj are located within the Pacific piedmont region of Guatemala in the municipio of El Asintal, Department of Retalhuleu. The site is situated on a gentle slope flanked by the steep walls of the Río Ixchiyá barranca to the east and a series of significantly smaller trenches carved by the Arroyo San Isidro and the Río Nimá to the west. Tak'alik Ab'aj has a long history of occupation and was founded as an agricultural village during the Early Formative period (c. 2000-800 BC). Artificial terraces and Olmec-style monumental sculptures appeared at the site during the Middle Formative period (800-300 BC); while the presence of potbelly sculptures, Izapan and Classic Maya-style stelae, and later K'iché wares indicates that the site continued to be occupied through the Late Formative (300 BC – AD 250), Classic (AD 250-900) and Postclassic periods (AD 900-1524) (Schieber de Lavarreda and Orrego Corzo 2002:22-23).

Due in large part to the work of J. Eric Thompson (1943), the University of California mapping project (Graham, Heizer, and Shook 1978; Graham 1979, 1981, 1989, 1992), and the Proyecto Nacional Abaj Takalik of the Instituto de Antropología e Historia del Ministerio de Cultura y Deportes de Guatemala (Orrego Corzo 1990; Schieber de Lavarreda and Orrego Corzo 2001, 2010), the site of Tak'alik Ab'aj has become well known for its rich corpus of Olmec-style monumental sculptures. Most notable among these are colossal head sculptures, niche figures, and stelae depicting masked elite personages. Previous studies of these monuments were primarily concerned with their cultural affiliation and chronological positioning (Popenoe de Hatch 2006; Schieber de Lavarreda 2008). Some scholars sought to delineate the origins of Olmec-style art among the site's potbelly sculptures (Graham 1981, 1989, 1992) although these monuments can now be firmly placed within Late Formative period contexts (Vinicio Garcia 1997). Other researchers, by contrast, argued that the Olmec-style traits observed among some of the monuments of Tak'alik Ab'aj were the result of direct contact with Middle Formative period sites in the Gulf Coast lowlands (Clark and Pye 2000; Orrego Corzo 1990; Schieber de Lavarreda and Claudio Perez 2006).

Although the nature of the cultural processes involved is still hotly debated, there have been relatively few attempts to compare the Olmec-style art of the Pacific Coast with the Olmec-style monuments of the Formative Gulf Coast lowlands. Until now, most examinations of the monuments of the Pacific Coast have stressed the continuity of particular iconographic elements and themes with the Olmec-style art of the Gulf Coast lowlands (e.g. Clark and Pye 2000; Love 1999; Rosenswig 2010). In this paper, I take a slightly different approach by using new observations of Monument 14 from Tak'alik Ab'aj to argue that it is an example of a regional variant of Olmec-style art which inverts the themes and iconography of Gulf Coast monuments. It is hoped that detailing this regional variant of Olmec-style art will aid in future attempts to explain the presence of Olmec art along the Pacific Coast of southeastern Mesoamerica.

Figure 1. The monuments on Terrace 3, Structure 7 at Tak'alik Ab'aj as seen from the north. Photograph by the Author.

NEW OBSERVATIONS OF TAK'ALIK AB'AJ MONUMENT 14

Monument 14 is one of a series of monuments located on Terrace 3, Structure 7 in the Central Group of Tak'alik Ab'aj (Figure 1). The surface of Structure 7 contains three north-south arrangements of stones, stelae, and boulder sculptures. The central arrangement consists of a north-south line that contains Monuments 14, 15, 16/17, and 19 (in order from south to north). This central line of monuments points north to Structure 7A, an Early Classic period mound containing Stela 13 (which depicts a stylized serpent) and a plain throne/bench (Schieber de Lavarreda and Orrego Corzo 2010:191-193). A second and third arrangement of five stones and boulder sculptures are aligned along

north-south lines diverging slightly from the more central line of monuments. Excavations at this structure reveal that these groupings of stones, stelae, and boulder sculptures were moved repeatedly over time from the Middle Formative period to the Early Classic period (Popenoe de Hatch 2003:797) and some of these sculptures (e.g. Altar 46) were associated with offerings containing Late Formative period artifacts, ceramics, and an obsidian blade (Schieber de Lavarreda and Orrego Corzo 2010:194-195).

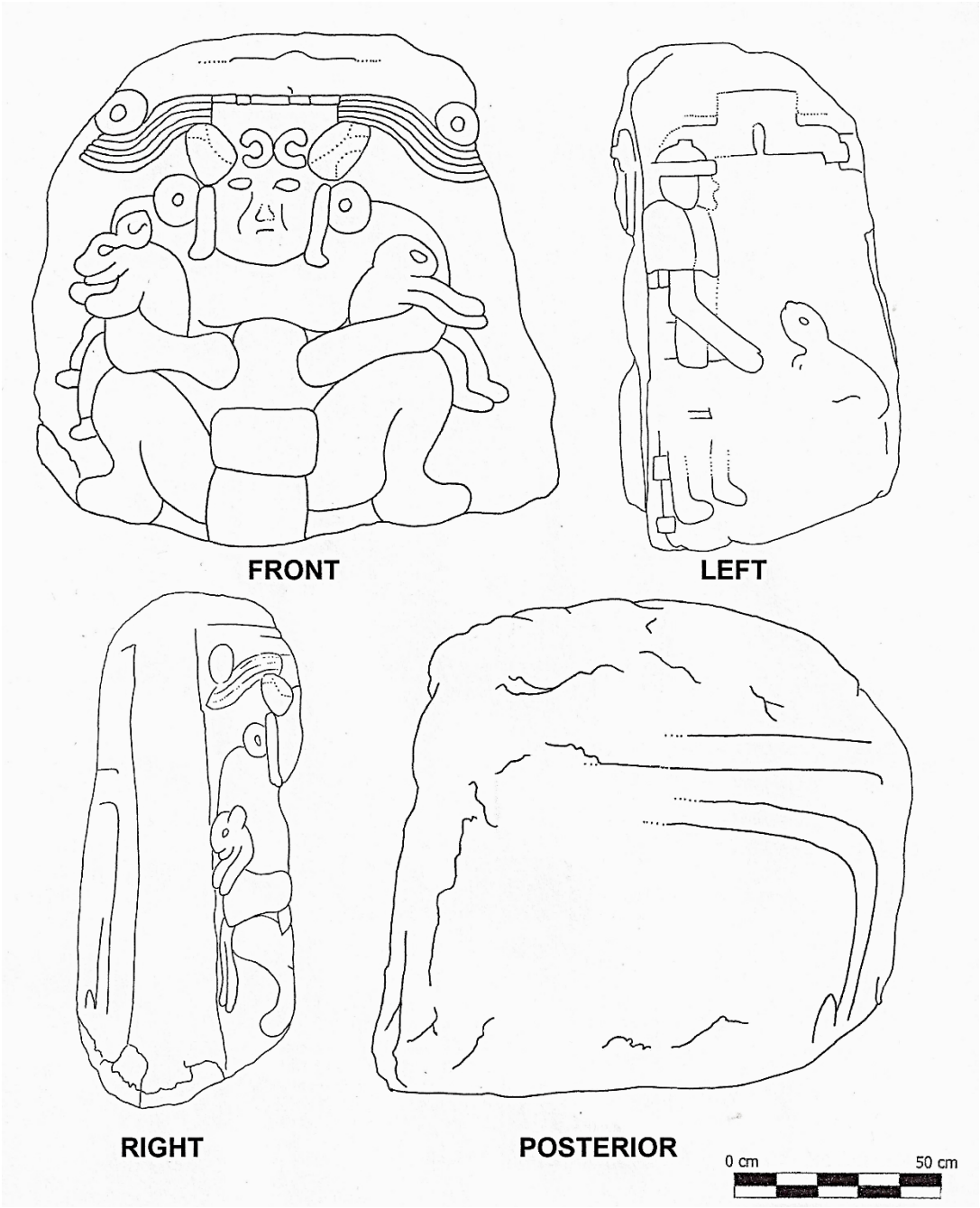

Figure 2. Tak'alik Ab'aj Monument 14. Drawings by the Author.

Measuring 125 cm in height, 130 cm in length, and 50 cm in width, Tak'alik Ab'aj Monument 14 has three carved facets (Figure 2). The front of this sculpture is well documented (Graham, Heizer, and Shook 1978; Graham 1979, 1981) and contains a high-relief carving which depicts a squatting human figure with arms bent at the elbow and hands placed above the knees. The figure's arms and legs are rendered in a schematic fashion such that the fingers and toes are not visible. Similar to the side panels of La Venta Altar 5 (Milbrath 1979:58, Figure 33), small animals are held in the crook of each of the figure's arms - a small feline on the figure's right arm and a mammalian zoomorph in the figure's left arm. The feline image is rendered with motifs such as a rounded nose, fanged mouth, a heart-shaped ear, four paws, and a long tail. The mammal's head is too heavily eroded to identify fully but appears to have included the depiction of a rounded snout. The motifs on the human figure consist of a number of elements. The figure's headdress consists of a forehead band with plumes, possibly indexing tassels of maize, emanating from both sides of the band's upper surface. The figure also has two circular ear ornaments emanating from ear guards and is depicted wearing a loin cloth suspended from a belt. The figure's face, while weathered, clearly depicts large eyes, a large flattened nose, and a downturned mouth.

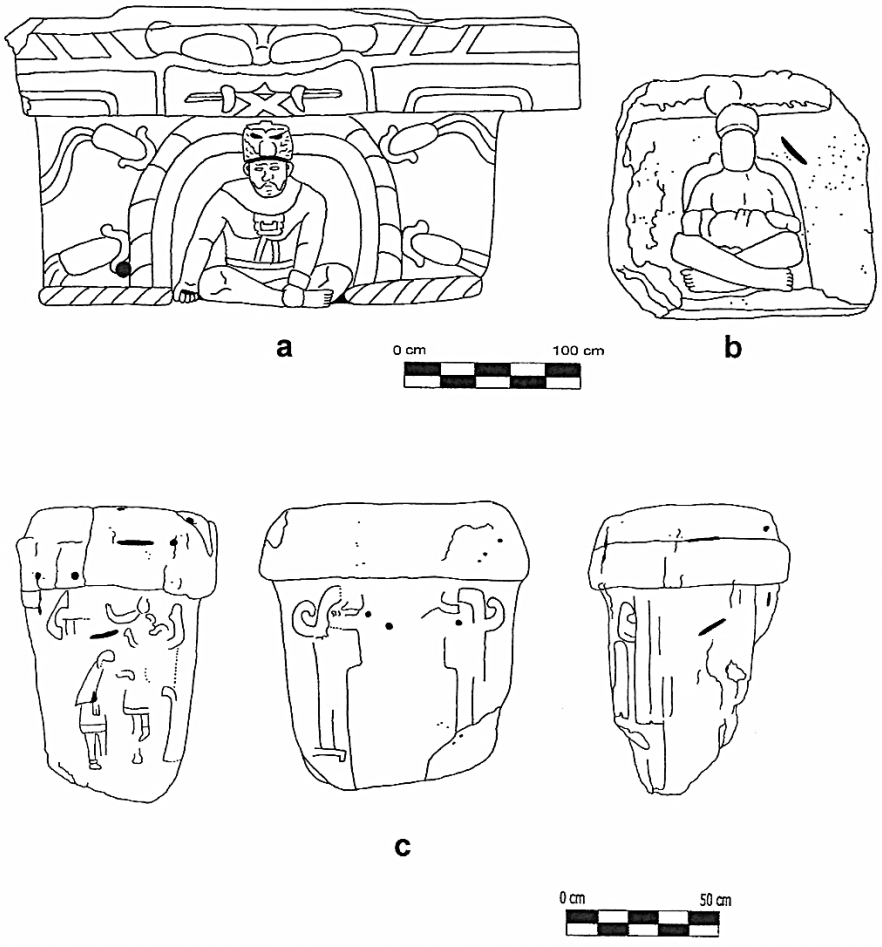

Figure 3. Thrones from La Venta: (a) Altar 4 (La Venta Park Museum, Villahermosa,Tabasco); (b) Altar 2 (La Venta Park Museum, Villahermosa,Tabasco); and (c) Altar 8 (La Venta Site Museum, La Venta, Tabasco). Drawings by the Author.

Less well known are the carvings on the sculpture's left and posterior sides. On the left side of Monument 14 are the remains of a low-relief panel, reminiscent of the side panels of La Venta Altars 4 and 8 (Figures 3a and 3c), which consists of an upper border and the remnants of a standing human figure with an outstretched arm wearing a headdress typical of Middle Formative Period elites. The figure appears to be facing a zoomorphic figure. On the posterior side of the sculpture are the highly weathered remains of a low-relief carving of a zoomorphic maw or niche, including one lower canine.

Taken together with the high-relief carving of a figure holding two animals, Tak'alik Ab'aj Monument 14 shares many themes (e.g. zoomorphic niches, elite figures holding zoomorphs or composite creatures, and paneled scenes involving elites) with the thrones from the Gulf Coast lowlands (Figure 3). The key difference is that the relative position of these themes on this sculpture has been changed from the manner in which they appear on the thrones of the Formative Gulf Coast lowlands. Gulf Coast thrones generally feature high-relief carvings of niches and niche figures on their front facets along with side panels containing low-relief carvings of elite figures with maize motifs or holding infantile composite creatures in the crooks of their arms -- see e.g., La Venta Altar 4 (Milbrath 1979:58, Fig. 31) and La Venta Altar 5 (Milbrath 1979:58, Figure 33). By contrast, Tak'alik Ab'aj Monument 14 inverts this structural order by presenting a high-relief carving of an elite figure bearing maize motifs and holding animals in the crooks of its arms on its front facet along with a low-relief carving of a niche on its posterior facet.

OTHER EXAMPLES OF THE INVERSION OF OLMEC-STYLE ART AT TAK'ALIK AB'AJ

Monument 14 is not the only sculpture at Tak'alik Ab'aj to apparently invert the structural order of Olmec-style monuments, suggesting that the inversion of the themes found in Gulf Coast monuments had salience for the Formative period inhabitants of Tak'alik Ab'aj.

Monument 8 (Figure 4)

Situated on the northwestern end of Structure 12, Terrace 2); this stela-like boulder sculpture measures 138 cm in height, 110 cm in length, and 80 cm in width. It depicts the face of a feline zoomorph in frontal view. The feline's ovoid eyes, nose, mouth, curved teeth, and whiskers are visible as are its ears. The feline's ears consist of a cleft-shaped element surrounded by several concentric rings as well as ear ornaments. Above the feline's head, a headdress is visible and bears the face, beak and feathers of an avian zoomorph. In the open maw of the feline, the arms and head of a prone human figure are clearly visible, including the figure's eyes and ears. These features suggest that Monument 8 represents a human figure emerging from the underworld via a cave represented by the feline's open mouth. From this perspective, Monument 8 is analogous to La Venta Altar 4 (Figure 3a) but changes some of its key features. While it is the niche figure in La Venta Altar 4 that is shown wearing an avian headdress as it emerges from the maws of a feline or cave; in Tak'alik Ab'aj Monument 8, it is the feline zoomorph that is decorated with an avian headdress.

Figure 4. Right Profile (left), Front (middle), and Left Profile (right) of Tak'alik Ab'aj Monument 8. Drawings by the Author.

Figure 5. Tak'alik Ab'aj Monument 23. Drawing by the Author.

Monument 23 (Figure 5)

Originally discovered at the northern end of an arrangement of four huge monuments in front of Structure 3, a small earthen structure located just north of the pyramidal Structure 5 on Terrace 3, this sculpture depicts a seated niche figure that was apparently carved from a colossal human head. This monument measures 184 cm in height, 120 cm in length, and 156 cm in width. The niche figure is depicted as cross-legged. As a niche sculpture, Monument 23 is similar to Tres Zapotes Stela D and Izapa Monument 2, and Tak'alik Ab'aj Monument 67 (see Figure 6), but the niche does not have any of the zoomorphic attributes found on these other monuments. At the same time, Tak'alik Ab'aj Monument 23 shares many physical characteristics associated with the colossal heads of the Gulf Coast, including the flattened back of the head, the proportion of the ears, and their placement relative to the rest of the sculpture (Porter 1989). This suggests that Monument 23 was once a colossal head that was later re-carved into a niche sculpture, an apparent reversal of the recycling practices associated with the Gulf Coast thrones.

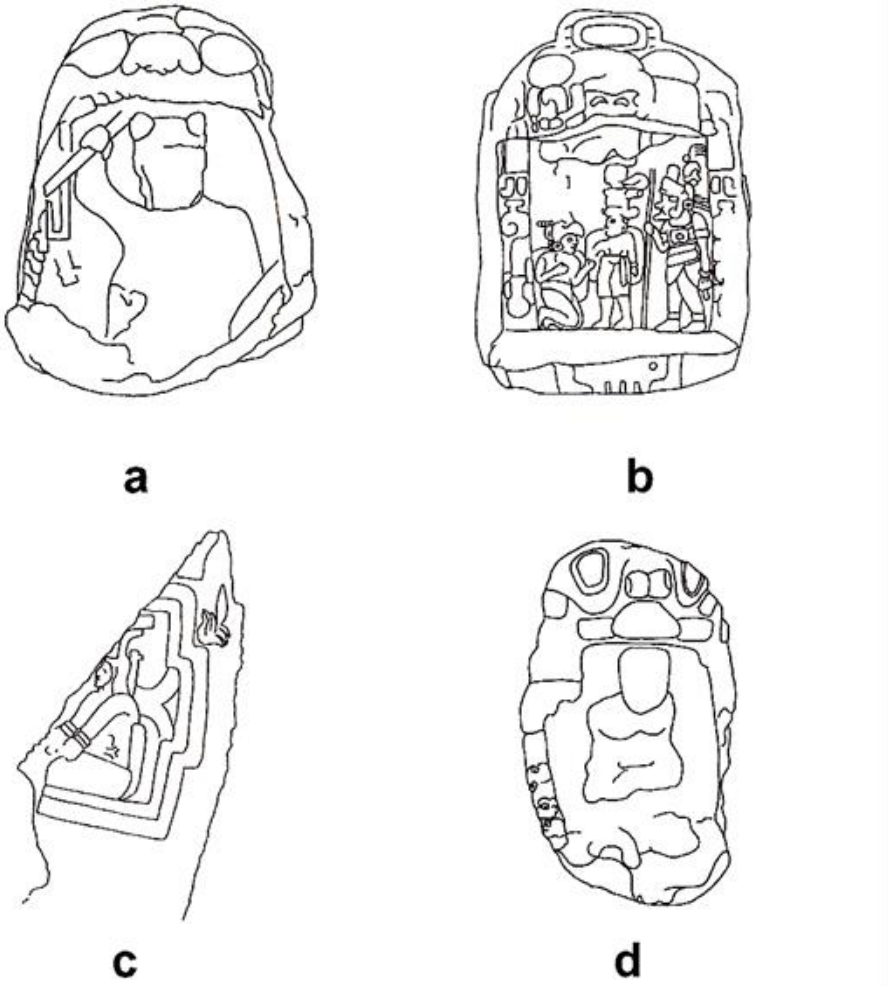

Figure 6. Middle Formative Period Sculptures with Niche Figures: (a) Tak'alik Ab'aj Monument 67 (Tak'alik Ab'aj, Guatemala), (b) Tres Zapotes Stela D (Tres Zapotes Site Museum, Santiago Tuxtla, Veracruz), (c) Chalcatzingo Monument 13 (Chalcatzingo, Morelos), and (d) Izapa Misc. Monument 2 (after Lowe, Lee and Espinosa 1982:178). Drawings are not to scale. Drawings by the Author.

Monument 15 (Figure 7)

The front of this deeply-incised boulder sculpture represents the head and arms of an anthropomorphic figure shown in a crouching position within a shallow niche. The sculpture measures 84 cm in height, 120 cm in length, and 52 cm in width. The face of the figure is rendered in frontal view but has been erased except for the remnants of a nasal protuberance. Large circular full frontal ear plugs are also present. The figure's arms, emanating from large bulging shoulders, are bent at the elbow with the forearms brought inward in front of the chest and under the head. The fingers on the hands are undifferentiated or may be clenched in a fist. In addition, the overall representation of the figure matches the contours of the boulder. By contrast, the posterior side of the sculpture contains a number of zoomorphic elements – i.e. hind legs and a tail – similar to those of a feline. Interestingly, the top of the tail or the paws of the hind legs appear on the figure's right side on the front facet of the sculpture. As a whole, this boulder sculpture has imagery suggestive of a close social relationship between feline to human.

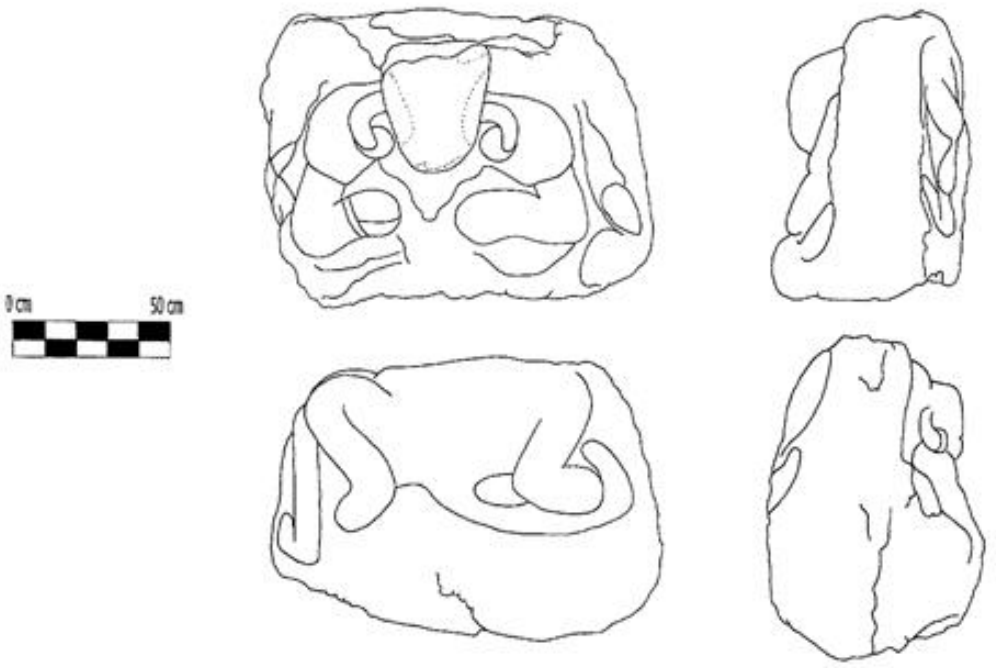

Figure 7. Front (top, left), Left Profile (top, right), Posterior (bottom, left), and Right Profile (bottom, right) of Tak'alik Ab'aj Monument 15. Drawings by the Author

In terms of its subject matter, Graham (1992) suggests that the entire boulder sculpture is analogous to the Olmec-style thrones of the Gulf Coast, such as La Venta Altar 4 (Figure 3a). From this perspective, the front side of the boulder (i.e. the side depicting the anthropomorph) is similar to a niche figure; while the back side of the boulder (i.e. the side with the feline traits) is analogous to the throne as a conventional representation of a jaguar. The posture of the human figure, however, is atypical of the niche figures represented on the thrones from the Gulf Coast. And while the jaguar imagery of some thrones is clear from their feline facial motifs (i.e. the almond-shaped eyes, stylized fangs and open mouth/niche), it must be noted that the entire composition of these sculptures is intended to be the body of a jaguar. On the basis of its iconographic elements and motifs alone, Monument 15 does not appear to have had any of these connotations. Rather, other

human-feline relationships seem to be represented in this monument. For instance, the sculpture may refer to a ruler's animal alter ego (compare to Gutíerrez and Pye 2010:47-48) although it may also be suggestive of a human wearing a jaguar pelt or a human-jaguar transformation scene.

CONCLUSIONS

Beginning with a re-examination of Tak'alik Ab'aj Monument 14, this brief paper has sought to describe a regional variant of Olmec-style art that is specific to the Pacific Coast region of southeastern Mesoamerica, especially Tak'alik Ab'aj, and features the structural inversion of iconographic elements and motifs typically found on the Olmec-style monuments of the Gulf Coast lowlands. In particular, it appears that the Formative period inhabitants of Tak'alik Ab'aj favored the themes associated with Gulf Coast thrones such as niche figures. In Monuments 8 and 23, the niche theme appears to have been the focus of these monuments resulting in the inversion of decorative motifs (e.g., the avian headdress on Monument 8) or monument recycling practices (e.g., Monument 23). By contrast, Monuments 14 and 15 appear to have reversed or at least significantly changed the structural order of the defining elements of throne sculpture from the Gulf Coast lowlands. As a result, the niche theme appears to be relatively unimportant in these latter monuments.

If these observations are correct, then many of the Olmec-style monuments of Tak'alik Ab'aj serve as evidence that the Formative period inhabitants of the Pacific Coast not only used many of the basic themes and iconographic elements found in the Olmec-style art of the Gulf Coast lowlands but developed new ways of expressing these themes by inverting the order in which these themes typically appear in the Gulf Coast lowlands. Although it is beyond the scope of this paper, such regional stylistic innovation requires an explanation. One possibility is that the sculptors of Tak'alik Ab'aj developed their own "tradition" or "school" of carving Olmec-style monuments. Another possibility is that the inversion of Olmec-style art represents a degeneration of the Olmec-style but such an interpretation makes the *a priori* assumption that Olmec-style art is derived primarily from the Gulf Coast lowlands. A third potential explanation, not wholly exclusive of the first, is that the inversion of Olmec-style art represents a blend of elite art, perhaps appropriated from the Gulf Coast, and more popular forms of material expression specific to the Pacific Coast. Other interpretations will certainly be advanced, however it is hoped that this paper has amply demonstrated that a more nuanced appreciation of regional differences in Olmec-style art is an important part of developing a better understanding of the social and political practices which underlie this early Mesoamerican art form.

ACKNOWLEDGEMENTS

The observations described in this paper were made during a detailed study of the Olmec-style sculptures at Tak'alik Ab'aj in September 2009 (IDAEH Permit No. Ci/11-09). I would like to thank Liccda. Christa Schieber de Lavarreda and the other members of the Proyecto Nacional Tak'alik Ab'aj for facilitating my research in Guatemala.

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Peter D'Arcy Harrison, September 19, 1937-December 15, 2013

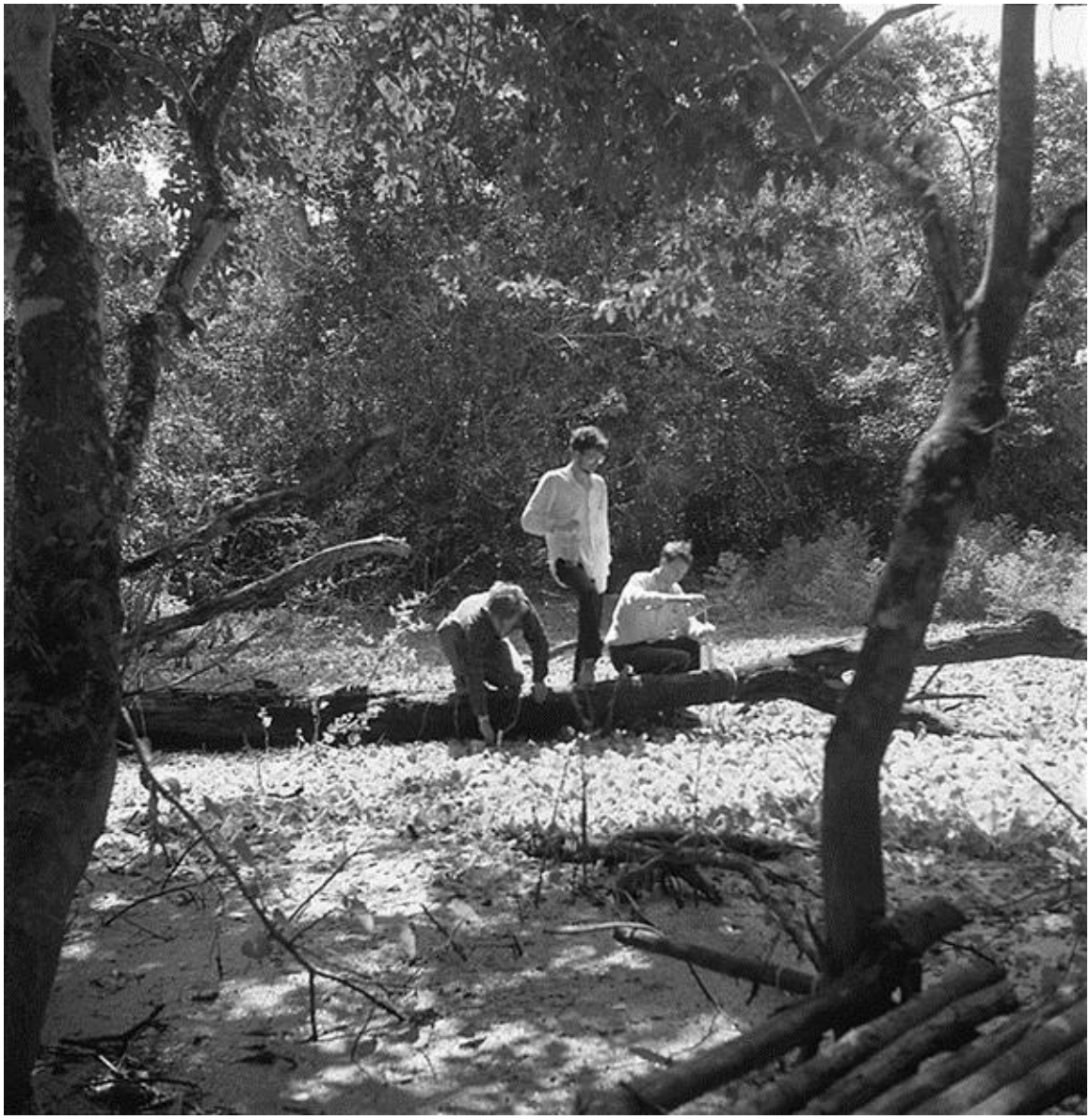
Peter D'Arcy Harrison was born in Toronto, and received his BA and MA from the University of Toronto and his Ph.D. in Anthropology from the University of Pennsylvania. Peter worked at Tikal in Guatemala for many years. He also taught at Trent University in Peterborough, Ontario from 1966-76. In New Mexico he was a Senior Research Associate at the Maxwell Museum, and at the time of death was the director of the Tikal Project West. Peter is survived by wife of 47 years Alexandra; son Andreas (Leia) of Willowbrook, Illinois. (This is edited from the original obituary that appeared in ***The Albuquerque Journal,*** December 20, 2013.)

Publicity shot, Peter Harrison with Burial 77 in situ, April 2, 1962. (William R. Coe, University of Pennsylvania, All rights reserved. University of Pennsylvania Museum.)

He was the author of many books and articles, including ***The Lords of Tikal*** (1999).

Here we present several photographs of Peter taken during his fieldwork at Tikal in the early 1960s.

Peter Harrison and Chris Jones on the trail to El Encanto, 1964. (Dennis Puleston, University of Pennsylvania Tikal Project Negative 64-37-69, All rights reserved. University of Pennsylvania Museum.)



Dennis Puleston, Christopher Jones, and Peter Harrison at the Aguada la Valanza, on their way to El Encanto. (Dennis Puleston, University of Pennsylvania Tikal Project Negative 64-37-66, University of Pennsylvania Museum. All rights reserved.)

GRAMMAR IN THE SCRIPT

METEOR SHOWERS IN THE SCRIPT: PART 1
by Hutch Kinsman

Apparently the reader has survived "Playing With the Sharks" and has returned to risk more damage and destruction, and even pestilence, this time from the heavens above. Fortunately there is no "upper jaw protrusion" by the Tlaloc war serpent, but it seems likely this serpentine demon showed up in the Maya region in the 4th century AD in the form of flaming arrows hurled by atlatls by none other than Spearthrower Owl (Freidel, Schele and Parker, 1993:301-302, figures 7.9 and 7.10), interpreted as meteors by Taube (2000:298, figure 10.17d) right in the middle of the ball court at Tikal. Yax K'uk' Mo', founding ruler of Copan is carved on Altar Q holding a flaming dart that Taube likens to shooting stars (2000:296). See figure 1 below.

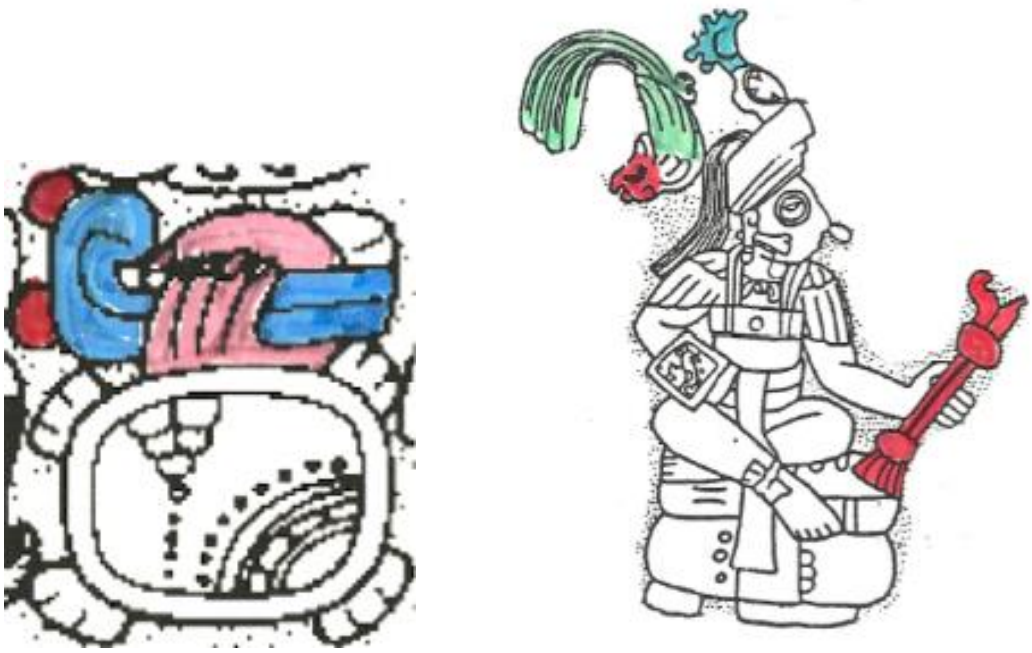


Figure 1. a. Spear-thrower Owl glyph from Tikal Stela 31; stars are indicated by red circles attached to the end of the atlatl (drawing by W Coe). b. Copan Founder Yax K'uk' Mo' holding flaming dart (drawing by L. Schele).

This is the first part of a two part series discussing the Maya and meteor showers and whether or not the Maya recorded observations of either individual meteors or annual meteor showers. Information abounds in the literature to show that the Maya and other cultures in Mesoamerica were aware of at least individual meteors and comets. The codex Telleriano-Remensis (www.famsi.org) records several "smoking stars", including the appearance of Halley's comet in the year 1531 (Köhler, 2002:2) on page 44r. Aveni discusses this record and more (2001:27, figure 9b). Kelley points out glyph B10 on Tikal Stela 5 that could be read *budz ek,* "smoking star" (1976:39, figure 9, 42).

Figure 2. BUDZ-EK'. B10, Tikal stela 5 (Drawing by W. Coe) (color added by author).

Milbrath mentions Kelley's *Budz Ek* and more historical and contemporary Maya information in her section on comets, meteors and supernovas (1999:250-251).

Picture 10 on page 58b in the eclipse table of the Dresden codex may be a depiction of a falling star (Kelley, 1976:40, figure 10). See figure 3 below.

A1

Figure 3. Picture 10, Dresden page 58b.

Glyph at A1 is interpreted as "falling star" due to the *star* sign attached to an upside-down body, while what may be termed "excrement" or even an obsidian blade itself may be found below the sky band between the figure's legs. The term for "excrement" *ta'* is a homophone for *taj,* obsidian, another term for meteor.

Other terms for comets and meteors or shooting stars found in the Maya dictionaries

The Maya Cordemex (Barrera, 1980) contains several entries for "cometa": *buts' ek' ,* "cometa crinito como el que apareció el año 1577 [cometa de cabellera, en otra part dice "cometa caudata", de cola] (page 72); *chamal ts'utan,* "cometas pequeños" (page 82)*; halal ek',* "cometa que corre" (175); *ik' omné*, "1, 111: cometa caudata o de cauda o cola. 2. *buts'ek'* (page 267); *k'ak'nah-ek'* , "cometa grande", (page 367).

Tzotzil lists *xojob k'ak'al*, "fiery comet", "cometa de los que echan rayos" from *xojob,* "sunbeam", "rayo del sol" (Laughlin, 1988:303).

Buts' means "smoke, to smoke, to make smoke", "humo, humear; hacer humo" in Barrera (ibid.:72) and also appears as entry 064, **b'utz'* s. "humo//smoke (Chl, Chn, Cht, Chr) (Kaufman and Norman, 1984:117). "Cometa que corre", 'comets that run' probably refers to meteors (Köhler, 2002:1). "*Chamal"* means 'tobacco' or 'cigar', and *ts'utan* (Barrera et al, 1980:894) means "sorcerer"; *chamal ts'utan* means "cigar of the devil" but Galindo (1994:111 referenced in Milbrath, 1999:250) says that "when these cigars are discarded, they are transformed into meteors." *Ik' omne'*, may refer to a comet as "spirit/wind foam/froth? tail?", "frothy tail wind/spirit?".

What this essay is not

This essay, however, is not about what has been seen or written about in the astronomical history of Mesoamerica. One can read the authors mentioned above such as Aveni, Milbrath, Taube and Köhler for valuable background information. In all the literature already written, however, there has been no mention of specific dates of meteor showers that have been observed in the New World. In fact, there has been no serious discussion of actual meteor showers the Maya might have seen. As careful as they were about recording celestial bodies and eclipses, undoubtedly the Maya kept records of annual events such as meteor showers, though these records as such surely must have been burned or otherwise destroyed. This essay is more about what the Maya could have seen and recorded, and may have embedded in the codices or Classic inscriptions. China, for instance, began making reliable recordings of observations starting in 687 BC; Japan and Korea also made early observations (Imoto and Hasegawa, 1958:134-137, Table 1).

Which meteor showers could the Maya have seen?

It is quite possible the Maya saw some showers that no other civilization saw in the historical record, but it is more likely that they observed some of the same showers that China, Japan, Korea and Europe recorded, if the ancient records are any indication (Imoto and Hasegawa, 1958:134-137) (Jenniskens,

2006:598-611). Some of the showers seen back then have no equivalent modern shower; these have been numbered by Jenniskens (ibid.). Most likely only four named modern showers however seen today could have been seen by the Pre-Classic and Classic Maya. Those are the Lyrids, Eta Aquariids, Perseids and Orionids, named for the constellation from which each shower apparently originates Lyra, Aquarius, Perseus and Orion respectively.

Meteor Showers

What are meteor showers anyway? We occasionally see individual shooting stars or even bright fireballs, whereas a shower will have a display of these meteors of any where from 10 meteors per hour up to 100 per hour. These showery displays are actually the remnants of typically millimeter-sized dust particles that are ejected from a mother comet when that comet passes near the Sun (*perihelion*). These ejected dust particles, now called meteoroids, spread out but within the basic orbit of the comet itself. Soon the meteoroids are spread throughout the orbit in a meteoroid stream that may or may not be in the way of a planet such as earth that might fly through the stream. Once the meteoroid enters the Earth's atmosphere it is called a *meteor.* If the meteor impacts the ground it becomes a *meteorite.* Figure 4 shows the stream in its relation to the stars and planet earth and referenced from the Sun, but not dependent on seasonal aspects of the Sun.

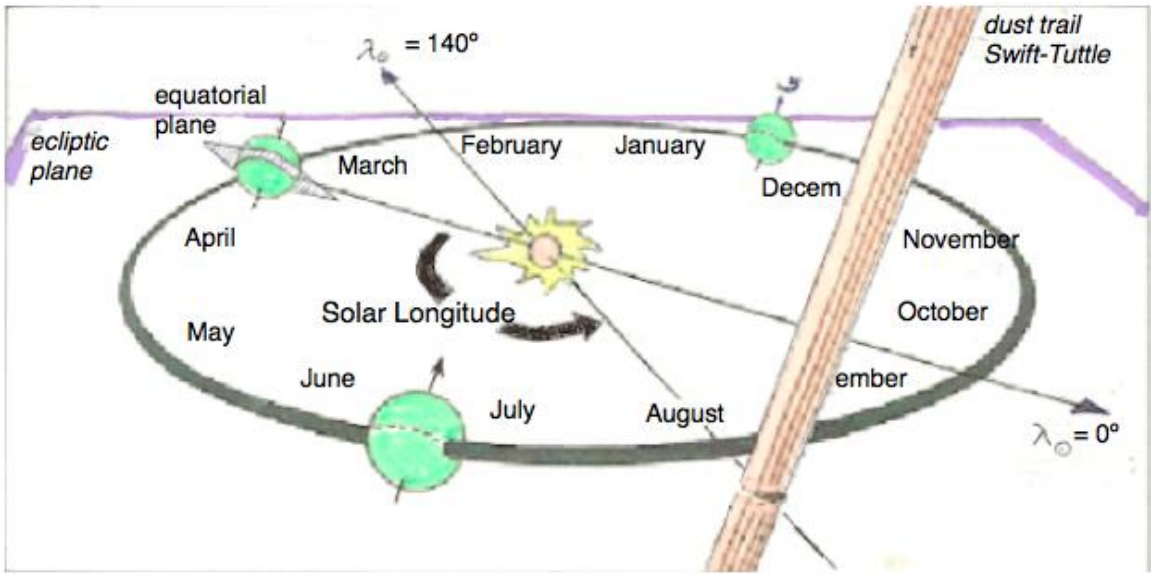


Figure 4. Meteoroid stream and definition of solar longitude. The modern day Perseid meteoroid stream is shown at a solar longitude of 140°, designated by the Greek letter *lambda* (after Jenniskens, 2006:159, figure 11.4).

In the last 2000 years most of the meteoroid streams that we and the Maya have been interested in have maintained a somewhat relative constant position in relation to the stars. Knowing that the streams maintained a sidereal position was discovered in 1837 (Herrick, 1837:176-180). By knowing the length of the sidereal year of the Earth, one can figure out when the Earth will return to the same spot in space the next year or any other year. The current accepted length of the Earth sidereal year is 365.256 days. Recently Grofe determined that the Maya measured the length of the sidereal year as 365.255 days (2011:85) while this author determined another formula that the Maya may have used where the sidereal year equaled 365.259 days (in press).

Because of the tilt and wobble of the earth's axis, the peak number of the well-known Perseid meteor shower was seen (in the early morning) on August 12 in 2013 but would have been seen on July 23 back in AD 775, even though the position in space of the stream itself has not changed. Once a specific date has been converted to an absolute position of a body in its bearing to the Sun, called *solar longitude*, then dates of different years can be compared, as described below. Why would the Maya care about the sidereal length of the Earth year? One reason might be to track annual meteor showers.

Meteor showers: equating positions of the meteoroid stream over a long time period

The positions of these streams relative to the Sun, i.e. solar longitude, indicate a very specific point in space measured from a known reference point. That reference, the spring or vernal equinox, is the intersection where the equatorial plane of the Earth crosses the Earth's orbital plane around the Sun (ecliptic) (Jenniskens, 2006:158-159, Figure 11.4) (author's figure 4). The reference point itself is currently based on the J2000 coordinate system when the Earth was fixed in time and space on January 1.5, 2000 (Universal Time). Annual meteor showers are typically labeled by their solar longitude, designated by the Greek letter lambda. Once a specific date is converted to the solar longitude, or absolute position in space, then the position of any body relative to the Sun, such as the Earth, can be compared to another body, such as a meteoroid or a meteoroid stream. If the meteoroid stream and the Earth have the same solar longitude and are the same radial distance from the Sun, then a meteor shower will occur as the Earth passes through that stream each sidereal orbit. The Lyrid meteor shower occurs at a rather narrow solar longitude range of 32.0º-32.5º because it is a Long-Period shower with a high inclination angle relative to the ecliptic plane. The Eta Aquariid meteor shower occurs in the solar longitude range of 40.2º-45.0º, the Perseids from 137.8º-141.7º (see figure 4) and the Orionids from 201.9º to 207.5º.

Comets and meteoroid streams

Since every meteoroid stream originates from a parent comet, once the orbit of the comet is known, the orbit of the stream itself can be calculated (Jenniskens, 2006:10-11) (Yau, Yeomans and Weissman, 1994:305-316). The origination of the comet, then, obviously determines the type of stream. There are basically three types of comets, classified according to their length of time in one orbit (*period*) and the inclination, or angle of the plane of that orbit to the orbital plane of the Earth around the Sun (ecliptic). Those types are Long-Period (LP), Halley-type (HT) and Jupiter-family comets (JFC). Long-Period comets originate from the large spherical cloud of cometary material surrounding our solar system known as the Oort Cloud (Oort, 1950:91) where the period is greater than 200 years. Halley-Type comets also originate from the Oort Cloud and have a period greater than 20 years and less than 200 years. The orbits of Long-Period and Halley-Type comets are usually inclined well out of the ecliptic. See figure 5 below. Jupiter-Family Comets usually originate from the Kuiper Belt and have a period 20 years or less and lie in the ecliptic plane, greatly affected by the gravitational pull of the planets because their farthest point from the Sun (*aphelion*) is about the same as the radius of the orbit of Jupiter (Edgeworth and Kuiper referenced in Jenniskens, 2006:62-65).

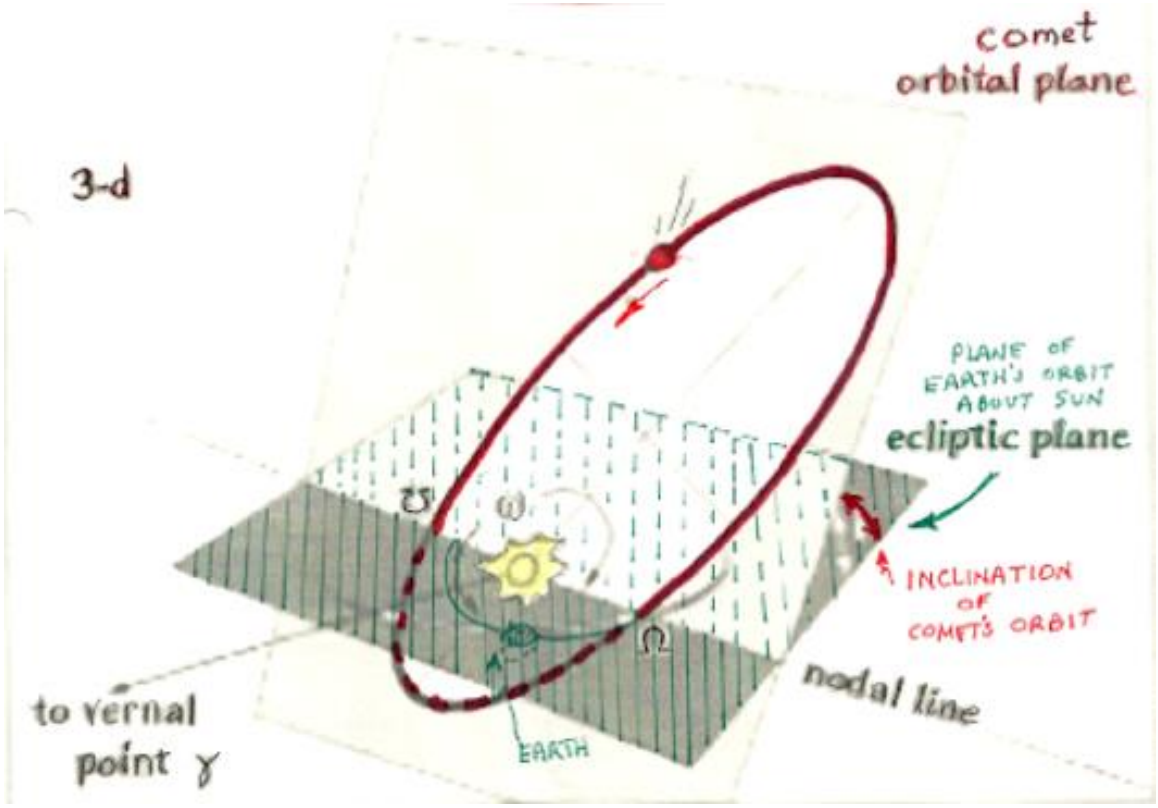


Figure 5. Orbit of comet in relation to orbital plane of the Earth-Sun (ecliptic) (after Jenniskens, 2006:59, figure 5.1).

Ritual of the Bacabs and Meteor Showers

An important link seems to be made by Roys in the incantations for seizures in the Ritual of the Bacabs. Shamans interacted with the spiritual world through chants, dances, hallucinogens, incantations and conjuring, invoking deities such as the Bacabs. The macaw was known to be responsible for seizures and, thus, meteors that originated from the offspring of fire or fire-drilling in the Pleiades constellation, or "rattles of the rattlesnake," from the area of the sky known as Na Ho' Chan, or "First Five Sky" (1965:xix, 6-10). On the Classic ceramic vessel K688, twisted cords are shown in Na Ho' Chan which Taube interprets as fire-drilling besides the already known interpretation of rebirth and creation; in fact, Taube states that the making of fire is "tantamount to creation and birth" (2000:292). See figure 6 below.

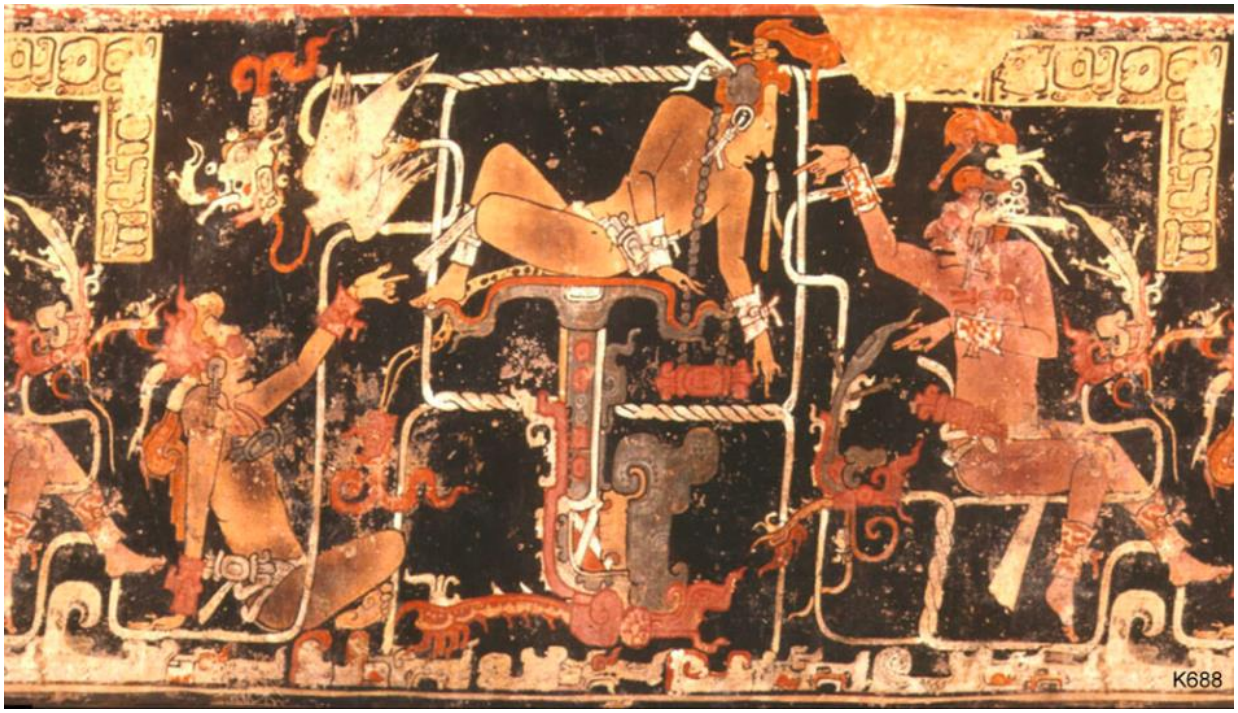


Figure 6. Painting of Na Ho' Chan, "First Five Sky" with twisted cords that may represent fire-drilling and thus meteors and also rebirth and creation (courtesy of J. Kerr, ceramic vessel K688).

There is a term *mehen ek'* , "los astilejos; constelacion del cielo" (mtm [Motul Mayan-Spanish], Bolles, famsi.org) where "los astilejos" means the "fire-drillers" which Milbrath concludes is a constellation located somewhere in Orion and/or Gemini (1999:267). It seems that possibly "los astilejos" may mean something closer to "fire-sticks", the sticks used to drill fire. Since Orion may contain the three stones or stars of the hearth of creation (Looper, 1995:24-25) (further references by additional authors provided in Part 2), it may be that the Orionid meteor shower is thought of as the sparks from the fire sticks that started the original fire of creation. A scene from the Madrid codex shows two god M figures in a fire- drilling fire scene. See figure 7 below.

Figure 7. Two god M figures in fire-drilling scene from the Madrid codex, page M51a (Codex Madrid or Codex Tro-Cortesianus, courtesy of famsi.org).

Summary of Part 1

A background of information on meteor showers and some pertinent notes from the Maya literature, both in the Classic inscriptions and codices has been presented. Four of the named meteor showers that the Maya most likely observed were the Lyrids, Eta Aquariids, Perseids and Orionids. These meteor showers occur annually (as all do) on a sidereal basis, that is in relation to the stars. Solar longitude is defined as basically the bearing of a body in relation to the sun (in the ecliptic plane) measured from the intersection of the Earth's equatorial plane with the ecliptic plane on the day of the vernal equinox. The Ritual of the Bacabs makes an important connection of the scarlet macaw to fire and fire-drilling and thus meteors in an area of the sky known as Na Ho' Chan. Important questions to keep in mind would be "Why would the Maya care about the length of the Earth sidereal year?" and "What interest would the Maya have in meteor showers?"

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