Ashes to Caches: Is Dust Dust Among the Heterarchichal Maya?

Marshall Joseph Becker
Welcome to the “28 – year book” of The Codex.

waxak k’atun jun tun hun

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.

This new issue of The Codex is arriving during a pandemic which has shut down all normal services in our state. Rather than let our members and subscribers down, we decided to go digital for this issue. And, by doing so, we realized that we could go “large” by publishing Marshall Becker’s important paper on the contents of caches in the Maya world wherein he calls for more investigation into supposedly “empty” caches at Tikal and at other Maya sites.

Hattula Moholy-Nagy takes us back to an earlier era in archaeology with her reminiscences of her days at Tikal in the 1950s and 1960s. Lady Sharp Tongue got her column in just before the shut-down happened, and she lets us in on some secrets in Lady K’abal Xook’s past at her palace in Yaxchilan.

Unfortunately, we had to sacrifice one of our regular features, Hutch Kinsman’s “Grammar In the Script Column.” It will return in the next volume.

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.
ASHES TO CACHES: IS DUST DUST AMONG THE HETERARCHICHAL MAYA?

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“Abraham spoke up again, ‘Here I am presuming to speak to the Lord, I who am but dust and ashes.’”
Genesis XVIII 27 (Speiser 1964: 132-133)

“That, while the earth shall be cast upon the Body by some standing by, the Minister shall say,
‘. . . earth to earth, ashes to ashes, dust to dust;’"
(Book of Common Prayer 1945: 333)

ABSTRACT

Caches and burials, or specially placed deposits of all types, among the Classic Period lowland Maya represent the material remains of religious or ritual behaviors. These behaviors are shared by people of all economic levels but expanded according to available economic resources. Discussions of these aspects of material culture commonly focus on elite or upscale examples found within various contexts. At Tikal, as at other Lowland Maya sites, the expression of these rituals varied by the wealth of the participants. Elite offerings involved greater quantities of precious and durable goods such as jade, marine shell, and elaborate lithic items. [FIGURE 1] Less affluent Maya utilized wooden or paper equivalents in performing these same rituals.

Perishable goods and objects of lesser economic value, including foodstuffs that were placed in caches, today survive, with rare exception, only in the form of the dust of decay. The “ashes” from burned items, perhaps even some wood ash associated with human remains, may have been buried in special deposits. Narrowing our analytical focus on ashes or dust, or what may be the remains of goods not readily evident in these ritual contexts may provide direct evidence for cultural uniformity that has been obscured by time and our techniques of study. Traditional macroscopic study may blur our understanding of Maya society. Directing greater attention to the recovery and analysis of ephemeral materials from contexts representing all economic strata reveals the cultural uniformity underlying Maya society. Similarities among the categories of goods found as grave offerings, and parallels in caching behavior, confirm the heterarchichal organization postulated for the Classic Period Maya.
RESUMEN

Los esccondites y entierros, o depósitos especialmente colocados de todo tipo, entre los mayas de las tierras bajas del Período Clásico representan los restos materiales de los comportamientos religiosos o rituales. Estas conductas son compartidas por personas de todos los niveles económicos, pero se expanden de acuerdo con los recursos económicos disponibles. Las discusiones sobre estos aspectos de la cultura material comúnmente se centran en ejemplos de élite o de alto nivel que se encuentran en diversos contextos. En Tikal como en otros sitios de las tierras bajas mayas, la expresión de estos rituales variaba según la riqueza de los participantes. Las ofertas de élite implicaban mayores cantidades de bienes preciosos y duraderos como jade, concha marina y elaborados artículos líticos. [FIGURA 1] Los mayas menos ricos utilizaron equivalentes de madera o papel para realizar estos mismos rituales.

Los bienes y objetos perecederos de menor valor económico, incluidos los alimentos, que se colocaron en cachés hoy en día sobreviven, con una rara excepción, solo en forma de polvo de descomposición. Las "cenizas" de los elementos quemados, tal vez incluso algunas cenizas de madera asociadas con restos humanos, pueden haber sido enterradas en depósitos especiales. Limitar nuestro enfoque analítico a las cenizas o al polvo, o lo que pueden ser los restos de bienes que no son fácilmente evidentes en estos contextos "rituales" puede proporcionar evidencia directa de la uniformidad cultural que el tiempo y nuestras técnicas de estudio han oscurecido. El estudio macroscópico tradicional puede desdibujar nuestra comprensión de la sociedad maya. Dirigir una mayor atención a la recuperación y análisis de materiales efímeros de contextos que representan todos los estratos económicos revela la uniformidad cultural que subyace a la sociedad maya. Las similitudes entre las categorías de bienes encontrados como ofrendas graves, y paralelos en el comportamiento de almacenamiento en caché, confirman la organización.

Figure 1. Carved jade pendant from Tikal Cache 140. (William R. Coe, University of Pennsylvania Tikal Project Negative C63-4-4, All rights reserved. University of Pennsylvania Museum.)
INTRODUCTION

“Archaeological remains always present a skewed image of the human past, supplying bountiful information about some aspects of ancient societies but a dearth about others” (Carrasco et al. 2009). Of these “others” these authors observe that many “leave little or no physical trace” We may, however, infer the behaviors associated with these ephemeral deposits by paying closer attention to the analysis of recovered materials such as “ash” in addition to making inferences drawn from situations that reveal more substantial types of evidence. Not surprisingly, finds of jade artifacts attract enormous attention while deposits containing only ashes do not. In the Maya lowlands the interpretation of much evidence had been retarded by the distracting nature of the pretty stuff found with the rich and the corollary failure to recognize that all economic strata within a society in an individual city shared a common culture (cf. Lucero 2010). Only unequal access to resources colored the expression of behaviors among the various participants within each polity.

The rituals of both the wealthy and the poorer members of Maya society can be better understood through examination of very specific finds. Laura Filloy Nadal describes a rare case at a Mexica site where unusual preservation of normally perishable artifacts has provided a glimpse into impressive rituals of their past. Filloy Nadal (2001) describes a Mexica cache found early in 2001 that includes astoundingly well preserved artifacts such as elaborate paper (bark cloth?) headdresses, cotton cloth with feather decorations, images modeled from rubber or copal, as well as several jaguar and serpent skins (see also Danien 2000; also Bell et al. 2004). These preserved paper artifacts studied by Nadal reveal the presence of objects that in themselves had relatively low value when compared with jade and even with some types of bird feathers that had been used in Mexica rituals.

Similarly, the Maya created paper substitutes for items of jade and other high value products, thus giving poorer people access (cognitively) to items with a wide range of values. These inexpensive paper items appear as substitutes for fine jades, revealing that ritual patterns could be shared regardless of a person’s economic status. However, perishable equivalents used by the less wealthy usually leave little or no physical traces over several centuries.

The iconography of the lowland Maya also reveals what kinds of items we can expect to find as offerings made by the elite and, by extension, among the commoners. Scholars who study the iconographic and the epigraphic records that refer to burning (Stuart 1998) commonly infer dedication and other rituals (cf. Osborne 2004). In most cases all we actually recover from perishable artifacts is dust. But perhaps we should take more seriously the finds of dust or ashes that derive from various contexts in elite as well as poor areas of a site. Are the dust and ashes discovered in “ritual” and other deposits the equivalent of a handful of ash from a tiny cache pit? Do they reveal similarities in ritual throughout all economic strata? Do these ashes derive from striking artifacts in perishable form standing in for valuable equivalent items? All of these finds of ash should be analyzed before they can be properly evaluated. Ashes, or what they represent, merit considerable interest from the archaeological community. Ash samples should be recovered from any suspicious context. Their organic origins may aid in our interpretation of the processes that led to their deposition; and perhaps even reveal the cultural meaning of the behaviors motivating their deposition.
After decades in anthropological obscurity, material culture studies re-emerged in the 1980s to provide insights into human behavior. Cultural anthropologists such as Igor Kopytoff (1986) and others (see Appadurai 1986, also Walker 1995: 72) have resurrected the study of the possible functions of individual artifacts and pointed out the insights these items may reveal. Obviously these concerns tend to focus on relatively intact objects such as those held in museums as well as those in the hands of living cultural performers who continue to lead “ethnographic” lives. Archaeologists have always had to wrestle with these matters, generally viewing the problem through examination of fragmentary or partially preserved materials. The recent resurgence of interest in material culture may now be extended to the examination of less obvious indicators of ritual activities. Considered here are various cached contexts from which only ashes or dust have been recovered. These ephemeral traces of possible rituals serve as a focus for discussion of the meaning of ashes as found in in various contexts in the Maya area.

Recovery of one category of material, however, remains uncommon even in Maya archaeological programs of the present century. Rarely sampled and tested are the ashes or dust commonly encountered in purposeful, or deliberate, “ritual deposits” now commonly called “caches” or votive offerings, but perhaps better identified as “placed deposits.” Several categories of material commonly glossed as “ash” often are the only “materials” recovered from cache pits and other ritual contexts. These include charcoal, lime (quicklime), ash (potash) of various origins (wood, paper or bark cloth), and sometimes materials believed to be cremated human remains (cf. Becker 2016). While each of these is a separate category (see Becker, Turfa and Algee 2009: 23-25), specialized knowledge may be required to differentiate among them. Aside from the efforts of Cameron McNeil (2006), specific analytical studies of what is believed to be ash remain rare, and the sources or materials that produced these ashes generally remain unknown. In most of the earlier reports the authors were uncertain as to whether these powders were actually the product of ash from burning, the dust from naturally decayed organic materials such as wooden furniture, or a combination of both. Increasingly we are finding greater attention paid to these materials. McNeil suggests, after observing numerous examples in the field, that decayed organic matter tends to be brown in color and seems to retain some characteristics of organic materials while ash is generally a gray powdery texture. No tests have been conducted.

Matters relating to ash-like materials are particularly interesting among the Maya for several reasons. Maize, a staple of the Maya diet, requires processing (soaking) with strongly basic (caustic) agents such as quicklime and potash to break down fibers in maize kernels and release nutrients otherwise unavailable to the human digestive system. This is an essential part of food preparation in the Maya realm and elsewhere where this grain is consumed. Ash derived from burning hardwood trees differs considerably from ash from softwoods. Lamoureux St-Hilaire (2018: chapter 7) discusses finds of ash in Classic Maya settings, but also notes that finds labeled as ash are often decomposed wood, as from furniture (see also Lamoureux St-Hilaire et al. 2019) The details of these variations are of importance in the study of “dust” found in archaeological contexts.

A second general category of materials often identified as ash are the various materials associated with the extensive remains of bone and wood-ash left following a traditional human cremation. Cremations appear relatively rarely in the Maya realm,
perhaps a function of under-reporting. In recent years, however, examples are being increasingly reported (see Buikstra et al. 2004; Chinchilla et al. 2015, Tiesler and Scherer 2018a; see also Becker 2016). Those reported from the Maya region may relate to influence from Teotihuacán, as is the case with the Mot Mot burial at Copan that features a cremated female in the Teotihuacán style and the heads of 3 men placed around her (David-Salazar and Bell 2000, also Fash 1991).

The actual human cremation process that uses wood for a high temperature pyre generates a quantity of wood ash, usually as much as two liters or more for an adult (Becker 2008). The bones themselves, however, generally may be only minimally altered during the burning process (see Becker 2005, Cervantes 2015). Many modern scholars concerned with the archaeological aspects of the cremation process (especially Tiesler and Scherer 2018a; also Pendergast et al. 2006) understand that the complex mineral structure of bone may be altered by burning (I use the term “porcelainization” for the highest temperature examples), but in general many scholars do not realize that human bone is far from being reduced to cigarette-like ash in any cremation (see “ash” in Tiesler and Scherer 2018b). Since human bones may be only minimally altered by the cremation process, the “burned” bones need to be smashed or otherwise processed to alter their form and reduce their volume if they are to be interred or stored within an urn or small box of less than 4 or 5 liters capacity (cf. Becker 2008, also 1996). An example of this type of error in the evaluation of a suspected “cremation” is presented by Coe (1959: 7) who, following Satterthwaite, believed that a “cremation” at Piedras Negras could be dated to “the terminal Xinabahul Phase [and] resulted in a fine ash” (Coe 1959: 133, also page 5). Coe (1959: 132) also erroneously identified the “burned human bone and a molar tooth” from Piedras Negras Lot 20 as evidence for a human cremation. Since human teeth commonly “explode” during the burning process, Coe’s data argue against the PN materials representing a cremation. His early review of so-called cremation burials in the Maya region (Coe 1959: 132-133) is interesting, but represents a serious lack of understanding regarding the cremation process itself (see Becker 2016), a problem that continued among scholars for many decades.2

A detailed examination and complete listing of every identifiable fragment represented in a collection of “burned bones” are essential to making reasonable inferences about the origins of each deposit (cf. Becker 1982). The important studies of Weiss-Krejci (2010, 2011a) demonstrate the extent to which bits and pieces of human bone can be used in many different contexts, none of which need reflect a burial or even secondary deposition of human skeletons. The research of Weiss-Krejci reveals how precipitous evaluations of small collections of human bone can easily deflect us from recognizing interesting aspects of Maya behavior. Chávez Balderas (2018) provides some indication of the use of cremated remains at Tenochtitlan, and indicates that these practices may distribute such pieces of bone more widely than previously recognized. The extensive data on cremations from the northern Maya Lowlands (Tiesler 2018) provides an entirely new view of mortuary activities in that region.

In a description of sixteenth-century Mesoamerican material culture brought to Italy from “Mexico,” the bearer of these artifacts reported that sacrificed captives were eaten, bones made into various objects, “& they burned the entrails together with the rest in the temple” (Domenici 2017). Presumably sundry bones were among “the rest”
leaving chunky pieces of skeletal residue, not a fine ash. However, if blood or soft tissue alone were burned, the result might be a fine ash of the type that is of interest here. Data on mortuary activities from among the Post classic Maya have only recently been scrutinized (see Vail and Duncan 2018).

Terminology also may lead us astray. In contemporary English usage, the term "cache" primarily refers to food safeguarded from animal depredations by placing it in a secure context. Secure sites include burials placed in small cabin-like structures built on posts, as among the Dena of Alaska (de Laguna 2000: 121-122). Similar scaffolding has been used by Plains Indians to protect the bodies in these burials, although what ultimately happens to these contexts is not clear. In Maya archaeology a “cache” is generally seen as any deliberately hidden deposit and thus generally believed to have ritual significance (cf. Coe 1959). Interest in Maya caches and other deposits within which only ash or powder can be detected was first expressed more than 40 years ago. The concept of “surrogate burial” (Drucker, Heizer and Squier 1959) referred to boneless deposits in which no recognizable materials were found (see also Coe 1990: 930). Today, collecting and preserving carbon samples, organic residues (Duffy et al. 2016), and organic remains of all types has become routine in archaeology. Their interpretation is another matter (see King, Powis, et al. 2017).

WHAT ARE “CACHES” AND WHY?

Distinctions made by various scholars among the terms “cache,” “problematic deposit,” and “burial” appear to be largely arbitrary (cf. Becker 1992, 1993; also Kunen et al. 2002: 197-199; Moholy-Nagy 2008). The lowland Maya may have buried some (all?) human bodies as a type of cached offering, or form of “surrogate cache.” People may have deposited, or recycled, materials that have perceived power in an effort to destroy, restrict or utilize that power (cf. Walker 1995: 72; also Joyce 1992). Caches consisting only of ashes seem to reflect the deposition of an entirely different category of object, but not necessarily for different purposes. The original form of these perishable or combustible objects merits our attention.

Complex arrays of materials found in placed deposits, or caches, of all kinds provide important data enabling us to identify cultural behaviors and their changes through time (Coe 1959, Becker 1988a, 1992, 1993, Maxwell 2000). These data also enable us to make comparisons among different zones within the Maya area (Maxwell 1996, Rodriguez 1997); zones that may relate to modern linguistic regions. Rodriguez (1997:2-3) discusses the literal meaning of the term “cache” as involving the concept of hiding something, and relates the term to Maya contexts. Moholy-Nagy (2008) prefers the term “placed deposit.” Some of these deposits, however, may not be dedicatory or votive offerings, but may reflect ritual disposal of materials that were sacred, but were transformed, perhaps as offerings or as discards, or both (cf. Chinchilla 2018). Walker (1995) sees the destruction of materials that were still useful, rather than obsolete goods, as creating the contents of “kratophanous deposits.” Maxwell (2001) also reviews various definitions for “caches” found in the Maya area, and integrates this information into a history of related studies. His suggestions regarding “kratophanous deposits” (see below, also Kunen et al. 2002: 200-201) are particularly instructive.

Krejci and Culbert (1995) review 365 burials and 263 caches from several lowland Maya sites, spanning the period from the Pre-classic to the Classic period,
and suggest that both categories become more elaborate ca. 378 CE, the approximate date of the Teotihuacán “incursion.” [FIGURE 2a, 2b] Moholy-Nagy believes that Lowland Maya caches decline in frequency and importance after the death of Tikal’s Yasaw Chan K’awiil [Ruler A] in 734 CE. This decline may relate to the long rule of Yik’in Chan K’awiil [Ruler B], ca 734 – 766 CE.

**Figure 2a.** Roll-out scene from an Early Classic engraved blackware cylindrical tripod vessel depicting the Teotihuacán entrada into Tikal (the “Arrival” Pot). Found at Tikal in Problematic Deposit 50, west of the North Acropolis, near Tikal Altar 13 and Stela 29 [location in Carr and Hazard 1961; see Greene and Moholy-Nagy 1966, also in Culbert 1993: Fig. 128; see also Moholy-Nagy forthcoming: Fig. 2). Length, 40 inches. Drawing by Virginia Greene, correcting the Coe 1965 version.

**Figure 2b.** Detail of the “Arrival Pot.” When found, the pot was in terrible shape and could not be reassembled. The figure shown here is labeled “G” on the rollout. (Virginia Greene and Hattula Moholy-Nagy, *A Teotihuacan-Style Vessel from Tikal: A Correction*. American Antiquity 31:432-434, 1966.)

**DETERMINING SOURCES OF THE ASHES IN “CACHES”: ORGANIC ORIGINS**

   At one time excavators rarely recorded the presence of ashes found in placed deposits, even if other indications of burned offerings were noted. The locations in which the actual burning took place may have been nearby. In the 1950s William Coe noted the great extent of burning that appeared on the floors of Tikal’s North Acropolis (1990: passim). What was being burned, and why, was not questioned, but deposits (or caches) of ashes, were ubiquitous.
It should be noted that in the limestone rich environment of the Maya lowlands, ash, whether from copal or other materials, may not be easily distinguished from limestone powder or from decomposed organic material. At Tikal and many other Maya sites, the specific contexts of what are here called “caches of ashes” may be critical to decoding their meaning (see Note 6). The problem with plant remains, which are probably the most common origins of ash in placed deposits, is the near-complete transformation during the oxidation (burning) process.

Plants, being organic and perishable, are easily burned. In addition to the ash produced by the burning of ritual or offerory materials, potash (wood ash from fireplaces), and other sources are common and are very useful products in most cultures. Ethnographic studies provide us with considerable evidence for ash production and uses in the Maya area, in addition to their expected use as fertilizer. Wyatt (2008, 2012) has documented pine particles in what he believes to be refuse used as fertilizers in Maya agricultural fields and terraces. Both ritual and secular contexts may be identifiable for each of these categories. Elin Danien (pers. Com. March 2001) notes that Burkitt’s 1930 catalogue of Guatemalan objects sent to The University Museum includes a pear shaped “cake” of ash of a type used by modern Maya to make their fingers less slippery while spinning. Nicholas David and Kramer (2001: 388; citing Hodder 1982: 136) note “that ash, so often in Africa and elsewhere as a symbol of the absolutely used up, is in fact ‘used explicitly [among the Nuba] to ensure the fertility of the grain’.”

Burning huge quantities of wood to convert limestone to quicklime, which has many uses in construction and elsewhere, is well documented from the Maya realm both through archaeological inference and the ethnographic record (see Chinchilla 2018, Chuchiak 2018; also Becker 2013). Certain types of ash, as well as urine, must have been used as deflocculating agents (agents to prevent colloids from settling out of solution) in the production of slips for finishing fine painted vessels during the Classic period. Modern ceramics production uses soda ash (sodium carbonate monohydrate: \( \text{Na}_2\text{O} \cdot \text{CO}_2 \cdot \text{H}_2\text{O} \)) as a soluble deflocculant, but other types of burned materials may be used. Volcanic ash, widely available in the mountain regions of Central America, has also been identified at lowland sites (Villaseñor and Graham 2010). These scholars have pointed the way towards specific studies to determine the composition of what is called ash and for comparative studies.

A possible use for certain types of plant ash as an early alternative (substitute?) for salt is suggested by the ethnographic observations of Robert Beverley (2013: 142) in early eighteenth-century Virginia. Beverley, perhaps during the first decade of that century, observed that the local Indians of coastal Virginia had no salt, but that they used the ashes of hickory, stickweed and other woods or plants instead. In my 50 years of ethnohistoric research with Native peoples of northeastern North America I do not recall a reference to salt or salt substitutes, although comments regarding the bland or tasteless Native diet do appear. The ancient Maya salt trade in Central America appears to have been well developed (Andrews 1983). The Maya may have been trading in this commodity before the Classic period, and salt or salt-substitutes may have become an integral aspect of trade, or at least local economics by the Classic Period. Fenner and Wright (2014) suggest that the intake of sea salt at Tikal, Guatemala may account for anomalies in the expected strontium levels. Their approach also may provide a means by which the first arrival of sea salt at Tikal may
be dated. McKillop and Aoyama (2018) approach ancient Maya salt use through stone tool studies at the possible salt works at Payne Creek, Belize (see also Sills 2017). Reina and Monaghan (1981) offer recent ethnographic data from nearby Sacapulas, Guatemala. In short, salt or ash substitutes for such a condiment may well have been a common component of ancient caches; but has not yet been recognized in the archaeological record.

The ashes from a number of various plants burned by the Maya for various purposes may have found their way into Classic period caches. The ethnographic literature is filled with excellent botanical studies as well as useful reviews of ritual uses of plants that might replicate behaviors observed in archaeological contexts (see Renata García Moreno for plants in tombs at Calakmul; García-Moreno and Granados 2000). Cameron McNeil’s (2006) study of samples from caches, burials and temple floors at Copan specifically sought pollens of flowers that may have been used in rituals. Her initial results were negative, but the process marked an important effort to determine what was in these “ashes” (see McNeil 2012). Ethnographic reports note that as least since 1960 raw apazote has been rubbed on children in Peten before a funeral to protect them from contagion from the corpse (N. B. Schwartz, pers com. 2007). Ellen Kintz reports that in Yucatan a plant called sipiche is placed on altars, and that rosemary (Rosmarinus officinalis) is tossed into fires. Rosemary, however, is an import from the Mediterranean and thus is a post-Contact addition to the Maya herbal. Johanna Kufer (pers. Com. 2008) suggests that the traditional sipiche noted by Kintz might be a plant called sipché in Yucatec Mayan (corrupted to sipiche in local Spanish).5

INORGANIC CACHED DEPOSITS

The Tikal Project of The University Museum (1956-1967/69) did recover many placed deposits that included artifacts of ceramic or stone or shell or human and/or animal bone. Both bone categories were variously represented by worked or unworked items (cf. Iglesias Ponce de León 1988). These deposits were identified as “caches” and placed into a numbered sequence in the order that they were recovered from Tikal. At Tikal, what were identified as caches originally included offerings of all types (Shook and Coe 1961: 10), but later Coe transformed the term into two subsets. Ritual deposits that had highly regular patterning continued to be identified at Tikal as “caches,” while all other “offered” or placed materials as well as small, amorphous, "artifact free" deposits became identified as “Problematic Deposits” (Coe and Haviland 1982: 49). Culbert’s 1993 use of a ceramic category believed to be related to “problematical deposits” seems to have spawned the use of that term for midden-like deposits in Belizean archaeology (Stanton et al. 2008: 227), and then was adopted by many scholars in Belize for discussions of terminal or termination deposits (Koenig 2014, 2017). Now some discussion of these categories at Tikal as they generally relate to ancient Maya culture is in order.

Determining the intent of deliberately placed (cached) deposits has become one of the primary goals in decoding the cultural meanings underlying “caching” events among the ancient Maya. The ethnographic record from the region of the lowland Maya provides only limited aid in directing our studies. Rodríguez’s (1997) useful survey of literature relevant to placed deposits among the ancient Maya points out the interesting variations among specific sites, and possibly regions.6 At the same time
Rodríguez points out some peculiar interpretations of these deposits that continue to confound our ability to understand the evidence. Rodríguez (1997: 3-4) suggests that there may be three types of deposits, all identified as caches. First, there are “dedicatory” caches that are placed in or on the ground prior to beginning work at a construction site. Dedicatory caches also include those that precede the renovation or renewal of a structure, or any part of a structure. Second, there are “intrusive” (non-dedicatory) placements cut “through an existing surface” rather than being put into the ground or within a structure before or during construction (following W. R. Coe 1959: 78). However, such dedicatory caches, including burials, also can be considered as intrusive when they cut through (are intruded into) the bedrock prior to construction of a new structure, or are cut through an existing building floor (are introduced into) and then covered or superseded by a covering structure (Becker 1999). Rodríguez's third category includes “offering” or “votive” caches that also may be commemorative in function (cf. Schiffer 1987: 79).

The direct archaeological evidence for the range of deposits commonly called “caches” in the Maya area often differs greatly from some possible interpretations of their functions. “Placed deposits” may be the most neutral term for these objects and their contexts, avoiding the implicit idea of something hidden that is associated with the term “cache,” or the functional implications of the term “votive offering”. A burial also represents a “placed deposit.” The relationship, or equivalence, between lowland Maya caches and burials has been explored elsewhere (Becker 1988a, 1992, 1993). The context and the contents of placed deposits commonly suggest that these involve ritual activities.

The several caches and burials recovered from the Courtyard 3 excavations of 2017 at Pacbitun often include some evidence that these deposits may have been relocated from elsewhere. The importance of expectation of such conditions at Pacbitun may be a factor in the recognition of what may be a common but rarely recorded situation. Examination of the five caches and two apparent burials found at the center of Courtyard 3, near Plaza C of Pacbitun (Skaggs et al. 2019, also Skaggs and Powis 2018), brings to mind the possibility that these “burials” had actually been first interred elsewhere, but became reused as caches at a later date (cf. Becker 1988a, 1992). For example, at Tikal the bones and ceramics, and perhaps perishable materials, from an elaborate Pre-classic period burial located in the area of Str. 5G-8 was re-deposited in a *chultun* in the plaza fronting the structure (Becker 1999). When it was excavated it was identified as Tikal P.D. 1 (as will be discussed below). The deposits in Pacbitun Courtyard 3 also call to mind Tikal Plaza Plan 4 arrangements (Becker 2003, *etc.*) in which a small, low, square structure occupies the center of a residential plaza. The largest structure at Pacbitun, Structure 1, is certainly a Tikal style Temple on the East (Plaza Plan 2); presumably the resting place of several of Pacbitun’s elite burials (see Becker 1999).

Moholy-Nagy (2008: 20) has made the important observation that at Tikal “Xux caches” involve situations where the “repositories were found empty” or contained impressions on “plaster fragments of what I believe to be bark cloth” (cf. endnote 10, below). She now is confident that “the so-called leaves in caches” are actually the remains of tapa or bark cloth (Moholy-Nagy *et al.* 2003).
Numerous cache-like contexts at Tikal and elsewhere in the Maya realm have been reported where a pit or hole has been dug, or chamber created and then sealed over, with nothing that has been identified by archaeologists as being placed within. “Empty pits” often contain deliberate deposits of ashes or dust. For purposes of this discussion both ashes and dust will here be called “ashes” unless the nature of the material has been specifically identified. Examination of the largely unexplained ash-like contents (potash-like?) of some of these placed deposits may provide clues to the origins and functions of these placements or caching events. Caches placed into holes cut into floors and other surfaces often include a variety of materials, perhaps including organic wrappings, some of which have not previously been considered because they were transformed by burning before deposition or by decay after. The materials can and should be studied in an effort to determine sources. Ashes alone, without identification or elements of surviving artifacts, have been placed into many of these deposits and then sealed with a plaster patch.

Since deposits of ashes at Tikal, where they occur without other materials, had not been classified by their contents, this subset of deposited materials was placed by W. R. Coe into a catchall category called “Problematic Deposit” (PD). However, samples of the “problematic” material, lacking any artifacts as part of their contents, were never collected, let alone analyzed. Thus Moholy-Nagy’s (2019) effort to define what constitutes a “problematical deposit” at Tikal, based on 223 examples categorized as PDs by members of the Tikal Project begins with implicit premises not tested by location, but separated by contents only. That she identified 43 different categories is problematical in and of itself. Surprisingly, Type 35 out of 43 (“No Identifiable Contents”), includes but one example. “The cist had been sealed with a plaster patch that subsequently underwent burning” suggesting to Moholy-Nagy (2019: 6) “a deposit of biodegradable, probably foul-smelling material.” Whether other plaster seals over these deposits were burned is not tabulated, and the nature of the “deposit” within remains unknown. The presence of charcoal in her PD Type 37: “Deposits of Ash and Charcoal” (Moholy-Nagy 2019: 6, 12), with a total of 84 examples, does suggest the use of fire, but burned bark-paper and other highly combustible items also might yield pure ash. The meaning of “fire” by itself, which would have burned a floor surface, will be noted below.

The persistence in Tikal Reports of a catchall category for objects neither cache nor burial (see Culbert and Kosakowsky 2019: 395-401) is a carryover from problems of analysis generated decades earlier. For reasons unknown to me, the concept or perhaps the very “idea” of problematic deposits appears quite frequently in archaeological studies from Belize. Fortunately this term appears to be eschewed by David Pendergast, much to his credit (see also Pierce 2019). In his discussion of “cache composition” at Lamanai, Belize, Pendergast reports that “caches” in one group:

“provide an example of another common phenomenon at Lamanai from Preclassic through Terminal Classic times: the empty pit, often on or very near the primary axis, with every indication that use as a cache container was either contemplated or actually carried out. Such pits, which we came to know as ‘Lamanai Holes,’ were maddeningly common.”

Pendergast 2006: 61-62
The “empty pits” described by Pendergast may be quite common throughout the Maya lowlands, but knowledge of their discovery is overshadowed by much more spectacular finds. The common focus of excavators on the contents of supposed cache pits often detracts from concerns regarding the placements of these "pits", so commonly found on the centerlines of structures. Pendergast (2006) suggests that this centering is implicit in the presentation of data, but no collection of this evidence has been made. Offerings placed at the four corners of buildings are noted extensively by Begél et al. (2020), but the excavation of large structures rarely involves the total exposure of fills and the recovery of every possible cache. Among the few reviews considering cache locations (on the center-line vs other, etc.) and also directionality as important variables in cache placement are Sharer and Traxler (2001). Their study of Early Classic period buildings and related caches offer hints to studies that need to be pursued at other sites (cf. Arlen Chase and Chase 2006: 53).

As noted above, what became identified as Tikal PD 1 was excavated at the site in 1962 (Becker 1999: 76). In fact, this deposit was the first excavated at Tikal to be so identified, even though it was clearly the re-deposited contents of an Early Pre-Classic (Eb) period tomb (see Culbert 1983). This material was assigned by Coe to the PD category “which was created to handle situations not suited to the designations ‘burial’ or ‘cache’” as he understood them. The recognition that burials and caches might be sub-categories of “earth offerings” (Becker 1992) had been recognized by 1992, but the materials that had been designated as Tikal PD 1 remained unquestioned (see Culbert and Kosakowsky 2019: 13). Tikal PD 1, however, clearly represents material from at least one Pre-Classic period burial, and two individuals, that had been re-deposited into a nearby chultun. Coe never resolved, or even noted, the problem of deposits that appear to contain only ashes, although he did address inorganic, mechanically “destroyed offerings” (Coe 2008: Appends. 10-12). The contents as well as the contexts of many problematical deposits at Tikal often are similar to some caches since both types of deposits commonly appear in holes cut through floors and into fill, with each hole then being sealed with a plaster patch. Studies of the locations, positions, directions (orientations), and other factors related to caches of ashes, as compared with object caches, may produce useful clues regarding meaning.

Tikal PD 3 was the number assigned to a round pit cut through the floor of Str. 5G-8-1st [FIGURE 3]; a pit that held a few sherds from a large jar and an accumulation of charcoal below which was ash, a single sherd and three gray flint flakes.
Nearby, and cut through the same floor, was PD 4, including worked sherds that may have been gaming pieces for *patolli* “admixed in dry gray earth” (Becker 1999: 76-77). The *patolli* board or pattern carved into the plaster floor of the final construction (Str. 5G-8-1st) may be related. Possibly this “dry gray earth” in PD 4 is actually ash or ash-mixed materials. [FIGURE 4] A review of all the caches associated with Tikal Str. 5G-8 may offer clues to meaning and chronology (see Moholy-Nagy 2008).
Tikal PD 76, excavated by C. Jones in 1963 (Field Notes 63-43-36, Op. 43C, Lot 26), is one of the few deposits at the site for which a record was made of the powder or soil recovered from within which artifacts were found. This cache was found within the northern enclosure for Stela 16 in Twin Pyramid Group N, being discovered to the north (behind) the stela (Becker and Jones, forthcoming). Jones had recorded a “dark, powdery organic fill without stones” inside a “square [wooden?] cache box” (see Weiss-Krejci 2011b). Details on finds of ash, soil, and other “non-artifactual” material associated with caches (etc.) are notably absent from the record at Tikal (see Moholy-Nagy 2008). Square or rectangular ceramic containers are of particular note.

The contents of elaborate artifact caches, generally associated with the largest structures at a site (cf. Guderjan 1998, 2000 for Blue Creek), are informative beyond the limited range of speculation now available for ashes. Particularly notable is David Maxwell’s (2000) observation that many caches contain remnants of “toxic” animals such as stingray stings, shells of the colorful but highly poisonous cone snail (genus Conus), and potentially toxic corals and sponges. These “poisonous” materials, however, may have been used for medical as well as pharmaco-magical purposes (Becker Ms. A). Maxwell demonstrates that “toxic” items appear at Tikal with greatest frequency during the period from 562-695 CE, the period often identified as the Hiatus that began with the apparent defeat of Tikal by the lords of Caracol and ending with the ascent of Yasaw Chan K’awiil [Ruler A] to the Tikal throne (?-734 CE).
Interpretation

Cache-like deposits containing a consistent set of ritual goods and found in similar contexts, such as beneath stelae, occupy only one locus on a classificatory continuum of placed deposits among the lowland Maya. The simple tabulation of the data relating to those caches made at Piedras Negras (Coe 1959) reflects the traditional view of these deposits as only an assortment of artifacts. This early work barely hints at the important clues to culture that may be derived from the analysis of these deposits. Placed deposits, or that variety of deposited materials in which the goods and/or locations are less regular than in stelae caches, or for which we have yet to decode the regular elements, may occupy other points on this continuum. Certain categories of deposited artifacts, such as flint eccentrics, lie at one easily identified and extreme end of apparently votive or ritual offerings. The evaluation of evolutionary change in the forms within this artifact category (e.g. Coe 1959) enables us to make inferences as to how a “state” religion operated; or a religion that I would identify as a cultural norm for a heterogenous society. The question posed here regarding functions of caches of ashes does not relate to stela caches, which are invariably associated with monuments yet without revealing the relationship between these monuments and Maya society at large. Caches of ashes are far more common than caches of flints or obsidians, and are far more likely to be overlooked, under-recorded, and generally ignored. Whether they may reveal more than collections of obsidian and/or flint used as monument caches remains to be determined.

J. A. King (1995: 110) describes eccentric flints that are found in structure caches at Altun Ha as the “inalienable possessions” of the buildings themselves, and thereby link the buildings “to the ancestors by virtue of their role as tombs.” Furthermore, King sees these flints as “heritable power sources” (cf. Hendon 2000, Joyce 2001). Linking these features seems reasonable for large structures associated with elite or royal tombs, and not conceptually different from the linkage of lesser materials found in non-elite buildings and burial contexts. Also of note is the possible continued linkage of these artifacts and bones when a building is destroyed, with the ritual goods being removed before the destruction. The “ritual” goods from a tomb may be re-interred in another location, as is the case with the material found in Tikal PD 1, while the building itself simply becomes part of the fill, along with rubble, that forms the platform for a subsequent structure.

Archaeological concern with large temples and rich tombs obscures the fact that a great deal of what can be termed folk religion and/or magic is distinct from, and may be frowned upon, by practitioners of state religions. Evidence for unofficial (folk) ritual behaviors may be recovered in the archaeology of complex society (Becker 1978). Maya society, however, lacks differentiation between “high status” religious activities and the beliefs and the behaviors of the most ordinary of the Maya (Becker 2003a; Haviland 2014a, b). I suggest that the rituals that often are associated only with high status individuals in a class stratified society may, among the Classic Maya, actually be present at all economic levels of society. Only differences in expression existed, reflecting different levels of economic resources. Perishable bowls and other items were more commonly used by people with lesser economic resources. Thus I propose that those deposits identified as caches as well as other aspects of ritual behavior can be used to demonstrate heterarchy among the Classic Period Maya (see Krejci and Culbert 1995).
AN EMBARRASSMENT OF RICHES

Excavators working in central Tikal and elsewhere at the site suffer from problems that also commonly afflict archaeologists working in Classical Greece and Rome. The complex architecture and volumes of elaborate artifacts from many contexts lead scholars to disregard the more mundane objects. An example of this approach in the Maya area is demonstrated by a section entitled “Sealed Pits Expectably of Caches...” where W. R. Coe (1990: 933) lists 18 examples where floor patches were found in a structure and excavated: “each promising to be a ‘cache’ on first sight, only to prove disappointing upon investigation.” The contents of those features that Coe (1990: 931) enigmatically calls “dry-run' pits” are not described. During these early decades of research at Tikal, not a single sample of ash was saved from any context. The presence of ash within a cache may go un-noted and unrecorded unless it is the only material detected (cf. Krejci and Culbert 1995). The object-based focus of Coe’s excavation is revealed by the description of PD 172, that in its “earthen fill” was found to have “a remarkably sparse inventory after sifting: scattered charcoal, . . .” and other materials considered to be insignificant (Coe 1990: 933, emphasis added). This leads Coe to ask: “Why bother to secrete such stuff?” Until recently this crucial question was never explored, let alone answered.

Johann Begél (pers. Com. 11 Feb. 2016) points out that Coe (1990 passim) identifies numerous examples of “on floor burning” with recognition of up to three different layers of carbon deposited prior to the floor being renewed; but no mention is made of ashes. Begél points out that the fire itself could be an offering; an extremely important point. The meaning of “fire” among the Maya is an important feature of all burning rituals, but has yet to be studied as a possible offering in and of itself. I also suggest that many if not all of these fires may have consumed objects that, in the form of ash, became the principal offering. As noted elsewhere, no ash samples were collected by the Tikal Project staff.7

Compounding the Problem

The arbitrary dichotomy between “caches” and “problematic deposits” at Tikal created an impediment to understanding the continuum of behaviors relating to placed deposits among the ancient Maya (cf. Moholy-Nagy 2008). Although terminologically separated by early excavators at Tikal (Haviland et al. 1985: 159), the categories “cache” and “problematical deposit” were linked, or confused, by Coe (1990: 97) under the heading “Special Deposits.” The rigid separation of caches from problematical deposits on the basis of perceived categories of materials or their condition (whole as distinct from fragmentary) led to a number of problems in curation and interpretation (cf. Becker 1992, also 1993). Labeling cache pits containing only ashes as Problematic Deposits (PDs), but at the same time ignoring the ash that was the contents, deflects attention from them. Lack of attention inhibits the collection and curation of samples of ash or other powdery contents from various deposits; a problem exacerbated by heightened attention to finds of jade and other luxury goods (cf. Guderjan 1998, 2000: 2). When carbon chunks or flecks appeared along with artifacts in placed deposits at Tikal, at best they were noted on the file cards. Moholy-Nagy (2008) coded these samples under Material Category 65. Pure ash or dust generally was ignored unless its presence was recorded by the excavator in a field note book.
DEDICATORY DEPOSITS

Throughout the world various types of offerings, caches, and evidence for rituals commonly are found by archaeologists as well as ethnographers to be associated with the erection of buildings (Begél et al. in press). Turner (1982) discusses stages of “liminality” associated with buildings, suggesting that a cache may be offered as a part of the rite of passage in the transition of the structure (ground surface?) from inanimate to animate; or made ready to be “occupied.” I would call this a quickening ritual, or a preparation of the building “to be used” (Becker 1992, also 1993; see also Fox 1996: 485, Rodríguez 1997: 90-91, Stross 1998: 31, 35, Begél et al. in press). Studies of modern ethnographic situations may offer clues to how the Maya conceived of the inanimate and the processes by which these categories are animated.

Settlement archaeology in the Maya area is concerned with several matters relating to daily life and culture. However, we seldom see reports detailing the offerings that poor Maya made for their simple houses, or in the erection of the individual structures that formed the Maya house compound. Not surprisingly, most authors (e.g. Rodríguez 1997) discuss only elite examples of placed deposits of any kind, perhaps because information regarding more simple deposits are buried in the secondary literature, if published at all (but, see Becker 1999). Deposits by the Maya poor, placed between a pair of wooden “cache” plates or in a gourd or wooden equivalence, and containing mostly perishable materials, might not be "seen" by an excavator. As Rodríguez (1997: 95) points out, Vogt's (1969: 461) "New-House Ceremonies in Zinacantan" specifically demonstrates the extent of such dedicatorial rituals and states that the possible archaeological evidence might be entirely invisible. Begél and his colleagues (in press) point out how much more information needs to be considered in the study of ceremonial activities. Barba and Manzanilla (1987: 91-96) provide an extremely important discussion of caches and cult (ritual) locations as they appear within ancient Maya houses. We may presume that some type of cognitive initiation, or quickening offering, was associated with every ancient Maya structure, but the ephemeral nature of most of these offerings predicts a low probability for recovery. Paired cache vessels form an open chamber providing what I call a heart-like unit within a structure. [FIGURE 5] Some contents of these caches may have been blood or heart tissue, such as reported as offerings among the modern Tzeltal Maya (Stross 1998: 38).

The identification of “floor caches” at Tikal (e.g. Cache 2 in Str. 7F-30) relates to deposits placed under vast plaster floors and believed to have been dedicatory (Coe and Broman 1958). I see these placements as welcoming the birth of a floor or structure to the ranks of the living, as parallel to the human birth process which also has many stages. To the Maya, a dedicatory cache or burial, particularly one cut into the bedrock or into a previously existing building, may mark the death and insemination of the “land” that permits the rebirth or transformation to the next step of the life process.
A dedicatory burial, similar to a cache in which no human corpse involved, commonly can be identified as having been put in place before erecting a building. This is what Coe (1990: 932-923, 947) identifies as “Ritual Prior to Construction.” A variation is the placement of an ‘earth offering’ (Becker 1993), a cross-culturally common offering when a structure is built (see Begèl et al. in press; Chosson et al. in review). What I might call a Maya quickening ritual, used for structures, is what Stross (1998: 31) describes as “ensoulment.” Stross suggests (1998: 35) that Maya ‘Cache ‘offerings’ can be interpreted as a way of animating the building by inserting a ‘heart’ that in some cases may replicate the cosmos.” Without quibbling over the soul-heart-cosmos linkage, one should also seek to determine if the actual offerings include other cognitive clues to Maya worldview.

Possibly related to a structure’s dedicatory activity is the evidence said to be derived from a fire that had been set at the location where a structure was to be built (cf. Golden 2002). The fire that “accompanied the act” of dedicatory ritual (Coe 1990: 933) could produce lots of charcoal. In fact, the technique used in the burning (such as quenching, etc.) may have been geared to the production of specific volumes of charcoal, or to pure ash. I suspect that such “dedicatory” rituals also may have been transitional – that is, marking the destruction of the old and the dedication of the new (see Mock 1998a: passim; Eppich 2009). An example may be the extensive burning associated with Tikal PD 85, from which nearly 100 grams of charcoal was recovered (Coe 1990: 98-99). At Tikal many small pits in platform surfaces were found to be open (unsealed) and these probably represent postholes (Coe 1990: 935). Other isolated holes contain evidence that something had been burned within them. Some very large pits probably were used to burn the dismantled elements of a “structure’s perishable building” (Coe 1990: 934).

Golden (2002) offers an interesting perspective on ashes derived from some types of ritual buildings; presumably those with perishable (and combustible) structures.
Golden suggests that the burning of Piedras Negras Str. J-20-sub-1, and other nearby “sacred” buildings ca. 550 CE, was a ritual act that could be seen from long distances. He also would like to believe that samples of the ash were sent to each city within view of this act as a means by which the unity of the whole polity could be reinforced. While this kind of archaeological speculation, is entertaining, we might do well to consider what the recipients of ash or carbonized wood might do with such a gift. The ultimate fate of these probable ashes is relevant to this general discussion. A bit of ethnographic evidence in support of their argument also would be nice (cf. Begél et al. in press), and perhaps a more useful approach to this kind of speculation.

The layering of artifacts within a cache also may provide us with a view of the Maya universe. Several authors have discussed the layering that often can be detected within placed deposits, suggesting that three recognizable strata often appear, or what I would call "cosmic levels." In these supposedly layered deposits, the uppermost layer commonly incorporates birds or bird-related items that are associated with the sky or heavens. In a burial-like cache at Tikal (Bu. 132, in Str. 7F-30) the uppermost layer included four birds, oriented to the four principal directions (Becker 1963; see Coggins 1988). The bones of these birds may provide evidence for a correlation between direction and specific species of birds. Finds of complex, layered caches also permit speculation regarding the cultural meaning of specific items and their particular placement within these offerings. As Rodriguez (1997: 92-93) observes, there is a great need for more accurate recording of the placement (positions) of objects found within each cache. Garber et al. (1998: 127, Fig. 11.2) suggest that the void or open space above objects, as within a lip-to-lip cache, may represent the heavens. Layering has not yet been reported in caches of ashes, but specific testing of these deposits for possible internal stratification may yield important results (cf. Kunen et al. 2002 for possible orientations).

Rodríguez (1997: 89) associates jade with the underworld and both obsidian and flint with the terrestrial realm. In theory, jade would be at the bottom of a layered cache while obsidian and flint would be in the middle of a layered cache. Joyce (1992: 498) suggests that obsidian represents the underworld, chert represents the human or middle world, and birds reflect the upper world. Various meanings are offered for some marine goods found in caches (e.g. Maxwell 2000), but all of these suggestions are in need of rigorous testing. Any and all of these ideas may be correct, depending on site or cultural region.

Location, Location, Location

The location of a cache, or any placed deposit (burial, votive offering, etc.), is a critical variable in its interpretation. Location may involve placement relative to the plan of a structure as well as placement in the chronological order involved in decommissioning a building before replacing or superseding it with another building that covers the earlier. Maya caches found centered under a structure may be dedicatory in nature, and distinct from the type of caches that are placed in holes dug into the room floor of a structure that is in use. Caches placed within a building prior to rebuilding or enlargement of the structure are, of course, dedicatory. The evaluation of Tikal Bu. 195 within Str. 5D-32-1st [FIGURE 6] notes that “Although Bu. 195 decidedly qualifies as ‘dedicatory,’ the record conspicuously lacks a contemporary cache, at least a basal one placed on a strict centerline” (Coe 1990).
Figure 6. Image from Guatemala in 1980; North Acropolis in Tikal from the summit of Temple I. Temple 32 (Structure 5D-32) dominates the foreground, with the remains of Temple 33 (Structure 5D-33) to the left. Behind this, in the center of the photo, is Temple 26 (Structure 5D-26). At back right, the tallest structure is Temple 22 (Structure 5D-22), Temple 23 (Structure 5D-23) is the tall temple to its left (facing right) and between the two and behind Temple 26 from this angle is the squat Temple 20 (Structure 5D-20). (Wikimedia Commons; photographer H. Grobe. This file is licensed under the Creative Commons Attribution 3.0 Unported license.)
In fact, Bu. 195 is the cache that Coe expected, [FIGURE 7] but Bu. 195 also served as the burial predicted on the basis of earlier finds related to Tikal Plaza Plan 2 (Becker 1999). At Tikal approximately 17% of all architectural groups (distinct clusters of structures) conform to what has been identified as a second Plaza Plan for the site (Becker 1982b). Plaza Plan 1 groups are those commonly known as twin-pyramid groups (see Becker and Jones forthcoming). Plaza Plan 2 groups at Tikal consist of a series of residential structures in an orderly arrangement about a central plaza, but with the structure on the east being relatively small, relatively square, and relatively low. The use of a burial as a dedicatory cache into the bedrock beneath the structure on the east is the element essential to the identification of Tikal Plaza Plan 2 (PP2: Becker 1971, 1992, also 2014a). The cognitive pattern in the minds of the people who made these burials, deliberately placing them in most cases on the center-line of the intended ritual structure (temple on the east of a PP 2), followed a specific architectural grammar or set of rules followed by the builders. This was pointed out in detail (Becker 1971, 1988a, also 1972) before Coe published his misperceptions regarding Tikal Burial 195. Even more significant has been the finding that the PP2 grammatical rule set at Tikal, and also Quiriguá (Becker 1972), has a corollary that applies when a non-temple structure occupied the site where an intended PP2 temple was to be built.

![Figure 7. K'awiil stucco covered wooden effigies from Burial 195. (Linda Schele Photograph Collection, Schele Number 76078. www.famsi.org )](image)

The PP2 pattern was confirmed as detectable from good surface mapping at Tikal in 1963, through a program of excavations that explored the differences between PP2 and PP3 groups at the site. Plaza Plan 3 was the number assigned to those groups of structures that were most common at Tikal, being identical with PP2 groups in general arrangements but lacking a shrine or temple on the east, a shrine with a square base and dedicatory burial. The 1963 research on the PP2 groups was conducted by Becker (1999), while PP3 studies were directed by Haviland (2014a, 2014b). A corollary to the axial dedicatory burial in PP2 groups dictates that the placement of the off-axis dedicatory burial beneath Temple I at Tikal (Str. 5D-1-1st) was needed to convert the prior structure to a PP2 group. This same off-axis feature also was predicted (Becker 1972) and then found in the extremely small temple on the east in the main group at Quiriguá during later excavations.
The rules that we discovered that are used for burials that initiate a Tikal Plaza Plan 2 temple, when built over an existing structure that is not a temple, is as follows. If a non-temple structure exists on the intended location, the dedicatory burial for the temple to be built had to penetrate through the existing or primary structure at that location (a non-temple) and then that grave shaft had to be intruded down into the bedrock below that existing structure (see Becker 1999, 2003a). Since an earlier structure (Str. 5D-1-2nd) stood where the northern aspect of the location at which Tikal Temple I was to be built, the rule required that the dedicatory burial penetrate that structure. Tikal Burial 116, [FIGURE 8] therefore, had to be placed in a location to the north of the centerline of Temple I (cf. the Quiriguá example: Becker 1972), while a dedicatory on-center “cache” also was needed. This separate deposit, identified as Tikal Caches 47 and 48, are on the actual center line, one behind the other, beneath Temple I. [FIGURE 9] Coe (1990: 610-611) suggests that this was a single cache that had been divided. Thus evaluating the location of a deposit is a variable that requires greater attention, added to the complex set of cultural rules governing caches. Data on location may help to resolve some of the questions relating to the caching of ashes.

Figure 8. Downward view of Burial 116, Temple I, November 1962. (Joya Hairs, University of Pennsylvania. University of Pennsylvania Museum.)
Where To Look

Pairs of flat bottomed, flaring wall plates are commonly identified as cache vessels at Tikal and at other Lowland Maya sites (Mock 1998b: 8). Variations in cache vessel form are reported, but a comparison of these forms has yet to be made. A distribution map might be useful in revealing the geographical area in which these types of paired-vessels were used for caching. These flaring wall pairs of plates, placed lip-to-lip to form a prototype of the plastic or Styrofoam “clam” containers now ubiquitous in fast-food societies. During the latter part of the Early Classic Period pairs of identical flaring walled plates commonly served as containers for caching. At Tikal many examples of these paired plates are found in cache-like contexts but with no apparent contents within the chamber formed by the pair. On the other end of the continuum, Tikal Burial 132 includes an elaborate pair of cache vessels placed beneath the head of the interred person (Becker 1992: 190). The uppermost vessel has an elaborate carving on the exterior of the flat surface; what would be the “bottom” were it not carved and used as a lid, and seven Kan signs along the surface of the sloped surface of this vessel. [FIGURE 10a, 10b] This large pair of cache vessels enclosed a considerable variety of materials, including at least four birds, never identified. Smaller parallel sets or pairs of cache vessels, such as PDs 23-25 at Tikal (Haviland et al. 1985: 155-156), may have held wooden items or other perishables, such as fruits or fiber items (cf. Folan et al. 1979). Where obsidian or flint objects are placed in cache vessels, etc. there is little question regarding what has been found, but when “empty” containers are found in similar contexts, further inquiry generally does not follow (cf. Kunen et al. 2002: 198).
Figure 10a. Uppermost cache vessel excavated by Marshall Becker from Burial 132, Tikal. Called the "Seven Kan Vessel," it actually has only five “kan” signs (A Precolumbian Portfolio. An Archive of Photographs created by Justin Kerr. Image Number: 4878. www.famsi.org )

Figure 10b. The interior of lower vessel from Burial 132 at Tikal containing birds, flints, mosaic jades, and sea material. (A Precolumbian Portfolio. An Archive of Photographs created by Justin Kerr. Image Number: 4878b. www.famsi.org )
Perishable materials such as copal and wood, like textiles and traces of textile imprints (Butler 1935), rarely survive in the Maya area in forms that are easily recognized. Actual examples have only recently been recovered, not from the Maya heartland but from the Zoque region of western Chiapas (Domenici 2014; Domenici and Sánchez 2017). [FIGURE 11] These and other perishable items remained largely intact in this unusual cave situation (Domenici and Lee 2012, Domenici 2014; also Domenici 2013). This cave is, as of now, a unique situation providing direct access to actual textiles that are only a fraction of what have been indirectly discussed for years (e.g. A. Chase et al. 2008).

![Figure 11. Specimen 50-1/06 from Burial 9 in the Cueva del Lazo in Chiapas, decorated with xicalcoli-uhqui or stepped-frets motifs (Fototeca CNCPC-INAH). (Domenici, Davide and Sánchez Valenzuela, Gloria Martha, "Classic Textiles from Cueva del Lazo (Chiapas, Mexico): Archaeological context and conservation issues" (2017). PreColumbian Textile Conference VII / Jornadas de Textiles PreColombinos VII. 7. http://digitalcommons.unl.edu/pct7/7)](image)

Carbon, in the form of charcoal, appears in contexts where burning appears to have taken place as well as in situations where it appears to be relocated from the actual site of fire. Carbon is often plentiful and can be very revealing as Morehart and his colleagues demonstrate. Morehart et al. (2005), in an extremely careful study, demonstrate that ceremonial contexts throughout the Maya Lowlands reveal the consistent use of pine (Pinus spp.) for the various processes or rituals that produced these ashes containing charcoal. McNeil (2006) finds that pine dominates in ritual contexts that she has studied but that it is not the only wood that is present. Morehart et al. (2005) also review many sources of copal and the relationship of this resin with pine. Their important study points us in the direction of greater concern for the actual ash from which charred seeds and/or flakes of wood are not recoverable. Other paleoethnobotanical efforts (Lentz, Yaeger, et al. 2005; Lentz 1990, 1999; Lentz and Hockaday 2009; Lentz et al. 2015) may be noted, but none address our concerns with pure ash. Studies of the charcoal recovered from funerary deposits at Rio Bec made by Dussol and her colleagues (2016) appear to confirm Morehart's findings that pine (Pinus spp.) was limited to ritual functions (contra McNeil 2006). Dussol et al. believe that pine, which does not grow in the area of Rio Bec, must have been used specially in rituals while a rich variety of other woods were used for fuel. At Lamanai pine
appears to have been used as a construction material and also is found in caches (Pierce 2016: 69). While anthracological (wood charcoal) studies may not directly aid in ash research, all efforts to deal more specifically with organic remains are important to research.

Arid microclimates such as those that exist at the tops of very tall structures at Tikal, complete with cacti, have enabled wooden doorway lintels to survive for over 1,200 years. While the numbers of these locations are very few, the preserved wood offers materials for study largely unequalled at lower levels. The stable environments within some open rooms as well as within some caches and structures have left a few remarkable remains in good states of preservation. [FIGURE 12]
Copal, presumably used in rituals in the distant past, has been found at a number of sites, including at least three examples at Piedras Negras and at several other sites noted by Coe (1959: 74). Ferree (1972: 3) mentions “pieces of possible copal (not located for testing)” from Preclassic contexts at Tikal (Ops. 12G/19, 12P/55). This suggests that these examples of copal were not curated by Coe, although Moholy-Nagy (2008: 36) has a brief note on copal balls at Tikal and some “modeled cylindrical objects” that seem to be copal. Other traces and lumps of copal at Tikal are described by Moholy-Nagy in two brief paragraphs. Ferree (1972: 2) notes that the burning of copal “in many cases would have left little or no evidence for the archaeologist.” Verbal reports from excavators attest to numerous finds of copal at Copan, but published accounts appear lacking. In the case of a “burned deposit,” where wood ash rather than dust appears to be present, even the smallest carbonized flakes provide an opportunity to determine the origin of these remains.

Many years ago William R. Coe had suggested (1959: 74) that “the offering of copal might be found in the carbon-smudged column altars so distinctive of [sic] Piedras Negras.” Whether this conclusion had been inferred or by an analysis of a specific carbon deposit is not clear. Now other information might be gleaned from this type and other more ephemeral types of carbon samples as well. Ferree’s (1972) study of pottery censers from Tikal provides useful indirect evidence for what I call smoke offerings (Becker 2003b), but also the interesting observation that later examples have no traces of burning and appear to have been used only as images (Ferree 1972: 1; cf. Rice 1999). Today samples can be recovered from carbon deposits of all types and can be dated using 14C techniques. Of interest in this regard are the numbers of ceramic objects identified at Copan as “censers” that have no apparent evidence for burning.

Locating and Testing the “Ashes”

Ash may appear more frequently at non-ritual locations within a Maya site and, if studied, may reveal aspects of Maya life and their environment. The search for specific “ash” deposits was one goal of a research project that I had suggested some years ago. I believe that kiln-like structures or other firing areas used by the residents of a Classic Period ceramic producing barrio at Tikal were located on a peninsula extending into a bajo (seasonal swamp: Becker 2013). I suggested that this location represented a deliberate positioning to provide access to quantities of various types of firewood, and air from prevailing winds (Becker 2003c). This idea has not yet been tested as part of the paleoecological studies at Tikal that specifically examine the value of bajo resources (cf. Dunning, Griffin, et al. 2015).

The value of close examination of suspected ashes and other materials recovered from caches is demonstrated by the work of McNeil and Friewald (2011: 6) in their carefully controlled excavation of the contents within a large vessel from an offering context at Tikal. Their laboratory excavation of this vessel, recovered during excavations in the area of the Siete Templos (Ofrenda 3 from Tikal Str.5D-97), held “un fino material blanco en el oeste de la vasija, que se asumió era ceniza.” Under a microscope this rose-white material was identified as an extremely fine sand. This source or origin of this sand awaits specialist analysis.

The testing of soils from various Maya contexts for the levels of phosphates and heavy metals had been applied in residential areas of Piedras Negras in Guatemala (Wells,
Terry. et al. 2000; cf. Wells and Davis 2007). Their goals were to locate areas of refuse deposits and to see if ancient houses had been painted with metal-based mineral pigments. Phosphate testing, once used by archaeologists to identify human toilet locations (see Becker 2014b), recently has re-emerged as a possible means for locating ancient markets in the Maya area (see King 2015, cf. Becker 2015). An extended critique of these methods (Becker 2014b) is relevant to any discussion regarding how we might test dust or ashes found in caches.

While Thompson, Hood et al. (2015) recognize that elevated phosphate levels can be sought as an indicator of the presence of organic residues, they (as other contributors to Lentz, Dunning and Scarborough 2015) focus on the carbonized plant macro-remains recovered from sites. Thompson, Hood et al. state that “[c]arbonized plant remains collected by the University of Pennsylvania project at Tikal from 1956 to 1969 were identified by Lentz and Cavallaro in an earlier study …” but offer no reference to this earlier paper or report. Nor do they provide a list of samples, locations, or references, but their supposed findings “included 64 wood morphospecies, …” that helped reveal the variety of plants that were present in the ancient forest. Their interest, therefore, is on the composition of the ancient forest, and being able to recognize imported species (see Lentz 1999) and to be able to make comparisons with a modern forest ecology.

Bozarth and Guderjan (2004) examined dedicatory cache vessels for the presence of biosilicates and found evidence for sponges. McNeil reports finding “intact” sponges in offerings at Tikal’s “Siete Templos,” noting that they leave a great deal of “dust” in their decay process. She also notes extensive finds of dust, as distinct from ash, in other contexts at Copan. Examples of relatively intact sponges were found in the cache-burial identified as Burial 132 at Tikal, in which an array of birds and marine objects were found among the “dusty” residue of various organic items (see Figure 10b above). “Dust” may be found to contain phytoliths, studies of which have become very sophisticated (Piperno et al. 2000). Similar inquiry has revealed a great deal about the origins and spread of Capsicum (Perry et al. 2007).

Any analysis of the ash or dust found in caches at Tikal or elsewhere will have to await future studies. Just how these materials are to be analyzed may benefit from a recent and interestingly related work. Paul Lioy, as professor in the Department of Environmental and Occupational Medicine at Robert Wood Johnson Medical School, became intimately involved in the aftermath of the destruction of the World Trade Center. Specifically, he was concerned with the dust (Lioy 2010). In addition to concerns with the presence of asbestos, his team hoped to determine what was causing persistent cough among rescue workers and other New Yorkers. In the process, samples of dust were collected from three distinct locations and subjected to various forms of analysis (Lioy 2010: 49-58, 95-119, Appendices). Their goals and approaches should be of interest to scholars working with the analysis of Maya “dust.”

BUT WHERE IS THE CHOCOLATE?

The importance of cacao (chocolate: Theobroma cacao L.) in ancient Central America has long been recognized and frequently studied (McNeil 2006b, also see Coe and Coe 2000). Depictions of the tree appear frequently in art works, and ceramic items often depict the pods that hold the chocolate beans. A representation of a sack believed to
be filled with cacao beans appears beneath a throne in the Bonampak murals (see McNeil 2010: 295). We are fortunate to see a growing list of studies that examine vessel residues in the Maya area, where traces of cacao now are well documented. At Copan alone, residue analysis of at least 37 vessels from the Acropolis reveals just how commonly cacao was consumed (McNeil et al. 2006: 224), particularly in the Early Classic Period. Many more samples have been secured and await analysis.

While recent research questions some of these findings of chocolate residues in museum curated vessels, several studies are of interest here. Powis et al. (2002) present evidence for cacao use among the Preclassic period Maya and also find a relationship between this comestible as a drink and spouted vessels. While Mesoamericanists long believed that cacao was native to Central America, Bletter and Daly (2006) discussed its relatives in South America, and Zarrillo et al. (2018) demonstrate that *Theobroma* had been present in the upper Amazon region for some 5,300 years. Zarrillo and her colleagues (2018: Figs. 1, 2) also find relationships in Peru between cacao and stirrup-spouted vessels. McNeil has addressed the interesting question regarding the types of vessels that appear with traces of chocolate residues and the numbers of samples tested (2010: 296, 298).

Given the evidence for chocolate found within a vast array of vessels placed in tombs, such as among the 31 that were sampled from Copan (McNeil et al. 2006: 227), where are the caches or deposits in which the actual beans must have been placed? At Copan, six cache vessels have evidence for the presence of theobromine and/or caffeine, and many cache vessels are ornamented with the seeds/beans themselves (McNeil et al. 2006: 229, 232). Given the value and importance of this commodity one would think that offerings of the unprocessed beans would have been common.

Recent findings may not yet be in print, but Prufer and Hurst (2007) report on five seeds found in a Classic period mortuary cave in southern Belize, and there is a single seed of *Theobroma bicolor* reported from Tikal, found sealed within an Early Classic offering vessel (Cache 98: McNeil et al. 2006: 229-232; Moholy-Nagy 2003: 95). The lidded cylindrical cache vessels may have favored preservation; as such vessels elsewhere at Tikal yielded cucurbit seeds and maize kernels. Moholy-Nagy dates Tikal Cache 98 in Str. 5D-33 to the Manik 3B period, or later Early Classic. The remains of three types of seeds in another Tikal cache vessel came from the *Siete Templos* excavations (see Gómez 2006). These various seeds were found in a large cache vessel (PP7TT, Ofrenda 3) and identified by McNeil and Friewald (2011: 5) as representing 3 species. One of these three species is the squash now called *ayote*, that they believe in this case is *Cucurbita pepo* L., as represented by 3 fragments of seed. Three other seeds appear to represent fragments of cacao (*Theobroma cacao* L.) of a small size. McNeil could not identify the last 3 seeds that were in this vessel. Insects had eaten the interiors of all these seeds, leaving only the husks. McNeil and Friewald (2011: 5, citing Kidder 1947) believe that a single *Theobroma bicolor* Bonpl. seed had been recovered at excavations at nearby Uaxactun.

In effect, while there are numerous findings of residues from liquids that suggest the presence of beverages, the cacao beans themselves are less likely to survive in a detectable form (McNeil et al. 2006: 234). Beans are more likely to survive in caches that are well sealed than in burials, where the general context is more likely to encourage insect and other consumers of the beans.
The rarity of finds of the seeds themselves suggests to me that beans are more likely to have been placed in caches, bagged or wrapped in cloth or paper, while liquids were placed in ceramic vessels (cf. McNeil et al. 2006: 243-244). McNeil’s (2010) review of the traces of cacao in tombs and caches at Copan provides an important route to understanding what kinds of perishables might be identified from these contexts, and in what form. Appropriate testing of the “dust” of decay that is found within the most simple of cached contexts may offer insights to the great extent to which cacao was used as offering in the raw (unprocessed) form of the beans themselves.

THE ETHNOGRAPHY OF “US”: Caches of Ashes

Today, rites conducted during the Easter season among the members of some Christian sects involve the use of palm leaves, some of which are ritually fashioned into crucifixes. Ultimately these palm fronds are burned in order to produce a gray-black ash that is meant to serve one specific purpose. The palm ash, or a parallel ash-like material, is used by clerics to mark the foreheads of believers to symbolize their relationship to rituals (cf. Olivier 2018). The modern origins of the palms used in these rituals, like that of water that has become holy through ritual process, and the deposition of the residues (ash, water) are parts of an elaborate and complex religious process. The details of these processes remain almost entirely unknown to the average practitioner, but reflect a kind of hierarchy of power. Where do these palms come from? Where do they go once they have served their purpose? What can archaeology tell us about these contemporary rituals from their ephemeral remains?10

If caches of ashes reflect modest ritual activities, such as those that employ food, drink, and objects of paper or organic materials, one might expect to find them most commonly in domestic contexts. These contexts are less likely to be investigated and less likely to be published when so many Maya archaeological sites abound in more striking cultural materials. Begöl et al. (2020; also Chosson 2020) address these issues of lower economic domestic situations, both from an archaeological context as well as from data assembled from numbers of ethnographic reports from this general region. From earlier archaeological contexts, Gabriela Uruñuela and Patricia Plunket (2002: 26) refer to Early Tetimpa period burials in the region of Puebla, Mexico as including deposits of ash, obsidian flakes, and small stones placed above and below some burials. Their focus, however, is on the Late Tetimpa period (ca. 50 BCE – 100CE) for which they have no burials reported, yet finds of ash with one or two obsidian flakes and many small stones are noted. These deposited materials may indicate caching behavior that, during the Early Tetimpa period, included human remains as part of the placed assemblage. The skeletal material may have been phased out during the later period. The changes at Tetimpa, as well as all situations where we have data revealing how caching behavior evolves or changes through time, merit specific examination. The changes may reveal aspects of the rituals involved that, in turn, offer insights into the wider cognitive processes.

DISCUSSION

Just as in the 1930s, when carbonized wood and ash from various archaeological contexts generally were considered to be ephemeral and irrelevant to the archaeological record, a few archaeologists with foresight collected and stored samples of these materials. Ash and soil sampling continue to be regarded as essential by most
Mayanists. The difficulty at this point is that the interpretation of “formative processes” in the archaeological record (Schiffer 1987) is limited not only by recovery rates, but by the costs and other factors inhibiting recovery and analysis. Coprolites have become one of the many new areas of interest within archaeology, probably for the scatological interest. Now “dust” is being recognized as important by archaeologists and others (cf. Amato 2000; Pereira 2013). Nevertheless, deposits of ash continue to be sampled and tested only infrequently.

Hendon (2000), following Harrison (1991), considers caches as hidden and thus secret, supposedly bestowing power on the cache makers in the form of knowledge of these secret locations. Harrison holds that ritual is a kind of intellectual property since he supposes that ritual is a type of knowledge not shared by all. As all knowledge must be acquired and thereby is inherently restricted, it has its own value. Knowledge of the proper rituals therefore reflects power. In any class-stratified society differential access to this sacred knowledge can be expected and culturally shared, and therefore is not covert. Just because the ritual behavior is conferred on “specially designated individuals” does not mean that the results of those rituals are not enjoyed by all members of the society. The distribution of cultural knowledge can be assumed to be equal throughout a heterarchichal society (Becker 2004). Caches in the Maya region appear at every socio-economic level. In a relatively open society such as that found in the modern USA, where most information often is available to all, criminals, particularly of the white-collar variety, may hide information to gain "power."

Joyce (2001) places Maya caches within the cognitive context of secret things, as a means of providing knowledge, and therefore power. She offers no testable hypothesis. Are caches of ashes a type of sacred and also a secret thing (Joyce 2000) or are they simply sacred trash, as David Maxwell suggests (2001)? If Maya caches were meant to be hidden, as Joyce proposes, why are they commonly placed in holes at doorways, along the front edges of temple floors, and not in remote corners of rooms? Obvious to all who enter are the plaster patches that seal these cache pits, as in Str. 5G-8-1 at Tikal shown above in Figures 3 and 4 (from Becker 1999). Caches placed beneath a building during construction are then covered and their locations within structure fill are not visible, but all members of the society would know where they are located.11

The meaning of a deposit used on any occasion of Maya ritual appears to have been constant regardless of the economic level of those who created it, with only the costs of the goods placed in it varying (cf. Wells and Davis-Salazar 2007). Suggested by these data on Maya culture is that there should be no cognitive distinction between inexpensive paper (bark cloth?) or wooden objects and more costly variations in jade. Gradations in the value of artifacts deposited in cached offerings are very well demonstrated by the contents of a dedicatory structure cache found with Tikal Structure 4E-31 excavated by Haviland in 1960 (Haviland et al. 1985). This cache was composed largely of discards from a jade workshop. The importance of jade as an offering is affirmed, but the middle income residents of this architectural group could not afford the elaborate finished jade artifacts used as offering in more upscale neighborhoods and therefore they used a lower valued but symbolically equivalent material.

Does the ritual power of the materials burned to ash provide power to these caches of ashes? I suggest that much of Maya ash-caching behavior is the deposition of
something that has outlived its usefulness. Perishable goods enter a category of objects to be taken out with the “ritual” trash, or the disposal of kratophanous materials. Due to the sacred role in life that was played by these objects they must be ritually deposited once their usefulness has ended. A parallel consideration is provided by the Hebrew *genizah* (*geniza*), a temporary storage area for worn out religious books and documents prior to their final deposition through a formal cemetery burial.

In a recent publication on findings from the Feltus Site in southwestern Mississippi, dated to the Coles Creek period (700-1200 CE) that immediately predates the Mississippi Period, Kassabaum and Nelson report on the erection of freestanding posts and the complex rituals surrounding these activities. The entire process as reconstructed sounds much like the erection of stelae in the Classic Maya lowlands. Most significant for this review, Kassabaum and Nelson (2016: 136) report that in these Feltus Site pits in which posts were erected there are “zones of specially procured sediments such as ash and clay” that are included as part of the deposits around each of these posts. Within the pits the authors found an “array of meaningful materials including bear and human remains, pipe fragments, and feasting debris” (Kassabaum and Nelson 2016: 136, see also 143; See also Carmody *et al*. 2018). These findings provide us with a very different or possibly parallel interpretations for the ashes found in various deposits throughout the Maya realm.

The human remains found by Kassabaum and her colleague in these post-pits brings us back to another question. Is each human being a sacred entity? Do burials, by definition, constitute a “caching” of a body? The disposal of the dead also may be viewed as the offering of a gift to the gods (Becker 1992, 1993). When the time comes to dispose of a body, by whatever means apply to the situation, human remains may become gifts to the appropriate gods. This form of cultural continuity links the human body with other materials needing to be disposed of, in the proper manner. Caching, or burial, not only is a method of disposing of the dead (bodies as trash), but provides a means by which to dispose of sacred stuff – stuff very distinct from the ritual objects buried as a necessary process with stelae, or deposited as building caches.

Elin Danien’s study of an outstanding example of a Chama vase, excavated in the 1890s and now in the collections of the University Museum of the University of Pennsylvania, has generated some interesting results. Its text, in the Eastern Cholan language, identifies one figure on the vase as *Bas Ch’am*, interpreted as “Wrapper of the Harvest” (Danien 2000: 4). Wrapping compares with winding sheets, shrouds (see García-Moreno 2004), and other “wrappers” that often enclose the dead before they are offered [up] to the gods by being placed into the ground. Danien identifies this black figure as “Lord Muwan [who] entered the earth” (*muwan* = owl). As the harvest is gathered and bundled or put in a container, so is Lord Muwan wrapped for burial. To “wrap” the trash before taking it out, in the Pre-plastic period, was to prepare something for transition, as is the context in which the expression appears on the Chama vase. [FIGURE 13] Now in contemporary practice the trash is bagged in plastic, as Maya offerings were (and may now be) wrapped for storage.
The kinds of containers or wrappings most commonly associated with Maya caches are a specific category of paired, flaring walled vessels noted earlier. Less ornate wrappings may have made use of cloth, leather, or leaves. All of these perishable objects would be rarely evident, although imprints might survive where simple caches are identified and excavated with specific care. The concept of a perishable and flexible wrapper, such as a “winding sheet” for the dead, also might explain the nature of numerous placed deposits. Deposits that are not easily recognized as being enclosed within a formal chamber or cist apparently without being placed within a perishable wrapper, frequently are recovered from within the building’s fill – fill that had been deposited at the time the structure was created.

**Termination Deposits**

Elsewhere (Becker 2016), I offered some thoughts on what are commonly identified as Maya termination deposits (see Stanton et al. 2008). This is a subject about which I am extremely skeptical. Johann Begél’s forthcoming dissertation discusses these various archaeological features in detail, specifically a category of “termination deposits” that involve “desecratory” or abandonment deposits. Moholy-Nagy’s paper on monument terminations (2016) offers clues critical to the general subject of termination rituals. If ash deposits of any type were included among such deposits, the likelihood of their recovery would be very low.

**CONCLUSIONS: The Burned and the Unburned**

The writings of Claude Levi Straus often reflect on the regular appearances of dualities found within various cultures; dualities such as his famous raw and cooked. This basic observation has found parallels in many areas of anthropology (e.g. Becker 1975). Ashes from organic materials are quite distinct from the dust of decay, but burned remains and the residues of unburned objects may be equivalent aspects of cached or ritually placed materials. These are two categories that require different sets of analytical techniques, but for which I expect similar results. Sandra Noble (1998:...
notes that Maya texts commonly refer to dedications or consecration rites. Noble makes reference to related verbs for acts such as “self-sacrifice” and for “fire rites,” but recognizes that our ability to determine what these mean remains limited. This leads me to ask the question “what is it that is being burned during these ‘fire rites’”? When we find deposits of dust or ashes, do we have means to distinguish between them, or to determine if both are present in the same context?

What do caches of ashes tell us about Classic period Maya socio-political structure? Lisa Lucero (2010) and others (Baltus and Otten 2009) repeat what has long been obvious from 1960s excavations at Tikal; Classic period Maya commoners as well as elites shared a single cosmology. The different manifestations of this cosmology reflect a matter of cost, not of differences in culture. The different ways of expressing ritual usually involve the form of the goods used, such as paper or wood or jade. Burned or intact paper offerings, and other types of goods, allow the poor to sacrifice or contribute the same (cognitively) categories of artifacts as the rich. These differences in the material used reflect the wealth of the actor (ritual participant) rather than any different cosmological views. Moholy-Nagy’s observations (pers. Com. 30 Sept. 2015) on the use of mundane objects found in caches of high ranking or elite individuals at Tikal suggests a strong communal aspect to these rituals.

Heterarchy has been suggested as being indicated for the Classic period Maya based on economic variations that are demonstrated within each of several types of residential architecture. Each of these residential types conforms to a distinct “plaza plan.” The very wide range of economic variation, demonstrated by differences in size of a single type of plaza plan at any site, provides an important indication of heterarchy (Becker 2004, 2014b). That suggests that ritual power is shared within the community, rather than being hierarchical, or ranked in order.

The presence of caches of the same cognitive form (similarities in location relative to a structure or monument, object categories within the cache, placement of objects, etc.) but with the placed objects reflecting a wide range of economic variation, also indicates a heterarchical social structure. That is, customs and values are shared throughout the community, rather than being differentiated by social class. Caches, however, are most easily seen in upper economic strata contexts, where the larger masonry structures and thick plaster floors offer greater opportunity for protection, and the offerings themselves include more examples of less biodegradable materials. Parallel but perishable offerings, placed within smaller repositories, are less likely to be recovered. Thus the sediments within Tikal Burial 195 created hollow spaces or molds of the perishables that had been offered and rotted away, including a basket with beans. These perishables along with water-worn pebbles, chert flakes, and obsidian blades and flakes suggest that donors of varying economic classes may have contributed, and therefore the range of grave goods was greater. In lesser graves, the foodstuffs in the simpler pots probably included pozole, cacao, various beans, and other ordinary edibles.

The ephemeral nature of the contents of many caches and the total lack of information as to what materials were used to create these caches of ashes leaves the question open to ridiculously broad speculation. Yet in the context of huge buildings that appear to be ritual structures, the discovery of caches of ashes is not aberrant. These placed deposits reflect either a parallel ritual caching event, using perishable
materials, or a very distinct process of ritual disposal. When we compare these
downscaled caches in large structures with deposits placed in small structures we note
remarkable similarities and parallels. A primary difference between caches in these	two contexts, that is large as distinct from small ritual buildings, is the value or worth of the objects. As would be expected, there is a direct proportionality between
estimated value of items placed in deposits in large structures and those items placed in small structures. But now we may ask “but what about ashes?” We may not be able to evaluate the sources of ashes from the extreme contexts of burned deposits, but the worth or value of such combustible materials is irrelevant. The rituals, concepts, and relationships with the cultural norms are the same. Within a heterarchical society we may expect considerable economic variation, but cultural uniformity in the concepts or ideals that are represented by ritual activities. It’s the thought that counts, not the value of the objects used in the ritual. Now the time has come to study dust from these deposits using standardized techniques that will produce uniform and comparable data.

NOTES

1 Edwin M. Shook, who organized the Tikal Project (1956-1970s) for The University Museum and served as the first Field Director, often compared the luxury of this camp and the “modern” methods of archaeology with what he had known in the 1930s. Ed recalled earlier excavations, particularly work at nearby Uaxactun where excavators frequently encountered vast deposits of carbonized materials. All were tossed aside without any thought that perhaps, at some time in the future, those burned bits of wood would provide accurate dates by which cultural activities of the past could be put into chronological order and the tree species identified (Shook, pers. Com 1960). By 1960 collecting samples of charcoal from archaeological contexts had become routine, with the newly devised 14C studies and emerging dendro-chronological research providing new dimensions to science in archaeology.

Despite advances in field methods over the past 50 years we still have a long way to go before we attain ideal degrees of data recovery that would provide evidence that can be explored through new types of analysis. Cleaning of artifacts at Tikal alone has removed painted hieroglyphic texts from jade objects, and organic residues from the bottoms of pots and from floors of burial chambers.

Dr. William D. Middleton of the Rochester Institute of Technology notes that the sources for some kinds of ash can be identified. Ideally, samples of modern organic materials should be burned to provide reference samples for comparison of their chemistry.

2 Regarding cremations in the Maya realm, note should be made of the Tortuguero wooden box, a rare surviving container that may relate to funerary ritual. [FIGURE 14] The text on this small, elaborately carved Maya wooden box (ht. 4.37cm, 15.3 x 3.54 cm) offers a possible means by which its specific function might be understood (Coe 1974). The subsequent decipherment of the text on this container suggests that it served as an offering container. The size and shape suggested that it may have held stingray spines and/or long obsidian blades, a function supported by finds of similar boxes with such bloodletting instruments still within them (Pendergast 1974). Kinsman (2013: 50) suggests that one phrase on the Tortuguero box may be
translated as “he is the keeper of the remains/ mummy bundle of his grandfather.” Does this suggest that these remains were contained within this very small box? While the form of this box still suggests to me that instruments of bloodletting had been held in this small container, let me offer a possible additional content. The letting of blood often involved the use of paper to catch and preserve the fluid. A paper with the blood of a grandfather could be folded, or burned to ash, and then stored in a very small container; perhaps the same one in which the instruments of the blood-letting ritual also were held.

As regards cremation containers, from a later date and from the Valley of Mexico, stone cinerary chests from among the Aztec are identified in that language as *tepetlacalli*, but are represented by few surviving examples (cf. O’Keefe 2014, VanEssendelft 2014). No comparable containers are known from among the Maya.

3 The accumulated ashes in hearths among the Five Nations Iroquois, as recorded during the Contact Period, are the focus of the “ashes stirring rite” within the Midwinter festival activities. Ritual performers stir these ashes within the fireplace, then gather them up and cast them along with live coals, about the individual households, as part of a fire renewal activity. The meaning of this ritual is “explained” (Fenton 1936: 11, 16) as part of the midwinter fire renewal ceremony, a late winter solstice event. The ashes still in the fire pits of the houses are stirred by designated individuals, each with “a paddle adorned with his clan’s eponym” (Fenton 1936: 20). These ash-strewers are newly appointed each year. After 1799, the midwinter rites of the Seneca and Cayuga often included the sacrifice and burning of one, or two, white dogs (Becker and Lainey 2013:16), but the disposition of these cremated remains is nowhere discussed in the ethnohistoric literature.

4 Study of ceramic slips and paints among the Lowland Maya was used to determine if the Postclassic Itzá and Kowoj used different pigments (Cecil and Neff 2006). This and other analytical approaches are rare, and seldom replicated or expanded. The work of...
Garcia-Moreno and her colleagues (2008) to identify and source various types of pigments has opened an entirely new line of research that may be invaluable in the analysis of “dust” from various archaeological contexts.

One exceptional excavator, Lisa Ferree provided extremely important data relating to the use of a specific type of "ash" that had been imported into Tikal and other lowland sites. Ferree (1972: 197) notes that one of the most important developments in “censer technology . . . was the adoption of volcanic ash temper, in place of carbonate temper, toward the end of the Early Classic period.” Her studies demonstrate that this finer, lighter ash renders clay “more workable and provides a more even distribution of heat during firing than does the heavy, coarser carbonate.” Ferree concludes that this change allowed the development of a new “form” of censers that previously had not been technologically feasible. Moholy-Nagy (pers. Com. 30 Sept. 2015) believes that some form of ash temper had become important in the development of Early Classic Period thin walled vessels such as cylindrical tripod plates. How these types of ash are related is not known to me, but volcanic ash is of economic significance in a number of different tribes and societies around the world.

Johanna Kufer (pers. Com. Feb. 2008) is certain that sipiche is not flor de Mayo (Plumeria rubra). Kufer also notes that Anita Ankli, in her study made in Chikindzonot in the 1990s, found that the name sipché was used for Bunchosia swartziana Griseb (Malpighiaceae). Kufer notes that Ralph Roys reported a plant called "zip-che" that he identified as Bunchosia glandulosa (Cav.) DC. Roys (1931) also identified this as "cib-che" or “cuyum-che” or Myrica cerifera (Myricaceae), or palo de cera- a waxy shrub 2 to 6 meters high. This plant may be the one the Maya texts say grow in open savannah. The water it is boiled in is rubbed on spider and snake bites and also drunk to cure dysentery. Kufer urges caution in accepting these botanical identifications. Kufer recalls showing a picture of the vine Philodendron anisotomum, which has cross-shaped leaves, to Nikolai Grube and believes that he said it was called something like sipché in the Yucatan where it was used for ritual purposes.

Ellen Kintz (pers. Com 29 Nov. 2009) suggests that if Philodendron anisotomum is sipché then the plant is more like a bush than a vine and is very important in modern (ca. 2000-2010) “Chaachac ceremony in Yucatan as part of the altar archway” construction. Kintz points out that sipché or sipiche appear in the Barrera Marin et al. (1976) listing as Bunchosia swartziana or Malpignia glabra. She also notes that there is “another cib-che” which is used to treat abscesses. Thus several plants appear to share the same Maya name.

In the Ch’orti area Kufer found a plant, possibly Bunchosia swartziana, to be called k’om or conte and that it is a very important plant in rituals to call rain clouds. Kufer (Pers. Com. 19 Feb 2008) believes it would be “counterproductive to burn it” while I suggest that just the opposite may be true – the burning serving as sympathetic magic equating smoke with rain clouds. Cameron L. McNeil (pers. Com. 14 Feb 2008) found that a wide range of plants are represented by pollen that has been recovered from ritual locations at ancient Copan, including maize, cattails, and various flowers. These provide important clues to what kinds of ashes might be expected from caches. McNeil’s results from her study of dust from a cache in the “Rosalila Temple” at Copan were disappointing.
Coe (1959: 144) wondered about the significance of what he called the “lime paste coating on cache containers.” We still have no specific answers. Rodríguez (1997: 35) codes for “lime-paste” among the 505 Classic period caches from seven sites that she surveyed, but “ash” is not noted. Rodríguez (1997) does not include ash in her “Other” category, which includes clay and/or charcoal (cf. Maxwell 1996). In no known case has this coating of lime-paste been analyzed, but I suspect that this may be a natural deposit. Coe’s example at Piedras Negras may have been made from one or more types of ash. The association with cached vessels may be a significant variable in identifying a type or sub-class of deposit.

One of the more intriguing categories of Maya caches are those that include finger bones (phalanges), finds of which are particularly numerous in caches at Caracol, Belize (see A. Chase and Chase 1994, D. Chase and Chase 1998). The rare distribution of phalanges in caches at Tikal (e.g. Op. 79A Lot 3; see Moholy-Nagy 2008) may reveal cultural linkages as yet unexpected (cf. Caches 14A, 14B and 14C, in Weiss-Krejci 2011b: 24, following Coe 1990: 744-745; also see Becker 1988b).

Maxwell’s (2001) study of “stingray spines (stings) from Tikal” wisely focuses on a single category of artifact and its variations within a single Maya site. Maxwell avoids many of the problems that confound other studies by focusing on specific types or sets of objects that can be understood across their entire distribution within placed deposits at a single site. The attempt to account for many of the diverse categories of artifact types as separate variables in the study of caches leads to another set of problems (Rodriguez 1997: 97). In all cases the presence of ash or powder did not rate specific attention.

Parallel to many Maya placed deposits are the approximately 70 “saucer pyre” deposits found on the Athenian Agora in Greece since the 1930s. Recently, Susan Rotroff (2014) analyzed the contexts and contents (pottery, fragments of burned bone, ash and charcoal) and concluded that these are protective votive-like offerings made by artisans near their workplaces. No ethnographic parallels are known.

At least the artifacts from these deposits at Tikal were saved, but the associated ash was discarded, as were the human skeletons from these earlier Tikal Project excavations. Filed and/or inlaid teeth were saved only by deliberate evasion of a William R. Coe directive. Difficulties in dealing with ambiguities in Coe’s taxonomy were never resolved (see “Caches” in TR. 14; Coe 1990: 926 – 930, esp. p. 930). The two-paragraph introduction to Coe’s (1990: 930-939, also App. D) section that is labeled “Problematical Deposits” is particularly revealing. Coe omits any reference to caches of “ash” and believed (1990: 926) that these matters would be resolved in Tikal Report 35, covering Tikal caches and burials (cf. Coe 1959; see also, Becker 1993). As of 2019 several Tikal Reports remain in process, but it is unlikely that information from caches and burials will be assembled in one work as they were for Piedras Negras (Coe 1959). Most of the caches and burials from Tikal have been presented in some form in the earlier published Tikal Reports.

The uses in the Middle East of the aromatic resin myrrh (Commiphora myrrha) and the related frankincense, both from the family of small thorny trees known as Burseraceae, are remarkably similar to those uses to which copal have been put in Central America. All are used in rituals as well as in medicines. Myrrh is commonly
found in the Horn of Africa, with frankincense more specifically said to be from the Dhofar region of Oman. Egyptian references are known from at least 2200 BCE, and certainly both were used earlier. Of particular note is that the ash of myrrh had important ritual uses, being used as an ingredient in eye liner and other products with medicinal value.

9 The excavations in and around the plaza fronting “seven temples” group in the southwestern sector of Tikal began around 2005 under the direction of Oswaldo Gómez (2006) with funding from the Agencia Española de Cooperación Internacional y Desarrollo (see Gómez 2013 for an overview). This program was identified as PP7TT, or the *Proyecto Plaza de los Siete Templos de Tikal*. These excavations were independent of the *Proyecto Nacional Tikal* (PNT) and had its own numbering system for caches ("Ofrendas") and burials.

10 Imprints of palm fronds were found in Tikal Cache 184 (Str. 5D-22-1st, see Coe 1990: 385). From the same structure the existence of “leaf bundles” is noted, after a fashion, as an “assemblage (read ‘pattern’) that thereafter guided ‘votive’ activities within the edifice (though Xux caches of leaf bundles were specifically made)” (Coe 1990: 412). García-Moreno (2004) has identified palm in tombs at Calakmul. But what these items symbolize (cf. Olivier 2018) remains speculative. How commonly leaf bundles or palm fronds were used in ancient Maya ritual, and whether the palms were incidental or central to these acts, remains speculative.

The study of pollens offers tremendous insight to the uses of floral and other plants. Parallel to the problem of cacao seed survival is the rare survival of macrofloral remains (but, see Miksicek 1983). Ethnographic data appears to be more likely to generate ideas regarding what plants were used, and where we might seek traces of them.

11 Rosemary Joyce (2001) creates a scenario in which the very act of deposition of “placed deposits” creates secret aspects, and that the secrecy gives these deposits particular power (see Simmel 1950: 330). Simmel (1950: 330) had suggested that secret things are shared by two people, but requires “purposive [sic] hiding and masking, that [is] aggressive defensive, so to speak, against the third person . . . ”. This requires concealment of information (the secret), and I assume this could be applied to objects. Simmel (1950: 332) speaks of the fascination of things secret and hidden. But, are Classic Period Maya caches secret and deliberately hidden, or are they simply placed for disposal in a ritual way and with a specific public function? I suggest that caching was necessarily a public and generally recognized activity among the ancient Maya, and that the shared knowledge was important to sustaining cultural or community understanding of ritual and process. In effect, my view of these processes of caching is directly opposite that of secrecy as suggested by Joyce. These very different suggested interpretations may be a function of the viewers’ personalities. I clearly am not a secretive person and tend to disbelieve conspiracy theories.

Carolyn Nakamura (2005) discusses magic as related to figurines found in Babylonian sub-floor deposits dating from the period of Assyrian rule, during the last two centuries BCE. She proposes that the magic related to these deposits is part of a system that involves hiding the fact that people control the gods. Her interpretation, as those relating to the Maya area, may all relate to an intellectualization of beliefs now
common, and possibly found in texts from the Greek and earlier philosophers— that is, a human process of thought that finds itself translated into ritual behaviors. All of these theories may be correct, but the question remains, how do the practitioners of any specific religion (both the priests and the peasants; or the priests as distinct from the peasants) translate these ideas into regularized (ritual) behaviors.

Simmel (1950:338, fn. 5) also speaks of things that are secret as a form of adornment, and thus act as a manifestation of power. Simmel’s translator, K. Wolff, notes that Simmel’s original text uses the word “schmuck” [sic], in association with adornment, by which I infer that Wolff means *der Schmuck* as in jewelry or ornament. Joyce (2000) suggests that certain Maya ornaments that appear as cached materials reflect power, and thus represent a statement of social and/or economic hierarchy. If the identifying characteristic of the object that reflects power, is the quality of the “heirloom” (a valuable made in a period earlier than that of the context in which it was deposited) enhanced by association with a past owner? Evidence for heterarchy among the Maya (Becker 1999: 137, 2004) is suggested when statements of power are not made public, as in the use of items believed to have been heirlooms as burial objects; a behavior that does not appear to reflect a power hierarchy. The interpretation of goods as being secret in nature satisfies the psychological needs of conspiracy theorists. We must ask a simple question: “How do we identify these behaviors in the archaeological record without resorting to conspiracy theory?” Or, if we rely on such theory, how do we recognize (predict) aspects of these behaviors in the archaeological record? If we cannot create testable models for our theories, then we enter a post-modern science fiction world that resembles archaeological interpretations made in the not so distant past.
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