

ARTICLE

# Cache Complexes in Tikal, Petén, Guatemala (800 BC–AD 950)

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(Received 7 December 2023; revised 11 June 2024; accepted 11 June 2024)

## Abstract

For almost a century, caches have been regular discoveries at most Preclassic and Classic Maya sites (ca. 800 BC–AD 950). As early as the 1960s, William Coe noticed a number of recurring patterns (Tikal Report No. 27A). Fifty years after the end of the Tikal Project's excavations, it was nonetheless necessary to review the data from all the successive projects to identify new deposits and reanalyze contexts deemed problematic. As a result, 343 caches are now identified at Tikal, of which 97% can be assigned to a recurrent Ritual Cache Complex on the basis of a combination of etic criteria including content, context of discovery, and chronology. Their study confirms a link between architectural and depositional sequences but also probable functions as gift offerings and agentive tools used by the whole population for ceremonies closely related to the type of structure in which they were performed. Finally, the repetition of cases provides a cautious basis for emic interpretations, thanks to the support of ethnographic comparisons. This organization of rituals into recurring patterns goes beyond Tikal and even the Maya area. This article is thus a first step toward a future larger-scale study.

## Resumen

Desde hace casi un siglo, se han descubierto regularmente escondites en la mayoría de los sitios mayas del Preclásico y del Clásico (ca. 800 aC–950 dC). Ya en la década de 1960, William Coe observó una serie de modelos recurrentes (Tikal Report No. 27A). Cincuenta años después del final de las excavaciones del Tikal Project, fue sin embargo necesario revisar los datos de todos los proyectos sucesivos, con el fin de identificar nuevos depósitos y reanalizar contextos considerados problemáticos. Como resultado, ahora se han identificado 343 escondites en Tikal, de los cuales el 97% puede asignarse a un Complejo Ritual de Escondites recurrente sobre la base de una combinación de criterios éticos que incluyen el contenido, el contexto de descubrimiento y la cronología. Su estudio confirma un vínculo entre las secuencias arquitectónicas y deposicionales, pero también probables funciones como ofrendas y herramientas agentivas utilizadas por el conjunto de la población para ceremonias estrechamente relacionadas con el tipo de estructura en las que se realizaban. En el estado actual del corpus, se han identificado 23 complejos recurrentes, 10 de los cuales se dividen en un total de 27 variantes. Sólo 10 escondites siguen siendo casos únicos. Por lo tanto, parecía importante destacar los procesos de repetición, codificación y normalización de estas prácticas rituales. Por último, la repetición de casos proporciona una base cautelosa para interpretaciones émicas, gracias al apoyo de las comparaciones etnográficas. Esta organización de los rituales en patrones recurrentes va más allá de Tikal e incluso del área maya. Por eso este artículo, centrado en los datos de Tikal, es un primer paso hacia un futuro estudio a mayor escala que pueda servir de base comparativa.

**Keywords:** cache; Tikal; ritual deposit; offering; repetition

**Palabras clave:** escondite; Tikal; depósito ritual; ofrenda; repetición

## Caches and Recurring Patterns

Sir Eric Thompson was the first to mention ritual deposits, which he called “caches” and identified under the stelae of Hatzcap Ceel and Cahal Pichik in Belize (Thompson 1931:269). He distinguished them from burials, a decisive step in the definition of this new type of ritual. This terminology was subsequently refined following the Carnegie Institution’s excavations at Uaxactun (Ricketson and Ricketson 1937:139; Smith 1950:91), before being formalized by William Coe at Piedras Negras (Coe 1959:77): “The term caches refers to one or more objects found together, but apart from burials, whose grouping and situation indicate an intentional burial as an offering.”

From the outset of the Tikal Project in 1958, caches were clearly defined. They could be inserted into pits dug into the floors, implanted into stairs or benches, incorporated directly into the masonry at the time of construction, or to dedicate a stela. This type of deposit was regularly used during the initial construction work, then throughout the periods of cyclical occupation and reconstruction of structures, plazas, and platforms, both residential and civic-ceremonial (Figure 1).

In 10 years of excavations, the University of Pennsylvania’s team discovered 203 firmly identified caches at Tikal and the satellite sites of Uolantun, Santa Fe, and Navajuelal. Over time, Coe found himself increasingly concerned by the growing number of equivocal cases, halfway between caches and burials (Iglesias 1988:27). All the more so as this ambiguity may have been maintained by the Maya. Some authors believe that they could be one and the same category (Baudez 1999:18; Becker 1992:186). Coe therefore created a temporary category for Tikal, which he called “problematical deposits,” until the evolution of knowledge made it possible to establish a more satisfactory typology. Eventually, this category came to encompass all types of uncertain but probably ritual contexts that do not fall within the definition of these two types of deposits, for a total of 246 cases (Moholy-Nagy 2019:47, 2021). A recent reassessment of these data showed that the vast majority can now be classified in various categories of rituals identified or better understood since then. Some of them are also household trash and therefore not ceremonial (Begel 2020:142–145).

Once again, it was Coe who observed repetitive patterns in the corpus of Tikal caches. A 162-page batch of typed notes is preserved in the Penn Museum archives (“Preliminary Cache Report”). In this manuscript, he establishes a categorization of ritual deposits associated with stelae (“complexes A to C”) and structures (“complex D”). This classification is accompanied by an attempt to reconstruct the caches discovered during earlier excavations, such as those by Jolly, Herron, and Robson in 1930. This first attempt was then largely supplemented by a synthesis in Tikal Report No. 27A, in which 18 “Offertory Assemblages” are included, two of which are subdivided into four variants each (Moholy-Nagy and Coe 2008:18–20). Unfortunately, this work does not include problematical deposits. It does, however, offer a first etic classification of 188 of the 203 caches identified at the time.

Surprisingly, this line of research has not been pursued by other archaeologists in the Maya area. Yet the phenomenon is not confined to Tikal and its micro-region. Recurring patterns can be identified at other sites, as shown by inventories published in monographs or annual reports (see discussion). At a Mesoamerican level, only Leonardo López Luján (1993) has highlighted such repetitive processes for the Mexica Templo Mayor of Tenochtitlán, defining 20 recurring “Offering Complexes.”

Coe’s short synthesis was to be complemented by Tikal Report No. 35, a project he unfortunately did not have time to undertake but which will be published shortly (Begel:2022a). The present study builds on this fundamental foundation. Nevertheless, the term “Offertory Assemblage” seems to imply not only an intention but also a necessary combination of several artifacts. It seems preferable to use a more neutral expression such as “Cache Complexes.” These ritual devices, which might combine a gift offering as well as an agentive function, will be described as the text progresses, according to the topics covered.

## Identifying Significant Repetitions

The 203 caches discovered by the University of Pennsylvania already represent a total that far exceeds what has been observed at other sites excavated to date. Nearly 50 years after the end of the Tikal Project excavations, it was nevertheless necessary to review all the data to build up an exhaustive

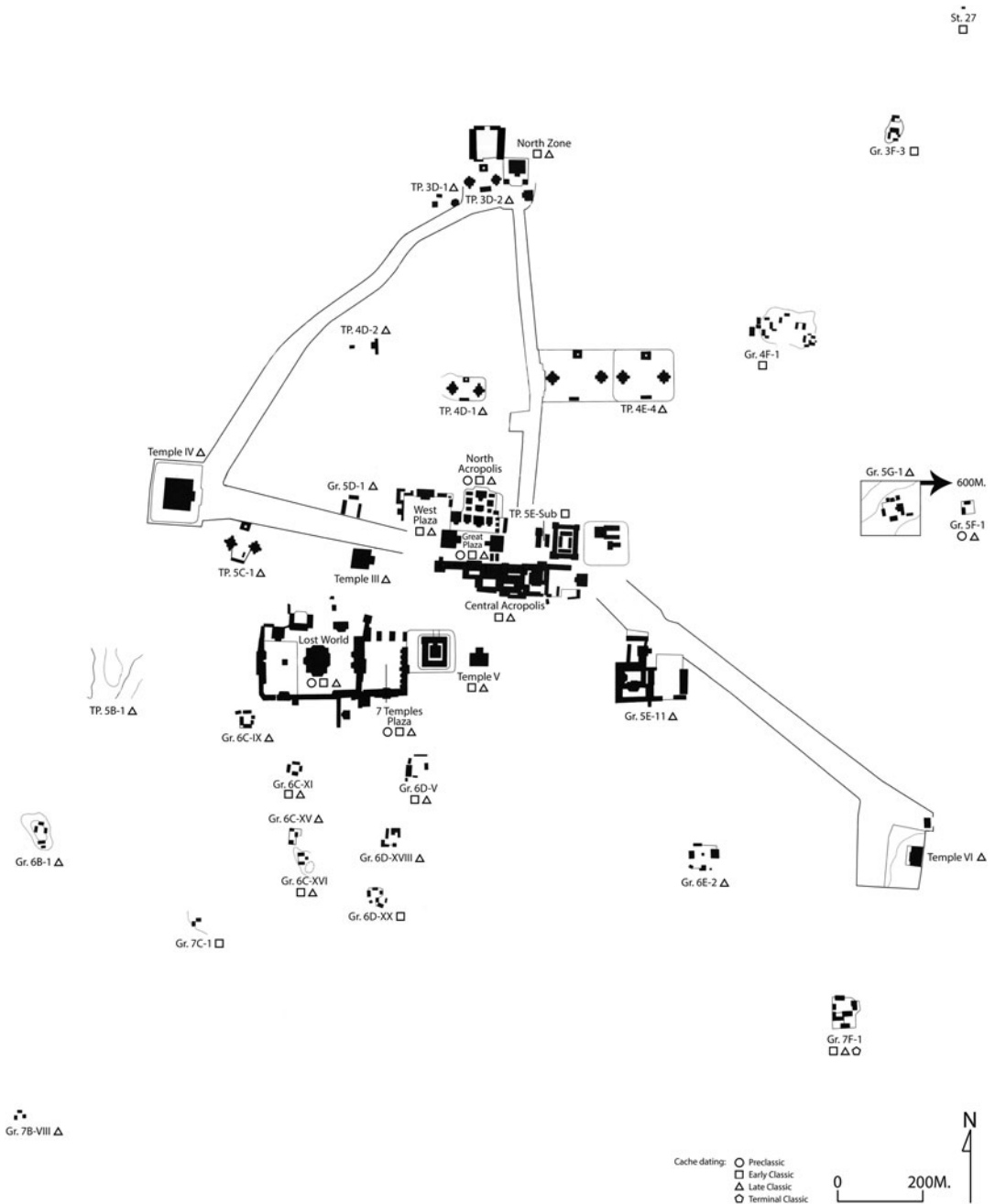


Figure 1. Map of Tikal groups where caches have been discovered (modified from Tikal Report No. 11).

corpus. To this end, it was first necessary to reexamine the excavation data to include in the study the 51 caches that had not yet been published in the Tikal Reports series.

The second stage of the investigation consisted in reconsidering all problematical deposits on a case-by-case basis. In fact, advances in knowledge now make it possible to identify new rituals such as termination contexts, disturbed primary or secondary burials, human sacrificial deposits, and ritual fires and feasts (Begel 2020, 2021, 2022a, 2024; Leclerc 1990:16; Schele and Freidel 1990:459–460; Stanton et al. 2008). But at Tikal, these problematical deposits also include caches that, for various reasons, were not identified at the time of excavation. For instance, some contained too few artifacts to be

considered as such. However, the cases of caches D1 and D2 at Uaxactun (Ricketson and Ricketson 1937:162) show that it is not quantity but context that must be taken into account. Indeed, these two caches contained only one and two jade beads, respectively, but were clearly used for the dedication of Stelae 15 and 16. Other deposits considered problematic turned out to be caches scattered between several loci (pits or inclusions). Some were either disturbed in ancient times and therefore present an incomplete inventory or were moved and reburied in a secondary context. Thus, 52 of the 246 problematical deposits in the Tikal Project can be considered caches today (Begel 2020, 2022a).

Subsequently, an examination of all material lots' cards led to the addition of six new caches. It was also possible to reconstruct others from the inventories of the Group 5D-2 termination deposits. Between the end of the Late Classic and the Terminal Classic, the temples of the North Acropolis, the North Terrace, and the Great Plaza were the scene of some particularly impressive abandonment ceremonies. In addition to the scattering of ceramic sherds, censers fragments, and wood charcoal, a probe for earlier deposits was clearly carried out. No fewer than 54 pits were dug in the various structures, disturbing several burials and caches. The material was partly removed and partly scattered on the floors and in other nearby pits. Based on similar Cache Complexes, it was possible to reconstruct 13 of them (Begel 2020).

Finally, for the sake of completeness, caches uncovered by subsequent projects such as the Proyecto Nacional Tikal (Laporte and Fialko 1985), the Group 5E-11 excavations (Orrego and Larios 1983), the Proyecto Templo V (Gómez 1997, 1999), and the Proyecto Plaza de los Siete Templos (Gómez 2006, 2008) must, of course, be taken into account. Only data from the ongoing Proyecto Arqueológico del Sur de Tikal have not been compiled, partly because laboratory analyses have not yet been completed, but also because only three caches have so far been identified by Edwin Román Ramírez's (personal communication 2022) team. In all, no fewer than 74 caches have been added to the previous ones.

The final corpus thus comprises 343 caches, including 25 from the Preclassic period (800 BC–AD 250), 139 from the Early Classic (AD 250–554), 168 from the Late Classic (AD 554–869), one from the Terminal Classic (AD 869–950), and 10 less precisely dated. In terms of location (Figure 1), the majority came from civic-ceremonial groups: 12 in the North Zone, 168 from Group 5D-2, five from West Plaza, 33 from the Twin Pyramid Groups, nine from the Seven Temples Plaza, 28 from the Lost World (Group 5C-11), and 11 from the great pyramidal temples. In addition, 52 caches were also discovered in various residential groups and seven on the Central Acropolis, which was reserved for palaces and elite residences. Two others were discovered during surveys in unoccupied areas of the city, and 16 came from satellite sites. The corpus is therefore exceptional in many respects: not only for its unusual number but also for its chronological and spatial extension, which opens up a wide range of analytical avenues.

Once the corpus has been almost doubled by these additions, it becomes possible to verify the hypothesis that the caches are indeed organized according to recurring Cache Complexes and that they are not just a few models restricted to the North Acropolis and the Great Plaza. From Coe's brief summary in Tikal Report No. 27A and the detailed inventories of the deposits, several identification criteria can be deduced (Table 1).

A Cache Complex is, of course, characterized above all by the content of the deposits that make it up. These may be specific artifacts or ecofacts, such as the large, imported chert bifaces found only in the Xik Complex or the Tuts censers. They may also be material present in other complexes, but found alone in some caches, such as shells with no other materials in Zay, bundles of leaves or woven bark in Xux, or lithic flakes in Lol. But most of the time, it's the particular combinations of different artifacts that are characteristic of a complex. Muul, for instance, is the most elaborate, frequent and emblematic example of the Early Classic at Tikal. The invariable part of the inventory combined chert and obsidian eccentrics, jade and shell ornaments, ceramic cylinders, unworked shells, and "Charlie Chaplin" shell figurines. It's important to remember that only a fraction of the original inventories is available. Almost all textiles, pelts, food, plants, feathers, and so forth have disappeared. Some seemingly simple deposits may once have contained valuable and diversified perishable goods. Only chemical, palynological, and phytolitic analyses will allow us to complete our partial vision of the caches in the future.

Other criteria also need to be taken into account. For example, the layout of the artifacts is sometimes significant. This is the case of several complexes where the material is protected between two

**Table 1.** Main identification criteria for Tikal's Cache Complexes.

Cache Complex	Variant Criteria	Chronology	Material Association and Special Layout	Preferred Contexts
Pepen ( <i>n</i> = 6)		Tzec-Chuen (600–1 BC)	Unworked and worked jade + ground stone celts	Temple SE-486 in Uolantun only
Sinan ( <i>n</i> = 35 + 2?)	2: number of vessels	Tzec-Imix (600 BC–AD 869)	Only 1 vessel (A), or only vessels (B)	Construction (93%) of various structures, plazas, and platforms
Chimez ( <i>n</i> = 6)	2: chronology and vessel content	Chuen 350–1 BC (A), Cauc 1 BC–AD 150 (B)	1 vase containing an obsidian flake-blade (A) or a few ornaments of jade and shell (B). Contained in a vase (A) with inverted dish as lid (B)	Construction (100%) of temples (50%) and ceremonial platforms (50%), indoor or outdoor spaces. In Group 5D-2 (75%) and in the Lost World Group (25%)
Tuts ( <i>n</i> = 10 + 4?)	2: censers style, combustible	Cauc-Imix (1 BC–AD 869)	Censers: unadorned with combustible (A), effigies, spiked, anthropomorphic (B).	Construction (80%) of temples (80%)
Leum ( <i>n</i> = 9 + 2?)		Manik (AD 250–554)	Shell figurines + mosaic elements + shells + unworked jade	Construction (75%) of ceremonial platforms (75%). Only in Gr. 5D-2 and the neighboring Twin Pyramids 5E-Sub.1
Maaz ( <i>n</i> = 3 + 1?)		Manik (AD 250–554)	One or more birds + small jade ornaments + sometimes lip-to-lip vessels	Construction (66%) of ceremonial groups (100%)
Muul ( <i>n</i> = 37 + 2?)	2: content variety and volume	Manik 3 (AD 376–554)	Chert and obsidian eccentrics + flint, obsidian, jade, shell and hematite fragments + cylinders with lids + imitation stingray spines + shells + shell figurines + jade and shell ornaments + composite mosaic figurines (B) + reptiles (B). Material generally outside the vessels	Construction (51%) of temples (49%) and ceremonial platforms (26%), mostly in Group 5D-2 (77%)
Acach ( <i>n</i> = 22 + 1?)	4: number of containers, content variety and volume	91% Manik, 9% Ik (AD 250–692)	Bowls (AB) and (D) or (C) cylinders + jade and shells beads + hematite powder + cinnabar + shells + stingray spines + shell figurines + mosaic elements + jade figurines (D)	Construction (68%) of temples (55%) and ceremonial platforms (32%)
Yikel ( <i>n</i> = 20 + 4?)	4: lithic typology, associated material	Manik-Ik (AD 250–692)	Chert and obsidian eccentrics + incised obsidians (B) + jade + mosaic elements + shells + human remains (B)	Dedication of stelae (75%) in Group 5D-2 (55%)
Lucum ( <i>n</i> = 14)		93% Manik, 7% Ik-Imix (AD 250–869)	2 bowls set lip-to-lip, 71% Aguila Red-Orange	Construction (79%)
Boxel ( <i>n</i> = 5 + 1?)		Manik-Imix (AD 250–869)	1 unusual vessel (tripod or pedestal) + 1 jade bead + green obsidian flakes	
Buch ( <i>n</i> = 7 + 7?)		Manik-Imix (AD 250–869)	Jade and shell beads or ear ornaments + shells	Construction (100%), mostly in elite Group 6C-XVI (57%)
Pik ( <i>n</i> = 3?)		Manik-Imix (AD 250–869)	Shale mirror plaque backings only, probably set in vaults	Construction of Group 5D-2 temples only

Sak ( <i>n</i> = 8)	2: layout, variety and volume	Manik-Imix (AD 250–869)	Dishes + beads + shells + coral + stingray spines + chert bifaces (B) + reptiles (B) + glyphic vessels and polychrome cylinders (B). Lip-to-lip vessels; quintipartite organization of the vessels (B); cist (B)	Construction (100%) of temples (88%) in Lost World Group and neighboring groups (100%)
Zay ( <i>n</i> = 6 + 1?)		Manik 3-Imix (AD 376–869)	Unmodified marine shells only	Construction (100%) of eastern shrines (PP2; 50%) in residential groups (66%)
Bool ( <i>n</i> = 26 + 4?)	4: lithic typology, associated material	Ik-Imix (AD 554–869)	9 chert eccentrics + 9 incised obsidians + ceramic containers without lids + flint or obsidian flakes (A) + human remains (B)	100% dedication of stelae. All plazas or platforms with stelae
Lol ( <i>n</i> = 8 + 4?)	2: presence of vessel	Ik-Imix (AD 554–869)	Flint and/or obsidian debitage or minor lithic objects such as lancets + vessel (B)	Dedication of monuments (57%) or in temples (43%). Only in ceremonial groups
Uz ( <i>n</i> = 35 + 4?)	4: lithic typology (AB), associated material	Ik-Imix (AD 554–869)	Chert and obsidian eccentrics and incised obsidians (A, B, and General) or miniature clay masks (C) + stingray spines and imitations + fish + shells + other marine materials + mineral pigments + mosaic elements + bundles of leaves. Cists covered by wooden beams (most recent ones)	75% construction (A), 75% occupation (C and General), 50% both (B) of temples (100%) in Group 5D-2 (97%)
Xik ( <i>n</i> = 10)	2: location	Ik-Imix (AD 554–869)	A large chert biface sometimes notched. At the 4 corners of the substructure (A) or in vault (B)	Construction of temples (100%), 66% in Group 5D-2 (A), 75% in Plaza of the 7 Temples (B)
Xux ( <i>n</i> = 7)		Ik-Imix (AD 554–869)	Braided leaves or bark bundles only	Occupation (71%) of temples (100%) in Group 5D-2 (86%)
Ex ( <i>n</i> = 5)		Imix (AD 692–869)	Chert eccentrics + obsidian eccentrics + incised obsidian + flint and obsidian flakes + human remains + mosaic elements + reptiles	Only dedication of monuments in Twin Pyramid Groups
Xnadul ( <i>n</i> = 3)		Imix (AD 692–869)	Eccentric chert + incised obsidian + unworked jade. Miniature clay masks and fishes are marginal in statistical terms but these deposits have all been disturbed	Only during the late occupation of temple 5D-26 (North Acropolis)
Others		2 with multiple Complex possible, 10 Unique caches, 1 insufficiently documented, 3 with stratigraphic issues, and 4 emptied or disturbed		
Total		343 Caches		

Note: The “?” in the totals correspond to slightly uncertain attributions. Percentages in other columns are calculated on the total number of well-identified caches of the complex.

bowls or dishes set lip-to-lip, such as Maaz, where the pair contained a bird. In Sak deposits, the ceramics were generally organized in a quincunx pattern, as if to recall the Mesoamerican cosmogram (Mathews and Garber 2004). Moreover, the caches of this complex also were most often placed in vaulted, masonry cists. The repository is another diagnostic element: Is the deposit placed directly in the fill, in an intrusive pit, or in an even more elaborate arrangement, such as a cist with a log roof and masonry walls or even an imitation burial chamber? These considerations naturally lead to the question of stratigraphy. Caches are inextricably linked to the architectural history of buildings and architectural groups, and at least in Tikal, most often placed on the primary axis of buildings and platforms. It is therefore important to determine whether the caches of a complex are placed in the foundations of the first version of a structure or during construction or occupation (terminal rituals being specific; see the text that follows). The architectural context must also be taken into consideration: in a temple, a platform, under a plaza or a stela, or in a residential group. Finally, chronology is a key factor because Cache Complexes clearly follow the major chrono-ceramic periods.

To give a complete example, nine caches are attributed to the Leum Complex (Figure 2), plus two uncertain cases. The contents include shell figurines, jade and shell mosaic elements, fragments of *Spondylus* sp., and unworked jade pieces. These are the core elements of the complex, to which are more rarely added some chert and obsidian debitage, cinnabar, coral, charcoal, and bone imitation stingray spines. Spatially, this complex is found only in Group 5D-2 and the neighboring Twin Pyramid Group 5E-Sub.1. It dates exclusively from the Early Classic period and is associated in 75% of cases with periods of (re)construction and in the same proportion with basal platforms of ceremonial groups (i.e., outdoor).

Overall, the more a complex is characterized, the more it stands out clearly from the others. Some are immediately recognizable because they combine a number of strong identification criteria that are specific to



Figure 2. Tikal's cache 63, Leum Cache Complex (courtesy of the Penn Museum, Tikal Project image No. 60-25-36).

it, while others are less well supported. Of course, the variability of the criteria leads to a set that may seem heterogeneous at first glance, but the combined result seems to be confirmed by the analyses that follow.

As a final important element of the classification method, some of these complexes have been divided into variants. This distinction reflects observations of groups of caches within the same complex that seem significant. In caches comprising chert and obsidian eccentrics and sometimes incised obsidian, the typology of these elements takes precedence, although some variants also feature other, sometimes exclusive, artifacts. For example, the Bool Complex, exclusively used for stelae dedication during the Late Classic period, is divided into three variants according to the typology of the chert eccentrics and incised obsidians. Nevertheless, in Bool A there were also vessels, generally rectangular—which is notably rare in caches; in Bool B lithics were paired with human infant bones (Figure 3); and in Bool C again the lithic was associated with vessels, but this time more often with cylinders. It should be noted that in these complexes, the typological combination between eccentric and incised obsidian sets is specific to each complex or variant (Table 2). In some cases, the complex has been divided according to the richness of its contents. Thus, to the Muul A inventory described previously (29 caches), reptiles such as turtles or crocodiles are sometimes added, as well as composite figurines of jade, shell, pyrite, and hematite mosaic elements on a stuccoed wooden backing, which defines the more elaborate variant B (eight caches). Occasionally, several of these criteria are combined, as in the case of the four Acach variants, which are distinguished not only by the richness of their contents but also by the shapes and number of vessels (Figure 4).

In short, it's important to observe a whole range of criteria when grouping caches into meaningful complexes: their content, layout, repository, stratigraphic position, associated structure types, architectural groups, and chronology (Table 1). But as the statistics that follow will demonstrate, nuances and variations have to be taken into account.



Figure 3. Tikal's cache 95, Bool B Cache Complex (courtesy of the Penn Museum, Tikal Project image No. 60-4-487).



**Table 2.** Classes of Chert and Obsidian Eccentrics and Incised Obsidian Sets by Cache Complex.

Class\Cache Complex	Chert Eccentrics	Obsidian Eccentrics	Incised Obsidians
Muul	4	2	
Yikel A	3	1A, 1B, 1D, 1E	
Yikel B	3	1B, 1D	X
Yikel C	3	1A, 1D, 1E	
Bool A	1		1
Bool B	1		2
Bool C	1		6
Bool General	1		Variable
Ex	1	1A	9
Uz A	2	1B	9
Uz B	3	1A	8
Uz General	3?	1C?	10?
Xnadul	1	1	6

**Figure 4.** Tikal's cache 119, Acach D Cache Complex (courtesy of the Penn Museum, Tikal Project image No. 61-4-605).

## Characterizing Cache Complexes

The reanalyzed collection thus includes a total of 326 deposits associated with a recurrent Cache Complex, of which only 43 are slightly uncertain attributions (generally due to ancient disturbances). Two disturbed caches could belong to two different complexes, and a further 10 deposits remain unique cases for Tikal. Finally, only one deposit was insufficiently documented, while four others were too disturbed or were found empty, preventing any identification of the original complex. A total of 343 deposits, taking all projects together, can be described as caches at Tikal, 97% of which belong to recurring complexes.

The number of Cache Complexes now stands at 23, 10 of which are divided into a total of 27 variants. For the sake of completeness, we should point out that the Pik (three caches), Maaz (four), and Boxel (six) Complexes have yet to be confirmed, as either the identification criteria are not yet sufficiently distinctive or the number of deposits observed remains very low. Nevertheless, this only concerns 3.8% of the total of caches, the other complexes being particularly well characterized and distinct from one another.

Once the corpus has been defined and classified into coherent recurring groups, it is possible to develop several lines of study, not only to assess the relevance of these Cache Complexes but also to begin to better understand the ritual dynamics at Tikal and its satellite sites over time.

### A Diachronic Evolution

A study of these different caches reveals a whole range of ceremonies that perpetuate, succeed, overlap, or replace one another over time. A first chronological observation of the evolution of the Cache Complexes hardly reveals any impact of major political events.

In fact, for the period preceding the dynasty documented by epigraphy, caches are hardly varied, consisting of one (Sinan A) or several ceramics (B), and sometimes Sierra Red vases containing a prismatic obsidian blade (Chimez A). Deposition activity was then concentrated in the ceremonial groups: the North Acropolis and the Great Plaza (Gr. 5D-2), in the Lost World (5C-11), and in the area of the future Plaza of the Seven Temples (which develops in the Late Classic). Some distance from the epicenter, the satellite site of Uolantun, 5.5 km southeast of Tikal, appears to have been quite dynamic throughout the Preclassic period. The Pepen Complex, made up of jade pebbles and stone celts, seems more similar to the Seibal caches (Aoyama et al. 2017) and therefore probably inspired by Olmec traditions (Drucker 1952). It was from the Early Classic period onward that the Cache Complexes multiplied, a very poorly known period in the history of Tikal until the reign of Siyaj Chan K'awiil I (Martin and Grube 2008:27). In terms of rituals, this was a first golden age, with the appearance of Muul and Aach caches of extremely rich and varied content, which only seems to correlate with the rapid demographic expansion and growing influence of Tikal. While caches were multiplying in groups already active during the Preclassic period, newly built temples such as those in the North Zone and Temple V were also being used. Similarly, deposits appear in residential patios: those in the Lost World dependent zone but also groups 3F-3, 4F-1, and 7F-1 to the southeast and northeast, which proves a diffusion among other social classes. Similarly, it was during this period that the satellite sites of Uolantun, Santa Fe, and Navajuelal adopted or were imposed the traditions of the emerging regional capital (Begel 2022b). This was also a period of marked Teotihuacan influence on Tikal and, more broadly, on the central Lowlands, culminating in the entrada of 378 (Stuart 2000). However, it does not appear that any new Cache Complexes appeared synchronously with this major event, bearing in mind that some caches are dated with little precision, for example the Manik Ceramic Complex, which corresponds to the entire Early Classic. The Muul, Zay, and Buch Complexes (some jade and shell ornaments) would be identified around 325 AD. The last complex to appear during the Early Classic is Sak, centered around Group 5C-11, which showed strong links with Teotihuacan. However, excavations of the Proyecto Nacional Tikal have not provided a precise enough chronology to correlate its appearance to the date of the entrada. Similarly, at the turn of the Late Classic, around AD 550, the beginning of the war with the Kaanul dynasty of Dzibanché/Calakmul and its allies (Martin and Grube 2008:39) does not seem to have had a direct impact.

The Late Classic is characterized by gradual but highly visible changes in deposition practices. The preceding complexes disappear following the Ik Ceramic Complex (AD 554–692), the period of the

second and third hiatuses in inscriptions (Moholy-Nagy 2016). This transition is also marked by the Yikel Complex, which is clearly halfway between the splendor of the Early Classic caches and the more codified aspect of those of the Late Classic. The latter are far more standardized, both in terms of their content and their association with a particular type of structure or monument. As a result, the diversity of material diminishes, giving way mainly to marine ecofacts such as fish, coral, sponges, sea urchins, Bryozoa, and algae. There is also a decrease in caches in the Lost World Group and the residential groups to its south. The transition from the first to the second half of the Late Classic corresponds to a period between the third and the fourth hiatuses (Moholy-Nagy 2016) and the accession of Jasaw Chan K'awiil I to power. This king reversed the course of the war against Calakmul and restored Tikal's power (Martin and Grube 2008:44–46). None of this seems to affect the complexes in vogue at the time. Therefore, there is probably little connection between political and diplomatic ups and downs, dynastic ruptures, and the evolution of caching practices at Tikal. Tradition changes seem more to follow that of major cultural shifts, which are also visible in ceramics and iconography. During the second half of the Late Classic, caching activity resumes in the Lost World Group and multiplies throughout the residential area southwest of the epicenter. Group 5D-2, where deposits have never ceased, sees numerous stelae dedications, as do the new Twin Pyramid Groups, which flourish to commemorate the end of calendar cycles every 20 years.

In addition, it seems possible to classify the majority of Cache Complexes into two main families. The first concerns caches in which the material is entirely contained in vessels, that is “cache bowls” placed lip-to-lip or “cache cylinders,” mainly for the Early Classic period. It is possible, though impossible to prove positively, that there is a certain filiation between these complexes over time. The earliest is Sinan, which appeared as soon as Tikal was a permanent settlement established in the Late Middle Preclassic (600–350 BC). It consists of a single ceramic (variant A) or several (B) without any other associated material. At the beginning of the Early Late Preclassic (350–1 BC), the new Chimez Complex appears. Originally quite simple, consisting of a single vase containing a prismatic obsidian blade (variant A), it became more complex in the Late Late Preclassic (1 BC–AD 150), including modest jade and shell ornaments, protected by an inverted dish set as a lid (variant B). This first use of a closed container may have inspired the complexes that subsequently proliferated in the Early Classic (AD 250–554). The simplest of these is Lucum, a pair of lip-to-lip bowls with no identified contents (at least with the techniques of the time). On the same model, Maaz, a little attested complex (three cases), seems to have contained quails among other materials. Finally, Aach is distinguished into four variants based on the number (1–24) and type of vessels (pairs of Aguila Orange bowls and Balanza Black cylinders) but also on the diversity of other elements they contained (Figure 4). The contents are similar in all four variants but range from simple pigments in variant A to some of the most diversified caches in the Early Classic because they included jade, hematite, and shells, among others, in a wide variety of forms (unworked, fragments, ornaments). This complex bears a strong resemblance to Sak, a tradition developing around Group 5C-11 (Lost World). Housed in fine vaulted cists, the contents of these caches were only partially included in the vessels, a large pair of central glyphic dishes and imported polychrome cylinders, all arranged in a quincunx pattern. This similarity, however, raises the question of a filiation between the two. More generally speaking, ceramic Cache Complexes develop gradually in the Preclassic period, before multiplying in the Early Classic and, for some, continuing beyond, but there is no innovation in the Late Classic.

The second family of complexes revolves around sets of eccentrics or incised obsidians. Each lithic complex presents a unique typological combination of sets, and therefore a stylistic specificity (Table 2). The variability of chert eccentrics is much greater in the Early Classic (Muul, Yikel). In the Late Classic, only the Uz variants (Figure 5) do not belong to Class 1. The same standardization applies to obsidian eccentric sets. Incised obsidian, with the possible exception of Yikel B, only appear from the Late Classic onward but replace obsidian eccentrics in caches by the Late Late Classic. One specific feature of these lithic Complexes is their context. Muul and Yikel are relatively versatile and may have been used for monument dedications or temples and basal platforms constructions. By contrast, a specialization appears in the Late Classic period. Bool and Ex are reserved exclusively for stelae, while Uz and the uncertain Xnadul Complex (three disturbed caches) seem to be used exclusively for



Figure 5. Tikal's cache 131, Uz B Cache Complex (courtesy of the Penn Museum, Tikal Project image No. 65-4-14).

buildings and basal platforms. As with the vessel complexes family, there may have been filiations. Indeed, the typology of sets is mainly based on stylistic variations of the same forms (Moholy and Coe 2008:Appendix 11). Be that as it may, the standardization and specialization of lithic complexes are clearly visible in the Late Classic period, when they multiply (mostly below stelae), in contrast to the vessel complexes that flourished in the Early Classic. The other eight complexes, which do not belong to either of these two families, are spread across the entire chronology.

A final chronological and spatial consideration is in order. The use of GIS has confirmed that the true ritual heart of the city is Group 5D-2, comprising the North Acropolis, the North Terrace, and the Great Plaza (Begel 2020, 2022a). Caching activity here is continuous from the Early Middle Preclassic to the end of the Late Classic (800 BC–AD 869) and accounts for no less than 49.1% of the corpus. These complexes were subsequently reused throughout the city. Nevertheless, in the Early Classic period, other models developed around the Group 5C-11. These include the Sak, Acach A and B (perhaps C), and Buch Complexes already described. But for a number of others, it is impossible to determine the anteriority in one of the two ceremonial groups. It is possible that this rise of a second pole correlates with the temporary use of Structure 5D-86 in Group 5C-11 as a royal necropolis between AD 250 and 378 (Jones 1991:110). At first, these complexes seem to have spread mainly to the residential area south of the Lost World, in this case groups 6C-XI, 7C-1, and especially 6C-XVI (Figure 1; Arabic numbers designate the Tikal Project excavations, while Roman numbers were used by later Proyecto Nacional Tikal). After a possible recession at the beginning of the Late Classic (AD 554–692), with some deposits dated imprecisely between the Ik and Imix Ceramic Complexes), these Cache Complexes from Group 5C-11 are experiencing a revival of interest. They are used mainly in newly built groups: the Seven Temples Plaza (Xik B), the great pyramid temples, and the Twin Pyramid Group 5C-1 but also more occasionally in the residential patios 6C-IX,

6C-XII, 6C-XV, and 6E-2. There was thus a bipolarization of ritual traditions at Tikal (see Becker [2023] on moieties), although the canon is well and truly defined in Group 5D-2.

### *Ritual Deposits and Architecture*

A second approach sheds some light on the long-suspected links between deposits and architecture. An initial analysis based on stratigraphic categorization and comparison of caches yielded mixed results (Begel 2020). Indeed, on the one hand, construction and occupation caches differed very little from one another. On the other hand, they differed markedly from the termination deposits, which are clearly identifiable not only by their form (scatterings, intrusions, localized deposits on last floors) but also by their content (broken ceramics and censers, charcoal and ash deposits, lenses of melted resins, etc.). In fact, a whole range of criteria had to be combined to obtain the most convincing results. Thus, it was the Cache Complexes, or more precisely their variants, and not the caches that had to be considered. These then had to be cross-referenced with the stratigraphic categories of the deposits that make them up and the associated structure type, all within the chronology.

Until the end of the Early Classic period, the complexes are generally quite specialized; that is, they are linked to a major stratigraphic category and structure type. For example, Chimez A is associated exclusively to the construction of basal platforms for ceremonial groups and Buch mainly to periods of residential patio construction. The importance of the variants is clear here: while Acach A and C are used for temple construction, variant D is more versatile and mainly concerns the construction and, to a lesser extent, the occupation of temples and basal platforms or plazas and more rarely range structures. Indeed, some Early Classic complexes, such as Yikel A, Lucum, Sinan A, and Muul, appear to be multipurpose. By contrast, Late Classic complexes are clearly linked to dedications or periods of occupation or construction and to a specific architectural or monumental context. Exceptions are rare, especially in terms of structure type. The standardization already mentioned goes beyond the simple framework of lithic and ceramic families to appear as a general rule.

Deposits are more varied in terms of both content and context up to the end of the Early Classic, whereas the use of a Cache Complex for a specific stratigraphic context and type of structure or monument is much more strictly observed thereafter. Unfortunately, these convincing results could not be confirmed by factorial correspondence analysis or multiple correspondence factorial analysis. Indeed, the number of sets (in this case, complexes) is too high, as are the types (stratigraphic categories or structure types according to the analysis) in view of the number of caches observed. As a result, in the vast majority of cases, the chi-square test returns an insufficient value, or the independence value is clearly too low. This lack of epistemological input does not, however, alter the interest of the cross-checks, which were developed more empirically (diagonalized matrices), or the hypotheses deduced from them.

Thanks to excavations in the residential sectors, the Tikal corpus also offers the opportunity to compare the question of caches with that of the standard of living of the inhabitants of the different areas of the site. The vast majority of mounds visible during prospecting or thanks to lidar concern different levels of the elite. The humblest dwellings are extremely difficult to locate, and at Tikal, the Invisible House Mounds Project revealed no ritual deposits. William Haviland (2014) has suggested that the spatial distribution of house types, special deposits, and kinds of portable material culture indicate a high degree of social stratification and segregation by Early Late Preclassic times, and Hattula Moholy-Nagy adds that the offertory traditions of the elite and commoners were quite different regarding material offerings, even though the intent to contact the supernatural might have been the same (Moholy-Nagy, personal communication 2023). Marshall Becker (1992:187) believes, however, that the poorest may have expressed the same cultural rules as the elite but with perishable materials. A Lucum cache found at the foot of the facade of a hut in Naachtun (Lemonnier 2018), however, shows that more substantial deposits cannot be ruled out.

Architecture is a good marker of social differentiation (Hendon 2010:102). The sophistication of construction techniques, from the adobe hut to the vaulted stone edifice, and therefore the cost involved, as well as the number and size of structures and adjoining patios are indicators of prosperity. The Maya social hierarchy is a continuum, and it remains risky to attempt to distinguish social classes

on this criterion alone because the difference between wealthy commoners and the minor elite remains problematic and debated (Marcus 2004:261). On the basis of a morphological typology of residential units proposed by Hiquet (2019:207–217) in Naachtun and the Plaza Plan concept developed by Becker (2003) it is, however, possible to hierarchize architectural groups if not social classes (Begel 2022a). At Tikal, a first level would be made up of nonvaulted structures, isolated or organized around a simple patio (Plaza Plans 3 and 5). Slightly more elaborate mound-top patios (PP3), built on a platform and sometimes organized around several courtyards or even with an oriental shrine (PP2 and 4), belong to an intermediate level. The clearly identifiable ruling elite resided in the Central Acropolis, in palatial groups on the periphery and in monumental satellite sites such as Navajuelal and Uolantun. Last but not least, the civic-ceremonial groups of the epicenter are attributed to royalty.

The first conclusion is that whatever the level of prosperity or influence, the entire population of the different types of patios uses caches. These may be artisans (Group 4F-1) or middle- and upper-elite families. Thus, 4.3% of caches come from the simplest patios (less excavated, these residential groups are certainly underrepresented in the calculations). Only 4.6% came from patios of intermediate complexity, which seems particularly low in view of the 16 groups involved (55.2% of the residential groups observed), some of which were extensively excavated. Finally, 14.1% were found in palatial groups and ceremonial structures of satellite sites belonging to the high aristocracy. Even if the caches produced by royalty dominate, rituals discovered in residential areas represent a fifth of the corpus, which is not negligible. These are mostly foundation and (re)construction deposits. Pragmatically, the cost of a ceremony has to be taken into account, so it's not surprising that only important occasions are commemorated with a cache in these patios. As for the question of recurrence, caches featuring a unique material association, and therefore not associated with a Cache Complex, are marginal. Twenty-two of the 45 complexes or variants are the exclusive prerogative of royalty. Of course, the simplest complexes such as Sinan or Lucum are shared by the whole spectrum of the population. Imported goods, such as Boxel's green obsidian blades, are nevertheless also found in simple patios, while Zay's shells are used in those of intermediate and higher rank. The case of Sak B is very interesting, as it consists of rich cosmographic caches contained in carefully vaulted cists. One of them comes from Group 6C-IX, a modest Plaza Plan 2. A pair of lip-to-lip Cambio dishes was set at the center, with two Cambio bowls next to them and five Infierno cylinders (two of them with red-on-white stripes, possibly imported) as expected in the corners. But all the rest of the abundant inventory of Sak caches is absent. Residents may have wanted to imitate as closely as possible the practices of the wealthiest. The fact that an Acach D cache was found in Navajuelal and a Muul A in Uolantun also would indicate that costly rituals were part of the territorial meshing strategies of power in these secondary centers. All this suggests that—whatever the standards of living at Tikal—the entire population observed the same types of ritual practices on a recurring basis. The logic of repetition of the Cache Complexes therefore seems to be quite universal.

Cache Complexes therefore follow the canons of successive eras and are not directly impacted by political events. They evolve more slowly but tend to specialize from the Late Classic onward. Specific ceremonies thus emerge, depending not only on when they are performed (construction, occupation, dedication of stelae) but also on the type of structure, space, or monument concerned. These rituals are not confined to rulers, as they are also attested in residential areas. With these observations in mind, is it possible to open the door to more emic considerations?

## Discussion

### *From Etic to Emic*

The transition from this etic classification to an emic interpretation of Cache Complexes is a perilous one. Because iconographic or epigraphic evidence is scarce (and above all reflect propaganda in favor of the established power), the intentionality behind these ritual protocols remains an object of speculation. Ethnology can suggest some interesting interpretative avenues, but the utmost caution should be exercised when applying them to archaeological data, given the temporal gap and the many political, cultural, and religious upheavals that separate the present-day Maya from those of the

Classic period. Similarly, limiting ourselves to present-day performances and metadiscourses is highly restrictive (Wobst 1978), and there is no evidence that the Maya of the past did not develop far more diversified traditions over the centuries and were strongly restrained by the imposition of Catholicism.

Modern ritual deposits can serve two different and complementary purposes. They may be purely oblation and thus offerings to nonhuman entities awaiting a countergift. But their function can also be purely performative, meaning that a deposit of a specific artifact combination would produce an expected effect. Is it a question of offering a tribute to nonhuman entities to benefit from their favors? According to some ritual specialists, food, drink, copal smoke, blood from animal sacrifices, and candlelight are consumed by the entities (Marie Chosson, personal communication 2017). So, there is indeed an exchange here based on gift and countergift, which can also be envisaged for various elements found in archaeological ritual contexts; for example, whole animals, copal, or charcoal. The question arises for the others. Many of these artifacts and ecofacts are rare, difficult, poisonous, or even perilous to obtain (snakes, crocodiles, stingrays, coral, *Conus* sp. shells) and come from imports. Could the Cache Complexes be specific gifts, meaning a list of prescribed offerings awaiting a specific countergift? P  rig Pitrou (2012:87) reports that reciprocity between humans and supernatural entities is an imperative today.

But perhaps the intention is to trigger a very specific effect. In this case, the caches would be agentive devices, and each complex would act a little like a magic formula, certainly made explicit by the ritual discourse accompanying the act of deposition. The increasingly strong relationship between complexes and structures, which became widespread in the Late Classic period, is a clue in this direction. The Xik Complex, for example, is made up of large, imported chert bifaces, sometimes notched. Identical deposits were found at the four corners of the base of Temple II at Tikal. They seem to protect the perimeter of the building (variant A), a notion very clearly expressed in the rituals of building inauguration among modern Maya (Begel et al. 2022a). Other specimens were found included in the roofcomb of Temple III and in the rubble of the vaults of temples 5D-96 and 97 in the Plaza of the Seven Temples (variant B), as if placing them at the top of the structure would protect it as a whole. Moreover, the antefixa of Cop  n's Temple 21A feature notched bifaces. The similarity between the Muul B caches and the burials is obvious, not only in their contents but also in the configuration of the chambered repository. This suggests a possible relationship between this complex found in the royal necropolis, the North Acropolis, and the world of the dead. The Sak cosmographic deposits may have served to represent the axis mundi, and thus perhaps to communicate with entities from the underworld. The presence of stingray spines or obsidian lancets in some caches suggests a connection with self-sacrifice, the purpose of which would be to communicate with ancestors (Fitzsimmons 2009:41), especially rulers, and deities. Similarly, the ceremonies performed in the Twin Pyramid Groups are linked to calendar events, more specifically *katun* endings, and thus to the notion of time. If there are specific ritual protocols for the dedication of stelae (Ex, Bool) or for the construction or occupation of different buildings (Uz, Xux, etc.), it's because there must be different functions. Becker (1993) emphasizes the material and symbolic link between caches and the Earth. Other objectives are conceivable: the inauguration of rulers, to ensure the coming of rains or military success, healing, and so forth. It's a question of influencing natural events or contingencies beyond human control by normal means, through what Pitrou describes as a "regime of mimetic coactivity" (Pitrou 2012:80). Deposits are thus ritual tools with very specific purposes. But for the ancient period, all this is still highly speculative and requires many more case studies before we can propose solid hypotheses.

To conclude on this point, when it comes to approaching the ritual realm in Mesoamerica, the answer is never binary. In the caches of classic Mesoamerica, it is highly likely that the two notions coexist, overlap, and complement each other in the course of a single ritual performance. This is a point often emphasized by ethnologists (Dehouve 2007) and is probably particularly relevant to ancient ceremonies. Some elements of the caches would have gift value, others a performative function, and there are some that even have a combination of both. It is also conceivable that some artifacts or combinations of artifacts serve to establish communication with supernatural entities, while others constitute an oblation act designed to satisfy the latter's appetite or solicit a more favorable inclination

on their part. Given the current state of knowledge, it probably seems both overinterpreted and simplistic to describe these deposits as offerings.

### *Beyond Tikal and beyond Caches*

At first glance, this notion of a Cache Complex might seem to be specific to Tikal and its micro-region. For the nearest neighbor, Uaxactun, 94.7% of the 97 caches identified belong to a recurrent complex (Begel 2022b). Consultation of monographs or excavation reports quickly reveals that the phenomenon is much more widespread than it seems. At Altun Ha, caches containing beads or necklaces (Pendergast 1979, 1982, 1990) are reminiscent of the Buch Complex at Tikal. Piedras Negras features a local Cache Complex with sets of chert and obsidian eccentrics in pairs lip-to-lip bowls (Coe 1959), which differs markedly from Tikal.

Similarly, Sinan, Lucum, and Tuts caches are regularly discovered at numerous sites (Begel 2020). Admittedly, these are the simplest of deposits: respectively one or two lip-to-lip vessels and censers. Other complexes are probably shared between various sites or are also universal, but only a large-scale study (in progress) will be able to determine this in the future, even if a certain number of ad hoc though conclusive comparisons have already been established (Begel 2020).

To extend the spatiotemporal framework to Mesoamerica, inventories of La Venta caches indicate that the Olmecs were already practicing recurring rituals using complexes centered on celts of jadeite and serpentine (Drucker 1952). Finally, this has been magisterially demonstrated for the Mexicas in López Luján's (1993) study of the Templo Mayor of Tenochtitlan deposits.

Returning to the Maya, it would seem that repetition is a key factor in the study of caches. To achieve this, it will be necessary to increase the number of exhaustive corpus studies. A first effort in this direction is underway to evaluate the influence of Tikal on the ritual cities belonging to its political network.

Beyond caches, these repetition phenomena are also observed in other types of deposits. Cache Complexes would appear to be just one subdivision of a broader concept that could be described as Ritual Complexes. Among termination or post-abandonment rituals, in addition to the usual scattering of ceramic and censers sherds accompanied by charcoal, ash, and copal, are also deposits of unbroken objects not "hidden" but displayed on the last floors. Julien Sion (2016) and Hemmamuthé Goudiaby (2018) have identified such deposits at Naachtun. Four Termination Complexes have so far been defined (Begel 2022a). These may include long bones or human skull fragments, projectile points or chert bifaces, manos and metates, and sometimes even piles of vessels deliberately placed across the thresholds and staircases of abandoned buildings or the corridors providing access to patios. Their purpose seems to be to symbolically block access to these disused structures. Other types of ritual deposits are also involved. For example, although this is not a Maya case, the construction deposits of the great pyramids of Teotihuacan (Pereira et al. 2011), involving numerous human sacrifices, also seem to conform to a logic of repetition and could therefore be described as Sacrificial Complexes. In Caracol, sacrificial deposits of finger bowls, whose name summarizes their contents, are common in residential shrines (Chase and Chase 1998:319). This tradition also seems to concern Belize and the central Petén (Guerra and Romih 2017:126) and more particularly the El Diablo royal shrine in El Zotz (Houston et al. 2015). Similarly, one or more variants of the Sacrificial Complex of Koxol skull deposits have so far been identified on 76 occasions at 29 sites, including 20 cases in Tikal (Begel 2020). The question remains unanswered for possible Funerary Complexes (term used in McAnany 2010), a subject that will be analyzed in future Tikal Report No. 35B.

### **Conclusion**

The vast majority of caches at Tikal and its satellite sites are therefore organized according to recurring Cache Complexes, from their origins in the Preclassic to the last occurrences in the Terminal Classic. The identification criteria are multiple: deposit content and spatial organization, morphology, stratigraphic and architectural contexts, chronology, and so forth. On this basis, most of the Complexes identified at Tikal form solid recurring patterns. This attests to the plurality of rituals practiced over nearly 17 centuries in this city, which played a major role in the history of the Classic Lowlands.



These Cache Complexes seem to evolve more in line with cultural changes than sporadic political events such as wars or dynastic ruptures. Rather, their sequence follows that of the Ceramic Complexes. Simple in the Preclassic period, they abound and gain in richness and diversity during the Early Classic, before becoming standardized in the Late Classic. The link between caches and architectural context, strongly suggested from the outset, is reflected in the appearance of complexes that are totally specialized according to the type of structure, space, or monument, and even the stratigraphic context (construction, occupation) with which they are associated. A significant proportion of these repeated rituals were practiced not only by royalty but also by the general population.

So, what do these Cache Complexes correspond to? No definitive answer can be given at present, but ethnological comparisons suggest that they probably combine an offering function with that of agentic ritual tools. In any case, this phenomenon of repetition seems to extend beyond Tikal and its micro-region, as Cache Complexes can be identified at numerous other sites. Future work on this theme will enable us to assess its prevalence. But it is not just caches that seem to be governed by recurring patterns. It is quite possible that this also applies to most other types of ritual deposits. Perhaps one day we'll have to consider them all together as Ritual Complexes, which we can distinguish as Cache Complexes, Sacrificial Complexes, Termination Complexes, or Funerary Complexes.

**Acknowledgments.** My thanks to my director and my thesis tutor, Gregory Pereira and Philippe Nondédéo, for having supervised the work that saw the genesis of this classification. Likewise, my gratitude goes to the members of the Tikal Project who have always been of good advice thanks to their intimate knowledge of the subject: Prof. Marshall Becker, Dr. Hattula Moholy-Nagy, and Prof. William Haviland. I would also like to thank Alessandro Pezzati, Senior Archivist, who has welcomed me among his collections at the Penn Museum.

**Funding Statement.** The examples cited beyond Tikal are the result of research undertaken as part of the postdoctoral fellowship program of the UNAM Instituto de Investigaciones Filológicas, under the tutorship of Dr. Francisca Zalaquett Rock.

**Data Availability Statement.** Most of the data used in this article are published in the Tikal Report Series or in the *Simposios de Investigaciones Arqueológicas en Guatemala*. Unpublished data about Tikal are held in the Tikal Project Archives at the Penn Museum or in the Universidad del Valle de Guatemala archives. Trimestrial or annual reports of the Templo V and Plaza de los Siete Templos projects are kept at IDAEH in Guatemala City.

**Competing Interests.** The author declares none.

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