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A cluster and spatial analysis of ceremonial architecture at Late Postclassic Mayapán

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Abstract

Mayapán, Yucatan, Mexico is the largest and best-known Late Postclassic archaeological site in the Maya lowlands. Ethnohistoric sources describe Mayapán as a cosmopolitan city with an extremely diverse population. This paper uses cluster and spatial analyses of ceremonial buildings called ‘oratorios’ to discern architectural analogues to the social complexity of Mayapán. Researchers supported by the Carnegie Institution of Washington in 1938 and from 1949 until 1955 collected the data evaluated in the present study. The cluster analysis revealed four major types of oratorio, two within the site’s central ceremonial group and two outside the group. Each type within the ceremonial core is associated with a specific configuration of ritual buildings suggesting that the analysis has revealed ‘real’ sets of building types. Most of the oratorios in the two types of outside the core stood in residential groups. Variation between these two types appears to have been the result of varying investments of labor and materials in the construction of oratorios.

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Keywords: Architecture; Cluster analysis; Spatial analysis; Maya; Postclassic

1. Introduction

Mayapán was the primary Late Postclassic period (ca. 1263–1441 AD) Maya politico-religious center in Yucatan, Mexico (Fig. 1) [20]. Its population included numerous social factions [16] and had a hierarchy of official positions and a range of social statuses making the population socially diverse. The present paper suggests that factional and status diversity led to patterned variability in the forms of certain ceremonial buildings at Mayapán. Such formal structuring of ceremonial architecture should arise from idiomatic ritual performances among the factions, differing roles of ritual practitioners, and disparities in access to ritual knowledge and construction resources. In order to explore this hypothesis, I examined the forms of a series of ritual structures at Mayapán, and cluster and spatial analyses.

Cluster analysis is a statistical method that combines units into hierarchies of similarity based upon the presence and absence of specific traits. The present paper examines ceremonial buildings called oratorios at Mayapán to reveal subtypes within the larger category of buildings. Oratorios are small ‘god houses’ occurring in both public and domestic contexts [24]. The architectural complexity of the buildings provides ample variability to be considered by the cluster analysis. After ‘shrines’ (N>100), oratorios (N=ca.58) are the most frequently occurring ceremonial buildings at the site, providing a sufficient sample for the analysis. The clustered data was examined spatially to discern whether the types of ceremonial buildings were significant in the social reality at Mayapán. Formal variation in religious buildings should correspond with social factions and statuses, because archaeological, ethnographic, and ethnohistoric research among Maya groups suggests that ritual practices, spaces, and paraphernalia tend to be idiomatic.

While non-Maya communities may consider religious symbols such as crosses or images of saints to be universal icons, many Maya groups consider religious representations to be individual and sometimes sentient.
Fig. 1. Location of the Central Ceremonial Groups within the Wall of Mayapán.
In addition to factional differences standardized, but specific decorations on the buildings at Mayapán, the general shapes of the temples were consistent 

A similar pattern occurred at Mayapán, where temples painted in murals seem to have represented social factions within the city [26]. In the Mixtec codices and the mural at Mayapán, the general shapes of the temples were standardized, but specific decorations on the buildings distinguished one social group from another [19,43]. In addition to factional differentiation, the mural at Mayapán depicts the central temple larger than the others, indicating a hierarchy of temples, and therefore, social groups. Since representations of buildings at Mayapán contain information distinguishing social factions and hierarchies, it seems plausible that the actual buildings contained such visual cues and it is this variability that I will explore with cluster and spatial analysis.

2. Mayapán

The Chilam Balam of Chumayel, a Colonial Maya text, states that a group known as the Itza established Mayapán as the primary center of Yucatan between 1263 and 1283 AD [36]. The site had previous occupations largely destroyed or covered by Late Postclassic constructions [24]. Mayapán was ruled by multepal, a political system composed of a council with representatives from numerous social groups [34]. Indigenous histories suggest that the city had four major divisions or social barrios [37], possibly inhabited by endogamous social groups [7]. While a council ruled the city, the jalach winik, the highest ruler, and the aj k’in, the high priest, dominated its politics. Below the aj k’in and jalach winik were numerous other officials with various responsibilities. The range of status variation extended from nobility (who likely composed the previously mentioned positions) to slaves [35] and included intermediate classes [4].

The social milieu of Mayapán was complicated by the antagonistic relationship of its most powerful groups, the Itza and the Xiw [11], which eventually lead to the city’s demise around 1441 AD [36]. This central political duality may have been symbolically played out through directionality. In Mesoamerica, directionality was the core symbolic contrast and the four directions were unequally valued. Since solar movement was the absolute datum, east and west were primary with the former being associated with life, males, and heat and the latter with death, females, and cold [13,15]. The Itza and Xiw may have been associated with east and west, respectively [11].

In 1938 and from 1949 until 1955, the Carnegie Institution of Washington studied the archaeological remains of Mayapán located in the northern part of the Yucatán peninsula approximately 45 km southeast of the modern city of Mérida. The project’s survey and excavations, eventually summarized in Refs. [14,20–22,24,36,41,42], produced a wealth of information concerning the Late Postclassic Maya. The site has over 4000 structures within a fortification wall enclosing an area of 4.2 km² [41] (Fig. 1). The majority of the buildings were residences [41], but four major classes of ceremonial architecture defined at Mayapán included open halls, temples, oratorios, and shrines (Fig. 2). The ceremonial core lies southeast of the center of the site (Fig. 1) and contains at least 10 temples, 21 open halls, eight oratorios, and numerous shrines. At its epicenter stands a radial temple called the Castillo. The Castillo and the Cenote Ch’en Mul formed the axis mundi (the primordial mountain-cave) of Mayapán, virtually standing between cosmic planes at the beginning of time [2,25,26].

The residences of Mayapán are concentrated in the southwestern part of the site where there are more water-filled cenotes [20,41] or ‘sinkholes’. Property walls surround most residential groups and many include multiple residential structures [41]. Clusters of several residential groups are also surrounded by walls, suggesting higher levels of social integration [2]. Almost all residential structures at the site are tandem structures with a front room with a bench and back room. Besides residences, residential groups might include a kitchen house, shrines, and oratorios [41].

Among the major categories of ceremonial structures are open halls, which are elongated buildings with a C-shaped wall and bench bisected by a medial shrine (Fig. 2). Considerable variation exists among the halls at Mayapán, but the superstructure of the typical hall is ca. 25.3 m long and 6.8 m wide. They usually have two rows of columns, sometimes covered with stucco modeled into human figures [24]. The buildings’ forms and burials match descriptions of ‘big houses’ thought to have been lineage administration and ritual buildings [3,31] or ‘great houses’ of Maya nobility [32]. The number of halls at the site roughly corresponds to the provinces controlled by Mayapán; hence, these buildings may have represented the city’s central lineages [24,32].

Temples are generally the tallest structures in a given group (Fig. 2B). Large temple platforms are symbolic mountains [12] and the superstructures on the top of
many of these mountains are god houses [48, pp. 428–432]. Late Postclassic temples tend to be smaller than their Classic period antecedents; however, Structure Q-162, the Castillo, stands over 15.5 m high, well above the rest of Mayapán. Temple superstructures vary significantly, but often have an antechamber leading into a room with a medial altar. The columns and balustrades of these buildings were sometimes decorated with serpent motifs. The variation in temple superstructures suggests differences in their cosmological significance and function, but most contained deity effigy censer sherds. Such censers include molded or sculpted deity figures mounted upon hourglass shaped vessels [49]. The presence of these artifacts indicates that these buildings housed rituals facilitating communication between humans and deities.

Oratorios stand in both ceremonial and residential groups [24,41]. They rest on low platforms with a large area of empty space in front of them (Fig. 2). The typical superstructure is 9.8 m long and 5.2 m wide. These structures usually have two rows of two columns and a C-shaped bench with a medial shrine or niche. Oratorios appear similar to the front room of domestic structures and were likely modeled after domestic structures, but
these were not residences. The three oratorios excavated in the ceremonial core held large numbers of effigy censer sherds [39,40,52]. Some oratorio balustrades were decorated with serpent motifs. Most oratorios excavated in residential groups were relatively clean, but those with artifacts had numerous effigy censer sherds. Eight of the 11 excavated household oratorios had cist burials along the primary axis, seven with multiple individuals [6,44,50]. One of those lacking burials had a pair of statues (made of stucco and stalactite) seated upon the altar [44], perhaps, the ancestral father/mother. Hence, household oratorios incorporate ancestor veneration into their symbolic repertoire.

Oratorios in the ceremonial core of Mayapán appear to have been lesser temples, but household oratorios were likely to be lesser temples combined with ancestral shrines. ‘Lesser’ indicates they were smaller and less elaborate temples. Excavations in Petén, Guatemala revealed that effigy censers in oratorios were also smaller than those of temples [28] suggesting that the deity they depicted was of lesser importance. On the other hand, small supernaturals [27] and ritual places [51] are often central; hence, the size of oratorios may not correlate with their significance. Sculpted turtle imagery at Mayapán was predominately associated with oratorios, perhaps demonstrating the buildings’ role in calendrical rites [18].

Mayapán’s shrines were its smallest ceremonial buildings. Proskouriakoff [24, p. 90] noted three types of shrines. Raised shrines were unattached buildings with a medial altar standing on substructures that faced into another building, generally an open hall, temple, or residence. Statue shrines were attached to stairways or stood in front of the stairway of another structure and frequently held statues [24]. Interior shrines were rectangular enclosures containing an altar located inside some open halls, residences, and oratorios. Mayapán contains hundreds of shrines, perhaps reflecting the importance of ‘ancestor cults’ [24, p. 136]. However, many shrines held no burials and some enclosed images of deities. The function of these buildings has not been clearly defined and likely varied.

The temples, shrines, open halls, and oratorios at Mayapán usually occur in distinctive arrangements, the most common being the ‘Basic Ceremonial group’ and the ‘Temple Assemblage’ [24, p. 91]. Basic ceremonial groups include an oratorio, raised shrine, and open hall (Fig. 2). The shrine and oratorio are centered upon and face toward the open hall with the shrine resting between the oratorio and hall. Mayapán temple assemblages have a temple with an oratorio to its right, both facing in the same direction (Fig. 2). Facing into and centered upon the temple is a raised shrine, and a statue shrine usually stands between this shrine and the temple. At a right angle to the temple lies an open hall [24]. Both types of ceremonial group included large ‘empty’ areas of plaza, which were important locations of ritual performance [16,30].

Several previous studies have investigated spatial variation in artifact patterning and the architecture of Mayapán. Chase (1981) tested the validity of Landá’s [16] description that late centers were laid out in a concentric fashion with elite residences surrounding the ceremonial core. Through spatial analysis, she discerned that the distribution of large residences, burial vaults, and caches at Mayapán did not support the concentric model. Brown [2, p. 582] noted significant variation in ceramics and lithics between clusters of residential groups, possibly occupied by ‘patrilocality’. An analysis of sculptures at the site indicated that imagery in the ceremonial core emphasized serpent, jaguar, and human figures while outside the core, turtles and burden bearers were the most common [18]. Recent studies have also proposed that discrete ceremonial groups within the ceremonial core evidence the presence of social factions mentioned in ethnohistoric accounts [26,32]. While archaeological research documented weak evidence of four divisions in residential areas [2, p. 581], the site’s central ceremonial architecture suggests quadrupartition [26].
classified according to their physical attributes. The data sources were the maps and reports created by Carnegie Institution archaeologists. I developed a coding system to classify each building according to the presence/absence of numerous architectural features. Only features that would have been visible to individuals using the buildings were included. These variables, some of which are combined, are listed in the first column of Table 1. Open halls were not analyzed because the coding system could not effectively deal with the asymmetry of some buildings. The sample included only 10 temples; hence, they were excluded as well. Following the coding, I analyzed the data with SPSS cluster analysis using Ward’s method as the cluster method, because it tends to produce superior results [1], and Squared Euclidean Distance as the similarity measure. The remaining two types of ceremonial buildings, shrines and oratorios, were analyzed separately. These analyses further refined Proskouriakoff’s [24] original classification by discerning subtypes within her types that could then be analyzed spatially to evaluate their social significance.

The cluster analysis of shrines produced two major sets, one of which included well-constructed shrines with columns and substructures. The second group included simple shrines that generally had no platform or columns and were less elaborately constructed. The primary difference between the two types was that more energy was invested in the former than the latter [25]. Most of the well-constructed shrines rest in ceremonial groups and tend to face open halls or temples. The spatial analysis did not detect observable patterning in shrines, as their highly dispersed distributions overlapped. The category, shrines, likely included several functionally different buildings and the variation in construction quality may have crosscut the functional variation. Shrines will not be examined further in the present paper.

While approximately 50 oratorios stand in residential groups [41] and eight in the ceremonial core of Mayapán [24], only 24 were described sufficiently to be included in the cluster analysis. Of the 24, one (Structure K-79B) was excluded from the analysis because it was not clearly an oratorio. An assessment of all of the residences and ceremonial buildings investigated by the Carnegie Institution indicated that the sample was fairly dispersed. However, the sample did not include buildings in the extreme northeast and northwest portions of the area within the wall and excavations focused upon the ceremonial core. The present study depends solely upon the data from the Carnegie Institution’s research at Mayapán and any errors present in that data set will be repeated here. I also believe that some residential groups likely include non-masonry oratories that would not have been recorded by the earlier survey. Despite possible sampling errors, the cluster and spatial analyses of oratorios indicated patterned results that cannot be ascribed to the Carnegie Institution’s sampling strategy.

The initial branching on the right side of the oratorio dendrogram differentiates ‘Household’ and ‘Central’ oratorios (Fig. 3). Table 1 describes the characteristics of each oratorio subtype and Fig. 4 illustrates each...
subtype. Household oratorios \((n=15)\) rest outside the ceremonial core and stand upon low platforms, usually without stairways, and tend to have niches as their medial feature. Most stand in residential groups and correspond to Smith’s [41, pp. 220–221] ‘family oratorios’. Household oratorios include two subtypes designated as Household 1 and Household 2 oratorios. Household 1 oratorios \((n=9)\) are poorly constructed, asymmetrical and often attached to another building. They usually have two round doorway columns, no interior columns, and less empty platform space in front of them. Household 1 oratorios generally have a medial niche and altar. Their benches are varied with half being C-shaped, but L- and I-shaped benches are also represented. These oratorios stand only in residential groups.

Household 2 oratorios \((n=6)\) have two round exterior columns and two round interior columns. Most of these symmetrical buildings have a medial niche in the bench, which is invariably C-shaped, though some have a medial shrine. All Household 2 oratorios are better constructed than the Household 1 oratorios. Household 2 oratorios stood in residential and ceremonial groups outside the ceremonial core—one stands in a temple assemblage (Structure H-14) and another in a basic ceremonial group (Structure J-109) distant from the ceremonial core.

All Central oratorios \((n=8)\) lie in the ceremonial core of the site and are well-constructed buildings. Their superstructures rest to the rear of platforms that stand more than a meter in height and generally have stairways and balustrades. The Central oratorio class has significant internal variation and branched into Basic Ceremonial and Temple Assemblage oratorios. Basic Ceremonial oratorios \((n=3)\) are symmetrical and have two round columns in the doorway, but no interior columns. A step leads up to a medial shrine resting against the rear wall. All of these oratorios are part of basic ceremonial groups in the ceremonial core. No other oratorio type is associated with basic ceremonial groups in this area. The correlation of the oratorio type with specific architectural groups in the ceremonial core suggests that this building type was a known variation by the people who constructed it.

The other type of Central oratorio is the Temple Assemblage oratorio \((n=5)\). The superstructure is symmetrical and has two round doorway columns and two rectangular interior piers. A step sometimes leads up to an altar against the back wall. Three of the five Temple Assemblage oratorios are associated with temple assemblages. Structure Q-88, is not clearly associated with a particular group, though it does lie on the eastern side of the plaza north of the Castillo. Structure Q-153 is part

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**Table 1**

Frequencies of attributes by oratorio type

<table>
<thead>
<tr>
<th>Variable</th>
<th>Household oratorios</th>
<th>Central oratorios</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Household 1</td>
<td>Household 2</td>
</tr>
<tr>
<td></td>
<td>(n)</td>
<td>%</td>
</tr>
<tr>
<td>Multiple substructure terrace</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Low substructure (&lt;1 m)</td>
<td>9</td>
<td>100.0</td>
</tr>
<tr>
<td>Single stairway</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Multiple stairways</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Balustrade</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Stairway shrine</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Rectangular superstructure</td>
<td>9</td>
<td>100.0</td>
</tr>
<tr>
<td>Square superstructure</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Circular superstructure</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Two round door columns</td>
<td>6*</td>
<td>66.7</td>
</tr>
<tr>
<td>Two square door columns</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Two round interior columns</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Two square interior columns</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Door jambs</td>
<td>7*</td>
<td>77.8</td>
</tr>
<tr>
<td>Interior wall</td>
<td>1</td>
<td>11.1</td>
</tr>
<tr>
<td>C-shaped bench</td>
<td>5*</td>
<td>55.6</td>
</tr>
<tr>
<td>L-shaped bench</td>
<td>1</td>
<td>11.1</td>
</tr>
<tr>
<td>I-shaped bench</td>
<td>1</td>
<td>11.1</td>
</tr>
<tr>
<td>Other bench</td>
<td>1</td>
<td>11.1</td>
</tr>
<tr>
<td>Medial altar</td>
<td>7</td>
<td>77.8</td>
</tr>
<tr>
<td>Medial niche</td>
<td>6</td>
<td>66.7</td>
</tr>
<tr>
<td>Medial shrine</td>
<td>1</td>
<td>11.1</td>
</tr>
<tr>
<td>Medial shrine jambs</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Back room</td>
<td>1</td>
<td>11.1</td>
</tr>
</tbody>
</table>

*Frequency possibly lowered by missing data
of a group that includes a raised shrine and open hall; however, to its left stands the Cenote Ch'en Mul instead of a temple. The Cenote Ch'en Mul is the natural feature upon which Mayapán's ceremonial core was centered, given that the Castillo, the constructed center, lies only 10 m due west. This group may be a variation of a temple assemblage with the cenote standing in the place of the temple [26]. Such substitution is not surprising as 'caves and temple superstructures' are analogous features [46] and Maya deities perceived both caves and temples as houses [8]. The placement of Temple Assemblage oratorios only in the ceremonial core and usually in specific architectural configurations suggests that their builders differentiated them from other oratorios.

4. Spatial distributions of building types

The spatial distributions of the oratorio types are displayed in three formats. Fig. 5 presents the actual spatial distribution of the types in relation to the wall surrounding Mayapán. I determined the statistical properties of the distributions with Idrisi Geographic Information System. Fig. 6 lists the spatial properties of the distributions of each type: the coordinates of the mean center of each building type, the standard radius, the coefficient of relative dispersion, the Castillo distance, and the Center distance. Fig. 6 also shows the diagram of these statistical data in relation to Mayapán’s wall. This diagram is a statistical summary of the spatial distributions of the oratorios, not actual boundaries or centers known to the occupants of Mayapán.

The mean center is a two-dimensional \((x, y)\) mean or the ‘average position of points’ in a group [10, p. 180]. The standard radius is a measure of spatial variability. It is the spatial equivalent of one standard deviation from the mean and signifies the radius within which 68% of members of a set are scattered, assuming a normal distribution [10]. The coefficient of relative dispersion (CRD) is determined by dividing the standard radius by the radius of a circle with an area equal to that of the sampled area (in this case, the area within the wall of
Mayapán) then multiplying the quotient by 100 [10]. Hence, dispersion is the degree to which points in a group are scattered across the sampled region. A coefficient of zero indicates no dispersion and a coefficient of 100 signifies maximum dispersion throughout the sampled area. Lower coefficients denote greater clustering of the points.

The Castillo distance is the distance from the Castillo to the mean center of the distribution of a specific building type. For example, the distance between the Castillo and the mean center of the Household 2 oratorios is 615 m (Fig. 6). Center distance is the distance between the mean center of each building type and the mean center of the entire area within the wall of Mayapán. The mean center of Household 2 oratorios lies 98 m from the site’s mean center. The two distance measures contrast buildings gravitated toward the ceremonial core with those distributed throughout the site. The Castillo is the most appropriate center of the ceremonial core because it is the axis-mundi and the most prominent ceremonial structure. If buildings are dispersed throughout Mayapán, then the mean center of their distribution will lie near the mean center of the site. If a building type is concentrated around the ceremonial core, then its mean center will be located near the Castillo.

The Basic Ceremonial and Temple Assemblage oratorios are only found in the ceremonial core. The mean center of the former lies 33 m east of the Castillo and that of the latter, 40 m west of the Castillo. The small radii (<100 m) and constricted CRD (<5.72) of each structure type reflect their concentration in the ceremonial core (Fig. 6). Household 1 oratorios have a standard radius of 475 m and CRD of 27.23. While these buildings are more dispersed than the oratorios of the ceremonial core, their mean center lies 116 m east of the Castillo, close to that of the Central oratorio types. Household 1 oratorios are found in residential groups outside, but surrounding the ceremonial core and this explains the proximity of their mean center to the Castillo. The mean center of Household 2 oratorios is located 615 m east of the Castillo and 98 m from the areal center of Mayapán. The distribution is highly dispersed with a standard radius of 715 m and a CRD of 41.26 (Fig. 6).

In sum, two distinct types of oratorios lie within the ceremonial core and two outside of it. One of the types inside the ceremonial core was associated with basic ceremonial groups and the other with temple assemblages. The location of the mean centers of three of the four oratorio types close to the Castillo reflects that most are found in or around the ceremonial core.
Household 2 oratorios deviate from this general trend. The mean center of Household 2 oratorios gravitates slightly east of the mean center of the site rather than near the ceremonial core because these buildings stand in groups dispersed throughout the eastern part of the site.

5. Summary and conclusions

The purpose of this study of the architecture of Mayapán was to cluster oratorios into sets and utilize spatial and contextual analysis to discern whether the statistical groupings had social ‘reality’. Based upon the data described above, I suggest that at least two branches in the dendrogram, one separating Household and Central oratorios and the other dividing Basic Ceremonial and Temple Assemblage oratorios, represent divisions known to the occupants of Mayapán and/or were the products of known boundaries.

All Central oratorios stand within the ceremonial core of Mayapán while most Household oratorios were concentrated within 500 m of the Castillo with the exception of two distant outliers in minor ceremonial groups (Fig. 5). While all oratorios were sacred buildings, those of the core were public ritual structures important to all of the inhabitants of Mayapán and outlying areas. Families or factions within the population used those outside the core. The main difference between the two types is that Central oratorios are constructed better, stand on higher platforms, and tend to have more substantial medial features than Household oratorios.

The better construction of Central oratorios is representative of the general monumental theme of the ceremonial core epitomized by the Castillo towering above all other structures at the site. While one might rightly speak of monumentality as the conspicuous ‘materialization’ of power [9], it has even deeper significance. Monumentality indicates that central space differs from the world outside of it, just as festivals differ from everyday life [17]. The scale of monuments signals their durability; they stand outside mundane time in the realm of immortality. As representations of the collective, they signify the permanence of society [17]. The high temple pyramids bridging the earth and sky indicate the center’s connection with divinity. The monumentality of the Central oratorios helped communicate that the center was of a different nature than the rest of Mayapán, it is sacred, at the threshold of the realm of the gods.

Monumentality partially explains the variation between the Central and Household oratorios, but other
factors were at work as well. As mentioned, disparities in sculptured motifs suggest variation in ritual performance between the ceremonial core and outlying areas [18]. The central area was also clearly the focus of caching behaviors [4]. In addition to the formal differences, Central and Household oratorios differed regarding the incorporation of burials, which was not included as a variable in the cluster analysis since it was not an overt trait. As noted, the Central oratorios excavated by the Carnegie Institution of Washington lacked burials, while most Household oratorios possessed burial cists. This disjunction matches Chase’s [4] observation that burial vaults were dispersed throughout the site. Oratorio burials were not simply dedicatory deposits as some burials were occasionally reopened to add new ‘occupants’, disturbing earlier remains [41]. Oratorios in residential groups combined deity and mortuary ritual, but those of the ceremonial core focus upon deity ritual.

All Basic Ceremonial oratorios occurred in basic ceremonial groups and most Temple Assemblage oratorios were found in temple assemblages. The formal differences in these types likely resulted from variations in ritual offices and practices. In basic ceremonial groups, the shrine and oratorio tend to be aligned with and face into the open hall, but in temple assemblages, the shrine is centered upon and faces the temple [24]. The hall, in the case of the former, and the temple, in the latter, are the primary structures of the particular groups, as each defines the medial axis of ritual space. As mentioned, temples were the houses of deities and open halls appear to have been lineage headquarters. Ritual practitioners may have used oratorios to prepare for ceremonies [24]. Temples in temple assemblage held deity image censers and decorated imagery that represented mythological events [18,26,27]. The Temple Assemblage oratorios could have been built by the social group controlling the aj k’in high priest position because the temples in the groups indicate priestly interaction with deities. Since open halls are the central structures of basic ceremonial groups, one might suggest that these groups were constructed and utilized by lineage heads. The formal differences between Temple Assemblage and Basic Ceremonial oratorios may be the result of differing rituals performed in each type of ceremonial group.

A third major division in the dendrogram is between Household 1 and Household 2 oratorios. While the difference between these oratorio subtypes is greater than that of Temple Assemblage and Basic Ceremonial oratorios, the variance is not strongly substantiated by spatial or contextual data. Household 1 oratorios are centered near the Castillo and have more constricted distribution than Household 2 oratorios. The center of the Household 2 distribution lies near the site’s areal center indicating their greater dispersion. Since the centers of the distributions of Household 1 and Household 2 differ dramatically, one is tempted to conclude that they represented distinct social barrios. However, the sample is too small to support such conclusions, though future research could test this hypothesis. Still, it is interesting that better constructed oratorios lie to the east, the symbolically most powerful direction.

Household 1 oratorios were more poorly constructed suggesting that the households that constructed them had lesser resources and labor available to them than those that constructed Household 2 oratorios. Hence, this division might represent differences in social status. If such a difference were present, it was likely between varying levels of elite or between high elite and, middle men, groups (following Ref. [5]), as it is unlikely that lower status groups would have constructed masonry oratorios.

The two Household 2 oratorios located distant from the ceremonial core lie in lesser ceremonial groups, not residential groups. If one excludes the two outliers from the sample, then the mean center of the remaining Household 2 oratorios lies only 103 m east of the mean center of the Household 1 oratorios. Hence, all domestic oratorios of this analysis concentrated around the ceremonial core. Masonry oratorios stood in elite residences [16, p. 108]; therefore, the homes of the nobility appear to have been organized in a concentric pattern around the ceremonial core. As mentioned, however, other indicators of social status such as ‘elaborate residences’, ‘burial vaults’, and the caching of sacred objects were distributed throughout the site [4, pp. 129–131]. If the nobility were concentrated around the core, then these peripheral elaborate residential groups must have belonged to non-noble high status families. In sum, these data support Chase’s [4, p. 121] argument that Late Postclassic social organization was not strictly divided into ‘nobles, commoners, and slaves’, but included intermediate classes between commoners and nobles.

The present analysis exposed three to four categories of oratorios at Mayapán corresponding to central and peripheral spaces, different types of ritual assemblages (basic ceremonial groups and temple assemblages) paralleling ritual specialists, and variance in construction suggesting social status. While archaeologists and architectural historians cannot fully reveal forgotten architectural taxonomies, they can discern fragments of such taxonomies through building typologies and spatial and contextual analysis of structures.

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