

A Ritual Spindle Whorl Deposit from the Late Classic Maya Site of El Pilar, Belize

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Excavations near the ceremonial precinct of El Pilar, an important Maya center in Belize, exposed a Late Classic period concentration of almost 200 broken limestone spindle whorls. A program of experimentation demonstrated that the whorls were purposely destroyed, possibly as part of a ritual event or events. Such rituals may have been part of a strategy to enhance the status of spinners by honoring deities associated with spinning.

Introduction

Elaborate woven clothing is one of the notable features of ancient Maya self-portrayals, and we know that at the time of European contact, cloth was an important good for trade and tribute. Elite women as well as commoners sometimes wove cloth, and spinning and weaving were associated with some deities, such as Ix Chel. Spindle whorls are not uncommon finds at Maya sites, and are often interpreted by excavators as indicating the presence of cloth-related craft workers. The Maya are also known for the number and variety of ritual deposits left at sites. An anomalous concentration of broken spindle whorls at the Late Classic center of El Pilar raises a number of questions about the place, organization, and meaning of fabric crafts in Maya life.

The Archaeological Evidence from Cahal Tok

Site Description

El Pilar is a ceremonial center located in west central Belize and Guatemala (FIG. 1). The core of El Pilar is the largest center in the Belize River area and consists of several plaza complexes, with most construction occurring in

the Middle Preclassic (950–650 B.C.) and Late to Terminal Classic (A.D. 650–1000) periods.

In 2004, a team from Grinnell College excavated at Cahal Tok (Place of Flint), a limestone rise at El Pilar with some structural evidence associated with an extensive debitage deposit that had been previously tested and designated the Larry de Forest (LDF) Chert Site (Ford and Olson 1989: 189; Michaels 1993: 227). The Cahal Tok/LDF Chert Site (henceforth LDF Locus) is roughly 150 m NW of Plaza Copal and its *sacbe* (causeway) near the middle of the El Pilar monumental center, but peripheral to the monuments and in an area of the site where limestone quarry pits are common and habitation evidence is sparse. Our excavations consisted of a series of trenches 1 m wide and running from east to west for 21 m, from the exposed limestone NW of the large LDF Locus, up a gentle slope to a low mound that caps the rise on the west (FIG. 2). The cultural deposits were shallow, with strata 50–70 cm thick resting directly on limestone bedrock, and, based on ceramics, date to the latter part of the Late Classic. Near the lithic debitage dump the inhabitants of Cahal Tok constructed a low limestone platform which is associated with an artifact assemblage dominated by biface thinning flakes. This was apparently a workshop area where chert axes were

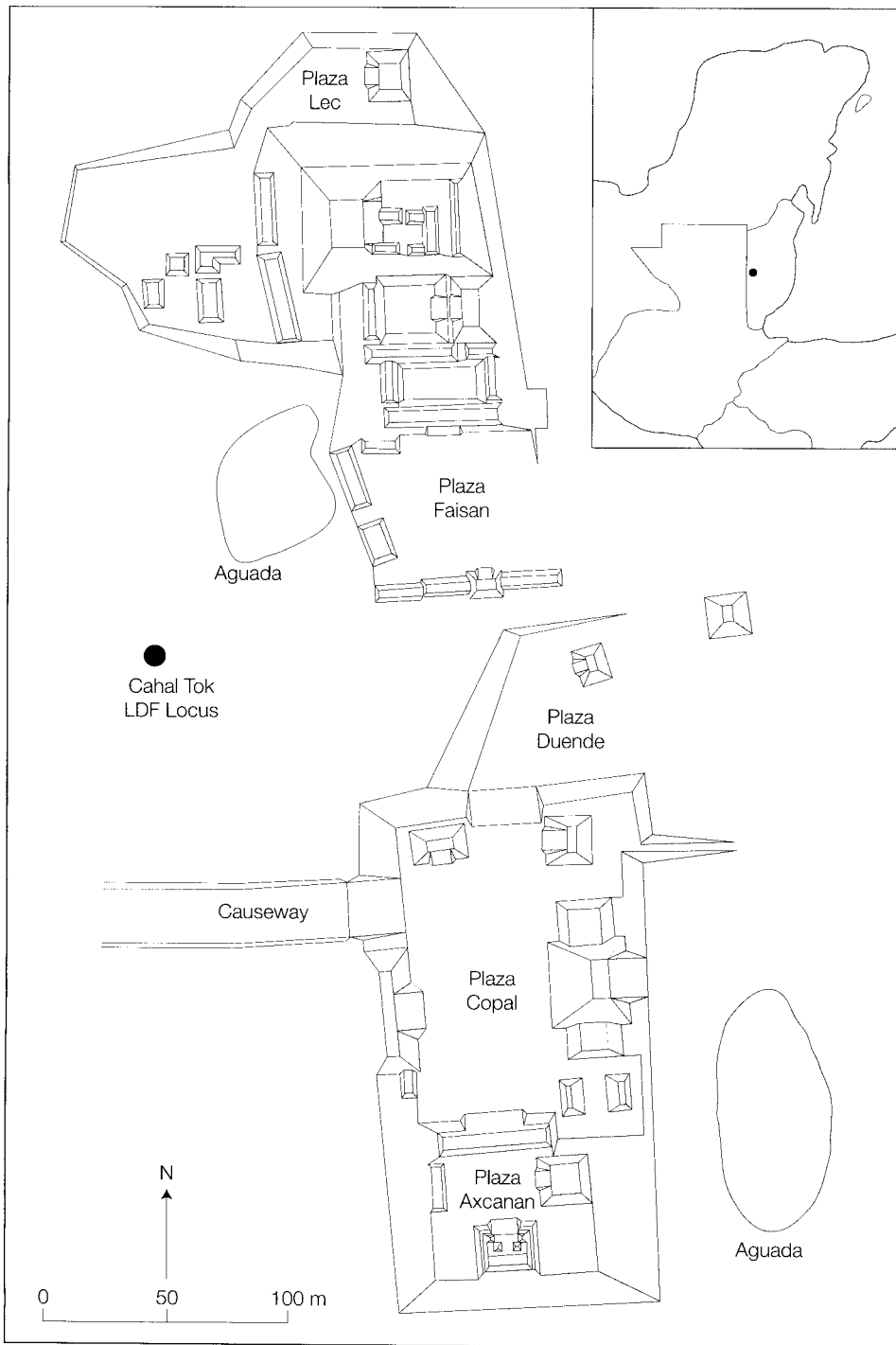


Figure 1. Location of Cahal Tok/LDF Locus in relation to the ceremonial center of El Pilar. Base map courtesy of Rafael Guerra and the Belize Department of Archaeology.

being made. Smaller debitage was left in situ, but larger bifacial reduction debris was dumped off the platform to form the LDF Locus. We encountered two stone rubble mounds (or platforms) on the top of the rise to the west of the plat-

form. The deposit of broken limestone spindle whorls that is discussed here was discovered in between the western rubble mounds and the limestone “workshop” platform (FIG. 2).

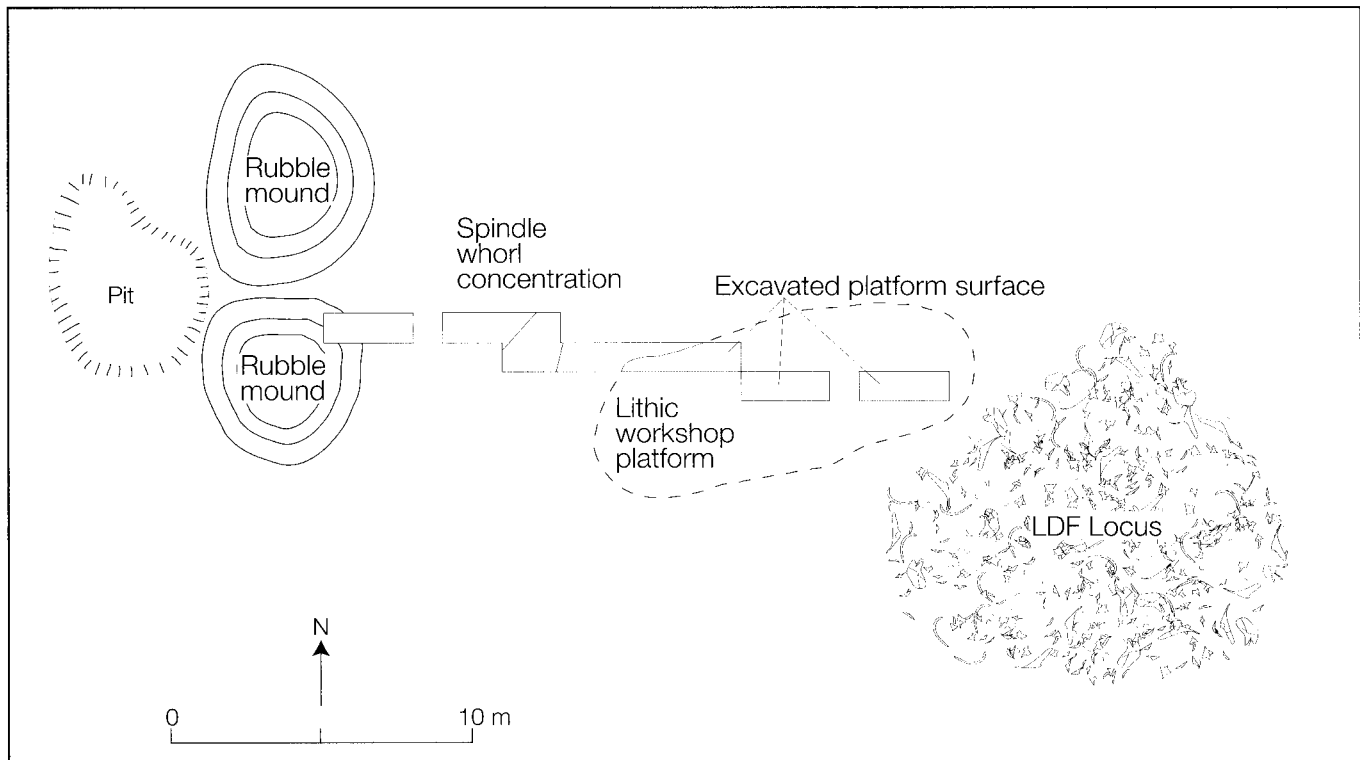


Figure 2. Location of the excavation trenches at Cahal Tok (center rectangles) showing the spindle whorl concentration to the west of the limestone "workshop" platform and the LDF Locus.

Spindle Whorl Deposit

One hundred and ninety-eight spindle whorl fragments, 135 (68%) of which were point-plotted, were recovered in an area of about 7 sq m. The densest part of the concentration occupied approximately 3.5 sq m (FIG. 3). The center of the concentration is about 3 m from the workshop platform, and the whorls become dispersed as one approaches the platform. To the east and west, we have exposed the edges of the scatter, but to the south and sw the deposit continues. The whorls are not associated with a recognizable surface, but about 70% of the whorls are between 10 and 30 cm below the present ground surface. Given the proximity of the deposit to the surface and considerable root action at the site, it is possible that originally the whorls were thrown on an unprepared exterior surface. They may have been deposited as a tight group, or in an organic container, but no pit or other feature was recognized.

Four bone fragments, four pieces of shell, approximately 15 obsidian blade fragments, and a drilled limestone artifact were discovered with the broken spindle whorls (FIG. 3). The bone fragments are small pieces of human long

bones (Sally Graver, personal communication). Preservation is poor, as it is for all bone at El Pilar. Three of the shell pieces are beads: two round disk beads and an Olivella shell bead. The fourth is a very weathered fragment of an extremely thick shell, tentatively identified as conch. The obsidian blade fragments are very small and the density of blades in this deposit is typical for Cahal Tok. The limestone artifact, drilled bi-conically, is well shaped and polished, but the form is hard to ascertain, as the piece is quite fragmentary. It is not a spindle whorl preform, since it is many times larger than the whorls, differently shaped, drilled at an angle, and apparently finished. The ceramic assemblage from the whorl deposit is relatively sparse, and is similar to that found in the other excavation units at Cahal Tok.

With the exception of one ceramic whorl, the Cahal Tok spindle whorls are made of limestone. The stone varies considerably in quality from coarse to fine, and in color from white and gray to pinkish, consistent with local limestone deposits. Limestone whorls are particularly characteristic of the lowland Maya area where, as at El Pilar and in the Cayo District in general, local limestone is abundant. Similar whorls have been found at many sites, including

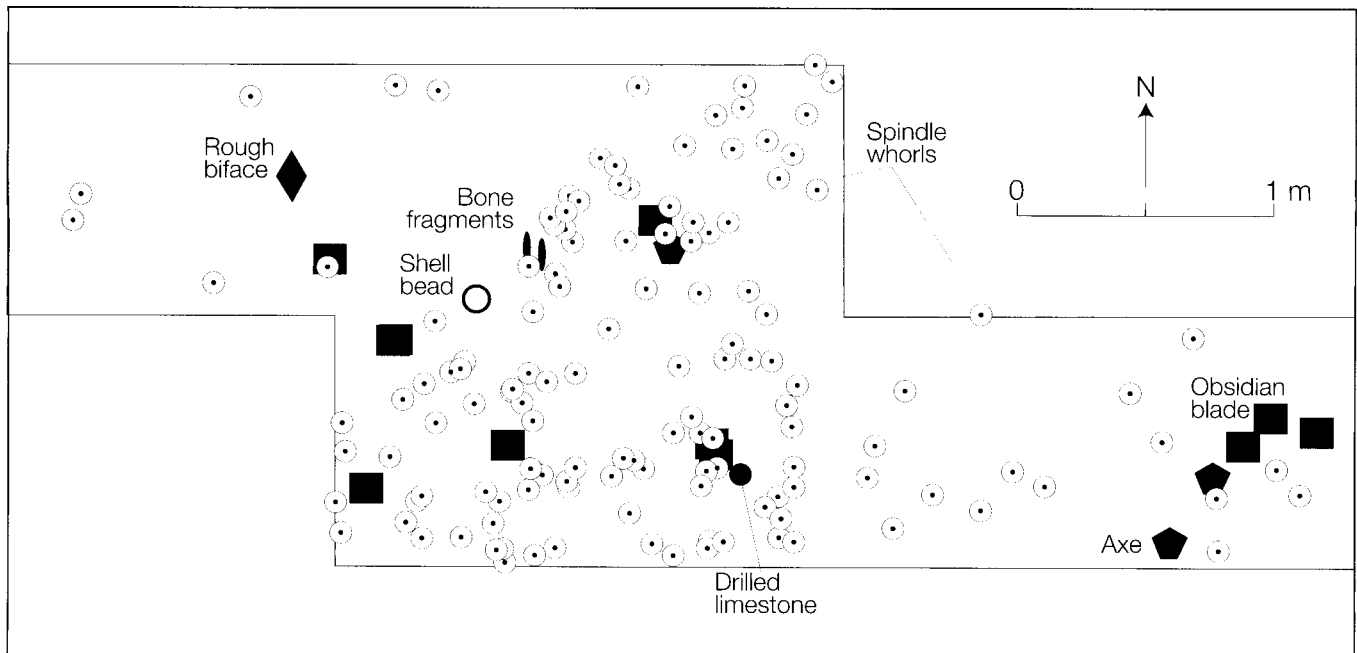


Figure 3. Point-provenienced artifacts in the spindle whorl deposit.

Altar de Sacrificios (Willey 1972), Baking Pot (Ricketson 1929), Barton Ramie (Willey et al. 1965), Cerros (Garber 1981, 1989), Piedras Negras (Coe 1959), Tikal (Moholy-Nagy 2003), and Xunantunich (MacKie 1985).

Because the size and weight of the whorl determines the moment of inertia of the spindle, it is possible to infer the type of fiber being spun by examining whorl characteristics. As a rough rule of thumb, Mesoamerican whorls (documented ethnographically) between 15 and 38 mm in diameter are used to spin cotton, while larger ones are for maguey (Parsons 1972, 1975; Parsons and Parsons 1990). Weights of cotton whorls generally vary between 1 and 13 grams and hole diameters vary between 2 and 6 mm. Obviously, these standards are an over-simplification because the effect of the whorl depends upon a complex interplay of size, shape, and weight as well as the positioning of the whorl on the spindle, the amount of accumulated thread, and the spinning technique being used. In addition, a good spinner can exert control over the spinning process and use a variety of whorls to produce similar products. Furthermore, this dichotomous whorl typology does not take into account the wider variety of fibers, including yucca/palm, nettles, milkweed, hemp, feathers, hair, rabbit or dog fur, and tree silk that were spun prehistorically (Anawalt 1981: 12; Beaudry-Corbett and McCafferty 2002; MacDougall and Johnson 1966; McCafferty and McCafferty 2000).

Because the Cahal Tok whorls are all fragmentary, it is

difficult to measure whole whorl weights or hole diameters. Whorl diameters can be assessed where the central perforation and the outer edge are preserved. Diameters were estimated for 147 of the 198 specimens (74%). The estimated dimensions of whorls at Cahal Tok are consistent with whorls designed to spin cotton. The mean diameter is 24 mm with a range of 16 to 32 mm, well within Parsons' 15 to 38 mm range for cotton-spinning whorls. The perforation diameters that could be measured were all in the 4 to 6 mm range, again within the range for cotton. The weight of the one complete, broken whorl was 13 grams, which is at the high end for cotton whorls.

The whorls varied in shape and in decorations. In order to identify unique whorls and estimate a minimum number of whorls, a typology that we believe reflects the sequence of manufacturing decisions was devised. The 172 whorl fragments that were the best preserved were divided into eight types according to their cross-sections (FIG. 4), and these categories were subdivided based on the number and patterning of incised horizontal lines and the presence and positioning of five simple design elements (FIG 5).

Only one pair of whorl fragments could be joined to make a complete whorl, and an additional three joins made partial whorls. These, with the remaining whorl fragments, represented a minimum of 168 individual whorls. There are likely more whorl fragments in the unexcavated area. The fragments of the point-provenienced whorls that could be joined were separated from each other by 80 to

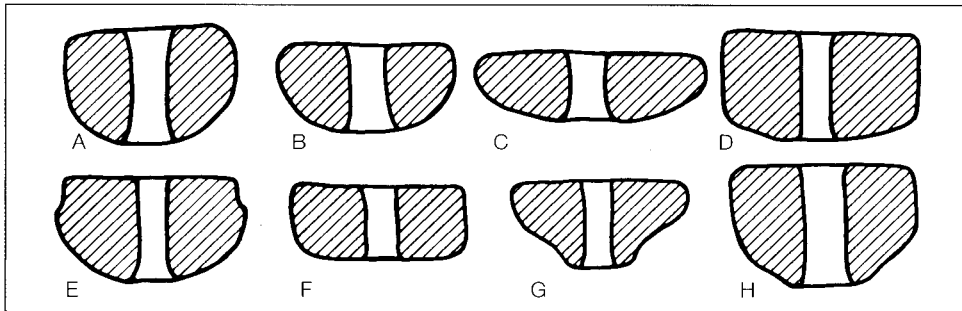


Figure 4. Cross-section typology used for the spindle whorl analysis. A) Semi-spherical: sides curve in slightly, high height to radius ratio; B) The same profile as A, but with medium height to radius ratio; C) The same profile as A, but with low height to radius ratio; D) Straight sides, distinct shoulder, bottom slightly rounded; E) Sides bulge out from top, creating a convex profile (many, like the illustrated example, have an upper horizontal incision, but this is not part of the general cross-sectional profile); F) Straight sides, flat bottom face; G-H) Elevated sections on bottoms of whorls. Original drawing by Peter Brands and Amy Henderson.

95 cm, suggesting that most whorls are represented by only a few pieces, or that the whorl fragments had been dispersed before or after deposition. We found no patterning in the spatial distribution of whorl types or designs.

The density of whorls at Cahal Tok is high for a Maya site, suggesting that this is not a normal trash deposit. Available data from the Maya area are limited, but some statistics from a broader Mesoamerican context emphasize this point. The spindle whorl to sherd ratio for the total fill excavated at Cahal Tok is 1:20; for the 7 sq m shown on Figure 3 there are more whorls than sherds. Much lower ratios (ranging from 1:318 to 1:480) were recorded from excavated Postclassic deposits in the Morelos area (Smith and Hirth 1988), and even lower whorl to sherd ratios (ranging from 1:170 to 1:713) have been reported from surface surveys in the Valley of Mexico (Brumfiel 1991: 233). Ratios formulated with data from the same surveys, but using only smaller whorls comparable to those from Cahal Tok, are lower still (ranging from 1:358 to 1:1110). At Cahal Tok the whorl to rim sherd ratio is 1:1.2, while the whorl to rim sherd ratio for excavated deposits in south-central Veracruz ranges from approximately 1:500 in the Late Preclassic to 1:110 in the Classic (Stark, Heller, and Ohnerson 1998), and the ratio at Matacapán ranges from 1:360 to 1:758 depending on the location at the site (Hall 1997). The most comparable ratios to Cahal Tok are from Late Aztec Coatlan Viejo in Morelos where the whorl to rim sherd ratio for small, cotton-spinning whorls is 1:45 (Brumfiel 1991: 236).

It is unusual for only broken whorls to be recovered. Although few reports provide information on the number or percentage of fragmentary whorls, and the breakage percentages for stone and ceramic whorls are not always dis-

tinguished, the breakage percentages are lower elsewhere than at Cahal Tok (where it is 100%). At Matacapán on the Gulf coast, for example, 31% of the whorls in one part of the site were broken, and 47% in another (Hall 1997). At Laguna de On (Murray 1998: 159) and Cerén (Beaudry-Corbett 2002: 130) ceramic spindle whorls have breakage percentages of 57% and 20%, respectively. At Tikal where the limestone whorls are similar to those at Cahal Tok, of 26 stone whorls, 6 (20%) were broken (Moholy-Nagy 2003: 46).

The Spindle Whorl Breakage Experiment

Since deposits with extremely high numbers of broken whorls are unusual, we conducted experiments to assess the difficulty of breaking limestone whorls and to examine the damage patterns that accrue as whorls are broken in a number of different ways. We manufactured 42 whorls of hard, fine-grained limestone from sources near El Pilar. The replicas were made using a lapidary grinder and electric drill press, and standardized to 12–16 mm thick and 24 mm in diameter, the average dimensions of the Cahal Tok spindle whorls. The holes were drilled with a 3/16 inch masonry bit to produce a 5 mm hole. We forced wooden spindles ($D = 1/4$ inch, $L = 50$ cm) into 18 whorls. Each spindle was filed down until it could be inserted as tightly as possible to a depth of 8 cm into the whorl.

We also made six limestone whorls of similar dimensions using only stone tools. Even inexperienced experimenters could shape, polish, and drill a whorl in two or three hours. The relatively small investment of time suggests that a limestone whorl may not have been a particularly valuable artifact, and that specialized skills were not necessary to make them. Making whorls and fitting them

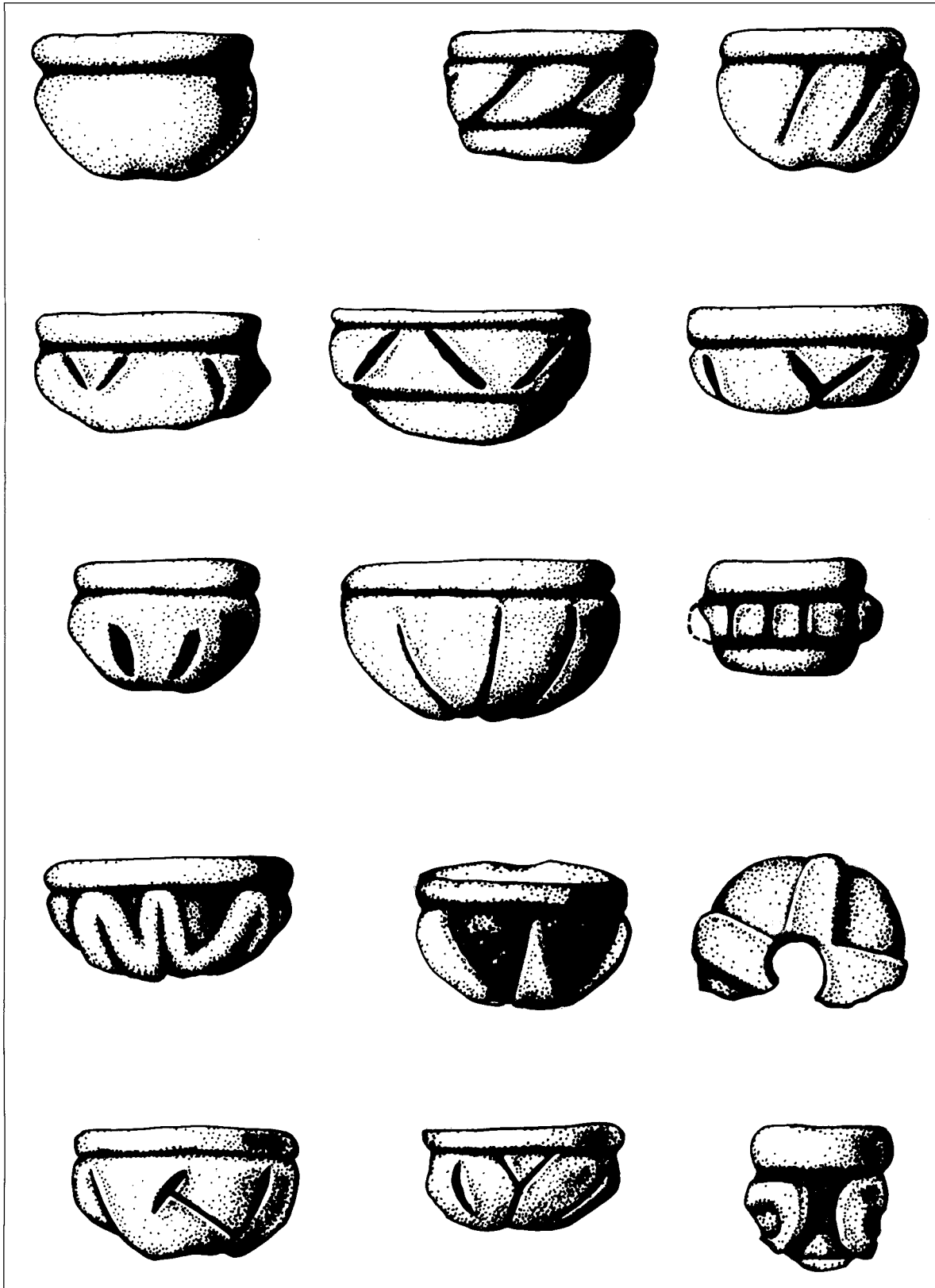


Figure 5. Representative examples of spindle whorl design types. Original drawings by Peter Brands and Amy Henderson.

Table 1: Experimental spindle whorl breakage comparisons (in percentages of specimens). Forty-two experimental whorls were used (or re-used).

	<i>Cahal Tok</i> 198 specimens >168 whorls	<i>Dropping</i> 23 specimens 18 whorls	<i>Burning</i> 4 specimens 4 whorls	<i>Trampling</i> 4 specimens 4 whorls	<i>Smashing</i> 54 specimens 23 whorls
Chipping					
No	47	26	100	100	56
Yes	53	74	0	0	44
Battering					
Extensive	0	100	0	0	0
Little or none	100	0	100	100	100
Amount of whorl preserved					
< 10%	7	4	0	0	4
10–25%	32	9	0	0	22
25–40%	31	0	0	0	22
40–55%	30	22	0	0	41
> 55%–whole	0	65	100	100	11
Whorl portion					
Bottom of wedge	2	22	0	0	4
Top disc	0	9	0	0	2
Edge/side	2	4	0	0	13
Top of wedge	4	0	0	0	5
Whole wedge	92	4	0	0	67
Complete whorl	0	61	100	100	9
Edge break type					
Radial (straight)	38	17	0	0	42
Concoidal	31	9	0	0	11
Radial + concoidal	16	0	0	0	15
Complex	15	17	0	0	28
Unbroken	0	57	100	100	4

with spindles were unlikely causes of prehistoric breakage. None of the experimental whorls broke during manufacture by hand or spindle insertion, and only a few were broken by the drill press.

We used the 42 experimental whorls to simulate five kinds of accidental breakage and four kinds of intentional breakage. Six randomly selected whorls were used in most trials. Some whorls survived the “accidental” tests and were reused. “Accidental” breakage involved being dropped 100 times (or until broken) onto a hard surface (cement sidewalk) from a height of 150 cm, both with and without a spindle inserted, and from a height of 42 cm with a spindle inserted. Additionally, we trampled 4 whorls under sandal-clad human feet for 20 minutes, and burned four whorls in a fire. We broke whorls intentionally by striking them with a hammerstone on the flat upper surface, the rounded lower surface, and the edge, and also by tapping the whorls sharply against the sidewalk using the inserted spindle as a handle.

The results of the experiments are summarized in Table 1. Small stone spindle whorls are not easy to break. When dropped on hard surfaces, they bounce. About half the whorls did not break even after being dropped onto a concrete sidewalk 100 times. Rather than breaking, they be-

came chipped and battered. Trampling and burning did not cause breakage. Two whorls were heated and dropped into cold water; they did not break. Normal use and accident, therefore, can be ruled out as the causes of breakage of the archaeological specimens.

Breaking the whorls intentionally required a heavy blow, and in some cases, several. The resulting fragments, especially from those broken by striking the whorl against the sidewalk using the spindle as a handle, show breakage patterns similar to those found at Cahal Tok. The most characteristic fragments are “wedges” shaped like a slice of pie, and representing the complete radius and half or less of the circumference of the whorl. It is difficult to understand how the Cahal Tok specimens could have been so consistently fractured without someone intentionally smashing them.

Interpreting the Spindle Whorl Concentration

A number of hypotheses regarding the Cahal Tok spindle whorl concentration can be evaluated. The deposit could represent the following: debris from a spindle whorl manufacturing area; part of a midden for one or more households where spinning of cotton thread was carried out on a regular basis for household consumption; debris

from a specialized textile workshop; a burial; or another type of ritual deposit. These hypotheses have implications for understanding craft and ritual at El Pilar.

Spindle Whorl Manufacture Debris

Cahal Tok is not a locus for making spindle whorls. The area lacks any evidence of early stages in spindle whorl manufacture, such as blanks, partially shaped specimens, or incompletely drilled whorls. Most of the specimens are decorated, all appear to be finished, and our experiments suggest that whorls usually do not break during manufacture. The single ceramic whorl fragment also argues against the hypothesis that the deposit is refuse from a limestone whorl manufacturing area.

Household Spinning Debris

Although the whorls were probably not broken through ordinary use, they may have been used at one time. There is, however, no clear evidence for this. Some of the chipping noted on edges could have occurred during the normal working life of a whorl. We did not examine the perforations microscopically, but polish from the spindle in the hole or other microwear probably would not have preserved well on the weathered limestone surfaces.

Spinning is often considered a household activity (Beaudry-Corbett and McCafferty 2002; Clark and Houston 1998), and whorls are occasionally found in household debris. The deposit at Cahal Tok is not directly associated with a house mound, although this does not eliminate the possibility that the refuse was dumped there from a nearby residence. The fill from which the whorls were recovered is not characteristic of household refuse because it does not exhibit the full range of household ceramics. Undecorated large open jars and bowls of finer paste dominated the assemblage, but coarse paste cooking vessels, common in domestic sites in the region (Lucero 2001), are lacking. Lacking also are the manos and metates usually found in habitation areas. The spinning in any normal non-specialized household, even a polygynous one with many daughters, would not be enough to produce such a density of spindle whorls as normal trash.

Household spinning is not incompatible with some degree of specialization, as some households probably produced more thread or cloth than necessary for their own consumption and utilized the excess in market and gift exchange, tribute, and ritual (Beaudry-Corbett, Simmons, and Tucker 2002; Sheets and Simmons 2002). To judge from post-conquest documentation of women being paid for spinning, some women may have been engaged in spinning as an occupation, although probably on a part-time basis (Clark and Houston 1998: 37). It is likely that cot-

ton was an important tribute item for the pre-conquest Maya as well. Hall (1997) believes that increases in evidence of spinning in the Late Classic period may reflect responses to the enhanced tribute demands of a burgeoning state.

Manufacturing activities among the Maya were not confined to commoners; among the nobility craft production for household consumption and gifts was essential, not incidental (Martin 2001). Excavations at a Maya scribe's house in Aguateca, Guatemala shows that elites as well as commoners were engaged in crafts, including painting, writing, and textile production (Inomata 2001). Although there is little evidence of food production in royal residences, women did spin and weave (McAnany and Plank 2001). At Copan in the elite district of Sepulturas, the number of spindle whorls is correlated with the size and complexity of the compounds (Hendon 1997). Similarly, at Maticapan most spindle whorls were found in domestic contexts near the ceremonial center (Hall 1997), and at Cerén a household that is viewed as specializing in cloth production and grinding corn for ceremonies is located close to a specialized ritual structure (Sheets and Simmons 2002).

Textile Workshop Debris

The large number of spindle whorls in the Cahal Tok deposit suggests a specialized workshop or workshop area rather than simple household textile production. The organization of such a workshop area need not imply the commercial enterprise of either an individual or the state. Workshops should have evidence of concentrated and consistent manufacturing activity on a relatively large scale. Such an area might be simply a place where individuals gathered to work communally, possibly socializing, sharing child care, or selling some of their products. Women may have worked in groups, and because house interiors were dark, much of the weaving and spinning may have been done outdoors (Anawalt 1981: 12). At Copan there is evidence of textile manufacture on platforms, sometimes under shelters constructed of perishable materials, either abutting adjacent masonry buildings or free-standing (Hendon 1997). The location of the whorls at Cahal Tok near an area of specialized lithic manufacturing is interesting. In elite residential contexts, cooking, spinning, and weaving were spatially integrated with other household-based craft production such as flintknapping and the manufacture of shell and bone objects (Hendon 1997). If the area around Cahal Tok were an actual work area, it would be an indication of a similar pattern.

Although our experiments show that stone whorls are hard to break, a large number of broken whorls may be ev-

idence of a location with such intense production that a low rate of breakage over time would yield a large number of broken whorls. The tight clustering of the whorls and their breakage patterns do not support this hypothesis. An accidental fire in a weaving area could be envisioned as a cause of a mass spindle whorl discard, but none of the specimens showed definite signs of burning, and there is no other burned material in the deposit. Furthermore, our experimental burning did not cause breakage.

Burials and Other Ritual Deposits

While spinning activities were economically vital for fulfilling basic household needs for netting, twine, sacks, bedding, armor, garments and numerous other necessities, and providing goods for trade and tribute, they were also symbolically important. While men may have occasionally spun, both spinning and weaving appear to have been primarily female activities (McAnany and Plank 2001; Clark and Houston 1998; Hendon 1997, 1999; Houston and Stuart 2001; Joyce 1993, 1999, 2000; Vail and Stone 2002). Women were told by the gods to spin and weave and there is a complementary gender division of labor whereby men farm and women transform the food into comestibles and the fibers into cloth (Hendon 1999). Spindles and whorls also have divine associations, especially with the goddess Ix Chel (Ardren 2006; Hamann 1997; McCafferty and McCafferty 1994; Vail and Stone 2002). Symbolically, through their associations with sex, fertility, and birth, spinning and weaving (Ciamarella 1999) form one potential locus of female power (McCafferty and McCafferty 1991). Because cotton played a part in some ceremonies, some thread must have been spun for this purpose, and Beaudry-Corbett and McCafferty (2002) suggest that workers in one locus at Cerén, adjacent to a specialized structure where ceremonies appear to have been held, may have in part been engaged in spinning to provide ceremonial thread.

Because spinning was both economically and symbolically important, it is likely that ritual practices surrounded the activity of spinning and the women involved. The Cahal Tok whorl concentration is likely the result of a ritual rather than the accumulation of refuse from production, although ritual connected with spinning might have been performed near areas where actual spinning took place. It is possible that perishable objects, perhaps including other spinning and weaving equipment, were originally included in the deposit, but were not preserved.

One possible ritual context is a burial. Spindle whorls are not uncommon Maya grave goods (Healy, Awe, and Hermann 1998; Masson 1999; Ricketson 1925) and may have been viewed as important tools for women in the af-

terlife. The few fragments of human bone found in the Cahal Tok spindle whorl concentration might suggest one or more burials, although they could suggest a ritual cache of some other sort. The line between caches and burials is not always clear-cut in the Maya area (Becker 1992). Because bone does not preserve well in shallow deposits at El Pilar, the fragmentary state of the bone does not preclude a burial. The dispersion of whorl fragments far beyond the bone fragments at Cahal Tok and the fragmentary nature of the whorls argues against interpretation as a burial. If the broken whorls were deposited as part of a burial ceremony, it was an unusual one. Objects sometimes become imbued with the power of their owner and must be destroyed when that individual dies (Grove 1981). One could imagine a powerful and symbolically important individual being buried with "killed" whorls because she was a particularly excellent spinner and weaver, unusual in her spinning and weaving activities because of age or gender, the head of a spinning and weaving guild, or even a shaman or diviner, such as the one hypothesized for Cerén (Sweeley 1998). If this were so, however, the lack of any other grave goods, especially ceramic vessels, would be unusual.

Other ritual possibilities include divination (see Simons and Sheets 2002: 110–111), initiation ceremonies for girls, various types of termination events, or sacrifices in honor of spinning and weaving deities. Among the Aztecs, spinning and weaving were important parts of the ceremonies after the birth of baby girls and during the socialization process (Anawalt 1981; Berdan and Anawalt 1992; Joyce 1999) and similar ceremonies may have characterized the Maya.

While there are no recorded ceremonies specifically mandating the destruction of spindles or spindle whorls, other objects are sometimes deliberately smashed or burned before being given as offerings, especially, but not solely, when used as a part of termination rituals (Garber 1981: 120–135; McGee 1998; Mock 1998; Vogt 1998). One possibility is that these spindle whorls were intentionally broken as a part of New Year's or other cyclical celebrations. Mesoamerican New Year's celebrations were momentous and solemn events. According to Landa (1975: 151), the Maya "renewed on this day all the objects which they made use of, such as plates, vessels, stools, mats and old clothes and the stuffs with which they wrapped up their idols. They swept out their houses, and the sweeping and the old utensils they threw out on the waste heap outside the town..." At Cuexcomate in central Mexico, Smith (1992) has discovered two shallow refuse pits covered with a layer of rocks and containing broken, but reconstructable, ceramics which he interprets as the result of the New Fire ceremonies observed every 52 years. The Maya

probably had analogous termination and renewal ceremonies at this critical juncture (Landa 1975: 151).

Termination rituals often marked the end of the use of a structure, often before a new phase of building or remodeling commenced. Although rituals of termination are not always distinct from those of renewal or dedication, destruction of artifacts is common in deposits interpreted as termination offerings (Garber 1983; Mock 1998; Stross 1998; Vogt 1998; Walker 1998). At Cahal Tok, the whorls were not deposited in or on a structure; the known structures in the vicinity are the lithic workshop platform to the east, and two low rubble mounds a few meters to the west. The major ceremonial precincts of El Pilar are some 150 m away. The spindle whorl deposit is not associated with clear residential groups and their usual ceramic assemblages, which makes termination ritual connected with habitation unlikely.

Whether the Cahal Tok deposit is the result of a New Fire or similar calendrical ceremony, or the termination ritual for a small structure or area at Cahal Tok, the question remains: why were spindle whorls, rather than ceramics or another artifact type, broken and deposited in such large numbers? The answer may be that this deposit represents a sacrifice of whorls by a considerable number of spinners, implying that spinning was being undertaken in the vicinity, although not necessarily at Cahal Tok.

The large number of whorls and the paucity of other types of artifacts suggests that the deposit reflects a ceremony with a strong emphasis on spinning. Gods and ceremonies are associated with particular occupations (Thompson 1970: 306–314) and it is likely that spinners, whether part or full-time specialists, or simply women who spent a considerable amount of time spinning and weaving for household use, may have honored tutelary deities such as Ix Chel. Ceremonies focusing in part on occupations were held in the month of Yaxkin when "...their purpose was to anoint with the blue bitumen, which they made, all the appliances of all their pursuits, from the priest to the spindles of the women..." (Landa 1975: 158–159).

While no comparable argument has yet been made for the Maya, Brumfiel (1998) argues that for the Aztec, urban contexts allowed a concentration of artisans that enabled them to define and maintain a communal identity via co-residence, educational opportunities for their children, and rituals honoring their patron deities. The status of the artisans depended upon a variety of factors including wealth, markets, and the nature of the product. Some Aztec specialists practicing elite crafts such as feather-working made offerings to their patron deities that even included human sacrifices.

Brumfiel (1998) argues that political and economic

power and symbolic status for a group depend in part on the size of the community. A regional center such as El Pilar may have been large enough to support a community of spinners. It requires organization to create group identities, and, as in the Aztec case, identities may have been forged through ritual by emphasizing the female gender and its links to spinning or by creating an occupational identity for a group of full or part-time spinners. We see this as one potential interpretation of the Cahal Tok whorl deposit, especially in a Maya context where termination rituals marking the end or changing of bloodlines, dynasties, and other social groups were common (Guderjan 1998; Rice and Rice 2004).

Conclusions

Experimental evidence suggests that the Cahal Tok spindle whorl concentration was the result of the deliberate destruction and deposition of spindle whorls, rather than the discard of accidentally broken whorls. The most likely interpretation is that this represents a ritual deposit rather than a simple household or workshop midden. While the evidence supports the ritual deposit interpretation, the exact nature of this ritual remains in doubt. The presence of some small fragments of human bone makes a burial or burials possible, but the broken condition of the whorls and their dispersal relative to the bones makes this less likely.

An alternative interpretation is that this deposit is the result of a ritual connected specifically to spinning and directed toward a deity associated with spinning and weaving such as Ix Chel. Because spinning was a gendered activity among the Maya, intimately associated with what it meant to be a Maya woman, it is possible that the Cahal Tok ritual deposit was connected with womanhood, perhaps an initiation rite. The deliberate destruction of the whorls, on the other hand, suggests a termination ceremony reflecting the end of a calendrical period, or the final use of a place or structure. Whether part of an initiation or a termination ritual, the nature of this deposit relates it to an occupational group of full or part-time spinners who produced thread for venues outside of household requirements. Such ceremonies would be important both for facilitating the formation of a group identity and for giving it legitimacy and status.

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Anawalt, Patricia Rieff

- 1981 *Indian Clothing Before Cortés: Mesoamerican Costumes from the Codices*. Norman: University of Oklahoma Press.

Ardren, Traci

- 2006 "Mending the Past: Ix Chel and the Invention of a Modern Pop Goddess," *Antiquity* 80: 25–37.

Beaudry-Corbett, Marilyn

- 2002 "Ceramics and Their Use at Cerén," in Payson Sheets, ed., *Before the Volcano Erupted: the Ancient Cerén Village in Central America*. Austin: University of Texas Press, 117–138.

Beaudry-Corbett, Marilyn, and Sharisse McCafferty

- 2002 "Spindle Whorls: Household Specialization at Cerén," in Traci Ardren, ed., *Ancient Maya Women*. Walnut Creek, CA: Altamira Press, 52–67.

Beaudry-Corbett, Marilyn, Scott E. Simmons, and David B. Tucker

- 2002 "Ancient Home and Garden: the View from Household 1 at Cerén," in Payson Sheets, ed., *Before the Volcano Erupted: the Ancient Cerén Village in Central America*. Austin: University of Texas Press, 45–57.

Becker, Marshall J.

- 1992 "Burials as Caches: Caches as Burials: A New Interpretation of the Meaning of Ritual Deposits among the Classic Period Lowland Maya," in Elin C. Danien and Robert J. Sharer, eds., *New Theories on the Ancient Maya, University Museum Monograph* 77. Philadelphia: University of Pennsylvania, 185–196.

Berdan, Frances F., and Patricia Rieff Anawalt

- 1992 *The Codex Mendoza*. Berkeley: University of California Press.

Brumfiel, Elizabeth

- 1991 "Weaving and Cooking: Women's Production in Aztec Mexico," in Joan M. Gero and Margaret W. Conkey, eds.,

Engendering Archaeology: Women and Prehistory. Oxford: Basil Blackwell, 224–251.

- 1998 "The Multiple Identities of Aztec Craft Specialists," in Cathy Lynne Costin and Rita P. Wright, eds., *Craft and Social Identity. Archaeological Papers of the American Anthropological Association* 8. Arlington, VA: American Anthropological Association, 145–152.

Ciaramella, Mary A.

- 1999 "The Weavers in the Codices," *Research Reports in Ancient Maya Writing* 44. Washington, D.C.: Center for Maya Research, 29–50.

Clark, John E., and Stephen D. Houston

- 1998 "Craft Specialization, Gender, and Personhood among the Post-conquest Maya of Yucatan, Mexico," in Cathy Lynne Costin and Rita P. Wright, eds., *Craft and Social Identity. Archaeological Papers of the American Anthropological Association* 8. Arlington, VA: American Anthropological Association, 31–46.

Coe, William R.

- 1959 *Piedras Negras Archaeology: Artifacts, Caches, and Burials. The University Museum Monographs* 18. Philadelphia: University of Pennsylvania.

Ford, Anabel, and Kirsten Olson

- 1989 "Aspects of Ancient Maya Household Economy: Variation in Chipped Stone Production and Consumption," in Patricia A. McAnany and Barry L. Isaac, eds., *Research in Economic Anthropology Supplement 4: Prehistoric Maya Economies of Belize*. London: JAI Press, 185–211.

Garber, James F.

- 1981 "Material Culture and Patterns of Artifact Consumption and Disposal at the Maya Site of Cerros in Northern Belize," unpublished Ph.D. dissertation, Southern Methodist University, Dallas.

- 1983 "Patterns of Jade Consumption and Disposal at Cerros, Northern Belize," *American Antiquity* 48: 800–807.

- 1989 *Archaeology at Cerros, Belize, Central America. Volume II: The Artifacts*. Dallas: Southern Methodist University.

Grove, David C.

- 1981 "Olmec Monuments: Mutilation as a Clue to Meaning," in Michael D. Coe and David Grove, eds., *The Olmec and Their Neighbors: Essays in Memory of Matthew W. Stirling*. Washington D.C.: Dumbarton Oaks Research Library and Collections, 49–68.

Guderjan, Thomas H.

- 1998 "The Blue Creek Jade Cache: Early Classic Ritual in Northwestern Belize," in Shirley B. Mock, ed., *The Sowing and the Dawning: Termination, Dedication, and Transformation in the Archaeological and Ethnographic Record of Mesoamerica*. Albuquerque: University of New Mexico Press, 100–111.

Hall, Barbara Ann

- 1997 "Spindle Whorls and Cotton Production at Middle Classic Maticapan and in the Gulf Lowlands," in Barbara L. Stark and Philip J. Arnold, III, eds., *OJohlmec to Aztec: Settlement Patterns in the Ancient Gulf Lowlands*. Tucson: University of Arizona Press, 115–135.

Hamann, Byron

- 1997 "Weaving and the Iconography of Prestige: The Royal

- Gender Symbolism of Lord 5 Flower's/Lady 4 Rabbit's Family," in Cheryl Claassen and Rosemary A. Joyce, eds., *Women in Prehistory: North America and Mesoamerica*. Philadelphia: University of Pennsylvania Press, 153–172.
- Healy, Paul F., Jaime J. Awe, and Helmuth Hermann
1998 "An Ancient Maya Multiple Burial at Caledonia, Cayo District, Belize," *Journal of Field Archaeology* 25: 261–174.
- Hendon, Julia A.
1997 "Women's Work, Women's Space, and Women's Status Among the Classic-Period Maya Elite of the Copan Valley, Honduras," in Cheryl Claassen and Rosemary A. Joyce, eds., *Women in Prehistory: North America and Mesoamerica*. Philadelphia: University of Pennsylvania Press, 33–46.
1999 "Multiple Sources of Prestige and the Social Evaluation of Women in Prehispanic Mesoamerica," in John E. Robb, ed., *Material Symbols: Culture and Economy in Prehistory. Center for Archaeological Investigations Southern Illinois University Occasional Paper* 26. Carbondale: Southern Illinois University, 257–276.
- Houston, Stephen, D., and David Stuart
2001 "Peopling the Classic Maya Court," in Takeshi Inomata and Stephen D. Houston, eds., *Royal Courts of the Ancient Maya* Vol. 1. Boulder: Westview Press, 54–83.
- Inomata, Takeshi
2001 "The Power and Ideology of Artistic Creation," *Current Anthropology* 42: 321–350.
- Joyce, Rosemary
1993 "Women's Work: Images of Production and Reproduction in Pre-Hispanic Southern Central America," *Current Anthropology* 34: 255–274.
1999 "Girling the Girl and Boying the Boy: The Production of Adulthood in Ancient Mesoamerica," *World Archaeology* 31: 473–483.
2000 *Gender and Power in Prehispanic Mesoamerica*. Austin: University of Texas Press.
- Landa, Diego de
1975 *Landa's Relación de las Cosas de Yucatán: A Translation, Edited and with Notes by Alfred M. Tozzer*. (Originally published 1941.) Cambridge: Harvard Museum. Millwood, NY: Kraus Reprint Co.
- Lucero, Lisa J.
2001 *Social Integration in the Ancient Maya Hinterlands: Ceramic Variability in the Belize River Area. Arizona State University Anthropological Research Paper* 53. Tempe: Arizona State University.
- McAnany, Patricia A., and Shannon Plank
2001 "Perspectives on Actors, Gender Roles, and Architecture at Classic Maya Courts and Households," in Takeshi Inomata and Stephen D. Houston, eds., *Royal Courts of the Ancient Maya* Vol. 1. Boulder: Westview Press, 84–129.
- McCafferty, Sharisse D., and Geoffrey G. McCafferty
1991 "Spinning and Weaving as Female Gender Identity in Post-Classic Mexico," in Margot B. Schevell, Janet Catherine Berle, and Edward Bridgman Dwyer, eds., *Textile Traditions of Mesoamerica and the Andes*. Austin: University of Texas Press, 19–44.
1994 "Engendering Tomb 7 at Monte Alban: Respinning an Old Yarn," *Current Anthropology* 35: 143–166.
2000 "Textile Production in Postclassic Cholula, Mexico," *Ancient Mesoamerica* 11: 39–54.
- MacDougall, Thomas, and Irmgard Weitlaner Johnson
1966 "Chichicaztli Fiber: The Spinning and Weaving of it in Southern Mexico," *Archiv für Völkerkunde* 20: 22–73.
- McGee, R. Jon
1998 "The Lacondon Incense Burner Renewal Ceremony: Termination and Dedication Ritual among the Contemporary Maya," in Shirley Boteler Mock, ed., *The Sowing and the Dawning: Termination, Dedication, and Transformation in the Archaeological and Ethnographic Record of Mesoamerica*. Albuquerque: University of New Mexico Press, 41–46.
- MacKie, Euan W.
1985 *Excavations at Xunantunich and Pomona, Belize in 1959–60. BAR International Series* 251. Oxford: Tempus Reparatum.
- Martin, Simon
2001 "Court and Realm," in Takeshi Inomata and Stephen D. Houston, eds., *Royal Courts of the Ancient Maya* Vol. 1. Boulder: Westview Press, 168–194.
- Masson, Marilyn
1999 "Postclassic Maya Communities at Progreso Lagoon and Laguna Seca, Northern Belize," *Journal of Field Archaeology* 26: 261–274.
- Michaels, George H.
1993 "Evidence for Lithic Craft Specialization by the Classic Period Maya of the Upper Belize River Valley, Belize," unpublished Ph.D. dissertation, University of California, Santa Barbara.
- Mock, Shirley Boteler
1998 "Prelude," in Shirley Boteler Mock, ed., *The Sowing and the Dawning: Termination, Dedication, and Transformation in the Archaeological and Ethnographic Record of Mesoamerica*. Albuquerque: University of New Mexico Press, 3–18.
- Moholy-Nagy, Hattula
2003 *The Artifacts of Tikal: Utilitarian Artifacts and Unworked Material, Tikal Report* No. 27. Philadelphia: University of Pennsylvania Press.
- Murray, Elizabeth
1998 "Spindle Whorls from Laguna de On," in Marilyn Masson and Robert M. Rosenswig, *Belize Postclassic Project 1997: Laguna de On, Progreso Lagoon, Laguna Seca. Report to the Department of Archaeology, Belmopan, Belize. Institute for Mesoamerican Studies Occasional Publication* No. 2. Albany: State University of New York, Albany, 157–162.
- Parsons, Mary Hrones
1972 "Spindle Whorls from the Teotihuacan Valley, Mexico," *University of Michigan Museum of Anthropology Papers* 45. Ann Arbor: University of Michigan Museum of Anthropology, 45–80.
1975 "The Distribution of Late Postclassic Spindle Whorls in the Valley of Mexico," *American Antiquity* 40: 207–215.
- Parsons, Jeffrey R., and Mary H. Parsons
1990 *Maguay Utilization in Highland Central Mexico: An Archaeological Ethnography. University of Michigan Museum of Anthropology Memoirs* No. 14. Ann Arbor: University of Michigan Museum of Anthropology.
- Rice, Prudence M., and Don S. Rice
2004 "Late Classic to Postclassic Transformations in the Peten Lakes Region, Guatemala," in Arthur Demarest, Prudence Rice, and Don Rice, eds., *The Terminal Classic in the Maya Lowlands: Collapse, Transition, and Transformation*. Boulder: University Press of Colorado, 125–139.

- Ricketson, Oliver G.
 1925 "Burials in the Maya Area," *American Anthropologist* 27: 381–401.
 1929 *Excavations at Baking Pot, British Honduras. Contributions to American Archaeology* No. 1. Carnegie Institution of Washington Publication 401. Washington, D.C.: Carnegie Institution.
- Sheets, Payson, and Scott E. Simmons
 2002 "Household Production and Specialization at Cerén," in Payson Sheets, ed., *Before the Volcano Erupted: the Ancient Cerén Village in Central America*. Austin: University of Texas Press, 178–191.
- Simmons, Scott E., and Payson Sheets
 2002 "Divination at Cerén: The Evidence from Structure 12," in Payson Sheets, ed., *Before the Volcano Erupted: the Ancient Cerén Village in Central America*. Austin: University of Texas Press, 104–113.
- Smith, Michael E.
 1992 *Archaeological Research at Aztec-Period Rural Sites in Morelos, Mexico. Volume I: Excavations and Architecture*. University of Pittsburgh Monographs in Latin American Archaeology No. 4. Pittsburgh: University of Pittsburgh.
- Smith, Michael E., and Kenneth G. Hirth
 1988 "The Development of Prehispanic Cotton-Spinning Technology in Western Morelos, Mexico," *Journal of Field Archaeology* 15: 349–358.
- Stark, Barbara L., Lynette Heller, and Michael A. Ohnerson
 1998 "People with Cloth: Mesoamerican Economic Change from the Perspective of Cotton in South-Central Veracruz," *Latin American Antiquity* 9: 7–36.
- Stross, Brian
 1998 "Seven Ingredients in Mesoamerican Ensoulment: Dedication and Termination in Tenejapa," in Shirley B. Mock, ed., *The Sowing and the Dawning: Termination, Dedication, and Transformation in the Archaeological and Ethnographic Record of Mesoamerica*. Albuquerque: University of New Mexico Press, 31–39.
- Sweeley, Tracy L.
 1998 "Personal Interactions: The Implications of Spatial Arrangements for Power Relations at Cerén, El Salvador," *World Archaeology* 29: 393–406.
- Thompson, J. Eric
 1970 *Maya History and Religion*. Norman: University of Oklahoma Press.
- Vail, Gabrielle, and Andrea Stone
 2002 "Representation of Women in Postclassic and Colonial Maya Literature and Art," in Traci Ardren, ed., *Ancient Maya Women*. Walnut Creek, CA: Altamira Press, 203–228.
- Vogt, Evon Z.
 1998 "Zinacanteco Dedication and Termination Rituals," in Shirley Boteler Mock, ed., *The Sowing and the Dawning: Termination, Dedication, and Transformation in the Archaeological and Ethnographic Record of Mesoamerica*. Albuquerque: University of New Mexico Press, 21–30.
- Walker, Debra Selsor
 1998 "Smashed Pots and Shattered Dreams: The Material Evidence for an Early Classic Maya Site Termination at Cerros, Belize," in Shirley B. Mock, ed., *The Sowing and the Dawning: Termination, Dedication, and Transformation in the Archaeological and Ethnographic Record of Mesoamerica*. Albuquerque: University of New Mexico Press, 81–99.
- Willey, Gordon R.
 1972 *The Artifacts of Altar de Sacrificios. Papers of the Peabody Museum of Archaeology and Ethnology* 64. Cambridge, MA: Harvard University.
- Willey, Gordon R., William Bullard Jr., John B. Glass, and James C. Gifford
 1965 *Prehistoric Maya Settlements in the Belize Valley. Papers of the Peabody Museum of Archaeology and Ethnology* 54. Cambridge, MA: Harvard University.