

Place and time in activity area analysis: A study of elevated contexts used for artifact curation at the Ceren site, El Salvador

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ABSTRACT

1400 years ago the residential site of Joya de Ceren (El Salvador) was covered, together with its surrounding cultivated fields, by a sudden eruption. This gives Archaeology an excellent opportunity to study the material culture of a Mesoamerican peasant village. This article explores the different storage contexts present in this site.

Key words: Ceren (El Salvador), household archaeology, activity areas, Mesoamerica.

RESUMEN

Hace 1.400 años una súbita erupción volcánica cubrió el sitio habitacional de Joya de Ceren (El Salvador) y sus campos de cultivo, proporcionando a la Arqueología una excelente oportunidad de estudiar, casi en su totalidad, la cultura material de una aldea campesina mesoamericana. El artículo se centra en el estudio de los variados contextos de almacenamiento que se dieron en este yacimiento único.

Palabras clave: Joya de Ceren, arqueología de grupos domésticos, áreas de actividad, Mesoamérica.

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IN SITU ARTIFACTS AND THE CEREN SITE

Archaeologists often express the desire to encounter a living floor with the full inventory of artifacts on that surface, *in situ* where their owners left them. Certainly, the behavioral inferences made from undisturbed *in situ* artifacts should be more reliable than the inferences based upon a highly disturbed material record. Unfortunately, such preservation is more rare than many archaeologists would prefer. Archaeologists occasionally have fallen victim to the «Pompeii premise» (Binford 1985), that they are finding artifacts where they were left in their positions of primary use on living floors, and thus artifact locations readily can be used to reconstruct past human behavior. Schiffer (1985) also noted the propensity of archaeologists to assume that the artifacts they are excavating on living surfaces are still in localities representing their original use contexts. McKee (1990) surveyed the arguments and assumptions of that debate. However, even at Pompeii before the eruption there was much disturbance of artifacts (Allison 1992) as people reacted to the risk of more earthquakes or a possible volcanic eruption. After the Vesuvius eruption the site continued to be «mined» for sculptures and marble in antiquity up to quite recently.

At any site, having the original full complement of artifacts would greatly facilitate the identification of activity areas. However, the usual archaeological site presents a greatly impoverished record, in part because people remove their most valuable possessions while they are gradually abandoning their living site, and later visitors take other useful artifacts and materials. The elements (wind, rain, sun) and flora and fauna further disturb the archaeological record, presenting the archaeologist with a greatly depleted material record of past human behavior. The study of taphonomy, site formation processes, and modes of abandonment have greatly assisted archaeologists in understanding the framework within which their inferences into past human behavior can be made.

The Ceren site (Fig. 1) was a village on the southern periphery of the Maya area occupied about 1400 years ago (Sheets 1992). The reason for its extraordinary preservation is a sudden volcanic eruption from a location where no volcano had existed before, only 700 m north of the site. A hot basaltic magma, working its way upward, made contact with the water of the Rio Sucio (Hoblitt 1983, Miller 1989, 1990), the large river that drains the Zapotitan Valley (Fig. 1). The eruption was immediately presaged by a small earthquake and probably some initial steam explosions that would have given warning of the dangers immediately north of the village (Miller 1993). The lack of human bodies in the portions of the site excavated to date is probably explained by their heeding these warnings and «heading south». The eruption began in earnest with a large steam explosion, as the magma vaporized the water. The

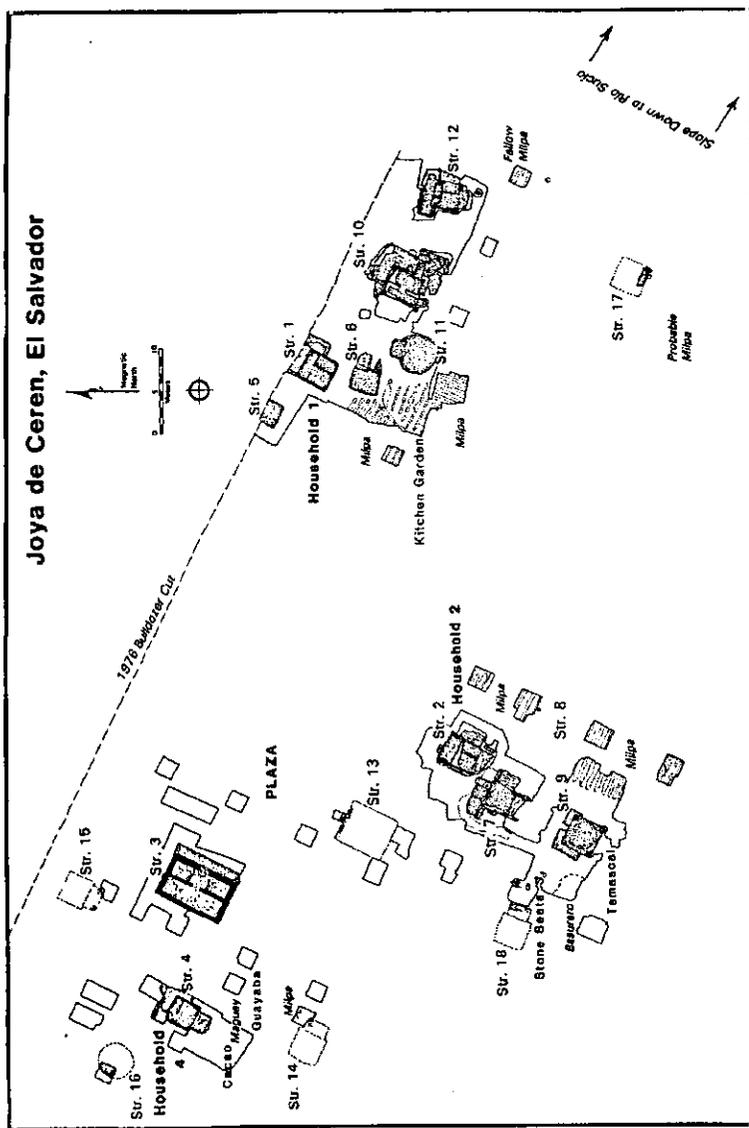


FIGURE 1.—Map of the Cerén site, El Salvador (called Joya de Ceren in El Salvador). Areas not yet excavated are left blank. The easternmost buildings (Strs. 10 and 12) are religious, and three others are civic-religious (3, 13, and 9). All other excavated structures are household buildings. The area covered by the map represents less than 1% of 1% of the area buried by the Loma Caldera volcanic ash just before AD 600.

various stages built up a cinder cone around the vent, now called Loma Caldera volcano. The hot clouds, composed of steam, volcanic gasses, and fine-grained volcanic ash, were propelled through the site at velocities between 50 and 200 km/hr, and left behind the hot steaming deposit designated by Miller as Unit 1 (Fig. 2). Its original temperature would have been about the temperature of boiling water, 100° Celcius, and it left a deposit 20 to 30 cm thick throughout the site. Being fine-grained and moist, it packed around growing plants. After the plants decomposed a hollow space was maintained which we explore with fiber optics and often fill with dental plaster to preserve them. Although people would have been killed by their first breath of this material if they were in an exposed area outside, they would have been protected from it by their houses. That was reversed by the arrival of Unit 2, with large clasts and lava bombs landing with temperatures over 575° Celcius (Hoblitt 1983). As the clasts and bombs penetrated the roofs they caught the thatch and wooden roofing frameworks on fire. If some people had not fled the site prior to Unit 1's arrival, they probably fled their buildings between arrivals of Units 1 and 2, or early during the emplacement of Unit 2. Most of the thatch roofs continued burning during the early stages of the arrival of Unit 3, a unit similar to Unit 1 but much thicker (60-80 cm). The weakening by burning combined with the overburdening by volcanic ash resulted in the collapse of most thatch roofs during the early-to-middle deposition of Unit 3. That also collapsed some walls, and all elevated wooden shelves and tables with the artifacts stored on them. The Loma Caldera eruption continued to deposit a total of 14 units, resulting in a depth of burial of about 4 to 7 meters. That depth was sufficient to isolate Ceren's architecture and artifacts from human activity until their accidental discovery by bulldozing in 1976. That effectively sealed the site from later people digging and removing things as well as from treeroots, burrowing rodents, and other agents of disturbance. The result is extraordinary preservation of architecture, artifacts, plants, and features of the occupied landscape at a moment in time 14 centuries ago. General site characteristics, as well as a discussion of volcanology, geophysical exploration, ethnobotany, individual structures, and other matters are presented in Sheets (1992).

One lesson from Ceren is that the archaeologist's desire for in situ artifacts in floor contact may itself be too narrow. The majority (almost 2/3) of artifacts at Ceren were in elevated contexts, not in contact with floors. I believe that in many cases we can understand the reason or reasons for those elevated contexts. A second lesson from Ceren is that the overwhelming majority of artifacts were in storage, not in localities of use. Of the 243 elevated artifacts, only 17 (7%) were clearly in use positions. These included mounted metates, pots on benches where they were being used, and specially-placed artifacts. Thus, the overwhelming majority (93%) of elevated artifacts at Ceren were in storage.



FIGURE 2.—*Structure 1 as it appeared in 1978, shortly after site discovery. The lowest stratigraphic level is the Formative period well-weathered soil, which provided the earthen material to construct the building. That soil is covered by the white volcanic ash from the 2nd century AD eruption of Ilopango volcano. After weathering and vegetative recovery people reoccupied the area and built the Ceren site. It was entombed by the various layers of volcanic ash from the nearby Loma Caldera vent. Lighter colored ash layers are from steam explosions, and the darker, coarser layers are direct airfall deposits.*

The Ceren site does have living floors with abundant *in situ* artifacts in floor contact, left where they had been placed about AD 600, the majority of which were in storage contexts, but that is largely beyond the scope of this paper. Rather, the focus is on the elevated contexts of artifact use and storage within buildings. This focus excludes artifacts discarded in gardens, middens, or other outside areas. Also beyond the scope of this paper is the preserved landscape, with the trees, cultigens, grasses, walkways with footprints, and features that were preserved. The unusual preservation of Ceren allows us to add the third dimension, height, to spatial analyses.

Because the roofs and their associated artifacts collapsed, carrying with them wooden shelves and tables and their artifacts, the determination of the original context of artifacts is not always straightforward. Occasionally sections of roofs inverted when they fell, causing structural-stratigraphic complexities in recognition and interpretation. Fortunately, roofs usually fell directly, and identifying specific volcanic units inside and around structures along with distinguishing roofing support members from shelves and tables generally helps understanding the original locations of artifacts. The laterally propelled early units (1 and 3) are represented by dustings of a few centimeters of volcanic ash that accumulated inside structures before their roofs collapsed. Finding these deposits above or below artifacts assists us in recognizing their original contexts. Artifacts that were stored high and fell onto the floor, even during Unit 1 emplacement, have sufficient volcanic ash below them that blew into the building to indicate that they were not originally placed on the floor. Items that were on shelves or tables often are still on top of those fallen surfaces. Artifacts that were stored with the roof beams often fell with them when the roof collapsed. Objects stored in the thatch or on top of the thatch generally stayed in or on top of the thatch during the collapse.

In summary, the correct recognition of the original elevated contexts in which artifacts had been placed is not difficult in most cases, based on careful examination of tephra context as well as the location of fallen shelves, roofing elements, and other materials. Most of these identified contexts are obvious, such as on other vessels, on mats, on shells, on wood ash, on posts, in wall niches, or on other elevated solid surfaces. Artifacts fallen from higher contexts, such as from high shelves, wall tops, or the roof beams can be more difficult to place in their original, pre-eruption contexts. Fortunately, the artifacts from these higher contexts frequently still are in contact with the material that elevated them. However, collapses of shelves and roofs presented challenging interpretive problems, and it is likely that some artifacts have been mis-assigned within the most-elevated contexts in this article. Artifact contexts are taken from the chapters in the four preliminary reports (Sheets and McKee 1989, 1990; Sheets and Kievit 1992; Sheets and Simmons 1993), field notes, photography, and records of artifact proveniences.

NON-ELEVATED ARTIFACTS AND ARTIFACTS IN GENERAL

Although it is not the topic of this paper to describe and interpret artifacts that were on the floor, at least brief mention of them provides context and comparison for the elevated artifacts. Only 37% of the artifacts excavated from the Ceren site to date were found in floor contact, while the majority, or 63%, were in elevated contexts. Specifically, of the 385 artifacts for which I felt the information was sufficient to assign them to probable original contexts, 142 were in floor contact and 243 were in elevated contexts. Most artifacts are from household buildings, including domiciles, storehouses, and a kitchen, but some were found in the religious buildings (Strs 10 and 12) and a few were found in Str. 3, a civic building (Gerstle 1989). Many of the floor contact artifacts were large ceramic storage jars used for grains (principally beans) and probably liquids, along with various smaller jars, bowls, cylinder vessels, and tripod plates. The more elaborately decorated polychrome vessels were stored in elevated locations, probably for protection from inadvertent damage. A *metate* with its *mano* were on the floor in the kitchen of Household 1 and was used for grinding maize. Near it was a medium-sized ceramic vessel full of maize kernels soaking, also on the floor. Occasionally a biconically-perforated stone disk («donut stone») was placed on the floor, but most were kept elevated. Mats were found in various structures placed on the floor, probably for comfort in sitting or squatting. Mats were also found rolled-up in roofing materials near sleeping benches, presumably stored in roofing supports in the daytime. Portable fences were found on floors, and wooden walls and their swinging doors, and the wooden doors closing doorways in earthen structures were in floor contact, of course. As with the elevated artifacts, the vast majority of floor contact artifacts were in storage localities.

Storage of artifacts or food inside ceramic vessels that were sitting on the floor was not considered elevated in this study, even though the items were not in direct floor contact. Some pottery storage jars were used for artifact storage, such as the small jar holding a miniature *metate* for hematite pigment grinding, a spindle whorl, shell, and 3 hematite cylinders. Another vessel held an antler tine that was sharpened and polished at its tip. Most North American and Mesoamerican archaeologists would identify that tine as a bone awl, but the same kind of bone or antler tool is used in traditional Maya households today to shuck corn, and is called a «*tapiscador*» (Hayden and Cannon 1984). The dried husks of corn are sufficiently abrasive to make it difficult to use hands alone to remove them.

Hayden and Cannon (1984) found that artifacts were better predictors of the number of household residents than was the floor area of their houses in the Maya highlands. If their association of one economically active female

owning one functioning *mano*-and-*metate* set is appropriate at Ceren, then we have artifactual evidence of one economically active female in Household 4, and four in Household 1 (3 *horqueta*-mounted *metates*, and one on the floor of the kitchen). McBryde (1947) also mentions the close association of a female with her *mano* and *metate*. If Hayden and Cannon's identification (1984) of an economically-active male with a celt is appropriate, then the one celt found in each of each of Households 1, 2, and 4 represents one economically active male.

Beans commonly were stored in elevated vessels or baskets, as discussed below, but little maize has been found stored in vessels. Maize was found in only two ceramic vessels: one contained maize in water in Str. 11, probably soaking overnight prior to grinding, and one contained dry grains in Str. 12. Blake and Blake (1988) note that maize is stored both inside domiciles (in attics, bins, etc.) and in small outbuilding storage structures located near kitchens in contemporary Maya highland communities. To those two must be added the storage of maize in the Ceren fields, as the corn was doubled over by snapping the stalk after the ear matured, thus stopping the flow of nutrients and beginning the drying. The technique is still widespread among traditional agriculturalists in southern Mesoamerica. Vogt (1990) mentions three reasons for the practice at Zinacantan, to dry the maize, to keep rain water out, and to let more sunlight through to the beans that are interplanted. To date, no outside maize storage shed has been found at Ceren, but storage within buildings and in the field have been found. The complexity of contemporary Maya storage behavior and facilities in the Yucatec area recorded by Smyth (1991) are reflected by the Ceren findings.

ELEVATED CONTEXTS AND THEIR ARTIFACTS

Almost two-thirds of Ceren artifacts were placed in elevated storage and use contexts. Eighteen separate means of elevating artifacts above floors have been discovered to date at Ceren. Some involved minimally elevating artifacts, while others involved placing artifacts very high with the roofing support members, or in the roofing thatch, and even a few on top of the thatch. The contexts are presented here in order of elevation, from minimal to maximal. Most of these 18 contexts occur within domestic household buildings, but four of them are unique to the religious buildings, Structures 10 and 12. They are: on olivella shells, on a layer of wood ash, on a lintel, and in vertical niches. Other contexts, such as on top of a bench or on top of a high shelf, occur in domestic, civic, and religious buildings (Sheets 1992).

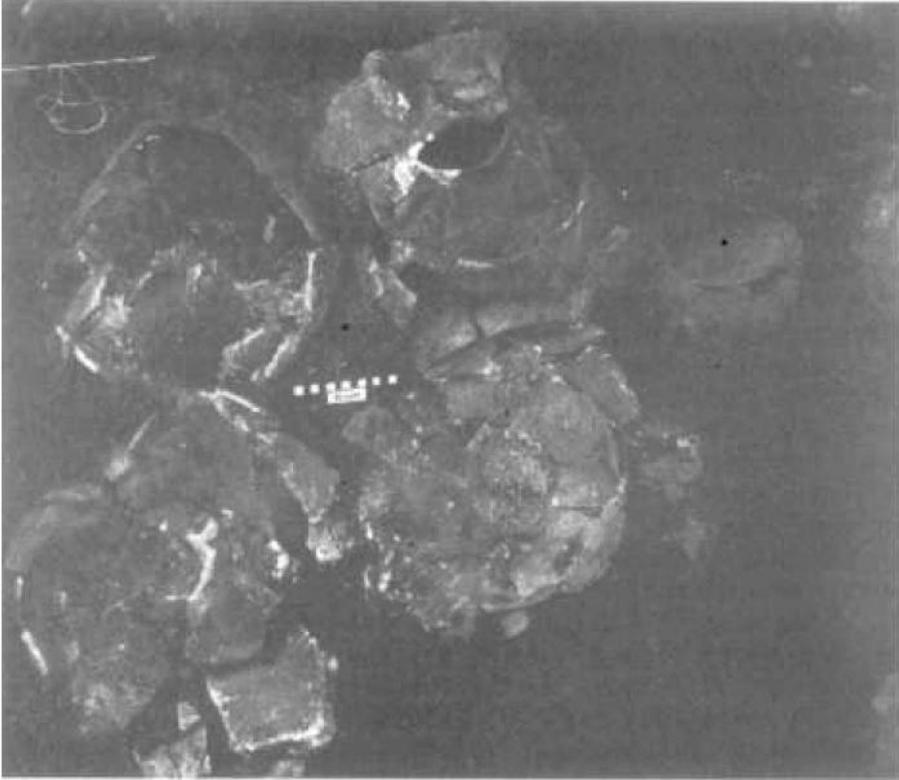


FIGURE 3.—Pottery vessels in the food storage area of the eastern room of Str. 10, apparently belonging to a religious association. The two vessels on the left, the one in the center (containing beans), and the one on the right were in floor contact; the one at the top right, with the shaped sherd lid, held a processed, ground food. The vessel at the top center, with the lid being a sherd from a large olla, was 2/3 full of squash seeds. It was elevated by resting in two other nested vessels.

1. Elevated on top of other ceramic vessels

There were three ways in which ceramic vessels were placed on top of other vessels: stacking them in storage (Fig. 3), placing upside-down vessels over other vessels, and empty vessels capping storage jars. Stacking storage was found in three types of buildings, *bodegas* (store houses), a kitchen, and a building belonging to a religious association. In these buildings, a stack of empty vessels was created, evidently for vessels temporarily out of active

service, with smaller ones toward the top. For instance, 3 smaller pots were stored inside an effigy-handled incensario in Structure 6, a *bodega*. The objective likely was conservation of space. Given the 73 whole vessels in Household 1, space conservation probably was important.

A second category of ceramic vessels elevating other ceramic vessels is in capping. It was common to place empty round-bottomed vessels, right side up, on top of narrow-necked large storage jars to cap their contents. A pair of large jars capped by pots were found at the south end of Structure 1, and another double pair were found in Structure 6. These structures are the domicile and the *bodega* of Household 1. It may be significant that this capping technique has not been found in other households.

Another mode of capping may have a different objective. In two households at the Ceren site polychrome hemispherical bowls have been found inverted over another vessel, and in both cases the finger marks of the last person to eat food from each inverted vessel are preserved on the inner surface. It may have been a Ceren custom that after eating a meal a vessel would be left upside-down over another vessel, perhaps as a visual reminder that it needed to be washed. One was found in the niche of Structure 2, and the other in the south end of Structure 4.

Not included in the category of elevated storage above floor contact are the things kept in ceramic vessels that are resting on the floor. Technically they are not in floor contact, and thus could be counted here, but they are so minimally elevated that they barely qualify as not in floor contact. Also not included in elevated contexts are the numerous vessels that were supported on top of the fiber rings that were resting on the floor because the bottom of the vessel was in direct floor contact, or the vessel on top of a 3-stone hearth found outside the north wall of Structure 10, under the eaves.

2. On top of leaf «matting»

A few cases have been found where Ceren residents placed multiple layers of leaves on earthen platform floors. These are not formally woven mats, but rather are layers of leaves placed on top of each other, with multiple layers lying perpendicular to each other. The base of the granery built into the south room of Structure 4 is an example, with multiple layers of leaves separating the floor from the corn stored on the cob (Gerstle 1990). Another example is the multiple layers of leaves resting on the floor of Household 1's kitchen. It had a small pile of beans in temporary storage on top of it. In both cases, the most likely reason for keeping layers of leaves between grains and the floor is to create a moisture and dirt barrier. The leaves would have kept the grains somewhat separated from the capillary moisture

moving upward toward the floor surface, and from the earthen floor surface itself.

3. On top of olivella shells (religious)

A ceramic vessel was placed on top of four complete olivella shells in the south end of the east room of Structure 12 (Sheets and Sheets 1990). No evidence of vessel contents was detected; it may have been empty or it may have held a liquid. It is the shape of historic and contemporary «chicha jars» in El Salvador. The olivella shells were shaped and perforated, and may have been suspended on a string. No practical purpose is inferred for placing a relatively heavy vessel on these shells, and it seems likely that they represent some kind of offering or ritual activity. They were placed directly under the vessel, not in a ring to aid the round-bottomed pot in staying upright.

4. On top of a layer of wood ash (religious)

A thin layer of wood ash was placed on the base of a «vertical niche» at the north end of the east room of Structure 12. The niche is at the north end of the same room that contained the vessel on the olivella shells. On top of the wood ash were two artifacts, a one-hand *mano* and a polychrome sherd. The sherd does not fit any vessel found in the structure or environs, and evidently was a sherd brought into the structure by itself. Its original provenience is not clear; it may have been on top of the north wall of the structure itself and fell very early during the eruption. Within the range of polychromes at the site it is a relatively fine piece, but not outstanding. There seems to be no practical reason for placing these artifacts on top of a layer of wood ash, or one on wood ash and one on the adjacent walltop. The reason may involve a ritual activity or an offering.

5. On top of forked sticks («horquetas»)

A total of four *metates* have been excavated to date at the Ceren site, still elevated where they had been placed atop thick forked-stick posts, locally called «horquetas.» Each *metate* was supported by two *horqueta* sticks, one at each end. In all cases, one *horqueta* is higher than the other, so that one end of the *metate* is elevated slightly above the other. The tilt facilitates grinding.

Metates are still mounted on *horquetas* for maize grinding in traditional households in El Salvador today, and all have a slight angle to them. The wo-

man doing the grinding stands at the higher end, and uses the slope to help collect the ground «masa» (moist ground corn meal) at the lower end, often into a vessel. Women are very particular about the height of the grinding surface, saying that there is about a 5 cm range that is an acceptable height for them, as their back is bent over the metate while grinding. That places the height of the grinding surface a little below the top of the woman's leg, and above the midpoint of her thigh, giving an approximation of the physical stature of the woman using the metate.

All three *horqueta*-mounted *metates* in Household 1 were about 50 cm above the ground surface, probably indicating a quite short woman or women as the principal food grinder for the family. One was outside the southeast corner of Structure 1, under the eaves; one was inside the *bodega* (Str. 6), and one was near the center of the kitchen (Str. 11). The *horqueta*-mounted *metate* of Structure 4 was found just outside the walls at the northwest corner, under the eaves. It probably was used to grind the maize stored on the cob from the grainery in the back room of the building. The *metate* surface was 60 cm above the floor, probably indicating a taller woman was the principal food grinder in Household 4. I calculate, if the ratios are reliable, that the Household 1 female(s) was only about 119 cm (47») tall, a very short person. The female using the Str. 4 *metate* would have been about 142 cm tall (56»). These estimates should not be taken too literally, as they do not take into account the ranges of *metate* height variability or relationship of the elevation of the grinding surface to the stature of the female, or possible compaction of lower tephra units since the eruption.

One could interpret the three *horqueta*-mounted *metates* in Household 1 as being for the same female, given their similar heights above the ground surface. It is hard to imagine, however, why a person would need more than one *mano* and *metate*. Further, the predominant pattern in traditional Maya villages is for an economically-active female to have a single *mano* and *metate*. Extended families, with more than one economically active female, have sets of them proportional to the numbers of those females (Hayden and Cannon 1984: 73). By that criterion, there may have been four economically active females who ground corn in Household 1, because there were three *horqueta*-mounted *metates*, and one on the floor of the kitchen. The latter is probably where the primary female did her maize grinding. If the four *metates* were used by different females, it is surprising that the three *horqueta*-mounted *metates* are so similar in height above the ground surface. I suspect that the economically active females of Household 1, who were all short, were grinding considerably more corn than they needed for household consumption, perhaps to feed participants in religious rituals occurring in the buildings immediately to the east of their *patio*. If correctly interpreted, this would be an example of episodic household craft specialization in service to a religious organization.

6. On Top of Stacks of Rocks

A *metate* was found in Structure 16 (probably a kitchen) elevated to working height by three stacks of rocks, two at the lower end and one at the higher end (Gerstle 1992: 69). The average height of the grinding surface was only about 40 cm above the floor surface where a person would have stood. The rocks apparently were a functional substitution for wooden *horquetas*.

7. On a Lintel (religious)

The lintel above the main front door of Structure 12 supported seven small artifacts, probably brought to the building and left as offerings or in exchange for services rendered (Fig. 4). These include two spindle whorls, an obsidian prismatic blade fragment, a painted gourd, an obsidian macroblade, a greenstone disk, and a sea shell. The spindle whorls were relatively small, and likely were used for cotton or other fine thread making. The macroblade was intact, and had been tanged by percussion flaking of the proximal end, probably to facilitate holding it by hand. It was very used, as was the prismatic blade fragment. It is possible that some of the other items were on top of one of the columns that supported the lintel, but it appears that the majority was on top of the lintel. The double-pole door was closed at the time of the eruption, and it appears that people would approach the building and leave small artifacts on top of the lintel without entering the building. As Scott Simmons (personal communication 1993) noted, «when the shaman's away, the people still pay.»

8. In Vertical Niches (religious)

Vertical niches, for lack of a better term, are the elongated enclosed vertical spaces, open on only one side, which have their bases elevated above the surrounding floors. Not included in this article are the horizontal niches in the benches of Structures 2 and 12, as their bases are formed by the floors of the buildings, and thus the artifacts in them can be considered to be in floor contact. Vertical niches have been found only in Structure 12 (Sheets and Sheets 1990). They usually are associated with columns in that structure (Fig. 4). Their bases are always elevated a few centimeters to a few tens of centimeters above the floor, and their bases usually are smoothed, compacted, organic-stained, and somewhat polished from considerable use. Specifically what that use was, or uses were, remains unknown.

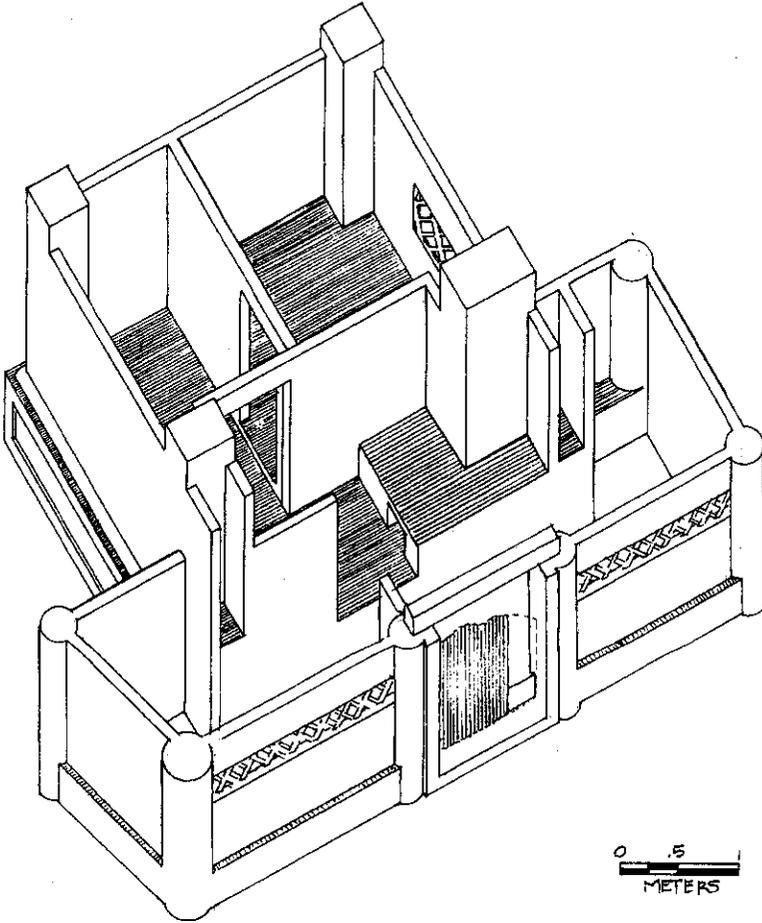


FIGURE 4.—Isometric drawing of Structure 12, the religious building that is the easternmost known structure at the site. It was painted white with red decoration. It had a mat-style lattice decoration in front, and a lattice window in the back; most foot traffic approached the front door but did not enter, and approached the back window. Numerous small offerings were left on top of the wooden lintel, or on the adjacent column top, including a collection of small minerals, two spindle whorls, an obsidian prismatic blade, a tanged macroblade of obsidian, a sea shell, a painted gourd, and a hard greenstone disk. The wall top held a miniature ceramic vessel with cinnabar paint. The vertical niche held a polychrome painted hemispherical gourd. The bench had ceramic vessels and a decorated donut stone on top of it. Column tops supported a few artifacts such as a mano. Str. 12 apparently is where a woman shaman practiced. Drawing by Karen Kievit.

The vertical niche on the north side of column 4 of Structure 12 held a small hemispherical painted gourd. The gourd fell from the niche onto the floor to its north, landing upside down on a thin veneer of tephra that blew in with the turbulence from the steam explosion of Unit 1. Later overburden crushed the fragile vessel, as it had no internal support.

9. In Wall Niches (civic)

Four niches built into walls more than a meter above the floor have been found to date, all in Structure 3 (Gerstle 1989), apparently a civic building. The niches were built into solid adobe walls, with small built-in wooden lintels supporting their tops. The niches penetrated most of the way through the walls. The niche bottoms did not show much use, in contrast to the vertical niches of Structure 12. Only one niche contained an artifact, a bone spatula. It apparently was made from a deer longbone, with a spatulate shape at both ends. It could have served a number of different uses, including smoothing, stirring, or possibly scraping something relatively soft.

10. On Benches

Five structures (1, 2, 3, 9, and 12) have formally constructed solid earthen benches inside them, most of which had artifacts placed upon them. Benches probably were among the most utilized area of structures, with specific activities changing frequently during the day and evening. Structure 9, the sweatbath, has elongated benches inside and outside, both of which were completely devoid of artifacts. Both benches in Structures 1 and 2 were in the innermost room, and presumably were used for various daytime activities of the household members, and for sleeping at night.

The bench in Str. 1 had four vessels resting on it, two of which were empty and two of which contained beans. Adjacent to the pots was a grooved stone maul. There were no artifacts placed on the bench in Str. 2, although numerous artifacts were stored above it, and various artifacts were stored in the niche built into it.

The largest benches, in size and volume, at the site are those in the front room of the public Structure 3. One bench supported a huge vessel that probably was used for a liquid, likely water or chicha. Kept on the wall top above that large vessel was a polychrome hemispherical vessel, likely used for scooping the liquid and dispensing it into individual drinking vessels, or it was passed around and people drank from it directly.

Structure 12 had numerous artifacts inside the niche under the bench (not discussed in this paper), and some artifacts on top of the bench. At

least three vessels were on the bench, one of which sustained a direct hit from a lava bomb and disintegrated into tiny fragments. A thick volcanic ash talud was left unexcavated, to assist the architectural conservation, and that may contain other bench-top artifacts. One donut stone has been partly exposed by recent cleaning of that talud, but not yet excavated.

11. On Table Tops

Two tables have been excavated to date, one in a *bodega* and the other in a kitchen. Both were supported by vertical poles that went into postholes in the floors of the structures. The height of either is not known, but they might have been about a meter or less above the floor. Both table tops were made of straight horizontal poles lashed together in pairs by two-ply twine, likely of agave. Each table had about a square meter of surface area.

The table top in the *bodega* of Household 2 (Str. 7) was covered by a woven mat, at least at the north end, perhaps to even out the surface or to prevent small items from falling between the cracks. On top of the mat was a small jar that was capped by a rounded, edge-ground sherd, with a polychrome dish nearby. The jar sat on a fiber ring, made of grass, to keep it upright.

The south end of the kitchen (Str. 11) of Household 1 had an elongated table or shelf built into it. Numerous artifacts were stored on top of it, and resting on the floor under it. The table must have been at least 1/3 meter above the floor, as that is the height of the larger items stored under it. Two large jars rested on fiber rings that were placed on top of it. The vessels contained beans and squash seeds. One was capped by placing a tripod vessel on top of it. Also on the table or shelf were a groundstone celt, a recurved bowl, an cylinder vessel, two small polychrome jars, a painted object badly damaged by a lava bomb (probably a polychrome painted gourd), and a lump of hematite mixed with mica. The hematite-mica mixture may have been an imitation of specular hematite paint.

12. On High Shelves («Tabancos»)

High shelves, locally called «tabancos,» have been found in three structures. The shelves were built of straight poles lashed together. Their ends were supported by the sidewalls, and occasionally with additional posts; the rounded impressions of the horizontal poles frequently were preserved at the top of the earthen portion of the *bajareque* sidewalls. In all cases the high shelves were about head height, just above 1.5 m, and were built abutting and paralleling the internal dividing walls inside the structures. The *tabanco* in-

side Structure 2, the domicile of Household 2, was in the inner room, while the *tabancos* in Structures 4 and 10 were in the front rooms. The *tabancos* of Structures 2 and 10 had clay capping them only where they extended beyond the walls. In contrast, the *tabanco* of Structure 4 had no clay surfacing beyond the walls, but was clay-surfaced between the two walls.

The *tabanco* in Structure 2, a domicile (Fig. 5), had fewer artifacts than the *tabanco* in Structure 4, a bodega. It held three ceramic vessels, including a tripod incensario. The other two «expedient vessels» were large sherds saved from broken scraped-slip utility storage jars. They measured about 20



FIGURE 5.—Structure 2 after excavation and removal of artifacts. Note the volcanic ash left in the doorway in the interior partition wall, and against the wall, to support the earthen lintel and cornice, and retain the record of volcanic phases. The majority of artifacts in this structure were in elevated storage contexts, especially on the roofing rafters, on wall tops, on a high shelf that paralleled the partition wall, and in the thatch roofing.

and 24 cm in diameters. They probably functioned as informal ceramic plates or trays. The *tabanco* also held a donut stone and a fine-grained sandstone whetstone, probably used for celt sharpening. The closest outcrop of fine-grained sandstone is near Metapan, in the northernmost corner of El Salvador, some 55 km north of Ceren.

The *tabanco* of Structure 4 was loaded with artifacts, especially above the doorway (Gerstle 1990). As one entered the north room of the building, one would have to duck under the *tabanco* that was about 1.55 m above the floor, and then duck under the adobe-wooden lintel of the doorway that was 1.45m above the floor. The shelf supported ten ceramic vessels. Four of the vessels were storing grains. One held cacao, one held cacao and chiles with beans, and the other two contained chile seeds. The shelf also supported two polychrome hemispherical vessels, two polychrome tripod vessels, and a large bowl. The latter five vessels were empty. Near the vessels was a ceramic ladle-shaped incensario, a wax ball (probably bees' wax), a lump of hematite pigment, a bone awl, a bone needle, a fine-weave textile, and a large sherd saved from a broken utility storage vessel. Small bone needles were also found at Copan (Longyear 1952: 111), dating to about the same time as those at Ceren. Hanging above the *tabanco*, or resting on it, were bunches of dried chiles.

Two kinds of artifacts were found on both of the *tabancos* in domestic structures: large sherds saved from broken vessels, and ladle incensarios. The former served as expedient plates, and the latter evidently were used for household ritual, as they were smudged with burned *copal*.

The contents atop the *tabanco* of Structure 10 lend credence to the interpretation of the structure as having a ritual function. It held a deer skull headdress that had been painted white and red, a spindle whorl, an obsidian prismatic blade, and two ceramic vessels. One of the vessels was unusual, with human faces on the sides of a fragile basket-style loop handle. It retains an incrustation of a liquid. A lava bomb smashed a storage vessel into many tiny fragments. On the portion of the *tabanco* that extended outside the structure, north of the north wall, were a number of artifacts, including a round white stone, five whole vessels, and a number of partial vessels and saved sherds. Two or three of these vessels might have been hanging just below the *tabanco* or from nearby roofing, but here are tabulated with the artifacts resting on top of the *tabanco*. Most of the vessels on the northern *tabanco* extension were large food or drink serving vessels, probably for dispensing from the very large cooking vessel that was resting on the three-stone hearth on the floor below. The northern side of the building provided access for people working within the building, while religious participants would approach the northeastern side of the building for food and drink.

13. On Wall Tops

Placement of artifacts on wall tops was the second most popular of the various contexts for elevated artifact storage. Only the tops of roof beams received more artifacts.

The tops of three types of walls were used to support artifacts: wooden pole walls, «bajareque» (wattle-and-daub) walls, and solid puddled adobe walls. Kievit (1994) surveyed the architectural variation and patterning at Ceren. Artifacts were commonly stored on *bajareque* walls, occasionally on solid earthen walls, but only rarely on pole walls.

Only at Structure 4 have artifacts been found that apparently were kept elevated by a pole wall. The front wall was made of vertical poles that were tied together in pairs by two-ply twine, evidently agave. The original height of the wall is unknown, but a guess would be between 1.5 and 2 m high. Fourteen lumps of wood ash, roughly spherical, were found on both sides of the wall, as if they had been suspended at or near the top of the wall and fell on both sides as the eruption affected the structure. The wood ash was stored in some type of round and firm organic containers, probably gourds, which decomposed completely. Such storage would necessitate considerable care in making sure that the wood ash collected and stored in such a situation had cooled completely. An example of a wood ash cooling feature was encountered in the *patio* of Household 1. How the containers were attached to the wall is unknown.

Ethnographic and ethnohistoric accounts of gourd use in southern Mesoamerica are numerous. McBryde (1947) mentions the variety of plain and decorated gourds in traditional villages of southwestern Guatemala. Vogt (1990) describes the use of gourds in contemporary Zinacantan for storing and serving food. The use of plain and decorated gourds for serving and storage continues in traditional areas of El Salvador, such as in the Izalco area. After Beaubien (1993) recovered and conserved the first painted gourd discovered at Ceren, numerous others have been found, particularly in the *bodega* of Household 2 where they may have been painted, and in the kitchen of Household 1. Feldman (1985) describes four types of gourd containers in use in nearby Guatemala during the 16th Century. Some grew on vines, and others on trees. They required careful preparation before they were useful as containers. They were used as drinking cups for chocolate or other beverages, storage containers, ladles, chamber pots, castanets, and water canteens. Some were polychrome painted. Hayden and Cannon (1984: 172) describe and illustrate polychrome painted gourds from central Guatemala that were used for drinking «atol» at special lineage and community rituals. Both plain and decorated gourds are still used in traditional areas of El Salvador, such as in the Izalco area.

Bajareque walls were frequently used for elevated artifact storage. The walltops are generally about 1.5m above the interior floors, and 2m or more above exterior floors. The walltops are usually between 12 and 15 cm wide, providing convenient but small elevated contexts to store medium-to-small sized items. The vertical poles of *bajareque* walls, spaced 15 to 20 cm apart, extend above the mudded portion up to connect with the wooden roof-support structure. The width of the mudded walls and the pole interval limited the size of artifacts that could be placed atop *bajareque* walls.

Structure 1 may have had more artifacts on wall tops, but only two can be reliably assigned there, based on excavated evidence. One is a fired clay figurine head that probably was on the western wall top, and fell to the southwest and landed on top of the *horqueta*-mounted *metate* under the eaves. Nearby, a small partial pot missing much of its upper portion and serving as a container for a hematite-based pigment, probably was stored on top of the southern end of the west wall, and fell outward.

Structure 2 had two donut stones on top of its western wall, or possibly on the *tabanco* extension. Both fell outward (westward) during the eruption. Both had organic residues in the perforations, probably from use as perforated mortars. A pointed bone tool, perhaps an awl or more likely a *tapisca-dor*, was atop the south wall, and fell to the south.

The walltops of the *bodega* behind Structure 2 may have supported quite a number of artifacts (Fig. 6), but all walls fell during the eruption, making interpretation more difficult. The walls that fell outside the building have been left in situ, obscuring whatever artifacts might have fallen under them. Only four artifacts appear to have been on top of walls, based on excavation contexts. Two *manos*, a cylinder of hematite pigment, and a donut stone apparently were on top of the western wall and fell outward.

The *bajareque* walls of Structure 4 held nine artifacts. Those included four *laja* stone slabs that were on top of the inner dividing wall. Two fell inside and two fell outside the wall. Also on the inner wall were a polychrome bowl, an unworked stream cobble, a red lump of pigment (probably hematite), and some beans. An unhafted greenstone celt was on top of the south wall. The east wall top held a small painted gourd plate, an unpainted gourd with beans, a large sherd saved from a broken large vessel, and a ceramic vessel containing seeds.

Structure 12 contained at least four objects placed on wall tops. A miniature paint pot, containing cinnabar, was on top of the western enclosure wall, and fell to the south. Both the north and the south walls had large bivalve seashells placed on them, and both were dislodged to the south by the eruption. A mineral collection was on top of the thin partition wall inside of Str. 12, and fell with the wall early in the eruptive sequence. It was com-



FIGURE 6.—Donut Stones (*bi-conically perforated stones*). The one on the left was one of a pair stored in an elevated context, probably on roof beams, in the storehouse (Str. 6) of Household 1. Both probably were perforated mortars. The donut stone on the right was stored on top of the western «*bajareque*» wall of the storehouse (Str. 7) of Household 2. Some organic remains were found encrusting the perforation, and it was found with carbonized remains of hardwood in the perforation, probably the remains of a wooden pestle.

posed of small augite and biotite crystals, minerals common to the area. The minerals are the strongest indication of shamanism in that building.

The third type of wall was made of solid packed adobe, without the vertical and horizontal reinforcements of *bajareque* construction. Both Structures 3 and 9 have solid walls, and the recently-discovered Structure 13 is similarly constructed. No household buildings are made of solid adobe, perhaps because of its vulnerability to collapse during moderate-to-large earthquakes. Household walls consistently are of *bajareque*, one of the most seismically resistant vernacular construction techniques known. In contrast, solid earthen walls are used for communal buildings, such as Structure 3 (a public building) and Structure 9 (a sweathouse). People would be inside such buildings only for short periods of time. Structure 9 had no artifacts on wall tops, column tops, around its immediate periphery, or in any of the areas excavated inside, as one would expect for a sweathouse. Structure 3 was re-

markable for the paucity of artifacts, particularly given the fact that it is the largest structure yet excavated at the site. It had two artifacts placed on top of the central dividing wall. One was a polychrome hemispherical ceramic vessel, for serving food or for dipping a liquid from the huge vessel sitting below it on the bench. The other was a large rounded rock, about the size of a grapefruit, that was resting on top of the wall and fell into the back room during the eruption. What its use may have been, and why it would have been placed on top of a wall, are completely unknown.

14. On Column Tops

Solid earthen columns consistently were built at the corners of *bajareque* structures, and short columns were built on the large solid earthen walls of Structures 3 and 9. Most earthen columns were used to support wooden posts or beams for roof support. In spite of their commonality, columns were used for elevated artifact storage only rarely. The northern column of Structure 2, the domicile building of Household 2, held a side scraper made on an obsidian macroblade. Apparently, Structure 12 had two artifacts on column tops. A used prismatic blade probably was on top of Column 6, and a used mano was on top of Column 8. In both cases the turbulence of the eruption dislodged them to the southwest, where they were found in tephra below the column tops.

15. Suspended Below the Roof Beams

In five structures people suspended things below the roof beams. This section presents the artifacts that were clearly and were probably suspended. The dubious or equivocal cases are not included here.

Two ceramic vessels were suspended over Area 5, the work area of Structure 1, the domicile of Household 1. Bunches of dried chile peppers were suspended over the bench in the innermost room of the same structure. The *bodega* of the same household (Str. 6) had four ceramic vessels suspended below the roof beams, or possibly on top of the roof beams. All were scraped-slip utility vessels: two small globular jars, a bowl, and an open basin. In addition, an organic bag which had decomposed completely held a spindle whorl and some hematite mixed with mica. It was hanging below a roof beam in the northern end of the structure, above the cluster of ceramic vessels that were on the floor.

Three structures (2, 3, and 4) had an enigmatic item hanging by ropes near their centers, held in pliable organic containers that decomposed comple-

tely. They were approximately spherical containers, about 50 cm in diameter, that held a mixture of fine white volcanic ash from the *circa* 200 AD Ilopango eruption mixed with water and some short pieces of grass. They had been stirred with sufficient agitation to introduce and retain air bubbles into the mixture. It is possible that the material was used as a scrubbing cleanser for architecture or artifacts, perhaps for cleaning gourd containers, but no direct evidence of such a use has been found.

Structure 4 had a large ceramic jar filled with beans hanging below the roof beams above the center of the porch. A string bag full of beans was tied to a roof beam, or possibly to the underside of the tabanco that protruded beyond the wall, just outside the west wall and under the eaves. And, as mentioned above, numerous bunches of dried chiles were hanging below the central part of the tabanco that ran the length of the porch toward the front of the building.

16. On the Roof Beams

More artifacts were stored on top of the roof beams than in any other elevated context. Of the 243 elevated artifacts in households, 111 (46%) were stored on the roof beams. A wide range of items were stored there, including ceramic vessels, small groundstone artifacts, pigments, jade and other beads, celts, wood ash containers, spindle whorls, food and seed grains, and other items. It is not known if some of the roof beams were flattened on top to facilitate storage, if some things were tied on to beams, or if some horizontal short sticks were added to make small shelves to help hold artifacts. Roof burning prior to collapse was sufficient to destroy these details. An artifact apparently stored on the roof beams are mats, often in domicile structures, but they are found in such fragmentary condition due to the burning and collapse that they are difficult to recognize, and so they are not counted here.

The roof beams were used for storage in two of the four structures of Household 1. Structure 1 had three ceramic vessels stored above the bench in the innermost room; they were a polychrome straight-walled bowl, a polychrome bowl missing most of its rim, and the lower half of a large storage vessel. Five ceramic vessels were stored on the roof beams, outside the southern corner of the building. They include two polychrome pots, both slightly broken and one with red pigment inside. Two jars and one broken jar (the bottom third) were also stored with the polychrome pots. A short distance to the north of these vessels was a recurved polychrome bowl. These would have been available to someone standing outside the walls, under the roof, by reaching very high. Because they were above the *metate* mounted on the *horqueta*, it is likely that many of them were associated with maize grin-

ding. Some may have been used to transport the soaked maize kernels for grinding, others may have been used to catch the ground «masa.» and the polychrome bowl may have been used as a food serving vessel. The roofing beams provided a handy concentrated area for storage of various ceramic vessels above the maize grinding locality.

The Structure 6 roof beams held two donut stones, one of which had a wooden stick with shaping marks on it, probably a pestle. Another part of the roofing supported the lower part of a broken jar, a fired clay spindle whorl, and a miniature fired clay vessel.

Large numbers of artifacts were stored in the roofing supports in the Household 2 buildings. The domicile (Str. 2) had a tripod incensario, a bone spatula, a wooden disk, and two large sherds that probably served as informal plates stored up in the roof beams above the bench. The larger of the sherds is the bottom fourth of a large scraped-slip jar, and the other is a slightly smaller portion of a broken vessel. The large number of partial vessels and large sherds from broken *ollas* at Ceren indicate that the common archaeological assumption that either ceramics are whole or they are broken into sherds and discarded is unwarranted. The incensario presumably was used for household ritual, and every household excavated so far has one.

Household 2 also stored great numbers of valuable small artifacts on the roof beams of their *bodega* (Str. 7). Some small valuable items were stored in a relatively inaccessible location, in an organic container in the far back-right corner of the building, on the roof beams. In the bag were five miniature clay pots, 7 jade beads, 2 other beads, 2 carved shell pendants (Fig. 7), and lumps of hematite and limonite pigment. The miniature vessels each contained cinnabar (mercuric sulfide). Each contained a slightly different hue of red ranging from a bright pink to a deep red. It probably is not coincidental that the structure with the most painted gourds is also Str. 7; it is likely that gourds were painted in or near this building.

The only use of cinnabar discovered at Ceren to date is to paint the outside of polychrome-decorated gourds. Because the gourds are most frequently found in contexts of food preparation and serving, it is likely that they were also used for food. Because the inorganic salts of mercury are toxic, it is not surprising that the five paint pots of Structure 7 and the one in Structure 12 were stored in elevated, relatively inaccessible locations. However, cinnabar on food-associated gourds suggests the possibility that at least trace amounts were being ingested. It also is absorbed through the skin, indicating that a person decorating gourds is at risk. According to Dr. Tom Henry (personal communication 1992), most ingested HgS is passed harmlessly through the system, but 7% to 15% gets into the blood, and is stored in the liver, kidneys, spleen, and bone. One gram is a lethal dose, but smaller amounts are not, and have half-lives of 24 days. Thus, if only minor amounts

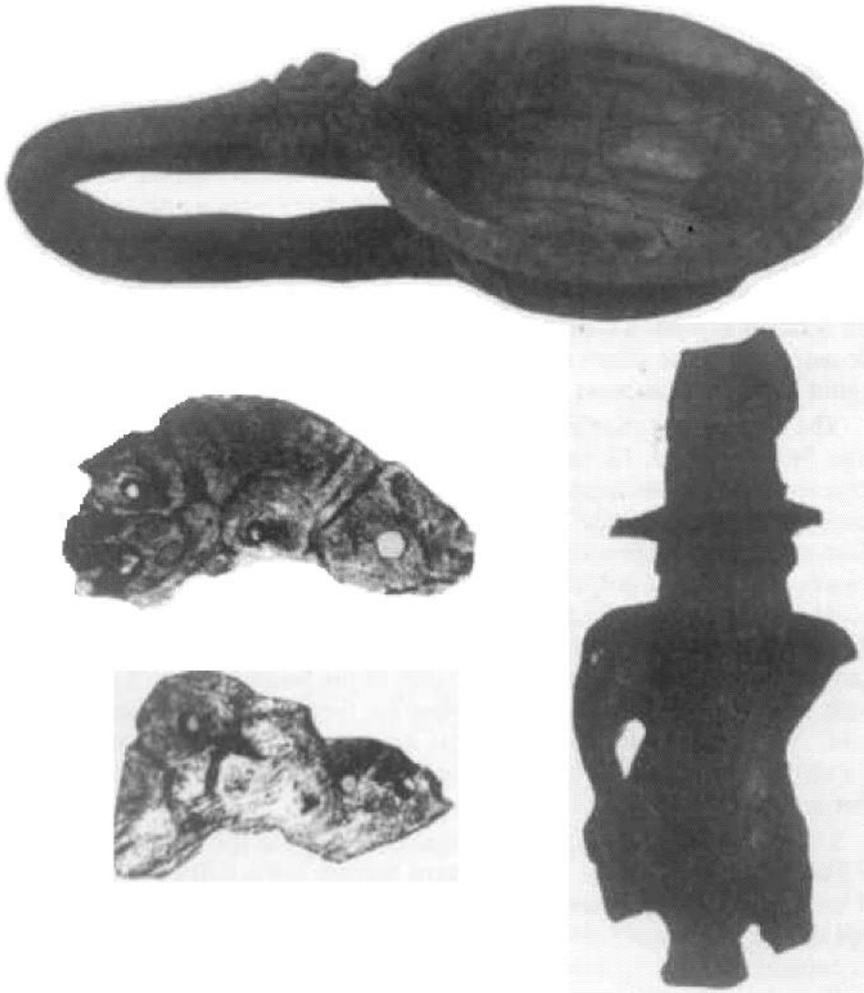


FIGURE 7.—Various elevated artifacts. Each household had an incensario, such as this loop handled scraped-slip decorated incensario from Str. 1, the domicile of Household 1 (23 cm long) at the top of the figure. On the lower left are two shell pendants stored in an organic bag with the roof beams of the storehouse (Str. 7) of Household 2 (4.2 and 3.7 cm in length). Also in the bag were five miniature ceramic vessels full of cinnabar (mercuric sulfide) pigment, seven jade beads, two shell beads, seashells, and limonite pigment. Near the bag, on a roof beam, was the carved bone figurine of a male, at the lower right of the figure (7 cm tall). His legs and one arm had broken off; the rounded broken surfaces indicate considerable curation of the heirloom. His pudgy belly probably signifies middle age.

were getting into the diet, it may have caused little or no problems. Analyses of bone will be necessary to determine if mercuric sulfide was ingested and accumulated.

Near the bag was a finely-carved bone figurine of a middle aged male with an elaborate hat, a pudgy stomach, a breechcloth, and hair tied in a ponytail. Both legs and one arm had broken off, and the breaks had become worn and rounded. Near these small valuable items were a large polychrome dish, two large sherds, a Copador polychrome bowl with three monkeys on the exterior exhibiting exaggerated sexual organs, an isolated polychrome sherd, a badly broken yet saved pot, a scraped-slip jar, the upper part of a broken scraped-slip jar, a Campana fine-line tripod plate, a celt, specular hematite paint, a spindle whorl made of a carved nutshell with wooden spindle, a scatter of large beans, and a wood ash hemisphere.

The roof beams above the porch of Str. 7 held a big sherd saved from a large broken vessel, 13 sherd lots, a Gualpopa polychrome and a Copador polychrome hemispherical bowl, 2 painted gourds, 2 deer longbones, two ash hemispheres, and a mouse (alive until the eruption, and not counted as an artifact, of course). Fallen on the west side, outside the wall, were 2 sherds, 3 vessels (a Gualpopa polychrome bowl, a Tazula polished black bowl, and a vessel missing its rim), and two wood ash hemispheres. In the northwest corner, outside the walls, were 9 sherd lots, a recurved bowl, a probable painted gourd, and 6 wood ash hemispheres. East of the building were 3 sherds, and south were two, in Loma Caldera tephra, but their original positions are unknown. Why various small sherds were kept is unknown, but many of them probably will turn out to be particularly shattered vessels or partial vessels, after analysis.

Large sherds salvaged from broken vessels were the only artifacts kept on Structure 3 roof beams. A large sherd and the lower half of a scraped-slip jar were above the southeast corner of the porch, and a rather large sherd was kept on the roof beams above the main front doorway. These are inexpensive, expedient means of making shallow plates, perhaps for a variety of uses.

Structure 4 had three large sherds stored in roof beams above the porch, and two large sherds outside the east wall, under the eaves, in the roof beams.

Structure 10, a building probably belonging to a religious association, had a few artifacts stored with roofing timbers, or perhaps on a wall top. A fascinating assemblage of five stone artifacts was stored in roofing at the front of the porch. It included three donut stones, one with a carbonized hardwood pole still in the perforation, which probably served as a pestle. Also in the same group were two cobbles, one shaped and one unworked. How these stones were used is unknown. None of the donut stones shows unequivocal evidence of being used as a perforated mortar, but all show use wear parallel to the perforation, wear that is consonant with that interpretation.

17. In the Thatch Roofing

Mice were found in the thatch of all buildings except three, but they are not counted as artifacts, of course. They are particularly prevalent in domiciles, *bodegas*, and the kitchen, with each of those roofs having about 1/2 dozen. A few were found in the roofs of the religious buildings. They were absent in the roofs of the public building (Str. 3), the workshop (Str. 5), and the thatch protective roof of the sauna (Str. 9), obviously because of the lack of food in them.

The third most common locality for artifact storage was in the thatch of the roof. Artifacts stored in the thatch roofing share the properties of being sharp, fragile, valuable, light, and small. Obsidian blades that were in everyday cutting use were generally located in the thatch roof above doorways or in corners of domiciles and *bodegas*. Thus it would be easy to find one when in need of a cutting implement. It is common in present-day traditional Amazonian villages to place the machete up in the thatch above a doorway when entering the house, but it is unknown whether there is any direct connection, a shared historical tradition, or a case of independent adaptive convergence, or simply the same logical solution to a routine problem. In traditional Salvadoran households today, machetes and knives are commonly stored on the roof beams, as well as an unfortunate recent increase in guns and grenades stored there. At the Ceren site, sets of prismatic blades that had yet to be placed in everyday use were kept in bundles in relatively inaccessible locations in the thatch roofs in anticipation of future consumption.

Structure 1 had an obsidian prismatic blade in the thatch above the doorway 60 cm from the west wall and 20 cm from the inner dividing wall. Structure 6 had a bundle of 4 pristine prismatic blades that had not been put into use stored in thatch in the center peak, the most inaccessible location in the structure. It is likely that they were in an organic container, perhaps of leaves, but it did not preserve. An accessible obsidian scraper was in thatch 20 cm from the south wall. It narrowly escaped destruction, as it was near a lava bomb trajectory. One prismatic blade was in thatch 15 cm from the north wall, and another was just outside the west wall, both quite accessible by reaching upward. Most blades seem to have been placed in thatch with their proximal portions (platform) downward, with their distal portions inserted more deeply into the thatch.

Structure 2 had two prismatic blades close to each other in thatch over the north room (Fig. 8), near the doorway, and a stemmed macroblade nearby (evidently an unhafted knife). All apparently were in daily use; they do not represent a cached bundle of blades intended for future use. A prismatic blade apparently was stored in thatch outside the walls in the northeast corner, but its provenience is unclear.

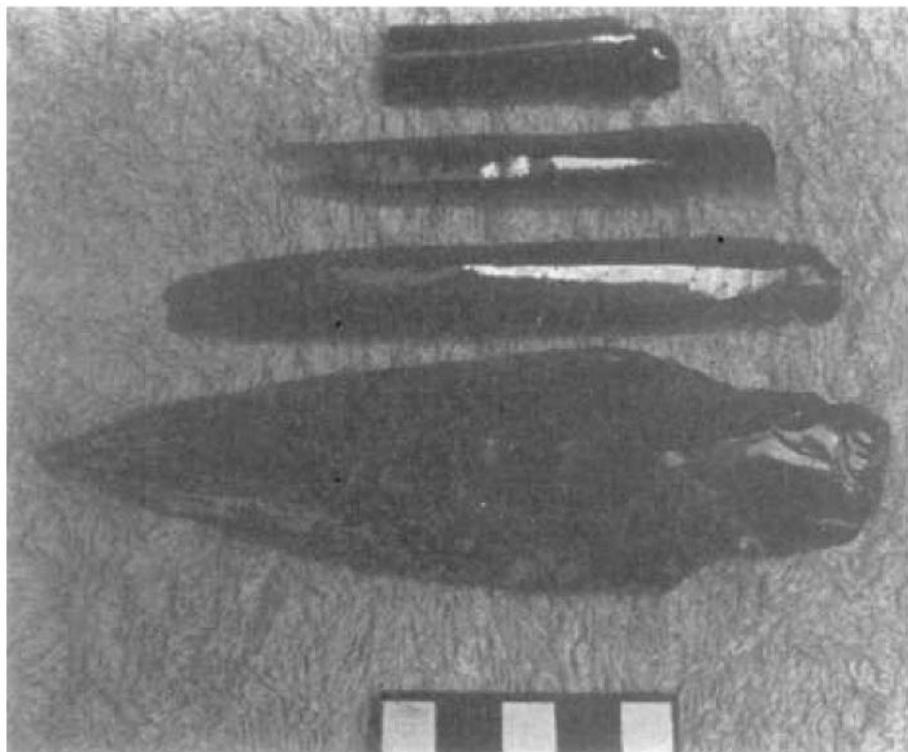


FIGURE 8.—Obsidian artifacts kept in thatch roofing in Household 2. The second prismatic blade was in the thatch of the household's storehouse, Structure 7. The other prismatic blades and the macroblade were in the thatch of Structure 2, the domicile of the household. The white discoloration at the distal end of the macroblade and along the bottom edge are the remains of thatch still adhering. Scale in cm.

Structure 7 had 2 prismatic blades above the NE corner of the porch, and more centrally located above the porch were a prismatic blade and the proximal portion of a macroblade. One of the northeastern blades was almost unused, but the other is a medial segment with steep unifacial retouching at both ends leaving a straight edge, but one that is offset from perpendicular to the blade's long axis. It probably was made for a very specific function, but that function remains unknown. The more centrally-located prismatic blade showed only the lightest of use wear on its edges, but the macroblade's lateral edges were heavily used, perhaps in a scraping function. Unfortunately, its distal end was thermally damaged when the roof burned. It certainly was a side scraper, and probably was a side-and-end scraper.

One macroblade was found on the west side of the building, outside the wall, in the thatch that forms the eaves. It was thermally damaged at the distal end, but enough is preserved to indicate that it likely was a scraper. A bone needle tip was found just northwest of the structure, on the ground under the roof. It probably was kept in the thatch roof, but was dislodged by the small earthquake or turbulence of the eruption.

Five prismatic blades were stored in thatch above the main room 40 cm from the back (south) wall. Three of them clearly were together in a tight bundle, perhaps leaf-wrapped, evidently kept as a pristine unused set. The other two were found a short distance away; it is likely that they were stored with the others, but probably became separated when the roof fell.

Structure 4 had a macroblade inserted in the thatch above the inner doorway, but north of the *tabanco*, along the main walkway. It was severely damaged by the fire when the roof burned, and by the fall of the roof. It was recovered in two fractured pieces. It may have been a scraper. Three prismatic blades were stored within a few cm of each other in the extreme northern end of the roof thatch, along the midline of the structure. They apparently were in everyday use, as evidenced by some use wear and what may be some organic residue from use. A bone needle was kept in thatch in the back room, just inside the south wall. It must have been threaded, or it would have been the proverbial needle in the haystack of a thatch roof, and would have been almost impossible to find. No evidence of thread was found, however. Any thread dangling down below the thatch would have burned rapidly when the undersides of the roofs caught fire.

Elevated contexts are still used in traditional Maya households to store small, sharp, fragile items such as bone needles and shards of fractured glass (Deal and Hayden 1987). The fractured glass shards presently are created by percussion fracturing of glass bottles. Larger pieces are used for scraping and smoothing of wooden shafts, working hides, and on bone and antler. Smaller pointed shards are used in bloodletting, often to relieve the pain of headache or various muscle pains, frequently in association with the use of a sweat-house. The reasons given for such elevated storage is to protect the valuable edges and to protect people from inadvertently cutting themselves.

Bone needles are carefully curated in contemporary Maya houses. In the households studied by Hayden and Cannon (1984) all were used in making clothing and blankets. They are larger than the specimens found at Ceren; the latter probably were used in making fine fiber cloth garments, probably of cotton.

18. On top of the Thatch Roof

Structure 3 had two *laja* slabs on top of the roof, at the middle of the west side of the roof. Structure 7 had two large sherds on top of the roof, at the northwest corner, beyond the walls. The *laja* slabs and the large sherds were relatively flat, large, and heavy. They probably were placed there to counter wind damage.

A considerable amount of fine white volcanic ash from the Ilopango eruption was placed on the thatch protective roof over the sweathouse, on the extreme southern margin of the roof. We do not know why this was done; one wonders if the ash would interfere with the «wicking» moisture removal of the sloping thatch.

Three human molars were found on the thatch roof of Structure 17 (Kievit 1992). People in traditional households in El Salvador today toss their teeth onto the roof, or over the roof, for «good luck,» but it is unknown if this is a long-standing custom and the teeth at Str. 17 represent an early example. Some investigators believe that these teeth might have been intrusive (Gershtle, personal communication 1993), but no evidence of intrusion was found during the excavations.

SUMMARY, CONCLUSIONS AND COMMENTS

When people gradually abandon their households in the village, they take with them their most important and portable possessions. Later passers-by remove other artifacts or elements of construction for their own purposes. Once the thatch roof is gone, the earthen architecture «melts» into a low mound. The active agents of decomposition, disturbance, and weathering in a tropical wet environment further deplete the record of human behavior within the deliberately abandoned site. The result is a greatly impoverished record of human activity. The archaeologist is left with a surface scatter of broken artifacts, and if they are fortunate, some stubs of architecture and a few intact sub-floor caches or burials. The remains of house mounds can be mapped, dated, and used as a data base to approximate population densities through time (e.g. Sheets 1983), and valuable subsistence data can be obtained by sampling for pollen, phytoliths, and carbonized microfossils. Based upon such reconstructions, village life has been traced in Mesoamerica for more than four millenia. However, that data base did not prepare us for the richness of village life at Ceren during the Classic period. The sudden volcanic ash burial did not allow cultural and natural processes to greatly impoverish the architecture and artifacts, allowing detailed studies of them at Ceren.

Judging by the material indices that relate to the quality of life, including roofed space, architectural features, ceramic vessels (numbers, shapes, decoration), amount and variety of stored foods, species in gardens and milpas, and silviculture, the quality of life was quite high. This paper focuses not on architecture or a category of artifacts, but cross-cuts the data base by focusing on the topic of the artifacts in elevated storage.

A total of 18 contexts in which artifacts were stored above the floor have been identified at the Ceren site to date. Some of the elevated contexts apparently were for ritual purposes, such as the vessel placed on top of olivella shells, the mineral collection on top of a front column, the *mano* placed on top of a layer of wood ash in a vertical niche, and the painted gourd in another vertical niche, all in Str. 12, a structure apparently built for shamanism. Many of the household elevated contexts are for obvious practical purposes, such as elevating metates on forked sticks, so the grinding surface is at a comfortable height for the woman grinding the corn. Round-bottomed vessels often were used to cap other vessels, to protect food stored in the lower ones. Food stored was also less accessible to the competition where the vessels were suspended below the roof beams, in pots on high shelves, or other high locations.

Pigments were consistently stored in elevated contexts. Hematite paints, sometimes mixed with mica, were kept on tables or shelves, or in small vessels, probably to avoid someone stepping on them and thus mixing them with clay from the floor or other substances. Hematite was found at the site in the form of uniform cylinders, probably made by occupational specialists, and perhaps obtained in the market at San Andres. Cinnabar paints were kept exclusively in miniature ceramic vessels in relatively inaccessible locations such as in a bundle in a back corner of the Household 2 *bodega*, up with the roof beams. Judging from the placement of cinnabar paint storage vessels, people were careful to isolate this chemical, probably due to the toxicity of mercuric sulfide. Other potentially hazardous materials, such as sharp obsidian blades and bone needles, were kept in the thatch of roofs, at standardized locations such as above doorways or at roof corners.

The fact that the overwhelming majority of artifacts at Ceren were in storage contexts, not out in activity areas where they were employed in active use, does have important implications for archaeological interpretation. The goal of finding in situ artifacts in their use localities is so rarely met at most archaeological sites including Ceren that it would be well to redirect archaeological efforts. It appears more productive to search for assemblages of artifacts that were used in various service functions, craft production and specialization, and food storage, processing, and serving functions at sites. In addition, the fact that the majority of artifacts were not in floor contact indicates the desire for such artifacts as a basis of behavioral reconstruction is

specious. At sites without exceptional preservation, focusing more on artifacts in and associated with structures and activity areas would be more productive. Schiffer (1985) has argued with Binford regarding the «Pompeii premise» that floor-contact artifacts are in their position of their primary use. McKee (1990) reviewed the controversy over the «Pompeii premise» in the literature. Certainly from the Ceren perspective, it appears that the argument over the «Pompeii premise» is too narrow, as the bulk of the in situ Ceren artifacts were in storage locations, not in locations of use.

Ceren certainly had single-function activity areas, but most are multi-functional and would change during the day, or from day to evening and nighttime. It appears that many areas inside of buildings, or outside the walls but under the eaves, and immediately outside of buildings, were used for many different tasks during the day, and cleaned up after each, leaving little evidence of any of them for the archaeologist to encounter. Some may have left only faint organic traces, or microdebitage, and we have implemented a microbotanical recovery program at Ceren to try to find them. Only areas at greater distances from structures, at least a few meters, were assigned to single functions. Exceptions in or near structures include hearths and fixed *metates* for grinding corn.

The fact that the majority of artifacts in storage contexts were elevated also has important implications for archaeologists. Only 37% of the artifacts at Ceren were in floor contact locations, while fully 63% of the artifacts were in elevated use and storage. Thus, while floor-contact artifacts were significant, they were in the minority at Ceren. And, within the category of floor-contact artifacts, most were in storage, and only a few were in their location of use. Part of the reason for this is that, based on artifact distributions, it appears that the eruption most probably occurred in the evening, after the evening meal was served. Most of the artifacts in use during the day had been returned to their locations of storage, including the digging stick in Str. 1. The sleeping mats had yet to be taken down from the roofing beams and spread on the benches. The serving bowls had yet to be washed, as they still had the finger swipes from the last meal. The large cooking pots had been removed from the three-stone hearths, and the fires were declining to embers. Because time of day has such an effect on the location of many artifacts — moving from storage in a structure to use in an activity area within or near the structure in most cases — individual artifacts' precise locations in storage within a building are often not as informative as the assemblages related to the repeated activities that take place in and around specific buildings. Thus, even where we have a great number of artifacts in situ on the floor where they had been placed by the original residents of this site, the floor contact artifacts are in the minority. Where preservation allows, the archaeologist would be wise to attempt to determine original contexts and

associations of artifacts and architecture whether or not they are in floor contact. The search for those elusive floor contact artifacts is often chimerical, yet even where they are encountered, they prove to be the lesser part of the richness of material culture in the functioning Ceren village.

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I particularly appreciate the fine scrutiny that Andrea Gerstle gave an earlier draft of this article; it has benefited from her attention. It would have benefitted further had I taken all of her suggestions. Upon her suggestion I removed the catalog numbers of all artifacts discussed in this paper; the individual catalog numbers can be determined by comparing artifact descriptions in this article with the FS (Field Specimen) lists in the reports of each field season. She cautioned heavily about possible errors in assigning artifacts to the more elevated contexts, and it needs to be pointed out clearly that some errors certainly must have been made here between, for example, artifacts that were on top of roof beams versus some that were on top of adjacent walls.

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