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STUDIES IN ANCIENT MESOAMERICA, III

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Department of Anthropology
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STUDIES IN ANCIENT MESOAMERICA, III

edited by

John A. Graham

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SEVEN COLIMA TOMBS: AN INTERPRETATION OF CERAMIC CONTENT*

Isabel Kelly

In the spring of 1940, I excavated seven tombs at El Manchón, immediately south of Los Ortices, Colima. Associated ceramic material provides concrete evidence of the sequential use of these tombs and helps clarify certain aspects of local ceramic phases.

Tombs

The tombs at El Manchón are of the form typical of central Colima (figs. 1-8). The roughly cylindrical shaft is a meter or less in diameter and one to two meters deep. At lower level, to one side of its base, a chamber has been chiseled in the hard subsoil, and there is a characteristic drop from shaft floor to chamber floor. Ordinarily, a large stone slab, sometimes slightly worked, covers the opening from shaft to chamber. Six of the seven Manchón tombs had such a stone, although not always did it seal effectively.

The tombs are quite closely spaced in an irregularly shaped area, approximately nine by 15 m., on a slightly sloping mesa. Distribution suggests advance planning and contemporaneous construction of the tombs, and the sketch (fig. 1) indicates that consistent orientation was not of interest. One special feature is a small, tunnelllike perforation at floor level, connecting the chambers of Tombs 4 and 7.

Pertinent ceramic phases

Many years ago, I published a tentative ceramic chronology for central Colima (Kelly [1944]); the suggested phases, from early to late, were Ortices, Colima-Armería, and Periquillo. In general, this succession still holds but, understandably, there have been modifications. [1] Particularly pertinent to a discussion of

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* This paper was presented at the XLI International Congress of Americanists, in Mexico City, September, 1974 and, through error, was programmed for publication in conjunction with a symposium on Majolica pottery. Owing to limited funds, the latter papers are not to be published, and the present study is being placed on record here.

1. In recent seasons, a pre-Ortices phase, called Capacha, has been recognized (Kelly 1972). Because its pottery is not found in the Manchón tombs, it need not be considered here. A monograph on the Capacha material is in press, at the University of Arizona. Its introduction includes a description of the phases now recognized, together with available information concerning chronology.

The three phases under consideration in the present paper fall roughly within

the Manchón tombs is the division of the Ortices phase, as it was defined 30 years ago. The earlier part, still called Ortices, includes an assortment of related wares (figs. 10-13), basically cream to gray, "wiped" or "shadow striped," sometimes with added geometric ornament in rose paint, sometimes in rose, plus purple-black, resulting in a tricolor or polychrome; also included are a rose red ware and a black on rose red (figs. 14, 15). To this newly-defined Ortices phase belong many of the small, solid figures which often depict action.

The latter part of the Ortices phase set up long ago now is designated as Comala. To it belong the best-known of all Colima ceramics: handsome red vessels, often modelled, and black on red variants (figs. 16-18). Engraved monochrome pots (figs. 19-20) also are Comala as are many -- perhaps most -- of the large, hollow, human and animal effigies (fig. 21), red or brown, found by the hundreds in museums and private collections. The small, solid figurines continue from Ortices into Comala times, but certain other kinds of solid figurines seem to be exclusively Comala products.

In addition, there are unplaced ceramics which, for want of a better term, have been designated as Manchón. The several vessels of this group and large and utilitarian (figs. 22-23). Some are open-mouthed ollas, whose rims adjoin the body directly, at a sharp angle, without intervening neck. There also are basinlike vessels and sizeable bowls, slightly incurved. Most specimens are red to mahogany in color, but in a few cases special surface treatment results in an apparent red on brown effect (fig. 23), in one instance, with slightly-raised red ribbing (fig. 22). This Manchón pottery does not fit in the general ceramic panorama of central Colima as a whole. Its undecorated red vessels are not very distinctive, and body sherds might well have been included with Red, unclassified wares. But the "ribbed" aspect is unique and should have attracted attention in any sherd lot; it is unlikely that such fragments have escaped notice.

The impression that Manchón pottery is extraneous to the local scene tends to be confirmed by the finding of one restorable vessel in the dump from a rifled tomb in the nearby Ixtlahuacan valley, of the Río Salado drainage, and that area may prove to be the center of Manchón wares. In any case, at one time, Tomb 4 was utilized by people who deposited Manchón pottery with their dead.

Finally, mention should be made of the Colima phase, which follows Comala in time. Sherds of its wares (figs. 24-27) penetrated the chambers of several tombs (pp. 25-26), but there is no evidence that these ever contained interments of this phase.

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the broad Mesoamerican scheme as follows: Ortices, late Preclassic; Comala, early Classic; Colima, middle Classic.

Re-use of tombs

Each of the tombs at El Manchón contained sherds of the Ortices phase, and both construction and initial utilization safely can be attributed to it. The quantity of Ortices fragments in several chambers (fig. 9) rather suggests successive use during that phase (p. 17).

Later -- except for Tombs 4 and 7 -- there was a half-hearted clearing of the Ortices furniture to make way for Comala-phase burials. At the time of my excavation, all tombs except no. 7 contained offerings and presumably burials of Comala affiliation. Skeletal material was so deteriorated that little can be said of it. Only in the case of Tomb 3 was it evident that two individuals accompanied by Comala offerings were the last interments in that chamber.

The emptying of the tombs, followed by re-use, has resulted in a somewhat puzzling distribution of sherds, and restorable and near-restorable specimens have been assembled from fragments found in quite different tombs. On very minor scale, this holds for Tombs 1, 2, and 7; on larger scale, for Tombs 3, 4, and 7. The accompanying sketch (fig. 1) gives provenience chiefly in terms of shaft and of chamber proper; for Tombs 4 and 7 are distinguished sherds found in the chamber, but at the very entrance from the shaft. In several cases, a preponderance of fragments or a cluster of large sherds suggests the original location of the vessel; this is shown on the figure as a black square; otherwise, occurrence is indicated by a hollow square.

The minor overlap between tombs may be disposed of first. (1) Two fragments of a small Ortices red on cream plate (fig. 1: no. 5105) actually join one another. One is from Tomb 1, chamber; the other, from Tomb 2, shaft. With no clue to original location, it may be guessed that the entire vessel once belonged to an Ortices offering in Tomb 1; when the chamber was cleared for subsequent use, one bit was tossed out, later to become incorporated in the fill of Tomb 2, shaft.

(2) The links between Tombs 2 and 7 are somewhat dubious (fig. 1: nos. 1138, 1143) because the sherds do not actually join the supposed companion pieces. No. 1138 is a Comala black on red vessel; its fragments and those of another Comala pot come from the fill of Tomb 7, chamber. They seemed not to be associated with any interment and actually may have been thrown into the open tomb as discards. Apparently Tomb 7 was not used for burials after the removal of its Ortices furniture (p. 4). Specimen no. 1143, an unclassified ware, may have belonged originally to an Ortices burial in Tomb 7 (p. 4).

The significant evidence concerning sequential use of chambers comes from Tombs 3, 4 and 7, which must be considered in conjunction. Relationships are between Tombs 3 and 7, on the one hand, and Tombs 4 and 7, on the other.

To start with Tomb 3, it contained some Ortices sherds (fig. 9), plus one

restorable Ortices vessel which apparently escaped destruction when the chamber was readied for use by Comala people. Although the latter deposited their own burial furniture in the chamber, half the sherds from the shaft were Ortices (fig. 9), with a negligible Comala ingredient. Unless Ortices and Comala are coeval -- as I concluded years ago, largely on the evidence of this tomb -- such distribution presents problems in interpretation.

It may be suggested that (1) Tomb 3 was cleared of its original Ortices grave furniture (except for one vessel, left to one side); (2) two Comala burials thereupon were installed; (3) the stone slab at the entrance, which in this case effectively sealed the chamber, was set in place; and for some unknown reason, (4) the shaft was left unfilled.

About this time, Tomb 7 was cleared. Its Ortices offerings were extracted and part of them dumped in the open shaft of Tomb 3. Owing to the well-fitting slab, nothing recognizable as discards from Tomb 7 penetrated the chamber of Tomb 3. In contrast, the overlap between the pottery of Tomb 7, chamber, and Tomb 3, shaft, is impressive (fig. 1: nos. 1136, 1139, 1141, 1142, 1145, 1146). Sherd distribution suggests that all these specimens once were grave furniture in Tomb 7. Fragments of three additional Ortices vessels, which come exculsively from the shaft of Tomb 3, also may have formed part of the Ortices offering in Tomb 7 and, when the general clearing took place, were passed to the open shaft of Tomb 3.

The same shift in location, from Tomb 7, chamber, to Tomb 3, shaft, was shared by two unclassified vessels. One (no. 1144) is not restorable; it might be a variant of Ortices rose red, or it might tie with Zapote rose, a ware tentatively recognized in eastern Colima. The other (no. 1143) is an unclassified black on red, near Ortices black on rose. Inasmuch as these stylistically unplaced vessels seem to have constituted part of the Ortices furniture in Tomb 7, contemporaneity with that phase is implied.

The steps outlined above seem to explain satisfactorily how the chamber of Tomb 3, with its Ortices sherds, its one Ortices restorable pot, and its Comala-phase furniture, came to be isolated by a shaft whose ceramic content was largely Ortices, with a negligible Comala ingredient.

To turn to Tomb 4, it also shares restorable and near-restorable pottery with Tomb 7, but in this case the wares are Manchón (p.), not Ortices. In keeping with the now-familiar pattern, Tomb 4 evidently was used first for Ortices burials. In time, the offerings were removed, apparently by non-local people who placed their dead and a generous assortment of Manchón wares in the tomb. From the chamber of Tomb 4 came a total of ten restorable or nearly-restorable Manchón pots, including those shown on figure 1 (nos. 1153, 1155, 1157).

In time, Tomb 4 was readied for use by Comala people. Three large Manchón

pots (nos. 1153, 1155, 1157) at the opening from the shaft were in the way and were pushed to one side. Some fragments were thrown out, and all chambers, save those of Tombs 3 and 6, contained Manchón sherds. Many Manchón fragments wound up eventually in the chamber of Tomb 7; in fact, no. 1155 is so well represented there as to suggest this may have been its original location. However, my impression is that Tomb 7 was not used for burials after Ortices days; it may have been left open, thus inviting deposit of rubbish. When I cleared it, there was no entrance slab, and shaft and chamber were filled solidly with earth and sherds.

In any case, considerable Manchon pottery remained within Tomb 4, and the cleaning for Comala use was careless, perhaps hurried. No skeletal material attributable to the Comala phase was evident, but on one side of the entrance to the chamber was a cluster of entire Comala vessels; on the other side, two redware pots, presumably also Comala, although not firmly classified. In summary, the sequence in Tomb 4 seems clearly to be: Ortices - Manchón - Comala.

The Colima-phase component in several of the tombs must be a post-Comala intrusion, but quantity and distribution of the several wares are puzzling.

Tombs 1 and 2. The chambers of both tombs contained a large number of sherds and, in both instances, about half belonged to the Colima phase (fig. 9). The stone slab of Tomb 1 did not fit, and behind it extraneous material worked into the chamber. The sealing of Tomb 2 was ineffective because the subsoil "vault" had collapsed behind the stone slab.

Tombs 3 and 6. Of the seven tombs, only nos. 3 and 6 were effectively sealed. In both, sherds were few and included no Colima-phase wares.

Thus far, the presence (and absence) of Colima-phase intrusives seems adequately explained, but this is not the case with the three remaining tombs.

Tomb 4. The vault of the chamber had given way behind the entrance stone; strangely enough, no Colima-phase sherds came from the chamber proper, although a few were found at the junction of shaft and chamber. A possible explanation might be that the roof continued intact until post-Colima times, when comparatively little refuse of that phase remained on the surface. At the time of my excavation, there were few surface sherds of any kind.

Tomb 5. Surprisingly, the chamber contained 34 sherds (16.2 percent) of Colima wares. Field notes state that the entrance seemed well sealed, but presumably the observation was faulty.

Tomb 7. The dearth of Colima-phase sherds in this tomb is strange. Perhaps it remained open and became completely filled with earth and discards during Comala times, thus impeding the entry of later material.

Despite some unexplained inconsistencies in the distribution of of Colima-phase sherds, it seems certain that none of the tombs at El Manchon ever contained interments of that phase. Except for a sizeable fragment of a Colima incised bowl (fig. 26) found on the chamber floor, immediately behind and below the sealing slab of Tomb 1, Colima-phase sherds are small, and none approximates a restorable vessel.

Chronological implications

Distribution of ceramic material from the seven tombs at El Manchon indicates: (1) sequential use of the chambers, with (2) construction and initial use during the Ortices phase, (3) followed by clearing and subsequent installation of Comala-phase interments. (4) The intrusive and unplaced Manchón wares from one tomb should be coeval with Ortices, or later; or contemporary with Comala, or earlier. As a guess, they may correspond to a time level early in the Comala phase.

In addition, (5) apparent association with an Ortices offering makes it likely that two unplaced specimens are contemporaneous with the phase of that name. Furthermore, (6) there is strong suggestion of a time difference within the Ortices phase. The material removed from Tomb 7, chamber, and dumped in Tomb 3, shaft (p.), includes one Ortices polychrome (figs. 12, 13) and five specimens of Ortices black on rose red (figs. 14, 15). In contrast, the bulk of the sherd material from Tomb 7 is Ortices red on cream (figs. 10, 11). The latter, then, may refer to Ortices occupancy in times prior to the vogue for polychrome and black on rose pottery.

(7) The Colima phase sherds found in Tombs 1 and 2 represent two rather different assemblages and should permit definition of internal time differences within that phase.

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Figures

Fig. 1	Tombs at El Manchón: ceramic relationships.
Figs. 2-8	Tombs at El Manchón: profiles. All to scale given for figure 2.
Fig. 9	Tombs at El Manchón: partial sherd count.
Figs. 10-15	Ortices-phase wares.
Figs. 16-21	Comala-phase products.
Figs. 22-23	Manchón wares.
Figs. 24-27	Colima-phase products.

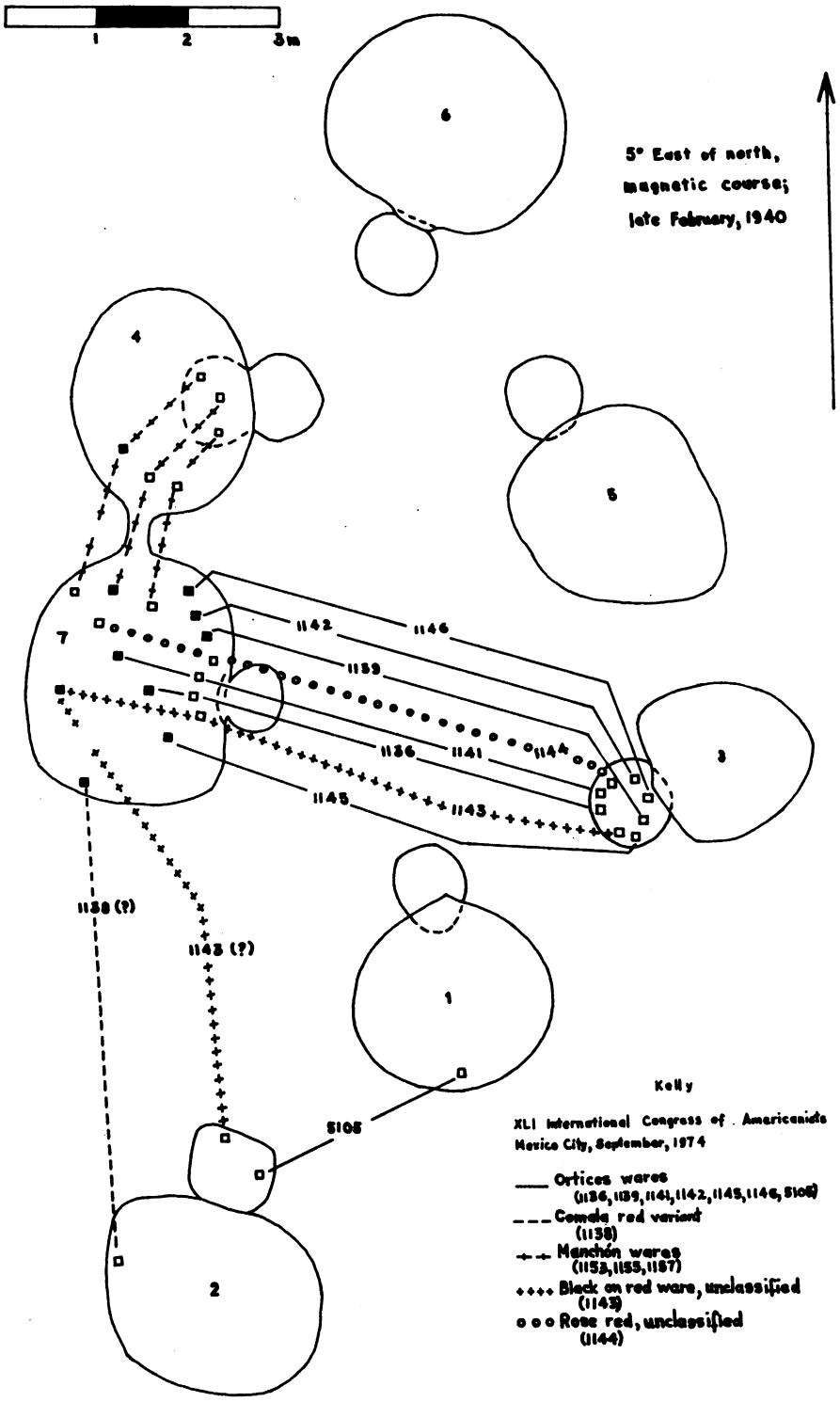

1
2
3m
6
5° East of north,
magnetic course;
late February, 1940
4
5
7
1142
1146
1139
1136
1141
1144
1145
1143
3
1138 (?)
1143 (?)
1
5105
2
Kelly
XLI International Congress of Americanists
Mexico City, September, 1974
Ortices wares
(1136, 1139, 1141, 1142, 1145, 1146, 5105)
Comala red variant
(1138)
Manchón wares
(1153, 1155, 1157)
Black on red ware, unclassified
(1143)
Rose red, unclassified
(1144)

Fig. 1

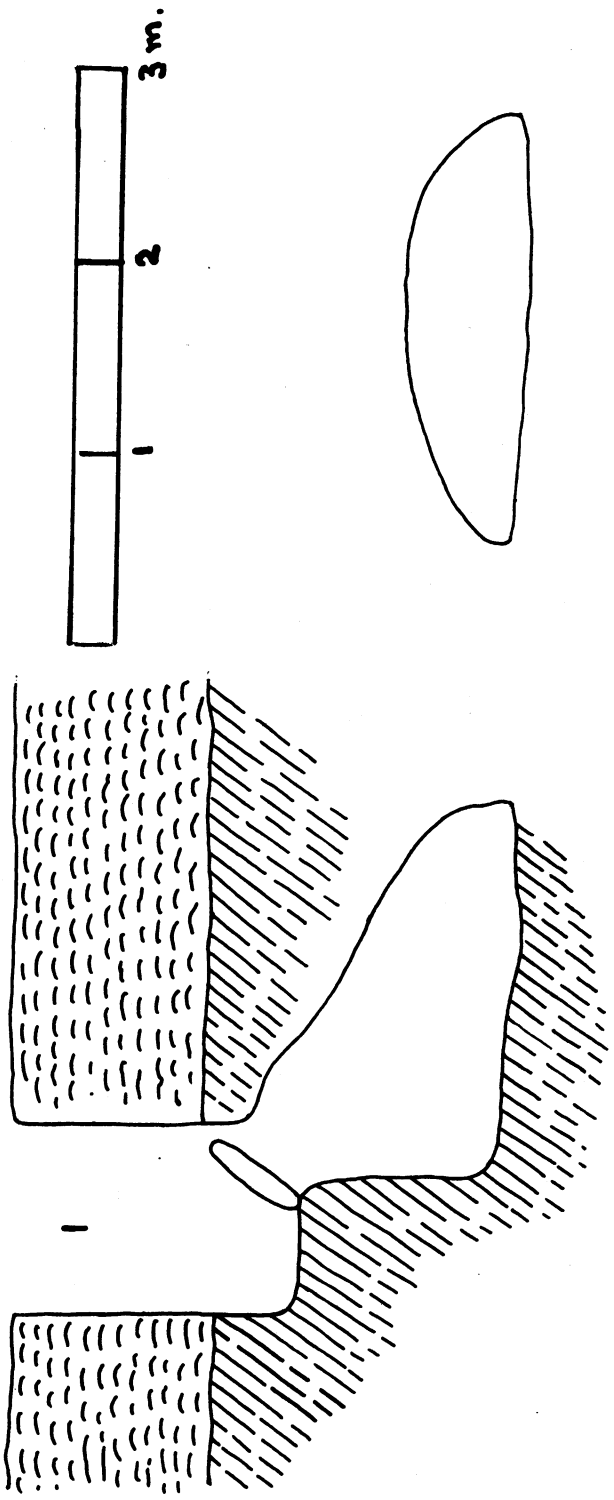


Fig. 2

Fig. 3

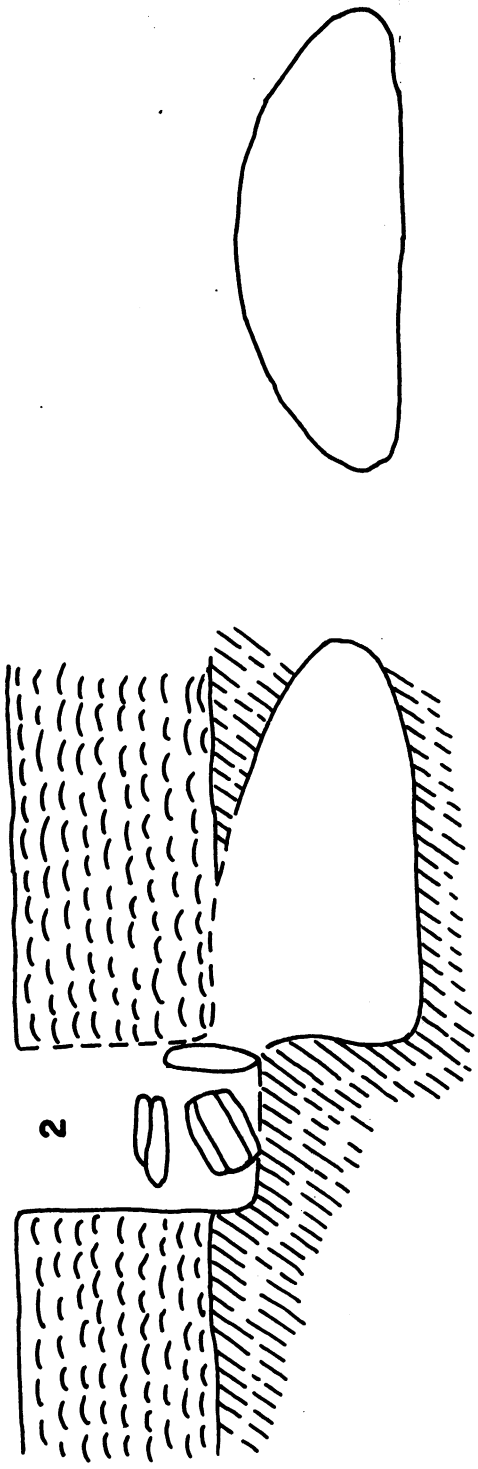


Fig. 4

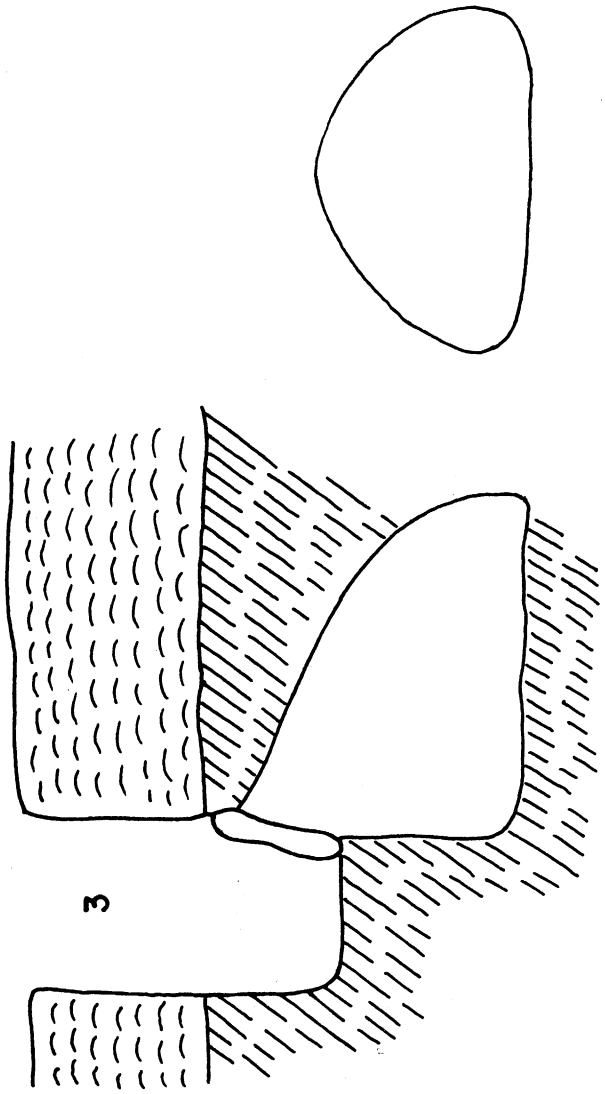
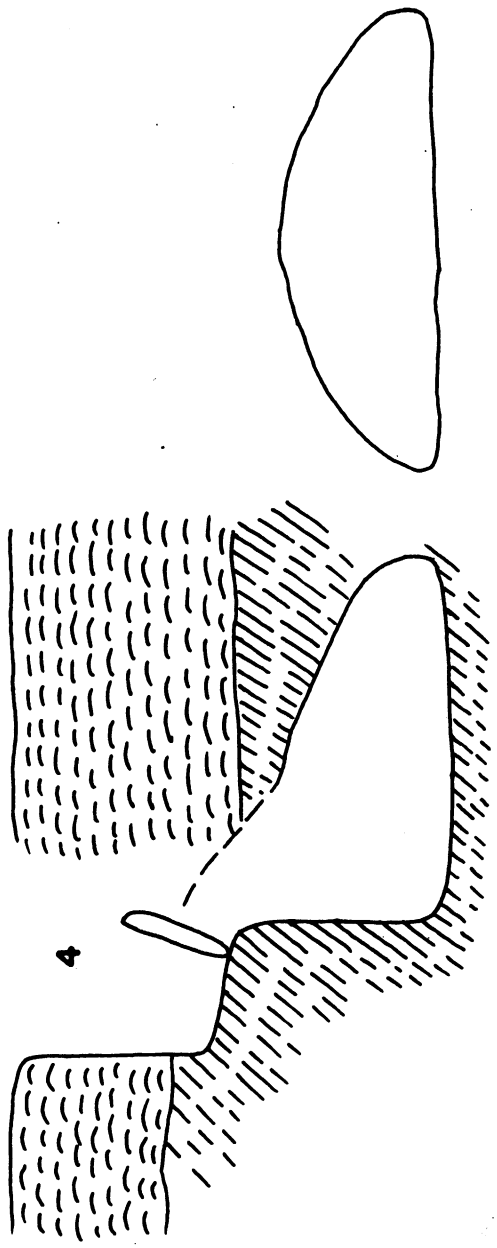


Fig. 5



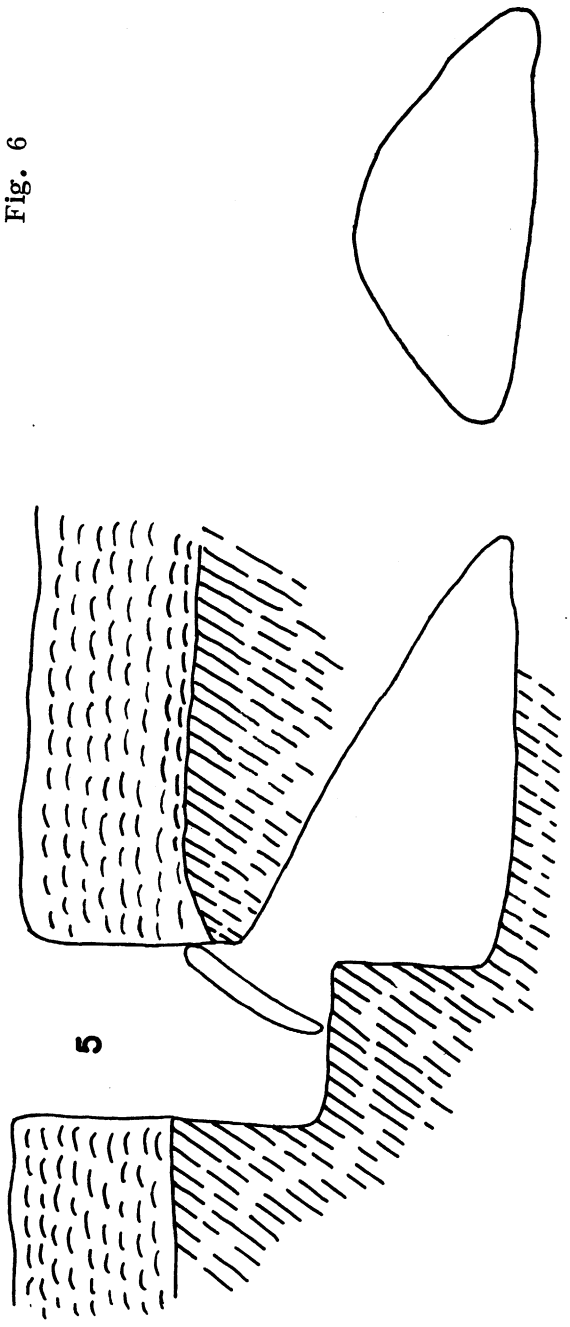
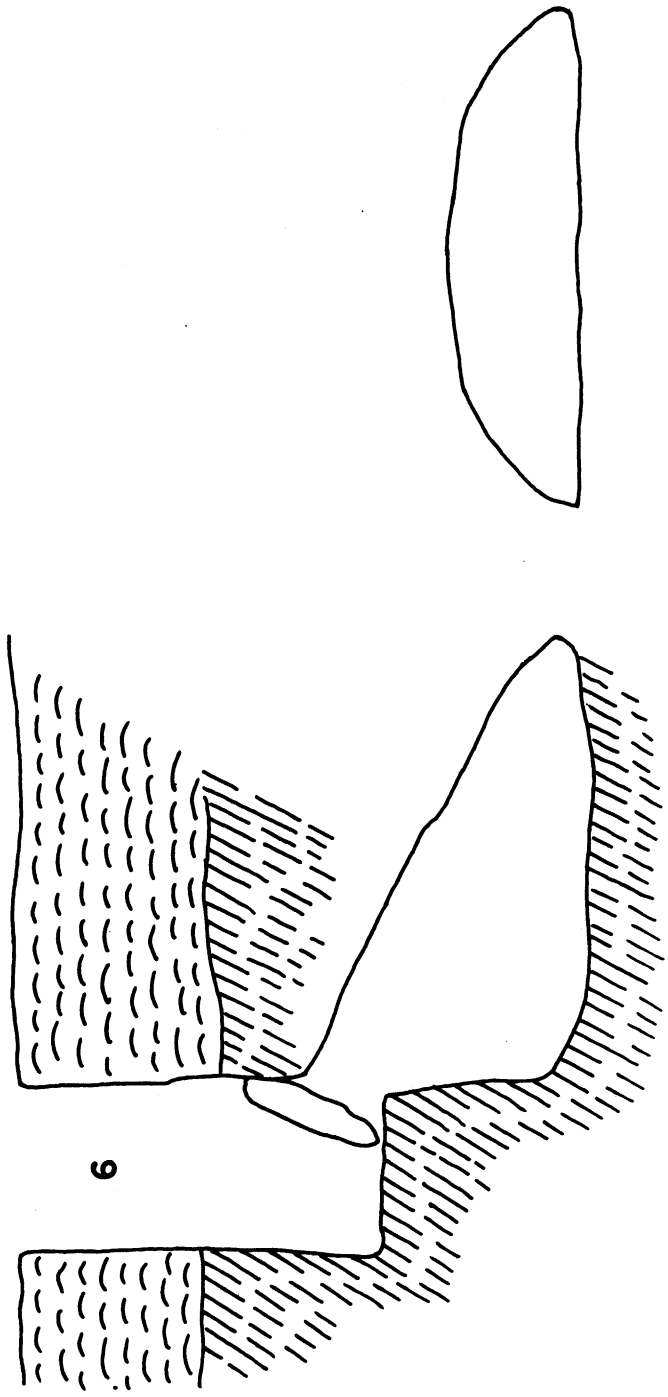


Fig. 6

Fig. 7



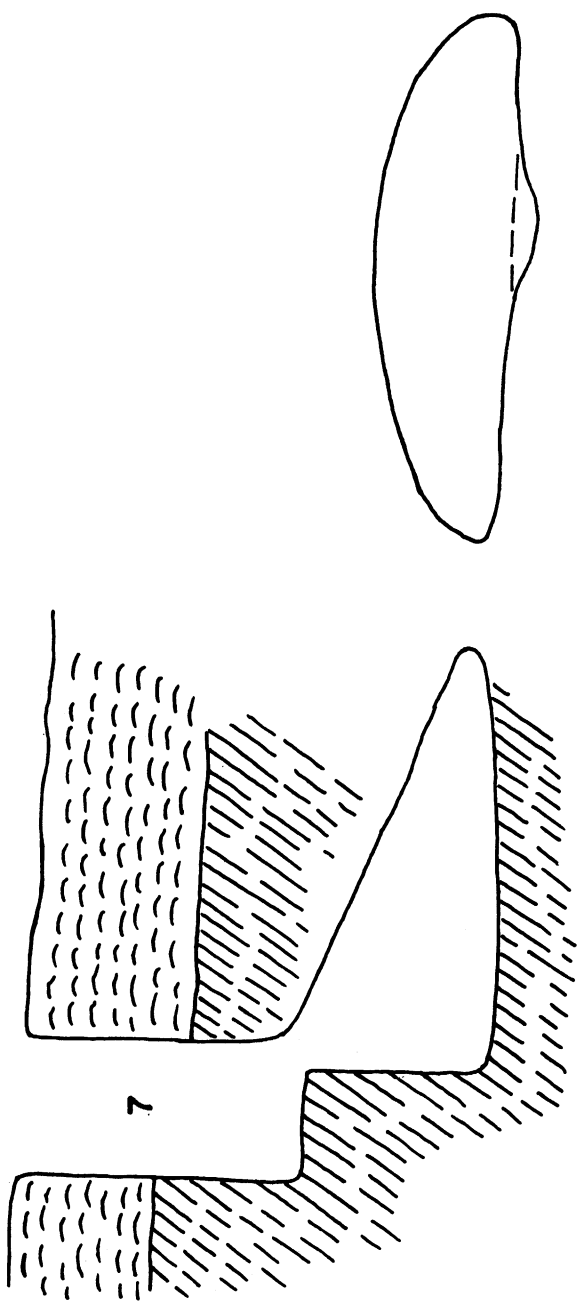


Fig. 8

Fig. 9. Tombs at El Manchón: partial sherd count [1]

Tomb number	1	2	3	4	5	6	7
				Ortices phase			
Shaft	42 (42.0)	31 (20.4)	167 (47.4)	148 (14.9)	22 (38.6)	75 (52.1)	78 (21.8)
Chamber, at entrance	-	-	-	44 (40.7)	-	9 (64.3)	34 (25.6)
Chamber proper	143 (14.8)	109 (8.8)	22 (61.1)	238 (17.8)	84 (40.0)	12 (44.4)	131 (21.2)
Chamber or shaft [2]	-	-	-	182 (36.3)	-	-	-
				Manchón wares			
Shaft	3 (3.0)	17 (11.2)	1(?) (x)	381 (38.4)	0 (0)	7 (4.9)	116 (32.4)
Chamber, at entrance	-	-	-	6 (5.6)	-	0 (0)	30 (22.6)
Chamber proper	16 (1.7)	38 (3.1)	0 (0)	543 (40.6)	10 (4.8)	0 (0)	115 (18.6)
Chamber or shaft [2]	-	-	-	122 (24.4)	-	-	-
				Comala phase			
Shaft	0 (0)	0 (0)	4 (1.1)	16 (1.6)	5 (8.8)	2 (1.4)	10 (2.8)
Chamber, at entrance	-	-	-	0 (0)	-	0 (0)	2 (1.6)
Chamber proper	2 (x)	0 (0)	25 (1.9)	25 (1.9)	2 (1.0)	1 (3.7)	12 (1.9)
Chamber or shaft [2]	-	-	-	1 (x)	-	-	-
				Colima phase			
Shaft	15 (15.0)	42 (27.6)	2(?)(1.0)	1(?) (x)	1 (1.2)	1 (1.0)	7 (2.0)
Chamber, at entrance	-	-	-	13 (12.0)	-	0 (0)	6 (4.5)
Chamber proper	453 (47.0)	643 (52.1)	0 (0)	0 (0)	34 (16.2)	0 (0)	28 (4.5)
Chamber or shaft [2]	-	-	-	3 (1.0)	-	-	-

1 Entries refer only to the several ceramic categories under consideration, but percentages are given in terms of total sherds. Accordingly, in no case will the indicated percentages total a hundred. For Tomb 1, shaft sherds come to 60 percent of the total; chamber sherds, to 63.5 percent. Red and Plain wares, unclassified, account for most, but not all, of the balance not shown here. The first entry in a column gives the number of sherds, with an "0" indicating absence. Immediately following, in parentheses, is the percent ratio; "x" is less than half of one percent.

2 In shipment, the label of a bag from Tomb 4 was damaged and, as indicated, it is uncertain if one sherd lot comes from the chamber or from the shaft.

Fig. 10

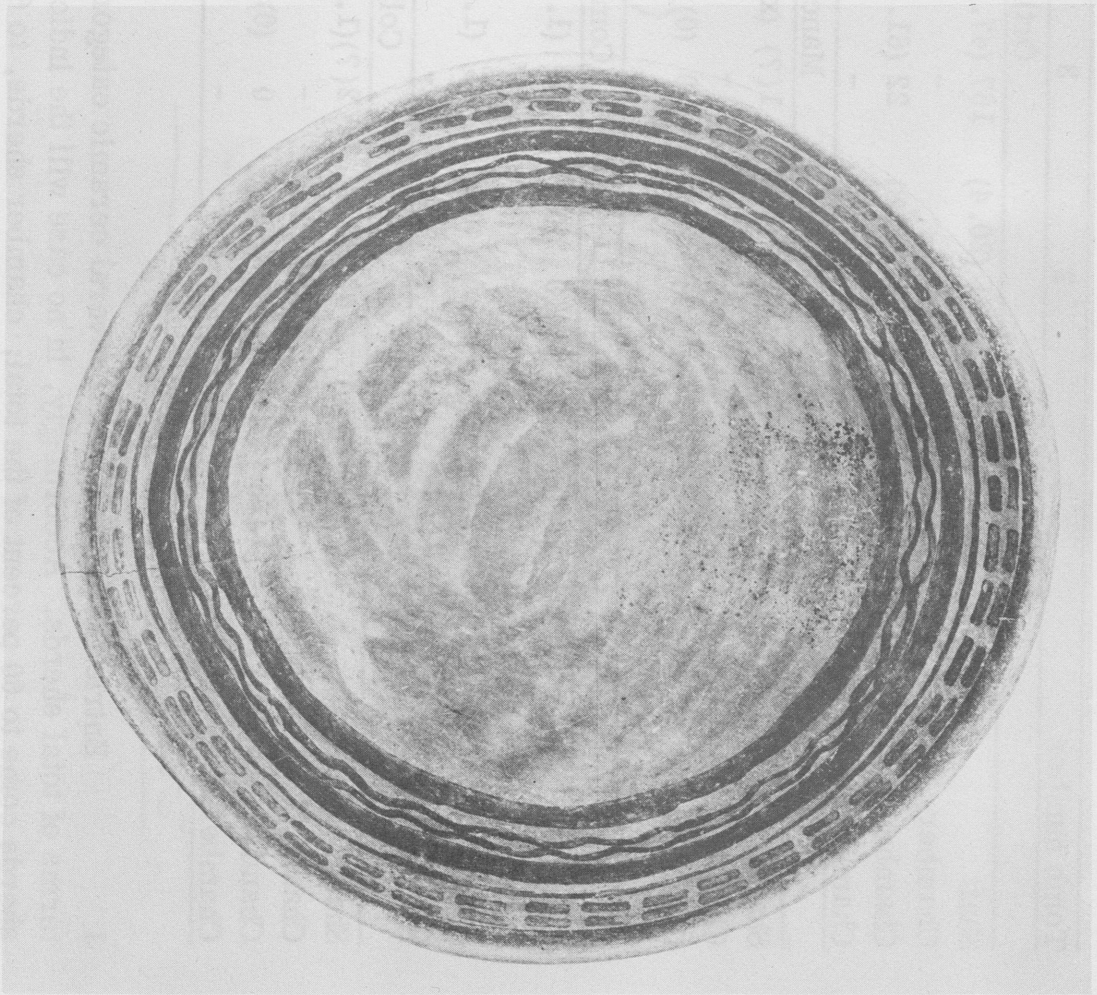


Fig. 11

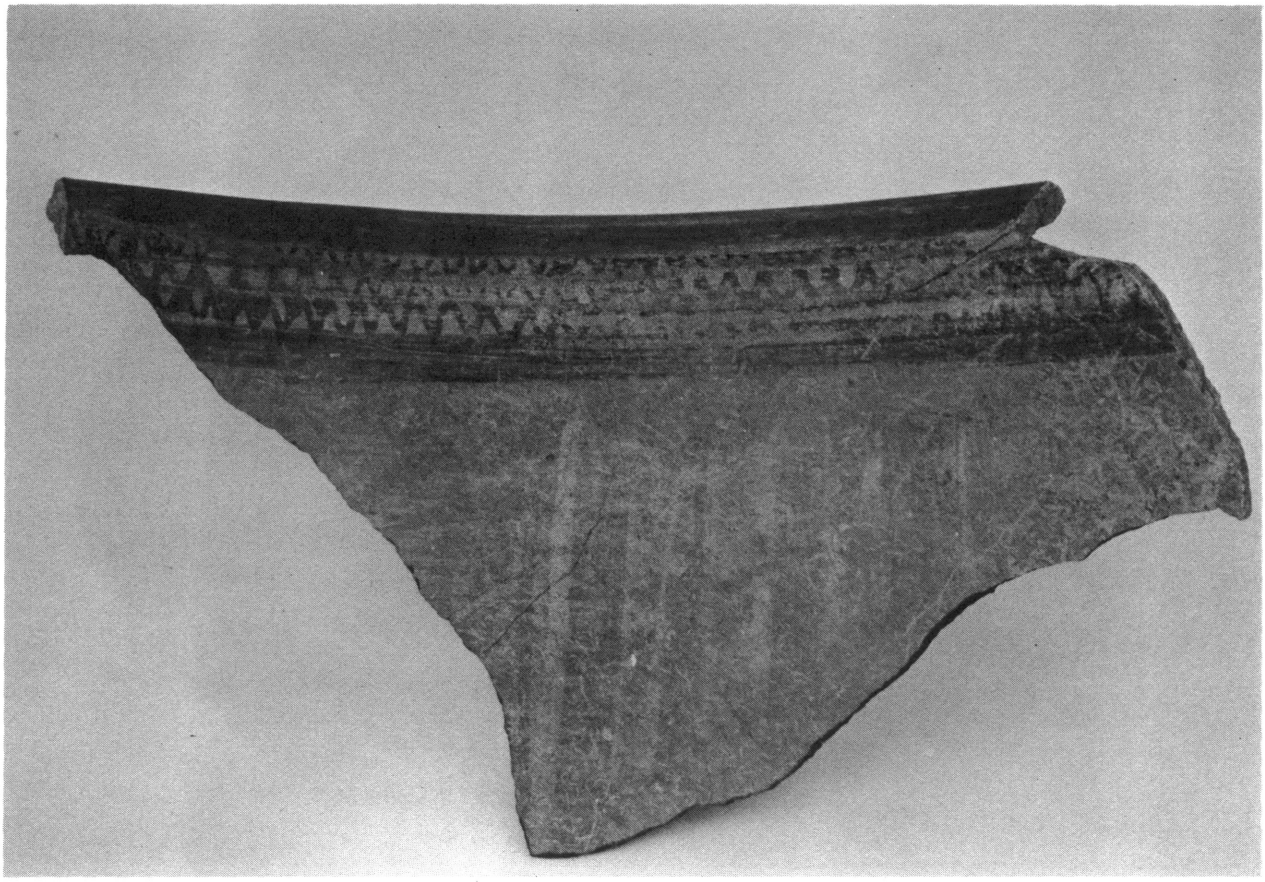


Fig. 12

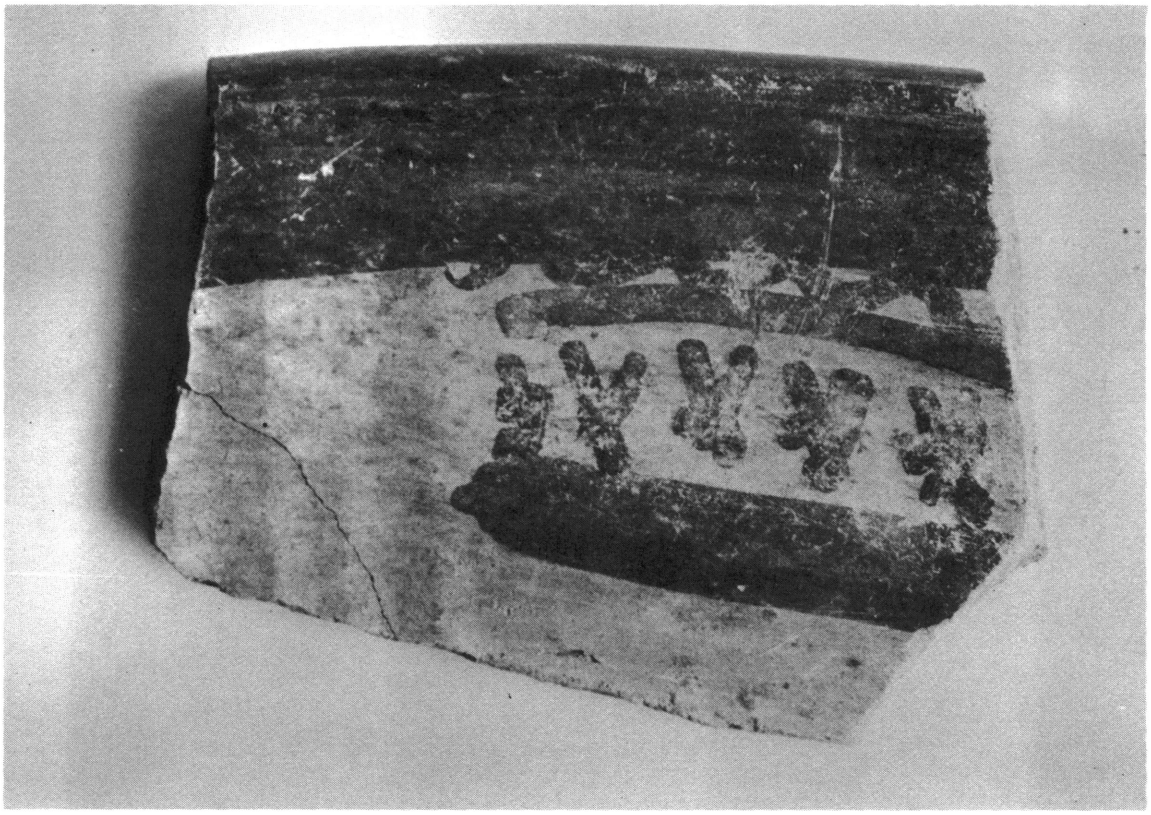


Fig. 13

Fig. 14

Fig. 15

Fig. 16

Fig. 17

Fig. 18

Fig. 19

Fig. 20

Fig. 21

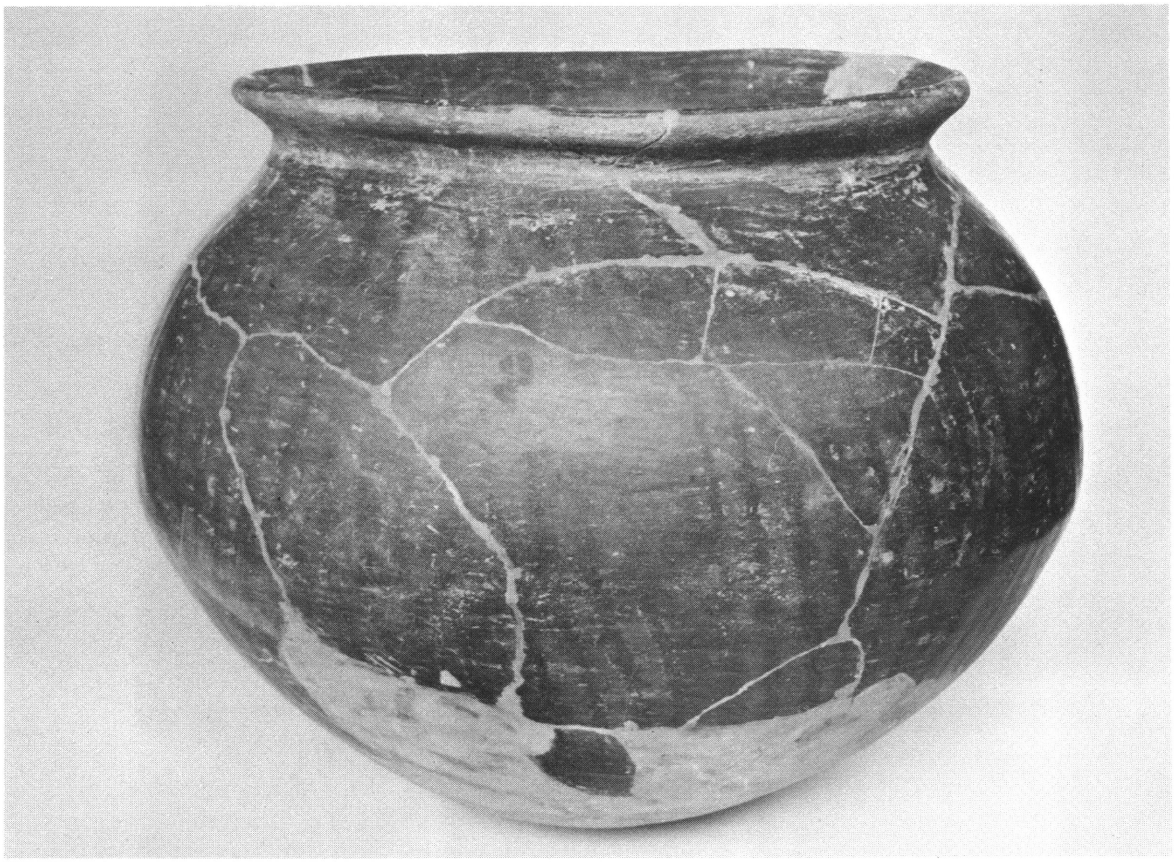


Fig. 22

Fig. 23

Fig. 24

Fig. 25

Fig. 26

Fig. 27

ACTUAL AND IMPLIED VISUAL SPACE IN MAYA VASE PAINTING: A STUDY OF DOUBLE IMAGES AND TWO-HEADED COMPOUND CREATURES

Jacinto Quirarte

There are usually two distinct but interrelated questions posed whenever the painted images of Mesoamerica are studied and analyzed. These center around the articulation of the formal and thematic elements leading to a definition of form and meaning in painting; that is, the "how" and "what" did the artist do types of questions. On occasion a third question dealing with surface and format, the literal underpinning of both form and meaning is singled out for study and analysis. A fourth question -- "why" -- is rarely asked since that is the most difficult to answer. I intend to ask a small "why" question in this paper and in the process of exploring its ramifications deal with a "what" type of problem.

Specifically, my interest is in determining why the Maya artist preferred to use the outer walls of a cylindrical container for many of his paintings. Did the container itself have some significance? I believe that it did, that it formed an integral part of the total meaning of the art object. I intend to show the significance of the vessel shape itself by 1) studying one type of arrangement -- the "double" image -- or basically the same image presented on opposite sides of a vase, and 2) one specific motif presented in this way. The first deals with one small "how" question, the latter with a "what" or iconographic type of question: the appearance of the ubiquitous two-headed serpentine compound creature in Maya art and Izapan style art before that; its relationship to the "double" image in Maya art concerns us here. A study of this problem will help us determine why this manner of presentation was chosen and beyond that, it will help us gain a little better understanding of the entire image making process in the Maya area.

Reentrant and Double Images:

The Maya artist arranged figures on the outer walls of cylindrical vessels in one of two ways. He either presented one complete scene around the entire surface of the vessel or two distinct scenes on opposite sides of it. I have designated these elsewhere as reentrant and mirror images [1] respectively (Quirarte 1972, 1973a). The first invariably constitutes a scene in which human beings are involved. The second has humans as well as supernaturals represented.

Continuous reentrant images are comprised of 1) processions of figures usually moving from right to left, 2) confrontation scenes between two groups of figures, and

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1. Kubler (1962: 172) called the continuous designs on the vessel walls reentrant compositions. Although I designated the second type of composition a "mirror" image it should more appropriately have been called a "double" image or front and rear images. The latter designation presumes a sequential hierarchy. In some instances, a reference to "double" image is preferable. In any case, mirror image is not used here because it was preempted by Trik (1963: 15) for the Tikal bones which represent true mirror images.

3) presentation scenes in which a ruler is represented. Processions are usually comprised of musicians, god impersonators, ball players and litter bearers. The confrontation scene, a variant on the procession, has as its focal point two important individuals facing each other while others back them up. The third variation is a presentation scene. An individual seated on a throne or cushion is usually shown receiving individuals who come before him. In some cases he is shown inside a temple.

The representation of two scenes that are basically the same on opposite sides of the vessel -- the so-called double images -- constitutes the second type of arrangement. In previous studies I assumed that basically the same individuals were represented on both sides involved in similar but different actions taking place during two distinct points in time. Now I am not so sure.

Some General Considerations:

The cylindrical vessel or ground used by the painter is broken down into compartments. The formal elements, such as line, color and shape are used to create positive and negative space. As soon as a shape, outline or color is added to a surface, an illusion of depth no matter how shallow is created. Forms project or recede on this surface. Additional illusions of depth are created by placement (overlapping) and location (above and below).

The definition of spaces surrounding figures and objects corresponds to a side to side and up and down movement echoing the format or frame. This bilateral displacement or two dimensional space has as one of its major artistic components the definition of spatial intervals between figures and objects. How artists establish these intervals will determine the clarity as well as the artistic merit of the images.

Implied visual space is independent of the formal elements and their articulation. This implied space, far more symbolic, is dependent upon motifs and themes and their articulation on front and back, obverse and reverse sides of stelas and cylindrical vessels. The ground itself becomes important in this context. The physical properties of the object which lends itself to the arrangement of images described above, become in themselves part of the image. So the double image is in fact one complete thematic statement independent of temporal and spatial considerations rather than the representation of two distinct moments in time in which presumably the same individuals or supernaturals are involved in similar but separate activities. Two opposing aspects of the compound creature mentioned above are presented on opposite sides of a cylindrical vessel.

I wish to demonstrate this Maya point of view by analyzing the representation of the two-headed compound serpentine creature presented in most cases as bodiless heads in a number of Proto-Classic and Classic pieces found in various parts of Mesoamerica.

The Twin Scroll-eyed and Cross-eyed Heads

Two-headed compound creatures with distinct normal scroll-eyed and cross-eyed heads first appear with companion feather-winged and earth bound figures in Proto-Classic pieces. The earliest known piece with these figures is the Diker Stone Bowl discussed by M. Coe (1973: 26). Its theme of a feather winged figure on one side and its earthbound companion has abbreviated references to the two-headed compound creature discussed above which links it to earlier Olmecoid and Izapan as well as later Maya pieces.

The bodiless heads are attached to the lowermost portions of the companion figures represented on the Diker Stone Bowl. Unlike later heads considered here these are distinctive in configuration as well as identity ($1a_1$ and $1a_2$). One is predominantly feline while the other is saurian. The former is located below the contorted legs of a winged figure wearing a mask (a wing in lieu of an eye) and a bucal attachment. The latter occupies the same position in relation to an earthbound (?) figure on the other side of the vessel. This figure wears no mask and no feather wings. The bodiless head near its foot has a U-shape within cartouches on the top and on the rear of the head as well as within its open jaws. The most significant feature is the placement of the stylized iris of the eye which makes the head appear cross-eyed (Fig. $1a_2$).
In contrast, the head on the other side of the vessel attached to the winged creature has a "normal" trough eye and has as its most distinguishing feature a hooked element on its forehead (Fig. $1a_1$). The hooked element appears in the same position on at least two Izapan style heads: Izapa Stelas 69 and 3 (Norman 1973: Pl. 56 and 6). The first is probably a winged figure; the second is an earthbound anthropomorphic figure with feline-serpent snout. Another distinguishing feature of the feline head is a quadrefoil flower-like unit covering its head. Parsons (1972) discusses a similar element associated with the compound serpentine-saurian creature represented on Abaj Takalik Stela 4 which he compares to Maya kin sign. This element does not appear in later bodiless heads discussed here.

The cross-eyed head associated with the wingless figure on the Diker Stone Bowl also has a gently sloping element attached to the forehead. This element is featured on another "earthbound" long-lipped head shown on Abaj Takalik Stela 3 (Fig. 1b). The head is duplicated on either side of a frontal (?) view of the same head at the base-line of the stela. Like other terrestrial heads these have a double contoured diagonal band and the U-shape within the supraorbital plate. Both elements appear in the Diker Stone Bowl head (Fig. $1a_2$).

Antecedents for the Diker heads can be found by studying the two-headed compound serpentine-saurian-feline creatures represented on Izapan style monuments. Determining whether a head occupied the "head" or "tail" positions of these compounds will help us understand the function and meaning of the successor Maya twin heads a little better. A breakdown of traits associated with each "position" will help us establish the identity as well as the relationship between the Izapan style and Maya heads.

Pre-Classic and Proto-Classic Heads:

Scroll-eyed heads appear as "tail heads" on Kaminaljuyu Stela 19 and El Baul Stela 1 (Quirarte 1973b: Fig. 11a and b). The heads are comprised of a series of scrolls (serpentine traits) clustered around a stepped upper-lip or snout with flared nostril (feline trait). When these heads are bodiless they are shown in duplicate fashion and at base-line of a stela as water suppliers. Examples are seen on Izapa Stelas 1 and 23 (Norman 1973: Pl. 1 and 37) and Abaj Takalik Stela 4 (Parsons 1972: 203-212). On Izapa Stela 23 the head occupying the "head" position is shown as well. As with the "tail" head it is presented in duplicate fashion. Thus the two-headed compound creature is presented in quadruplicate fashion since each head is presented twice. On Izapa Stela 1 and Abaj Takalik Stela 4, only the tail head is duplicated as on Izapa Stela 23.

The "heads" of the compound creatures are either serpentine (Kaminaljuyu Stela 19; Quirarte 1973c: Lam. 13) or predominantly saurian (Izapa Stelas 3 and 7; Norman 1973: Pl. 6 and Pl. 14; Abaj Takalik Stela 4). Double contour diagonal bands and U-shaped elements are associated with this head. However. there is no distinctive eye representation which would directly link it to the later squint-eyed or cross-eyed heads. The "cowlick" on the forehead is already present as on Abaj Takalik Stela 3 (Fig. 1b). Finally, there appears to be no distinction between their association with earthbound or celestial creatures. They can appear in either sphere as bodiless or attached to the compound creature discussed above.

Early Classic Heads:

Early Classic heads bearing the distinct sets of traits discussed above appear in contexts which differ from those established by Izapan style artists. The heads are no longer merely attached to a serpentine body or presented as bodiless heads within base line panels. The heads are 1) either attached to anthropomorphic figures with body markings and other insignia which indicate that a deity or supernatural is depicted; or 2) presented as bodiless heads with no other indication of meaning or function, such as that already indicated for the Izapan style scroll-eyed heads seen at base line. The bodiless heads usually appear on opposite sides of a vessel. Sometimes the same head may be replicated three times as on a Kaminaljuyu black subhemispherical bowl reported by Kidder (1946: Fig. 186c). At other times each of the three heads bears distinctive traits, some of which have already been discussed above. A good example is found on a vessel discussed by Smith (1955: Fig. 1f) in Uaxactun. Each head is represented facing left within Tau shaped cartouches equally spaced around the wall of a relatively squat tripod vessel. Two are scroll-eyed; one is cross-eyed. The latter has the diagonal bands on the tongue and cheek and U-shaped element within a supra-orbital plate and the ear plug. The scroll-eyed head in front of the "head" position head is bearded, has a Y-shaped element on the cheek, a "hooked" element on the forehead and jaguar markings on the upper scroll of the ear plug. The scroll-eyed head immediately following the "head" position head is badly damaged. However, a trident shaped element is placed within the mouth of the head.

An almost identical breakdown of traits is found on a Maya vase discussed by M. Coe (1973: 107-108; Figs. 106 and 109). Coe designates the vessel as the "Vase of the Seven Gods". Six seated deities presented on two different levels in groups of three are facing a seventh personage seated on a jaguar throne. The three deities or deity impersonators seen on the upper register are undoubtedly the same three deities represented on the Uaxactun tripod (Fig. 1c). Two scroll-eyed deities precede and follow a cross-eyed deity on both vessels.

It may be that two different aspects of the "tail" position head are presented in this fashion as they flank the "head" position head much in the same way that either head was presented singly or duplicated on Izapan style monuments. There undoubtedly are many other possible meanings embodied by these heads which cannot be explored here at this time. [2] I would therefore like to concentrate on those examples of companion twin heads bearing the distinctive identities already discussed and which are represented on opposite sides of a vessel to support my view that the shape of the vessel was an important and integral part of the iconographic as well as formal programs of Maya vase painting.

Twin heads bearing the distinctive scroll-eye and squint-eye are incised and cut in plano-relief (champleve) on the walls of a Becan cylindrical tripod vessel discussed by Ball (January 1974: 2-9). The heads are attached to almost identical seated figures represented on the extreme left of two large horizontal panels carved on opposite sides of the vessel (Fig. 1d). Over half of each panel is taken up by an upward gazing feline-serpentine head with U-shaped elements forming part of the headdress. The seated figures emerge from the open mouths of these compound heads. A plant-like element grows from the uppermost cartouche containing the U-element placed on the headdress of these heads. A long-lipped head with scroll-eye and a supraorbital plate in the shape of a U is located on the right side of the headdress; directly in front of it is a glyph with a scroll infix along with part of a long-lipped head with flared nostril and nose plugs.

The heads of the Becan seated figures clearly represent the two distinct sets of traits discussed above. The figure on the left has a scroll-eye while the one on the right is cross-eyed (Fig. $1d_1$ and $1d_2$). This is in keeping with the traits associated with the twin heads of the Diker carved stone bowl (Fig. $1a_1$ and $1a_2$). A similar profile and sloping forehead "cowlick" as well as the prominently inscribed U-shape are present on the cross-eyed head. The scroll-eyed head on the other side has a hooked element instead of the cowlick.

The same two supernatural beings appear together as bodiless heads on a number of vessels found in Teotihuacan by Sigvald Linne (1934: Figs. 28 and 29) in the early thirties. These vessels have long been accepted by specialists as examples of typical Teotihuacan III pottery. I have shown elsewhere (Quirarte 1973d) that these are alien to Teotihuacan in style; that in fact their possible origins may be found in the Chiapas Guatemala Highland area (Fig. 2a).

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2. Scroll-eyes are represented as being formed in counter-clockwise direction (Fig. $1c_1$) or in clockwise direction (Fig. $1c_3$). The direction of the scroll may have some significance.

The long-lipped head with scroll-eye and a diagonal band placed within the supraorbital plate is seen on one side of the Xolalpan vessel while the U-shape as supraorbital plate is placed above the cross-eyed long-lipped head shown on the other side of the vessel (Fig. 2a). This combination of traits associated with twin heads is retained in a number of Late Classic Maya images.

Late Classic Heads:

By Late Classic times Maya painters had standardized the presentation of motifs within iconographic clusters. The twin heads or references to them on vases were invariably presented back to back and bodiless. These bodiless heads presented on opposite sides of a vessel appear at first glance to be duplicates similar to the many presentations of identical size on either side of the Maya serpent or ceremonial bar. They are, however, the "head" and "tail" heads of a two-headed serpentine compound creature.

Several examples will demonstrate this traditional arrangement. The lower-most long-lipped heads forming part of the triple tiered back attachments worn by human celebrants represented on opposite sides of a Holmul painted vase, have the same traits discussed above. One head is scroll-eyed while the other is cross-eyed (Fig. 2b).

A vase found in Huehuetenango has the same breakdown of heads: one is cross-eyed, the other scroll-eyed (Fig. 2c). At first glance the Huehuetenango vase appears to have a different arrangement from those presently being discussed since the lower portion clearly arranged in duplicate fashion is surmounted by a procession of kneeling figures. Previous discussion (Thompson 1961: 13-20; Joralemon 1974: 65) has centered on the apparent procession of squatting celebrants shown on the upper register. However, these represent two distinct groups of human and supernatural figures rather than one single group arranged continuously around the entire vessel. The two groups of squatting individuals, some with supernatural traits (deity eyes), death spots and all facing toward the left are separated by columns of glyphs. On the other hand these could conceivably be one group presented twice. If this is so then the arrangement would echo the two distinct heads dominating the lower portion of the entire vessel.

The horizontally placed long-lipped heads, designated as "deified perforators" by Joralemon (1974: 65) are echoes of the twin heads of the Huehuetenango vase since they too have the distinctive scroll and squint eye.

One final example will indicate the significance that the twin heads had in the iconographic as well as the formal programs of Maya vase painting.

A Maya polychrome vase presently held in the collection of the Denver Art Museum has a scene presented twice or duplicated in which a seated figure is attended by another standing before him. Similarities in the two images indicate that the same two individuals may be presented in both scenes presumably at two different points in

time. Since the twin heads are signalled by the reference to a scroll eye and a crossed eye within the two vertical bands separating the two scenes, it may be that we are dealing with two different aspects of the individuals represented rather than with their presentation in temporal terms.

Summary:

It is my contention that the Maya artist did not think of the opposing sides of a cylindrical vessel as necessarily being distinct in spatial and physical terms as we do. In order for us to fully comprehend a vessel scene, we have to see the entire presentation of an image in roll-out fashion. We have to take all aspects of an image into account, to make it fully visible in one instant, before we are able to fully comprehend and appreciate it. We have learned to read two dimensional images in this fashion. Secondly, although we can read them sequentially, we assume that what is fully visible at any one instant is a unit unto itself, independent of any other images not readily visible unless we move ourselves or the object. Had the artist dealt with images as we do, he would have used the plaque as a ground instead of the cylindrical vessel for his painting program. The manner in which the twin companion heads were represented demonstrates the special formal as well as symbolic meaning the Maya vase painters attached to the cylindrical vessels.

Thus, when we see a squint-eyed or cross-eyed head on one side of a vessel we know that the scroll-eyed "tail" head is depicted on the other side. Both are connected in the viewer's mind. The artist does not have to show the connecting body. The surface on which the twin heads are painted becomes the connecting body. In this way the cylindrical vessel itself and the images painted on its outer surface signify formal as well as implied visual space. And finally, the vessel shape in concert with the the formal and the thematic programs adds to the symbolic meaning of the art object.

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ILLUSTRATIONS

1. Scroll-eyed and Cross-eyed Heads I. a: Diker Carved Stone Bowl; b: Abaj Takalik, Stela 3; c: Vase of the Seven Gods; d: Becan Tripod Vessel (Champleve). Drawings: a and c, after M. Coe (1973); b, after S. Miles; d, after Ball.

2. Scroll-eyed and Cross-eyed Heads II. a: Tripod (Champleve): Teotihuacan; b: Holmul, cylindrical vase; c: Huehuetenango, cylindrical vase. Drawings: a, b, and c, based on photographs.

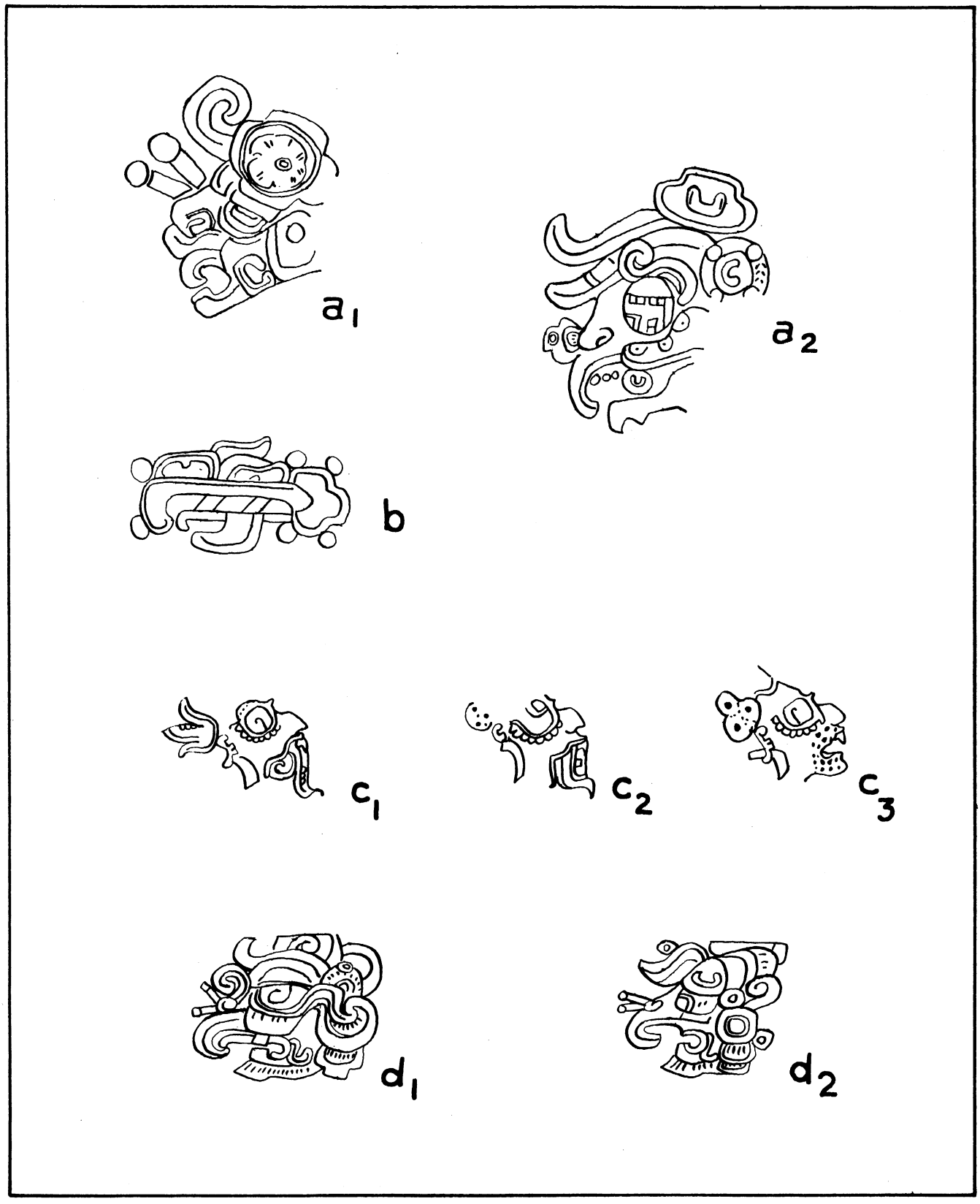

Figure 1. Scroll-eyed and Cross-eyed Heads I.

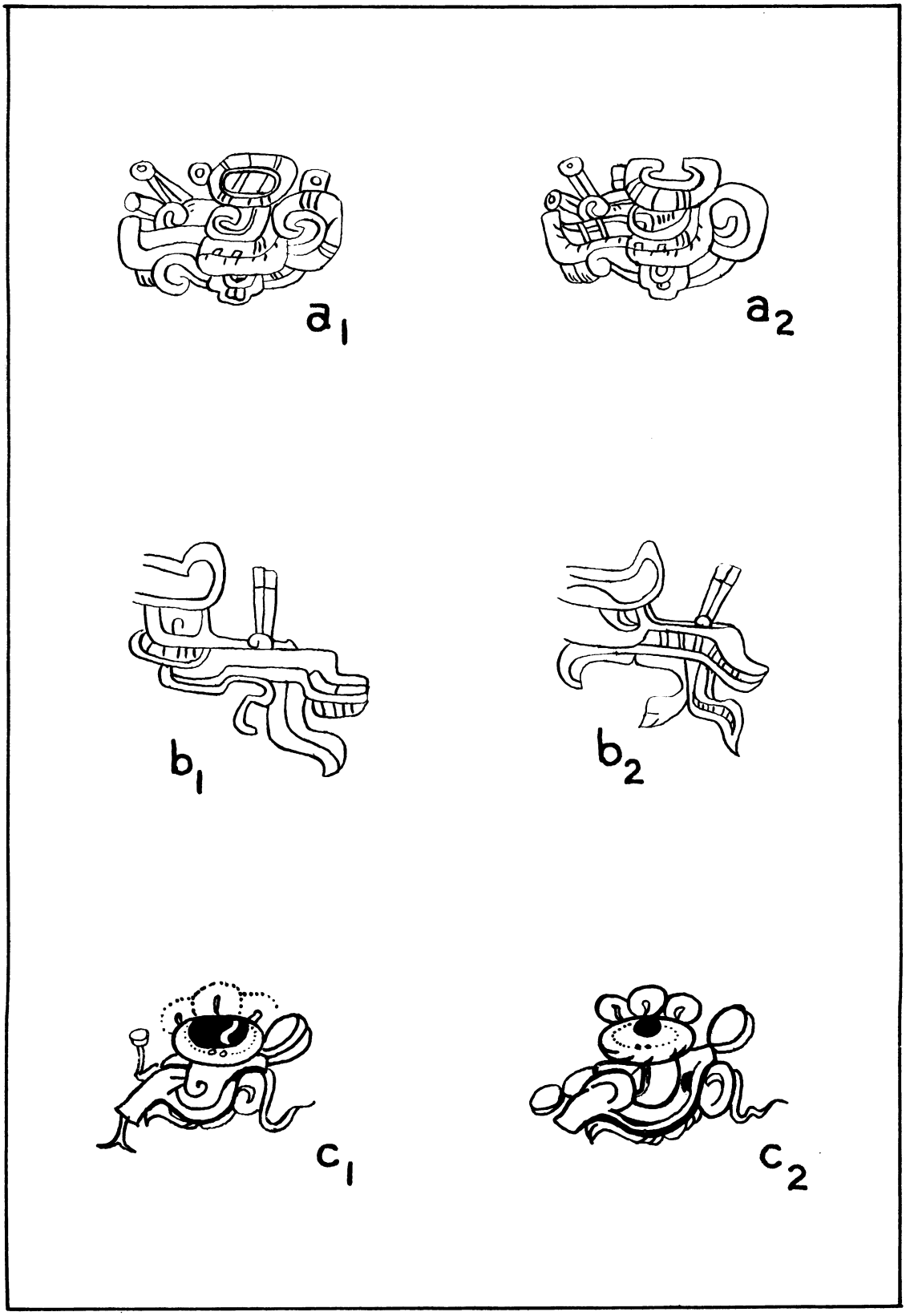

Figure 2. Scroll-eyed and Cross-eyed Heads II.

A TENTH CYCLE SCULPTURE FROM ALTA VERAPAZ, GUATEMALA.

Brian D. Dillon

In 1959 the site of Chinaja was discovered during the course of petroleum explorations by the Ohio Oil Company in northern Guatemala, and a sculpture bearing a short hieroglyphic inscription was removed from the site to Guatemala City where it was subsequently sold. The present owner acquired the piece with the intention of protecting it and keeping it from being sold outside the Guatemalan Republic; he plans to eventually donate it to the Museo Nacional de Arqueologia e Etnologia. Edwin M. Shook was notified of the existence of the sculpture and of the particulars of its discovery, information which he then communicated to R.E.W. Adams and to John A. Graham. Several years ago Adams was able to see the piece and to take photographs of it, from which Graham read the date. In spite of its recognized importance (Graham, n.d.: 15), this late monument has remained unpublished until the present time.

During the summer of 1975 I was engaged in archaeological explorations in Northern Alta Verapaz, and Shook very generously placed at my disposal all information he had been able to accumulate concerning the sculpture. New photographs were taken by Edgar Luis Torres, and in September of that year an unsuccessful attempt was made by Mark Johnson and myself to reach the site of Chinaja on mule-back. The following year saw a second visit to Alta Verapaz, this time during the dry season, and we were able to effect a brief reconnaissance of the Chinaja area.

The site is located on the natural frontier between the Southern Maya Lowlands and Guatemalan highlands, very near the boundary between the Departments of Alta Verapaz and El Peten. Chinaja is Kekchi for "small river" (Arriola 1973: 167), and the site correspondingly lies at the headwaters of the Quebrada Chinaja, a tributary of the Rio San Roman. The San Roman wends its way down a marshy, meandering channel to meet the Rio Salinas at a point only 36 kilometers upstream from the latter's confluence with the Pasion. The northernmost extension of the karstic range known locally as the Montana Tzululsechaj (Kekchi: "in the pine-forested mountain", Ibid: 634) rises to elevations of over four hundred meters above the level of the site only a kilometer to its south. The area surrounding Chinaja is only minimally known archaeologically, but the presence of important sites at no very great distance suggests that more are to be found: from Chinaja the site of Cancuen is only 21 kilometers east; Salinas de los Nueve Cerros 40 kilometers west; Aguateca, Tamarindito, and Dos Pilas lie between 40 and 50 kilometers to the north.

When the Chinaja oil camp was built in 1959, an airstrip nearly two kilometers in length was cut through the jungle nearby. A number of artificial, stone-faced mounds were bulldozed, but one (albeit minus its cut masonry facing) was left on a small rise south of the southeast end of the landing strip. Workmen who were present during construction said that the sculpture described in this paper was removed from

the surviving mound, and that a second, very similar monument was also discovered in association with the first. This second sculpture was reportedly broken by bulldozers, and its present condition and whereabouts are unknown. Atop the mound that escaped total destruction were found a few dressed, square-cut limestone blocks, but no other traces of sculpture or even of ceramics were encountered.

The Chinaja sculpture is carved in low relief on one face, bearing a vertical column of nine large glyphs on the left and a human figure at the center and right. Carving is bounded by a peripheral raised border up to 5 cm. wide with rounded sides; this border is broken at the bottom and incomplete or eroded on the left side. The entire front of the sculpture is likewise eroded, and no fine-line incision or cross-hatchure can be detected. Portions of the front bear the marks of recent abrasion, which presumably occurred during its transport to Guatemala City, and these show up as white in the photograph. A horizontal brown stain crosses the figure's stomach above his belt. The sides of the slab are dressed, but its back is extremely pitted and eroded. Dimensions: length: 140 cm., width at top: 68.5 cm., width across broken bottom portion: 44 cm., thickness: 13 cm., maximum relief: 2 cm. A thin section examined by Dr. Garniss Curtis of the Berkeley Department of Geology and Geophysics revealed the stone to be an oolitic limestone with inclusions of organic origin and occasional fragments of feldspar crystals which are fairly well sorted as to size, probably windblown.

Glyphs A1, A2 and A3 measure 13 by 13 cm. each; A4, A5, A6, A7 and A9, 14 by 14 cm. each; A8 measures 15 cm. high by 14 cm. wide. Glyph designations follow Thompson's (1962) numeration system:

A1: 4 Lamat
A2: 6 Xul
A3: Main sign: 515; prefix: 87; suffix: 25.
A4: Main sign: 764 (?); prefix: 1; suffix: 106.
A5: Main sign: 751 with dot or hair bundle merged with forehead; suffix: 142.
A6: Main sign: 501; prefix: 1; suffix: 87 (?).
A7: Four-part glyph, unreadable: element at lower right may be 510b.
A8: Main sign: 756 (?).
A9: Composite glyph, Left: 32; Right: 1008 (?); suffix 142 (?).

The inscription opens with the Calendar Round date 4 Lamat 6 Xul, which would seem best placed at the Long Count position of 10.2.0.12.8 owing to the stylistic similarities of the sculpture with other early tenth Cycle monuments from the Pasion River area. Proskouriakoff (1963; 1964) in her study of the Yaxchilan inscriptions, argues convincingly for the identification of a glyph denoting "capture" and for a second glyph signifying "captor [of]" which is commonly inserted into the name clauses of individuals at that site. On the Chinaja monument, both "capture" (A3) and "captor" (A4) glyphs seem to be present, although A3 is lacking the postfix 181, and no cross-hatchure can be seen in A4. A6 is an Imix compound with unclear suffix. At Yaxchilan this compound

with suffix 102 "is intimately associated with names of captives" (Proskouriakoff 1963: 152), and if a similar situation prevailed at Chinaja a century later, then A5 might be interpreted as a name glyph or part of a name clause also including A4 and A6. A very tentative reading of at least the first part of the inscription produces the recording of the capture at 10.2.0.12.8 4 Lamat 6 Xul of the individual portrayed, possibly known as "captor of jaguar".

The Chinaja sculpture portrays a nearly nude bound prisoner as its only subject. The figure is presented in left profile with his right leg fully extended and left leg bent slightly backwards. The left foot is missing, due to the damaged condition of the lower right corner of the stone, but the right foot and ankle are unadorned. The left arm is tightly doubled behind the back; the left hand is shown with palm forward and fingers clenched, thumb outermost. Although the right arm and hand are not depicted, the unnatural position of the left suggests most strongly that both arms were bound together behind the figure's back.

In spite of the considerable erosion of facial features, the eye can be seen sunken back below a prominent brow ridge and projecting cheekbone, which gives the aspect of emaciation. The figure's nose is bulbous, and its bridge does not slope back to the forehead in a continuous line. The hair is quite long, and gathered in a tie behind the neck, after which it falls in distinct strands below the waist. A small "pompadour" curl frames the face from forehead to ear, and immediately behind and below the hair tie is a small hatchet-shaped projection, possibly a tassel.

Issuing from the extended earlobe is a flare or tube in profile, and a necklace or collar of eight separate teardrop-shaped beads or possibly copper bells hang suspended from a thick cord around the neck and shoulders. The sole article of clothing worn, apart from the jewelry, is a loincloth tied at front and rear and supported by a wide belt with slashes in its lower edge that divides it into five sections. In front, the loincloth "tail" hangs to the knees, at which point it is knotted twice and then continues in three separate tassels to slightly above the ankles. The rear loincloth "tail" is shown in a rigid, unnatural fashion paralleling the bend of the left leg so as not to interfere with the latter's depiction.

Other evidences of the somewhat limited technical ability of the sculptor are to be found as anatomical oversights; these include recurving the forehead outwards to meet the hair line, portrayal of the left hand, and in the poor joining of the neck with the shoulder. Proskouriakoff (1965: 488) notes that sculptures carved after 10.2.0.0.0 exhibit a "definite decline in draftsmanship", and the Chinaja monument is no exception. Seibal Stela 1, with its positioning of the figure in profile, similar to the convention of the Early Classic period, is cited (Ibid) as an example of the "relapse into archaic mannerisms" that also tend to characterize this time period and equally applies to the Chinaja sculpture.

The Chinaja figure is similar to that within the central panel of Seibal Stela 3,

and to the figure on Seibal Stela 13; the former is also minimally dressed, has ankle-length hair, large beads and a projection from the hair tie behind the neck, while the latter also exhibits many of these characteristics plus the "pompadour" curl. John Graham (1971; 1973; n.d.) has described the non-Classic elements that set much of the sculpture of Seibal apart from the previous Maya tradition. Graham (1973: 213) suggests that Seibal Stelae 3, 13 and 17 all portray figures sufficiently destinctive to warrant their grouping together; the category offered is Seibal Non-Classic Facies B, dating to the second and third katuns of Cycle 10. The figures are "recognized by their waist-length or longer hair, by absence, with minor exceptions, of elaborate Classic Maya attire and accoutrement...the large bead necklace, and other features." Although prisoners on earlier stelae in the Pasion area (cf. Aguateca Stela 7 at 9.18.0.0.0) are similar to the Chinaja captive, the latter seems closer to the non-captive figures of Seibal Non-Classic Facies B and may even be a member of the same ethnic type characterized by them.

The portrayal of captives or prisoners in positions of submission or disgrace is perhaps as old as the sculptural tradition of the Southern Maya lowlands itself. The Leyden plaque of the third quarter of the eighth Baktun provides us with an early example of a prone captive below the principal figure displayed. In sculpture of the ninth Baktun, prisoners may usually be identified by their smaller size relative to the principle figure, their lack of clothing, and especially by specific gestures of submission. For many captives, their status is also indicated by the suggestion of binding with rope or cord which does less to inhibit free movement than to symbolize captivity. An excellent example of this is to be found on the lower portion of Piedras Negras Stela 12 (9.18.5.0.0) where a series of prisoners are simply linked together by a single rope rather more "artistically" than practically, as their arms and hands are free. Less commonly encountered is the situation where prisoners are heavily bound and incapable of movement.

Captives with both arms tied to each other behind the back are found at a number of sites during the last quarter of the ninth Baktun: Tikal Altars 1 & 8, Ixkun Stela 1, Aguateca Stela 7, and Yaxchilan Structure 44; S.E. doorway's upper and lower steps, N.W. doorway's upper step. Unlike the Chinaja figure who stands upright, the captives with arms bound behind the back at these other sites are either kneeling, prone, or nearly prone.

The exact function and precise context of the Chinaja sculpture is unknown. In its general composition and presentation of a single figure accompanied by an explanatory text, the piece recalls the stela art of the late 9th and early 10th Cycles in the Pasion river area, and if it be regarded as a stela then it may be the first one known from this locality to portray as its sole subject a bound prisoner. Prisoners on Pasion area stelae are usually shown in quite subordinate positions in relation to the principal figure or figures, either within the same panel (Aguateca Stela 6) or in a separate and lower panel which the principal figure or figures stand upon (Aguateca Stelae 2 & 7, Dos Pilas Stelae 1 & 17, Seibal Stela 11, etc.). Examples of bound prisoners as the

sole subjects of sculpture seem at present to be limited to the "prisoner stairs" of the Usumacinta (Yaxchilan) and Pasion (Tamarindito and Dos Pilas) river areas. Proskouriakoff (personal communication) is of the opinion that the Chinaja sculpture is an architectural panel. The relative thinness of the slab, the absence of a butt for socketing, and the report of a very similar counterpart from the same mound support this interpretation, as does the practice of placing carved panels (often in pairs) flanking stairways in the Pasion river area. In light of our present lack of knowledge, recording the Chinaja piece as a "sculptured panel" seems best.

Hypotheses accounting for the non-Classic cultural intrusion at the sites of Altar de Sacrificios and Seibal have been advanced by Adams (1971; 1973) and Sabloff (1973; 1975) on the basis of ceramic evidence, and by Thompson (1970; n.d.) who makes use of ethnohistorical and other material. The best evidence for a foreign intrusion characterized by militarism is to be found in sculptural contexts (John Graham 1973; n.d.). Graham (1973: 217) poses the intriguing question of whether the people represented by Seibal Non-Classic Facies A arrived at that site with those of Facies B, or whether they were not only separate groups but successive. Whatever the case, the presence of an individual from the Facies B group on the Chinaja sculpture suggests that the invaders of the Pasion river area in Terminal Classic times were not content to control the sites of Altar de Sacrificios and Seibal but also engaged in warlike activities at the headwaters of the smaller streams at a considerable distance removed.

The identity of the people in control at Chinaja in early Cycle 10 times remains a moot question. A military outpost at Chinaja would be admirably suited to command the upper reaches of both the Salinas and Pasion rivers if possessed of sufficient strength. Do we have here the southernmost extension of non-Classic Maya military power from Seibal, or, conversely, and as suggested by the depiction of the figure on the Chinaja sculpture as a captive, the failure of a non-Classic group to establish dominance in the area? Only further investigation can contribute answers to an historical problem such as this.

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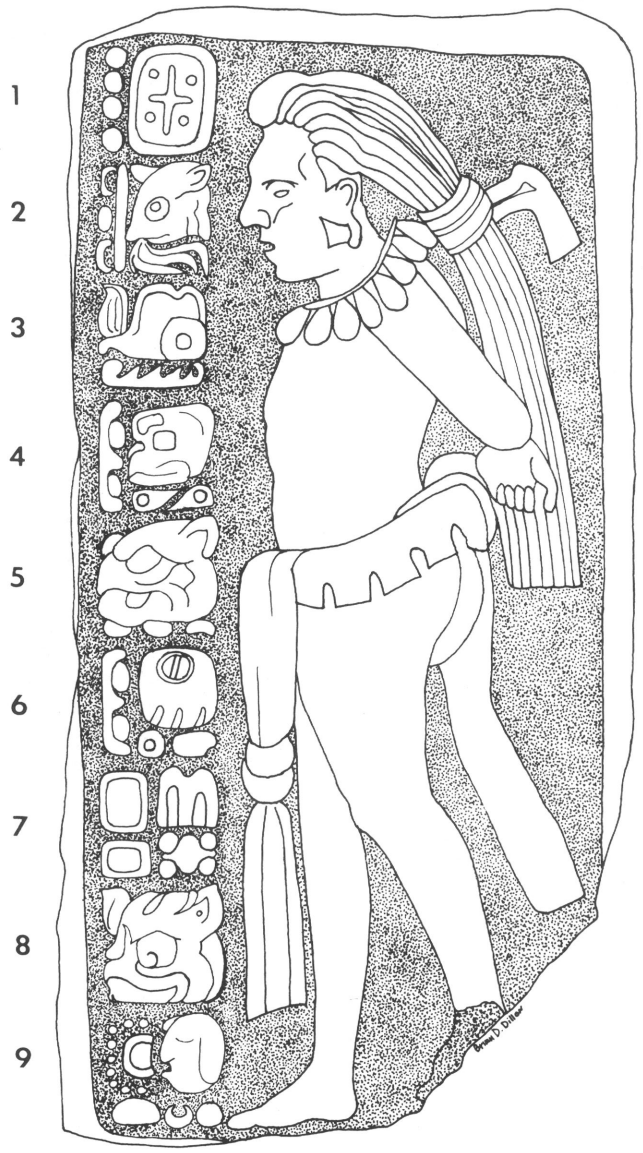
140 cm.



Sculptured Panel 1, Chinajá, Alta Verapaz.

THE STATUE OF LA MORELIA

John L. Clark

In early December of 1975, William Parady, Richard Wagner, and I, guided by our friend Julio Morales, drove about ten kilometers north northeast of Santa Lucia Cotzumalhuapa to the Finca La Morelia in the Departamento de Chimaltenango, Guatemala, where we had heard there was a newly discovered carved stone of some importance. On arrival we had no difficulty in finding the sculpture as it has been installed in the place of honor overlooking the small central plaza of the village; to make sure it would not take off unexpectedly, the monument was imbedded in concrete. In the village it is known as "El Rey."

The monument consists of a figure carved in the round from a gray, hard volcanic stone. It measures about 1.4 meters high, about a third of a meter thick and about a half of a meter wide; the scale, proportions, and monumentality of the sculpture, however, contrive to convey an impression of a much larger and more stately work. It is said to have been found in a canyon, or gulch, on the side of the Volcan de Feugo by Rosaria Xicay and thence transported to the village where it was installed in the plaza.

The sculpture has been damaged. Several large, but not particularly important, parts have been knocked off: notably the right hand part of the headdress and part of the lower left hand bird or serpent head. Conceivably the figure was never completed since the legs appear to terminate in a block of stone. If so, perhaps this sculptor started at the top and worked down in the manner of Michaelangelo. Nevertheless, the block is carefully dressed and shaped as if to serve as a pedestal.

A most unusual feature of this sculpture is that the front is flat and when viewed frontally conveys the impression of a flat stela-like monument. Only upon walking around the carving does one learn that it is in fact a sculpture in the round. Apparently, the entire front of the carving consists of a shield-like object or screen held before the figure, perhaps for the purpose of impersonation, completely masking the figure behind and protruding well beyond its confines. The figure's right hand clearly grasps the edge of the masking-device while the left hand is broken or uncompleted.

The figure, as now planted in concrete to an unknown depth, leans slightly to its right. A careful examination of the features and accoutrement shows the nose to be on the right hand side of the face; the left hand eye goggle is wider than its counterpart. Also, the elaborate "moustache" appears much wider on the left than on the right, although damage to the statue may have created this impression. The circle in the center of the costume is also slightly off-center and not completely round. Finally, one snake, or bird, head is slightly higher than the other.

Where transportation was a problem, sculptures were frequently roughed out in the quarry to cut down weight, as was the famous Tlaloc of Coatlinchan now in

Mexico City. Perhaps, something of the sort happened here, without even the roughing out being completed.

A description of the carving is in order. Starting at the top and front, the headdress appears to be the yawning mouth of a great serpent, though without fangs. The eyes of the face are enclosed by goggles. It cannot be ascertained whether the eyes are actually meant to be shown, or whether what appear to be eyes are only imperfections in the stone. The nose is small, pug, and partly broken. The mouth is surmounted by an enormous "moustache," the ends of which turn down at right angles, then out, up, and in again. The imperfections of the stone make it difficult to determine how many teeth were intended. The tongue is bifurcated, extends beyond the lower jaw and obscures it. The ears are indicated by earflares.

The next prominent feature is a broad, plain circular "collar" which serves to frame and emphasize the mask-like face above. Beneath the collar is a double knotted bow or bow-tie. Over the loins is a large circle defined by a raised fillet and mounted on a wide horizontal band. On either side are scrolling zig-zags (serpent bodies?) commencing at the level of the figure's shoulders and terminating in heads (serpent or bird) in the area of his knees. The heads have open mouths, no teeth, but with great lolling tongues.

When the sculpture is viewed from the sides, it is noteworthy that the figure in the round bears no relationship to the depictation on the frontal panel or "shield." One is immediately struck by the contrast in style and execution of the "shield" and the figure behind. Whereas the "shield" in both its conception and execution is extremely complicated and elaborate, almost to the point of appearing "baroque," the figure itself is so simple in these respects as to appear almost "primitive." The figure, massive and block-like, is rudimentarily indicated by horizontal lines defining a waist and bordered skirt, and it is finished by a large and somewhat more "finished" headdress with pendant components extending to the bottom of the skirt and arms bent at the elbow terminating in hands supporting the frontal "shield." The somewhat startling effect of this juxtaposition of opposing styles is to render the figure surprisingly stolid and lifeless while the "shield" projects a vividly animated and dramatic presence; this is a chief contributing factor to the illusion of greater monumentality than the sculpture actually possesses.

Although specific iconographic elements of the sculpture are, of course, familiar, the total composition is extraordinary and has few parallels in the sculpture of Mesoamerica with which the author is familiar. The so-called Tlaloc complex of elements has particularly close ties to the low relief Sculpture 15 of nearby El Baul (Thompson 1948: fig. 8b), one of several Cotzumalhuapan style portrayals of this icon. Parsons (1969: 140) considers this carving to belong to the beginning (ca. AD 400-500) of his "Middle Classic" period and believes the Tlaloc effigy to be of Teotihuacan inspiration.

Another interesting comparison to note is the Tlaloc effigy jar from Metapa,

south of Izapa (Shook 1958). Tozzer (1957, Vol. XII: fig. 206-233) conveniently illustrates a number of manifestations of the Tlaloc complex. Drawing upon the sculpture of Chichen Itza and other localities such as Cotzumalhuapa, he (Vol. XI: 116) points out a close connection between Tlaloc and Tlalchitonatiuh, as well as Tlaloc and Xiucoatl. In this connection it is interesting to note he points out that in both Chichen and Cotzumalhuapa the god Tlalchitonatiuh, or his impersonators, are shown with long braids or strands of false hair, generally hanging down the back. It is possible that our La Morelia figure has this feature. Probably the two zig-zag features which terminate in heads are serpents, conceivable the fire serpents associated with the sun-god and with Tlaloc (cf. Tozzer 1957, Vol. XII: fig. 216).

In her study of Teotihuacan Tlaloc iconography, Pasztory classifies Teotihuacan "rain-god" depictions into Tlalocs A and B, and remarks (1974: 15):

> Moreover, the long bifurcated tongue represented on Tlaloc B, thought to be derived from a serpent, is identical with the long tongues of feline figures represented in Teotihuacan art.
>
> In view of these jaguar associations for Tlaloc B, the term Jaguar-Tlaloc is suggested to describe this deity... Covarrubias may have been correct in tracing the Jaguar-Tlaloc image back to Olmec art. A parallel closer in time to Classic Teotihuacan is the image of the rain god Cocijo at Monte Alban (also derived from an Olmec prototype), which has a conspicuously long tongue emerging from a jaguar maw.

An interesting comparison to Teotihuacan iconography for our La Morelia sculpture is the relief design on a tripod vessel from Zacuala (Kubler 1967: fig. 32). We see here a goggle-eyed, jaguar-mawed, fanged, and bifurcated-tongued Tlaloc flanked by fire serpents with great extended forked tongues.

Another somewhat analogous piece is the brazier from Oaxaca illustrated by Boos (1966: fig. 115). Here a young god holds in his hands identical scepters displaying the motif of the falling eagle. While our figure is probably holding serpents, the lack of greater naturalism does not make this certain. The similar cropped feather headdress should also be noted.

An extraordinary resemblance to our La Morelia piece is found in a white jadeite plaque typical of San Jeronimo, Costa Grande, Guerrero (Covarrubias 1971: fig. 49). Although the jadeite figure is only crudely etched, it possesses the same jaguar-maw, the fangs and teeth, the extended tongue, and most remarkable the same sort of tunic costume with bow-tie and a circle, though small, in the midrif. Further, two serpents front outward on either side, and other serpents form the headdress.

Other Tlaloc effigies worthy of comparison are found on Copan Stela 6, the

Pyramid of the Magician at Uxmal, and at Castillo de Teayo. Two of the Teayo figures have "Mixtec year-signs" in their headdress, as do the Copan and Uxmal examples. It is interesting to note that the curious convention of portraying the feet of figures vertically, i.e. the feet are shown as they appear from above, not from the side, or as Proskouriakoff puts it, in the same plane of the sculpture, which is so common in Cotzumalhuapan art, is to be found in two of the Teayo sculptures (Seler 1902-1923, Vol. III: figs. 32, 33).

The bow-tie element in our La Morelia sculpture is of importance. This unusual feature occurs upon a number of sculptures at Kaminaljuyu as well as upon several additional carvings related stylistically but of unknown provenience. Miles (1965: 257-264) considers the Kaminaljuyu sculptures in question to belong to her Division 4, an admittedly somewhat unsatisfactory unit which encompasses pieces from at least as early as Late Preclassic to the Early Classic. Also strongly relating both to Kaminaljuyu and Miles's Division 4 is the elaborately sihouetted-effect of the La Morelia frontal shield.

With regard to sculptural concept, attention should also be called to the remarkable "compound" Olmec sculpture from Ojo de Agua on the Chiapas coast. Though quite dissimilar stylistically, the notion of a simple figure in the round supporting a flat, relatively elaborately decorated "plaque" before it recalls most strongly the La Morelia carving.

But so much for conjecture! The clues to this puzzle and mystery may lie below the ashes and lava flows of Fuego, but there is no doubt that we are only at the beginning of our attempt to unravel the mysteries of the Guatemala Piedmont. As Proskouriakoff (1950: 183) points out, the objective approach is better than the subjective, but until we have more information there is little choice.

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Plate 1. The stone statue of La Morelia.

A MAYAN PLANETARY OBSERVATION

James A. Fox and John S. Justeson

Although the pre-Columbian Maya had a sophisticated knowledge of astronomy, our understanding of it is based mainly on Postclassic tables for the calculation of eclipses, phases of Venus, and possibly other phenomena. [1] These tables were abstract mathematical models, not ephemerides; no link with actual observations had been demonstrated. Such observations are presupposed by the accuracy of the tables, but the hieroglyphic record of the Classic Period (ca. A.D. 250-950) contains few references to astronomical events. [2]

Teeple (1930: 115) recognized that Poco Uinic Stela 3 records a solar eclipse at Maya Date 9.17.19.13.16, corresponding to Julian Day Number 2009799, or Julian Date 13 July, A.D. 790. [3] This is only three days before a total solar eclipse was actually observable at Poco Uinic (Oppolzer 1962: 192). Teeple's demonstration was based on the accompanying sign for solar eclipse (known from the codices), and the close match of a total solar eclipse with the date in an already widely accepted correlation. The three-day discrepancy suggests three explanations: (a) the event was predicted rather than observed; (b) the event was observed, but associated with another event three days earlier; and (c) the event was observed on the date recorded, but the correlation constant is three days too small. Prediction is unlikely, since the monument was almost certainly erected after the eclipse took place. There may have been an associated non-astronomical event, though the glyphic text does not mention it. It is very possible, therefore, that there is a minor error in the correlation constant. [4] More records of such observations should either confirm a correlation constant, or suggest a new one, in addition to improving our knowledge of Mayan astronomy.

Dumbarton Oaks Relief Panel 1 (Coe and Benson 1966: fig. 1) bears an inscription which probably records an astronomical event. The panel is of uncertain provenience, but style and content suggest that it is from a site near Piedras Nigras. Briefly, the panel records the life of a local ruler, described as a son of Proskouriakoff's (1960) Series 2 ruler at Piedras Negras, a contemporary of the Series 3 ruler, and the father of the Series 4 ruler. [5] The text begins with a record of his birth at Maya Date 9.10.16.8.14 (Julian Date 23 April, A.D. 649). Nearly forty-one years later, he is the protagonist of an unknown event coincident with the third anniversary of the accession of the Piedras Negras Series 3 ruler. About seven years later, his own accession at a local site is recorded, followed by his death at 9.15.1.6.3 (12 December, A.D. 732). The text then records the length of his life (about eighty-four years), and the accession of his son at Piedras Negras three years earlier. Finally, an interval of 378 days is counted to 9.15.2.7.1 (25 December, A.D. 733); the glyphs surrounding this final date are obliterated.

The interval of 378 days is suggestive, since it is the closest integral approximation to the mean synodic period of Saturn (378.09 days). If not coincidental,

this identity indicates either (a) a conscious application of the Saturn cycle, but with no actual correspondence between the dates and the position of Saturn; or (b) a genuine correspondence between the dates and observed positions of Saturn.

The most striking events in the synodic period of Saturn are the stationary points, i.e., the points at which the planet perceptibly slows to a halt and either begins or ends retrograde motion (westward movement among the stars). Using Neugebauer's (1914) tables and Tuckerman's (1964) improved perturbations, we calculate that a stationary point of Saturn fell on Julian Date 15 December, A.D. 732, just three days after the death date on the monument -- the same discrepancy as for the Poco Uinic eclipse. The final date of the inscription also falls three days before the next comparable stationary point of Saturn (end of retrograde motion). No other correlation produces a comparable result. This agreement indicates that the Maya were aware of the astronomical significance of the interval, and actually observed the stationary point of 15 December, A.D. 732, and possibly the next comparable point as well. The following alternatives may account for the connection between the death of the ruler and the stationary point of Saturn: (a) The ruler died on the recorded date; its proximity to the stationary point motivated a commemoration at the next astrologically significant recurrence of the death date. [6] (b) The stationary point occurred on the recorded date, at or near the death of the ruler; the commemoration was similarly motivated. The second alternative either requires a small correction of the correlation constant, or indicates that the motion of Saturn through the point was too slow (.01° over a five-day interval) to allow precise determination of the point with available methods.

This Saturn observation has three main implications:

(a) The Maya probably also observed the brighter, more colorful Mars and Jupiter.

(b) The significance of this observation to the Maya was astrological; astronomy was subordinate to the historical content of the inscription. In Thompson's words, "It is not improbable that the Maya made no record of eclipses, planets, equinoxes, solstices or suns overhead except when these phenomena happened to coincide with dates which they wished to record for some other purpose" (Thompson 1935: 82).

(c) The Goodman family of correlations is supported. Thompson's constant, 584283, is adequate, while Lounsbury's constant, 584286, fits the stationary point to the very day. [7]

End Notes

1. Interpretations which attempt to link the tables with various asterisms, or the synodic periods of Mercury, Mars, Jupiter, and Saturn are disputed.

2. However, many inscriptions do record dates in a temporally and regionally variable lunar calendar.

3. The Maya Date was a count of the number of elapsed days from a position in the Mayan calendar several thousand years in the past, plus a (redundant) specification of the position reached in several calendrical cycles. The elapsed days of the Maya Date were recorded in a modified vigesimal system; the decimal equivalent is the Maya Day Number. The Maya Date 9.17.19.13.16 is reduced to decimal notation as follows: 9 x 144000 + 17 x 7200 + 19 x 360 + 13 x 20 + 16 = 1425516 (the third position from the right is eighteen times the value of the second; all other positions are twenty times the value of the position to the right). The correlation of the Maya and Western calendars is achieved by specifying a correlation constant, which is added to the Maya Day Number to yield the corresponding Julian Day Number. Numerous correlation constants have been proposed. The most widely accepted constant, 584283, is the last minor modification proposed by Thompson for Goodman's original constant, 584280. The Goodman "family" of constants, all near 584280, is based on colonial and modern survivals of the Mayan calendar, the most careful radiocarbon age determinations, lunar data in the inscriptions, and archaeological constraints on the length of time from the Classic Period to the Spanish Conquest. All other correlations (except Spinden's, which meets the colonial criterion) sacrifice agreement with all but the lunar data, for the sake of agreement with putative astronomical events. All dates in this report are based on Thompson's constant.

4. F.G. Lounsbury has suggested the constant 584286 to account for the Poco Uinic and other eclipses, and other lunar data.

5. Proskouriakoff identified seven series of monuments associated with seven consecutive rulers of Piedras Negras; earlier rulers at the site were not included in this numeration system.

6. Only the synodic period of Saturn, rather than the next stationary point (start of retrograde motion) was astrologically viable, to judge from Lounsbury's (Proceedings of the Segunda Mesa Redonda de Palenque, pp. 211-224) study of astrological cycles; only integral multiples of calendrical and mean synodic intervals linked historical events to past mythological counterparts.

7. We thank Dean W. Bliss Carnochan, Stanford University, for a grant-in-aid of the research which led in part to these findings; Ryland Kelley and Peter Voll, for valued assistance at a crucial stage in our research; Capt. Robert Risser, USN, Morrison Planetarium, California Academy of Sciences, for guidance in locating pertinent astronomical literature; and Elizabeth Benson, Dumbarton Oaks, for photographs of the relief panel.

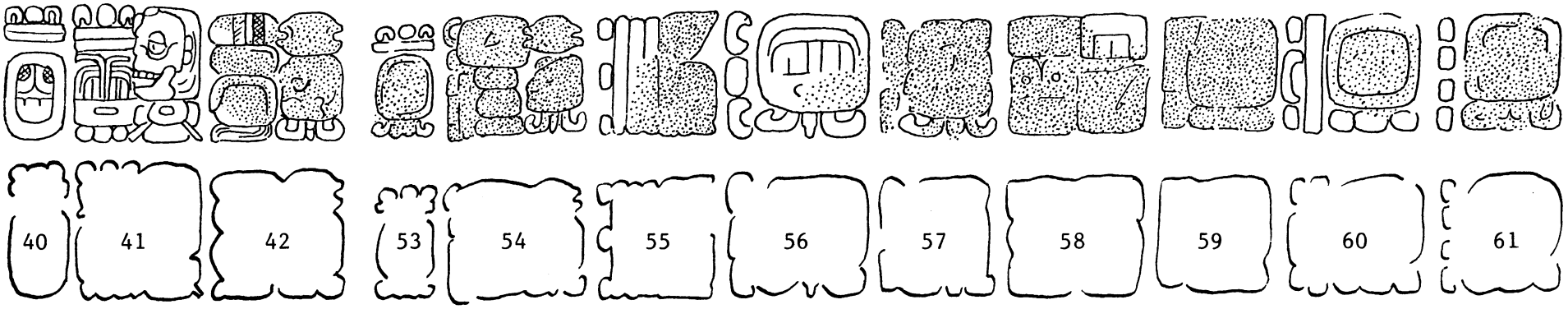

Figure 1 (After M. D. Coe)

Figure 1. Paraphrase of text, Dumbarton Oaks Relief Panel 1, blocks I1-I2, J7b-J11: (40)...[at] 11 Akbal [11 is an error for 6] (41) 11 Pax [Julian Date 12 December, A. D. 732] die(d) (42) Ruler ... (53) [at] 6 Akbal [same date] (54) (an undetermined event involved) Ruler. (55) (It was) 18 days, no months, (56) (and) 1 tun [360 days] (57) ?until (58, 59) (an undetermined event involved an unidentifiable protagonist -- not the ruler or his son; possibly Saturn) (60) (on) 7 Imix (61) 4 Kayab [Julian Date 25 December, A. D. 733].

Block 40 contains an error, and as indicated by the stippling, blocks 53 to 61 are quite eroded. All dates are certain, however, since they are distant from other dates in the text by stated intervals. Ruler is used in paraphrase for the name of the local lord since the Mayan reading and English translation of his name are both slightly uncertain. Blocks 53 to 61 could be paraphrased in present or future tense with equal justification.

Lithic text was drawn by Michael Coe.

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OBSIDIAN DISTRIBUTION AND PROVENIENCE IN THE CENTRAL HIGHLANDS AND COAST OF PERU DURING THE PRECERAMIC PERIOD

Richard L. Burger and Frank Asaro

Introduction

High quality obsidian combines the qualities of chipping predictability and the sharpest known edge of any material. These features were known to the ancient inhabitants of the Old and New World who sought to gain direct access to obsidian or to acquire it indirectly through exchange. However, obsidian suitable for the production of projectile points and other fine edged tools, occurs only in rare instances of volcanic activity when magma of the requisite silica content and acidity cools rapidly enough to prevent the formation of crystals, but not so rapidly as to trap the volcanic gasses. The prime quality obsidian, born of the convergence of these complex factors of igneous tectonics, begins to decline in value as soon as its genesis is completed, due to its absorbtion of water and consequent devetrification. Thus the kind of obsidian valued for tools is often scarce in regions with a history of vulcanism and it is absent elsewhere. Other raw materials, such as basalt, chert, or quartzite, are more commonly encountered in the geological record and provide a convenient alternative for the toolmaker. Moreover, these other materials are harder and less brittle than obsidian.

For most ancient communities, the procurement of obsidian represents an extra expenditure of time and energy over and above minimum subsistence needs. Thus it is not surprising to find that obsidian use in most areas fluctuates throughout prehistory along with changes in political, social, and economic organization.

This article will discuss the patterns of obsidian exploitation in the Central Highlands and adjacent coast of Peru during the time period of approximately 10,000 B. C. to 2,000 B. C., that period preceding the introduction of ceramics. The domestication of the major Andean plants and animals and their spread into new ecological zones occurred during this time period. The diffusion of domesticated crops from valley to valley, and from the highlands to the coast implies extra-local communication and movement at a time when populations were small and societies were relatively simple. It has been hypothesized (Lynch 1971; 1973) that the hunting and gathering regimen of pre-agricultural highland populations included transhumance, a system of subsistence scheduling by which groups move from one ecological zone to another in accordance with seasonal climatic fluctuations and concurrent availability of resources. Such a model would partially explain the mechanism by which long distance and inter-zonal contacts were first established. However, recent research on the coastal lomas (Quilter, personal communication) and highlands (Rick, personal communication) does not support the model of preceramic transhumance. An alternative or complementary model for early contacts, is that inter-regional and inter-zonal travel occurred to procure raw materials. This article will deal only with obsidian, but other trade materials, such as salt, would create the same

need to to beyond local boundaries; unfortunately, many of these other items are harder to detect in the archaeological record, and cannot be traced with the same precision.

Obsidian distribution at preceramic sites in central Peru [1]

Obsidian was commonly used during preceramic times to produce tools in the central highland area from Juaja-Huancayo to Ayacucho. The work of the Ayacucho Archaeological Botanical Project indicates that obsidian was used in a large number of preceramic sites in all of the defined micro-environments: dry thorn forest, tundra, desert, and humid scrub forest (MacNeish, personal communication). Importation of obsidian and manufacture of obsidian tools was already underway by 10,000 B. C. and continued throughout the Preceramic.

D. Browman, in his survey of archaeological sites in the Jauja-Huancayo area, found that the preceramic population of that area frequently used obsidian for projectile points during the middle and late Preceramic (Browman 1970: 89; MacNeish et al. 1975: 20).

The highlands north of the Huancayo-Jauja have recently been studied by the Proyecto de Investigaciones Arqueologicas Junin. A summary of their preliminary findings asserts that obsidian first appears in that area in the late Preceramic and even at this late date it is scarce. Obsidian is far less popular in this area than chalcedony, basalt or quartzite (Matos 1975: 55). Obsidian appeared in small quantities in the late Preceramic layers of Uchcumachay, in excavations directed by P. Kaulicke and R. Matos (Wheeler Pierres-Ferreira et al. 1976). At least one obsidian flake was recovered from levels tentatively cross-dated to the Piki/Jaywa phases of the Ayacucho sequence (Kaulicke, personal communication).

Sixty kilometers further north, John Rick excavated at the site of Pachamachay, near Lake Junin. In the preceramic layers he found no obsidian tools, and out of approximately six million flakes, only one was obsidian (Rick, personal communication).

This picture of obsidian scarcity in the highlands north of Jauja is supported by the research of Danielle Lavallee in the San Pedro de Cajas area. San Pedro de Cajas is located about 35 kms southeast of Pachamachay. In the excavations of preceramic components at four different sites, none of the artifacts were made from obsidian (Levallee and Julien 1975: 109). Further to the north, in the Huanuco drainage, teams from the University of Tokyo excavated extensive late preceramic deposits of the late Preceramic Mito culture at the sites of Kotosh and Shillacoto. No obsidian artifacts were found among the numerous lithics (Izumi and Sono 1963; Izumi and Terrada 1972; Izumi, Cuwliza, and Kano 1972). In the same area, Ravines discovered an earlier site, Ambo, at which he collected tools stylistically resembling middle Preceramic artifacts from Lauricocha and other sites. The artifacts are made of crypto-crystaline quartz; no mention is made of any obsidian (Ravines 1965). Further west in the puna zone, Cardich investigated preceramic remains at Ranracancha and Lauricocha. Apparently,

no obsidian was used at these sites in the Preceramic (Cardich 1964; 1973).

The northernmost highland preceramic site for which there is good information is Quichqui Puncu in the Callejon de Huaylas (Lynch 1970). The site was occupied for the first time at approximately 7000 B. C. but abundant early ceramics were found mixed with the Preceramic materials (ibid.: 99). Less than a dozen flakes of obsidian were found there and no obsidian points or other tools were encountered (ibid.: 19). It is not clear whether or not the scarce obsidian predates the introduction of ceramics at Quichqui Puncu.

To the west of Huancayo, on the upper slopes of the Cordillera Occidental, T. Patterson and his students surveyed archaeological sites in the Huarochiri area. According to a recent summary, obsidian was used there at the end of the early Preceramic continuing in middle Preceramic and intensifying in the late Preceramic (MacNeish, et al. 1975)

Unfortunately, the sample of highland preceramic sites in the current archaeological literature, reaches only 20 kms. south of the city of Ayacucho (Ac351) and no information is available about the early occupations of the neighboring regions to the south, such as Andahuaylas or Abancay. Moreover, we are unaware of detailed published information on preceramic sites in the highlands west of the Ayacucho region (eg. Castrovirreyna). One exception to this vacuum of knowledge are the lithic scatters on the Pampas Galeras to the southwest of Ayacucho (Province of Ayacucho, Department of Ica). These assemblages, rich in obsidian artifacts, appear to be the products of hunting activities which, judging from the style of the projectile points, began during preceramic times (M. Neira, personal communication). A systematic survey of these materials has yet to appear, although several surface collections have been made.

Piecing together the fragmentary bits of information ennumerated here, a pattern of central highland obsidian distribution can be inferred and presented as a working hypothesis. The area of extensive obsidian use is the Huancayo/Ayacucho region and adjacent highland areas to the west. The neighboring southern region is not included due to the absence of investigation there. In the more northernly highland areas (northern Junin and beyond), obsidian plays a negligible role, appearing sporadically as an exotic material.

Obsidian has also been found at preceramic sites on the coast of Peru, particularly to the west and southwest of the highland region where obsidian was commonly used. At the preceramic shellmound of San Nicolas, located on the bay of the same name in the Province of Nasca, W. Strong discovered abundant obsidian flakes and an obsidian "flake knife" (Strong 1957: 10). While he was there he collected more than 400 waste flakes of obsidian along with obsdian cores and nodules "representing workshop debris." Later investigations by Vescelius and Engel confirmed the prevalence of obsidian at the site, and revealed two points and a scraper made of obsidian (Vescelius 1963). The presence of cotton at the site suggests that it was probably late Preceramic in date (Bonavia and Ravines 1972).

Surveys by Engel and Lanning also discovered obsidian at the preceramic shellmounds of Casavilca, at the mouth of the Ica Valley (Engel 1957: 61-62; Lanning 1960: 50; 1963: 368) and at Mound 12 at Otuma, slightly south of the Paracas Peninsula (Engel 1957b: 57-61; Lanning 1960: 49; 1963: 368). Otuma and Casavilca "are characterized by an abundance of small projectile points, neatly pressure flaked and made of obsidian..." (Lanning 1967: 72). Obsidian points were also discovered in preceramic graves at Asia, a site located in the lower Asia-Omas Valley. At this site there is evidence that hunting was done with spear-throwers using darts tipped with obsidian, worked bone, wood, or chipped quartz crystal (Lanning 1960: 49; Engel 1963: 56, 99, 111). Otuma, Casavilca, and Asia also appear to date to the late Preceramic (Bonavia and Ravines 1972).

In the next drainage, that of Chilca, Engel and his collaborators have conducted large scale excavations at several preceramic sites. Recent work by a team from CIZA and the University of Missouri, directed by R. Benfer and F. Engel, concentrated its efforts at the lomas site of Paloma. A surface area of over 2,000 m^2 was opened by Engel and Benfer, [2] a figure which suggests the extensiveness of the sample. Only four obsidian flakes and one obsidian point were found in the excavations; an additional obsidian point fragment was collected from the surface. Lithics are rare at the Paloma site. The dating of these is not definitively resolved but the Paloma site seems to have been occupied during the middle Preceramic. Two of the Paloma flakes were found in early levels of the site (Quilter, personal communication). Engel also excavated at the nearby preceramic site of Chilca 1, from which he illustrates an obsidian point (1966: fig. 12).

In the adjacent Rimac Valley, Engel reports "small leaf shape projectile points of obsidian" from the lowest layers of the Chira/Villa site; these apparently have preceramic associations (Engel 1957: 62-65).

Further north on the coast, obsidian is not generally found at preceramic sites. For example, none appeared in the preceramic layers at Ancon (Ravines and Mulle 1972), nor at Aspero (Willey and Corbett 1954: 151). It was not found by Wendt at Rio Seco (Wendt 1976: 31-33).

Despite the considerable amount of research at preceramic complexes north of Lima, the only evidence of obsidian is a single unique obsidian projectile point found by P. Ossa at La Cumbre in the Moche Valley. This site contains typologically early artifacts such as Paijan points and a fish tail point, as well as extinct megafauna. It has yielded an early C14 measurement of 8585 $\pm$ 280 B. P. 4,892 tools and waste flakes were collected, of which the unique obsidian point constituted .02%. Most of the tools at La Cumbre were made of fine grained grano-diorite or basalt, and less frequently, chert. The obsidian projectile point is not related typologically to the other artifacts (Ossa, personal communication). Since there is no indication of a later occupation at La Cumbre, the stylistic distinctiveness of the obsidian point is best explained as the result of non-local manufacture. The rarity of obsidian and complete absence of obsidian debitage at

La Cumbre are consistent with this hypothesis.

The exceptional find of obsidian at La Cumbre can be compared to the isolated but statistically insignificant appearance of obsidian at Pachamachay, and the rare obsidian pieces from Paloma may be comparable in importance to the rare fragments of obsidian found at Uchcumachay, Junin. It is unfortunate that quantitative data are not available on the raw materials of lithics at the coastal sites investigated by Engel and Lanning. The impression given in the publications is that obsidian is frequently found on the coast south of Chilca. Absence of quantitative data prevents comparison of the intensity of obsidian use in the highlands and coast. Imprecise chronological controls on most coastal sites makes diachronic discussion difficult. The extant evidence for obsidian exploitation on the coast is drawn primarily from late Preceramic occupations, but this may partially reflect the bias which exists in the archaeological literature. [3]

The sources of preceramic obsidian

Lanning, in 1967, speculated that obsidian found on the early sites of the south and south central coast had been imported from the southern highlands (1967: 72). R. Ravines later discovered an obsidian flow in the barren heights of San Genaro, Huancavelica (Petersen 1970: 50). This source, located near the snow line, is strategically located, being near the headwaters of the Pisco, Mantaro, and Pampas drainages. These river valleys provide natural routes of transportation of the obsidian to coastal and highland areas. Ravines speculated that this mine could be the source of the obsidian artifacts encountered on the coast and highlands.

Subsequently, the Ayacucho Archaeological Botanical Project located another natural obsidian deposit near Tukumachay, to the south of the city of Ayacucho. Although the samples recovered were of low quality obsidian, the possibility remained that there exists, or existed, a better outcrop of the same geological deposit which could have served as a source for early tool makers of Ayacucho and neighboring regions.

The source of obsidian artifacts can be determined by matching the trace element composition of source samples with the same measurements for the artifacts in question. The underlying assumptions of the technique are that 1) each source of obsidian has a unique, and therefore, diagnostic trace element composition; and 2) the trace element composition of a single source is relatively homogeneous. These assumptions have been rigorously tested and generally confirmed, with the amendation that in exceptional cases, homogeneity does not occur. However, the variation which does occur in the trace element composition of rare sources is patterned, and therefore recognizable, and equally diagnostic of the source (Bowman, Asaro, and Perlman 1973). Moreover, archaeological obsidian is usually more chemically homogeneous than the flow itself because only selected parts of most deposits were mined in antiquity. Since coincidental similarities do exist in the amounts of some trace elements in any two flows, the provenience analysis is most convincing when a large number of trace elements are

measured. Since low precision measurements blur the compositional differences between different types of obsidian, a high level of measurement precision is desirable. When low precision techniques are used on a small number of trace elements, the result may be failure to distinguish between different sources.

In 1973, Burger began work on the trace element analysis of Andean obsidian using a method of rapid scan X ray fluorescence at the Department of Geology, University of California, Berkeley. This technique had been applied earlier to Mesoamerican and Californian obsidians (eg. Jack and Heizer 1968; Jack and Carmichael 1969). The technique provides semi-quantitative measurements for Sr. Rb, and Zr. This procedure proved inadequate in destinguishing between the different types of Peruvian obsidian (Burger and Asaro, in press). It was therefore decided to apply a technique which provided quantitative measurements for a larger number of trace elements. This goal led to the collaboration of the authors at the Lawrence Radiation Berkeley Laboratory.

The first step was to subject the two sets of source samples and a selected group of preceramic obsidian artifacts to a complete neutron activation analysis. This produced quantitative measurements for 26 trace elements. The analytical procedure is described elsewhere (Burger and Asaro, in press). The sample tested from the flow in Ayacucho (845 X) did not match any of the artifacts from preceramic or later archaeological sites. The three samples collected by Ravines from the Quispisisa mine, Huanacvelica (861 H, 861 J, and 861 K) had a homogeneous chemical composition which matched many of the archaeological samples tested from Ayacucho, the South Coast and other areas. It was demonstrated by neturon activation that ten samples from preceramic sites near Ayacucho, three samples from the preceramic site of San Nicolas (Nasca), and six samples from preceramic strata at Uchcumachay (Junin) came from the Quispisisa mine.

Many other samples were analyzed by neutron activation, including pieces from sites throughout Peru and northern Bolivia. An attempt was made to sample diachronically as well as geographically for each region (Burger and Asaro, in press). The neutron activation analysis of these samples initially characterized six of the most important sources of obsidian used in ancient Peru.

This work permitted us to design a method of X ray fluorescence which could successfully distinguish between these types of obsidian by providing quantitative measurements on the amounts of Ba, Ce, Rb, Sr, Zr and other trace elements. A detailed description of this procedure will soon be published (Burger and Asaro, in press). The X ray fluorescence technique has the advantage of being rapid, non-destructive, and inexpensive. Using this method, we analyzed a larger sample of obsidian artifacts in order to identify their sources. Any X ray fluorescence results which did not fit the established groupings were selected for further analysis by neutron activation. Through this process, we isolated a second type of obsidian used at preceramic sites in the Ayacucho area. The chemical composition of this type of obsidian differs from both the Quispisisa source material and the sample taken from the natural outcrop near Tukumachay,

Ayacucho. This new type of obsidian must come from an unlocated flow. Since obsidian of this composition did not occur in our 1974/5 sample of over 900 pieces at archaeological sites outside of the Ayacucho area, we hypothesized that the obsidian source is in the Ayacucho region. We christened obsidian with this distinctive trace element composition as the Ayacucho Type obsidian, a term which will be replaced when the actual source of the obsidian is discovered.

More recent research (1977), in which an additional 90 obsidian samples were analyzed by X ray fluorescence, indicates that four of the five fragments tested from the Early Horizon site of Chupas, Ayacucho, are of the Ayacucho Type; the fifth fragment is from the Quispisisa mine. No obsidian artifacts tested from outside the Ayacucho area were of the Ayacucho Type. These new findings are in accord with the original hypothesis concerning the general source area of the Ayacucho Type obsidian.

In order to fully characterize the chemical composition of the Ayacucho Type obsidian, five samples were analyzed by neutron activation. These came from the sites of Puente (Ac158), Iomachay (Ac102), and Ac500. These results, as well as those for preceramic artifacts and source samples from the Quispisisa mine, are reproduced in Table 1. Also included in this table is the composition of a unique fragment found on the surface of Jaywamachay and that of the nonutilized outcrop near Tukumachay. The compositional differences between the Ayacucho Type obsidian and the obsidian from the Quispisisa source which are detected by X ray fluroescence are seen in Table 2. The provenience results of both the neutron activation and X ray fluroescence analysis for the preceramic artifacts tested are summarized in Tables 3 and 4.

The two types of obsidian just discussed constitute more than 99% of the materials of the preceramic artifacts tested. However, the single piece of obsidian recovered by Rick at Pachamachay in his preceramic layers is of a unique chemical composition. A second fragment, collected from the surface of Jaywamachay, has a different and equally rare composition. This sample may date to the Initial Period/Early Horizon occupation of the site. The occasional appearance of unique obsidians when large samples are tested is an interesting phenomenon which has received little attention in the literature. Such anomolies may be produced in the contact zones between the obsidian and the adjacent non-igneous geologic formations. Alternatively, they may come from igneous formations with small patches or inclusions of obsidian. Such flows might provide material for an occasional tool but not a reliable source for long-term tool production. A third alternative is that such rarities will prove to be long distance imports from unsampled regions. In the case of Pachamachay or Uchcumachay, the first two hypotheses are considered more probable than the latter.

Discussion

It has been shown that obsidian mined at two different natural deposits was used in central Peru during preceramic times and that the most popular source of obsidian was the Quispisisa quarry near Castrovirreyna, Huancavelica. This quarry

was already being exploited by 10,000 B. C. and its obsidian transported to sites in Ayacucho, approximately 110 kms. to the east. Inportation of this obsidian apparently extended to highland areas in the northeast, more than 200 kms. from the Quispisisa quarry. The evidence for obsidian use in these regions has already been described. Although we have been unable to analyze preceramic artifacts from the Juaja-Huancyo area, obsidian from later occupations there have been shown to come from the Quispisisa source (Burger and Asaro, in press). The movement of Quispisisa obsidian to distant areas included the south and south central coast. Forty-nine samples tested from San Nicolas all were shown to be Quispisisa obsidian. The Quispisisa mine is located 270 kms. by air from San Nicolas. Also identified as Quispisisa obsidian were artifacts from Jaywamachay, Puente, Iomachay, Tukmachay, Ac500, Ac300, Pikimachay, Pampas Galeras, Uchcumachay, and La Cumbre (see Table 3).

Three alternative models can be presented to describe the mechanism by which Quispisisa obsidian reached preceramic archaeological sites outside the Castrovirreyna area. The first model is one of direct exploitation in which representatives of distant communities journey to the source area, mine the raw material themselves, and then return to their communities. A second model would be the existence of mobile non-specialized traders, possibly local pastoralists from near the mine, who would mine and transport the obsidian to the areas which utilized it. A third model would postulate multiple small exchanges from group to group as part of a larger exchange system, so that by the time the obsidian reached a distant site like La Cumbre, it would have passed through the hands of many communities. All three of these models have the advantage of not requiring complex economic organizations absent among small scale societies of hunter-gatherers, littoral collectors and fishermen, or incipient agriculturalists. Markets, ports of trade, self-sufficiency through archipellagos may have all played a role in trade in later times, but they are difficult to reconcile with the present understanding of the preceramic societies of Peru.

The first model, that of direct acquisition, could only function if there was unrestricted access to the source of obsidian. The neutrality and multi-ethnic exploitation of essential raw materials is a pattern which occurs in the Central Andes before and after the arrival of the Spaniards. For example, the salt deposits of the jungle and highlands were the destinations of long distance journeys by numerous outside groups (Conchas Contreras 1975: 74-76; Oberem 1974: 350). These groups arrived, camped, mined the salt, and then returned to their homes. Such trips are often so long that they imply some sort of trade and social contact during the journey, if only to procure food and drink and to avoid hostilities. Contact would have occurred even if these other groups do not play an active role in gaining the obsidian. For example, a trip to San Nicolas from the Quispisisa mine crosses numerous ecological boundaries and must have crossed many cultural boundaries as well. The trip to the mine and back must have taken over a month, if we use a figure of 15 to 20 kms per day as the average distance covered by a llama caravan (Flores 1968: 130). This is probably a very conservative estimate of trip length because it is based on distance by air rather than the actual distance than must be traversed along the winding paths of the convoluted

central highlands. The trip from Chavin to Olleros, Ancash, for example, measures only 28 air kilometers, which would be a trip of two days using Flores' figure. But even the most fit resident cannot make the journey by foot in less than 14 hours; it would be even slower with cargo animals or humans carrying a heavy load. Thus, the time to reach the Quispisisa mine and to return to San Nicolas might actually take almost two months, especially if one includes several days for the mining activities. However, unlimited access to resources, even during the Preceramic, cannot be presumed. Recently Moseley has argued that jural rights over coastal resources began on the central Peruvian coast during the Preceramic (1975: 51-52).

The second model, that of long distance trading expeditions, is appealing since it is derived from the widespread tradition of lengthy trips by puna dwellers into the lower agricultural valleys of the sierra and coast in order to obtain products which cannot be produced within the puna environment. Such journeys are scheduled to coincide with the dry season when pastrues are reduced and the temperatures are the coldest on the puna. This same type of pattern may have existed even preceding the domestication of camelids since herds of wild camelids may have migrated naturally to lower zones in search of pasture. If this was the case, this model might apply to the early as well as the middle and late Preceramic.

In the second model the direction of movement would have been reversed, as compared with the first model. However, the overall result would have been quite similar: contact between peoples of different ecological zones and cultures, and the exchange of goods. Both systems would be capable of providing dependable supplies of quantities of obsidian. Either model would have been adequate to supply the inhabitants of San Nicolas, Otuma, or Jaywamachay with the large quantities of obsidian that they needed for their tools.

The third model, one of multiple exchanges, would have had a different impact since only people in adjacent communities would have been brought into contact. This model best accounts for the rare occurrence of obsidian in distant areas such as the North Coast. It may also apply to nearer areas, on the outer edge of the obsidian utilization sphere, such as northern Junin (Uchcumachay) or the area around Lima (Paloma).

Ayacucho Type obsidian has only been found at preceramic sites in the Ayacucho area, where it made up 12% of the preceramic artifacts tested. The earliest concrete evidence of its use is from Puente (Ac158), from a "zone" with an estimated age of 7100 B.C. Obsidian of this type was was found in later preceramic layers at Puente, Ac500, and Iomachay (Ac102). Its use apparently continued throughout the preceramic, Early Horizon, and possibly Early Intermediate Period. A relatively local source for this obsidian was hypothesized because of its apparent absence from archaeological sites elsewhere. Such an explanation, however, does not account for the greater popularity of the Quispisisa source obsidian at preceramic sites in Ayacucho (87% of the sample). Perhaps this unlocated source will be found in some of the yet unsampled and somewhat distant areas of Ayacucho, such as the Provinces of Cangallo or Victor Fajardo. Other

considerations might include differences in the quality of the two obsidians or more limited access to the Ayacucho Type source as the result of jural restrictions. If the Ayacucho Type source is local or semi-local, it could have been distributed by either direct exploitation or by exchange.

During the Peruvian Preceramic, society underwent major social and economic transformations, and one would expect that the use and distribution of obsidian would reflect these radical changes. It may be, for example, that small quantities of obsidian reached the coast in early preceramic times through multiple exchanges, but its use intensified in late Preceramic times, at which time it was procured through mining expeditions or through trade with the members of pastoral caravans. The study of such diachronic shifts must await future archaeological investigation.

Conclusions

1. Long distance distribution of obsidian in the central highlands of Peru predates the advent of agriculture, and was underway by 10,000 B. C.

2. Direct contact between the coast and highlands is domonstrated by the presence of obsidian from the Quispisisa mine, over 4,600 meters above sea level, at preceramic sites on the south and south central coast. This situation existed by the late Preceramic (approximately 2500 B. C.) and probably earlier.

3. Journeys of one to two months were made during preceramic times in order to distribute Quispisisa obsidian to the coast and distant highland areas.

4. At least two obsidian flows were already being exploited in central Peru during the early Preceramic. One is the Quispisisa source near Castrovirreyna, Huancavelica and the other is an unlocated deposit probably in the Ayacucho region.

5. Beginning in the early Preceramic, small amounts of obsidian reached distant areas, up to 900 kms. away from the original source. This probably occurred through multiple exchanges.

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Footnotes

1. This article is confined to the Preceramic in central Peru because of the paucity of data for other regions. Work by M. Neira and others shows that obsidian is abundant at preceramic sites in Arequipa. Preliminary XRF results on samples from Sumbay, Arequipa and elsewhere indicate that neither Quispisisa nor Ayacucho Type obsidians were utilized.

2. Some of this work was begun by Engel and C.I.Z.A. before the collaboration of R. Benfer and the University of Missouri team.

3. At present, there is no adequate chronological framework for dealing with the Preceramic Period on a pan-Peruvian basis. The terms used in this paper are broad chronological divisions based on C14 measurements and the artifactual inventories of the sites. The coarseness of the divisions are appropriate to the vagaries of the current diachronic controls prior to the introduction of ceramics, and for this reason were preferred over the system utilized by Lanning and others. The terms used will be employed as follows:

	approx. absolute dates	Lanning (1967)
early Preceramic	? to 6000 B.C.	Preceramic I to III
middle Preceramic	6000 B.C. to 2500 B.C.	Preceramic IV to V
late Preceramic	2500 B.C. to 1800 B.C.	Preceramic VI

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Key to Figure 1

1. La Cumbre
2. Shillacoto
3. Kotosh
4. Ambo
5. Lauricocha
6. Ranracancha
7. Rio Seco
8. Aspero
9. Pachamachay
10. San Pedro de Cajas
11. Ushcumachay
12. Ancon
13. Huarochiri
14. Chiravilla
15. Huancayo preceramic sites
16. Chilca 1
17. Paloma
18. Asia
19. Quispisisa obsidian source
20. Ac 100 (Pikimachay); Ac 102 (Iomachay)
21. Ac 158 (Puente)
22. Ac 500, Ac 351 (Tukumachay)
23. Otuma
24. Pampas Galeras
25. Casavilca
26. San Nicolas

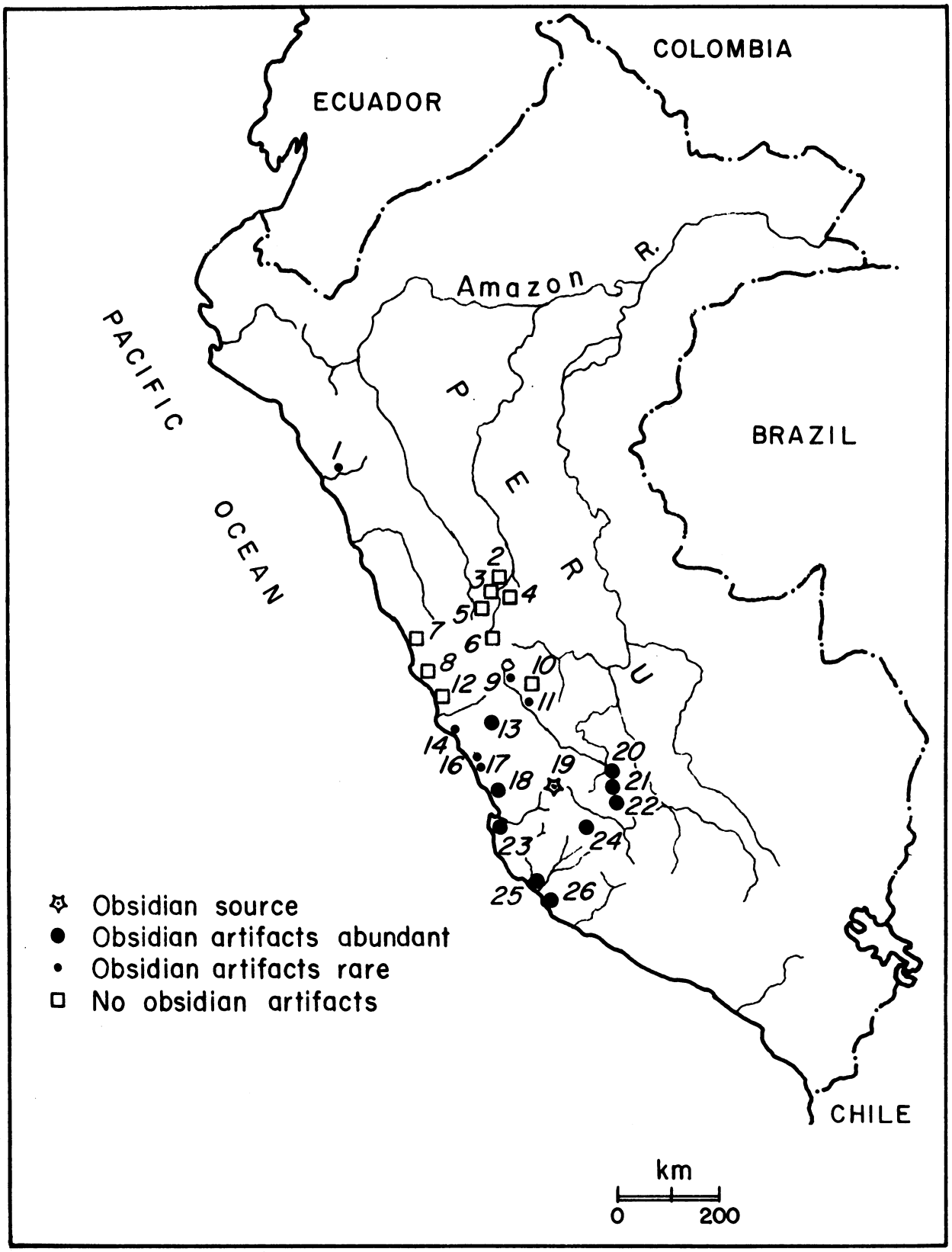

Figure 1. Map of Peru indicating archaeological sites and geological deposits discussed in this article.

Table 1. Results of Neutron Activation Analysis

Element Abundances in Representative Peruvian Obsidians

(Values in ppm or percent if indicated by % after chemical symbol)

				Al%	Dy	Mn	Na%	K%	Sr
OBSIDIAN FROM QUISPISISA SOURCE									
SOURCE MATERIAL FROM QUISPISISA, HUANCAVELICA									
1	861	H	BURG-66	5.86 +/- .14	1.59 +/- .09	363 +/- 3	2.973 +/- .018	3.75 +/- .23	95 +/- 67
2	861	J	BURG-67	7.01 +/- .17	1.77 +/- .09	367 +/- 3	2.951 +/- .018	4.06 +/- .24	115 +/- 69
3	861	K	BURG-68	6.66 +/- .08	1.83 +/- .08	361 +/- 3	2.874 +/- .018	4.07 +/- .23	112 +/- 70
ARTIFACTS FROM SAN NICOLAS									
4	822	G	BURG-3	6.95 +/- .12	1.64 +/- .09	370 +/- 5	3.021 +/- .029	3.65 +/- .28	265 +/- 126
5	822	M	BURG-8	6.99 +/- .12	1.52 +/- .10	373 +/- 5	3.051 +/- .032	3.97 +/- .32	138 +/- 109
6	822	W	BURG-18	6.90 +/- .11	1.80 +/- .09	369 +/- 4	2.952 +/- .031	4.26 +/- .37	132 +/- 95
ARTIFACTS FROM JAYWAMACHAY									
7	861	R	BURG-74	6.96 +/- .18	1.69 +/- .08	366 +/- 3	2.897 +/- .018	3.88 +/- .23	130 +/- 62
8	871	J	BURG-92	6.86 +/- .20	1.69 +/- .09	359 +/- 2	3.000 +/- .018	3.78 +/- .22	149 +/- 68
9	890	O	BUR-129	7.06 +/- .16	1.70 +/- .09	364 +/- 3	2.652 +/- .017	4.45 +/- .23	102 +/- 72
10	890	P	BUR-130	7.08 +/- .20	1.82 +/- .10	364 +/- 3	2.859 +/- .018	4.32 +/- .23	9 +/- 75
11	893	F	BUR-108	6.97 +/- .14	1.84 +/- .08	360 +/- 2	2.709 +/- .017	4.01 +/- .22	96 +/- 68
12	893	G	BUR-109	6.80 +/- .16	1.68 +/- .09	364 +/- 3	3.011 +/- .018	4.00 +/- .22	110 +/- 71
13	893	H	BUR-110	6.45 +/- .21	1.63 +/- .09	358 +/- 3	2.905 +/- .018	3.67 +/- .21	239 +/- 74
ARTIFACTS FROM UCHCUMACHAY									
14	861	W	BURG-79	6.89 +/- .10	1.59 +/- .08	370 +/- 3	2.974 +/- .018	3.57 +/- .22	141 +/- 72
15	871	Z	BUR-106	6.94 +/- .21	1.71 +/- .09	358 +/- 3	3.005 +/- .018	3.66 +/- .22	140 +/- 72
16	890	E	BUR-120	6.97 +/- .12	1.77 +/- .08	365 +/- 2	3.037 +/- .018	3.67 +/- .22	56 +/- 63
17	890	G	BUR-123	6.88 +/- .16	1.67 +/- .08	363 +/- 2	3.037 +/- .018	3.64 +/- .22	110 +/- 66
18	890	U	BUR-135	6.71 +/- .17	1.59 +/- .10	363 +/- 3	2.992 +/- .018	4.14 +/- .22	111 +/- 73
19	893	O	BUR-115	6.93 +/- .14	1.55 +/- .09	365 +/- 3	2.990 +/- .018	3.77 +/- .22	95 +/- 72
ARTIFACT FROM IOMACHAY									
20	890	Q	BUR-131	6.73 +/- .08	1.68 +/- .08	363 +/- 3	2.577 +/- .016	4.76 +/- .23	160 +/- 65
ARTIFACT FROM PUENTE									
21	890	R	BUR-132	6.67 +/- .10	1.66 +/- .09	364 +/- 3	2.919 +/- .018	3.88 +/- .24	107 +/- 73
ARTIFACTS FROM AYACUCHO SITE AC300									
22	890	X	BUR-138	6.56 +/- .12	1.73 +/- .10	361 +/- 3	3.002 +/- .019	3.87 +/- .25	214 +/- 82
23	890	Z	BUR-140	6.90 +/- .17	1.64 +/- .09	363 +/- 3	2.344 +/- .015	5.06 +/- .22	237 +/- 72
AYACUCHO TYPE OBSIDIAN									
ARTIFACTS FROM IOMACHAY									
24	893	J	BUR-111	7.20 +/- .37	1.48 +/- .10	449 +/- 3	2.980 +/- .018	4.22 +/- .23	153 +/- 70
25	893	K	BUR-112	6.81 +/- .08	1.37 +/- .08	443 +/- 3	2.878 +/- .018	4.51 +/- .23	111 +/- 70
26	893	M	BUR-113	6.82 +/- .10	1.57 +/- .09	452 +/- 3	3.033 +/- .018	4.19 +/- .23	109 +/- 73
ARTIFACT FROM AYACUCHO SITE Ac 500									
27	893	N	BUR-114	6.97 +/- .12	1.34 +/- .09	453 +/- 3	3.414 +/- .020	3.78 +/- .23	38 +/- 76
ARTIFACT FROM PUENTE									
28	893	E	BUR-107	6.65 +/- .12	1.52 +/- .09	509 +/- 3	3.294 +/- .020	3.64 +/- .24	196 +/- 77
RARE TYPE 2 OBSIDIAN									
ARTIFACT FROM JAYWAMACHAY									
29	828	V	BURG-38	7.10 +/- .13	1.59 +/- .10	508 +/- 7	3.109 +/- .023	3.64 +/- .23	0 +/- 75
OBSIDIAN FROM AYACUCHO SOURCE (NEAR TUKUMACHAY)									
30	845	X	BURG-60	6.60 +/- .12	1.27 +/- .10	393 +/- 3	2.165 +/- .014	4.47 +/- .22	156 +/- 95

				As	U	Ba		Sm	La	Co
OBSIDIAN FROM QUISPISISA SOURCE										
SOURCE MATERIAL FROM QUISPISISA, HUANCAVELICA										
1	861	H	BURG-66	13.7 +/- 1.8	8.376 +/- .102	689 +/-	22	2.382 +/- .015	26.88 +/- .92	.55 +/- .06
2	861	J	BURG-67	15.8 +/- 1.8	8.374 +/- .102	706 +/-	22	2.401 +/- .015	24.34 +/- .91	.53 +/- .06
3	861	K	BURG-68	13.9 +/- 1.8	8.269 +/- .101	675 +/-	22	2.402 +/- .015	26.21 +/- .92	.47 +/- .06
ARTIFACTS FROM SAN NICOLAS										
4	822	G	BURG-3	15.1 +/- 1.1	8.518 +/- .053	717 +/-	21	2.482 +/- .009	27.59 +/- .63	.61 +/- .05
5	822	M	BURG-8	14.5 +/- 1.1	8.374 +/- .052	731 +/-	21	2.440 +/- .009	26.89 +/- .62	.46 +/- .05
6	822	W	BURG-18	14.9 +/- 1.1	8.627 +/- .053	736 +/-	20	2.476 +/- .009	27.82 +/- .64	.48 +/- .05
ARTIFACTS FROM JAYWAMACHAY										
7	861	R	BURG-74	14.2 +/- 1.9	8.642 +/- .111	749 +/-	24	2.422 +/- .016	27.47 +/- .98	.40 +/- .06
8	871	J	BURG-92	17.3 +/- 1.7	8.879 +/- .072	748 +/-	19	2.520 +/- .013	28.05 +/- .80	.53 +/- .05
9	890	O	BUR-129	17.8 +/- 1.8	8.789 +/- .074	747 +/-	22	2.543 +/- .013	26.62 +/- .81	.56 +/- .06
10	890	P	BUR-130	16.7 +/- 1.8	8.731 +/- .074	738 +/-	23	2.532 +/- .013	29.46 +/- .85	.54 +/- .06
11	893	F	BUR-108	15.2 +/- 1.4	8.723 +/- .062	737 +/-	21	2.479 +/- .010	26.49 +/- .70	.66 +/- .05
12	893	G	BUR-109	16.0 +/- 1.4	8.648 +/- .062	739 +/-	21	2.485 +/- .011	27.89 +/- .72	.65 +/- .05
13	893	H	BUR-110	15.6 +/- 1.4	8.642 +/- .062	750 +/-	21	2.477 +/- .011	28.23 +/- .71	.54 +/- .05
ARTIFACTS FROM UCHCUMACHAY										
14	861	W	BURG-79	15.4 +/- 2.0	8.627 +/- .111	696 +/-	23	2.420 +/- .016	26.33 +/- .99	.50 +/- .06
15	871	Z	BUR-106	19.7 +/- 2.0	8.753 +/- .069	749 +/-	18	2.522 +/- .013	28.79 +/- .82	.54 +/- .05
16	890	E	BUR-120	14.5 +/- 1.7	8.701 +/- .073	710 +/-	22	2.545 +/- .013	28.42 +/- .82	.69 +/- .06
17	890	G	BUR-123	17.0 +/- 1.8	8.741 +/- .073	730 +/-	23	2.513 +/- .013	27.66 +/- .83	.45 +/- .06
18	890	U	BUR-135	17.8 +/- 1.7	8.772 +/- .071	761 +/-	22	2.524 +/- .013	27.48 +/- .80	.47 +/- .06
19	893	O	BUR-115	15.6 +/- 1.4	8.729 +/- .063	774 +/-	20	2.484 +/- .011	26.44 +/- .71	.50 +/- .05
ARTIFACTS FROM IOMACHAY										
20	890	Q	BUR-131	14.7 +/- 1.6	8.797 +/- .071	748 +/-	21	2.525 +/- .012	27.10 +/- .79	.60 +/- .06
ARTIFACT FROM PUENTE										
21	890	R	BUR-132	8.6 +/- 6.0	8.649 +/- .101	686 +/-	19	2.528 +/- .025	26.75 +/-1.57	.56 +/- .07
ARTIFACTS FROM AYACUCHO SITE AC300										
22	890	X	BUR-138	15.2 +/- 1.9	8.956 +/- .077	735 +/-	23	2.585 +/- .015	28.63 +/- .91	.49 +/- .06
23	890	Z	BUR-140	14.4 +/- 1.6	8.884 +/- .072	743 +/-	21	2.546 +/- .013	27.76 +/- .78	.55 +/- .06
AYACUCHO TYPE OBSIDIAN										
ARTIFACTS FROM IOMACHAY										
24	893	J	BUR-111	4.7 +/- 1.1	4.604 +/- .042	231 +/-	16	1.975 +/- .009	21.50 +/- .64	.20 +/- .04
25	893	K	BUR-112	3.0 +/- 1.1	4.663 +/- .042	259 +/-	16	1.956 +/- .009	22.54 +/- .64	.43 +/- .04
26	893	M	BUR-113	3.7 +/- 1.1	4.705 +/- .042	227 +/-	16	1.979 +/- .009	23.16 +/- .66	.28 +/- .04
ARTIFACT FROM AYACUCHO SITE Ac 500										
27	893	N	BUR-114	3.0 +/- 1.2	4.720 +/- .043	212 +/-	17	1.996 +/- .009	23.01 +/- .68	.26 +/- .04
ARTIFACT FROM PUENTE										
28	893	E	BUR-107	1.3 +/- 1.1	4.595 +/- .043	208 +/-	17	2.217 +/- .009	18.82 +/- .64	.48 +/- .05
RARE TYPE 2 OBSIDIAN										
ARTIFACT FROM JAYWAMACHAY										
29	828	V	BURG-38	3.2 +/- 1.1	4.537 +/- .039	312 +/-	14	2.341 +/- .009	21.69 +/- .63	.19 +/- .03
OBSIDIAN FROM AYACUCHO SOURCE (NEAR TUKUMACHAY)										
30	845	X	BURG-60	3.1 +/- 1.0	4.500 +/- .038	288 +/-	14	1.955 +/- .008	27.93 +/- .61	.16 +/- .03

				Sc	Fe%	Cs	Sb	Th
OBSIDIAN FROM QUISPISISA SOURCE								
SOURCE MATERIAL FROM QUISPISISA, HUANCAVELICA								
1	861	H	BURG-66	1.68 +/- .02	.55 +/- .02	11.55 +/- .31	1.25 +/- .14	20.93 +/- .18
2	861	J	BURG-67	1.47 +/- .02	.55 +/- .02	11.57 +/- .31	1.37 +/- .15	21.05 +/- .18
3	861	K	BURG-68	1.44 +/- .02	.55 +/- .02	11.64 +/- .31	1.38 +/- .15	20.96 +/- .18
ARTIFACTS FROM SAN NICOLAS								
4	822	G	BURG-3	1.52 +/- .02	.60 +/- .01	11.51 +/- .24	1.49 +/- .12	21.08 +/- .13
5	822	M	BURG-8	1.49 +/- .02	.57 +/- .01	11.27 +/- .23	1.24 +/- .11	20.87 +/- .13
6	822	W	BURG-18	1.50 +/- .02	.57 +/- .01	11.30 +/- .23	1.20 +/- .10	20.82 +/- .12
ARTIFACTS FROM JAYWAMACHAY								
7	861	R	BURG-74	1.51 +/- .02	.61 +/- .02	11.36 +/- .32	1.16 +/- .14	21.02 +/- .19
8	871	J	BURG-92	1.52 +/- .02	.58 +/- .02	10.96 +/- .23	1.45 +/- .15	21.26 +/- .18
9	890	D	BUR-129	1.52 +/- .02	.55 +/- .02	11.65 +/- .30	1.29 +/- .12	19.98 +/- .13
10	890	P	BUR-130	1.52 +/- .02	.58 +/- .02	11.74 +/- .30	1.22 +/- .12	20.08 +/- .13
11	893	F	BUR-108	1.55 +/- .02	.57 +/- .01	11.53 +/- .25	1.24 +/- .11	20.96 +/- .14
12	893	G	BUR-109	1.55 +/- .02	.59 +/- .01	11.24 +/- .25	1.30 +/- .12	20.74 +/- .14
13	893	H	BUR-110	1.53 +/- .02	.56 +/- .01	11.42 +/- .25	1.35 +/- .12	20.88 +/- .14
ARTIFACTS FROM UCHCUMACHAY								
14	861	W	BURG-79	1.48 +/- .02	.59 +/- .02	11.46 +/- .32	1.31 +/- .15	20.96 +/- .19
15	871	Z	BUR-106	1.51 +/- .02	.62 +/- .02	11.47 +/- .24	1.38 +/- .13	20.89 +/- .17
16	890	E	BUR-120	1.52 +/- .02	.57 +/- .02	11.61 +/- .29	1.35 +/- .12	19.86 +/- .13
17	890	G	BUR-123	1.51 +/- .02	.60 +/- .02	11.51 +/- .29	1.39 +/- .13	19.93 +/- .13
18	890	U	BUR-135	1.53 +/- .02	.56 +/- .01	11.33 +/- .27	1.15 +/- .11	20.00 +/- .13
19	893	D	BUR-115	1.50 +/- .02	.55 +/- .01	11.51 +/- .25	1.32 +/- .12	20.86 +/- .14
ARTIFACTS FROM IOMACHAY								
20	890	Q	BUR-131	1.47 +/- .02	.58 +/- .01	11.52 +/- .28	1.19 +/- .11	19.94 +/- .13
ARTIFACT FROM PUENTE								
21	890	R	BUR-132	1.49 +/- .02	.56 +/- .02	11.07 +/- .27	1.34 +/- .12	19.97 +/- .13
ARTIFACTS FROM AYACUCHO SITE AC300								
22	890	X	BUR-138	1.52 +/- .02	.56 +/- .02	11.29 +/- .28	1.30 +/- .13	19.91 +/- .13
23	890	Z	BUR-140	1.50 +/- .02	.56 +/- .01	11.28 +/- .27	1.22 +/- .11	20.00 +/- .13
AYACUCHO TYPE OBSIDIAN								
ARTIFACTS FROM IOMACHAY								
24	893	J	BUR-111	1.71 +/- .02	.51 +/- .01	4.07 +/- .12	.25 +/- .05	16.20 +/- .11
25	893	K	BUR-112	1.72 +/- .02	.48 +/- .01	3.86 +/- .12	.32 +/- .05	16.06 +/- .11
26	893	M	BUR-113	1.73 +/- .02	.49 +/- .01	4.00 +/- .12	.27 +/- .05	16.24 +/- .11
ARTIFACT FROM AYACUCHO SITE Ac 500								
27	893	N	BUR-114	1.72 +/- .02	.48 +/- .01	4.01 +/- .12	.24 +/- .05	16.62 +/- .12
ARTIFACT FROM PUENTE								
28	893	E	BUR-107	2.03 +/- .02	.49 +/- .01	3.89 +/- .13	.28 +/- .05	15.97 +/- .11
RARE TYPE 2 OBSIDIAN								
ARTIFACT FROM JAYWAMACHAY								
29	828	V	BURG-38	1.87 +/- .02	.54 +/- .02	3.80 +/- .11	.24 +/- .05	15.44 +/- .17
OBSIDIAN FROM AYACUCHO SOURCE (NEAR TUKUMACHAY)								
30	845	X	BURG-60	1.56 +/- .02	.48 +/- .01	4.89 +/- .13	.27 +/- .05	16.00 +/- .11

			Eu	Ce	Hf	Ta	Yb
OBSIDIAN FROM QUISPISISA SOURCE							
SOURCE MATERIAL FROM QUISPISISA, HUANCAVELICA							
1	861 H	BURG-66	.422 +/- .009	52.48 +/- .81	3.39 +/- .08	1.104 +/-.008	1.129 +/- .028
2	861 J	BURG-67	.420 +/- .009	51.13 +/- .80	3.33 +/- .08	1.101 +/-.008	1.168 +/- .029
3	861 K	BURG-68	.415 +/- .009	50.77 +/- .80	3.31 +/- .08	1.098 +/-.008	1.121 +/- .028
ARTIFACTS FROM SAN NICOLAS							
4	822 G	BURG-3	.421 +/- .007	51.73 +/- .60	3.25 +/- .06	1.144 +/-.006	1.187 +/- .021
5	822 M	BURG-8	.424 +/- .007	52.32 +/- .61	3.39 +/- .06	1.134 +/-.006	1.156 +/- .021
6	822 W	BURG-18	.438 +/- .007	51.94 +/- .61	3.22 +/- .06	1.103 +/-.006	1.169 +/- .021
ARTIFACTS FROM JAYWAMACHAY							
7	861 R	BURG-74	.440 +/- .009	52.23 +/- .83	3.31 +/- .08	1.111 +/-.008	1.096 +/- .029
8	871 J	BURG-92	.442 +/- .008	51.06 +/- .81	3.27 +/- .08	1.124 +/-.007	1.144 +/- .030
9	890 D	BUR-129	.427 +/- .009	52.99 +/- .74	3.27 +/- .08	1.114 +/-.007	1.149 +/- .025
10	890 P	BUR-130	.431 +/- .009	53.26 +/- .74	3.32 +/- .08	1.122 +/-.007	1.154 +/- .025
11	893 F	BUR-108	.440 +/- .008	50.96 +/- .69	3.19 +/- .07	1.113 +/-.006	1.141 +/- .024
12	893 G	BUR-109	.416 +/- .008	51.05 +/- .68	3.30 +/- .07	1.104 +/-.006	1.156 +/- .024
13	893 H	BUR-110	.426 +/- .008	51.89 +/- .69	3.24 +/- .07	1.116 +/-.006	1.140 +/- .024
ARTIFACTS FROM UCHCUMACHAY							
14	861 W	BURG-79	.431 +/- .009	52.01 +/- .83	3.23 +/- .09	1.112 +/-.008	1.213 +/- .031
15	871 Z	BUR-106	.440 +/- .007	53.46 +/- .83	3.31 +/- .08	1.135 +/-.007	1.192 +/- .029
16	890 E	BUR-120	.434 +/- .009	52.78 +/- .73	3.20 +/- .08	1.117 +/-.007	1.170 +/- .025
17	890 G	BUR-123	.426 +/- .009	52.33 +/- .73	3.34 +/- .08	1.119 +/-.007	1.123 +/- .025
18	890 U	BUR-135	.445 +/- .009	51.53 +/- .71	3.20 +/- .08	1.098 +/-.007	1.118 +/- .025
19	893 D	BUR-115	.431 +/- .008	52.03 +/- .69	3.24 +/- .07	1.119 +/-.006	1.160 +/- .024
ARTIFACTS FROM IOMACHAY							
20	890 Q	BUR-131	.415 +/- .009	50.78 +/- .71	3.19 +/- .08	1.106 +/-.007	1.154 +/- .025
ARTIFACT FROM PUENTE							
21	890 R	BUR-132	.428 +/- .009	51.83 +/- .76	3.36 +/- .08	1.106 +/-.007	1.162 +/- .027
ARTIFACTS FROM AYACUCHO SITE AC300							
22	890 X	BUR-138	.417 +/- .010	52.92 +/- .81	3.28 +/- .09	1.121 +/-.008	1.135 +/- .028
23	890 Z	BUR-140	.436 +/- .009	51.58 +/- .72	3.28 +/- .08	1.114 +/-.007	1.176 +/- .025
AYACUCHO TYPE OBSIDIAN							
ARTIFACTS FROM IOMACHAY							
24	893 J	BUR-111	.287 +/- .006	40.49 +/- .59	3.79 +/- .07	1.770 +/-.008	.847 +/- .022
25	893 K	BUR-112	.291 +/- .006	40.73 +/- .59	3.84 +/- .07	1.781 +/-.008	.876 +/- .022
26	893 M	BUR-113	.300 +/- .006	40.97 +/- .60	3.67 +/- .07	1.780 +/-.008	.826 +/- .022
ARTIFACT FROM AYACUCHO SITE Ac 500							
27	893 N	BUR-114	.288 +/- .006	40.70 +/- .59	3.76 +/- .07	1.791 +/-.008	.815 +/- .023
ARTIFACT FROM PUENTE							
28	893 E	BUR-107	.332 +/- .007	38.96 +/- .58	3.85 +/- .07	1.951 +/-.009	.968 +/- .023
RARE TYPE 2 OBSIDIAN							
29	828 V	BURG-38	.344 +/- .006	42.92 +/- .82	3.86 +/- .09	1.936 +/-.011	.953 +/- .032
OBSIDIAN FROM AYACUCHO SOURCE (NEAR TUKUMACHAY)							
30	845 X	BURG-60	.307 +/- .006	46.25 +/- .60	3.71 +/- .07	1.641 +/-.007	.744 +/- .020

Table 2. Selected trace element composition of Andean obsidian: x-ray fluorescence analysis made at Lawrence Berkeley Laboratory (in parts-per-million)

obsidian type	Ba	Ce	Rb	Sr	Zr
Quispisisa	735	52	195	139	99
Ayacucho	220	43	138	56	85
Rare 9 (Pachamachay)	844	-	150	171	60

Table 3. Summary of source identifications of preceramic obsidian artifacts analyzed by neutron activation (NAA) and x-ray fluorescence (XRF)

Archaeological Site	Quispisisa Source	Ayacucho Type	Rare	Method
San Nicolas, Dept. Ica	49			NAA 3 XRF 46
Ac335, Dept. Ayacucho (Jaywamachay)	30		1	NAA 8 XRF 23
Ac158, Dept. Ayacucho (Puente)	9	3		NAA2 XRF 10
Ac351, Dept. Ayacucho (Tukumachay)	3			XRF 3
Ac500, Dept. Ayacucho	4	2		NAA 1 XRF 6
Ac300, Dept. Ayacucho	10			NAA 2 XRF 10
Ac100, Dept. Ayacucho (Pikimachay)	1			XRF 1
Pampas Galeras, Dept. Ica	5			XRF 5
Uchcumachay, Dept. Junin	8			NAA 6 XRF 2
Pachamachay, Dept. Junin			1	XRF 1
La Cumbre, Dept. La Libertad	1			XRF 1

Table 4. Analysis of obsidian from the excavations of the Ayacucho Archaeological-Botanical Project

Sites Sampled	Microenvironmental Zone*
Ac100 (Pikimachay)	dry thorn forest
Ac102 (Iomachay)	dry thorn forest
Ac158 (Puente)	desert
Ac300	tundra
Ac335 (Jaywamachay)	humid scrub forest
Ac351 (Tukumachay)	tundra
Ac500	humid scrub forest

Site	Zone	Phase*	Tentative dates*	Quispisisa Source	Ayacucho Type
Ac100	f-2	Puente	7000 BC	1	
Ac102	8	Puente	7300 BC	1	
	7	Jaywa	5600 BC	2	
	6	Chihua	3600 BC		3
Ac158	XIII	Puente	7100 BC		1
	XII	Puente	6900 BC		1
	XI	Jaywa	5900 BC	2	
	IX	Piki	5300 BC	1	
	VIII	Piki	5200 BC	1	
	VII	Piki	4900 BC	2	1
	VI	Piki	4720 BC	1	
	V	Piki	4520 BC	1	
	I	Chihua	4000 BC	1	
AC300	C-north	Jaywa	5500 BC	6	
	C-south	Chihua	3100 BC	4	
Ac335	M-N	Ayacucho	10000 BC	1	
	K		9020 BC	3	
	J-2	Huanta	7940 BC	3	
	I	Puente	7610 BC	2	
	H	Puente	7030 BC	2	
	G	Puente	6850 BC	2	
	F	Jaywa	6550 BC	5	
	E	Jaywa	6490 BC	1	
	D	Jaywa	6410 BC	5	
	C	Jaywa	6300 BC	4	
Ac351	C-2	Cachi	2500 BC	2	
	C-1	Cachi	1800 BC	1	
Ac500	F	Puente	7300 BC	2	
	E	Piki	4600 BC	1	
	D-1	Chihua	3000 BC	1	2

* data from MacNeish et al. 1970; and MacNeish, personal communication.

ABAJ TAKALIK 1976: EXPLORATORY INVESTIGATIONS

by
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1. Preface

In February, 1976, in the course of a preliminary exploration of the archaeological site of Abaj Takalik, Department of Retalhuleu, southwestern Guatemala, for the purpose of evaluating its potential for more intensive investigations, a number of very important discoveries were made. While these finds serve to justify more thorough investigation of the site in the near future, an interim and preliminary report should be of interest to colleagues. Since fuller investigations will greatly expand our present information on the site, the present report will not attempt to present all data resulting from our 1976 preliminary investigations nor to undertake detailed analysis of the data collected which are still in the process of study.

Monument terminology for sculptures previously reported from the site follows that of Miles (1965: 246) and as expanded, with a single exception, by Parsons (1972: 203). In a later report we will provide a fuller table of terminology including early references to these and other monuments from sources not utilized by Miles and Parsons. The earlier practice of referring to sections of the site by names of the various modern fincas which now divide up the ruins, as well as references to the site as Colomba, have created considerable confusion and some misunderstandings; to correct this problem, Miles (1966: 246) christened the ruins "Abaj Takalik" (her translation of "piedra parada" into Quiche), a convenient designation now generally adopted.

In the present report we have provided descriptions of only a sampling of the many new or unpublished sculptured and plain monuments from the site; further work will expand our data on these and other monuments and will further provide a better photographic record than we were able to obtain with the limited time and resources available to us. Most of the monuments for which we were able to make some record appear on the present map; numerous other monuments, and probable monuments, were noted, but the lack of time precluded investigation. As with other aspects of this report, the map is preliminary and is subject to amendment upon more intensive study of the site.

2. Background of the 1976 UCB Project

During the summer of 1975 we discussed the feasibility and profitability of detailed explorations at Abaj Takalik. Shook had carried out brief reconnaissances at the site on several occasions during the course of his surveys of south coast archaeology, recording a number of unpublished monuments. With his interest in south coast archaeology in general and in particular with his recent excavations at Monte Alto, an exploration of Abaj Takalik could yield interesting comparative data as well as contributing to a better understanding of the south coast as a whole. Graham and Heizer were particularly interested

in the possibility of finding an Olmec sculptural site on the south coast, a possibility enhanced by the fine Olmec relief that had come to Shook's attention some years earlier (Shook and Heizer 1976). Finally, Graham had long been interested in the site for the possible light that might be focused upon early Maya hieroglyphic writing and sculptural art. Thus, aside from general questions about early Mesoamerican cultural development in which we all shared a common interest, the site further provided the potential possibility of seeing our individual, specialized interests intermeshing.

Since the ruins of Abaj Takalik are distributed over the properties of several different fincas and continue to be intensively planted in coffee, extensive explorations would probably run against a number of practical problems. For these and similar additional reasons, we decided to attempt a month long, preliminary season of investigation which hopefully would provide us with an adequate basis upon which we could evaluate the potential and feasibility of further work at the site.

In the late summer of 1975 Graham applied to the National Geographic Society for the basic funding of a preliminary season of explorations at the site; supplemental financial support from the Graduate Division of the University of California was also sought to enable the project to be combined with the training of graduate students in archaeology. Applications to the Center for Latin American Studies at the University resulted in grants to two of our students who were to assist in the explorations. In addition to most enthusiastic encouragement, a very generous contribution from Judge Jon and Francesca Wiig, of Antigua, made possible the participation of two additional students, provided vehicles essential to the project, and other useful field equipment.

During the fall of 1975 Shook undertook various local arrangements in Guatemala, and in November Shook and Heizer visited the site briefly to make final arrangements for our camp there. By early January of 1976 all preliminary tasks had been completed, and on January 29, Shook, Heizer, and Graham arrived at the site. On January 30, Colin Busby, Brian Dillon, Mark Johnson, and Edgar Torres arrived on schedule in Retalhuleu, having made the long bus trip from San Francisco, and work began the following day. Unfortunately, Shook was unable to remain at the site beyond the beginning of the work, and the disasterous February earthquake prevented his return with the exception of a brief visit at the end of the investigations. Similarly, Heizer joined friends in Antigua to lend assistance for a period when the extent of the earthquake devastation became known. With two exceptions, we worked a seven day week; the season had been scheduled for one month, and we reluctantly terminated operations on February 28 despite important discoveries continuing to be made up to the very end.

It is very difficult to adequately express our appreciation to all the many persons who contributed to the success of our work. Dr. Luis Luján Muñoz, Director of the Instituto de Antropología e Historia, provided the necessary authorization and gave us very stimulating encouragement. All members of the family of Don Manuel Ralda of El Asintal provided countless courtesies. In addition to permission to undertake the work on their finca, Don Manuel and his son, Don José Luis, generously allowed us to remove

a number of coffee trees impeding explorations and they provided enthusiastic encouragement at every opportunity. Doña Stela Ralda de Schaeffer permitted us the use of the main house at her Finca La Palmera and greatly simplified problems of feeding our group by providing a cook. The success of our work at Abaj Takalik owes a great deal to the kind interests and the warm appreciation of the value of archaeological exploration and its contribution to the history of Guatemala by the Ralda family.

Finally, we wish to acknowledge the devotion, hard work, and invariably cheerful attitudes of our four student colleagues. Without their invaluable assistance, we would have considerably less to report here.

3. Earlier explorations at Abaj Takalik

Although the mounds and stone monuments at Abaj Takalik were commented upon by a number of early writers, the brief report of Gustav Brühl published in 1888 is particularly interesting. Although Brühl complained of the dense vegetation, the structure and monuments of the site were clearly considerably more exposed than after the great ash fall resulting from the eruption of the Santa Maria volcano in 1902. Already some monuments had been removed from the site (e.g. Monument 3) while other known monuments were to become lost. Brühl, for example, gives a brief description and the measurements of Stela 4, a monument not to be "rediscovered" until 1969 (Parsons 1972: 204). He observed that the ruins are "scattered over a vast area on the plantations of Santa Margarita and San Isidro" and "consist of foundation-walls of stone edifices." It is unfortunate that Brühl's account is not fuller; his descriptions are not always helpful but many of his data are valuable.

A distinguished visitor who came upon the site quite by accident only a few years after Brühl was Karl Sapper (1894). Traveling with his brother, Sapper provides a brief description of Stela 1 which he linked to the style of Santa Lucia Cotzumalhuapa. Curiously, the Sappers did not see any of the other sculptured monuments although the opinion was offered that additional carved monuments were surely to be found away from the road. Stela 1, standing in the edge of the road cutting through the eastern side of the site, was viewed as they were passing through; perhaps time was not available to stop to undertake further investigation.

The German artist Max Vollmberg (1930; Lehmann 1926: 175) sketched Stela 1 and noted other monuments, and he provided the stimulus for Walter Lehmann to visit the site in 1925. Stela 2, which appears to have been largely exposed during Brühl's visit, was now almost entirely buried and had to be excavated by Lehmann. To Lehmann belongs the credit for correctly recognizing the great antiquity of the Abaj Takalik sculptures, an observation not generally accepted for decades to come.

J. Eric S. Thompson visited the site in 1942 (Thompson 1942, 1943), providing the fullest information to date on the ruins. Curiously, Thompson was unaware that this was the site of Lehmann's "Piedra Schlubach" and Piedra Fuentes" although he was aware of Lehmann's earlier account.

Subsequent to Thompson's report on the monuments at Abaj Takalik, several archaeologists paid brief visits with Miles (1965) publishing Monument 6 and Stela 3, and Parsons (1972) publishing Stela 4.

4. The Site and its Setting

An introduction to the environmental setting of Abaj Takalik can be obtained through discussions of two adjacent areas. Coe (1961: 7-14) and Coe and Flannery (1967: 9-15) provide informative sketches of the ecology of the coastal plain immediately southwest of Abaj Takalik, and Parsons (1967: 22-23) describes the natural setting of the lower Pacific piedmont not far to the east. Finally, an interesting account of the area and of life in Retalhuleu in the late 19th century is provided by Otto Stoll (1886: 67-255) who practiced medicine there from July of 1879 to January, 1881.

The ruins of Abaj Takalik are situated in the municipio of El Asintal which has been part of Department of Retalhuleu since 1940. The southern limits of the site, as marked by mounds, begin a few kilometers north of the village of El Asintal on the Finca Santa Margarita. Construction continues northward across the Fincas San Isidro Piedra Parada, Buenos Aires, and San Elias. During the 1976 explorations, it was possible to survey in detail only the section of the site on the Finca Santa Margarita.

The site lies at an elevation of some 600 meters. Before being cleared for sugar cane and coffee planting the site was covered with heavy tropical forest as can be judged by a few remnant stands. Portions of the deep, steep-walled barranca on the eastern edge of the ruin is still covered with a luxuriant growth. The barranca carries in its bottom the Ixchiya, a small stream forming the western branch of the Rio Nil. The mounds occupy a ridge running north-south with a gentle slope toward the south. As can be seen from the accompanying map of the southern portion of the site, the ancient center was laid out as a series of wide, level terraces with steep fronts. These terraces were made by cutting back into the rising slope. We assume that the earth which was removed was used to build the mounds which stand on the level terraces, but without excavation it cannot be determined whether the steep terrace fronts consist of dumped fill or are simple truncations of the natural subsoil. The terraces are variable in width, ranging from 140 to 220 meters. Terrace fronts range from 4.6 to 9.4 meters high. Since terrace fronts are not correlated with terrace width, this might reflect variable slopes in the original terrain.

The mounds vary greatly in size and height. Details of their forms were very difficult to determine since we could not clear the structures, and the thick mantle of the 1902 Santa Maria ash fall has further obscured many features. Dimensions and such details as corners of the constructions shown on our map must be considered solely as approximations. No cut stone masonry was observed in the structures, but it is clear from Brühl's observations made prior to the ash fall and from our own limited exposures that a number of mounds had been faced with stone cobbles. It is also likely that some structures had stairways built of large, naturally shaped, stone blocks. A considerable

use was made of a distinctive locally mined material for flooring; this consists of partly decomposed, massive and slabby andesites principally derived from the topmost lava flows beneath the brownish layers of weathered ash. This material makes a good floor and has the additional quality of an interesting, varicolored texture.

Presumably, the mounds served as substructures for buildings constructed of perishable materials. Further interpretation of the architecture of Abaj Takalik and the functions of its constructions must await excavation.

5. Notes on Selected Sculptures

Including the slightly more than a dozen sculptures reported from Abaj Takalik prior to 1976, we now know of more than fifty stone monuments of various types. These include carved and plain stelae, carved and plain altars, and a great variety of miscellaneous monuments ranging from Monument 1, an enormous boulder with its famous Olmec petroglyph, to both large and miniature "pot-belly" sculptures as well as other carvings of previously unknown types. Further exploration will surely increase this corpus.

Abaj Takalik is a ruin with notably large monuments. Six altars weigh between 4.5 and 7.0 tons; the largest altar weighs in excess of 11 tons. Stelae are similarly monumental; five weigh between 1 and 5 tons; 4 weigh between 5 and 10 tons; 2 are over 10 tons, and the largest intact stela weighs 17.25 tons. Average weight of the 12 largest stelae is 14.8 tons.

The stone of almost all Abaj Takalik monuments is andesite and is identical to the natural boulders which abound in the site and surrounding areas. Preliminary petrographic studies of the principal monuments have been undertaken by Howel Williams of the University of California, and it is anticipated that he will carry out a field study at the site during a forthcoming season of work.

Stela 2. (Plates 1 and 2)

It appears likely, although it is by no means certain, that Stela 2 is Dr. Brühl's upright "monolith" with a "low relief...figure of a twisted serpent, surrounded by ornamental scrolls," looking "at a rectangular shield in the centre of the slab " (Brühl 1888). If this is the case, the stela was largely exposed at the time of Brühl's visit. In any case, removal of the present ground surface and the thick ash deposit resulting from the 1902 Santa Maria eruption would expose about half of the carved height of the monument. When Lehmann visited the site in late 1925, however, only the top of the monument protruded above the ground surface and excavation was necessary to expose the hieroglyphic panel and other details of the carving. When Thompson visited the site in 1942 "only the top few inches" of the stela were exposed. "Because it was the object of offerings and worship by Indians working in the neighborhood, Sr. Zacarias Saenz, owner of the farm, had it interred" (Thompson 1943: 102). It is interesting to note that Brühl had

observed a "half-burned tallow candle, as an offering of the Indians" in front of his "monolith" which we believe may have been Stela 2.

Although Thompson was familiar with Lehmann's account of the "Piedra Schlubach," as Lehmann christened the monument, he failed to correlate it with Stela 2, and he excavated the monument once more. According to local informants, Stela 2 was excavated still another time when the late S. W. Miles visited the site in 1958. Apparently, all of these excavators of Stela 2 dug only to the base of carving since none mentions the great unsculptured circular altar (Altar 5) which virtually abuts the base of the stela.

Although Walter Lehmann (1926: 176) correctly recognized this monument as "an ancient Maya stela," Eric Thompson was the first to refer the style of Stela 2 to that of Izapa, an identification that most students have echoed to the present day. Proskouriakoff (1950: 176) early pointed out the relationship of the costuming of the single preserved figure to that of early Maya art in the Peten while the absence of hieroglyphic texts at Izapa but present on both the known stelae at Abaj Takalik should have provided a strong clue to the weakness of Thompson's view. With the discovery of additional monuments during the 1976 investigations which provide additional examples of Maya costume and hieroglyphic writing, the proper cultural affiliation of Stela 2 can no longer be confused.

The hieroglyphic text, preserved with clarity only in its beginning, has generally been accepted as presenting a Cycle 7 Initial Series date. Lehmann, accepting the great antiquity of the monument, argued no more than for an early date of Cycle 7 or Cycle 8 of Maya Long Count chronology. Thompson (1943: 103) considered the initial numeral as "far and away the best" at 7 although he was reluctant to concede a contemporaneous date in the Maya lowland calendar. Proskouriakoff (1950: 176), M. D. Coe (1957), and others have accepted the Cycle 7 notation, if not an actual contemporaneous Cycle 7 date.

The cycle coefficient is damaged; while a reading of 8 is a remote possibility, the number is clearly much the best at 7, as Thompson stated. Only the left edge of the katun coefficient is preserved, with the remainder of the text entirely flaked away. The preserved, minimal portion of the katun coefficient is best interpreted as the end of a bar. The space from the base of the ISIG to the base of the cycle bar measures at most a half centimeter difference off the distance from the base of the cycle bar to the base of the supposed katun bar; the distance from the base of the ISIG to the top of the cycle bar is precisely the same as the distance from the bottom of the cycle bar to the top of the supposed katun bar. This strengthens the identification of the preserved fragment of the coefficient as the end of a bar and further suggests that a dot had been centered above the bar in the now flaked away central area. The area beneath this admittedly somewhat ephemeral bar and dot of the katun coefficient is entirely lost, thus permitting a probable reconstruction of the katun coefficient at 6, 11, or 16 for the full value. Three probable date spans [1] thus emerge:

1 The Western calendar conversions include the astronomer's "year 0" which is customary among Maya epigraphers when converting Maya dates to Western B. C. equivalents.

a) 7.16.0.0.0 - 7.16.19.17.19 or 38 - 18 B.C.
b) 7.11.0.0.0 - 7.11.19.17.19 or 136 - 117 B.C.
c) 7.6.0.0.0 - 7.1.19.17.19 or 235 - 215 B.C.

Since we know so little of the Late PreClassic/ProtoClassic Maya art and writing, it is difficult to make a selection from these three possibilities on a purely stylistic basis. It might be argued that the absence of a variable -- the patron of the month -- suggests an extremely early position; this argument would be stronger if we had a well preserved ISIG with variable on Abaj Takalik Stela 5 at 8.4.5.17.11. The tun element is absent from the ISIG (which does possess the variable) on Tres Zapotes Stela C at 31 B.C., but the later Tuxtla Statuette similarly possesses a double-bar element replacing the standard ISIG tun sign. Furthermore, the highly unusual constructions preceding the Cerro de las Mesas Initial Series of Early Classic age similarly lack the tun element while the geographically nearer El Baul Stela 1 at A.D. 11 [2] presents even greater irregularities. To complicate matters still further, Abaj Takalik Altar 12, which has no preserved date but which may belong to the epoch of Abaj Takalik Stelae 1-2, possesses a series of signs carved along its sides which recall ISIG's of the Tres Zapotes Stela C type. Thus, we may best leave this argument to be resolved when fuller data are available.

The stela was set near the base of a sloping cobble facing forming the surfacing of the structure behind the monument (Plate 2). In front of the monument, the cobbles join a characteristic Abaj Takalik floor, consisting of varicolored aggregates of partly decomposed, massive and slabby andesites. A thin deposit containing a few sherds and particles of charcoal immediately underlies the floor and is mixed with the lowest levels of the floor itself. Beneath this cultural material are clean, culturally sterile deposits. A sample of charcoal from this sub-floor deposit was submitted to the Institute of Planetary and Geophysics at UCLA for radiocarbon age measurement. Dr. Rainer Berger kindly undertook processing of the sample, UCLA-1996, which yielded an age of 2100 B.P. $\pm$ 170 years, remarkably close to the reconstructed epigraphic date of the monument suggested above.

Stela 2, carved of andesite, measures 2.1 m. high, 1.52 m. wide, and has a thickness of 0.85 m. Its weight is calculated at 9.42 metric tons.

Almost abutting the base of the stela was a large circular altar (Altar 5) without sculptured embellishment. The width of the altar spanned the lower cobble facing in front of the stela and continued out above the specially prepared floor in front of the stela and its associated structure. The altar rested upon a solid foundation of cobbles and clay. The altar has a maximum diameter of 2.25 m. and a maximum thickness of 0.40 m.

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2 This derives from a new reading of the Herrera number series (Graham, n.d., a).

Stela 5. (Plate 3)

Only the uppermost few centimeters of this monument protruded above the present ground surface upon discovery. Excavation disclosed that the monument was still standing erect behind a large circular altar, Altar 8, and centered upon the west front of Structure 12.

The stela is carved on the front with two standing figures facing an inscribed panel while the sides carry subsidiary seated figures with a badly eroded, short column of glyphs above each. The carved figures on the front are of very great interest in recalling such early Maya figural art as is to be seen on the Leyden Plaque. Both figures hold the hands in a grasping gesture before the chest; the figure on the observer's right clearly holds a long, undulating serpent, recalling the traditional serpent bar of so much later Maya ceremonial art. Both figures wear belt heads with the characteristic three pendant "shells."

The glyph panel is unfortunately none too well preserved. A double column (A-B) of glyphs both open with a very eroded sign, possibly the ISIG although no certain details can be now recovered. In each case a five term number series follows to be concluded by a group of four badly eroded glyphs, the first in each case almost surely being a day sign. The number series of column A transcribes as 8.4.5.17.11 (A.D. 126) while the number series of column B records 8.2. or 3.2.10.5 (A.D. 103 or 83). The katun term of column B clearly shows only two dots, but since these are irregularly spaced one must consider the possibility that a coefficient of 3 was intended.

These readings presented here assume that the coefficient of the day sign is suppressed. If this is not granted and the final number of each series (the supposed "kin" term) is regarded as the day coefficient, then we have some sort of abbreviated notation. While one might accept suppression of the cycle coefficient as "understood," the suppression of another coefficient in a purely positional notation would surely seem to lead to chaos. Purely for the argument, it might be noted that a suppressed "completion" for the "uinal" term would yield Sacred Almanac days with coefficients equal to the value of the final term of each number series.

While we have made clear that we do not favor this reconstruction, it would not in any case result in a major chronological shift for the date of the text. The sculptural style of the figures is fully in agreement with the early, first quarter of Cycle 8, placement.

The small seated figures on each side of Stela 5 bear very close resemblance to similarly placed figures on Izapa Stela 18 and perhaps represent Izapan visitors to the site although the figures are rendered in Maya fashion (Graham, n.d.b).

As the first new stela to be discovered during the 1976 work, and as an extraordinarily important Maya sculpture, it seems appropriate to designate this monument as "La Estela Ralda."

The height of the front carved panel of Stela 5 measures 1.66 meters while the total height of the monument is 2.11 m. The width of the stela is 1.22 m. and it is 0.6 m. thick.

Altar 12. (Plate 4a, b)

This great sculptured stone is positioned at the center of the east face of Structure 4 in front of the butt of Stela 11, another huge monument which unfortunately is now shattered into dozens of fragments although it was still standing intact and regarded as a landmark within the memory of older inhabitants of the area. From the carving of the top of the altar, Altar 12 might be suspected to originally have been also a stela and to have been re-used as an altar. However, the carvings around the periphery of the altar are oriented to a horizontal placement of the monument, and while these of course could have been executed at a later date, the sculptured depiction on the top of the altar overlaps the side at the base of the composition and thus argues against an original upright placement.

The carving of the top of the altar, long exposed to the elements, is very poorly preserved. A large, centrally placed human figure is turned toward his right where a column of glyphs, free of an enclosing frame, separates him from a smaller figure wearing a loin clout consisting of a long, basically naturalistic, serpent, perhaps the forerunner of the loincloth apron with serpentine elements whose development in Classic Maya art has been studied in detail by Proskouriakoff (1950: 70-71). The size of the smaller figure may derive from the irregular surface of the stone and the artist's desire to accomodate this figure to the irregular space at hand. If this is so, we have a more directly comparable example of the familiar format of two figures facing a glyphic text; both figures extend the right arm in a gesture toward the explanatory, hieroglyphic caption. The larger figure stands upon a band which features two highly exotic grotesque figures at each end somewhat reminiscent of the arrangements seen on Izapa Stelae 22 and 67 although the iconographic themes are different.

Although we suggest that the Altar 12 scene represents a rather free adaptation of the two figure/central glyph panel format, the composition could also be interpreted more literally as a figure of great rank receiving an inferior. The monument, together with Altar 13, was discovered during the final days of our reconnaissance; time and inclement weather did not permit the construction of scaffolding necessary to record properly with carefully controlled night photography the badly weathered top of the monument.

The sides of the altar, with the exception of that portion adjacent to the butt of Stela 11 and which could not be exposed, bear a series of sixteen glyphs. Each glyph possesses an early form of Affix 124 as superfix. The main element consists of full figure forms, purely human, anthropomorphic with zoomorphic elements, or purely animal, kneeling upon a bar-like element divided by a medial line. Behind each figure is a series of concentric, semi-circular bands, the outermost ornamented with two

circles to each side of the glyph. These glyphs, for which more detailed study is reserved to a later date, resemble Initial Series Introducing Glyphs; the bar-like basal element recalls the Introducing Glyphs of Stela C at Tres Zapotes and the Tuxtla Statuette.

Altar 12 was discovered during the visit to the site of Judge Jon and Francesca Wiig, who have given their generous support to archaeology at the University of California for many years and who contributed very substantially to the success of the Abaj Takalik explorations. We consider the circumstances most fitting that this great archaeological monument be designated the "Wiig Altar."

The altar measures 2.7 x 2.0 m.; its thickness at the periphery averages about .85 m. Weight of the altar, without knowing thickness at the center, may be estimated to be in excess of 11.7 metric tons.

Altar 13. (Plate 5a, b)

Altar 13 is found east of Altar 12, across the open space between Structures 3 and 4, placed near the center of the west face of Structure 4. The altar was placed at the base of the now fallen, massive, plain Stela 17.

Altar 13 is clearly a re-used stela; both the composition of the carved surface together with the missing butt and lower portion of the carving as well as the shape of the monument clearly indicate this.

Unfortunately, Altar 13 is badly weathered and severely damaged in parts. Careful night photography should bring out much detail, nevertheless. It was discovered during the final days of our work, when time and unfavorable weather together with a shortage of laborers prevented construction of a stable scaffolding necessary to proper photography.

The upper portion of the monument was carved with a great profile "dragon" design. Beneath this most details of the carving are lost with the exception of the right (observer's) border. Here a human figure in left profile is presented. The figure is particularly interesting for its long beaded, trellis-patterned skirt often associated with portrayals of women. This garment which is so common in Late Classic Maya art was also present in Early Classic Maya art, since the figure on the back of El Zapote Stela 5 wears the beaded garment at 9.0.0.0.0. Since the El Zapote figure is unusual in several respects, it is interesting that there are some curious similarities to the figure on Altar 13. Altar 13, however, may be of Late PreClassic age; specific elements of the carving link the monument to the sculptures of Abaj Takalik Stelae 1 and 2.

The height of carving of the original stela exceeded 2.9 m., the break for the missing basal portion occurring above the feet of the human figure. Maximum width is 1.8 meters while the thickness at the peripheries of the monument average 0.55 meter. Weight of this fragment may be estimated at about 7.0 metric tons.

Monuments 14-16, Three Sculptures in Olmec Style (Plates 6-8)

The top of the large platform designated Structure 7 contains a number of monuments. Time permitted us to examine only a north-south line of monuments which include Monuments 14-19 as shown on the map. All of these monuments are sculptured, but some are represented at present only by incomplete fragments, and all are considerably weathered.

Monument 14 bears carving on both front and back sides; we designate the west side with its high relief figure as the front. The front figure consists of a squatting human, possibly a female, with arms bent at the elbow and hands placed upon the chest below the breasts. A small animal is held in the crook of each arm. The left (observer's) figure is clearly a feline with a cat's face and pointed ears, paws, and a long tail, while the right animal appears to be hooved, possibly representing a small deer or a peccary. The head of this hooved beast is badly weathered and is partly broken away; it appears to have a snout. The principal figure wears a narrow rectangular apron suspended from a belt. The facial features are much worn, apparently naturally, rather than deliberately, defaced. Large earspools are clearly shown and the mouth is of Olmec form. A hat or forehead band is shown, above which what appears to be hair extends out on both sides. The carving, in high relief with rounded contours, recalls Olmec style not only in terms of specific stylistic elements but in the sculptor's technique and approach as well.

The back of the monument is less well preserved, but it bears carving in low relief.

When excavated, Monument 14 was upright but canted strongly to the south side so that the upper right corner of the front was exposed above the modern ground surface. The head and front paws of the feline were thus exposed to view, and the carving was well known to local inhabitants who identified the animal as a rabbit. Generally known as "El Conejo," the monument was the subject of ritual interest and in exposing the front sculpture we found a quantity of candles and glass bottles placed next to the stone.

The stone measures 0.87 meter in height, 1.18 meter in width, and 0.48 meter in thickness. Maximum height of relief (on the front) is 0.22 meter.

Monument 15 resembles Monument 14 in bearing a high relief figure on the front (west) but with low relief carving on the back. The monument was found upright but buried to its very top by the modern ground covering. The badly weathered front presents the shoulders, arms, and head of an anthropomorphic figure within a concave area or niche. The figure appears to wear a stiff cape which covers his shoulders and extends down to the middle of the upper arm. No facial features are preserved but two large, round centrally-perforated earspool flares can be seen. Below the chin there seems to be the remains of a necklace ending in a raised boss. Although also poorly preserved, the "hands" of the figure suggest large, clawed paws. No body features are apparent below the level of the lower arms.

The back of the monument presents buttocks, legs, and a long tail. One might, therefore, interpret this sculpture as a figure crouched or emerging from a niche and extending invisibly backward through the stone to have his rear-quarters emerge on the opposite surface. On the other hand, it is possible that the back of the monument depicts the rear end and tail of a large feline which continued upward and over the top of the monument, now missing, to constitute a "guardian" or "alter ego" for the figure in the niche below.

The monument in its present incomplete form measures 1.4 meters in height, 1.27 meters in width, and 0.52 meters in thickness. The maximum height of relief on the front is 0.15 meters while the low relief on the back measures only 0.02 meter.

Monument 16 was found upright, but buried with only the top barely exposed at modern ground level. The monument consists of a rectangular block of stone, badly weathered and perhaps intentionally defaced. The sculpture appears to represent a helmeted head, its heavy, squarish elements suggest an Olmec sculpture of primitive aspect, although this impression may be partly the effect of its poor preservation. Found near the very end of our work in February, 1976, we did little more than expose and photograph this and the immediately neighboring monuments on Structure 11. The The stone measures 0.9 meter in height, 0.58 meter in width, and 0.4 meter in thickness; maximum relief is 0.05 meter.

6. Concluding Remarks

Abaj Takalik Monument 6, a crudely incised boulder sculpture, was removed in 1958 from the bed of the El Asintal-Colomba road which cuts through the eastern edge of the site. According to S.W. Miles (1965: 247; see also Broman Morales 1968: 492-493), the pottery from above and around the carving was of Early and Middle Preclassic types. The 1976 preliminary investigations at Abaj Takalik were largely confined to surface survey with only occasional excavations being undertaken to more adequately expose and study sculptured monuments near present ground surface; thus it is not surprising that we found no ceramic evidence to either confirm or dispute Miles' view of an Early Preclassic sculptural presence at the site. Since the modern road bed generally lies at a considerably deeper level than those reached in our explorations, it would be well to keep an open mind with respect to the possibility of discovering very early sculptural activity at the site. Reaching these levels may prove to be very difficult.

Monuments 2, 3, and others as yet unpublished at Abaj Takalik provide good examples of the "pot-belly," boulder sculpture tradition which is widely distributed along Pacific Guatemala with important extensions beyond at Kaminaljuyu, Copan, and elsewhere. Miles (1965) also was inclined to attribute these sculptures to her earliest sculptural division although few writers seem to have considered seriously this view. Perhaps the most thorough investigation of a series of sculptures of this type has been in the still unpublished excavations at Monte Alto; based upon those excavations, Parsons

(1976: 329) has concluded that the sculptures were carved during the early Late Preclassic. At Finca Santa Letecia in El Salvador radiocarbon dates for a pot-belly excavation have been published suggesting a somewhat earlier positioning, i.e. late Middle Preclassic (Newsletter: 4). Since these and other types of sculpture were being re-used and re-positioned as late as the Late Classic (e.g. Bilbao Monument 58; Parsons 1969: 122), the dating of placement may be of very little aid in assessing the age of carving. At Abaj Takalik we doubt that pot-bellies were being carved during periods when radically different and far more sophisticated sculptures were being produced. We think, therefore, that the pot-bellies are no later than Middle Preclassic.

A series of relief sculptures at Abaj Takalik, Monuments 1, 14-16, and several others clearly relate to the Olmec style and fully demonstrate the presence of Olmec sculptural sites in Pacific Guatemala. Although all of the Olmec scluptures at Abaj Takalik thus far uncovered are reliefs rather than sculptures in the round, these do include high relief carvings with rounded contours which thus relate conceptually to the Olmec sculptural tradition of southern Veracruz - western Tabasco. True sculpture in the round also clearly relating to Olmec style is present in Pacific Guatemala as the Sin Cabezas carvings (Shook 1950; Parsons and Jenson 1965: 143-144) fully demonstrate. Similar, though cruder, miniature carvings from Abaj Takalik also demonstrate a link between Olmec carving in the round and the pot-belly tradition. We are confident that further explorations at Abaj Takalik will reveal additional examples of Olmec sculptural art.

The precise chronological parameters of the Olmec monumental style as well as its internal chronology have yet to be fully demonstrated to our satisfaction. The general attribution to the Middle Preclassic largely derives from excavations at La Venta, Tabasco, where the sculptures (for which excavation data exist) were all found on or in the latest constructional stage; it is not unreasonable to suggest, as has been done, that at least some of these sculptures were re-positioned from earlier placements. At San Lorenzo, however, with sculptures so closely resembling La Venta art that a substantial time difference in carving seems unlikely, it is argued the carvings were all last positioned in Early Preclassic times. Since we do not have confidence in the precise chronology of Olmec sculpture in Mexico, we see no virtue in attempting to date the Abaj Takalik Olmec pieces on this basis. At Abaj Takalik we also believe that many of the Olmec sculptures we located are probably re-set monuments. Thus determining the age of placement, a primary goal of future investigations, will unfortunately probably not enlighten us with respect to the age of carving.

At some point in the Late Preclassic, Maya style stelae and altars were being erected at Abaj Takalik, a tradition which persisted into the Protoclassic period. Many of these monuments also carry inscriptions in Maya hieroglyphic writing, including Initial Series dates antedating the earliest dated inscriptions thus far found in the lowlands to the north. Although the art style and writing are "early" in terms of later Early Classic Maya development, these monuments at Abaj Takalik display a fully developed Maya style lacking any clear relationship to known earlier sculptural styles. The local Olmec sculpture clearly does not provide plausible antecedents for the genesis of this

distinctively Maya style whose origins thus remain unknown. The closest ties of these monuments may be found in a few scattered sculptures from the Pacific slope, such as Chocola, El Baul Stela 1 [3], and Bilbao Monument 42 [4] as well as a number of monuments at Kaminaljuyu in the highlands. A relationship to a few poorly known sculptured fragments from the lowlands are also evident, as Altar 1 at Polol, Uaxactun Stela 10 and other monuments at that site, as well as the Loltun cave relief. The question of a Pacific slope, highland, or lowland origin for Maya hieroglyphic writing and sculptural art thus should remain open. The variety of early sculptural activity on the Pacific slope, and now with the discovery of a well developed phase of early Maya art there, clearly enhances the argument that this region may have seen the origins of Maya art. Nevertheless, we must remember that the intensity of Classic period occupation in the lowlands has greatly obscured our view of Preclassic developments there, and until more extensive exposures of Preclassic levels have been accomplished, we believe it premature to reach final decisions. With such crucial and fundamental historical questions still quite unresolved, the construction of hypothetical models seeking to explain "why" Maya civilization developed in particular environments seems rather academic.

To students who have become accustomed to thinking of a widely distributed "Izapan civilization" occupying the Pacific slope of Guatemala during the Late Preclassic-Protoclassic period, it will come as a surprise to find that we do not recognize "Izapan" monuments at Abaj Takalik, particularly considering that the great site of Izapa lies only some 70 kilometers to the northwest. Abaj Takalik Stela 4 (Parsons 1972) shares a few iconographic details and motifs to the art of Izapa, as do some of the other monuments of Abaj Takalik, but even Parsons who considers Stela 4 to be illustrative of the Izapan style noted that the sculpture is "atypical" of Izapa and that "the stylistic feeling is perhaps closer to Miraflores and Arenal phase stone carving at Kaminaljuyu than that which has been found at the type site of Izapa" (Parsons 1972: 204). Since none of the published monuments from Izapa show any close formal relationship to the early Maya style, the art of Izapa and that of the early Maya must be related largely in terms of certain motifs and iconographic themes; the basic subject matter of the two arts is fundamentally different as are the concepts and approaches of the artists working in the two styles (Graham, n.d., a). There are clearly major cultural differences, and presumably political ones as well, between Izapa and neighboring Guatemala.

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3 A number of writers refer to the Herrera stela from El Baul as "Izapan" in style. In fact, a careful stylistic analysis of the carving demonstrates that while certain motifs are shared with some of the art of Izapa, the monument is fundamentally Maya in concept (Graham, n.d., a).

4 Parsons (1967) perceptively noted the basic affiliation of the Bilbao sculpture to early Maya art. His term, "proto-Maya," however, seems unsatisfactory since we now see the style is fully Maya both in terms of subject matter and iconography as well as in the artist's basic conception of the art. Furthermore, we cannot agree with his assignment of some of the sculptures at Izapa, as well as other sites, to this early Maya style while other monuments which he considers to be "Izapan" should properly be assigned to the early Maya style (Graham, n.d., b).

On the basis of the sculptural corpus now known, major carving of sculpture at Abaj Takalik may have come to an end with the Early Classic period. Later intensive occupation of the site is demonstrated, however, by surface ceramics and the probable re-positioning of many of the older sculptures. Plain stelae may have been erected at this time, and some carving of sculpture may have occurred, but the importance of the site as a significant center of sculptural art probably declines with the development of the Cotzumahuapa sculptural style centered around Santa Lucia some 80 kilometers to the southeast.

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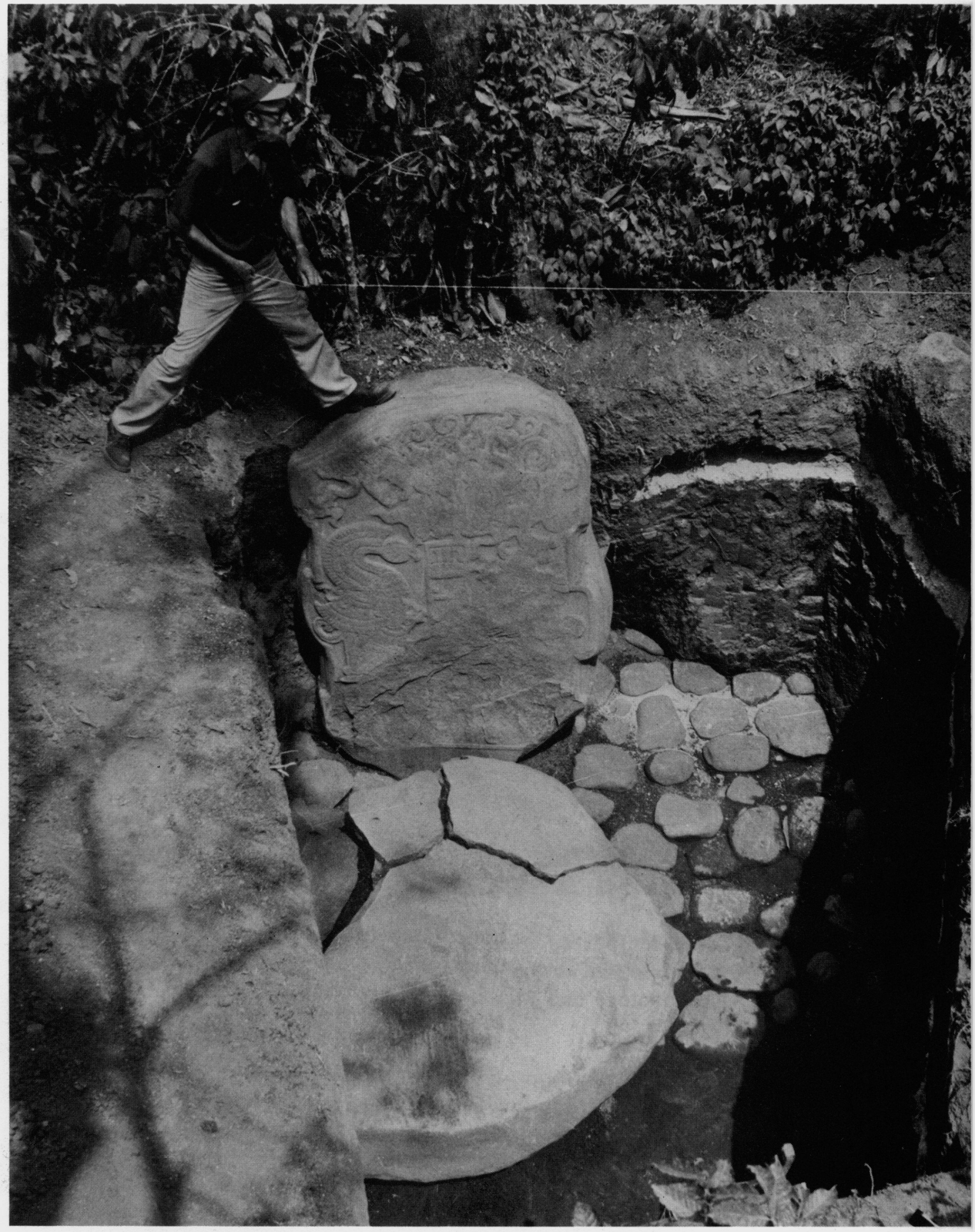


Plate 1. Abaj Takalik Stela 2 and Altar 5.

Plate 2. Abaj Takalik Stela 2, illuminated by night photography.

Plate 3. Abaj Takalik Stela 5, illuminated by night photography.

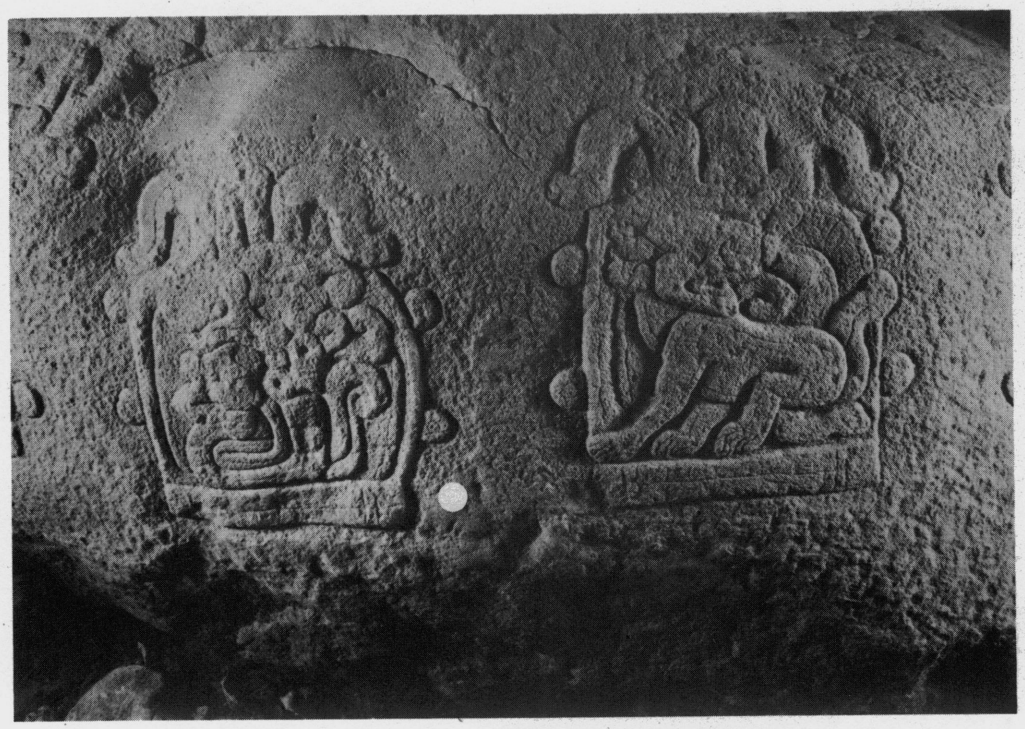
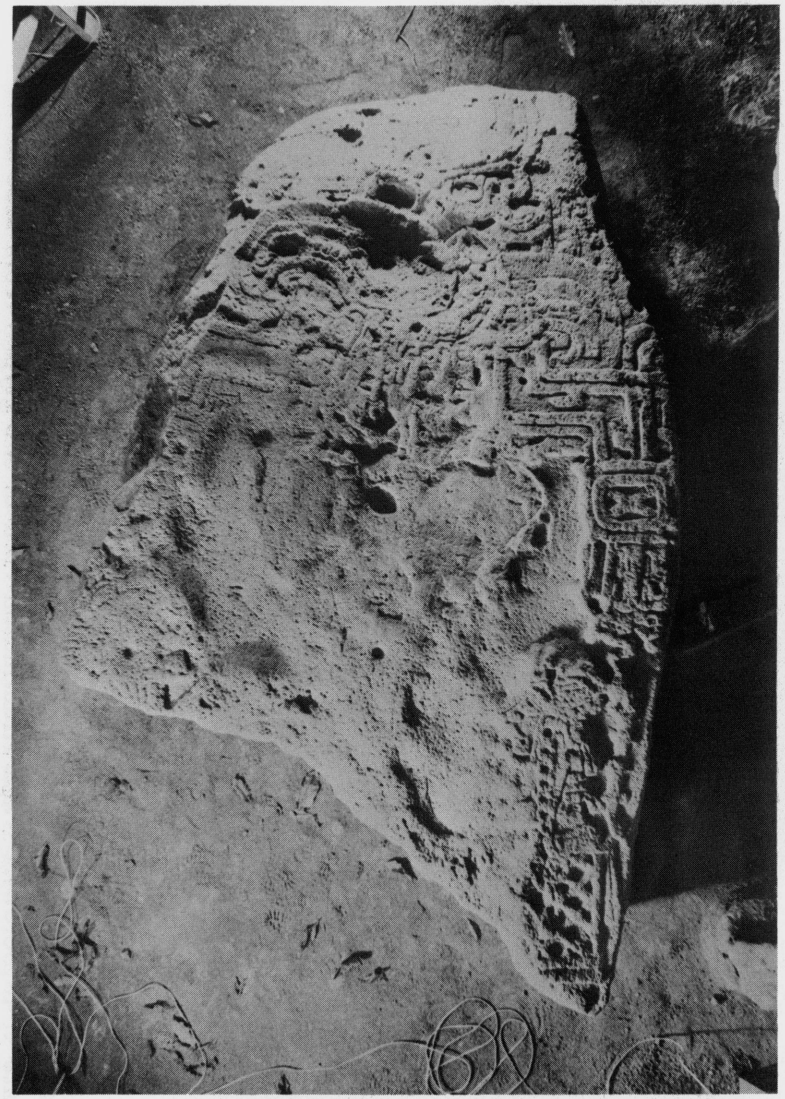


Plate 4, a (above). View of carved side sides of Abaj Takalik Altar 12.
Plate 4, b (below). Night illuminated view of two glyphs from side of Abaj Takalik Altar 12.



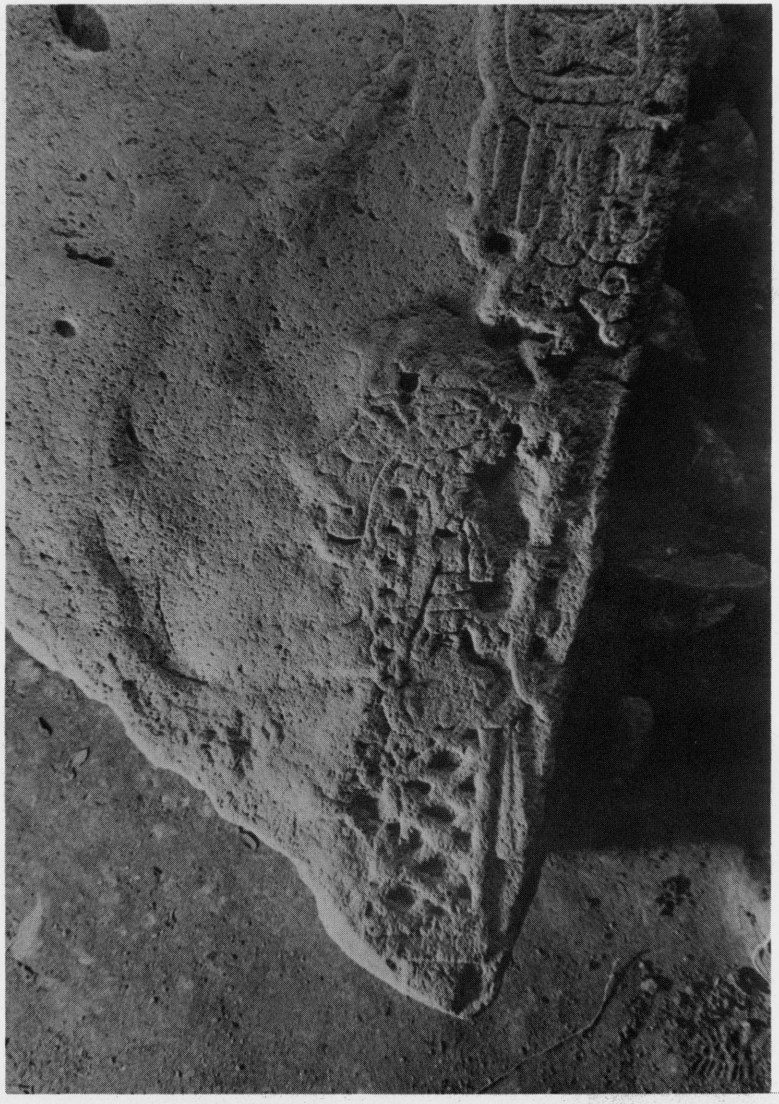


Plate 5, a (left). Abaj Takalik Altar 13.
Plate 5, b (right). Detail of human figure at lower right corner.

Plate 6. Abaj Takalik Monument 14.

Plate 7. Abaj Takalik Monument 15.

Plate 8. Abaj Takalik Monument 16.

THE ABAJ TAKALIK SITE MAP

by

Colin I. Busby and Mark C. Johnson

The mapping of Abaj Takalik was undertaken with the object of obtaining a preliminary planimetric view of the site and to determine the locations of the numerous stone monuments in relation to the various terraces and structures present. Due to the great extent of the site and the limitations of time, the survey was confined to but one portion of the total site. With this in mind, the map should be viewed as only a tentative and temporary reconstruction of this single portion. [1]

The plane table method of survey (cf. Bouchard and Moffitt 1959; Spier 1970 for a discussion of this survey technique) was chosen for the site because of its ability to produce an accurate and reasonably complete map while in the field. In this case this was a prime factor; while a closed traverse survey could be made utilizing the road network surrounding the site as a boundary, access and a reasonably clear view of the various structures and monuments was obscured by the heavy growth of economically valuable coffee trees. Once the traverse was completed and other features and details that could be mapped in from the roads were recorded, the structures and monuments were located on this map using the previously mapped roads and other known features as controls.

A structure's dimensions -- base measurements, width and length of top platform, length and percentage of grade of the faces -- were measured after the survey crew members had determined the extent of the mound or terrace boundaries by visual inspection. The procedure was often an extremely difficult and frustrating experience because of the heavy undergrowth, the effects of erosion on the structures and the fact that portions of the site had been disturbed by road construction and/or the agricultural techniques used in the planting of the coffee and shade trees. Measurements of each structure were made with standard taping techniques. The average percentage of grade was determined for each face with the clinometer of a Brunton Pocket Transit, and the orientation of the mound, in regard to magnetic north, was found with a standard compass. All of these data were entered in a survey notebook for future use.

After several structures in close proximity had been measured and their orientation checked, measurements were taped on a compass bearing between various mounds, the road network and features of a known location to allow the accurate plotting of each structure on the plane table sheet from the notebook data. Terraces were similarly plotted except that the terrace faces were measured at regular intervals in order to determine if any variations were present over their length. The locations of the various monuments and other features were plotted based on their orientation to the various mounds and other elements. After each "group" had been located and plotted on the map, a field check was conducted utilizing additional taped measurements and observations from different high points on the site to determine if the plotted items were

accurately located. Corrections were made if necessary.

Since only a planimetric view of the site was required because of the preliminary, exploratory nature of the project, no topographic mapping was attempted. The contour line representing the gradations of a slope of the barrancas which border the site on the east and west, were made utilizing the data supplied by topographical map No. 1859-II, a map of the 1:50,000 series published by the Direccion General de Cartografia de Guatemala in 1962. The height of each structure and terrace was calculated using the data obtained from the field survey and standard trigonometric calculations. Several of these determined elevations were checked by the hand levelling method and found to be within $\pm$ 1.0 meter of the field check. Both calculated and field determined measurements were used as a basis for the profile.

It should be stressed that as the structures and terraces of the site were primarily of earthen construction, the erosion of their surface features was quite extensive in most instances. The reconstruction of these features for mapping purposes was, therefore, based on a close, visual inspection of surface remnants followed by the measuring procedure previously described. Every attempt was made to insure that the survey was conducted to the highest standards of accuracy possible under the field conditions present. In certain areas, however, qualitative judgments or interpretations had to be made in estimating the extent of structural features and the general layout of several mounds and terraces. The area south of Mound 5 is one of these areas. Past road construction has obliterated the edge of the mound and substantial portions of the two terraces which lie just to the south. Our reconstruction was determined through the application of the measurements from the intact faces of the respective mound and terraces under the assumption that all three structures were regular in form. Similar confusion existed in the determination of the original extent of the eastern faces of Mounds 2, 7 and 13. The road from El Asintal to Colomba, a much traveled thoroughfare, runs along the eastern edge of these mounds, and in some cases, has cut into various portions of the structures, considerably altering their configuration. Those portions of each mound face which seemed not to be damaged by the encroachment of the road were used to establish an approximation of the original extent. This procedure was employed in several other instances where a similar problem of erosion existed, as well as in cases where the density of vegetation made it impossible to obtain a clear view of a structure's surface.

It is clear, therefore, that our reconstruction is simply an attempt to approximate, to the best of our ability, the original architectural features visible on the surface of the site. In closing, it is re-emphasized that this map is only a preliminary version. Further field work is required to improve the accuracy of the map and to determine the full extent of the ruins of Abaj Takalik.

Notes

1. Survey crew members participating at various times in the mapping were Brian Dillon, Edgar Torres and Steven Wegner. They deserve our special thanks for their observations and able collaboration.

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FINCA SAN ISIDRO PIEDRA PARADA

MAG. N.

FENCE LINE

RÍO IXCHIYÁ

WER LINE

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ABAJ TAKALIK

1976-1977

0 50
METERS

● STELA ▲ MONUMENT
■ ALTAR Ⓣ TERRACE FACE

FINCA SANTA MARGARITA

North

South

ROAD

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ABAJ TAKALIK

PROFILE - WEST SIDE