

II. EARLY AND MIDDLE PRECLASSIC CULTURE IN THE BASIN OF MEXICO*

Paul Tolstoy and Louise I. Paradis

Between the 1st century of our era and the 16th, the Basin of Mexico saw the rise, one after the other, of what were probably the two largest cities of pre-Columbian America: Teotihuacán and México-Tenochtitlán. The preclassic settlements that precede these giants in the Basin are therefore of more than passing interest. Their study contributes inevitably to the perspective in which we view these two later centers of Mesoamerican civilization.

Much of our present understanding of Preclassic cultures in the Basin of Mexico comes to us from the work of George C. Vaillant at the sites of Zacatenco (1), Ticoman (2), and El Arbolillo (3). In the late 1920's and early 1930's, Vaillant brought to light the refuse deposits of these three small farming communities, situated on the lower slopes of the hills of Guadalupe, on what was once the north shore of a bay of Lake Texcoco, and what is today the rim of a flat plain covered by Mexico City.

Vaillant's sites, the first of their kind to be thoroughly tested and reported, represent the stage preceding the appearance of native civilizations in the Central Highlands of Mesoamerica. This position on the ladder of cultural evolution is reflected in the terms "Formative" and "Preclassic" generally applied today to these remains. Vaillant, not without wisdom, referred to them as the "Middle cultures" (4), recognizing in this way that they obviously did not represent the beginnings of settled life, farming, or most of the other practices and crafts known to these villagers. Earlier occupations of the Basin by peoples already possessed of similar habits and skills were therefore assumed, and concrete evidence was expected, sooner or later, to prove their existence.

Through an analysis of style changes in figurines and pottery, Vaillant was able to distinguish several periods within the time span of the Middle cultures. He recognized two gross temporal divisions, and these are still valid today. The earlier one, which he called Lower Middle or Copilco-Zacatenco, is exemplified by El Arbolillo, the deeper strata at Zacatenco (levels 10 through 4 of trench D), and evidence from under a lava flow at Copilco, a site in the southern part of the Basin investigated by Manuel Gamio in 1917. The later period, designated Upper Middle or Cuicuilco-Ticoman, is represented by Ticoman, by the upper layers at Zacatenco (3, 2, and 1, in ascending order), and by Cuicuilco, another site on the northern

* Underlined numbers in parentheses refer to "Reference and Notes" at end of article.

edge of the Basin, this one with several pyramids of modest size which are among the earliest in the region.

Each of these two major units of time and culture was subdivided further by Vaillant. The later, Cuicuilco-Ticomán phases (or subphases?) originally three in number but recently increased to six (5), are of no further concern here. In the earlier Copilco-Zacatenco culture, Vaillant perceived a twofold division. At El Arbolillo, it was formalized as phases I and II, and these were equated, respectively, with the strata called Early (10 through 7) and Middle (6 through 4) in trench D at Zacatenco. Like the Lower-Upper distinction, this partition appears essentially valid, and is widely accepted today. It is based on the presence of figurine styles A, B, and F in El Arbolillo II. These tend to supersede the C-1, C-2, and C-3 varieties of El Arbolillo I, though Vaillant's primary data, in fact, convey this rather imprecisely. Vaillant also points out the prevalence, in El Arbolillo II, of a new kind of incised pottery on which was "etched a running pattern that had the same relation to the previous stiff geometric design that script has to block lettering." Unfortunately, Vaillant found this stylistic change "almost impossible to express in a statistical summary," and he also failed to document it adequately with illustrations (1, plate 4; 4, plate 17; 6, figs. 22 (i, j, k, l), 25, 26 (b, c, g)). As a consequence, reliance on it by later investigators has been slight.

The finer divisions proposed by Vaillant for El Arbolillo have proved to be very difficult to use or to verify on the basis of his own data. Some of them appear to lack not only definition but substance as well. Thus, "Intermediate El Arbolillo I," the middle one of three subphases within phase I, and "Transitional El Arbolillo I," conceived as a bridge between phases I and II, are probably invalid and, in any case, unsupported by Vaillant's data. Early and late divisions do seem to be visible within his phase I (they may be, roughly, our El Arbolillo and La Pastora subphases, discussed below), but Vaillant does not define them satisfactorily.

To the problems inherited from Vaillant's original work, new ones have been added over the last 35 years. Some have been created by discoveries within the Basin itself; others have accrued as knowledge has come in from other regions of Mesoamerica, among them the Gulf coast, the southern highlands, and the area around the Isthmus of Tehuantepec.

For some time now the burial ground at Tlatilco west of modern Mexico City has been a prime source of perplexity (6-8). Since the early 1940's hundreds of graves have been excavated at that site. They contain pots, figurines, and other objects markedly different in style from those recovered in Vaillant's refuse dumps, and much more elaborate. The relative abundance, at Tlatilco, of flat-based dishes, long-necked bottles, and effigy jars, the presence of decoration by rocker-stamping and excision, and such unusual pottery forms as stirrup spouts, funnels, cornucopias, and spouted trays have all raised

the question of the relationship of this site to those studied by Vaillant. It has been claimed that Tlatilco was inhabited by a dominant group or elite, ruling over the villages of Zacatenco and El Arbolillo (7). The presence, at Tlatilco, of refuse resembling that of Vaillant's sites has been cited as support for that hypothesis, as well as for the rather different notion that, at Tlatilco, the elaborate burials are later, and were dug into earlier refuse of El Arbolillo-Zacatenco type (8). Another possibility, less often considered but worthy of serious attention, is that the graves, whatever their date, represent, to some degree at least, a mortuary complex of villagers whose day-to-day equipment may not have differed greatly from that of the inhabitants of Vaillant's sites (9). A meaningful choice among these and other alternatives requires data which published reports have, in the main, failed to provide.

Finds outside of the Basin of Mexico have had their own impact on our understanding of early cultures in the Basin, and this impact has been largely destructive. As new sequences have emerged elsewhere, it has become increasingly difficult to fit the Basin within the overall framework of the Preclassic in Mesoamerica, particularly if it is assumed, as it has been by many, that Vaillant's earliest finds are as old as, or older than, the earliest materials of other regions. A long chronology, based on this postulate, has been advocated by a number of authors. It would place the beginnings of Zacatenco and El Arbolillo well back in the 2nd millennium B.C., and would attribute the lack of cross-ties to other, equally ancient cultures elsewhere to the regionalism and isolation of the Central Plateau at that time. The fact is, however, that the few outside parallels that can be found for El Arbolillo (10) lie not with Ocos, Chiapa I, or Ajalpan but with Conchas, Chiapa II, and Santa Maria, all of them within the time range 1000 to 300 B.C. A shorter chronology has thus appeared, to some, increasingly probable. Until recently, radiocarbon dates from Vaillant's sites (C-196 and M-662) were inadequate to help with this problem. Tlatilco served merely to compound the existing confusion: while some of the grave goods have a clear relationship to Olmec finds from Morelos and Veracruz, neither the date of Tlatilco nor that of Olmec materials elsewhere could, until recently, be relied upon to support each other, or to tie the Basin sequence as a whole to the rest of Mesoamerica.

The alternatives made plausible or possible in view of all these uncertainties have been basic to the polemic between the so-called "Highland" and "Lowland" views of the emergence of civilization in Mesoamerica (11). Partisans of the first view have tended to push back in time as far as possible the beginnings of known Preclassic cultures in the Basin of Mexico, thereby securing a developmental lead for this area which is thought to have been maintained up through the time of the emergence of Teotihuacán civilization. Proponents of the "Lowland" thesis have been impressed by the Olmec phenomenon in Veracruz and Tabasco, and have emphasized what they feel to be a relative lag in highland development prior to the rise of the great city of Teotihuacán.

From this brief sketch of earlier research, certain urgent problems should have become apparent. They include (i) the proper phasing and absolute dating of the Vaillant sequence prior to Cuicuilco-Ticomán; (ii) the relative placement of Tlatilco within this sequence; and (iii) the nature of occupations preceding the initial settlement of El Arbolillo and Zacatenco.

It was primarily to solve these fundamental time-space problems that we recently carried out a series of stratigraphic and other investigations in the Basin of Mexico. Included were tests on the plain at Tlatilco, on the Loma de Atoto overlooking it, in two portions of the site of El Arbolillo, and at a locality near Tlapacoya which we call Ayotla. Surface collections were made at a number of other sites known, or presumed, to yield materials of pre-Ticomán date.

What follows is a summary of some of our fieldwork and of our present opinions (October 1969) concerning the relationships and meaning of our materials. The opinions are subject to revision in the future, for they are little more than impressions formed in the course of a long and continuing program of processing our data. Definitive tabulations were thus not available for most of the attributes which we recognize and which we plan ultimately to use as a basis for firmer conclusions.

The New Sequence at El Arbolillo

Two cuts were made in 1965 at Vaillant's site of El Arbolillo. These were designated El Arbolillo East and El Arbolillo West. They were located east and west, respectively, of the Ticomán-Cuauhtepéc road, which passes through the site.

Fortunately, the materials from these two cuts appear to span the full range of the occupation of the site as determined by Vaillant.

It is evident, moreover, that ceramic trends in our cuts can be described in greater number and in sharper focus than Vaillant found possible, and our final study is likely to improve the picture further. At this time, two subphases are clearly evident in the ceramic column at El Arbolillo East. The earlier subphase, which we are calling the El Arbolillo subphase, is characterized by a stiff geometric style of incision applied to burnished monochrome ware, often after hardening. It is also notable for the relative abundance of white ware decorated by incision on the interior floors of bowls (which were perhaps molcajetes or chile graters) and on the rim, where this incision often takes the form of the double-line-break motif, proposed by Coe (10) as a Middle Preclassic time marker for parts of Mesoamerica. Also characteristic are fine-paste "bird-face" figurines of Vaillant's C-1 and C-2 groups, small pottery masks, and a small amount of coarse pottery with sandy paste. The beginnings of the El Arbolillo subphase also seem to be marked by a scarcity or total lack of the yellow-white and white-on-red types typical of later levels,

and by the rare occurrence of white-rim black ware (differentially fired) and flat-based vessels. In the later, La Pastora subphase, two novel styles of plastic decoration appear: a deep broad-line incision, which predominates and generally is made before burnishing and used to create large-scale curvilinear designs (among them a series of concentric arcs which we call the "rainbow motif"), and a very shallow kind of engraving in which the burnished slip is scratched lightly when it is leather-hard, to form the cursive designs which Vaillant found so difficult to sort out in his material. This cursive style is, however, still quite scarce in the La Pastora levels. Other trends within this subphase include a perceptible decline in black burnished monochrome and in white incised ware, an increase in the abundance of light brown burnished monochrome, and certain changes in figurine types. In particular, "bird-face" varieties eventually disappear, to be replaced by the broad-faced C-3, the flat-eyed B-C, and the "sheep-face" C-5 forms of the Vaillant classification. The uppermost La Pastora levels contain a small but consistent amount of "textured" ware, bearing overall stamped designs which Tozzer (12) and Vaillant called "cuneiform" some of which may be impressions of basketry.

After what may be a short interruption, the sequence resumes at El Arbolillo West. The Cuauhtepac subphase represented at that location is notable for the overwhelming abundance of incision in the cursive style, and by the presence of flat figurines of the B variety, and of the very crude F type. The absence of the A type may be due to sampling error. Other characteristics include the virtual absence of incised white, the decline of the darker and lighter brown monochromes, the presence of textured ware, and the relative abundance of yellow-white, red, and red-on-buff. A number of these characteristics are those reported by Vaillant for his "El Arbolillo II" phase.

As to Vaillant's sequence in general, it appears that enough vertical mixture prevailed in most of Vaillant's cuts to prevent recognition of many of the changes which do in fact take place in the time span covered by his materials. For this reason, Vaillant's subdivision of "El Arbolillo I" does not match our own distinction between the El Arbolillo and La Pastora subphases, and the vertical distribution of a number of elements, including figurine types, appears in fact to be somewhat different from that claimed originally in the 1935 El Arbolillo report.

Tlatilco

In 1963, one of us (P.T.) made a cut 4.5 by 3 meters at San Luis Tlatilco on the plain formed by the rivers Hondo and Totolica, some 130 meters from Piña Chás "Iglesia" test pit. An outline of the stratigraphy and chronology of this excavation is given in an earlier paper (9). In it, Tolstoy and Guénette express the view that materials recovered by Piña Chán on the hill of Atoto less than half a kilometer away represent the final

portion of a sequence which runs through both Tolstoy's test of 1963 and Piña's two cuts at Tlatilco proper (his No. 2 and Iglesia pits) (9). This remains essentially our position, with certain qualifications and refinements which we set forth below.

A preliminary ordering of the material from our excavations suggests four main time segments or components marked by relatively minor changes in the popularity of certain types and attributes. These components should probably be considered no more than arbitrary and rather thin slices of a continuum.

Our two earlier Atoto components (1 and 2) probably overlap, in time, Piña's pit No. 2 at Tlatilco proper (levels 4 and 3), and certain units (F to C) of our own 1963 Tlatilco test pit. This overlap is indicated by the peaks and subsequent declines of light brown ware and fugitive white, which our earlier information failed to show clearly, as well as by the seeming absence of figurine types A and B in this early part of the occupation of Atoto.

Atoto components 1 and 2 should therefore be assigned, in all probability, to the Totolica subphase, defined (9) as a subphase showing a gradual decline of black and dark brown ware from an initial peak; an increasing importance of light brown, white, and white-on-red; and the presence of certain very minor wares such as the lacquer-like fugitive orange.

The two later components in our Atoto sequence (components 3 and 4) support and amplify our earlier definition of the Atoto subphase (originally founded on Piña's data) as one in which several trends visible in the cuts at Tlatilco proper continue or come to their predictable culmination. These include the decline of black ware and of fugitive white and white-on-red and the growth in importance of red, grayish-white, and red-on-buff. To these criteria, the presence of figurines of types A and B should probably be added.

Finally, if figurine types A and B are accepted as markers of the Atoto subphase, it must be granted that Piña Chán's latest level (level 2) in his pit No. 2 at Tlatilco contains Atoto subphase materials. A few clues, such as the frequency of textured body sherds in zone A and our radiocarbon date for our zone A at Tlatilco proper (Y-1626; 410 B.C. \pm 120), suggest that here too the latest Preclassic may represent the Atoto subphase, though unidentified as such on cultural grounds.

In summary, then, it may be said that our original threefold phasing of the refuse at Tlatilco into the Iglesia, Totolica, and Atoto subphases still stands. However, a review both of our own evidence and of that of Piña Chán now suggests that the initial occupation of Atoto dates back to Totolica times, whereas settlement on the Tlatilco plain continued into Atoto times.

The relationship of Tlatilco graves to Tlatilco refuse remains a vexing problem. Our recent work at Ayotla clearly shows that many Tlatilco graves

belong to a phase earlier than any represented so far by refuse at Tlatilco itself -- namely, the Ixtapaluca phase. Aside from the problem of recovering, at Tlatilco, the refuse dumped by the occupants of these early graves, there remains at that site the tertium quid long ago noted by Heizer (13) - namely, grave materials that cannot be matched with any other known assemblage. Thus, we still must ask whether some of this pottery reflects its funerary function, instead of being merely a sample of what the deceased used in their lifetimes, or whether perhaps we are dealing here with some third, unidentified ethnic or cultural entity.

The Relationship of Tlatilco and El Arbolillo

Tolstoy and Guénette (9) examined this problem at some length and concluded that the refuse deposits at Tlatilco and Atoto corresponded in time, respectively, to Vaillant's El Arbolillo II and to an unfilled gap thought to follow that phase in the Vaillant sequence. In searching for cross-ties between the two sites, Tolstoy and Guénette were compelled to depend on Vaillant's analysis of change at El Arbolillo. Now that we have on hand our own data from all of the sites concerned, we are in a position to revise these earlier conclusions.

Our new information, though still incompletely digested, strongly suggests that the Tlatilco-Atoto and El Arbolillo refuse sequences are, in fact, essentially parallel in time. More specifically, the Iglesia, Totolica, and Atoto subphases at Tlatilco emerge as rough equivalents of the El Arbolillo, La Pastora, and Cuauhtepic subphases at El Arbolillo. This opinion is based on a number of cross-ties, which include the predominance of cursive incision over other styles, the presence of B-type figurines, and a decrease, with time, in the importance of light brown and fugitive white pottery in the Atoto and Cuauhtepic subphases; parallel increases in the abundance of light brown ware, a concurrent decrease in black, and the presence of C figurines (among them, the C-5 variety) unaccompanied by type B figurines in the La Pastora and Totolica subphases; the appearance of cursive incision and of C-3 figurines at the beginning of the Totolica and La Pastora subphases; and an apparent lack or scarcity of yellow-white and white-on-red pottery in the earlier Iglesia and El Arbolillo subphases.

Whether or not these various points and segments in our refuse columns deserve to be matched precisely, the significant fact remains that the stylistic events we have mentioned follow one another in the same order at both sites. Since, in addition, the two sites have much the same chronologically "neutral" inventory and are located a scant 15 kilometers apart, the conclusion that they are roughly contemporary (within the limits of discrimination set by our data as a whole) would seem to be the best possible conclusion at this time.

If this is granted, we may raise some interesting questions about the

differences between the two localities. As yet, our analysis is not complete enough to show all of them, but a few are apparent. Thus, the greater abundance of dark monochrome at Tlatilco, already noted by Tolstoy and Guénette, is confirmed by our own analysis of El Arbolillo materials. It is particularly intriguing in view of the even greater abundance of dark ware at Atoto, contrary to what might be expected on purely chronological grounds. Whereas the trend, through time, of this ware is evidently useful in cross-tying the El Arbolillo and Tlatilco columns, the actual percentage of dark ware within any component thus would seem to reflect "activity" rather than time. More specifically, if we are able to follow up certain earlier leads (9), black ware may emerge as an index of prestige or wealth.

Other meanings must be sought for the abundance of D-1 and D-2 figurines, and for the seeming relative abundance of cursive incision in the Totolica subphase. Cursive incision may prove to be a cultural diagnostic, and its slow rise to dominance in Cuauhtepc times at El Arbolillo could reflect increasing communication between the two communities, over time, possibly in the form of intermarriage. The D figurines, on the other hand, pose a different problem. They remain exceedingly scarce at all times in the Basin of Mexico outside of Tlatilco (though they are well represented in Morelos). Rare examples occur in Zacatenco levels 9 and 7, and in level 3 of Vaillant's trench G at El Arbolillo (probably of La Pastora age). At Tlatilco itself, the definition of their time range is complicated by their presence in graves which could be earlier than the Totolica and Iglesia subphases. One may wonder, therefore, whether some D figurines did not find their way into refuse from earlier graves. Viewed in this light, the occurrence of D-2 and K specimens in our lowest levels at Ayotla and in some Tlatilco graves may be of considerably more significance than their continued presence in later Totolica refuse.

Excavations at Ayotla (Tlapacoya)

The three 4-meter-deep shafts that we sank at Ayotla in 1967 provided what is undoubtedly the most novel information to come out of our recent work in the Basin of Mexico. The location tested is the remnant of a larger site which has been bulldozed away, in large part to provide fill for the Mexico-Puebla highway, which passes to the east and south. Private collections contain pottery and figurines recovered from these fill-quarrying operations, and such specimens are usually identified as coming from "Tlapacoya" (14, 15). We substitute the designation Ayotla, not because it is more apt geographically, but to avoid confusion with the site of the Late Preclassic pyramid, already known in the literature as "Tlapacoya" (16).

The three Preclassic occupations at Ayotla are marked by assemblages significantly different from any hitherto reported from refuse deposits in the Basin. The two earlier assemblages, which we call Ayotla and Justo, though

separate, are closely related to each other and represent adjacent portions of a continuum. They have a host of features in common, many of them also found in the "Olmec" cultures of Chiapas, Oaxaca, Veracruz, Puebla, and Morelos. Such features include flat-bottomed cylindrical or flare-sided dishes (vasos) as the major open-vessel form; a gray-paste white ware decorated with exterior incision, excision, and resist designs; differentially fired ("white-rim-black") and red-on-buff plain rocker-stamping and zoned hatching; motifs such as the St. Andrew's cross; the use of a red pigment containing specular hematite; figurines of the D-C-9 (or Dx), D-2, K, and C-9 types; small pointed-stem projectile points; and legless metates with thick loaf-shaped manos. This material provides clear-cut evidence of "Olmec" presence in the Basin of Mexico in the form of occupational refuse, and suggests strongly that some, at least, of the individuals buried at Tlatilco belonged to a community culturally similar to Ayotla.

More startling yet is the evidence for the third subphase, which we have called Bomba. While it retains a substantial proportion of the attributes of the earlier occupations, it is also clearly in the process of losing some of them, and of acquiring characteristics that ally it to the earliest refuse at Tlatilco and El Arbolillo. In other words, it appears to represent an extension of the Ayotla-Justo continuum in its change toward an Iglesia- or an El Arbolillo-like assemblage. Indications to this effect include the appearance and growth in importance of brown-paste white ware decorated on the interior with "grater bowl" incisions and bearing the double-line-break motif incised on a flattened lip; the disappearance of rocker-stamping and earlier varieties of white ware; the decline of differentially fired ware; the decline of the flat-bottomed dish, and a corresponding increase in round-bottomed bowls, some of them of composite silhouette (though this shape is found earlier); and the disappearance of the earlier figurine styles and the appearance of new forms clearly within the C-1/C-2 tradition of the lower El Arbolillo levels.

On the face of it, we appear to have evidence that the earliest ceramic occupation in the Basin of Mexico is culturally "Olmec", and that it is followed by the appearance or emergence of Copilco-Zacatenco culture. This would seem to be the most economical interpretation of the evidence at this time. It should be recognized, however that the Covarrubias thesis, which would bring the Olmec into contact with a preexisting or equally old local tradition of Zacatenco type, still cannot be discounted completely. The main argument against it is inability to claim on either seriation or chronometric grounds, that suitably early sites in the Zacatenco tradition exist in the Basin of Mexico (see Fig. 1). Such reasoning will carry more weight when more early sites become known.

Chronology, Phasing, and Broader Relationships

Figure 1 sets forth the relationships in space and time of the materials

so far discussed.

Vertical sequencing within our El Arbolillo, Tlatilco, and Ayotla pits (Fig. 1, columns 4, 6, and 11) is based primarily on stratigraphy, though seriation was used to interdigitate lots from adjacent squares or shafts into single columns at each of these localities. At Atoto (column 9), the stratigraphy was more complex and less reliable, and seriation is responsible therefore to a greater degree for the definition of the four components shown. Numbered levels are shown for Piña's Atoto and Tlatilco excavations [columns 8 and 7; for a more detailed presentation, see (9)] and for Vaillant's trench D at Zacatenco (column 2). Vaillant's El Arbolillo and Ticoman sequences (columns 3 and 1) are given schematically in terms of his phase designations. Column 10 represents the Tlatilco graves, which evidently cover a fairly long time span, though most individual grave lots have not been published, and sequencing is not possible except on the basis of a few radiocarbon dates (hence the four entries in column 10).

Horizontal correlations between and within localities are based on matching a limited number of modes, types, and trends. As our analysis proceeds, many more cross-ties should become available, and our alignments will either be modified or achieve a higher level of proof.

Much the same thing can be said about our taxonomy, in which we attempt to express some of the relationships visible to us at this time within the material. The units we call subphases are so labeled because they are obviously finer than what most Mesoamerican archeologists have called phases - as might be expected, since they serve to contrast manifestations that are very close to each other in space, time, and content.

In the Tlatilco-El Arbolillo sequence, we propose three sequent phases; Iglesia-El Arbolillo; Totolica-La Pastora; and Atoto-Cuatepec. For those who would find the terms too cumbersome, we suggest the initials I-A, T-P, and A-C.

For the earlier subphases Ayotla and Justo, we are unable to predict, at this time, whether each will be linked laterally with contemporaneous but as yet unknown subphases in the Basin or even outside it, or whether the two should be joined vertically into a single phase. Some of the elements needed as a basis for this decision may be provided in the future by greater knowledge of the Tlatilco grave sequence.

What is evident, however, is that Ayotla, Justo, and whatever unit (or units) is formed by the "Olmec" graves at Tlatilco do constitute a higher-order group, easily contrasted with the rest of the material we are considering. The latter material corresponds to Vaillant's Copilco-Zacatenco culture or period, which we propose to designate more simply "Zacatenco." The former, more ancient group of cultures we shall label "Ixtapaluca." These two groupings parallel the broad phases of many Mesoamerican sequences, such as that of Flannery for Oaxaca (17) (San José, Guadalupe) and that of MacNeish for Tehuacán (18)

(Ajalpan, Santa Maria).

Traditions within the ceramic cultures of Mesoamerica have yet to be defined systematically. Here, we need only point out that both the Ixtapaluca and the Zacatenco cultures have relatives outside the Basin of Mexico. The Ixtapaluca subphases are part, of course, of the famed Olmec series of cultures which are now known to have existed in Morelos, southern Puebla, Veracruz, Oaxaca, and the Isthmian region and which may, in these areas, have come close enough to being contemporaneous to qualify as a genuine Mesoamerican horizon [Lowe's Early Olmec subhorizon (19, p. 68)]. The Zacatenco phases appear to have fairly close counterparts in Puebla and Morelos, with some features (such as the composite-silhouette bowl and the double-line-break motif) quite broadly distributed in Mesoamerica.

In the Basin of Mexico, there remain two major Preclassic assemblages whose exact taxonomic position still appears very uncertain. One of these is the Bomba subphase, which combines features of the earlier Olmec subphases with characteristics of later El Arbolillo and Tlatilco refuse. In its transitional nature, we can say unequivocally, lies the significance of the Bomba subphase. It is also this transitional nature that makes classification difficult until we can view our data more completely. We are inclined now to include Bomba within the Zacatenco group, perhaps as the sole representative of an initial phase within it, or else as a third subphase within the Iglesia-El Arbolillo phase. It is possible, however, that the quantitative study of vessel shapes and a point-by-point comparison with all of our other assemblages will place Bomba among the Ixtapaluca cultures.

The second unplaced phenomenon of the Early to Middle Preclassic in the Basin of Mexico is the tertium quid in the Tlatilco graves. Some Tlatilco burials fall clearly within the Ixtapaluca group. Others in all likelihood correspond to the later Zacatenco occupation of the site. Until complete grave lots are published, individual assignments of burials to one or the other category will be impossible. Yet, it is evident already that neither Ixtapaluca nor Zacatenco refuse have all the characteristics which are so obtrusively present in many Tlatilco graves and which Grove (20) takes as the basis of his "Tlatilco style." Over a dozen features of vessel shape, for example, are either entirely or largely confined to these graves. They include tubular necks and mid-body construction in bottles; stirrup spouts; whistling jars; and effigy forms (6, figs. 35y, 37q, 39a, 43m, 44q). Are these part of a burial assemblage, used by participants of one of the subphases already recognized, or do they indicate a cultural unit so far unrepresented by refuse? When do these features first appear in the Basin sequence, and what of their Andean relationships? Answers to these questions today are still guesses. Our own guess is that they do represent a culturally distinctive element of the Tlatilco community, that they appear first

at the time of the transition from Ixtapaluca to Zacatenco culture, and that their immediate source was Morelos, while their more remote affiliations are with the west coast of Mesoamerica and, ultimately, the Andean area [see Lowe (19, p. 71)].

Radiocarbon dates for Basin Preclassic are still scarce. Our 11 individual dates are discussed at length elsewhere (21). Together with four dates on Tlatilco burials, they constitute a corpus which renders suspect the two early dates obtained from solid carbon (C-196, and C-199) which form the basis of the "long" chronology of some investigators. As a consequence, both the Ixtapaluca and the Zacatenco phases fall well in line with their ceramic analogs in other parts of Mesoamerica. Ixtapaluca parallels Late Ajalpan in Tehuacán (18, p. 38), San José in the valley of Oaxaca (22), San Lorenzo in Veracruz (10), Cotorra in Chiapas, and Cuadros on the Pacific side of the Isthmus (23). Zacatenco, particularly with respect to its incised white ware, parallels Early Santa María in Tehuacán, Guadalupe in Oaxaca, perhaps part of La Venta in Veracruz, Dili in Chiapas, and Conchas 1 on the Isthmus.

While broadly consistent, the picture afforded by the radiocarbon assays is too imprecise to answer several questions. Thus, the amount of time between the latest Bomba and the earliest El Arbolillo levels could be stretched to 150 years or reduced to zero. How much time one allots this interval is crucial to visualizing the rate of "deculturation" of the Olmec communities in the Basin, the suddenness of the beginning of Zacatenco, and the extent of subregional differences between southern and northern portions of the Basin in the early centuries of the first millennium. It could also be important in estimating any possible gap in the sequence into which the appearance of the "Tlatilco style" might be fitted. Similarly, the degree of contemporaneity of the two members of the pair of subphases in the Tlatilco and El Arbolillo refuse sequences cannot be verified. Discrepancies could range as high as a century between boundaries of seemingly equivalent units. Convincing answers to some of the questions raised in the next section will be hard to provide until some of this chronological play is eliminated from our correlations.

Events, Activities, and the Olmec Problem

Our work has been aimed primarily at revising what had clearly become an inadequate time-space framework. This goal has determined our priorities both in the field and in this preliminary article. At this point we can offer some evidence and a few thoughts concerning the activities and events that involved the communities we have studied. As our study proceeds, these thoughts doubtless will be amplified and corrected.

The communities we have dealt with are, of course, those of farmers. All of them, as it happens, are so situated that both hillslope and lakeshore micro-environments are within close range. At El Arbolillo, Vaillant found casts of maize leaves in trench G, in what are probably La Pastora levels. At

Ayotla, the earliest deposit has yielded tiny maize cobs, which we have submitted to Paul C. Mangelsdorf for examination. In all the deposits there is abundant evidence of the hunting of large and small animals.

This latter evidence, in the form of bones, has been examined recently by Kent V. Flannery (24). The identifications he provides suggest that deer, rabbits (*Sylvilagus* and *Lepus*), gophers, domestic dogs, and people were among the land mammals most often eaten. In most phases, the lake was intensively exploited both for mud turtles (*Kinosternon*) and water birds (predominantly coot at Ayotla, and pintail, shoveler, coot, and others at El Arbolillo). Not a single fish bone was found in the refuse. Remarkable, also, is the almost total neglect of lake resources (turtle and birds) in the El Arbolillo subphase - - that is, by the first few generations to settle at the site. While there are several possible explanations, it is difficult not to speculate that we may be dealing here with recent settlers whose food habits had been formed elsewhere and who needed time to adopt techniques and schedules for procuring lakeside food and to acquire a taste for such food.

In trying to visualize economic and other relations within the Basin and between our sites and regions outside the Basin, we are led to consider the fact of Olmec presence from 1200 or 1150 B.C. to about 900 B.C. over a great part of Mesoamerica. This presence has been linked to trade by many (Coe, Flannery, Grove, and Jimenez Moreno), though the products exchanged between particular communities cannot always be specified with any confidence. In the case of our sites, we need to know the attraction that the Basin of Mexico held for traders from either the tropics or the highlands to the south.

As Coe has suggested (25), Ayotla (Tlapacoya) could have functioned as a port of entry into the Basin of Mexico from Morelos, while Tlatilco may have controlled the road leading westward out of the Basin to Toluca. The locations of these two sites of the Ixtapaluca phase are thus compatible with a possible role as gateways to several regions lying north and west of the Basin. Whether this was their role and, if it was, what product (or products) was handled is still not clear. Obsidian would seem a good possibility as a product, particularly since the prized green variety from Hidalgo, though exceedingly rare and not locally prevalent in the Preclassic of the Basin, is represented in one of our Ayotla subphase levels and at San Lorenzo in Veracruz (26). However, it is likely that many products traveled these routes, if any did, and that exchange occurred in both directions, even if one particular product may, in some cases, have been of primary importance, historically or functionally, in creating and maintaining particular routes.

We need, of course, to know many other things before we can elucidate the nature of Olmec presence. Do the Olmec of the Ixtapaluca phase represent a group of "Olmecoids" from another highland area, or "colonial" Olmec

from the lowlands (27)? And whom did they find and deal with in the Basin of Mexico? As long as we are completely in the dark on this latter point, a meaningful discussion of Olmec "trade" is very difficult. It is conceivable that the Basin of Mexico in 1200 B.C. was a virtual vacuum, in which the Olmec established self-sustaining settlements for the sole purpose of keeping open lines of supply to the lowlands, and that they had no need to deal in any but a defensive way with a scarce, possibly pre-ceramic, resident population. It is also possible, on the other hand, that the inhabitants of Ayotla and Tlatilco are the resident population, acculturated through ties to Olmec elsewhere, but also linked by ties of ethnic identity and mutual self-interest (kinship, trade, markets?) to a less acculturated local population of significant density and level of complexity. Gradations between these two extremes are also possible, as is a gradient in time leading from the first to the second. It is this last possibility that is, in fact, the most appealing, provided we bear in mind the fact that we have as yet no real basis for setting at the time of Olmec arrival the base line for this transformation of resident societies, which still are completely unknown archaeologically.

In gauging the impact of Olmec presence, we should ask not only what the Olmec came to get in this part of the highlands but also what, if anything, they brought in exchange. Here again the answer is not likely to be simple. As it is for "trade" in general, our basis of inference is mainly twofold: our theoretical understanding of the relationship of civilizations to the less complex societies around them, and data on regional specialization and trade in later times in Mesoamerica. Theoretically, we might predict that Olmec centers would export manufactures. Finds of Olmec portable art in such places as Michoacán might be cited as evidence of this kind of activity. On the basis of later conditions, we might, in addition, infer a flow of natural lowland products to the highlands. While perishable products (such as fruit) might not survive more than a few days of transport, items such as feathers or cacao can travel over great distances and did so in Aztec times.

In this connection, one wonders whether the Olmec may not have created for themselves a hold over much of Mesoamerica by introducing both cacao and the need for it among some of the "developing" societies of the highlands. The ultimate test of this idea is likely to be made in the dry caves of an area such as Guerrero, or possibly through the use of flotation techniques in areas less favorable for preservation of material. In the meantime, it is tempting to suggest that cacao was one more early contribution of the Olmec to Mesoamerican unity, particularly in view of its potential as a stimulus to economic and social differentiation (28) within lowland societies; its known range of cultivation, not unlike that of lowland Olmec remains; and its link with irrigation, which, in Coe's opinion, must have been known to the Olmec of Guerrero at least.

Olmec "presence" in Mesoamerica has been interpreted by some (29) as incorporation into an Olmec empire. It is difficult to see how this view

will be verified. At this time we can only say that resemblances between Veracruz, Oaxaca, and the Basin of Mexico do appear to be very close and to indicate that contact between these regions was continuous and intimate. Before we choose, in a particular instance, the imperial model of Caso (29), the economic- and social-dependence model of Flannery (17), or any other ethnographic representation of such similarities, a full-scale inventory of alternatives and of tests for them must be thought through.

On a more local scale, it is worth noting that our stratigraphic findings somewhat reduce the dimensions of the problem examined earlier by Tolstoy and Guénette (9) - that of the contrast and relations between Tlatilco and El Arbolillo. Whether or not an Olmec "elite" is responsible for the Ixtapaluca phase at Tlatilco, it would appear in any case that El Arbolillo was unoccupied at that time. That part of the occupation of Tlatilco which parallels the occupation of El Arbolillo, though marked by a larger settlement (about 50 hectares, as opposed to the 6 hectares occupied by El Arbolillo) can no longer be linked with all the opulent burial furniture which inspired the Olmec-dominance hypothesis of Covarrubias. In the Basin, at least, we are left, prior to 900 B.C., with all chiefs and no Indians. The "Tlatilco style" burials may yet revive the idea of Tlatilco dominance during the earlier part of the period of coexistence of the two sites. However, our burial chronology is still too imprecise to indicate how seriously this idea should be entertained. It is, in fact, the time interval between about 975 and 800 B.C. (that of the Bomba, Iglesia, and El Arbolillo subphases and possibly also of the Tlatilco-style graves) that is the least understood portion of our sequence.

That, and the nature of immediately pre-Olmec occupancy constitute two pressing problems for future Preclassic research in the Basin of Mexico.

Summary and Conclusions

To the three specific questions raised at the beginning of this article, we offer the following answers.

1) The Vaillant sequence at El Arbolillo is best viewed in terms of three sequential subphases--the El Arbolillo, La Pastora, and Cuauhtepac subphases--which appear to extend from about 850 to about 400 B.C. on the radio-carbon time scale.

2) At Tlatilco, the refuse (including the deposits on the Loma de Atoto) spans approximately the same interval, and can be fitted into three subphases roughly parallel to those of El Arbolillo; the Iglesia, Totolica, and Atoto subphases. However, the graves at Tlatilco include at least one component which is earlier, and which has no known equivalent in refuse - the Ixtapaluca or "Olmec" burials. For another component, consisting of the so-called "Tlatilco style" graves, the date and refuse equivalent are doubtful.

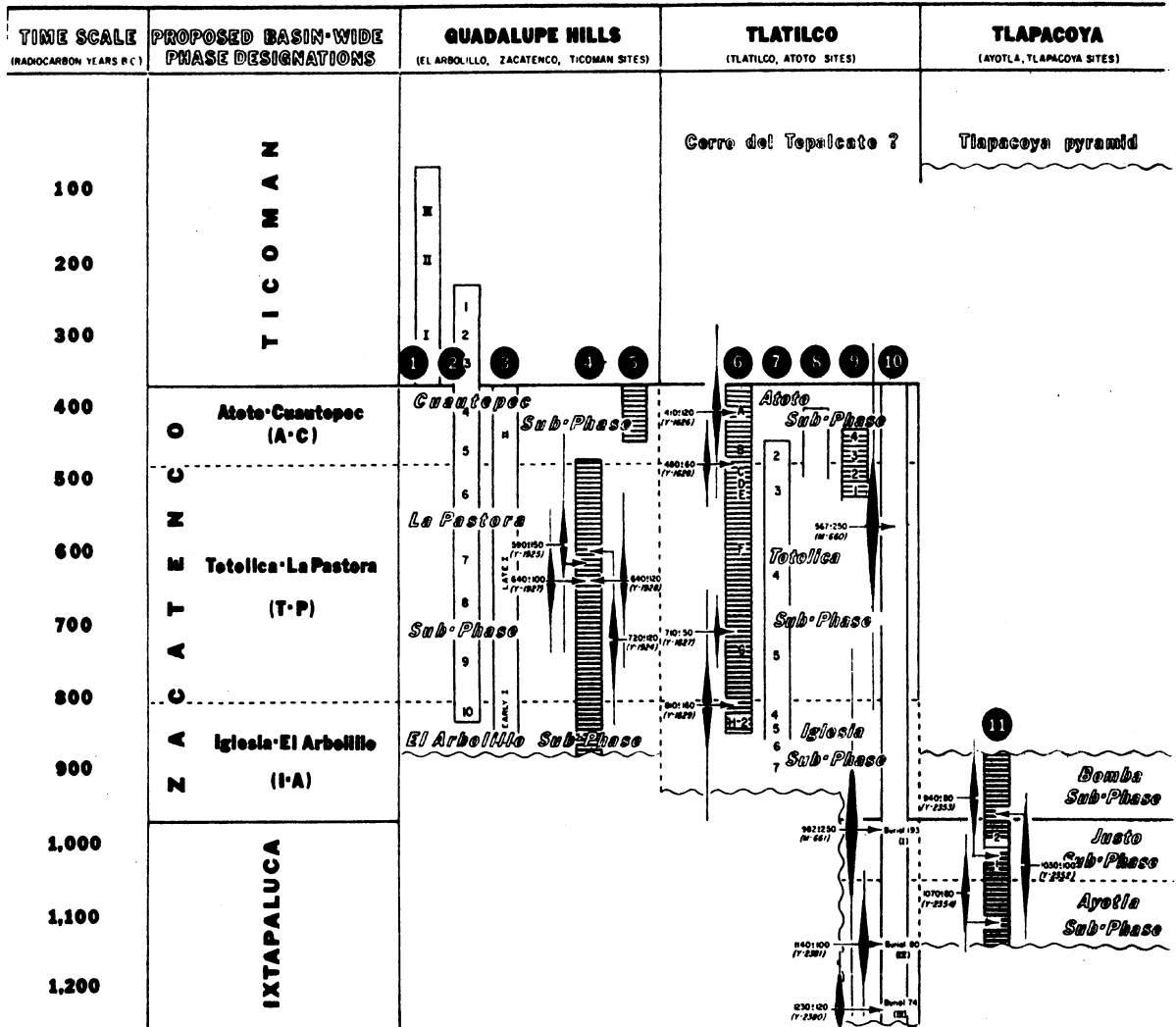


Fig. 1. Chronological alignment of Preclassic sites in the Basin of Mexico. For discussion of individual columns, see text. The shaded columns represent excavations by Tolstoy and Paradis.

3) The initial settlement of El Arbolillo (and doubtless of Zacatenco as well) in the Guadalupe hills appears to have been later, by at least 300 years, than the appearance of Olmec culture in the Basin. The appearance of that culture is manifest as the broad phase we call "Ixtapaluca," which we contrast with an equally broad phase or aspect that we call "Zacatenco." Ixtapaluca components in the Basin are now known only at Ayotla (Tlapacoya) and at Tlatilco. They represent the earliest reliably identified users of pottery in the Basin of Mexico (30).

These few points represent a mere beginning in the effort to put our data to use. Vast numbers of attributes and their combinations remain to be studied, from the standpoint both of chronology and of wider relationships. In addition, we need still to sift a broad range of evidence bearing on environment and its exploitation, on relationships within and between communities, and on other aspects of the cultures with which we are dealing. Ultimately, we hope for greater understanding of such central questions as the changing importance of the Central Highlands in Mesoamerican prehistory and the specific manner in which the Olmec phenomenon there affected the rise of civilization.

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31. Work at Tlatilco was carried out in 1963 by one of us (P.T.), with a grant from Canada Council, while he was at the Université de Montréal. The investigation of other sites in the Basin of Mexico from 1965 through 1968 was made possible in part by concurrent grants from Canada Council and the National Science Foundation (grant GS-720). We thank these institutions for their support, as well as the Groupe Anthropologique et Sociologique pour l'Etude des Communautés and the Institute of Andean Research, which received and administered the grants.

Recent research into the Early Preclassic of the Central Highlands

Paul Tolstoy

Since the above was written, some further progress can be reported in our understanding of the Early Preclassic in the Basin of Mexico and adjacent regions.

Excavations by Christine Niederberger in 1969 at the site of Tlapacoya (which I call Ayotla in our earlier paper), under the direction of José-Luís Lorenzo of the INAH, have provided abundant material which should amplify immeasurably our picture of early ceramic phases at that site (Niederberger, 1969). In neighboring Puebla, the work of Joerg Aufdermauer at Moyotzingo (1970, pp. 15-16) evidently confirms the early position of Olmec-related materials in the sequence of the Central Highlands. In Morelos to the south, the work of Grove (n.d.) similarly indicates an early Olmec phase (La Juana) and a later Middle Preclassic occupation (Cerro Chacaltepec I), the latter paralleling Zacatenco in the Basin of Mexico. Perhaps intervening between the two is the San Pablo phase (Grove 1970), known principally from grave offerings near-identical to those of some burials at Tlatilco and exemplifying what Grove has called the "Tlatilco" or "Rio Cuautla" style of ceramics.

To clarify the position of "Tlatilco style" materials in the revised Basin of Mexico sequence, I have undertaken a seriation of the grave lots from Tlatilco, using unpublished data generously supplied by Muriel Porter

Weaver, Arturo Romano P., and José-Luis Lorenzo, and examining specimens at the Museo Nacional in Mexico City. This study, still in progress, has led to the recognition of 4 groups of burials. Group 1, perhaps the earliest, contains graves with goods of predominantly Olmec (Ixtapaluca) affinities. Group 4, probably the latest, consists of graves containing stirrup-spouted vessels and other markers of the "Tlatilco" style, as well as what appear to be occasional anticipations of Zacatenco ceramics. Groups 2 and 3 seem intermediate between polar groups 1 and 4. There are hints that the Ayotla and Justo subphases at Tlapacoya correspond in time to groups 2 through 4 at Tlatilco. Irreducible differences seem to exist nevertheless between materials from the two sites, regardless of their apparent age. For this reason, some, at least, of the attributes peculiar to the graves at Tlatilco are likely to be specifically funerary. Within the category of funerary materials, however, Tlatilco-style goods do seem to become particularly varied and numerous and to displace the earlier Olmec-style materials near the end of the Ixtapaluca phase (ca. 1000 B.C.). This trend evident in the grave seriation has not become visible so far in the Ayotla-Justo refuse sequence at Tlapacoya. A temporal equation of Justo and Group 4 materials is likely nevertheless in view of the radiocarbon dates and ceramic cross ties, including a possible stirrup-spout fragment in Justo refuse.

The apogee of the Tlatilco style in Group 4 graves at Tlatilco itself thus could be roughly interpreted as a short-lived, perhaps intrusive, fashion in burial furniture, ca. 1000-900 B.C., a conclusion also reached by Grove (n.d.) for Morelos. Yet it is evident that the situation is not so simple. Features alien to the San Lorenzo Olmec but allied to the Tlatilco style occur from the very beginning of the grave sequence postulated at Tlatilco (e.g. certain bottle forms, gadrooning) and, for that matter, from the very beginning of the Ayotla subphase at Tlatilco as well (e.g. an abundance of red-on-brown decoration). Such distributions can be interpreted in several ways. One of these is to postulate a non-Olmec tradition of respectable age in Central Mexico, one with which the Olmec would have interacted in some degree from the time of their earliest presence. Recent finds in Colima (Kelly, n.d.) and Michoacán (Beatriz Braniff, personal communication), as well as the striking prevalence of Tlatilco-like features in the later ceramics of the northern and western fringes of Mesoamerica (Ortices, Chupicuaro), suggest that such a tradition did exist and that it may go back quite far in time (perhaps beyond the San Lorenzo horizon of Mesoamerica proper). Therefore, within the broader framework of the culture history of Mesoamerica and of its northern frontier, the Tlatilco style should perhaps be situated within West Mexico, rather than within Mesoamerica proper. A shifting boundary is thus implied between two major traditions (the Mesoamerican and the West Mexican) in the Central Highlands between 1200-950 B.C.

With reference to the main theme of the Wenner Gren symposium - that of the emergence of civilization in Mesoamerica - the role of Central Highlands in Preclassic times remains somewhat enigmatic. It is difficult to avoid a first impression that the Ixtapaluca phase of 1200-950 B.C. represents an initial, and - in the short run - unsuccessful implantation of a way of life that had arisen elsewhere, perhaps on the southern Gulf coastal plain. If trade was responsible for this first impingement of civilization on groups living in the Basin of Mexico, then it is perhaps the decline of trade ca. 950 B.C. (Cobean and others, n.d.) that underlies the decline in craft standards and overall prosperity that seemingly takes place in Zacatenco times. 950 B. C. or thereabouts would then be the starting point of a slow uphill climb back to, and beyond, the level of relative material achievement and societal differentiation represented formerly by Tlapacoya and Tlatilco. As Sanders has indicated (1965), this climb must have been sustained, at least by Ticoman times, by the development of intensive valley-floor cultivation, transcending the constraints of seasonal frosts and deficient water supply that limit rainfall agriculture in much of the Basin.

Several major points, however, remain obscure. How real was the decline of productivity and social complexity in Zacatenco times? And, whatever the economic trajectory of Preclassic society in the Basin of Mexico, how much of the Olmec cultural legacy survived to the beginnings of Teotihuacán? The dating of major architecture at Cuicuilco is, in this respect, crucially important. For, if Cuicuilco was an active ceremonial center by 600 B.C. or earlier (Heizer and Bennyhoff, n.d.), then three centuries or less separate Olmec presence from tangible evidence of Mesoamerican ceremonialism in the Basin of Mexico. In developmental terms, if the smallish Zacatenco-phase sites now known in the Basin are to be considered satellites of a major center such as Cuicuilco, our view of Zacatenco society becomes very different from one that supposes that these communities were self-sufficient, undifferentiated and generally representative of all settlements then in existence. These, and other alternatives - that even older ceremonial structures remain to be discovered in the Central Highlands, or that the intangibles of Olmec civilization survived through the "dark ages" of the Middle Preclassic, to be revived in Ticoman times in tangible form - remain to be weighed in assessing the contribution of the Central Highlands (and of the Olmec) to later developments.

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