Teotihuacan, Mexico, and Its Impact on Regional Demography

Dramatic population shifts in the Valley of Mexico marked the rise and fall of this prehistoric city.

Jeffrey R. Parsons

The archaeological site of Teotihuacan has long claimed a large share of the interest and energy of prehistorians working in the central highlands of Mexico (1). The site's vast surface area, impressive architectural remains, and elaborate artistic tradition all clearly indicate the dynamic and central role which this ancient urban metropolis played during the period of its greatest florescence between A.D. 100 and 700 (2). Teotihuacan is a key locus for defining and clarifying the problems and processes of prehispanic cultural development in Mesoamerica.

Despite the long-recognized importance of Teotihuacan, only within the last few years have archaeological investigations been oriented toward the systematic analysis of ecological setting, exploitative possibilities and capacities, demographic and settlement configurations, and characteristics of social stratification as manifested by architectural and artifactual differentiation. Without such basic data, anthropological interpretations of the prehistoric civilization focused on Teotihuacan have been severely hampered. The past half-century has seen a multitude of contradictory and diametrically opposed schools of thought regarding even the fundamental character and function of the Teotihuacan center itself. The principal organizational and integrative mechanisms of florescent Teotihuacan civilization have traditionally been phrased under the vague rubrics of "theocracy" and "theocratic state." The salient feature of these traditional interpretations is that they are largely based on subjective impressions and ethnocentric conceptualizations of the signi-

The author is assistant professor of anthropology at the University of Michigan, Ann Arbor. An abbreviated version of this paper was read at the 1968 annual meeting of the Society for American Archaeology, Santa Fe, New Mexico.
are 50 sites of varying size, occupational density, and architectural complexity. Sites are generally situated either at or near lakeshore in the southwest quadrant of the survey area, or well back on the lower hill flanks throughout the entire region (Fig. 3). This distributional dichotomy suggests a division between communities with some orientation toward exploitation of marine resources, and communities largely concerned with cultivating the well-drained lower hillslopes above the poorly drained zone of maximum frost danger on the main lakeshore plain. The number and size of communities clustered in the southwest corner around the base of Cerro Chimalhuacan, and the scarcity of such lakeside communities further north, undoubtedly reflect the unique ecological potential of the Chimalhuacan zone. Only here do we find a close juxtaposition of lake and hillside, with a consequent facilitation of combined agricultural and lacustrine exploitations.

Sites of this phase occupy a total surface area of roughly 778 hectares. Individual community size varies from a fraction of a hectare up to 118 hectares. Except for the smallest sites, these communities are relatively nucleated, with moderate to heavy concentrations of surface pottery. Architectural remains include a full range from small, low, vaguely defined house mounds to sizable ceremonial-civic structures up to 7 meters high (4).

This Terminal Formative pattern represents the culmination of about 600 years of preceding occupation characterized by steady increase in size and number of Formative sites in the Texcoco Region. In very general terms, this Formative pattern is comparable to what was happening in the adjacent Teotihuacan Valley to the north. Most significantly, in both the Texcoco Region and the Teotihuacan Valley, the penultimate phase of the Formative featured a fair number of moderately large communities of roughly similar size and architectural complexity. Furthermore, there was little in the settlement configuration of the Teotihuacan Valley at this time that set it apart from the Texcoco Region or that clearly foreshadowed the tremendous urban expansion at Teotihuacan in the first century A.D. Patlachique-phase Teotihuacan consisted of a discontinuous occupational cluster of somewhat over 400 hectares in surface area, with an estimated population of about 5000 people material which could definitely be assigned to this phase. In the Texcoco Region most Tezoyuca-Patlachique sites were wholly or largely abandoned. With one exception, Classic communities were hamlets and small villages, 100 to 500 meters in diameter, with light to moderate occupational debris, containing very little in the way of obvious architectural remains (Fig. 4).

Most of these communities were located on the lower hillslopes, but several were situated along what looks like the Classic-period lakeshore, and a few are found in the steeper foothills not far below the western base of the main Sierra Madre. Some occupied small sections of old Formative sites; others were located in previously unoccupied areas.

The single exception to this general pattern is a larger community near the southern edge of the Texcoco Region: the Portezuelo site, previously discussed by Hicks and Nicholson (6). Here Classic occupation is somewhat obscured by a heavy Early Toltec overlay, but enough can be seen to indicate Classic settlement stretching over an area of roughly 2.5 kilometers long by 200 to 500 meters wide. The Portezuelo site has sometimes been viewed as a kind of provincial center, dependent upon Teotihuacan (7). My impression, however, is that despite the total surface area over which Classic sherds are scattered, Classic occupation here was not substantial. Concentrations of Classic surface pottery are seldom greater than light, and never exceed the light-to-moderate range of our subjective scale of visual estimation. Unless the true character of the Portezuelo Classic site is obscured by the much heavier Early Toltec overlay (a distinct possibility), I would tend to view this site as little more than a larger variant of our standard Classic hamlets and villages. Almost certainly, Classic Portezuelo was not a population center of more than modest proportions.

In the Late Classic (Xolapán and Metepec phases) (Table 1) we find a general continuation of the basic Early Classic (Miccaotli, Tlalimilolpa) settlement pattern in the Texcoco Region. This general continuity breaks down only in the central section of our survey area, where a sizable number of Early Classic sites are abandoned (Fig. 5). There is a concomitant expansion in size of the Portezuelo site in Late Classic times.

Excluding the Portezuelo site, 36
Fig. 3 (left). Terminal Formative settlement pattern, Texcoco Region. Living sites, defined by concentrations of surface pottery and architectural ruins, are shown in solid black. Contour interval 10 meters; lowest contour 2240 meters. Fig. 4 (right). Early Classic settlement pattern, Texcoco Region.

Fig. 5 (left). Late Classic settlement pattern, Texcoco Region. Fig. 6 (above). Early Toltec settlement pattern, Texcoco Region.
Early Classic sites cover about 135 hectares in surface area. Adding the Portezuelo site increases this figure to 195 hectares. This represents about one-quarter of the total occupational area of the Terminal Formative Tezoyuca-Patlachique-phase sites. By Late Classic times the occupied surface area at 22 sites, excluding Portezuelo, totals only 66 hectares. Adding Portezuelo brings the Late Classic total to 146 hectares. Furthermore, Classic communities lack the occupational density characteristic of many Terminal Formative sites in the Texcoco Region.

This marked population decline and drastic restructuring of settlement configuration in the Texcoco Region are strikingly different from what was taking place in the adjacent Teotihuacan Valley (5, pp. 72–77). Here, Teotihuacan itself underwent a tremendous expansion in size and population—to 17 square kilometers and an estimated 30,000 people in Tzacualli times at the very end of the Terminal Formative; to 22.5 square kilometers and roughly 45,000 inhabitants during the Miccaotli phase between A.D. 100 to 200; with population increases to about 65,000 for the Tlamimilolpa phase at A.D. 200 to 400. The city’s estimated population in the Xolalpan phase of the Late Classic jumped to at least 85,000. In the Metepec phase at the end of the Late Classic apparently the population was reduced to roughly 70,000.

The configuration of nonurban population in the Teotihuacan Valley for this period is equally distinctive (I, p. 101). In Tzacualli times at the very end of the Formative, roughly 50 percent of the valley’s population was distributed in numerous village communities situated in the lower hill flanks around the edges of the main valley floor. Throughout the Classic period, the proportion of rural to urban population steadily decreased to a low point of roughly 10 percent at the end of the Classic (Metepec phase). There was a concomitant restructuring of community location and distribution—a majority of Classic rural communities were located along extensions of the city’s main north-south and east-west avenues, primarily in sloping areas above the highly productive valley floor (I, Fig. 8). At least one of these rural communities is believed to have specialized in cultivation of maguey and production of pulque (I, p. 113).

The salient aspects of settlement configuration in the Teotihuacan Valley during Classic and proto-Classic times are (i) the tremendous expansion in area and population size of the Teotihuacan center in Tzacualli times (a 600 percent increase in estimated population, and more than 400 percent expansion in surface area, relative to the immediately preceding Patlachique phase); and (ii) the progressive drying up of nonurban population and the patterned rearrangement of remaining rural communities throughout the Classic period.

**Early Toltec Settlement Patterns**

Two main patterns emerge when Early Toltec (Oxtoitpec-Xometla, or Coyotlatelco phase) occupation of the Texcoco Region is examined (Fig. 6): (i) a nearly complete abandonment of the entire central sector, a continuation and intensification of the trend toward such abandonment initiated here in Late Classic times, and (ii) sizable population buildups at the northern and southern edges of our survey area, at the lowermost flanks of the Patlachique Range and Cerro Portezuelo, respectively. Major sites in these two zones contain abundant ceremonial-civic structures in the form of large pyramidal mounds up to 10 meters high, together with relatively dense quantities of occupational debris. The occupational area of Early Toltec sites in the Texcoco Region amounts to about 1059 hectares, with a breakdown into some 24 sites.

In the Teotihuacan Valley at this time, the main urban center shrank significantly in size and population (I). There was a concomitant increase in the number of small urban and rural sites. These manifestations correlate with the fall of Teotihuacan as a pan-Mesoamerican power center, and its replacement by two or three major regional centers at the peripheries of the Valley of Mexico—Tula to the north, and Cholula and Xochicalco to the south and southwest.

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**Table 1. Chronological framework used in archaeological research in the Valley of Mexico.**

The absolute dates and phase names have been adapted from recently published works (I, p. 16; 5, p. 10). The placement of chronological periods, which are intended only to be rough guidelines for purposes of discussion and description, is based upon the generally accepted estimates of the duration of certain ceramic styles and types which have long been used as time markers in Valley of Mexico archeology. Cross correlations with the Mayan calendar, and several radiocarbon dates from different segments of the chronological sequence, have structured the main outlines of the temporal subdivisions.

<table>
<thead>
<tr>
<th>Estimated absolute chronology</th>
<th>Teotihuacan Valley phases</th>
<th>Valley of Mexico phases</th>
<th>Chronological periods for Texcoco survey</th>
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<tr>
<td>1500</td>
<td>Tezcalco</td>
<td>Aztec IV</td>
<td>Late Aztec</td>
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<tr>
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<td>Chimalpa</td>
<td>Aztec III</td>
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<td>Aztec II</td>
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<tr>
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<td>Huexcofic</td>
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<td>Xometla</td>
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<td>700</td>
<td>Xolalpan</td>
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<td>Cuicuilco</td>
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<td>Ticoman II</td>
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<td>800</td>
<td>Chiconautla</td>
<td>El Tlaloc</td>
<td>Middle Formative</td>
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Interpretations and Hypotheses

1) Both the Texcoco Region and the Teotihuacan Valley developed along roughly similar lines throughout most of the Formative era.

2) Early in the first century A.D. Teotihuacan made a critical breakthrough, a true organizational revolution whose principal archeological manifestation is the sudden appearance of a huge urban complex which continued to expand in size and population during the succeeding 500 years. The extent of population structuring and the low proportion of nonurban population in the Teotihuacan Valley during the Classic period clearly indicates the overwhelming local influence of the Teotihuacan urban center. A part of the basis for Teotihuacan's organizational breakthrough was almost certainly the productive capacity and coordinational requirements of full-scale canal irrigation in the rich alluvial plain below the city. Although direct evidence of Classic-period irrigation is lacking (2, pp. 157-162), the potential for such productive agriculture is the only obvious major element which sets Teotihuacan apart from several other large and elaborated Terminal Formative population centers in the eastern Valley of Mexico.

We can envision a highly competitive situation in Terminal Formative times throughout the Valley of Mexico, with numerous centers of roughly equivalent size and power struggling among themselves for access to strategic productive resources and trade routes. A preceding millennium of sedentary agricultural life and population expansion had laid the groundwork for these potentially hostile local confrontations. The stage was now set for regional integration on a broader scale if any single center could make the quantum jump in organizational capacity necessary for such a step. Teotihuacan obviously made such a quantum jump, and found it necessary or advantageous to concentrate the majority of a large regional population within a single great community.

3) A sizable segment of the population explosion at Teotihuacan during the first century A.D. apparently derived directly from the Texcoco Region where we have conclusive evidence of a drastic population decline correlating with the tremendous expansion at Teotihuacan itself. Teotihuacan clearly maintains its direct control of the Texcoco area throughout the long Classic period. We can suggest that the Classic communities in the Texcoco Region represent small concentrations of people engaged in a variety of exploitative activities tied directly to the economic networks focused on Teotihuacan. Shoreline sites were probably involved in salt making, collecting lake plants and insects, hunting water fowl, and perhaps fishing. Citlles on the lower hillslopes are likely to have been engaged in cultivating the wide expanse of gently sloping, deep-soiled ground rising above the lakeshore plain. Sites higher up in steeper portions of the foothills may have been oriented primarily toward collecting forest resources and hunting. The apparent lack of any architectural remains of even modest proportions at most Classic sites in the Texcoco Region might suggest seasonal or temporary residence at some locations by people whose permanent homes were in Portezuelo or even in Teotihuacan itself, some 15 to 30 kilometers to the north. These hypothetical considerations should be readily amenable to archeological testing.

The poorly understood nature of Classic Portezuelo is a major problem. If it represents only a few small undifferentiated hamlet and village communities, there is little difficulty in understanding its function. If it represents a considerably larger and more elaborate site, we can probably view it as a small provincial administrative center directly dependent upon Teotihuacan, charged with the regional coordination of local production and delivery to Teotihuacan of raw materials and staple goods. This site should be a focus for future archeological investigation and reporting.

4) The nature of the relation between Teotihuacan and other sections of the Valley of Mexico and the central Mexican highlands in Classic times remains extremely tenuous. Very little concrete information is available on location and character of Classic sites outside the Teotihuacan Valley and the Texcoco Region. This very lack of data is, in itself, somewhat suggestive, for it probably indicates a lack of any large sites dating to this horizon outside the Teotihuacan Valley. In a recent summary of what little we do know regarding this subject, Bernal (8, p. 98) feels that the 25 or so localities where Classic occupation has previously been reported in the Valley of Mexico outside the Teotihuacan Valley all represent small town and village communities.

This hazy picture probably indicates an absence of Classic urban centers of large or even moderate proportions in the Valley of Mexico, aside from Teotihuacan itself. Except for Cholula, and possibly Xochicalco, large Classic sites are also unknown for the rest of the Central Highlands (7). Recent surveys to the east and southeast of the Valley of Mexico, in northern Tlaxcala by Snow, and in southern Tlaxcala and adjacent Puebla by Tscholl (9), have revealed a settlement pattern virtually identical in general outline to that of the Texcoco Region—numerous Late and Terminal Formative sites, some of which are fairly large, with a marked decline in size and number of sites in the succeeding Classic. If future surveys indicate a political and economic dependence upon Teotihuacan in other parts of the Valley of Mexico and adjacent highlands as extreme as that of the Texcoco Region and Tlaxcala-Puebla, we may have to drastically revise our present notions of Classic social organization in central Mexico.

I believe the pattern that will eventually emerge will be one of a series of small to moderate-sized administrative centers throughout the Central Highlands, all closely tied socially, politically, and economically to Teotihuacan. Even at this point in our understanding, however, we have to deal with the organizational mechanisms whereby Early Classic (and even latest Formative) Teotihuacan pulled in and (or) attracted large masses of people from considerable distances and coordinated them, and probably much of the whole of central Mexico, into an effective urban system which was adaptive for over 500 years. This brings us to the very organizational basis of the Mesoamerican Classic, a problem too broad to be entered into here.

However, it now seems fairly apparent that the Aztec (Table 1) pattern of several major Valley of Mexico power centers competing or loosely allied with one another, each with a sizable subordinate rural population and tributary province, cannot serve as a model for understanding the Classic era. Sanders once (7) suggested such an analogy between Classic and post-Classic in his criticism of Mayer-Oakes' suggestion which, in turn, envisioned Classic Teo-
thihuacan as an "elite ceremonial center . . . with secular centers of comparable size at Azcapotzalco and Portesuelo" (7, p. 173). Apparently, we will have to think in terms of something quite different from what either Sanders or Mayer-Oakes had in mind.

5) The population expansion of Early Toltec times in the Texcoco Region clearly reflects the collapse of Teotihuacan as a principal power center and the drifting away of sizable segments of its concentrated urban population. What is not so clear is the lack of Early Toltec sites in the wide central sector of the Texcoco Region. As a final comment I would suggest that this occupational gap is the manifestation of a political frontier separating the spheres of influence of two major power centers which replaced Teotihuacan in the Central Highlands after A.D. 700—Tula and Cholula. The placement of this buffer zone was probably in great measure conditioned by the demographic near vacuum created in this area during Classic times. The abandonment, during the Late Classic, of several Early Classic villages in this central zone suggests that sociopolitical conditions leading to its complete abandonment in Early Toltec times were even being formulated or anticipated within the Classic Period itself. It looks as if Cholula may have confronted Teotihuacan on a more nearly equivalent and competitive basis even before the latter center's demise by A.D. 700. Future surveys in the southern Valley of Mexico and adjacent Puebla, together with detailed comparisons of artifact assemblages throughout the central Mexican highlands will provide some of the answers to these problems, and should permit us to reassess and redefine the character of regional sociopolitical integration and disintegration in central Mexico throughout the critical first millennium A.D.

Summary

The end of the Mesoamerican Formative era saw a large number of roughly equivalent local polities competing among themselves for access to strategic resources in the Valley of Mexico and its environs. One of these local centers—Teotihuacan—made a critical organizational breakthrough during the first century A.D., and expanded into a huge urban complex by A.D. 100.

Teotihuacan very quickly developed into a regional coordinating center with extraordinary impact on settlement configuration and population distribution throughout central Mexico. While we have a great deal to learn regarding the basic organizational and integrative mechanisms which structured Classic society, we are nonetheless in a good position to construct a model for regional sociopolitical and economic organization which is amenable to archaeological testing and evaluation.

Teotihuacan is seen as the single principal demographic focus and coordinating center whose direct influence pervades the entire Valley of Mexico, much of the Tlaxcala-Puebla region, and probably much of the remaining central highlands. A large proportion of the population of this general zone was progressively drawn into the Teotihuacan urban center from the end of Terminal Formative times into the Classic period. Remaining local populations were closely tied to the urban economy, probably specializing in various types of state-directed productive and exploitative activities for which they were best suited by virtue of their ecology or location. Small provincial centers, directly dependent upon Teotihuacan, were charged with coordinating production and distribution of materials within specific local areas.

The drastic restructuring of interregional political frameworks in central Mexico after about A.D. 700 is reflected in the settlement patterns of both the Teotihuacan Valley and the Texcoco Region. Large segments of the highly concentrated urban population of the old Classic center relocated themselves in sparsely populated areas, and a broad, largely unoccupied zone in the central part of the Texcoco Region is suggestive of a political buffer zone separating the spheres of influence of two new centers—Tula to the north, and Cholula to the south.

References and Notes

1. For a recent bibliography of archeological investigations at and around Teotihuacan see W. T. Sanders, The Cultural Ecology of the Teotihuacan Valley (Pennsylvania State University, University Park, 1965). This monograph also contains a detailed preliminary account of the findings of the Teotihuacan Valley Project carried out between 1960 and 1964.

2. For the purposes of this article, this period of time will be referred to as "Classic." Some discussions of Mesoamerican prehistory have used this term to refer specifically to the interval between A.D. 300 and 900.


5. R. Millon in Teotihuacan, Onceva Mesa Redonda, Sociedad Mexicana de Antropología (Editorial Libros de Mexico, Mexico, D.F., 1966), pp. 1–18, 57–78.


8. D. Snow, personal communication.

9. The 1967 Texcoco Region survey was sponsored by NSF grant No. GS-1617 to the University of Michigan, with J. R. Parsons as principal investigator. Richard Blanton, Susan Crowell, Rosemary Cross, Robert Horning, Mary Hrones, William Jowdy, Joan Moran, Theron Price, and Nancy Ryan participated as student assistants. Our work was facilitated by the cooperation of the Instituto Nacional de Antropología e Historia in Mexico City, Dr. Rene Millon and his associates of the Teotihuacan Mapping Project allowed us to examine their ceramic-type collections, and we thank Mrs. Evelyn Rattray for her assistance with surface collections. Sr. Benito Hernandez, of Texcoco, assisted us in numerous ways.