

THE CAMBRIDGE HISTORY
OF THE NATIVE PEOPLES OF
THE AMERICAS

VOLUME II:

Mesoamerica

THE CAMBRIDGE HISTORY
OF THE NATIVE PEOPLES OF
THE AMERICAS

VOLUME I: NORTH AMERICA

Edited by Bruce G. Trigger and Wilcomb E. Washburn

VOLUME II: MESOAMERICA

Edited by Richard E. W. Adams and Murdo J. MacLeod

VOLUME III: SOUTH AMERICA

Edited by Frank Salomon and Stuart B. Schwartz

**THE CAMBRIDGE HISTORY
OF THE NATIVE PEOPLES OF
THE AMERICAS**

**VOLUME II
MESOAMERICA
PART 1**

Edited by

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INTRODUCTION TO A SURVEY OF THE NATIVE PREHISTORIC CULTURES OF MESOAMERICA

RICHARD E. W. ADAMS

This section both introduces the chapters of my colleagues that follow and is an attempt to outline the intellectual context within which the work and thought have been accomplished. A short historical background is also provided as well as a description of the basic theoretical underpinnings of American archaeology.

THE FUNDAMENTAL INTELLECTUAL STRUCTURES OF MESOAMERICAN FIELD ARCHAEOLOGY

The basic theoretical structure of American archaeology is derived from its association with anthropology as well as parts derived from Western scholarly and traditions in general. Briefly, anthropology (and therefore archaeology) argues that most human behavior is patterned and that the patterns are culturally determined. Furthermore, any given culture is made up of such patterned behavior, functionally integrated, and driven by a core of beliefs about the nature of the universe and humanity's place in it. These disciplinary premises have been distilled from the study of hundreds of cultures, mainly non-Western, over the past 150 years, although Herodotus (c. 425 B.C.) is often claimed as an early anthropologist. All cultural patterns, such as differentiated social status, have material correlates, as witness differential housing. For archaeologists, the important part of this premise is that the material remains of any culture therefore have some relation to the formerly operative nonmaterial behaviors. For example, ancestor veneration among the Maya drove them

I am deeply indebted to Harry Shafer, Thomas Hester, Jeffrey Quilter, and Laura J. Levi for commentary on this introductory chapter. While I did not take all of their advice, I carefully considered it, and any errors, therefore, are doubly my own.

to create shrines and temples, large and small, which are now found in ruins across the landscape. Analytically, the anthropologist and archaeologist both may artificially break cultures down into component parts called *cultural institutions*. The use of cultural institutions is not the only means of analysis, but it is a particularly useful concept for archaeology because of the direct logical linkage between institutions and their material remains. Thus ancient irrigation canals reflect not just a farming technique but a segment of a former economic system. Examples of both cultural institutions and their material correlates are provided in Tables 1.1 and 1.2. Research methods that generate the data are listed in Table 1.3. A final point is that archaeology depends greatly on analogy to ethnographic or historical cultures in order to interpret material remains. A mild dispute exists between those who argue that only the sixteenth-century Mesoamerican cultures are appropriate analogies and those who cast their nets wider and include parallels from other historical or prehistoric civilizations.

Scholarly tradition in Western civilization has evolved so that it is commonly practiced in three distinct stages. The first is the gathering of information (fieldwork), then the elicitation of patterns from it (analysis), and finally the attempted explanation of those patterns (theory). It should also be observed, as it was by Sir John Eccles, "that all of science is based on a metaphysical assumption: There is a lawful order to the universe" (Michael Warder, *WSJ* 19Apr96). This is the most fundamental of the premises of Western science and modern scholarship. Warder also observes that "metaphysical beliefs cannot, by definition, be disproven by the scientific method" (op. cit). Finally, explanation (theory) is derived from patterns in the data through the use of analogy or of greater perception. Analogical theory is epitomized by systems theory, and greater perception by cultural ecology, for example. Systems theory largely depends on the demonstrable or arguable linkages among the active parts of a cultural institution. Greater perception is dependent to some degree on personal experience. It is bemusing to note the amazement of scholars whose lives have largely been spent in urban areas when they write of agricultural systems and their linkages to the natural environment. Cultural ecology makes these linkages explicit in both static and dynamic forms.

Cultural institutions exist(ed) within ecological and biological contexts, the major categories of which seem to be:

Table I.I. *Major cultural institutions universal to human cultures
(not exhaustive)*

Cultural institutions	Subcategories
1. Kinship	residential rules terminological categories descent and inheritance rules ranking principles, etc.
2. Non-kin groups (associations, sodalities, etc.)	warrior societies religious sodalities occupational guilds (flint-knappers, scribe-artists?) tribal secret fraternities, etc.
3. Social structure	principles of ranking within society; ascribed and achieved status rank, class, or caste societies economic factors in social ranking occupational specializations, etc.
4. Economics	food production craft production internal exchange and distribution external trade tribute systems and taxation, etc.
5. Politics	allocation of power relative to social structure and kinship units centralization versus diffusion of power; differences among re- gional states bureaucracy geographical units; hierarchical organization regional state and city-state models tribute systems, conquest states, etc.
6. Ideology	formal religion folk religion magic and witchcraft world view political ideology regional and temporal variation, etc.
7. Warfare	military organization weapons systems fortifications strategy and tactics, etc.
8. Settlement patterns	urban networks settlement hierarchies rural fabric major landscape modification (wetland drainage, terracing, level- ing, paving, wall networks, roadnets, dams, reservoirs, etc.)
9. Technology	agricultural crafts (weaving, pottery, woodworking, feather working, etc.) construction (quarrying, masonry, mortar, stucco, plaster prepa- ration [factor in deforestation]), engineering, architecture (heavy transport), etc.
10. Intellectual developments, communicative systems, and administrative and educa- tional tools	writing mathematics astronomy art and iconography, etc.

Table 1.2. *Material correlates to cultural institutions (not exhaustive)*

Material remains	Analytical results	Cultural institutions
Trash deposits	discard patterns; artifacts	social structure, trade patterns, etc.
Artifacts (pottery, stone tools, jewelry, etc.)	taxonomic categories	technological development, trade patterns, craft specializations, etc.
Architecture	functional categories; e.g., formal and informal buildings, ritual, residential, administrative, military, and burial structures	social, religious, political, demographic, kinship, and other institutions
General construction	functional categories: agricultural, site preparation, hydraulic, etc.	technology, economic, political, and demographic institutions
Burials	classification ranges (interments to tombs); content analysis	social, religious, economic, kinship, and other institutions

1. Climate and climatic cycles
2. Human demography, and its fluctuations
3. Health and disease parameters
4. Topographic and ecological characteristics: soils, drainage, minerals, and so forth
5. Major landscape modification
6. Plant and animal inventories.

The interactions of these elements of the natural world with those of the cultural world constitute what has been called *cultural ecology*. Processualism, particularly espoused by the “New Archaeology,” attempts to explain cultural change and creation not only in terms of this interaction but also by the interactions of cultural institutions among and within themselves.

Beyond these postulated factors are what I term *secondary theoretical structures*, such as those purporting to explain the origins of state-level political organizations or particular events of culture history. However, these derive either from the basic theoretical foundation or from the rapidly changing mass of data.

To be sure, the fundamental theoretical structure of (especially Americanist) archaeology has been under attack by scholars who have estab-

Table 1.3. *Correlation of cultural institutions with field and other research methods of archaeology (not exhaustive)*

Cultural institutions	Field and laboratory research methods
1. Kinship	settlement pattern studies burials and tombs ceramic motif studies, etc.
2. Non-kin groups	architectural studies script (epigraphy) artifact studies, etc.
3. Social structure	settlement pattern studies functional analyses of buildings burials and tombs artifact studies studies of complex art, etc.
4. Economics	agronomy studies (soil analyses, hydrology, palynology) studies of major landscape modifications remote sensing of landscape artifact analyses special studies such as trace element analyses of obsidian, etc.
5. Politics	rank-size, rank-order analyses of urban (or community) networks epigraphy iconography architectural stylistic study internal analysis of community patterns, etc.
6. Ideology	epigraphy iconography burials study of ritual centers, etc.
7. Warfare	mapping remote sensing of landscape study of fortifications artifact analyses, etc.
8. Settlement patterns	mapping of sites and regions remote sensing mapping artifact studies rank-size, rank-order studies functional analyses of urban, town, village, hamlet, farmstead and other unit examples selective excavation of units from settlement hierarchy, etc.
9. Technology	artifact studies experimentation and replication study of manufacture zones, etc.
10. Intellectual structures, etc.	epigraphy iconography burials artifact studies archaeoastronomy, etc.

lished something that they call *postprocessualism* (e.g., Hodder 1985). The adherents of this point of view argue, in essence, that much of the past is unknowable in its own terms and that many of our interpretations of prehistory are based only on our current perceptions of the world. Context and particularism are the only convincing interpretative bases for archaeological inference, and material culture reconstruction is the soundest of these inferential operations. This semiexistential movement has largely been espoused by armchair archaeologists and those from outside the anthropological tradition. In the end, it is no more than another variety of philosophical nihilism and as such has been rejected by most if not all field archaeologists working in Mesoamerica and most investigators working in the New World.

A DEFINITION OF MESOAMERICA

Archaeology has three basic elements, as G. R. Willey has often pointed out. These are time, space, and data (content). Chronological organization of the information on ancient prehistoric cultures in the geographic space defined as Mesoamerica (Map 1.1) is a good example of the use of these components.

Mesoamerica has been defined as a “co-tradition” or culturally interactive area. The culture-area concept of Mesoamerica was first developed by Walter Lehmann in the 1920s and then reformulated by Krickeberg (1943). Both scholars largely defined the area as one in which complex cultures had existed in sixteenth-century sources. Characteristics were mainly derived from early historical sources. This resulted in something of a hodgepodge of both important and trivial elements, with some of both kinds being highly regional. For example, human sacrifice, a broadly distributed trait linked to a basic religious tenet, and the *volador* dance ceremony (restricted in distribution) were both on the original list. Willey, Ekholm, and Millon (all archaeologists) reworked the concept in 1964 and made it operational for prehistoric research. I quote from my adjusted summary of their revision, as published elsewhere:

Basic agricultural technologies tended to be extensive in the tropical lowlands and intensive in the highlands. This distinction blurred in periods of high populations, when intensive agriculture was practiced in both sorts of zones. Regional crop lists always included varieties of corn (maize), squashes, and beans, but varied wildly in regional plants such as cacao, avocados, tropical fruits, and many sorts of vegetables. Settlement patterns tended to conform to these differ-

ing subsistence systems – dispersed in the lowlands and nucleated in the highlands. [This distinction is a matter of degree, however.]

Stone Age technologies were common to all Mesoamerican cultures. New World cultures lacked the wheel, possessed few useful domesticated animals, and did not use the true arch. Metal was not ordinarily used for utilitarian purposes. Movement of goods and people was largely by canoe or by foot.

Organization of society and economy centered on the agricultural village. Aristocratic leadership controlled all affairs of import through civil servants. Merchants, warriors, and artisans formed special social classes ranking above the main class of farmer-laborers. Temple centers in both highlands and lowlands functioned as headquarters for the elite and bureaucratic classes, both initially and later when the centers had been transformed into varieties of urban communities. Market systems were integrated with the various population centers and furnished the sinews binding together the symbiotic regions. The dispersed and nucleated towns, cities, and metropolises all were built of stone, plaster, and mortar. A variety of architectonic forms were expressed in these materials, and they were decorated with art styles which were intimately connected with the elite classes. Other manifestations of hieratic art appeared in elaborate pottery, murals, sculpture, and jewelry. After the establishment of state-level organizations, the city-state was the basic and stable unit, combinations of which made up the larger political structures of kingdom and empire.

Intellectually, there were certain cross-cutting philosophical and religious principles. One set was bound up with the fatalistic cosmologies of the Mesoamericans. [Humanity] lived in a hostile world with capricious gods. Mathematics, hieroglyphic writing systems, astronomy, and calendrical systems were all tied to these philosophical tenets. Two ritual games were widely played, the [rubber] ball game and [*patolli*, a board game. The ball game still survives] in isolated regions.

Regional diversities existed within these and other characteristics which bound Mesoamerica together. Willey has characterized Mesoamerica as a vast diffusion sphere. That is to say, whatever happened of importance in one area sooner or later had some effect on most of the other areas. (Adams 1991: 19–20)

The geographical extent of Mesoamerica includes roughly two-thirds of present-day Mexico, all of Guatemala and Belize, a thin western segment of Honduras, and probably four-fifths of El Salvador. In all, it covers about 1,015,300 square kilometers, or 392,000 square miles (see Map 1.1).

Stage-development presentation has theoretical implications of its own. These are that in each stage, often a very long period of time, there were characteristic features common to all societies. These commonalities crossed all cultural institutions, although economic development as an infrastructure for further cultural elaboration has often been given priority. Much of the terminology has lost most of its evolutionary implica-

‘The map which appears here in the printed edition has been removed for ease of use and now appears as an additional resource on the chapter overview page’.

tions, however, and now is best regarded as representing large blocks of time. Thus Willey, Ekholm, and Millon, (1964) used the Lithic, Preclassic, Classic, and Postclassic stages to organize their synthesis. However, I have made several modifications to that evolutionary terminology to conform with that used by various authors in the chapters that follow. First, the Lithic stage has been renamed the Paleoindian. Second, the now commonly used term *Archaic* has been adopted. Third, the term *Formative* has come to be used interchangeably with Preclassic.

Paleoindian (35,000?/10,000–7000 B.C.)

The earliest certain settlers in Mesoamerica now seem to date about 10,000 B.C., but possibly people were there as early as 40,000 years ago. Upper Paleolithic hunting and gathering bands appear to have sporadically crossed through the land bridge (Beringia) between northeastern Siberia and present-day Alaska over several hundred years. At the moment, it appears that the initial entry was not later than 15,000 B.C. Material from the Southern Cone of South America dates the earliest presence of humans there at about 12,000 B.C. or slightly earlier (Meltzer et al. 1997). New finds in the Amazon date to about 9200 B.C. (Roosevelt et al. 1996). Ice age climates, Pleistocene animals and plants, and other features such as lower ocean levels formed the context within which these earliest colonists lived. Radically distinct varieties of stone tool kits were developed and adapted to New World conditions.

Archaic (8/7000–1500 B.C.)

Apparently under the pressures of climatic change, drastic loss of animal populations, and other factors, transitions from hunting and gathering took place during this stage. Domestication of many plants and a few animals began at least by 7000 B.C. and perhaps by 8000 B.C. Nonagricultural villages were established about 5000 B.C., while others used a mixture of old extractive techniques combined with new food-producing methods. Agricultural villages were established all over Mesoamerica by 1500 B.C. A general increase in the number of people diminished opportunities to expand through space and eventually led to regional differences.

Preclassic (1500 B.C.–A.D. 150)

Cultural elaboration leading to complex cultures took place over the next 1,650 years. The Gulf Coast culture called the *Olmec* seems to have been the earliest to reach a state of development that we can define as civilization about 1350 B.C. and appears astonishingly early in the period, although there are now possible predecessors on the Pacific Coast. A number of other precocious Formative cultures in the central highlands were in existence and interacted with the Olmec. Beginning about 600 B.C., various large regional centers with major buildings appeared in many zones. Many of these became the focal points for complex cultures between 600 B.C. and A.D. 150. By the latter date, most of the features defining Mesoamerica and that distinguish it from North and Central American cultural areas were in place.

Classic (A.D. 150/300–650/900)

The development of elaborate cultural institutions appears to have been directly spurred by social and ideological factors. Indirectly, population growth was also a dynamic element. The starting and ending dates are strictly dependent on the area with which one deals. Classic cultures were in every sense the second florescence of Mesoamerican civilization and built upon the previous successes of Preclassic civilizations. The first large-scale, economic and political systems were developed, which bound together several regions.

Early Postclassic (A.D. 650/900–1250)

Collapse and transformation of Classic civilizations led to new regional expressions in this stage. Intense interaction between far-flung zones led to the creation of hybrid cultures, which appeared as transitional forms. Climatic changes played a role in at least accelerating the new adaptations. Tribute-seeking, predatory military states developed, which laid down patterns fully developed in the next stage.

Late Postclassic (A.D. 1250–1519)

Essentially, this was the climax stage for reformulated, regional, and larger-than-regional cultures put together in the preceding stage.

Historical and native documents as well as eyewitness accounts provide unexcelled detail for these civilizations. A number of the sixteenth-century expressions of Mesoamerican civilizations are relatively well known: the Aztec, Tarascan, Maya, Zapotec, and Mixtec.

A SHORT HISTORY OF MESOAMERICAN FIELD
ARCHAEOLOGY: A SELECTIVE HISTORICAL REVIEW OF
RESEARCH

I have concentrated on the years 1950 to the late 1990s for a historical survey of research, a period within which all of the scholars with chapters in this book accomplished the research that gave them the credentials to write in their chosen fields. However, I also refer to a number of earlier developments and precursor concepts. The dating of the survey is not entirely arbitrary; it is clear that the last forty-six years have seen radical changes in both research data and our understanding of it. Surveys of literature and trends in Maya archaeology made in 1969 (Adams) and 1982 (Adams and Hammond) clearly show the explosive growth not only of knowledge but also of practitioners. The obvious points are that these developments are related and are also characteristic of the general field of Mesoamerican archaeology (as seen in Blanton et al. 1981; Adams 1991; Weaver 1991). The less obvious point is that an increasing diversity of research design, field methods, interpretation, and even of publications took shape. Some references will be made to precursors in certain fields.

In the longer history of Mesoamerican archaeology three trends can be clearly seen. The first is the growing realization of the great depth of time in the area. The second is the increasing perception of the complexity of the area and of that achieved by individual cultures. These two changes in intellectual awareness are mainly substantively driven – that is, nearly a direct result of increased fieldwork and the publication of it. The third trend is the increase in the amount of and persuasiveness of explanatory (secondary theoretical) material from about 1960 onward. This is partly a response to the challenges of the changes in perception of the data but is also driven by the history of the field of archaeology as practiced by Northamericans. In Latin America, mainly regionally trained archaeologists have taken the Marxist models as premises to be assumed and have found themselves bewildered and even upset by the newer and more sophisticated constructions of their Northamerican colleagues.

However, scholarly interchange has brought about more sympathetic understanding on both sides.

The history of field archaeology in Mesoamerica is a simultaneously narrower and wider field than the usual survey of Mesoamerican studies. As Bernal notes (1980:148), the first large-scale Mesoamerican fieldwork was begun in the 1880s by Harvard's Peabody Museum at the site of Copan, Honduras. Before that time, antiquarianism had characterized the study of artifacts and the sites. The lack of discipline in excavation, especially the lack of the stratigraphic method, had hampered even the best of the fieldworkers in comprehending what they observed and in developing the sequence of events and construction at any given site. Typological studies often had been done on museum collections, including a study of the small clay figurines so common in the Basin of Mexico. However, the figurines were ordered in time by stylistic means and lacked the necessary independent confirmation. Such indispensable discipline was introduced about 1911 with the stratigraphic technique, which has since been supplemented by a great number of technical and field methods. In my view, it is no coincidence that the person probably most responsible for introducing stratigraphic excavation to New World archaeology was Franz Boas, the founder of American anthropology (Adams 1960:99). As Browman and Givens (1996:91) conclude, however, the method was probably independently introduced three times into American archaeology during a relatively short period. The intellectual development of that crucial time meant that archaeology was to be part of anthropology, and that the interactivity characteristic of the total field was also to be part of the subfield. It is also apparent that the development of stratigraphy, and the implications of the information to be gained from it, meant that field methods were not mere skills and proficiencies that were an end in themselves. The real implication was that fieldwork, done in a disciplined and imaginative manner, could produce insights and conclusions available from no other source. In short, explanation and understanding flowed from fieldwork, or at least from the information produced by fieldwork.

It is my argument that new methods of gathering information and of analyzing it ultimately are the intellectual drivers in the field of Mesoamerican studies and not secondary theories. Two examples will suffice. The reformulated and integrated theory of the Classic Maya collapse (Culbert 1973) was stimulated by the accumulation of significant amounts

of data on the topic from projects in the period 1955–70. The explanation was not the result of a breakthrough in understanding but was the consequence of new information from several sites that appeared to coincide and to suggest it might be possible to integrate the data and explanations. The breakthrough in understanding came at a conference where all the data was examined and twelve scholars contributed to the analysis and final form of explanation. The new explanation was, as always, insufficiently supported by data in certain areas; it therefore became a guide for further research during the next twenty-five years and probably will continue to influence field research for the foreseeable future.

A second example is that of the research effort in the Valley of Oaxaca and its surrounds. Considerable data had been accumulated from 1920 to 1965, principally from the work of Alfonso Caso and his colleagues. In this case, a later, small group of scholars led by Kent Flannery generated a series of research problems based on Caso's work and also on a larger theoretical scheme, the Palerm Wolf theory, which, in turn, was based on huge amounts of work already done in the Basin of Mexico (Flannery et al. 1967). Again, I argue that the available information generated by fieldwork and analysis stimulated tentative explanations and further fieldwork as well as still further explanations. Both of these examples are examined further in this introduction, but my point should be clear. Data generation leads to more sophisticated analysis and thence to more pattern perception that, finally, demands explanation and more fieldwork. Theory mistakenly has been set at the center of this scholarly operational process and, because of its glamor and the often perceived lack of need for data to sustain it, is frequently used as shortcut to facile, persuasive, and mistaken explanation. Greater intellectual weight and historical credit needs to be given analysis and field methods.

The recent and ever faster changing fashions in "theory" often have little or no effect on the nature of and the quality of the information produced. This point can be demonstrated by comparing the quality of the fieldwork, publication, and data from the work of scholars at the Carnegie Institution of Washington with that from many other projects stimulated by the hypothesis testing of the "New Archaeology." The triviality of conclusions, poverty of documentation, and smallness of sample of the latter are in often great contrast to the work accomplished by the Carnegie group. To use an analogy, a great deal of theory is too often like the surface of the ocean, tossed and agitated by every wind

that blows, while the flow of data from fieldwork is similar to subsurface ocean currents controlled by far more profound forces. In other words, I am arguing that the view of the intellectual history of Mesoamerican archaeology is at least as well understood from its fieldwork as from secondary theoretical developments. However, both aspects are clearly interactive and will be dealt with in that manner here. We now turn to a review of the major tools of archaeological fieldwork and analysis organized by topic.

The Artifacts; Stylistic and Taxonomic Classification. Up to the late nineteenth century, ad hoc stylistic classification of artifacts was occasionally done based both on the museum traditions of the West and on the spreading influence of Thomsen's work in Denmark in working out the old-stone, new-stone, and other technological bases for human cultural development. In Mexico these efforts eventuated in a series of clay figurine types for the Basin of Mexico that were truly taxonomic. Attempts to place these into some sort of temporal sequence by Selser, Boas, Gamio, and others were more or less successful but were left with the strong residual uncertainty that such seriation studies always include. Stratigraphy was introduced partly to solve this problem of ambiguity and eventually led to firm sequences of artifacts, particularly of pottery.

Increasing rigor in description of artifacts, especially pottery, were characteristic of the period from about 1914 to the late 1950s. Once more, these were stylistic classes that usually could be traced through time by stratigraphic means, although absolute time was most often missing. The Maya area, with the precision calendar of the Classic period, had an advantage in that pottery and other artifacts could be correlated with it and then cross-correlated with other parts of Mesoamerica based on the trade of Maya ceramics to other areas. From about 1920 to 1950, these correlations were a major way of injecting absolute time into the various artifact sequences of Mesoamerica. The achievement of absolute time values for artifacts was finally accomplished with the development of radiocarbon dating from about 1950. Note that up to this time most of the artifacts dealt with were ceramics: figurines, pots, incense burners, and so forth. Special studies were most successful because they focused on self-evident functional categories. One of the best of these is that of Caso and Bernal (1952) on the mortuary incense burners of Monte Albán.

The major analytical advance in ceramic analysis was introduced by Willey's Barton Ramie (Belize) project in which taxonomic categories

were organized into empirically and logically determined hierarchical categories. J. C. Gifford was principally responsible for the theoretically underpinnings of the system and for its practical development (Gifford 1960; Smith, Willey, and Gifford 1960). The Type: variety/mode system of analysis became a brilliantly flexible means of studying pottery that has produced a set of comparable, consistently defined categories. The comparative utility of the system allowed rapid and wide-ranging establishment of site chronologies (sequences), as well as regional and areal chronologies. The system allows the investigator to turn to and document trade, class structure as reflected by ceramic-residential correlations, and many other vital pieces of information. Thus from an intuitive stylistic ordering of artifacts without certain time, culture, or even provenance information, we have come to a system which provides all of this information and more. The system has taken hold most strongly in eastern Mesoamerica (mainly the Maya area) and has not been widely applied in the western half. Thus we have the older, more ambiguous descriptions of wares for the relatively recent excavations at the Olmec site of San Lorenzo (Coe and Diehl 1980) and at the more recently published site of Chalcatzingo in the central highlands. Ceramics from the latter are presented by somewhat ambiguous and indefinite type descriptions which lack consistency and therefore reliable comparability (Cyphers Guillen 1987:200–251). Either the Type: variety system needs to be introduced into the western area or an alternative should be developed. Simply more sophisticated quantitative modal and descriptive studies will not produce the needed synthetic comparable units.

Tools and other functional categories made of stone (lithic artifacts) were most often described on the same ad hoc basis as had been the case with ceramics with intuitive categories. Many of the latter were probably correct but undemonstrated in their functional assignments. A. V. Kidder's study of the stone artifacts of Uaxactun, done in the 1940s, and G. R. Willey's monograph on the lithics of Barton Ramie were examples of these essentially ad hoc analyses. For example, so-called flint (chert) axes were indeed used to cut trees, but this conclusion had to await confirmation from innovative techniques of analysis developed in North American lithic studies. Beginning in the 1960s a significant series of experiments carried out by gifted amateurs as well as by professionals attempted to replicate the manufacturing processes of ancient lithic artifacts. The same period saw the beginning and development of use-wear studies in which principally edges of stone tools

were microscopically examined to determine distinctive patterns created by the function of the tool. Thus, stone tools used for wood working were distinguished from those used to cut grasses or to cultivate soils, for example. These studies led to models of both manufacture and use histories for stone tools. A pioneering study of obsidian tools using these concepts and others was done by Payson Sheets in 1972. John Clark's studies (1988) of obsidian significantly advanced the method. This analytical scheme has achieved the potential of universality of application obtained by the Type: variety/mode system in ceramics. It is now known as the *linear reduction model* of lithic analysis (Shafer and Hester 1996ms). In 1976 the Colha project in Belize (Maya lowlands) applied these new techniques and models wholesale to hundreds of thousands of tools, principally of chert but also of obsidian. In this case a site where huge numbers of stone tools had been manufactured over centuries of time had left at least eighty-nine mounds of debris. T. R. Hester and Harry Shafer organized a project in which the manufacturing and use histories of the various types of tools were reconstructed, and in which the types were also tested, replicated, and analyzed for function(s). By 1980 they had created a set of categories that equated with many of the ceramic sequences in its sensitivity to time and space (Shafer and Hester 1983). Shafer later analyzed the tools from a nearby wetland garden area (Pulltrouser Swamp) and was able to demonstrate the use, renewal, reuse, and final discard of many stone tool categories previously established at Colha (Shafer 1983).

A number of technological aids to analysis have been developed outside the field. One among many applied to ceramics and lithics will be mentioned here. Trace element analysis is a new analytical technique of great interest which was introduced into the Mesoamerican field in about the mid 1970s and has been applied with great success to obsidian. The latter, of course, is volcanic glass and each episode that produces obsidian is specific in the trace elements that it contains. Given the new technique, it is possible to trace the movements of obsidian tools, highly prized for their sharp edges, over Mesoamerica. Thus at 1200 B.C., for example, we can say with certainty that the Olmec site of San Lorenzo in lowland Veracruz was importing obsidian from the central highlands of Mexico (Cobean et al. 1971). Unfortunately, the technique does not seem to work nearly as well on chert.

The major results of this long development of analytical techniques are universal frameworks for looking at any ceramics and any stone tools.

These methods result in relatively value-free taxonomic and functional units that are universally comparable. Thereafter, they are susceptible to use and reuse in the more ephemeral secondary reconstructions of trade, elite gift exchange, crafts, social class structures, mortuary patterns, and the like.

Stratigraphic Methods of Excavation. Of all the developments of field archaeology, stratigraphy was and is the most important introduction. As noted, the method was developed outside both Mesoamerica and the New World. It was introduced three times by three different persons familiar with the use of the technique in the Old World (Browman and Givens 1996). Nels Nelson in 1914 and A. V. Kidder, Sr., in 1915 independently introduced the system into the U.S. Southwest. Earlier, however, Manuel Gamio, influenced by Franz Boas and possibly by Eduard Seler, first used the system in Mesoamerica in 1911. Gamio had previously carried out more than three hundred excavations without resort to stratigraphy, but after study with Boas at Columbia University and then fieldwork under his direction in Mexico, he shifted to using the new method.

Archaeological deposits and remains are hugely diverse and often exceedingly complex, and new means of digging, recording, and analysis are still being developed. However, old and new are all based on the principle of superposition, which means that in a stack of deposits the top is the most recent and the lowest the oldest (Adams and Valdez, 1997). The Harris matrix system is probably the most accurate means of recording stratigraphic data and has the advantage of forcing a simultaneous analysis (Harris 1989). Site formation histories and the means of reconstructing them have been rightly emphasized in recent years (Schiffman 1987).

The Tikal project, innovative as usual, introduced a unit of variable time called the *time span*, which represents the activities, whether momentary or lengthy, defined by a stratigraphic unit (W. R. Coe and Haviland 1982). These relative time units may be stacked up, sometimes in parallel, to define activities reconstructed on the basis of stratigraphy and other evidence. This very useful concept has not been adopted outside the project but deserves consideration.

All of these refinements, the extensive use of the basic system, and the ordering of artifacts and other information provided by stratigraphy have led to several results. One is a firm grasp of chronology, at first only

relative (A is older than B), but later absolute as given by dates provided by radiocarbon dating. Trends and change through time are also provided by the system; important for working out evolutionary and historical explanations of cultural development. At least as important is the consequence that regional and area wide comparisons can be made with further implications for secondary theory.

Mapping and Settlement Pattern Studies. Mapping and recording of formal architecture throughout Mesoamerica has a long history reaching back into the late Spanish colonial period. However, systematic mapping of Mesoamerican sites only began in 1839 with J. L. Stephens and Frederick Catherwood's attempts to comprehend the plans of Maya centers. After a pause owing to political unrest in Mexico and Central America, systematic surveys of Maya sites were carried out by Teobert Maler and Alfred Maudslay in the late nineteenth century. The tradition of accurate systematic mapping was established and carried on from about 1920 to 1958 by the Carnegie Institution of Washington, which instituted a series of surveys of major sections of the Maya area, both highlands and lowlands. Of course, given the immensity of the task, the Carnegie research members were unable to map more than site centers in some cases. A great deal remained to be done when the program was abruptly abolished by the then president of the Institution, Vannevar Bush. In 1956 the Tikal project in Guatemala began a mapping endeavor much larger in scale than anything done before. Eventually, the map covered 18 square kilometers and included many smaller-scale dwellings, conclusively demonstrating the urban nature of larger Maya cities and yielding population estimates of 60,000 to 80,000 (Carr and Hazard 1961; Haviland 1969). To continue with the Maya area, many single-site maps have since been completed, including the recently published map of Calakmul, a preindustrial city of at least 50,000 (Folan et al. 1996). Meanwhile, Ian Graham and his collaborators, as a complement to his hieroglyphic text survey, have systematically remapped and newly mapped many Maya lowland urban centers and published them in his *Corpus of Maya Hieroglyphic Inscriptions* (1975 passim). The buildup of such accurate maps has made many further studies possible, as will be discussed later in the chapter. New electronic devices and computers have greatly increased the speed and accuracy of mapping not only individual sites but also sections of the countryside.

Relatively little such study was accomplished in western Mesoamerica

before Manuel Gamio's large Teotihuacan Valley regional project, a part of the Basin of Mexico from 1921 to 1926. Small-site and partial-site mapping characterize most of the work done up until the 1960s when a major mapping project began at Teotihuacan. The excellent results of Millon's work led to a major reassessment of urban centers and their nature in western Mesoamerica and especially in the central highlands. The Teotihuacan map stands as a standard to which all may aspire (Millon 1973; Millon et al. 1973), but unfortunately very few maps attempted since then match it in its accuracy, extent, or thoroughness. One exception is the remapping of the well-known Oaxacan site of Monte Alban by Richard Blanton and his colleagues (Blanton 1978). Caso's mapping of the center had been restricted to the major architecture on the top of the ridge on which it is located. Blanton included the slopes of the ridge and showed that the center was indeed a city, with such features as fifteen barrios, defensive features, and roads. Remapping of supposedly well-known sites, therefore, can yield surprising insights, as also demonstrated by Rebecca Gonzalez Lauck's revision (1988) of the La Venta (Mexico) map. Accurate maps permit rank-order assessment of groups of centers with greater intensity achieved by such means as rank-size analysis (Blanton 1976). Any number of subsequent studies are made possible by these sources and can include estimates of social fractions within a city, developmental histories, and functional assessments. The continual addition of new maps constitutes an increasingly valuable resource.

The extraordinary value of general settlement pattern studies as introduced into Mesoamerica by G. R. Willey is well recognized. This work was built somewhat on that of predecessors, however, as were most of the innovations in Mesoamerican archaeology. In the 1920s Manuel Gamio's regional project around Teotihuacan included some rural survey, but this was not very systematic. A more innovative approach was initiated by O. G. Ricketson around Uaxactun with transect surveys running out into the countryside from the city center (Ricketson and Ricketson 1937). However, in 1951 the rationale of settlement pattern work developed in the Viru Valley archaeological project (Peru) by G. R. Willey was initiated in the Barton Ramie project (Belize), where the focus was entirely on what later would be called *household archaeology*. The intellectual linkages between data from the site centers and countryside households were made clear and, therefore, the inferential linkages between the urban elite classes and their sustaining rural commoner

populations (Willey et al. 1965). The Tikal project included such work in their research plans, and, in addition to the base map just mentioned, produced transect surveys that ran in four directions, the north transect eventually connecting with the old Uaxactun survey strip (Puleston 1983).

Meanwhile, in the Basin of Mexico, a vast program of survey and limited excavation was initiated by William T. Sanders in the 1960s. Eventually the survey covered the entire Basin with the exception of the present-day urban zones, and even these were included as opportunity or previous work afforded the opportunity. The massive amount of information and especially the maps constitute an invaluable resource (Sanders et al. 1979). Large amounts of theory in regard to land–man relationships were generated by the project (cf. Sanders and Price 1968), but these have turned out to be more ephemeral. The interactive nature of data and analysis is demonstrated by the fact that the survey material provides a secure context for the Teotihuacan work as well as at other sites and periods in the Basin. Our understanding of the economic, demographic, and environmental bases for central Mexican civilizations now rests on firm ground. Thus a project as focused as that of the Great Temple of Tenochtitlan (Mexico City) can ultimately be related to religious beliefs of the Aztecs. Ideology links the tribute system to the economic necessity of sustaining an over populated basin from external sources (Matos 1987, 1988).

While settlement pattern work has not been as systematic and consistent a research theme in western Mesoamerica as in the east, there have been some impressive accomplishments. A set of unpublished survey maps of the Mesa Central area, including the Basin of Mexico and its surrounding valleys, has been produced by Eduard Matos and his colleagues. A long-term German survey and investigation project has made intensive surveys of the area of Tlaxcala to the northeast of the Basin of Mexico and published a large amount of data (e.g., Aufdermauer 1970, 1973). The archaeological atlas project of the Institute of Anthropology and History of Mexico has listed and located thousands of sites, principally in the Maya lowlands but also in other areas. For example, the survey under the direction of Norberto Gonzalez recorded more than four thousand sites in the state of Yucatan alone (Garza and Kurjack 1980). Much of this material, however, is unprocessed data, in the sense that most sites are unmapped and unassessed in terms of size, chronology, and relationship to the rural zones around them.

Settlement pattern studies have become an important branch of ar-

chaeology in their own right. They might be divided into micro and macro studies. The former include household studies such as carried out in the Oaxaca project work in defining distinct work areas inside households that might be related to women and men. Estimates of Maya palace populations and covered space studies in general lead to estimates of elite populations as social fractions. Macro studies include the now traditional transect surveys, random sample excavation of sites within the transects, and more intensive survey and investigation of selected zones. Beginning in 1970, large-scale landscape modification in the form of agricultural terracing was noted in the Rio Bec region of the Maya lowlands and later studied by B. L. Turner (1974) and others. The precursor work of O. G. Ricketson, Jr., around the Maya lowland site of Uaxactun must be mentioned (Ricketson and Ricketson 1937). Aerial photographic survey indicated that the terraces cover an area of at least 10,000 square kilometers. Groundwork confirmed that these were a form of intensive agriculture. Aerial photography has been used in Mesoamerica since 1928 when Lindbergh flew over the Maya lowlands taking pictures. From 1978 to 1980, courtesy of NASA and Jet Propulsion Laboratory, experimental surveys were carried out using synthetic aperture radar (SAR) mounted in both aircraft and a satellite (SEASAT). Imagery from the surveys included specific patterns that were confirmed as ancient canal systems although their extent is still in dispute (Adams, Brown, and Culbert 1981). Further surveys were carried out in 1990 over a selected part of Guatemala and Belize using an improved SAR with results similar to those from the earlier imagery. Steadily improving resolution indicates that individual sites will be detectable in the future. Meanwhile, known sites in poorly mapped zones can still be placed in relation to the important topographic and ecological features around them. No field and analytical method since stratigraphy has provided such enormous amounts of new information on such a variety of topics and given such enlightenment about them.

Ancillary Analytical Methods. These techniques and analyses usually are from other fields and may be performed by them as a service, or they have been adopted and adapted to archaeology by Mesoamericanists among others. A widely used technique is pollen analysis (palynology), adapted from geology and allowing the reconstruction of vegetation patterns and their change through time. In turn, this has allowed the indirect reconstruction of climatic episodes and cycles, although these are

better controlled from other sources of data. Human intervention in the natural world is often reflected in vegetational change, such as the sudden and striking shift from mixed forest species to grasses in the Maya lowlands about 1200 B.C. when slash-and-burn farmers began extensive operations. Botanical examination of macro- and micro-sized plant parts from dry cave deposits has already been mentioned as a technique especially useful in tracing the domestication and further development of food plants in Mesoamerica. Paleoclimatic information is especially useful in the earlier periods given that those fall into at least the end of the Ice Age (Pleistocene). Many technical aids have been mentioned under other rubrics, including remote-sensing and trace element analyses. Other approaches include petrographic analyses of pottery to determine clay sources and therefore trace trade and exchange patterns. Many analytical methods have come from the venerable field of geography, which has furnished the techniques of rank-ordering and rank-size investigation of cities, central place theory, and other ways of discerning and extracting patterns from complex data. One extraordinarily fruitful development has been that of experimental archaeology. Attempts at ancient stone tool replication especially has led to much more realistic insights into the possible ancient manufacturing processes. Interestingly, in this field avocational archaeologists such as the late Donald Crabtree have been major contributors. In the end, the use of other fields is restricted mainly by the imagination and practical limits on resources.

Epigraphy and Iconography. This subfield of archaeological studies holds a unique promise, that of giving an “insider’s” point of view on an ancient culture. The rest of archaeology, by its comparative and scholarly nature is an “outsider’s” point of view. Interestingly, no body of work demonstrates more brilliance and more fatuity. We concern ourselves with the former sector of these studies.

Aside from the inherent ambiguities of deciphering ancient scripts for which no modern equivalents exist, obscurities are compounded by the contents that are those of cultures ideologically foreign to the scholars working on them. Even so, remarkable progress has been made. The initial steps in dealing with the mathematical and calendrical parts of Maya script were taken in the nineteenth century when the basic structure of both systems was laid out by Förstemann and others. Caso, in his studies of Mesoamerican calendars, made it quite clear that all were based on the same principles, except for the Maya extension of the solar

calendar that remains unique. Various scholars in the early and middle twentieth century also pointed out the differences among scripts that were basically pictographic (western Mesoamerica) and what turned out to be logographic-phonetic in character (eastern Mesoamerica). The use of the pictographic systems also required a group of scribes who were able to memorize long texts that explicated the written material. Logographic-phonetic systems were able to render verbal material into written form. In other words, the latter represent the New World's most fully developed writing systems. It has been suggested that pictographic systems are most useful when there is a multitude of languages because it provides cross-cultural communication through widely understood symbols. However, the system is limited in its communication possibilities. In the linguistically more unified Maya area, the logographic-phonetic system provided widely understood and precise rendering of messages. What were these messages? Joyce Marcus (1992) is the latest to examine Mesoamerican scripts as a group, and classifies most of the content now known as history, myth, and propaganda.

Studies of Mesoamerican writing systems have undergone a transformation from a generalized and iconographic interpretation of texts to quite explicit decipherments. In the Maya case, the principal break-ins to the code were those of Yuri Knorozov in the 1950s and of Tatiana Proskouriakoff in the 1960s. Knorozov provided hard and convincing evidence that Maya script was at least partly phonetic, although very few accepted the argument at the time. Proskouriakoff's brilliant papers demonstrated the historical nature of many of the texts and specified a number of hieroglyphic phrases as having precise meanings: "was born on such and such a date" for example. Eventually, Floyd Lounsbury and his colleagues provided much more phonetic material and convinced most people that decipherment was possible. The younger scholars now active (David Stuart, Stephen Houston, Joyce Marcus, and others) are slowly rendering texts into understandable and accepted translations.

In Oaxaca, Alfonso Caso laid the basis from about 1920 to 1955 for the further elucidation of the ancient writing of the Zapotecs and Mixtecs. One advantage that scholars in western Mesoamerica have had is the existence of a substantial body of written books that have survived mainly in museums and libraries of Europe. These long texts, in addition to the sculpted and painted renditions, have aided in the process of decipherment. Joyce Marcus has taken the decipherment much further with her readings of various monumental texts from the Zapotec capital

of Monte Alban. These are mainly political texts and document conquests, alliances, and royal genealogies. As in the Maya area, they form a most valuable supplement to the archaeological record and, in some cases, provide crucial evidence on such matters as the size of regional states.

Iconographic analysis has also progressed thanks to considerable effort by art historians trained in disciplined investigation of depictive and symbolic art. Such art was largely the province of elite classes in Mesoamerica and therefore embodies not only ancient and largely lost ideologies but also those as interpreted by aristocratic classes, many times for their own purposes. Thus scholars such as Jacinto Quirarte and Arthur Miller have applied detailed analysis to extract possible meanings from art such as Zapotec tomb murals (Miller 1995) or the earlier Izapan style (Quirarte 1976). Such thoughtful, conditioned conclusions are of great value and give meaning to otherwise recondite artistic expressions. Quite the opposite are the unbridled speculations presented as proven interpretation which have been presented recently as “breakthroughs” and original insights.

Integration Studies

I have placed under this rubric the general shifts in perception of cultural linkages in space (regional studies) and between cultures and the natural environment (cultural ecology). Both perceptual changes have benefited Mesoamerican archaeology greatly. One reason is that from the beginning of agricultural village life, it now appears, regional economic and political structures were the norm. The former were more common and more stable than the latter. Flannery’s Oaxaca project is an excellent example of a regional approach to ancient cultures, although it will be recalled that Manuel Gamio’s Teotihuacan project was probably the first to use this attack. Demarest has used the approach in the Petexbatun of the Maya lowlands, as have Willey, Baudez, and Sanders in the Copan Valley of the southeastern Maya lowlands. The northeastern Peten (Rio Azul) and adjacent northwestern Belize projects are still further examples. Because of cost, logistics, and problems of continuity and of archaeological permits, however, the approach is not always feasible. A series of projects in the same zone is an alternative but often has the disadvantage of discontinuity of field and analytical methods.

A REVIEW OF MESOAMERICAN FIELD ARCHAEOLOGY BY
PREHISTORIC STAGES

While the point of view of scholarship as primarily driven by fieldwork and analysis is arguable and unorthodox, there is nothing unusual in using the rubrics of culture areas and chronology to organize the history of Mesoamerican field archaeology. Further, such a scheme has the merit of conforming to the organizational format of chapters in this volume that deal with the prehistoric period. This chapter concludes with such a review.¹

Palaeoindian and Archaic Periods

Research on these earliest periods has been sporadic, and only since about 1960 has consistency of attack on these problems been maintained. The search for the earliest remains of humans in the New World is difficult and fitful. The nature of the earliest cultures and the small number of humans involved means that most sites are either campsites or single-event sites, the latter usually the point at which some large animal was brought down. Slow accumulation of data has reconstructed not only the characteristics of the earliest cultures but also the quite different world in which they lived. Huge efforts have been expended to explore the climatic and related shifts in animal and plant populations. Aveyra de Anda's outstanding work (1964) in the case of the Iztapan mammoth kills in the Basin of Mexico has yet to be matched either for information gained or for the excellence of field techniques used. Surface surveys in many parts of Mesoamerica have filled in the distribution pictures of various stone tool kits, which seem to reflect regionalism even in these early times. The Zeitlins (Chap. 2, this volume) point out that thirty-two genera of animals had disappeared by 9000 B.C. with assistance from human hunting. This is still another argument against the neo-Rousseauian view of Native Americans living in total harmony with nature as advanced recently by some scholars.

For sheer tenacity of purpose and scholarly stamina, R. S. MacNeish and his series of projects stand out. The volume and quality of data from the Tamaulipas projects (1948–55) and still more from the Tehuacan project (1960–63) are prodigious. A series of excavations of shell middens

¹ Note that the majority of the chapters that follow were written in 1989 and 1990 and revised later.

and other coastal remains on the Pacific and Gulf coasts have also illuminated matters. The exploitation of dry cave deposits for recovery of the actual plant remains was a giant step forward, although like most techniques used in Mesoamerica it is not unique nor does it originate in the area. Micro- and macrobotanical studies have advanced our knowledge of domestication of plants and, to a much lesser degree, of animals. Many specialists have contributed across disciplines to the understanding of the cave data. For example, the rejuvenation of human fecal material as developed by Eric O. Callen, working with MacNeish, allows the assessment of proportions of animal protein to vegetable foods in ancient diets. Radiocarbon dating (introduced in 1948) and the later more precise accelerator mass spectroscopy [AMS] (c. 1985) refinement provided a means of absolute dating that revolutionized time perspectives. This development alone allowed accordion-like expansion of the time scale and produced many surprises, some of which are noted throughout the book. However, overenthusiastic and undercritical use of radiocarbon dates, especially from early laboratory procedures, produced many wildly improbable dates, threw doubt on the method, and drove some to despair of the method's ever producing usable chronology. Gradually, with better laboratory procedures and technological improvements, dates became technically more reliable. However, sloppy fieldwork and naive interpretations continue to plague us with dates assessed on material that should never have been submitted to the laboratories. Some dates that are badly out of line with stratigraphic and other data are those pushing early humans in Mesoamerica back in time before 10,000 B.C. A few dates from 45,000 years ago or more have been claimed for certain central Mexican sites but have not been sustained by further work.

The immense block of time represented by the Paleoindian and Archaic stages is the least well documented in data. To some degree the relatively small amount of work is justifiable if the basic assumptions are correct that change was relatively slow, that the societies were replicative, and that the fundamental processes are already mainly understood. If any suppositions are not correct, then much more effort needs to be applied to the sites of the various periods. For example, because of the lack of application of the linear reduction model, which requires examination of quarry sites, new inspection of this early material is urgent. Additionally, the sample of known and definite Paleoindian campsites is vanishingly small. More of these need to be searched out and investigated, preferably by block excavation (horizontal exposure) with a view to estimates of

social group size, activities, material culture inventory, dietary information, and the like.

At the moment, we can probably conclude that humans entered the New World perhaps as early as 15,000 B.C., spread rapidly through space, and expanded fairly rapidly in numbers. By 9000 B.C. drastic climatic, floral, and faunal changes were driving new adaptations, which meant collection of many more plant foods and the eventual domestication of the same. This process of intensified collecting and hunting and domestication quickly created the economic basis for village life. Intensive forms of gardening were probably present from the beginning, and their use spread under the pressure of population growth. Larger social groups meant new cultural institutions, which eventually reached thresholds of change into new forms. All of this is an example of secondary theoretical synthesis and is subject to rapid change by reason of new data or analysis.

The Preclassic

Of all the stages of Mesoamerican prehistory, this set of periods and sites has been subjected to the most intensive and ingenious research over the past forty years. Fortunately, the Preclassic sites of the Basin of Mexico have long absorbed scholarly interest because the rapid growth of the metropolis of Mexico City has and is destroying much of the data. William T. Sanders's projects, together with the salvage and reanalysis of sites such as Tlatilco, Tlapacoya, and Cuicuilco, have yielded vast amounts of information. Many sites, such as those that George Vaillant dug in the 1930s, will be known only from his fieldwork publications, which fortunately were scrupulously careful. Cuicuilco and Teotihuacan appear to have been the first centers to achieve urban status, and the latter especially has been the focus of long-term studies of the phenomenon. David Grove's various projects have produced immense amounts of high-quality data and thought, especially from his intensive work at Chalcatzingo, Morelos. Economic linkage of sites both in the Basin and out is evident as early as 1900 B.C., with village specialization in various commodities and manufactures. These linkages grew more intense and farther flung by 900 B.C. with ties from Morelos to the Balsas River in the west, and to the Gulf Coast Olmec in the other direction. Another "hot spot" of research activity has been the central valley of Oaxaca with its surrounding zones. Flannery's research group has carefully traced the development of agricultural patterns in the valley and found that they,

in large part, replicate those of the Tehuacan Valley (Flannery 1986). A very long sequence of village-level communities begins by 1600 B.C. and rapidly takes on a regional economic aspect, and later a political character about 600 B.C.

The latter is expressed in some of the first writing and formal art in Mesoamerica (Marcus 1980). Conquest monuments and substantial architecture abound in the period after 500 B.C. during which the huge center of Monte Albán was established. Blanton and his colleagues' very important settlement studies on the Monte Albán ridge and in the rest of the valley made possible the outline and detail now known about the Zapotec conquest state and its extent.

The west and northwest were examined in the 1950s and 1960s by various projects, but the work of Weigand, Bell, and their colleagues is especially important in dealing with the Preclassic periods. Here the situation is one in which looters, collectors, and art dealers have dominated the scene, and as a result research has been badly hampered by difficulties in finding and excavating unlooted sites. The famous shaft, pit, and other types of family and individual graves yield vast numbers of attractive ceramic figurines and even group scenes. Salvage work has largely been responsible for the recovery of what is known about these Preclassic western village cultures. Teopantecuanitlan, Guerrero, has been the focus of long-term excavation in which definite ties with the distant Gulf Coast Olmec and central Mexico has been demonstrated for the period c. 900 B.C. (Martinez Donjuan 1996ms). Large regional centers such as Chalcatzingo and Teopantecuanitlan were linked by elite-class marriage ties in the same manner as were later, larger, and more sophisticated centers.

The Gulf Coast has seen a great deal of work on the large Olmec sites San Lorenzo and La Venta, with mapping and sampling activities at Laguna de los Cerros. Rust and Sharer began work on smaller sites near La Venta with Bari River villages (Rust and Sharer 1988). This work is continuing with intensive excavation (Symonds and Cyphers 1996ms) as well as extensive survey (von Nagy 1996ms). Many Early as well as Middle Preclassic sites have been discovered. Work on the rapidly shifting landscapes of the riverine zones in this area is building a complex picture of interaction among early villages, levee agriculture, meandering rivers, and outbuilding of the coasts into the Gulf. In the Grijalva River trench, the important excavations at Chiapa de Corzo were a breakthrough in understanding the nature of the Preclassic of the region and

in general (cf. Lowe and Agrinier 1960). Fortunately, the New World Archaeological Foundation took a regional view of the work and has published a very large number of high-quality reports on other sites as well.

A New World equivalent to the Near Eastern aceramic neolithic has been defined for the Maya lowland at Colha in recent work by Hester, Shafer, and Harry Iceland. There are pollen analysis hints of corn cultivation as early as 2500 B.C. (Jones 1994; Hester, personal communication 1996). However, the artifacts may date as late as 1400 B.C. This Preceramic Lowland Formative is characterized by constricted unifaces, macroblades, Lowe points, manioc pollen (as well as the corn already noted), and good evidence for deforestation. On a later level Brigham Young–New World Archaeological Foundation projects have produced immense amounts of information from Edzna (Matheny et al. 1983) and El Mirador (Matheny 1980; Hansen 1990). Nakbe (Hansen 1991) has the earliest large temple now known in the lowlands (620 B.C.). The Late Preclassic temples at El Mirador are perhaps the largest ever constructed by the Maya. Contemporary and later Preclassic remains in the form of huge temples have also been found at Rio Azul (c. 500 B.C.; Valdez 1992ms) and Calakmul (c. 150 B.C.; Folan et al. 1996). Large Preclassic sites in northern Yucatan have been found at Komchen, Dzibilchaltún, and Yaxuna, all with substantial Late Preclassic architecture. Late Preclassic fortifications were found at Tikal, Becan, Aguacatal, and several other sites in the lowlands. Intensive wetland agriculture and water management works have been found in Belize, and probably in the Rio Bec region, all dating to the Late Preclassic (Turner 1974; Scarborough 1994). The Tikal projects (University of Pennsylvania 1956–70; National Project of Guatemala 1979–84) have produced overwhelming amounts of information in all fields, including material on the Preclassic. The excellent Tikal reports are making this data available, although they have been criticized for lacking interpretation or what I herein call secondary theory. Preclassic rulership and ancestral monuments and tombs are among the remains that have been carefully reported. The mass of data has led to a widely accepted conclusion that the Late Preclassic was a climactic period in the history of Maya civilization. It appears that with more information the Middle Preclassic may also come to be so regarded, and if so, this will drive Maya civilization back into the period of around 600 B.C., overlapping with the end of the Olmec development.

The Pacific coastal plain of Guatemala and Mexico (Soconusco) has

produced some of the earliest villages and most sophisticated early centers of Mesoamerica. Work by the New World Archaeological Foundation at Izapa has developed information on a regional center with many religiously oriented sculptures and other stone monuments, but practically none that can be regarded as political (Lowe et al. 1982). On the other hand, nearby Abaj Takalik, the focus of a project headed by Miguel Orrego of Guatemala, has many mound groups with both religious and political monuments, some of which in the Late Preclassic are inscribed with Maya-style dates and depictions of rulers (Orrego 1995).

In the adjacent Maya highlands, the southern valley of Las Vacas (present day Guatemala City) was the location of the huge site of Kaminaljuyu. A project in the 1960s headed by W. T. Sanders did both salvage and regional survey work that indicated the center was much larger than had been thought. However, the analysis omitted some vital data for the Late Preclassic period of the site showing that it is an order of magnitude larger than the nearby coastal centers of Abaj Takalik and Izapa (Adams 1991: 93–101) and therefore could have been an early regional capital. Work in the highlands has not produced much early material outside of the southern valleys, but the site of El Porton is an exception (Sharer and Sedat 1987). With its mounds, early monuments and texts, and location between the highlands and the lowlands, El Porton may on the ancient route used by the Maya to link the areas.

The southeastern frontier has produced large mounds and early sculpture related to that of the Olmec and, later, to that of the Izapa. The large center of Chalchuapa (El Trapiche group) and several other centers date to the Middle and Late Preclassic. The eruption of Ilopango volcano in about 150 B.C. devastated this zone for many generations and apparently drove the survivors west into the Guatemalan highlands (Sheets and Sharer, Chaps. 9 and 10, this volume). This is an excellent example of the detection of the interplay of the processes of nature and human cultural development.

The Classic

Appropriately, a great deal of work has been done on sites and regional patterns of this period during the past forty years. Although the Preclassic is a period of two and perhaps three cultural climaxes, these were limited to a few regions. During the Classic nearly all regions of Mesoamerica developed new or reformulated civilizations, and new areas were incor-

porated into the Mesoamerican culture sphere. Many of the largest cities and economic and political units were created during this period. Therefore there is an immense number of sites that date to this time.

In central Mexico, among the most important projects have been, once again, the Teotihuacan work of Millon's research team together with the various Mexican projects that have concentrated on the great city, and the Basin of Mexico survey of Sanders and his colleagues. This combination of collaborating projects is, in effect, a giant regional investigation. The map of Teotihuacan alone is a revelation and worth repeated study together with ancillary analyses such as those by George Cowgill. In Oaxaca, there is the Flannery project centered on Monte Albán and the central valley. The reams of data and analysis pouring out of this project again will be used and reused and reformulated in the future.

The west and northwest have seen some renewed interest in recent years with the investigations of a number of sites that appear to be Classic in date and related to the expansion of Teotihuacan into this area for the purposes of mining and trade. The suggested linkages with the U.S. southwestern cultures are more believable and interesting. Unfortunately, Weigand and his colleagues' work in the west at sites such as Aqualulco has not been followed up intensively, and so we know little more now than we did in the 1970s.

The same hiatus in field data and analysis held for the Gulf Coast until the work done by Santley at the Teotihuacán linked site of Matapan (Santley et al. 1986). While the nature and strength of Teotihuacan influence at this city is disputed, there is at last data to examine and discuss. In the northern Gulf Coast plain, the site of Tajin has at last made its way into the literature thanks to salvage work by the Krotsers (1973) and Wilkerson (1987). Huge amounts of unreported work by previous investigators will apparently go unpublished for lack of documentation, and because of this, we shall perhaps only ever poorly understand Tajin, a crucial site. Studies of the iconography of Tajin have also been revealing.

Maya lowlands excavations and publications have been voluminous. In the north-central plain, the crucial site of Dzibilchaltun is well and truly in print, including an impressive map. The northeastern city of Coba has also been studied by George Stuart, Folan, and their colleagues and the map, although incomplete, and ancillary studies are very illuminating as to possible social, economic, and political organizations (Folan

et al. 1983). The Oxkintok project of the Universidad Complutense of Madrid has concentrated on Classic period architecture and remains at the site, producing a long construction sequence supplemented with a considerable number of hieroglyphic texts and artifact studies (Rivera Dorado, 1987, 1989, 1990, 1992). Pollock's belated but extraordinary study of Puuc architecture and sites is a basis for an infinite number of future studies (Pollock 1980). Studies around Sayil in the Puuc Hills have finally put some cultural history and secondary theory on the architectural bones. The use of cultural ecological theory as well as some sophisticated demographic and environmental analysis greatly enhances this work. Edzna, in the central area, was investigated by Matheny and perhaps owes its Classic period success to extensive hydraulic development in the Preclassic. Some have doubted that the canal is man-made, pointing out that it is along a typical karstic fault, but there is no reason why ancient engineers, like modern ones, would not take advantage of useful natural features.

In the early 1970s, the Rio Bec region was the focus for intensive work cut short about 1976 by severe restrictions imposed on foreign archaeologists. However, reports on Becan, Chicana, and David F. Potter's invaluable study of central Yucatan architecture, together with a study of hillside terracing by B. L. Turner II, all constitute a critical mass of data that will continually become more valuable. Although flawed, Prentice Thomas's settlement pattern studies are a good start for the region. It is hoped that unpublished studies done after 1973 will eventually find their way into print. These cover small-structure excavations, craft specialization studies, ecological investigations, as well as large-scale architectural excavations and restorations done for touristic purposes.

The huge site of Calakmul has been focus for work for ten years. Although it was a very large Preclassic center, its heyday was in the Classic when it became the head of a regional state. Folan and his colleagues' focus on the region around the city has produced invaluable data and insights, including the detection of a road net connecting the capital to its subsidiary centers in the same way the better-known road system does at Coba. The site has more sculpted political monuments than any other Maya center, and Marcus has achieved a great deal in deciphering the texts and their import, in spite of their poor state of preservation (Marcus 1987). The Tikal project mentioned earlier is finally achieving final report status with the outstandingly documented and illustrated studies now projected to reach thirty-nine volumes

(W. R. Coe and Haviland 1982:57–61). The summaries of work done afterward by the Guatemalan National Project have been published recently (LaPorte and Vialko 1995), but the fullest documentation is still to come. The immense center is now better understood than any other large city in the Maya lowlands, with dynastic ruler lists, tombs of many of those rulers, their stone monuments and temples, and their palaces. The non-elite population has been well studied with small structure investigations even yielding a convincing reconstruction of the ancient kinship system (Haviland 1972). Work at Uaxactun by Guatemalan archaeologists has clarified many problems left hanging from the Carnegie Institution work in the 1930s and has dynastically linked that city with Tikal, only 20 kilometers southeast of it. Rio Azul, an *Early Classic frontier city in the Tikal regional state*, was investigated by R. E. W. Adams and colleagues in the 1980s and 1990s. A large amount of effort has gone into investigations of the countryside, major landscape modification, and the Late Classic site of Kinal. The region immediately to the east, in present-day Belize, is the focus of continued regional studies by Valdez's research team. Hammond and Tourtellout's work at La Milpa, as well as the crucial preceding work at Nohmul in Belize, have elucidated the role of subsidiary or second- and third-tier Maya centers. Colha, the previously mentioned stone tool manufacturing center, turned out huge numbers of implements in the Late Classic, a period that coincides with population maxima according to all studies, including the recent one of H. Robichaux (1995). Demarest and his colleagues have concentrated on the Petexbatun region, working at Aguateca and Dos Pilas and following on the work in the 1960s by Willey and Smith at Altar de Sacrificios and Seibal. Studies done by Hammond at Lubaantun (Late Classic), Leventhal and Ashmore at Xunantunich, and by many others including Ball and Taschek in the Belize Valley, have added to the data mass. Finally, the ongoing Copán project digs ever more deeply into the great acropolis resurrecting the temple memorials of the sixteen rulers now known to have reigned during the Classic. Preceding settlement pattern studies (Willey and Leventhal 1978; Willey et al. 1994) and the massive valley-wide project headed by Claude Baudéz (1983) have laid the data and analytical foundations for a detailed understanding of this site and its surroundings. Iconographic and epigraphic studies on the well-preserved sculpture have greatly aided the field archaeology, the study by Fash being an outstanding example of such work (1993).

Southwestern Maya lowlands investigations have been pursued at two

major sites, Palenque and Tonina. Unfortunately, the Palenque architectural, stratigraphic, and artifactual studies are poorly published or not at all, with the notable exception of Ruz's report on the Temple of the Inscriptions (Ruz 1973). Another exception is that of the excellent ceramic studies of Robert Rands (cf. Rands and Rands 1957; Rands 1973). The mass of publication on this regional capital has been on the formal art and texts that have been used to reconstruct a remarkably detailed dynastic history and iconography for the site. Tonina is a former regional capital at the upper edge of the lowlands in the Ocosingo Valley, which has been published in multiple volumes by French Mission scientists who worked there (Becquelin and Baudez 1979, 1982; Becquelin and Taladoire 1990; see also Mathews 1983, Graham and Mathews 1996).

The southeastern frontier has seen the continued excavation of a small Classic period village, Ceren, by Payson Sheets, who has extracted an amazing amount of solid data and analysis from this site. The outstanding preservation is owed to a localized volcanic eruption during the Classic, but the amount and quality of information is owed to Sheets and his colleagues with their superlative field and preservation techniques, and thoughtful analyses.

The Maya highlands has seen relatively little work on Classic period sites except for important work by the French archaeological mission in the Ixil zone (Becquelin 1969), and other incompletely reported investigations by R. E. W. Adams to the east in the Cotzal Valley (Adams 1973). The latter was one of the first regional projects in the Maya area, carried out in 1965 and 1966.

The major work has been accomplished by the Kaminaljuyu project headed by W. T. Sanders and which did most of its work in the 1960s. Further documentation of the important Teotihuacan episode at Kaminaljuyu has led to the conclusion that it was indeed a genuine intrusion, probably by a military group who became administrators of the region, including the chocolate-producing south coast (Sanders and Michels 1977). A great deal of valuable survey and excavation work has been accomplished on the coastal plain, especially, at the site of Balberta, by Fred Bove and his colleagues, who have begun to illuminate one of the murkiest zones in Mesoamerica (Bove et al. 1993).

The Postclassic

Work in central Mexico at Teotihuacan has indicated that elite direction failed by A.D. 650 and that transitional centers began to fill the power

vacuum in zones outside the Basin. Fortunately, we have had a very high-quality set of investigations at Xochicalco in Morelos, which indicate that the center was fortified and was a hybrid culture on the élite-class level, and that many of the patterns later seen among the Aztecs were established at this time (Hirth 1995). The Tlaxcalan site of Cacaxtla with its extraordinary murals of warfare and religion was found by the German mission and then excavated by others, and partially published. Ongoing work indicates that this site is also fortified and also has elite-class linkages to the Gulf Coast, perhaps to the Maya lowlands, and certainly to Xochicalco (Garcia Cook 1986).

The spectacular project at the Great Temple of the Aztecs, together with earlier salvage work in connection with the Mexico City metro system have produced much new detail on ancient Tenochtitlan. Matos's excellent excavation and restoration work has yielded astonishing amounts of information not just on the architectural unit of the Great Temple but also on Aztec religion, social structure, and economic ties, among other matters (Matos 1987, 1988). This is an example, too rare, of the kind of work that can be scientific and scholarly and yet result in an understandable cultural and touristic monument. The Tikal, Copan, and Uaxactun projects are further examples of such work, although these sites are earlier.

In the west, Tarascan culture has finally become clarified largely through the efforts of Shirley Gorenstein (Chap. 7, this volume) and Helen Pollard. Research at the ancient capital city of Tzintzuntzan and other centers of the Patzcuaro Basin has been combined with the ethno-historic material to make a much more coherent analysis. First-rate publication of work in the Zacapu Basin of Michoacan by the French scientific mission has thus far dealt principally with the geomorphology and other environmental factors, but also contains settlement survey data (Michelet 1992).

DiPeso's monumental work and reports on the site of Casas Grandes, Chihuahua, in the far northwest, have gone a long way toward confirming his (and Haury's) hypotheses of Mesoamerican connections between the U.S. Southwest and Mesoamerica (DiPeso 1974). However, southwestern archaeologists now consensually regard Casas Grandes as a southwestern phenomenon. From a Mesoamericanist's perspective this seems overly provincial, but it may be an act of academic imperialism to insist on my own opinion here. Current settlement pattern surveys directed by Minnis and his colleagues tend to confirm that Casas Grandes was a very

large regional center supported by a mass of subordinate communities. Closer to the heart of Mesoamerica, investigations under way at La Quemada, Zacatecas, indicates that this center was earlier (A.D. 500–900), smaller in scale, and, in some ways, less sophisticated than the New Mexico site of Chaco Canyon with which it is often compared (Nelson 1995). This indicates the need to reevaluate the facile comparisons sometimes made initially as well as for much more fieldwork in this vast zone. Much remains to be done, but the possibilities are very promising for finally defining the periods, agents, commodities, religion, and other elements in this long-distance, long-term interaction. It is noteworthy that both “frontiersmen” (Gorenstein and Sheets) regard their areas as interaction zones that acted not only on their own behalf in cultural evolution but also as transmission filters through which cultural traits, and material goods and services passed in both directions.

Our understanding of Postclassic cultures of Oaxaca has benefited from the intensive attention of many scholars in recent years. Ronald Spores did the groundwork for the integration of ethnohistoric and archaeological data in the 1970s in the Yanhuitlan and Nochixtlan valleys. Flannery’s research group has examined and reevaluated some sites either poorly excavated or poorly reported. Lambityeco, an early Postclassic site, is still inadequately published and little understood, in spite of a careful reevaluation and report by David F. Potter (1976ms). Mitla and Zaachila, major sixteenth-century Zapotec centers, in spite of practical problems with modern populations need to be explored and their basic chronologies and culture histories published. On the other hand, work at other sites has led to greater understanding of the long-term “Mixtec–Zapotec” conflict and relationships. Much laudable effort has been expended in publishing and analyzing the Mixtec codices that remain in various European and Mexican libraries. The Akademische Druck und Verlagsanstalt editions (Graz, Austria) are especially noteworthy and present an unrivaled body of facsimile data to the scholarly world (cf. Adelhofer 1963). Dynastic, tribute, and other information can be extracted from these documents.

There are great gaps in our knowledge of the Postclassic in western Mesoamerica. The Gulf Coast has seen nearly no work at all in the past forty years on the Postclassic sites of the Totonac, for example. In spite of “touristic archaeology” at Cempoala, the first Mesoamerican city that Hernan (or Hernando) Cortes examined closely, we know very little more about that city or its contemporary communities. The Aztecs (among others) regarded this area as the breadbasket of Mesoamerica and

conquered it as soon as possible. Huge areas of the previously depopulated jungle area are being cleared, and the ongoing salvage work is imperative to recovering the past of this area for all periods, but especially for the Postclassic. This data would bear on the relationships between early Postclassic centers in the highlands (Xochicalco and Cacaxtla, for example) and those of the coastal plain.

In the Maya lowlands there has been relatively little work on the Postclassic sites, except for tidying up centers such as Tulum for touristic purposes. Acanceh, Ake, salvage work on T'ho, and still further work on salt field administrative centers and the like, should be pursued. Webster has done some field survey on small fortified Postclassic centers in the north, but there has been no follow-up. In Belize, the Lamanai project has yielded a very long sequence at this lagoonside center, which runs from the Preclassic into Spanish Colonial period materials. Pendergast has carefully excavated much of interest from all periods, and his reports are eagerly awaited. Colha has an Early Postclassic period, but the site was abandoned long before the Spanish arrived. Santa Rita in northern Belize has been explored and was apparently in existence in the sixteenth century. However, the central Peten with the central lake district sites (Tayasal, Macanche, Topoxte and others) is still the mainstay of the definition of this latest period.

In the Maya highlands, the recent civil war and insurgency has made archaeology impossible in many zones, but the Quiche work of the 1960s by Carmack and his colleagues has yielded large amounts of information that illuminate the nature of these relatively small, tribute-seeking, predatory military states (Carmack 1973; Carmack and Weeks 1981).

CONCLUSION

This chapter represents the views of only one active scholar in the field and a regionally specialized one at that. For complementary and conflicting opinions and assessments the reader must look at those presented in the bibliographic essays that accompany each chapter. The huge data mass for Mesoamerica and the great number of competing and complementary theories make it increasingly difficult to synthesize the cultures of the area without an imposed overarching organization. The concept of Mesoamerica and the fundamental structures of field archaeology provide those intellectual tools.

REFERENCES FOR INTRODUCTORY ESSAY.

(Abbreviations)

- CIW Carnegie Institution of Washington, Washington, D.C.
 INAH Instituto Nacional de Antropología e Historia, Mexico City.
 MARI Middle American Research Institute, Tulane University, New Orleans.
 NWWAF New World Archaeological Foundation, Provo, Utah.
 PMP Papers of the Peabody Museum, Harvard University, Cambridge, Massachusetts.

- Adams, R. E. W. 1960. Manuel Gamio and stratigraphic excavation. *American Antiquity* 26:99.
 1969. Maya Archaeology 1958–1968, A Review. *Latin American Research Review* 4:3–45.
 1973. Maya highland archaeology: new data and implications. *Publication of the Archaeological Research Facility* 16:1–21. University of California, Berkeley.
 1991. *Prehistoric Mesoamerica*. Rev. ed. University of Oklahoma Press. Norman.
- Adams, R. E. W., W. E. Brown, Jr., and T. P. Culbert. 1981. Radar Mapping, Archeology, and Ancient Maya Land Use. *Science* 213: 1457–63.
- Adams, R. E. W., and Norman Hammond. 1982. Maya archaeology, 1976–1980: A review of major publications. *Journal of Field Archaeology* 9:487–512.
- Adams, R. E. W., and Fred Valdez, Jr. 1997. Stratigraphy. In R. F. Heizer, J. Graham, and T. R. Hester (eds.), *Field Methods in Archaeology*. 3rd ed. Mayfield. Mountain View, CA.
- Adelhofer, Otto. 1963. *Codex Vindobonensis Mexicanus I*. Akademische Druck-u. Verlagsanstalt. Graz.
- Aufdermauer, J. 1970. Excavaciones en Dos Sitios Preclasicos de Moyotzingo, Puebla. In *Comunicaciones* 1. Fundacion Alemana para la Investigacion Cientifica. Puebla, Mexico.
 1973. Aspectos de la Cronologia del Preclasico en la Cuenca de Puebla-Tlaxcala. *Comunicaciones* 9:11–24. Fundacion Alemana para la Investigacion Cientifica. Puebla, Mexico.
- Aveleyra Arroyo de Anda, Luis. 1964. *The Primitive Hunters. Handbook of Middle American Indians* 1:384–412. University of Texas Press. Austin.
- Baudez, Claude F. (ed.). 1983. *Introduccion a La Arqueologia de Copan, Honduras*. 3 vols. Secretaria de Estado en Despacho de Cultura y Turismo. Tegucigalpa. (Distributed through the MARI, Tulane University, New Orleans.)
- Becquelin, Pierre. 1969. *Archéologie de la Region de Nebaj*. Université de Paris.
- Becquelin, Pierre, and Claude F. Baudez. 1979. *Tonina, Une Cité Maya du Chiapas*. Vol. 1. Mission Archéologique et Ethnologique Française au Mexique. Mexico.
 1982. *Tonina, Une Cité Maya du Chiapas*. Vols. 2 and 3. Mission Archéologique et Ethnologique Française au Mexique. Paris.
- Becquelin, Pierre, and Eric Taladoire. 1990. *Tonina, Une Cité Maya du Chiapas*. Vol. 4. Mission Archéologique et Ethnologique Française au Mexique. Mexico.
- Bernal, Ignacio. 1980. *A History of Mexican Archaeology*. Thames & Hudson. New York.

- Blanton, R. E. 1976. The Role of Symbiosis in Adaptation and Sociocultural Change in the Valley of Mexico. In Eric Wolf (ed.), *The Valley of Mexico*, pp. 181–201. Academic Press. New York.
1978. *Monte Alban: Settlement Patterns at the Ancient Zapotec Capital*. Academic Press. New York.
- Blanton, R. E., S. A. Kowalesky, G. Feinman, and J. Appel. 1991. *Ancient Mesoamerica: A Comparison of Change in Three Regions*. 2nd ed. Cambridge University Press. Cambridge.
- Bove, Frederick J., S. Medrano, B. Lou, and B. Arroyo. 1993. *The Balberta Project: The Terminal (Pre) Classic–Early Classic on the Pacific Coast of Guatemala*. University of Pittsburgh Memoirs in Latin American Archaeology No. 6. Pittsburgh.
- Browman, David L., and Douglas R. Givens. 1996 Stratigraphic Excavation: The First “New Archaeology.” *American Anthropologist* 98 (1):80–95.
- Carmack, R. M. 1973. *Quichean Civilization*. University of California Press. Berkeley.
- Carmack, R. M., and J. M. Weeks. 1981 The Archaeology and Ethnohistory of Utatlan: A Conjunctive Approach. *American Antiquity* 46: 323–341.
- Carr, R. F., and J. E. Hazard. 1961. *Map of the Ruins of Tikal, El Peten, Guatemala*. Tikal Report No. 11. University Museum, University of Pennsylvania. Philadelphia.
- Caso, Alfonso, and Ignacio Bernal. 1952 *Las Urnas de Monte Albán*. Memoria No. 2 del INAH de Mexico. Mexico.
- Clark, John E. 1988. *The Lithic Artifacts of La Libertad, Chiapas, Mexico; An Economic Perspective*. New World Archaeological Foundation Paper 52. Brigham Young University. Provo.
- Cobean, R. H., M. D. Coe, E. A. Perry, Jr., K. K. Turekian, and D. P. Kharkar. 1971. Obsidian Trade at San Lorenzo, Tenochtitlan, Mexico. *Science* 174:666–671.
- Coe, M. D., and R. A. Diehl. 1980 *In the Land of the Olmec*. University of Texas Press. Austin.
- Coe, W. R., and W. A. Haviland. 1982 *Introduction to the Archaeology of Tikal, Guatemala*. Tikal Report No. 12. University Museum, University of Pennsylvania. Philadelphia.
- Culbert, T. P. (ed.). 1973. *The Classic Maya Collapse*. University of New Mexico Press. Albuquerque.
- Cyphers G., Ann. 1987. Ceramics. In David C. Grove (ed.), *Ancient Chalcatzingo*, pp. 200–251. University of Texas Press. Austin.
- DiPeso, Charles C. 1974. *Casas Grandes*. Vols. 1–3. Amerind Foundation. Dragoon, Arizona.
- Fash, William L. 1993. *Scribes, Warriors, and Kings: The City of Copan and the Ancient Maya*. Thames & Hudson. New York.
- Flannery, Kent V. (ed.). 1986. *Guila Naquitz, Archaic Foraging and Early Agriculture in Oaxaca, Mexico*. Academic Press. Orlando.
- Flannery, Kent V., Anne V. T. Kirkby, Michael J. Kirkby, and Aubrey Williams, Jr. 1967. Farming Systems and Political Growth in Ancient Oaxaca. *Science* 158: 445–54.
- Folan, W. J., E. R. Kintz, and L. A. Fletcher. 1983 *Coba: A Classic Maya Metropolis*. Academic Press. New York.
- Folan, W. J. Marcus, S. Pincemin, M. R. Dominguez C., L. Fletcher, and A.

- Morales L. 1996 Calakmul: New Data from an Ancient Maya Capital in Campeche, Mexico. *Latin American Antiquity* 6:310–34.
- Garcia Cook, A. 1986. *Guia Oficial; Cacaxtla–Tizatlan*. INAH. Mexico.
- Garza, Sylvia, and Edward B. Kurjack. 1980. *Atlas Arqueologico del Estado de Yucatan*. INAH Centro Regional del Sureste. Mexico.
- Gifford, James C. 1960. The Type-Variety Method of Ceramic Classification as an Indicator of Cultural Phenomena. *American Antiquity* 25 (3):341–47.
- Gonzalez Lauck, Rebecca. 1988 Proyecto Arqueologico La Venta. *Arqueologia* No. 4. Monumentos Prehispanicos. INAH. Mexico.
- Graham, Ian. 1975. *Corpus of Maya Hieroglyphic Inscriptions, 1: Introduction*. Peabody Museum. Harvard University. Cambridge, Massachusetts.
- Graham, Ian, and Peter Mathews. 1996. *Corpus of Maya Hieroglyphic Inscriptions, 6.2: Tonina*. Peabody Museum. Harvard University. Cambridge, Massachusetts.
- Hansen, R. D. 1990. *Excavations in the Tigre Complex, El Mirador, Peten, Guatemala*. NWFAP Paper No. 62. Provo, Utah.
- 1991 The Road to Nakbe. *Natural History*, May:8–14. American Museum of Natural History, New York.
- Harris, Edward. 1989. *Principles of Archaeological Stratigraphy*. 2nd ed. Academic Press. New York.
- Haviland, W. A. 1969. A New Population Estimate for Tikal, Guatemala. *American Antiquity* 34:429–33.
- 1972 A New Look at Classic Maya Social Organization at Tikal. *Ceramica de Cultura Maya*: 1–16.
- Hirth, Kenneth R. 1995. Urbanism, Militarism, and Architectural Design. *Ancient Mesoamerica* 6:237–50.
- Hodder, Ian 1985. Postprocessual Archaeology. In Michael Schiffer (ed.), *Advances in Archaeological Method and Theory*, 8:1–26. Academic Press. New York.
- Jones, John G. 1994. Pollen Evidence for Early Settlement and Agriculture in Northern Belize. *Palynology* 18:205–11.
- Krotser, P., and G. R. Krotser 1973. The Life Style of El Tajin. *American Antiquity* 38: 199–205.
- LaPorte, J. P., and V. Fialko. 1995. Un reencuentro con Mundo Perdido, Tikal, Guatemala. *Ancient Mesoamerica* 6: 39–94.
- Lowe, G. W., and P. Agrinier (eds.). 1960. *Excavations at Chiapa de Corzo, Chiapas, Mexico*. NWFAP Publication 7: Papers 8 to 11.
- Lowe, G. W., T. A. Lee, Jr., and E. Martinez E. 1982. *Izapa: An Introduction to the Ruins and Monuments*. NWFAP Paper No. 31.
- Marcus, Joyce. 1980 Zapotec Writing. *Scientific American* 242:50–64.
- 1987 *The Inscriptions of Calakmul*. Technical Report 21. University of Michigan Museum of Anthropology. Ann Arbor.
- 1992 *Mesoamerican Writing Systems*. Princeton University Press. Princeton.
- Martinez Donjuan, Guadalupe. 1996ms. Consideraciones Simbolicas de la Arquitectura Ceremonial de Teopantecuanitlan, Guerrero. Paper presented at the 61st Annual Meeting of the Society for American Archaeology, 12Apr96, New Orleans.
- Matheny, R. T. 1980. *Mirador, Peten, Guatemala*. NWFAP Paper No. 45. Provo, Utah.

- Matheny, R. T., D. L. Gurr, D. W. Forsyth, and F. R. Hauk. 1983. *Investigations at Edzna, Campeche, Mexico*. NWAFA Paper No. 46. Provo, Utah.
- Mathews, Peter. 1983. *Corpus of Maya Hieroglyphic Inscriptions, 6.1: Tonina*. Peabody Museum. Harvard University. Cambridge, Massachusetts.
- Matos Moctezuma, Eduardo. 1987. Symbolism of the Templo Mayor. In E. H. Boone (ed.), *The Aztec Templo Mayor*, pp. 185–207. Dumbarton Oaks. Washington, D.C.
- 1988 *The Great Temple of the Aztecs*. Thames & Hudson. New York.
- Meltzer, D. J., D. K. Grayson, G. Ardila, A. W. Barker, D. F. Dincauze, C. V. Haynes, F. Mena, L. Nuñez, and D. J. Stanford 1997. On the Pleistocene Antiquity of Monte Verde, Southern Chile. *American Antiquity* 62:659–63.
- Michelet, Dominique (ed.). 1992. *El Proyecto Michoacan 1983–1987: medio ambiente e introduccion a los trabajos arqueologicos*. Collection Etudes Mesoamericaines 11–12, Cuadernos de Estudios Michoacanos 4. Centre d'Etudes Mexicaines et Centramericaines. Mexico.
- Miller, Arthur G. 1995. *The Painted Tombs of Oaxaca, Mexico: Living with the Dead*. Cambridge University Press. New York.
- Millon, René. 1973 *The Teotihuacan Map. Vol. 1, Part One: Text*. University of Texas Press. Austin.
- Millon, René, R. B. Drewitt, and G. L. Cowgill. 1973 *The Teotihuacán Map, Vol. 1, Part Two: Maps*. University of Texas Press. Austin.
- Nagy, Christopher L. von 1996ms. Making Milpa Amid Meandering Streams: Olmec Settlement in the Ancient Grijalva Delta. Paper presented at the 61st Annual Meeting of the Society for American Archaeology, 12Apr96, New Orleans.
- Nelson, Ben A. 1995. Complexity, Hierarchy, and Scale: A Controlled Comparison between Chaco Canyon, New Mexico, and La Quemada, Zacatecas. *American Antiquity* 60: 597–618.
- Orrego C., Miguel. 1995. Costa sur de Guatemala: importante evidencia sobre la presencia de la cultural maya, para los periodos Preclasico Tardio y Clasico Temprano. In Grube 1995, *The Emergence of Lowland Maya Civilization, Acta Mesopotamia* 8: 7–16.
- Pollock, H. E. D. 1980. *The Puuc: An Architectural Survey of the Hill Country of Yucatan and Northern Campeche, Mexico*. Peabody Museum Memoir 19. Harvard University. Cambridge, Massachusetts.
- Potter, David F. 1976ms. *Salvage and Stratigraphic Excavations at Lambityeco, Oaxaca*. Ms. in possession of John Paddock.
- Puleston, D. E. 1983. *The Settlement Survey of Tikal*. Tikal Report No. 13. University Museum, University of Pennsylvania. Philadelphia.
- Quirarte, Jacinto. 1976. The Relationship of Izapan-style Art to Olmec and Maya Art: A Review. In H. B. Nicholson (ed.), *Origins of Religious Art and Iconography in Pre-classic Mesoamerica*, pp. 73–86. UCLA Press. Los Angeles.
- Rands, Robert L. 1973. The Classic Maya Collapse: Usumacinta Zone and the Northwestern Periphery. In T. P. Culbert (ed.), *The Classic Maya Collapse*, pp. 165–205. University of New Mexico Press. Albuquerque.
- Rands, Robert L., and Barbara C. Rands. 1957. The Ceramic Position of Palenque, Chiapas. *American Antiquity* 23: 140–50.

- Ricketson, O. G., and E. B. Ricketson. 1937 *Uaxactun, Guatemala: Group E, 1926–1931*. CIW Publication 477. Washington, D.C.
- Rivera Dorado, Miguel. 1987, 1989, 1990, 1992 *Oxkintok 1, 2, 3, 4*. Dirección General de Bellas Artes y Archivos. Madrid.
- Robichaux, Hubert R. 1995. Ancient Maya Community Patterns in Northwestern Belize: Peripheral Zone Survey at La Milpa and Dos Hombres. Unpublished Ph.D. dissertation in anthropology. University of Texas at Austin.
- Roosevelt, A. C., M. L. da Costa, C. L. Machado, M. Michab, N. Mercier, H. Valladas, J. Feathers, W. Barnett, M. I. da Silveira, A. Henderson, J. Sliva, B. Chernoff, D. S. Reese, J. A. Holman, N. Toth, and K. Schick. 1996. Paleoindian Cave Dwellers in the Amazon: The Peopling of the Americas. *Science* 272:373–84.
- Rust, W. F., and R. J. Sharer 1988. Olmec Settlement Data from La Venta, Tabasco. *Science* 242:102–4.
- Ruz L., Alberto. 1973. *El Templo de las Inscripciones, Palenque*. INAH, Colección Científica 7. Mexico.
- Sanders, William T., and J. W. Michels (eds.). 1977. *Teotihuacan and Kaminaljuyu*. Pennsylvania State University Press. University Park.
- Sanders, William T., J. R. Parsons, and R. S. Santley. 1979. *The Basin of Mexico: Ecological Processes in the Evolution of a Civilization*. Academic Press. New York.
- Sanders, William T., and B. J. Price 1968. *Mesoamerica: The Evolution of a Civilization*. Random House. New York.
- Santley, Robert S., Janet M. Kerley, and Ronald R. Kneebone. 1986. Obsidian Working, Long-Distance Exchange, and the Politico-Economic Organization of Early States in Central Mexico. In B. Isaac (ed.), *Economic Aspects of Prehispanic Highland Mexico*, pp. 101–132. JAI Press. Greenwich, Connecticut.
- Scarborough, Vernon L. 1987. *Formation Processes of the Archaeological Record*. University of New Mexico Press. Albuquerque.
- 1994 Maya Water Management. *National Geographic Research and Exploration* 10(2): 184–99.
- Schiffer, M. 1987. *Formation Processes of the Archaeological Record*. University of New Mexico Press. Albuquerque.
- Shafer, H. J. 1983. The Lithic Artifacts of the Pulltrouser Area: Settlements and Fields. In B. L. Turner II and P. D. Harrison (eds.), *Pulltrouser Swamp*, pp. 212–45. University of Texas Press. Austin.
- Shafer, H. J., and T. R. Hester. 1983. Ancient Maya Chert Workshops in Northern Belize, Central America. *American Antiquity* 58: 519–43.
- 1996ms. Chipped Stone Tool Production and Products. Article submitted for inclusion in D. L. Webster (ed.), *The Archaeology of Ancient Mexico and Central America: An Encyclopedia*.
- Sharer, Robert J., and David W. Sedat. 1987. *Archaeological Investigations in the Northern Maya Highlands, Guatemala*. University Museum, University of Pennsylvania. Philadelphia.
- Sheets, Payson D. 1972. A Model of Mesoamerican Obsidian Technology Based on Preclassic Workshop Debris in El Salvador. *Cerámica de Cultura Maya* 8:17–33.

- Smith, R. E., G. R. Willey, and J. C. Gifford. 1960 The Type-Variety Concept as a Basis for the Analysis of Maya pottery. *American Antiquity* 25(3):330-40.
- Symonds, Stacey, and Ann Cyphers G. 1996ms. Settlement Patterns at San Lorenzo. Paper presented at the 61st Annual Meeting of the Society for American Archaeology, 12Apr96, New Orleans.
- Turner, B. L., II. 1974. Prehistoric Intensive Agriculture in the Mayan Lowlands. *Science* 185:118-24.
- Valdez, Fred, Jr. (in press). A Middle PreClassic Maya Temple; Structure G-103 at Rio Azul, Guatemala. To be published in *Rio Azul Reports, No. 5; The 1987 Season*. Center for Archaeology and Tropical Studies. San Antonio.
- Warder, Michael J. The Nature of Science. *Wall Street Journal*, 19 Apr96. New York.
- Weaver, Muriel Porter. 1991. *The Aztecs, Mayas and Their Predecessors*. 3rd ed. Academic Press. New York.
- Wilkerson, Jeffrey. 1987. *El Tajin. A Guide for Visitors*. Museum of Xalapa, Veracruz, Mexico.
- Willey, G. R., W. R. Bullard, Jr., J. B. Glass, and J. C. Gifford. 1965 *Prehistoric Maya Settlements in the Belize Valley*. PMP 54.
- Willey, G. R., G. F. Ekholm, and R. F. Millon. 1964 The Patterns of Farming Life and Civilizations. In R. C. West, ed., *Handbook of Middle American Indians*, Vol. 1, *Natural Environment and Early Cultures*, pp. 446-498. University of Texas Press. Austin.
- Willey, G. R., and R. M. Leventhal. 1978 Prehistoric Settlement at Copan. In N. Hammond and G. R. Willey (eds.), *Maya Archaeology and Ethnohistory*, pp. 75-102. University of Texas Press. Austin.
- Willey, G. R., R. M. Leventhal, A. A. Demarest, and W. L. Fash, Jr. 1994. *Ceramics and Artifacts from Excavations in the Copan Residential Zone*. PMP.

THE PALEOINDIAN AND ARCHAIC CULTURES OF MESOAMERICA

ROBERT N. ZEITLIN AND JUDITH FRANCIS ZEITLIN

THE STATUS OF RESEARCH

Mystified about the origins and cultural development of the strange people they called *los indios*, the sixteenth-century Spanish conquerors of Mesoamerica could do little more than speculate. Native accounts of the past spoke of successive worldly creations and tribal migrations, but the *conquistadores* created their own explanatory narratives, founded for the most part in biblical lore and Classical mythology. Ranging from the insightful to the preposterous, these tales stood largely unverified until the latter part of the nineteenth century, when archaeologists first began the task of systematically investigating Mesoamerica's prehistory. Even then research was focused primarily on the more recent pottery-making periods. It is only since the 1950s that any significant headway has been made toward reconstructing the story of the very earliest human inhabitants of Mesoamerica or, for that matter, of the New World as a whole.

What we can now say with reasonable certainty is that the prehistory of Mesoamerica begins more than 12,500 years ago, and perhaps as early as 35,000 years ago, with the initial entry into the New World of small bands of hunters and wild-food gatherers from northeast Asia. Adapting to the varied environmental challenges of their new homeland, these nomadic foragers flourished, so that by 9000 b.c.¹ they extended from coast to coast and from the far north in Alaska to Tierra del Fuego at

¹ Unless otherwise indicated, all radiocarbon dates in this chapter are uncalibrated. Actual calendric dates, corrected for variations over time in cosmic radiation and atmospheric radiocarbon, could be as much as 5% earlier than their uncalibrated equivalents. Uncalibrated dates will be denoted with lower case letters, b.c. Calibrated (calendric) dates, where given, will be distinguished by upper case letters, B.C. When referring to dates in years before present, the same convention will be used, with uncalibrated dates indicated by the lowercase letters b.p., and calibrated dates with the capital letters B.P.

the tip of South America. Over the millennia, with an increasingly large and dense population to support and with the post-Pleistocene extinction of many of the animal species on which they had depended for food, the immigrants evolved new and more productive methods of subsistence, culminating in the development of agriculture and the domestication of maize, beans, squash, and the more than forty other cultigens that came to constitute the Mesoamerican diet. Concomitantly, the itinerant way of life characteristic of the early foragers was abandoned, so that by 1500 b.c. much of the area was dotted with small, permanent farming villages. Thus the stage was set for the formation of the great civilizations by which Mesoamerica came to be identified.

That relatively little detail is known about these important early developments can, to some extent, be attributed to the many years that have intervened to hide or destroy the sparse material remains of Mesoamerica's ancient forebears. Adding to the deficiency are ongoing disagreements over the interpretation of what meager archaeological data there are. In this chapter we review the current status of the evidence at hand and discuss the major controversies it has engendered.

TOWARD A TEMPORAL FRAMEWORK FOR THE STUDY OF EARLY MESOAMERICAN CULTURES

To examine most fruitfully the beginnings of Mesoamerican prehistory one must look beyond the area's sixteenth-century geographical boundaries to other parts of the New World. This broad perspective is required not simply because the scant data bearing on these most ancient times need amplification, but because at that early date the circumscribed sphere of social and cultural interaction by which Mesoamerica is defined had not yet coalesced. Thus it is necessary to regard the initial cultural adaptations and processes of change in the area now called Mesoamerica as an integral part of a complex of developments occurring throughout much of the New World.

Lithic or *Preceramic* are the descriptive terms alternatively attached to New World archaeological sites of this first prehistoric era, reflecting the fact that stone tools make up the bulk of the artifacts found and that pottery was not yet part of the cultural assemblage. The Lithic/Preceramic era is further divided into two periods: an initial Paleoindian period, followed by the Archaic. The Paleoindian period begins with the first appearance of humans in the Americas at some time toward the end of

the last Ice Age. Precisely when is a matter of current debate among prehistorians, owing largely to the absence of a widely accepted body of conclusive archaeological evidence. Lacking such information, which could be derived from a series of well-dated Pleistocene epoch archaeological sites along the route of migration, researchers currently argue for dates of earliest settlement ranging from as recently as 12,500 years to more than 200,000 years ago (Fig. 2.1).

Mesoamerica's climate during the late Pleistocene was, with some fluctuations, drier and cooler than it is nowadays, although the glacial sheets blanketing the higher latitudes of North America at that time were confined in this more southerly area to sporadic ice fields in mountainous regions. The resulting environment supported a complex of biotic communities that included an assortment of large, now extinct mammals, the mastodon and mammoth perhaps best known among them. Although the Paleoindians are typically identified with the hunting of these Pleistocene megafauna, smaller animals and wild-plant foods seem to have played a prominent if less conspicuous role in subsistence.

The Paleoindian period ends and the Archaic begins somewhere between 9000 and 7000 b.c., during a time of global warming. By the mid-Archaic, temperatures had risen to several degrees above what they are at present, and the final Wisconsin-stage glaciers that previously covered much of North America above the 45th parallel had retreated to the Canadian Subarctic. The extinction of various large Ice Age animals, correlated with the more temperate postglacial climate, is often used as a timeline for the inception of the Archaic period, and in North America that date is set at 7000 b.c., when the horse joins the list of vanished indigenous species. The disappearance of these animals and their food potential was undoubtedly instrumental in the profound subsistence changes that characterize the Archaic, changes culminating by the end of the period in the development of agriculture and settled village life.

Based on the date at which the earliest pottery is found in Mesoamerica, 2300 b.c. marks the end of the Preceramic era and, by strict definition, the close of the Archaic. Some prehistorians reason that the Archaic period in Mesoamerica should more logically be extended to 1500 b.c., when the transformation from nomadic foraging to a fully sedentary, agricultural way of life was essentially complete throughout the area.

The inability of prehistorians to agree upon precise cutoff dates for the beginning and end of the Paleoindian and Archaic periods is in part

Date	Period
2000 b.c.	Formative/Preclassic
3000 b.c.	Late Archaic
5000 b.c.	Middle Archaic
7000 b.c./ 9000 b.c.	Early Archaic
10,000 b.c. 12,000 yrs B.P.	Late Paleoindian
35,000 yrs B.P. or earlier?	Early Paleoindian

Figure 2.1. Temporal framework for the Paleoindian and Archaic period.

because we are dealing with processes of cultural change rather than with discrete events, even when, as in the case of the Paleoindian/Archaic boundary, these cultural processes are presumed to have been triggered by geological events occurring within limited, if not precise, temporal parameters. Consequently, there is no distinct date when hunting and wild-plant food gathering was replaced by agriculture, or when nomadism gave way to sedentary village life, to take but two of the most significant evolutionary developments during these early periods. As for the seemingly endless debate over the beginning of the Paleoindian period, it will probably never be known exactly when the very first human set foot in the New World, nor would such knowledge in itself be of much significance were it determinable.

This is not to say that accurate dating of specific archaeological remains is considered unimportant. On the contrary, the importance of chronological control is underscored in the bolstering of older methods of age determination based on geological context, radiocarbon analysis, and cross-dating of artifacts from lesser- to better-known archaeological sites by a battery of newly developed dating techniques employing accelerator mass spectrometry (AMS), silicate glass hydration, amino-acid racemization, fission-track counting, fluorine diffusion, thermoluminescence, and uranium series measurement. With the exception of AMS dating, however, it is unfortunate that the archaeological credibility of many of these still experimental procedures is undercut by their all too often inconsistent and occasionally outlandish results. Even where the age determinations are themselves unquestioned there are often doubts about whether the dated materials are genuinely associated with archaeological remains and, if so, whether the association indicates contemporaneity.

OTHER PROBLEMS IN ARCHAEOLOGICAL RECONSTRUCTION

Beyond the various chronological complications, attempts at reconstructing the first periods of Mesoamerican prehistory are adversely biased as a result of their disproportionate dependence on archaeological data derived from interior highland regions of the area. Important as they may be, the coastal lowlands of Mesoamerica, having lost much of their record of Paleoindian occupation to a combination of rising post-Pleistocene sea levels, land subsidence, and poor conditions for the preservation of organic remains, are all but unrepresented in the earliest archaeological

record. The situation is little better for the Archaic. The rare investigations designed to remedy our lack of knowledge about the lowland Archaic, such as the Chantuto project directed by B. Voorhies or R. S. MacNeish's Belize Archaic Archaeological Reconnaissance, have been enlightening, but their limited scale or exploratory nature has produced neither a range nor depth of details comparable to that from the highlands. Research currently under way in several lowland regions promises to help fill this void.

Compounding the problem of highland bias is the fact that much of the received wisdom regarding Paleoindian and Archaic period diet, modes of subsistence, exchange networks, and other aspects of economic life is derived from studies conducted more than twenty-five years ago. Analytical advances since that time have raised data-criteria issues not addressed by the earlier research designs. Even greater difficulties are faced when it comes to reconstructing social organization, ceremonialism, and ideology from the archaeological traces of people whose material manifestations of these phenomena, even where preserved, were very limited.

Finally, and perhaps most problematical of all, are the ongoing efforts at establishing causality and explaining processes of change in early Mesoamerican prehistory. Toward this end prehistorians have drawn heavily upon studies of contemporary hunter-gatherers and small-scale traditional farmers for organizational and behavioral models of the past, but almost invariably the requisite archaeological database against which these analogues could suitably be tested is lacking. Consequently, the many hypotheses about the dynamics of technological advance, population growth, the replacement of wild-food procurement by agriculture, the shift from nomadism to permanent village life – all hallmarks of Paleoindian–Archaic development – often fall back upon ethnographic analogy as explanation itself or remain largely speculative.

THE ROUTE OF ENTRY INTO THE NEW WORLD

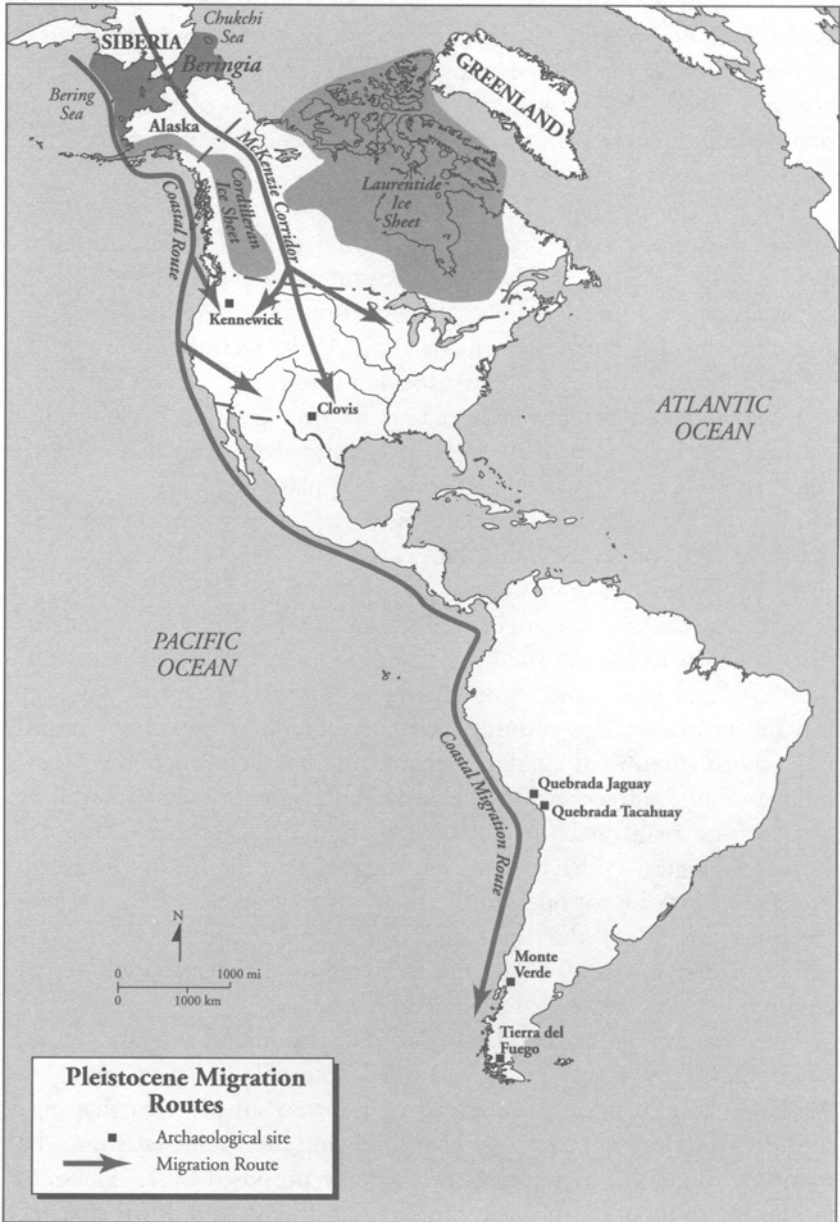
Notwithstanding the various shortcomings in current archaeological research, it is generally agreed that the first Americans were anatomically modern humans, hunter-gatherers who wandered unwittingly across the Bering Strait into Alaska from northeastern Asia during the final Wisconsin stage of the Pleistocene, perhaps in several waves of migration. The paucity of archaeological evidence from the far north locus of entry is,

however, a major stumbling block in verifying the precise route as well as the time of America's initial settlement. To some extent this can be accounted for by the limited archaeological exploration in the inhospitably cold Siberia–Alaska area, the probable spottiness of the early, transient Paleoindian population, and post-Pleistocene flooding of the littoral regions where first entry would have occurred.

The Wisconsin stage, between 70,000 and 10,000 years ago, was marked by several cold, dry periods, during each of which substantial quantities of the earth's surface water was captured in glacial ice, lowering sea levels as much as 150 meters. Depleted of water, the shallow Bering and Chukchi seas separating Siberia from Alaska were transformed into a broad, grassy plain more than 1,500 kilometers wide. Over this intercontinental "land bridge," referred to by geologists as Beringia, it is believed that cold-adapted Asian hunters entered America, following the game animals they favored, gathering wild-plant foods along the way. During the last millennium of the Pleistocene, at least, a major attraction for these early migrants would have been the large herds of herbivores that were themselves drawn to the grasslands of the Beringian tundra.

Scientists are not of a single mind regarding the ability of the Paleoindian migrants to have crossed the 2,000-mile-long ice sheets that would have hindered travel south from Beringia. A widely accepted hypothesis has the primary route running eastward initially, through the mainly unglaciated interior of Alaska, then turning south through the Yukon, following an ice-free corridor between the Laurentide and Cordilleran glaciers that blanketed the northern part of the continent (Map 2.1). Recent geological evidence, however, suggests that the ice-free McKenzie Basin corridor did not open until about 11,500 years ago. Even so, there are questions about the abundance for several centuries afterward of edible plants, firewood, and game animals in the deglaciated wetland environment that succeeded the retreat of the ice.

Uncertainties about the viability of an early inland migration route, compounded by a scarcity of identified archaeological sites along the Alaska–Yukon corridor, have served to resurrect an old idea that entry into the Americas was partly by boat following the Pacific coastline. The maritime migration hypothesis, as originally proposed by K. Fladmark, locates the route of entry across the Aleutian Islands and down along the Pacific littoral, where numerous wildlife refugia would have offered easily exploited habitats, rich in fish, shellfish, birds, and sea mammals. Recent discoveries of two fishing and seabird-hunting campsites along the coast



Map 2.1

of Peru, radiocarbon dated as early as 13,000 years B.P., lend the hypothesis archaeological credence. Further support is derived from a linguistic theory that would explain the high diversity of aboriginal languages along the west coast of North and Central America – 143 mutually unintelligible languages in all – as the outcome of a lengthy process of splitting from a common ancestral language, a process with a time depth estimated on the order of 35,000 years.

A seagoing capability of Paleoindian migrants is presupposed by the maritime hypothesis since the broken coastline, interspersed with minor glacial zones, would have been difficult to traverse entirely on foot. Such a precocious skill has yet to be verified archaeologically for the New World Paleoindians, but cannot be rejected out of hand in light of the colonization of Australia by boat from the Asian mainland more than 30,000 years ago. The Australian example has led to additional speculation, not widely accepted, that some very early dates claimed for archaeological sites in South America, such as Monte Negro in Brazil, are better accounted for by a separate trans-Pacific migration along a southerly route from Australasia.

Arguments favoring the Bering Strait point of entry, whether subsequently inland or coastwise, are supported by odontological studies comparing historic north Asian peoples and native Americans. These studies reveal an assortment of uniquely shared dental traits, such as shovel-shaped incisors, single-rooted upper first premolars, and three-rooted lower first molars, all of which indicate a common genetic origin. Differences that exist between Asian and American Indian dental morphology are attributable to genetic drift subsequent to the initial Paleoindian separation from an ancestral “Sinodont” stock more than 15,000 years ago. Analyses based on the estimated mutation rate of mitochondrial DNA have led geneticists to favor a model of multiple waves of human migration from Asia, beginning as early as 40,000 years ago.

THE TIME OF EARLIEST ENTRY

In principle there is no reason why the earliest human migrations from northeastern Asia could not have occurred 40,000 to 60,000 years ago, or even earlier. Since radiocarbon dates indicate human occupation at Fell’s Cave at the southernmost tip of South America by 9000 b.c., attempts have been made to gauge the time of first entry by estimating how long it would have taken mobile hunter-gatherers to disperse

throughout the continents and wander the thousands of miles south from Alaska. Unfortunately, this kind of demographic growth modeling has not proven very informative. Depending on the variables employed to measure such factors as population growth rate and carrying capacity of the land for people subsisting by hunting and wild-food gathering, these calculations indicate a theoretical time of passage to Fell's Cave ranging from 500 to 35,000 years.

Based on archaeological evidence, it was asserted until recently that human occupation of the Americas could not be confirmed earlier than about 12,000 years ago. At that date irrefutable indications of skilled big-game hunters armed with spears or *atlatls* tipped with a uniquely sophisticated Clovis-type fluted projectile point were found throughout North America. Proponents of the 12,000-year barrier argued that there was not a single Paleoindian site in the Americas that could be shown to predate this Clovis culture. Their reasoning was that at no site had they been shown pre-Clovis human skeletal remains, a convincingly diagnostic pre-Clovis artifact assemblage or, at the very least, indications that the natural environment had been altered before that time by human activity. Should such archaeological evidence be located, they called for it to be dated directly or, less preferably, indirectly through stratigraphic and contextual association with materials of confirmed antiquity, as were the Clovis finds. They insisted that there be multiple concordant determinations of age at any purportedly early site, ideally employing more than one dating technique.

A number of investigators professed to have met these criteria, but their findings continued to be subject to question and criticism. Such reservation or outright rejection these researchers attributed less to the quality of their data than to what they saw as the implacable commitment of a conservative element of prehistorians to defending the North American Clovis complex as the New World mother culture. With Clovis well dated at not much earlier than 9500 b.c., the early-entry skeptics were accused of setting inordinately high standards for the acceptance of evidence from the growing number of North, Central, and South American sites with indications of pre-Clovis occupation. On their part, the Clovis-first advocates denied any preconceptions or prejudicial standards but, rather, pointed to uncertainties about each of the supposed early finds. A proliferation of problematical sites, they argued, did not, by mere virtue of number, constitute a strong argument for pre-Clovis human occupation.

Finally, one site in southern Chile, under investigation by T. Dillehay since 1977, has provided evidence of pre-Clovis occupation that satisfies almost all the doubters. Dillehay's excavations at Monte Verde uncovered a variety of wood, bone, ivory, cordage and lithic artifacts, along with a preserved human footprint in this now waterlogged ancient campsite. A series of eleven associated radiocarbon samples produced dates centered around 12,500 years B.P., well before Clovis. In 1997 a committee of nine distinguished Paleoindian archaeology specialists, none associated with the Monte Verde project and some counted as Clovis-first proponents, inspected Dillehay's excavations. Their unanimous conclusion was that the Monte Verde site was genuine and, at 12,500 years of age, predated Clovis. More intriguing, but still under investigation at Monte Verde, is an earlier but less-well-preserved occupation level, radiocarbon dated to at least 33,000 years B.P.

Claims for New World human occupation dating before 35,000–40,000 years ago remain highly speculative. The unlikelihood of such an occurrence had once been an assumption among archaeologists grounded in the belief that the recovery of fossil human remains older than 40,000 years would imply the existence of premodern *Homo sapiens* populations in the New World and their improbable independent evolution into our own species. Recent genetic and fossil studies that identify the African evolution of anatomically modern *Homo sapiens* at well over 100,000 years ago now make the biological argument against New World human occupation before 40,000 years untenable. Whatever the hypothetical possibilities, however, there are currently no recorded hominid skeletal remains in the New World, morphologically modern or primitive, anywhere near that age. Of the thirteen oldest North American fossil humans known in 1985, seven were redated by radiocarbon accelerator mass spectrometry; not one was found to be over 11,000 years old. Two newly discovered Paleoindian skeletal finds, one at On-Your-Knees Cave in Alaska, the other at Kennewick, on Washington's Columbia River, have been radiocarbon dated respectively to only 9,800 and 9,300 years ago. The Kennewick skeleton has become particularly notorious because of an unfortunate statement, subsequently withdrawn, that its skull was "Caucasoid" in form.

Lacking skeletal evidence, claims for New World human occupation before 35,000 years ago fall back on inferences drawn exclusively from artifactual and contextual data: stone "tools," simple in form and crudely flaked, are reported in Pleistocene-era geological deposits of an early date;

radiometric dating often supports a geological assessment of great antiquity; fossil remains of now extinct Ice Age fauna are sometimes associated with the lithic specimens; and some of the fossil animal bones show signs of intentional breakage or alteration interpreted as resulting from their having been used by humans for food or in bone-tool production. In every instance, however, questions have been raised about the authenticity of the lithic or bone tools, the stratigraphic integrity of the deposits, and the accuracy of the dates. Consequently, over the past several decades there has been an ever-changing roster of these controversial early North and South American archaeological sites, as new finds are made and existing ones are discredited.

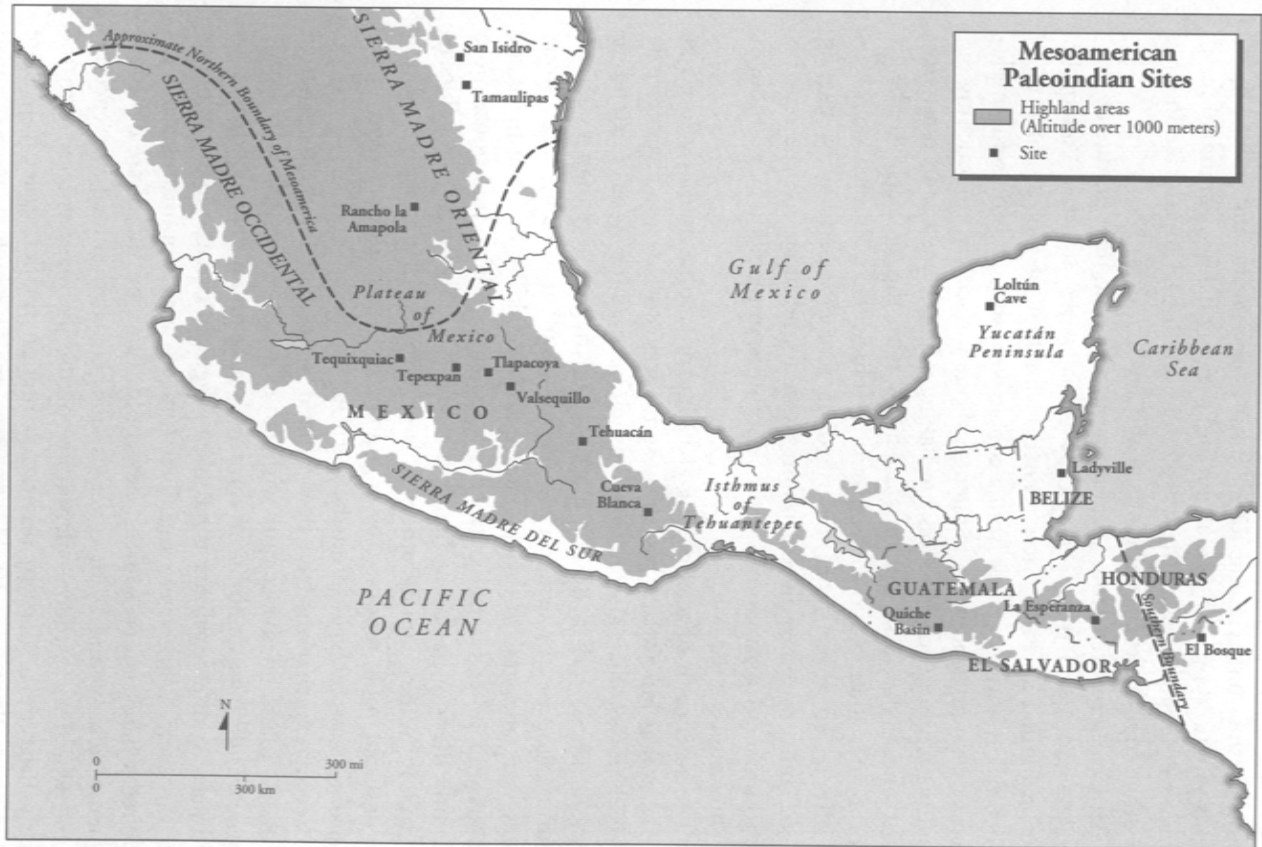
THE EARLIEST MESOAMERICANS

One of the few current candidates for very early New World human settlement is in the heart of highland Mesoamerica, near present-day Puebla, Mexico. The archaeological site or, more precisely, cluster of sites bordering the Valsequillo Reservoir (Map 2.2), is particularly significant, since it has been used to support more than one hypothesis about the initial date of human entry into the Americas and exemplifies a number of other issues in Paleoindian period studies.

It was J. Armenta Camacho who first called attention to the alluvial gravels around Valsequillo as a potential source of evidence bearing on questions about early human settlement in Mesoamerica. Encouraged by the results of his exploratory investigations, he joined forces in 1962 with the late C. Irwin-Williams for an intensive archaeological survey of the area. In short order, five possible occupational sites – Hueyatlaco, Tecacaxco, El Mirador, El Horno, and Cualapan – were located, all within a roughly 5-kilometer radius.

Excavation, directed by Irwin-Williams, proceeded through 1966 at the five Valsequillo locations, resulting in the recovery of numerous lithic artifacts along with the remains of various Pleistocene mammals, among them mastodon, mammoth, camel, horse, four-horned antelope, saber-toothed tiger, and dire wolf. The stone tool assemblages and associated fossil animal bones suggested to Irwin-Williams a number of temporary hunting camps at or near a kill site.

At Hueyatlaco ten stratigraphically superimposed alluvial deposits were reported, dating from recent times back to the Pleistocene. Below the uppermost “unit,” where modern debris was encountered, two strata



Map 2.2

were identified, the higher of which revealed evidence of a sophisticated lithic technology, manifested in a bifacially worked stemmed projectile point, cutting and scraping tools, burins, perforators, and other implements produced by both percussion and pressure flaking. Abundant fossil remains of extinct Pleistocene megafauna were found in association with the stone tools at several locations at this level.

Artifacts recovered from the lowest stratigraphic unit producing cultural remains, and from geologically coeval strata at other Valsequillo sites, exhibited an earlier, less refined technology of tool production in which flakes initially struck from a cobble were shaped into useful implements by simply smashing fragments off one surface, then retouching the resulting working edge by pressure-flaking. Camel, horse, and mastodon were among the fossil remains associated with the artifacts. At the El Horno site, about 1,000 meters south of Hueyatenco, thirteen such unifacially flaked stone tools, described as scrapers, perforators, cutting edges, and possible projectile points, were found alongside the remains of a butchered mastodon. Some of the lithic implements were thought to show signs of use-wear.

The absence of bifacial flaking at El Horno and in the lower levels of excavation at Hueyatenco is seen by some prehistorians as a characteristic of Early Paleoindian assemblages throughout the New World, extending back in time as early as 40,000 years. A. D. Krieger, more than a quarter-century ago, was the first to propose that simple unifacially flaked stone tools were ancestral to the distinctive array of skillfully made projectile points and other bifacially flaked implements of later traditions; more recently the idea has been championed by A. L. Bryan, R. S. MacNeish, and G. R. Willey, among others. It is noteworthy that an early tradition of unifacial tools modified by marginal retouch is discerned in upper Paleolithic assemblages of northeastern Asia as well.

Several explanations have been offered to account for the megafaunal remains found in association with stone tools whose relatively crude forms would belie an ability to hunt such large and potentially dangerous animals. As one possibility it has been suggested that the initial migrants to the New World were unskilled foragers who opportunistically exploited whatever food sources they could. Only on those rare occasions when a sick, wounded, or otherwise incapacitated animal was encountered would a mastodon, mammoth, or the like have entered into the Early Paleoindian diet. In this reconstruction smaller, easier-to-procure game as well as wild-plant foods, the remains of which have survived

only under exceptional conditions, as at Monte Verde, are seen as the principal source of subsistence.

It should, however, be recognized that the relatively small sample of artifacts recovered from Early Paleoindian sites is unlikely to represent the full range of tools utilized by the early inhabitants of the Americas. The Monte Verde tool assemblage reminds us that projectile points and other specialized tools suited to the hunting of large animals could have been produced from wood, bone, or other perishable materials and thus might not be preserved. Moreover, although the early Chileans at Monte Verde appear to have led a semisedentary lifestyle, it is likely that in most other habitats prolonged occupation at a single campsite would not have been feasible. Mobile hunter-gatherers may have found it more expedient to make and discard right after use whatever implements were needed for the task at hand, taking advantage of locally available materials. Such an ad hoc approach to tool production would have freed these foragers from the burden of maintaining and transporting from place to place a permanent kit containing every tool required, but would frustrate archaeological detection and recovery.

Whatever the evidence or lack thereof for subsistence technology at Valsequillo, the most astonishing outcome of the investigation involved the results of dating efforts. Applying an experimental tephra hydration measurement to samples of volcanic pumice at the Hueyatlaco site, V. Steen-McIntyre announced an age of 250,000 years B.P. for the stratum said to overlie the earliest archaeological components. As if in confirmation of this extraordinarily early determination, B. J. Szabo, experimenting with the use of uranium-series measurements on Pleistocene animal bone at the same stratigraphic level, arrived at a date of $245,000 \pm 40,000$ years B.P. Fission-track analysis of volcanic glass from the two geological strata overlying the early component yielded even earlier dates of $600,000 \pm 340,000$ and $370,000 \pm 200,000$ years B.P., although in reverse stratigraphic order. While the overlapping determinations could be interpreted as corroborating each other, they have been largely disparaged as inordinately early, the result of improper sample collection and analysis. They continue to draw the attention of only those few prehistorians philosophically inclined to the possibility of New World occupation before the Wisconsin glacial advance or of those who use them to undermine the credibility of a more reasonable series of radiocarbon-based dates for the site endorsed by Irwin-Williams.

The radiocarbon determinations to which Irwin-Williams subscribes

were obtained from a stratigraphic profile at the Cuilapan barranca, a stream-eroded gully leading into the Valsequillo Reservoir. There five fossil freshwater mollusk samples from different levels yielded a sequence of dates ranging from 9150 ± 500 years b.p. near the surface of the excavation to 29,000, 30,000, and 35,000 years b.p. for the lowest levels. Midway down the profile, one of these samples, found in direct association with a flake scraper, was dated to $21,850 \pm 850$ years b.p. Although shell has been faulted as an unreliable medium for radiocarbon dating and the integrity of the complex streambed stratigraphy from which it was obtained has been questioned, the chronological sequence is by and large internally consistent. Considering the association of the stone tool with the dated shell, Irwin-Williams adopted the 21,850 years b.p. date as representative of the time by which the Valsequillo region had been settled.

The more conservative Valsequillo age claimed by Irwin-Williams falls within a range of dates between 14,000 and 35,000 years ago that bracket a growing corpus of New World archaeological sites extending from the Yukon to Chile. In Mesoamerica, Valsequillo is only one of several places falling within these age limits. Other sites include Tlapacoya, located alongside ancient Lake Chalco in Central Mexico; Rancho La Amapola, farther north near El Cedral in the Mexican state of San Luis Potosi; and El Bosque to the south in Nicaragua.

At the El Bosque site, where bones of mastodon, horse, and giant sloth were found by R. Gruhn and colleagues in association with what look like crudely flaked tools, radiocarbon dates extend from about 18,100 to over 35,000 years b.p. MacNeish, who examined the El Bosque finds, considers at least one specimen in the lithic assemblage to be a primitive "chopper," and on that basis tentatively assigned the site an antiquity greater than 30,000 years. His interpretation draws upon a theory originating with Chard that simple bifacial chopper-chopping tools along with crude pebble or flake implements were characteristic of the very earliest New World lithic industry, preceding even the unifacially flaked tools found at sites such as Valsequillo.

A number of archaeologists, along with MacNeish, have proposed that the chopper-chopping tradition may have been imported into the New World via Siberia out of an ancestral Lower and Middle Paleolithic Eurasian tool tradition. With specific regard to the El Bosque site, however, serious doubts have been expressed about both the authenticity of the tools and the validity of the early dates. There are no other Meso-

american Paleoindian sites with verified remains in the chopper-chopping tradition, although San Isidro in Nuevo Leon, La Esperanza, Honduras, and Tlapacoya in the Basin of Mexico have all been suggested as candidates.

Somewhat less equivocal evidence from Tlapacoya relates to a later tradition, resembling more closely that of early Valsequillo. The Tlapacoya data result from eight seasons of interdisciplinary fieldwork carried out between 1965 and 1973 under the principal direction of J. L. Lorenzo and L. Mirambell. In addition to the artifactual remains reported from excavations, analyses of the local geology, limnology, pollen, and fauna were included in their study. A suite of radiocarbon dates was obtained, seventeen of which fall between 33,000 and 14,000 years b.p. The investigators accept as representative a determination of $21,700 \pm 500$ years b.p. on carbon and soil from a circular hearth, about 1.15 meters in diameter, within and adjacent to which were found stone tools and abundant animal bones, many from now extinct Pleistocene mammals. Two other cooking areas, one radiocarbon dated at $24,000 \pm 4000$ years b.p., provide additional evidence for what appears to be a series of temporary campsites along the ancient Chalco lakeshore.

Most of the more than 2,500 lithic artifacts recovered from Tlapacoya-1 Alfa, the earliest dated locality at the site, were crudely made flakes and blades of poor-quality local volcanic stone, similar in form to the edge-retouched artifacts from the lower levels at Valsequillo. Several obsidian artifacts were also found, two in association with animal bones, one located in a hearth. Their bifacial flaking appears more controlled than that used to manufacture tools from local stone, and does not conform to the unifacial industry proposed by MacNeish as typical of this Early Paleoindian subperiod. The obsidian itself was obtained from sources at least 50 kilometers away, indicating that the inhabitants of the Tlapacoya-1 campsites were either wide-ranging nomads or that some sort of exchange relationship had developed between adjacent groups of people. Criticism of the Tlapacoya research centers around whether the artifacts are actually contemporaneous with the radiocarbon dated materials.

Recovered from the screening of excavated material or from less secure provenances at Tlapacoya, and thus not contextually datable, were several well-made bifacially flaked implements, including a "lermoid" and a Coxcatlan-style projectile point, lithic types that are assigned at other archaeological sites to later Paleoindian times. Several bone fragments

were found to have cut marks, although it is uncertain whether they indicate efforts to carve the bones into tools or are attributable to food preparation, food consumption, or scavenging animals.

Subsequently, Lorenzo and Mirambell produced some even earlier radiocarbon dates in a program of excavation they conducted from 1977 to 1980 at the Rancho La Amapola site in San Luis Potosi. The site is situated in what was an area of lakes, marshes, streams, and springs during its time of occupation. One charcoal sample, thought to be from a cooking area, has been dated at $31,850 \pm 600$ years b.p. The circular, ash-filled hearth is bordered by proboscidean tarsal bones. Abundant remains of mammoth, mastodon, horse, camel, dire wolf, short-faced bear, glyptodon, giant ground sloth, and other large Pleistocene-age animals found in the vicinity of a nearby ancient spring suggest that both humans and animals were attracted to the locality by the availability of water. Unfortunately, only three definite artifacts, none very diagnostic, have been identified: a point made from a horse tibia, a discoidal stone scraper, and a limestone hammerstone. The chalcedony scraper was found in a stratum radiocarbon dated at $33,300 \pm 2700$ – 1800 years b.p.

Currently, only one site in Mesoamerica supports the hypothesis of human occupation in lowland environments before 12,000 years ago. In the Puuc Hills of northern Yucatan, the lowest levels of excavations reported by R. Velázquez at Loltún Cave have produced some crude stone and bone tools along with the remains of horse, mastodon, and other now extinct Pleistocene mammals. Felines, deer, and numerous rodents round out the archaeological assemblage. No radiocarbon dates have been forthcoming for this proposed early component that underlies later ceramic occupations. On the basis of stone tool typology and faunal association, MacNeish has proposed that the lower levels of Loltun Cave are somewhere between 40,000 and 15,000 years old.

THE LATE PALEOINDIAN PERIOD AND THE “BIG-GAME HUNTING TRADITION”

Whereas the possibility of human migration into the New World before 35,000 years ago is argued only tentatively by a small number of prehistorians, and even the mounting evidence of entry between 35,000 and 12,500 years b.p. fails to be universally accepted, it is unequivocally recognized that by 12,000 years ago Paleoindian settlement was widespread throughout the Americas. Indeed, it was the well-dated Clovis culture, first defined for the high plains of New Mexico, that had, since

the introduction of radiocarbon dating in the 1950s, set the basemark for early New World human occupation.

Beginning with Clovis, the hunter-gatherer occupants of the Americas began producing a variety of skillfully-made, bifacially-flaked spear and dart points. From the standpoint of technology, the suitability of these projectile points for use against large Pleistocene mammals underlies the conceptualization of a late Paleoindian period “big-game hunting tradition.” Although the term *big-game hunter* seems most appropriate when applied to complexes such as the Llano of the southwestern United States and northern Mexico, where finds of Clovis points are commonly associated with mammoth kill sites, the geographic distribution of these large, lanceolate-shaped points, easily identified by the flute or channel at their base, extends as far south as Central America. Hafted to thrusting spears or perhaps to shafts used with *atlatls* (spearthrowers), they would have made formidable weapons, even when directed against animals as imposing as mammoths. Following the time of Clovis production, the final several thousand years of the Late Paleoindian period saw a proliferation of large, skillfully made point types, many strikingly beautiful. The care and craftsmanship invested in these tools, far exceeding that required to fulfill utilitarian needs, suggests that some of them may have served as markers of status or group affiliation.

The idea of a big-game hunting tradition implies not only a technological capability but also the development of new organizational strategies to successfully pursue a large and potentially lethal quarry. With these new capabilities, there is evidence that by 11,000 b.p. the human predation of Pleistocene megafauna had reached unprecedented levels in North America. Whereas earlier Clovis-tradition kill sites are commonly found on the boggy margins of lakes or ponds, where an isolated mammoth might have encountered difficulty evading attack or to which a hapless animal may have withdrawn for shelter after being wounded elsewhere, later Paleoindian Folsom and Plano complex sites of the southwestern United States reveal multi-animal kills, sometimes the result of entire herds having been stampeded into box canyons or over the edges of cliffs. Such large-scale hunting would have entailed more sizable, better-organized social groupings than in Early Paleoindian times.

“BIG-GAME” SITES IN MESOAMERICA

Although not many Clovis and Clovis-like fluted points have been recovered from stratigraphic excavations in Mesoamerica, surface finds are

reported from Chihuahua, Durango, Sonora, Coahuila, Nuevo León, San Luís Potosí, and Jalisco in northern Mexico, to Tlaxcala, Puebla, and Oaxaca in highland central Mexico, and farther south into Belize, Guatemala, and Costa Rica. Recent discovery of two Clovis points at the Ladyville site in coastal Belize extends the range of Mesoamerican fluted points to lowland environments as well (Fig. 2.2).

The co-occurrence of Clovis with what MacNeish interprets as a form of “fishtail” point in the earliest Lowe-Ha complex of coastal Belize would indicate the contact of two geographically distinct Late Paleoindian traditions at a time period dated at 9000–7500 b.c. “Fishtail” projectile points, some with slight basal fluting, were first reported by J. Bird over a quarter century ago at Fell’s Cave in the Tierra del Fuego region of southern Chile, where they are found along with the remains of extinct horse, mylodon and other large Pleistocene animals in strati-

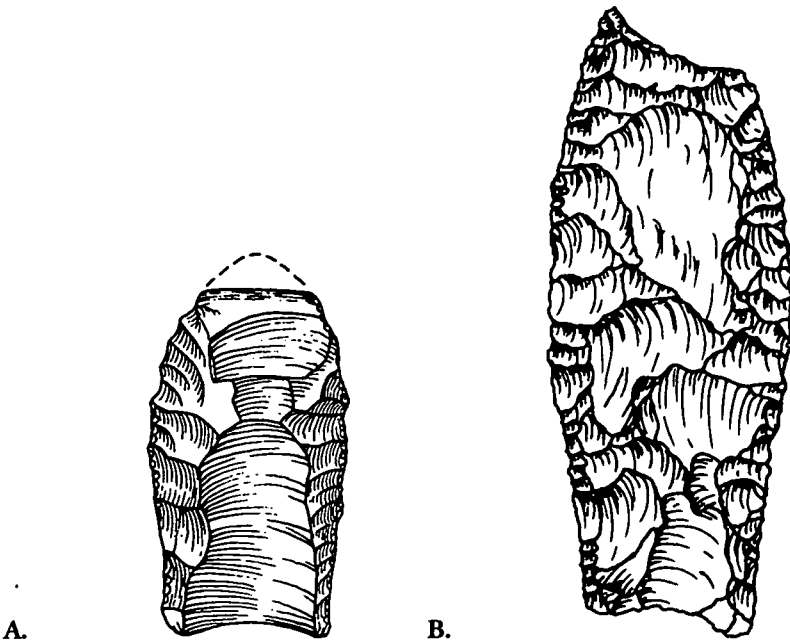


Figure 2.2. Clovis-type fluted projectile points from the Valley of Oaxaca, Mexico, and Ladyville, Belize. (A): Valley of Oaxaca example. Drawing courtesy of Kent V. Flannery and Joyce Marcus, Museum of Anthropology, University of Michigan. (B): Ladyville, Belize example. Redrawn from *Ancient Mesoamerica* 4 (2): 212 (1993), fig. 5a.

graphic contexts dated 9050 ± 170 and 8770 ± 300 b.c. Subsequently a variant of the fishtail point with fluting resembling that on Clovis points was identified at the El Inga site in Ecuador.

In addition to the Belize specimens, other Central American “fishtail” points are reported from Madden Lake, Panama, and the Quiché Basin of Guatemala (Fig. 2.3). No faunal remains were found with the Belize points, but the current open savanna environment, probably not much changed since the Terminal Pleistocene, suggests a habitat attractive to large grazing animals. The points, recovered by MacNeish and his fellow investigators in excavations carried out as part of the Belize Archaic Archaeological Reconnaissance, would represent the northernmost extension of the fishtail point horizon. A recent critical review of MacNeish’s projectile point typology, however, questions the classification of these tools and argues against the expansion of the fishtail point tradition into Belize.

Somewhat more recent than Clovis and fishtail points in Mesoamerica are a number of large, well-made, unfluted point or knife types – Lerma,

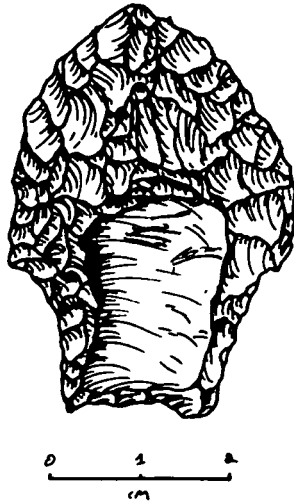


Figure 2.3. “Fishtail” point from Madden Lake, Panama. Redrawn from Bird, J. B. and R. Cooke, “The occurrence in Panama of two types of Paleoindian projectile point,” in *Early Man in America from a Circum-Pacific Perspective*, ed. A. L. Bryan, pp. 263–72. Occasional Papers, No. 1, Department of Anthropology, University of Alberta, Edmonton, fig. 3d, p. 270.

Angostura, Dalton, Plainview, and Scottsbluff most notable among them – related typologically and contemporaneous to the Plano complex of the North American Plains. Both Pleistocene and modern animal remains have been found in association with Planoid tool-types at various Mesoamerican sites dated between 9000 and 7000 B.C., reflecting the transitional nature of the terminal Paleoindian years.

The best known of the Mesoamerican Late Paleoindian fossil animal finds are the two dismembered mammoth skeletons from Santa Isabel Iztapan, adjacent to ancient Lake Texcoco in the Valley of Mexico. Lerma, Scottsbluff and Angostura points found in association with the mammoths (Fig. 2.4) suggest that the animals were killed either after they had been driven into or attempted to take shelter in the swampy shallows of the lake. A number of associated chert and obsidian knives, prismatic blades, scrapers, and other tools were likely responsible for the many cut marks found on the fossil bones, indicating that the hunters butchered the mammoths on the spot. Interestingly, the lithic materials from which some of these tools were made were obtained from locations

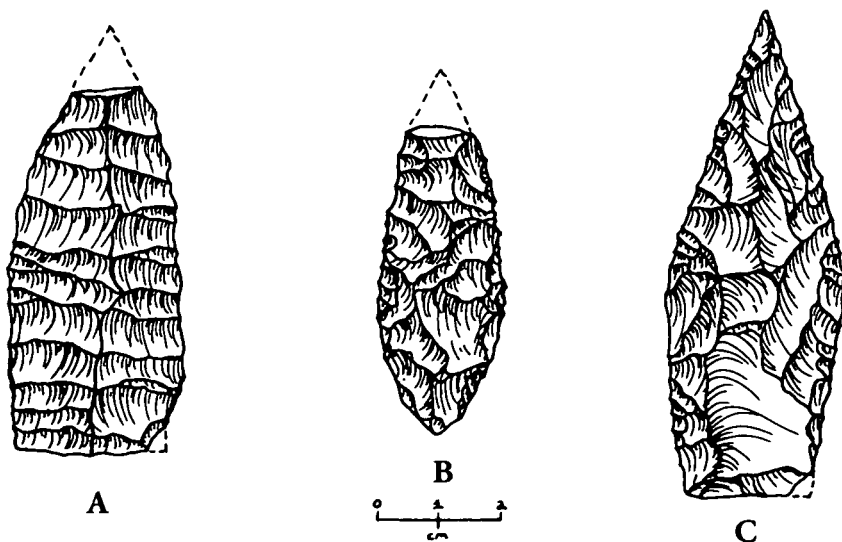


Figure 2.4. Projectile points from Santa Isabel Iztapan: (A) Scottsbluff; (B) Lerma; (C) Angostura. Redrawn from Willey, G. R., *An Introduction to American Archaeology*, vol. 1, fig. 2–28, p. 65, and Coe, M. D., *Mexico*, fig. 10a, b, c.

hundreds of kilometers from the Iztapan kill sites, indicating the wide-ranging mobility of these foragers or the development of an early system of exchange with neighboring bands.

THE THEORY OF "PLEISTOCENE OVERKILL"

So successful is the big-game hunting tradition thought to have been that it is credited in a much debated hypothesis with the massive extinction, beginning about 11,000 years ago, of some thirty-two genera of Pleistocene megafauna, including the mammoth, mastodon, horse, camel, tapir, ground sloth, dire wolf, saber-toothed tiger, and glyptodon. As argued by the proposal's original and most steadfast mentor, P. S. Martin, the worldwide disappearance without replacement of numerous animal genera cannot be accounted for by their inability to adapt to the environmental changes of the terminal Ice Age. Alterations in habitat because of glacial retreats at earlier times in the past did not result in concomitant extinctions. Nor was there a loss at the end of the Pleistocene of numerous other plant and small-animal species that should have suffered equally from climatically induced changes. The only new factor introduced during the late Pleistocene, in Martin's opinion, is the agency of human predation.

Critics of the "Pleistocene overkill" hypothesis are quick to point out that many of the animals that became extinct were not even exploited by Late Paleoindian hunters; others, such as bison, although intensively hunted, did not perish but, on the contrary, prospered until commercial hunting with firearms in the nineteenth century resulted in their near extermination. Martin and his supporters respond that the overhunting of large animals would have undermined the viability of dependent, nonhunted creatures, from carnivores to scavengers, thus accounting for the disappearance of animals not directly victimized by humans. Why some large animal prey and not others survived into the Holocene remains unanswered by advocates of "overkill."

Bearing on the question of Pleistocene overkill is the additional observation that nowhere in Mesoamerica do we find evidence of the massive, multi-animal slaughter documented for the North American Great Plains. Indeed, the whole concept of a widespread big-game hunting tradition outside of the southwestern United States, and by extension the credibility of human-predator induced extinction, is impugned by evidence from Mesoamerica, where a much more varied if less spectacular

diet is indicated. MacNeish's Tehuacán Archaeological-Botanical Project – arguably the most ambitious regional investigation ever undertaken with the objective of reconstructing a complete sequence of socio-economic development from the earliest arrival of humans to urban civilization – addresses itself directly to this point.

In the rain shadow of the surrounding Sierra Madre mountains of Central Mexico, the Tehuacán Valley is today a semi-desert area of dense, xerophytic vegetation. There is evidence that the valley's climate during the Late Pleistocene was cooler but even more arid than today, resulting in an open, treeless, steppe-like environment. A number of large, permanent springs which provide abundant potable water ameliorate these dry conditions and from Paleoindian times have made the valley an attractive place for animals and humans preadapted to the environment from their travels through the arid areas to the north.

Excavation of archaeological sites belonging to the earliest Ajuereado phase, dated between 12,000 and 9,000 years ago, produced a complex of bifacially flaked lithic artifacts, including Lerma and Plainview-like points, indicative of large-animal hunting. Still lacking the invention of the bow and arrow, the late Paleoindian inhabitants of Tehuacán, as did their contemporaries elsewhere in Mesoamerica, probably employed the *atlatl* as their weapon of choice. That large animals were exploited by the Tehuacán hunters is supported by finds of fossil horse and antelope in the Ajuereado occupational levels. Of special significance, however, are the many bones from smaller animals, such as jackrabbit, gopher, rat, turtle, and birds, that, along with the remains of avocado, agave, opuntia, and other wild-plant foods, indicate a much broader subsistence base than that expected of "big-game hunters." Year-round hunting activities are estimated to have provided the bulk of the Ajuereado-phase food, with pods, seeds, and fruits supplementing the diet when seasonally available.

Nearly four hundred jackrabbit bones are reported from just one of the lower stratigraphic zones of the Coxcatlán Cave site at Ajuereado phase Tehuacán, including, in a single 1-meter excavated square, the feet of more than forty animals apparently dismembered in one butchering session. The gregarious nature of jackrabbits would have made it most productive to hunt them in communal drives, involving men and women from several small, otherwise autonomous Tehuacán bands. The slaughter of large numbers of jackrabbits during a single drive implies that a

technique of drying was employed to preserve the food for later consumption.

Early Ajuereado-phase subsistence thus appears to depend primarily on generalized foraging, with small game constituting the bulk of the diet, supplemented by the occasional larger animal and seasonally available wild-plant foods. K. Flannery's analysis of the changing percentages of animal food remains over the several-thousand-year duration of this terminal Paleoindian phase suggests to him a climatically induced transformation in the Tehuacán animal population, from social species such as pronghorn antelope and jackrabbit – animals found in herds, packs, or droves – to solitary types, such as white-tailed deer and cottontail rabbit. The consequence of this faunal replacement for the human occupants of the valley would have been the need to abandon old hunting strategies based on communal animal drives in favor of individual or small group efforts better suited to the stalking of isolated animals.

A similar situation is apparently encountered a couple of hundred kilometers to the south in Flannery's more recent analysis of the lowest stratigraphic level, Zone F, at Cueva Blanca in the eastern Valley of Oaxaca. Radiocarbon dates obtained from the level directly above Zone F indicate the contemporaneity of the earliest Cueva Blanca complex with Ajuereado-phase Tehuacán. Judging from the Oaxaca Valley and Tehuacán evidence, archaeologists have concluded that the basic social unit in such environments during the Late Paleoindian period was a small, mobile "microband" consisting of perhaps four to eight related individuals. Several such family units may have joined together briefly from time to time for communal hunting and perhaps social activities. Ajuereado-phase population density must have been very low; on the basis of site size and distribution, it is estimated at less than one individual for every 5 to 70 square miles of the 1,400-square-mile survey area of the Tehuacán Valley.

PALEOINDIAN ART AND IDEOLOGY IN MESOAMERICA

A bit more light is shed on the noneconomic aspects of Late Paleoindian life by a series of earlier archaeological finds north of Tehuacán in the Basin of Mexico. Associated with a thick Late Pleistocene bed of sediments known as the Becerra formation, the first of these discoveries, made back in 1870 at Tequiquiac, Hidalgo, is probably the oldest in age

as well. Located at a depth of 12 meters in a fossil-rich layer of gravel and sand at the base of the Upper Becerra, was a camelid sacrum that had been carved to look like what is variously interpreted as the head of a dog, wolf, coyote, or peccary (Fig. 2.5). The authenticity of the carving had been in doubt for many years, but recent reanalysis by L. Aveleyra de Anda appears to confirm its antiquity. If actually attributable to the Late Paleoindian era, it would represent one of the earliest examples of indigenous art in the New World. Subsequent archaeological investigation from 1951 to 1955 at the Tequixquiac site by Aveleyra recorded a number of stone scrapers, unifacial blades, a knife fragment, and several bone awls, all in association with the remains of extinct bison, camel, glyptodon, ground sloth, mammoth, mastodon, and other species.

Equally fascinating, but also the object of considerable controversy, is the nearby Tepexpan skeleton site, discovered in 1947 by the geologist

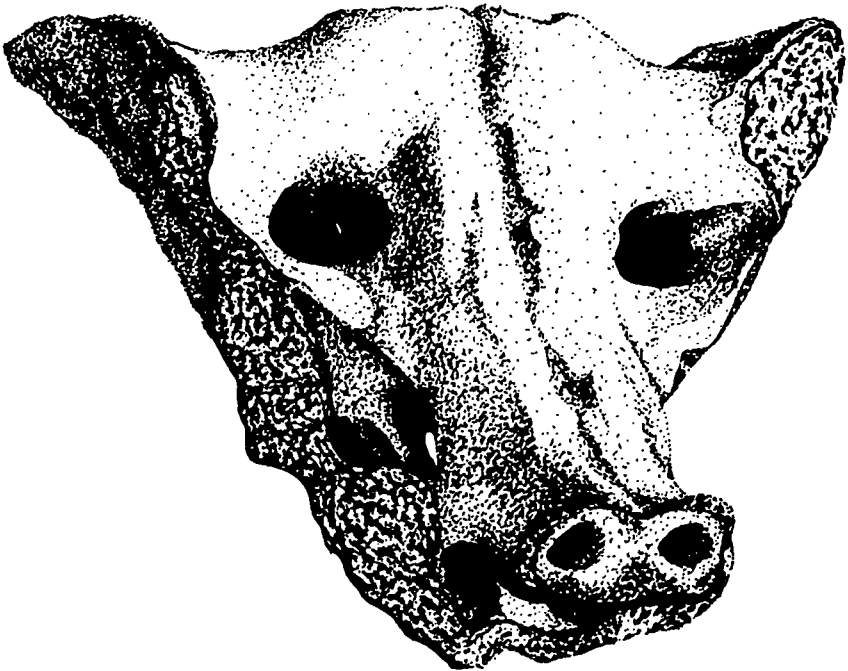


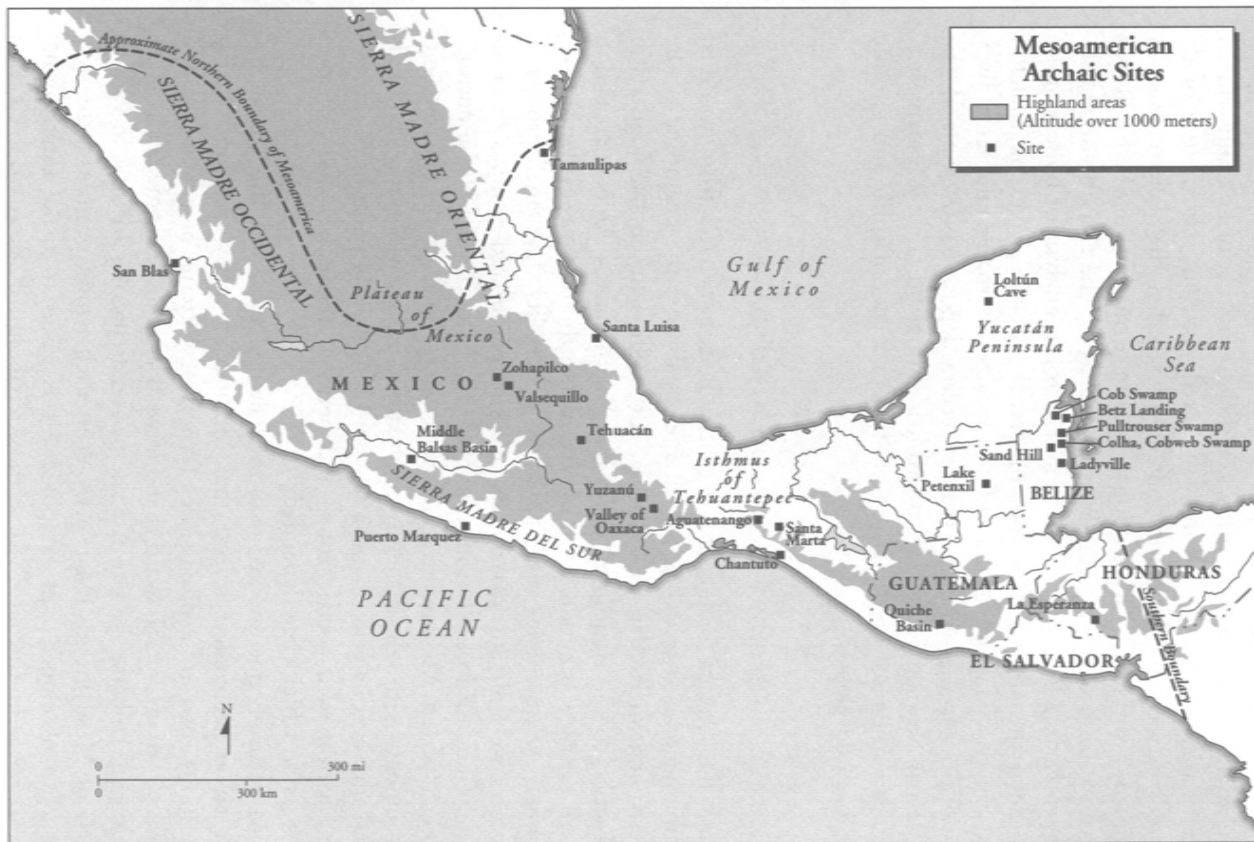
Figure 2.5. Tequixquiac carved camelid sacrum. Redrawn from a photograph in *National Museum of Anthropology, Mexico*, catalog, p. 21. G. V. editores, s.a. de c.v. (1991).

H. de Terra. Also located in the Upper Becerra, but at a more recent level than the Tequiquiac finds, the skeleton is that of an adult female, intentionally buried facedown in a flexed position. The nature of de Terra's excavation raised questions about whether the skeleton was, as claimed, associated with the Upper Becerra formation or whether it was intrusive from overlying post-Pleistocene levels. These doubts were subsequently dispelled when fluorine and nitrogen analysis of bone samples indicated the approximate contemporaneity of the Tepexpan skeleton with the two Iztapan mammoth finds, located less than 2 kilometers away and also associated with the Upper Becerra deposits. Now verified, the Tepexpan woman is the earliest known formal burial in Mesoamerica. Such attention to the dead suggests that concepts of spirit and afterlife had been developed.

THE ARCHAIC PERIOD IN MESOAMERICA

From the Oaxaca Valley, a series of radiocarbon dates from stratified components at two archaeological sites establishes the beginning of the Mesoamerican Archaic at 8750 b.c. Although many archaeologists still subscribe to the traditional 7000 b.c. Paleoindian – Archaic transition based on the extinction of the horse in North America, evidence from southern Mesoamerica reveals that by this earlier date small groups of foragers were already making use of wild plants and animals of completely modern form. During the more than 5,000 years of the ensuing Archaic period, Mesoamerican hunter-gatherers successfully exploited environments with which they were already familiar, while important cultural innovations were shaping new and long-lasting patterns of interaction within their social groups and between themselves and the food sources on which they depended.

More amply documented than the Paleoindian period, the Archaic has left an archaeological record that, despite its many gaps and dating questions, permits a discussion of regional patterns of adaptation and processes of change. Toward that end we briefly survey some of the more important or better known Archaic period archaeological sites in various parts of Mesoamerica (Map 2.3). With each region promoting its own sequence of named cultural phases, it is easier to make interregional comparisons by further dividing the Archaic into Early (9/7000 to 5000 b.c.), Middle (5000 to 3000 b.c.), and Late (3000 to 2000 b.c.) subperiods.



Map 2.3

THE NORTH MEXICO ARCHAIC

Although it lies just beyond the defined boundaries of Mesoamerica, northern Mexico provides an important linkage between the Archaic traditions of highland central Mexico and the southwestern United States. Cultural interchange between these regions is evidenced by the many shared forms of projectile points, a tradition extending back to the Late Paleoindian period. The continuity of environmental zones extending across the modern Mexico–U.S. border may have played an important role in producing the fundamental homogeneity of the so-called Desert Culture that characterizes the Archaic period in this widespread area. While surface surveys have reported preceramic sites in many locations, controlled excavations in the northeastern Mexican states of Coahuila, Nuevo León, and Tamaulipas have yielded the most abundant data.

Stratified cave and rockshelter deposits in the mountain ranges of the Sierra Madre Oriental and the northern sector of the Central Mexican Plateau expose the richest concentration of these Desert Culture components. In Coahuila investigations at Frightful Cave, Fat Burro Cave, and Nopal Shelter have produced abundant material remains from the seasonal or occasional encampments of what must have been small, widely spaced foraging groups whose occupation of the area began as early as 7600 b.c. and continued with little apparent change until historic times. Projectile points and other flaked tools, one-handed *manos* (grinding stones), and grinding slab fragments indicate the interregional affiliations and chronological trends in the long-lived Coahuila complex, but it is the extraordinary preservation of organic remains in the arid cave deposits that best affords a glimpse into the diverse use these Archaic foragers made of their environment.

For the inhabitants of Coahuila, the hunting of small and medium-size game supplemented a diet primarily dependent on plant foods, some of which had been kept in grass-lined storage pits. Such practical artifacts as fiber cordage, sandals, baskets and mats, wooden *atlats*, projectile points and shafts, fire drills, and fire tongs were of clear economic use to the cave occupants. Ornamental shell beads, scarifiers used for bloodletting or tattooing, musical rasps, a deer skull headdress, and remains of hallucinogenic plants hint at the complexity of a ritual system rarely documented archaeologically for this period. Recent excavations at La

Calzada Rockshelter in Nuevo León reveal a similarly lengthy occupation by foraging bands between about 9000 and 2500 b.c.

What seems to distinguish most of these northeastern Mexican sites from their Archaic counterparts within Mesoamerica proper is the absence of cultivated plants among the food remains, although corn (maize) and other domesticates have been found farther west at Swallow's Nest Cave in Chihuahua. By contrast, plant domestication is claimed to have made an early and continuing contribution to the diet of foraging populations south of the Rio Soto la Marina in Tamaulipas, where MacNeish first launched his investigations into the Mesoamerican origins of maize agriculture. A reevaluation of these claims in light of recent AMS dates for corn and other cultigens from a number of Archaic sites in Mexico and the United States, however, blurs this once distinct boundary between the wild-plant-gathering populations of northern Mexico and the incipient cultivators of Mesoamerica proper.

MacNeish's excavations in 1949 at Nogales and La Perra caves in the Sierra de Tamaulipas yielded abundant plant materials, including primitive domesticated corncobs. This initial investigation was followed a few years later by more extensive survey and excavation in the southwestern part of the state. Data from the deeply stratified cave sites in the eastern Sierra Madre near Ocampo complemented the previously identified Middle and Late Archaic Tamaulipas complexes and added an important Early Archaic component, the *Infiernillo* phase.

Dated between 7000 and 5500 b.c., the *Infiernillo* archaeological remains indicate that Archaic foragers on the northern fringe of Mesoamerica, like their Desert Culture cousins, relied heavily on plant materials for food, cordage, and containers, utilizing a botanical inventory that included wild runner beans, agave, and opuntia. B. D. Smith's recent AMS dates for five Ocampo cultigens indicate that what was once thought to be an Early Archaic origin for the domesticated bottle gourd and squash complex in Tamaulipas did not begin until about 3500 b.c. At the same time, this reanalysis confirms the stratigraphic integrity of the Ocampo cave sites and the appearance there of cultivated maize sometime after 2500 b.c.

HIGHLAND SITES OF THE MESOAMERICA ARCHAIC

Important as MacNeish's discoveries at Tamaulipas were, they are overshadowed by his subsequent interdisciplinary study of the Tehuacán

Valley, mentioned previously for its Late Paleoindian period occupation. It is this pioneering research, initiated in the early 1960s, that is most called upon even now to characterize the Archaic period in Mesoamerica. Among several hundred surveyed cave and open-air sites with occupation dating from Paleoindian to historic times, excavations were undertaken at twelve localities. In all, thirty-five excavated components from nine archaeological sites contributed cultural materials assigned to three Archaic phases: El Riego (7000–5000 b.c.), Coxcatlán (5000–3400 b.c.), and Abejas (3400–2000 b.c.).

Fifteen of these components came from the rich, stratified deposits at Coxcatlán Cave, which provided nearly 75 percent of the classified stone tools from excavation. On the basis of well-preserved plant remains from nine of these Coxcatlán “floors” and two additional occupation levels from San Marcos Cave, MacNeish and his associates have reconstructed dietary patterns for the Archaic populations of the Tehuacán Valley. Widely preserved among the excavated Archaic sites, faunal remains round out this picture of subsistence activities by suggesting seasonal and microenvironmental differences in hunting patterns.

Because so many of the Tehuacán flaked stone tool types continued to be manufactured throughout the entire Archaic, more diagnostic projectile points were relied on as the major chronological markers. But even the substantial sample of 824 complete or fragmentary points found in excavated Archaic components at Tehuacán are of limited utility for precise dating of preceramic components, since many of them continued to be manufactured for thousands of years. Set against the stratigraphic column of Coxcatlán Cave, Tehuacán’s lithic industry appears more like a gradually evolving, temporally overlapping continuum of tool types, with the three named regional phases, El Riego, Coxcatlán, and Abejas, a heuristic device for segmenting the long Archaic span into Early, Middle, and Late periods.

For sites with such remarkable organic preservation, the Tehuacán caves yielded relatively few wood and fiber artifacts in comparison with Desert Culture sites in northern Mexico. Although *atlatsls*, baskets, knotted and knotless nets, and cordage were found in almost all phases at Coxcatlán Cave, they represent a much smaller part of the cultural inventory than do the lithic artifacts. Food remains, however – both macrobotanical specimens and human coprolites – attest to the increasing diversity and magnitude of plants in the foraging economy of the post-Pleistocene inhabitants of Tehuacán and, more significantly, provide the

most extensive diachronic record we have to date for the development of plant domestication in Mesoamerica. The appearance of *manos* and *metates*, the ubiquitous Mesoamerican hand-held grinding stones and matting stone basins employed in the processing of seeds and other plant food parts, serves as another important line of evidence for the growing importance of fruits and vegetables in the Archaic diet (Fig. 2.6).

During the Early Archaic El Riego phase, most of the plants utilized were still wild. Leguminous trees such as mesquite, acacia, and *guaje* were harvested for their edible pods and seeds; the *pochote* contributed seeds as well as its edible fleshy root. Maguey hearts were roasted and chewed, their indigestible quids dropped on the cave floor. Foxtail millet or *Setaria* seeds were collected and apparently stored in small caches. Fruits of the *chupandilla*, *cosahuico*, *ciruela*, and prickly pear were also consumed, as was the avocado. The latter, because it had to be kept well watered, may have been transplanted to more favorable locations and nurtured, representing a first step in the process of agricultural development. Other candidates for incipient domesticated status at this date include chile peppers and squash.

The subsequent Coxcatlán phase adds to the list of possible cultigens the fruits of white sapote, black sapote, and coyol palm, trees not presently found in the arid valley environment and thus, like the avocado, thought to have been introduced from elsewhere and brought under cultivation. The Coxcatlán-phase inhabitants of the valley also left behind many more annual plant remains with morphological evidence of domestication. Presumed cultigens represented in Coxcatlán-phase deposits include chile pepper, the *moschata* and *mixta* forms of squash, the bottle gourd, the common bean, and a primitive form of maize. Domesticated tepary and jack beans are attributed to the subsequent Abejas phase, which also saw a dramatic increase in the incidence of cultivated maize (Fig. 2.7).

While there is solid evidence for plant domestication at Tehuacán, the legitimacy of the early dates of its occurrence has been challenged as a result of recent accelerator mass spectroscopic analysis of the archaeologically recovered cultigens conducted by A. Long et al. and by L. Kaplan. The small sample-size needed for AMS analysis has made it possible to date uncarbonized plant specimens directly, rather than by their contextual association with radiocarbon-dated charcoal found in the same occupational levels, as MacNeish had been required to do. The AMS dating of Coxcatlán-phase cultigens has produced substantially younger dates

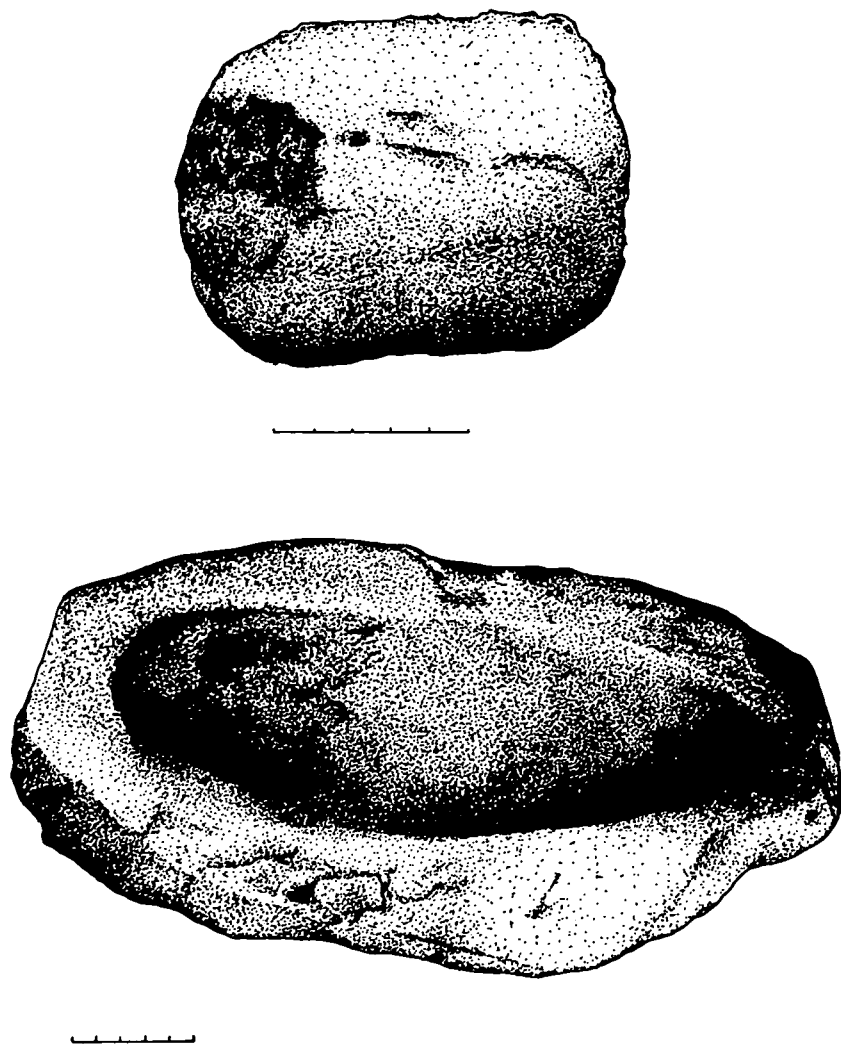


Figure 2.6. Typical Archaic period *mano* and *metate* from Tehuacán. Redrawn from D. S. Byers, ed., *Prehistory of the Tehuacan Valley*, vol. 2.

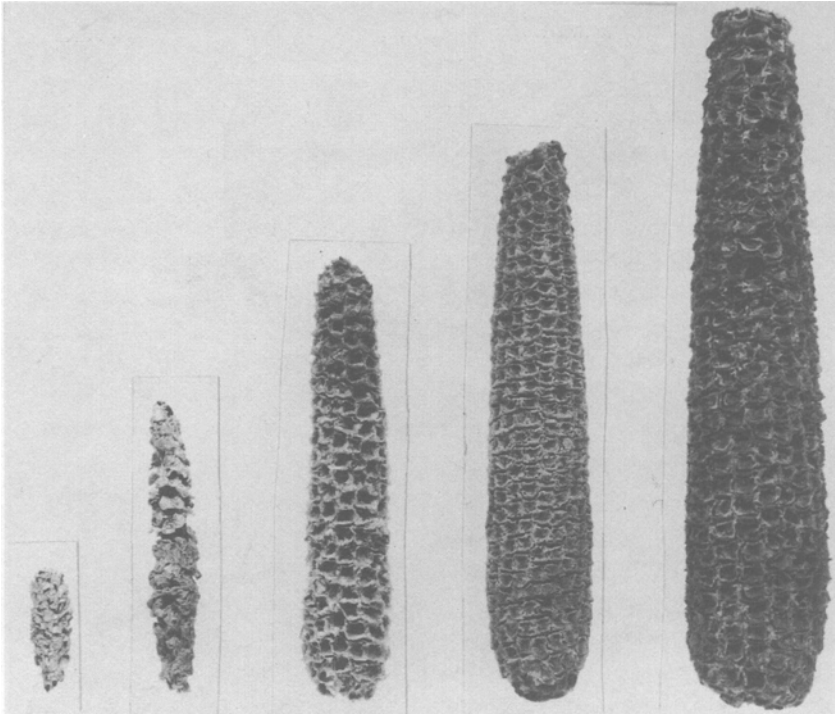


Figure 2.7. Corn cob remains from excavations at Tehuacán. From left to right: Middle Archaic Coxcatlan phase, Late Archaic Abejas phase, Late Formative/Early Classic; last two on right date to the Postclassic period. Photograph courtesy of the Robert S. Peabody Museum of Archaeology, Phillips Academy, Andover, Mass.

than those obtained by the conventional radiocarbon method. The oldest of twelve corn cob samples have been redated to only 2750 b.c., with an even more recent, Late Formative period, date reported for a pod valve from the common bean. Such age discrepancies could have resulted from animal burrowing, insect activity, erosion, or other forms of soil disturbance moving the plant remains into earlier stratigraphic deposits.² Whether or not these pedological problems are so persistent in dry cave environments as to make all contextually dated Mesoamerican plant

² MacNeish has recently criticized the AMS re-dating of early Tehuacan corncobs, arguing that the samples used were contaminated by having been sprayed with an organic preservative.

remains suspect, as G. Fritz has argued, the younger dates for Tehuacán corn would better match the pattern of early plant usage seen at other Mesoamerican sites.

Elsewhere in the central highlands, excavated Archaic period sites have added important complementary data to that of the original Tehuacán sequence and sometimes suggest significant adaptive variations. Such is the case just northwest of Tehuacán, where several caves surrounding the Valsequillo Reservoir in Puebla provide evidence of Archaic period occupation. Unfortunately, poor organic preservation has prevented a complete portrayal of the local patterns of subsistence. Surprisingly lacking, however, from the Early Archaic levels at Texcal Cave reported by R. García Moll are any ground stone tools associated with plant processing, as in the El Riego phase of Tehuacán.

Further to the northwest, in the Basin of Mexico, humid soils at the site of Zohapilco preserve a rare portrait of the plants exploited by Archaic hunter-gatherers in a lacustrine setting of more plentiful year-round resources than in the arid Tehuacán Valley. In a single long trench excavated into ancient beach deposits on the eastern shore of Lake Chalco, adjacent to the earlier Tlapacoya Paleoindian campsites, C. Niederberger encountered stratified preceramic artifacts dating to the Middle Archaic associated with abundant animal and plant remains. The earliest initial Playa phase at Zohapilco, radiocarbon dated between 5059 ± 115 b.c. and 4250 ± 125 b.c., reveals a lithic assemblage characterized by heavy bifaces and macroblades, notched flakes, scrapers, and ground stone mullers and *metates*. Obsidian flakes and projectile points are also found, but the single prismatic blade Niederberger recovered might better be attributed to a later time period. More clearly separable stratigraphically and chronologically is the Final Archaic phase dated from 2300 ± 110 b.c. to about 1500 b.c., with its greater reliance on microlithic obsidian flakes and its more sophisticated ground stone tools.

Palynological, faunal, and macrobotanical remains associated with both the Playa and Zohapilco phases augment the artifactual record left by these lakeside food collectors. Although detailed botanical analyses have not been published, Niederberger reports that the Playa-phase pollen spectra include such economically important genera as *Chenopodium*, *Amaranthus*, *Physalis*, and *Zea*. Carbonized seeds of teosinte (*Zea mexicana*), amaranth, portulaca, and squash were also recovered from Playa strata. The bones of deer, rabbit, dog, turtle, the amphibian *axolotl*, snake, rodent, freshwater fish, and several species of both local and

winter-migrating waterfowl make up the faunal inventory and indicate that the Zohapilco site was exploited in both the rainy and the dry seasons. Despite a failure to encounter architectural features in her trenching operation, Niederberger has proposed that the abundant lacustrine food resources supported permanent preagricultural settlement during the Playa phase. By the late Archaic stage, beginning about 3000 b.c., fundamentally similar hunting and fishing patterns were retained by the Zohapilco occupants, but now enhanced by the cultivation of plants, notably maize, amaranth, *Physalis*, chile, pumpkin, and *chayote*.

In the Sierra Madre southeast of Tehuacán, Archaic occupations have been investigated under the direction of K. Flannery at three cave sites in the Valley of Oaxaca – Guila Naquitz, Martínez Rockshelter, and Cueva Blanca – and at an open-air site, Gheo-Shih, all near the present-day town of Mitla (Fig. 2.8). A second open-air site has been excavated by J. L. Lorenzo at Yuzanú in the nearby Nochixtlán Valley. Together components from these sites span nearly the entire Archaic period and provide an important archaeological sequence congruent with the transhumant foraging pattern discerned for Tehuacan.

Beginning with the Naquitz phase, dated 8900 to 6700 b.c., six stratified components have been defined at Guila Naquitz Cave; an additional component has been dated at Cueva Blanca. As with most other contemporaneous Mesoamerican assemblages, the Early Archaic Naquitz-phase lithic assemblage belongs to a flake industry with relatively little standardization of finished artifacts. Indeed, only 152 retouched tools are found in the entire collection of 1,716 flaked specimens. Notched flakes, steep denticulate scrapers, and crude blades are the most common deliberately formed types (Fig. 2.9). Chert was available nearby for flaking, and slabs from local ignimbrite outcrops and from stream-borne cobbles were ground into metates and one-handed manos for plant food processing. A small but early sample of cordage, knotted netting, and coiled basketry, a few fire drills, one drill hearth, and some roasting sticks constitute the archaeological assemblage of fiber and wood artifacts (Fig. 2.10).

More than 20,000 specimens of preserved dietary plant parts were identified in Naquitz phase components from the Oaxaca Valley, the largest sample of macrobotanical remains yet recovered from a single Mesoamerican Archaic complex. By far, acorns appear to have been the most important vegetal component of a diet that also depended on maguey hearts, pods and seeds of mesquite, *guaje*, *susi* nuts, *nanches*, prickly pear leaves and fruits, pine nuts, hackberries, and wild onions.



Figure 2.8. Guilá Naquitz Cave, in its environmental setting. There is a figure standing in the mouth of the cave for scale. Photograph courtesy of Kent V. Flannery and Joyce Marcus, Museum of Anthropology, University of Michigan.

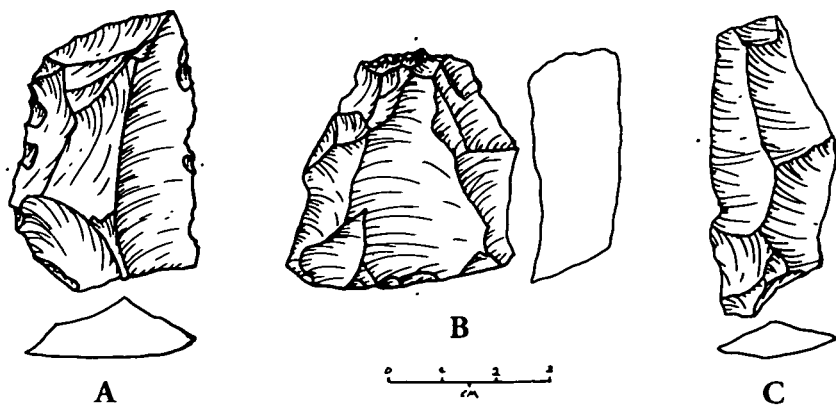


Figure 2.9. Naquitz-phase lithic artifacts from the Valley of Oaxaca: (A) notched flake; (B) denticulate scraper; (C) crude blade. Redrawn from K. V. Flannery, *Guila Naquitz*, figs. 6.11, 6.17, and 6.19.

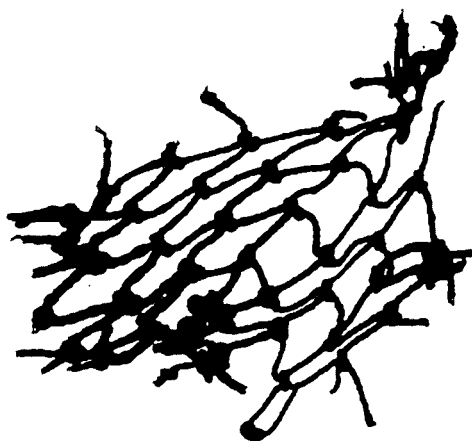


Figure 2.10. Net bag fragment from Guilá Naquitz, Valley of Oaxaca. Photograph courtesy of Kent V. Flannery and Joyce Marcus, Museum of Anthropology, University of Michigan.

No maize or teosinte was recovered at the site, although *Zea* pollen was found in one sample (Fig. 2.11).

Figuring importantly in the macrobotanical inventory at Guilá Naquitz are specimens of two other plants significant to the history of domestication. Morphologically wild runner beans from an unidentified variety of *Phaseolus*, while never domesticated, were gathered in such large numbers as to leave open the possibility that the Naquitz foragers increased the plant's local availability by sowing wild seeds nearby. An even stronger case for intentional cultivation can be made for wild cucurbits, which are easily established in disturbed areas of human activity. The genetic consequences of human selection are precocious at Guilá Naquitz, where seeds and peduncles attributed to an early form of domesticated squash, *Cucurbita pepo*, are found throughout the Early Archaic stratigraphy. AMS dating of the squash samples by B. D. Smith confirms the likely domestication of *C. pepo* at this early date. The remains of deer, cottontail rabbits, and mud turtles were also present in each of the Guilá Naquitz components, along with collared peccary, raccoon, and various birds, all apparently hunted by the small family bands that occupied the cave during fall seasons.

The Valley of Oaxaca Middle Archaic Jícaras phase is represented by

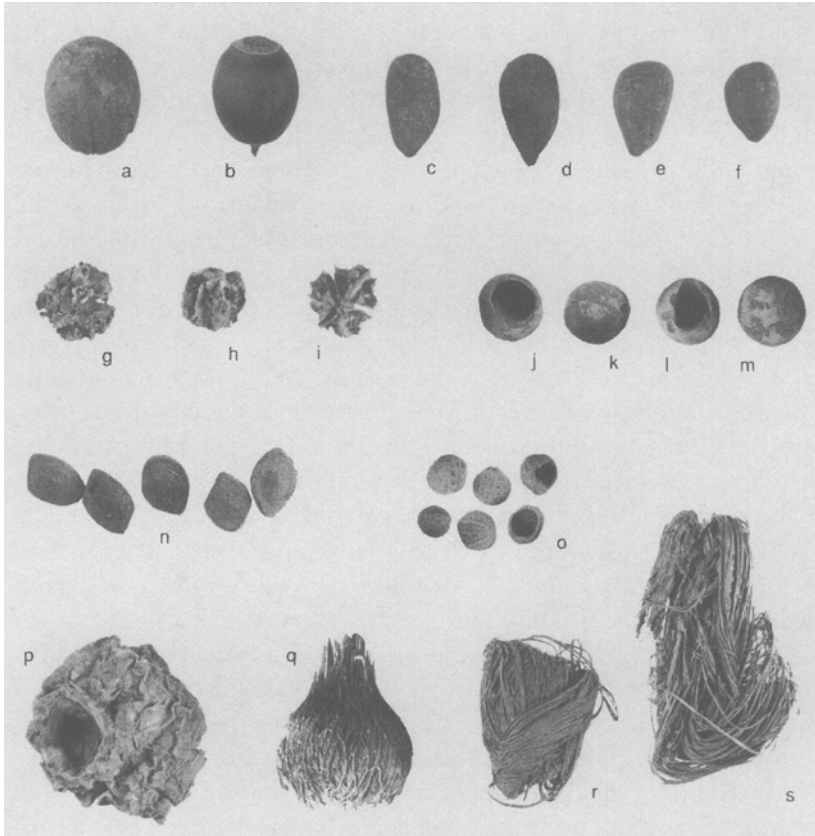


Figure 2.11. Wild plant food remains from excavations at Guilá Naquitz Cave, Valley of Oaxaca: (a)-(b) acorns; (c)-(f) pinon nuts; (g)-(i) West Indian cherry seeds; (j)-(m) *yak susi* hulls; (n) mesquite seeds; (o) hackberry seeds; (p) prickly pear cactus fruit; (q) wild onion bulb; (r)-(s) chewed agave fiber quids. Photograph courtesy of Kent V. Flannery and Joyce Marcus, Museum of Anthropology, University of Michigan.

just one site, Gheo-Shih, tentatively dated at 5000–4000 b.c. by the comparison of artifacts and pollen with equivalent remains from sites of confirmed age. Despite a lack of animal bones and macroscopic plant remains, or of charcoal for radiocarbon dating its shallow cultural deposits, the 1.5-hectare open-air campsite revealed clear spatial evidence of activity areas, a unique architectural feature, and an abundant sample of tools, including an unusually large number of projectile points.

The architectural feature consists of two parallel lines of boulders about 20 meters in length, bounding a space about 7 meters wide that had been swept clean of virtually all artifacts. In contrast, the area on either side of the parallel lines was densely strewn with lithic fragments. Flannery and Marcus have suggested that this feature served as a “dance ground” similar to those known historically for some Great Basin hunter-gatherer groups. Both the size and density of occupation at Gheo-Shih argue for its function as an encampment where several family microbands joined together during a time of plentiful food. The site’s location near the Mitla River floodplain and the presence of *Zea* pollen originally suggested to the excavators that rainy season maize cultivation was a major subsistence activity of its occupants. With no macrobotanical evidence of cultivated maize in Mesoamerica indisputably dated before 3000 b.c., however, the economic orientation of the Middle Archaic Gheo-Shih settlement remains to be determined.

The better-dated Late Archaic Valley of Oaxaca Blanca phase, running from about 3300 to 2800 b.c., shares many projectile point types with the coeval Abejas phase in the Tehuacán Valley. Although Cueva Blanca, a winter deer-hunting camp, is the only excavated site assigned to this time period, other Blanca-phase projectile points have been found in surface collections in the nearby Nochixtlán, Miahuatlán, and eastern Oaxaca valleys.

Probably overlapping with Tehuacán’s late Abejas phase is the late Archaic Martínez phase in highland Oaxaca, known best from J. L. Lorenzo’s excavations at Yuzanú in the Nochixtlán Valley. There a small sample of tools and chipping debris were found associated with a hearth and an extensive scatter of fire-cracked rocks that Flannery feels may be the remnants of a maguey-roasting pit. A Valley of Oaxaca site contemporary with Yuzanú is the Martínez Rockshelter. The site is thought to have served as a short-term plant-processing station, although no botanical remains were preserved. Its upper-zone artifact assemblage contained a variety of groundstone *manos*, *metates*, and bowls, but few projectile points among the flaked stone tools. Many of the flaked stone artifacts had edge polish of a kind that would be produced by cutting siliceous plant stems and leaves. Radiocarbon dates of 2100–2000 b.c. \pm 200 for Yuzanú place the Martínez phase on the eve of sedentary agriculture’s transformational impact on Archaic lifestyles.

Traces of Archaic period occupation extend even farther to the southeast in the valleys of the Sierra Madre, from the Chiapas Central Depres-

sion all the way down to Managua, Nicaragua. Large numbers of sites discovered through surface survey in the Quiché Basin of Guatemala and in the vicinity of La Esperanza, Honduras, indicate that lower Mesoamerica was a long-standing host to successful Archaic foraging groups, but extensive excavations that might better elucidate the nature of that area's Archaic occupation have been conducted at just two locations, both in the present-day state of Chiapas: at the lakeshore site designated Aguacatenango II–III and, farther east, at Santa Marta Rockshelter in Ocozocoautla.

At Aguacatenango, despite the large corpus of over 13,000 chipped stone fragments recovered from two geomorphologically distinct soil strata, only 186 were typologically diagnostic tools, making it difficult to distinguish Archaic from possible Paleoindian components. Associated surface finds of Lerma and Abasolo-type projectile points, however, suggest a terminal Paleoindian to Middle Archaic occupation.

Not far away, the Santa Marta Rockshelter has yielded the only well-dated stratigraphic evidence of Archaic occupation from the southern highlands of Mesoamerica. Initial excavations at the site by MacNeish and F. Peterson in 1959 have been augmented more recently by J. García-Barcena, D. Santamaria, and others, who report a sequence of five pre-ceramic phases. In the earliest occupation, with two radiocarbon dates centering around 7300 b.c., a mixed hunting and collecting economy is indicated by the remains of rabbit, armadillo, deer, mud turtle, iguana, and freshwater mollusk (*Pachychylus* sp.).

Cobbles and slabs worn by grinding or pounding activities suggest the dietary importance of plants collected for their seeds in these lowest Santa Marta levels, but hackberries are the most commonly preserved macrobotanical remains. Hammerstones, a few bone tools, some small, leaf-shaped projectile points, and a diverse yet fairly simple inventory of flake tools complete the Santa Marta Phase I toolkit. García-Barcena considers this to be a Paleoindian occupation, contemporaneous with that at nearby Los Grifos Cave, but the radiocarbon dates, modern faunal associations, and lack of diagnostic Paleoindian period projectile points make a more convincing case for an Early Archaic assignment.

Sparse evidence for sporadic dry season occupation a few centuries later comprises the Santa Marta Phase II, followed by the more substantial Middle Archaic phases III and IV, dated between 5200 and 4300 b.c. Although there are some differences in hunting activities indicated by the paucity of larger game animals and absence of projectile points in

Santa Marta III, the occupants during this and the subsequent phase gathered freshwater mollusks and the fruits of *Celtis*, *Ficus*, and *Solanum*, as well as some unidentified root plants. Notable is the absence of any domesticated plant species in these Middle Archaic phases or, for that matter, in the final, Early Formative Santa Marta V occupation, dated 1300–1000 b.c.

LOWLAND SITES OF THE MESOAMERICAN ARCHAIC

Thus far the discussion of Archaic period prehistory has focused on highland regions where the arid environment was conducive to organic preservation. For the coastal lowlands, with their more humid climates and complicated post-Pleistocene shoreline changes, an extensive Archaic period archaeological sequence exists only for the Yucatan Peninsula. One site contributing to this sequence is the previously noted Loltún Cave near the Puuc Hills. Lithic artifacts associated with modern fauna in some of the later cultural deposits at this site attest to Archaic occupation postdating the initial Paleoindian habitation.

Farther south on the peninsula, in what is now Belize, surface finds of Paleoindian and Archaic period projectile points by T. Hester, H. Shafer, and T. Kelly inspired MacNeish to undertake a lowland equivalent to his pioneering investigations in highland Tehuacán. Beginning in 1980, the Belize Archaic Archaeological Reconnaissance (BAAR) was by far the most ambitious program of survey and excavation devoted to Mesoamerica's lowland preceramic era, aimed at establishing a regional-scale sequence of human occupation spanning the entire Archaic period.

Scores of archaeological sites with lithic artifacts but no pottery were identified in the course of the project's initial surface reconnaissance. Of these, six were selected for extensive excavation. The results of these excavations, under the direction of R. Zeitlin and J. Zeitlin, were the tentative definitions of at least three sequential preceramic stone tool complexes – designated Sand Hill, Belize, and Melinda – each with a characteristic lithic technology utilizing the abundant high-quality local chert. Except for the many stone artifacts that were recovered, environmental conditions at the open-air encampments, most of which are located in the acidic soils of pine orchard savanna near the present-day villages of Sand Hill and Ladyville, left behind few datable materials. Consequently, temporal assignments for the various complexes had to rest primarily on the cross-dating of diagnostic lithic artifacts, mainly

projectile points, with what were thought to be related tools from established Archaic sequences in highland Mesoamerica and elsewhere.

The initial Archaic Sand Hill complex, estimated at 7500–5500 b.c., seemed to indicate an abrupt break in the lithic flaking technology that had characterized the earlier Paleoindian period occupation. Its most distinctive stone tool type was a unifacially retouched macroblade, produced from a prismatic core with minimal platform preparation; additional lithic artifacts not found in Paleoindian levels included large “snowshoe” or sole-shaped unifaces, a wide range of scraping tools, and some bifacially flaked implements. Although the macroblade industry appeared to be unique to Belize, “Pedernales-like” projectile points point attributed to the complex gave MacNeish a rationale for linking Sand Hill chronologically to highland Archaic complexes such as those of the late Naquitz and Jícaras phases in the Oaxaca Valley and the Coxcatlán phase in Tehuacán, which date from approximately 6700 to 4000 b.c.

Subsequent investigations in the Belize lowlands have called for a rethinking of the Early Archaic dates assigned the Sand Hill complex. In particular, excavations under the direction of T. Hester and H. Shafer at the sites of Colha and Cobweb Swamp, by T. Kelly at Ladyville, and by M. Pohl, K. Pope, and their collaborators at Pulltrouser, Douglas, and Cob swamps have not only added to the corpus of lowland stone tools assigned to the Archaic but also have brought radiocarbon assays, paleobotanical data, and lithic use-wear analysis to bear on interpretation. Stratigraphic levels containing *constricted unifaces* (the term by which Hester refers to the Sand Hill sole-shaped unifaces) and *Low points* (which Kelly and Hester equate with MacNeish’s Pedernales-like points), have produced radiocarbon dates that range from 1900 b.c. to as recently as 835 b.c., much later than the BAAR cross-dated estimates. (Fig. 2.12). Large macroblades and a handful of unifacial and bifacial tools were found by Hester at a lower stratigraphic level of his Colha excavations, but even these are dated no earlier than 2500 b.c.

However questionable the stone tool evidence for Early and Middle Archaic human occupation of the Belize lowlands, settlement during the Late Archaic is confirmed by pollen evidence at Cob and Cobweb swamps, where the appearance of maize and manioc by 2750 b.c. is followed by widespread evidence for forest clearance, suggesting the growth of an early agricultural population. The large gap in the lowland Belize Archaic chronology reopened by this recent research raises a question as to whether there was any significant but as yet undefined human

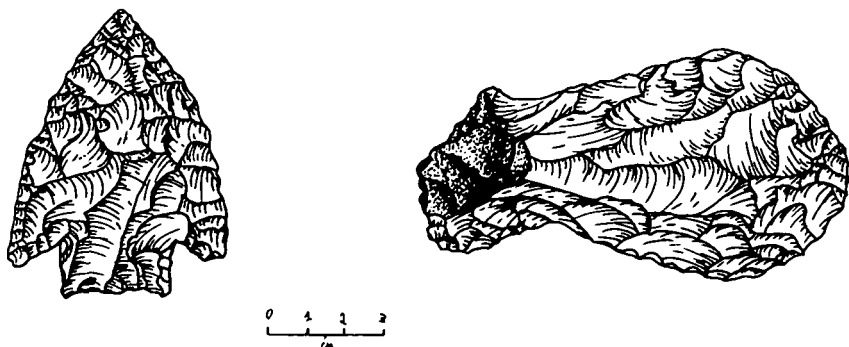


Figure 2.12. Late Archaic/Early Formative lithic artifacts from Belize: (right) constricted/sole-shaped uniface; (left) Lowe/Pedernales-like projectile point. Redrawn from M. Pohl et al., "Early Agriculture in the Maya Lowlands," *Latin American Antiquity* 7: 355–472, fig. 5 a and b.

presence in the area during the 7,000 years following the Paleoindian period, or whether the Late Archaic evidence of domesticated plants and forest clearance indicates a second inward migration, this time of agricultural people.

MacNeish's interpretation favors continued occupation from Late Paleoindian times onward. He sees an Early Archaic Sand Hill complex succeeded without a break by several later Archaic complexes, during which a ground stone tool technology was introduced, producing mulders, pestles, and stone bowls, along with heavy-duty flaked stone tools suitable for digging roots and processing plant materials. The terminal Archaic is marked in the BAAR project by a single radiocarbon date of 1830 ± 800 b.c. Attributed to a late Melinda complex, the date was obtained from excavation levels underlying an Early Formative component at the lagoon-shore site of Betz Landing. Net-sinkers and a deer antler fragment suggest that a diversity of food procurement activities were taking place. The implication drawn by MacNeish is that Early Archaic foraging groups in Belize shifted toward a more extensive use of plant foods, ultimately becoming dependent on agricultural produce. His is a gradualistic model of development similar to the one he proposed earlier for the Mesoamerican highlands. Ongoing investigations by Hester, Pohl, Pope, and others promise to provide the additional data that will help to evaluate whether the highland model for the Archaic period

transition from hunting and gathering to an agricultural economy is valid for the lowlands as well.

Palynological and archeological data from the southeast Maya lowlands lend support to the emerging Late Archaic portrait of lowland cultivators. A pollen core from Lake Yojoa in Honduras mirrors the Belize sequence, with evidence of forest clearance and maize pollen at no later than 2500 b.c. Just outside the southern boundaries of Mesoamerica, Archaic occupations are more extensively documented in Costa Rica and Panama at rockshelter sites overlooking the Río Chiriquí, at coastal middens along Parita Bay, and at inland localities extending into the Santa María watershed. Although Early Archaic populations there were small, high levels of charcoal and pollen from invasive weeds in contemporary sediment cores from Lake La Yeguada suggest to R. Cooke and A. Ranere intentional burning to clear small gardens. No clear domesticates appear among the macrobotanical remains from these sites before about 100 b.c., but the investigators infer an increasingly important role for part-time cultivation in the Middle and Late Archaic, based in part on maize pollen and phytolith evidence they date stratigraphically as early as 5000 b.c. More reliable sediment cores from the Lake Gatun Basin indicate the introduction of slash-and-burn maize cultivation in the Late Archaic.

Whatever the final resolution of the argument for very early Panamanian maize agriculture, ground stone *manos* present from the Early Archaic onward attest to the dietary role of plant foods for Central American hunter-gatherers. Carbonized palm nuts dominate the macrofloral remains at both inland and coastal sites until this wild-food source was supplanted by maize early in the first millennium b.c. as the primary carbohydrate staple. Fish, crab, and marine mollusks provided most of the protein food for coastal communities, with deer and other terrestrial game serving as important additional resources.

Within Mesoamerica proper there is no other current evidence of the lowland Archaic older than 4000 b.c. A mixed seaside economy, seemingly similar to that described for Panama, is evidenced in the Late Archaic Palo Hueco phase at Santa Luisa, on the northern Veracruz coast, where an extensive habitation zone, radiocarbon dated to about 3000 b.c., was found underlying ceramic-bearing levels of occupation. Small obsidian nodules imported from a source located several hundred kilometers away in Querétaro and some local sandstone cobbles were

used to produce crude blades and flakes, often with one edge utilized or retouched, and a few minimally worked bifaces. The procurement of obsidian from such a long distance suggests that interregional exchange relationships had been established with highland neighbors at this early date.

Of particular interest at Santa Luisa is the seeming lack of interest of its inhabitants in plant foods at a time when most highland populations were moving toward increasing dependence on agriculture. No plant remains whatsoever were recovered by the investigators, and although this could be attributable to poor preservation, the absence of grinding tools for processing such foods suggests that Santa Luisa is indicative of a major economic difference between resource-rich coastal populations and their more poorly endowed highland contemporaries. Fire-cracked sandstone cobbles at Santa Luisa are thought to have been utilized to cook the oysters and other shellfish whose remains are found in abundance. Also represented are large land crabs, fish, and small mammals, including howler monkey. The concentrated diversity of resources in the vicinity of Santa Luisa and the extensive preceramic archaeological deposits argue that the site served as the base camp for a large band of food collectors. The suggestion by J. Wilkerson, the principal investigator at Santa Luisa, that the settlement had been occupied year-round, however, finds little supporting evidence at present.

Pertaining to about the same time period is a series of sites on the Pacific Coast of Chiapas, where B. Voorhies defined the Chantuto phase from excavations into deep shell midden deposits at Tlacuachero and adjacent localities in a mangrove-lined estuarine zone. Further excavations in the nearby Mazatán region at Cerro de las Conchas by M. Clark and M. Blake have extended the Chiapas Archaic coastal chronology back to 4000 b.c. and allowed a subdivision into Chantuto A (c. 4000–3000 b.c.) and Chantuto B (3000–1800 b.c.). While only sketchy artifactual remains have been found for the earlier subphase, the use of large marine bivalves for tools and the absence of any obsidian distinguish it from its Late Archaic successor.

Chantuto B presents more ample documentation for Late Archaic lifeways. A large clay occupation floor at Tlacuachero has posthole patterns indicating two oval-shaped structures that may have served as temporary shelters for some of the small groups that returned to the site periodically to process lagoon-zone food resources. Although Voorhies and G. Michaels have suggested that these visits focused on shrimp

collecting and drying, marsh clams were the dominant food component recovered archaeologically. Vertebrate faunal remains from the midden include fish and terrestrial game. The limited assemblage of obsidian flakes, cores and debitage as well as cobble hammerstones, one-handed *manos*, and slab *metates* does not look much like the specialized tool kit of seasonal collectors. As yet no larger base camps have been located, but inland sites near cultivated fields may have been part of the Chantuto B settlement system. Human skeletons from two Late Archaic burials at Tlacuachero have been analyzed for stable carbon isotope ratios in an effort to determine the dietary regimes of these coastal inhabitants. The results were similar to those associated with diets relying heavily on maize or other C₄ plants, but other food sources that could have produced the same reading have not yet been ruled out.

Aceramic shell middens extend farther north along the Pacific Coast of Mesoamerica, exemplified by Puerto Marquez, Guerrero, where test excavations by C. F. Brush revealed cultural remains underlying early pottery levels, and by San Blas, Nayarit, where J. Mountjoy obtained radiocarbon dates on shell from the Matanchén complex ranging around 2000 b.c. Even farther up the coast, from the Marismas Nacionales into Sinaloa and Sonora, a large number of shell middens are reported, many of which appear to have aceramic components. Since these sites are mostly unstudied, it is unclear if they conform to what appears to be a Late Archaic tradition of marine-estuarine food procurement specialization in coastal lowland regions of Mesoamerica.

GENERALIZING ABOUT ARCHAIC SUBSISTENCE TECHNOLOGY AND SOCIETY IN MESOAMERICA

The importance of the Archaic period cannot be overstated, for during the five to seven thousand years allotted to it, profound changes occurred in the lifeways of the early inhabitants of Mesoamerica, changes culminating in the shift from a subsistence economy based on hunting and wild-plant food gathering to one dependent on agriculture; from an itinerant existence to one grounded in permanent villages; from a maximal social organization consisting of small egalitarian bands in which one's status was attained by personal achievement to that of chiefdoms, in which the status of each individual was to a large extent ranked according to ancestry. Given the wide variety of Mesoamerican environments and the long time-span of the Archaic, it is not surprising to find

significant regional variation in the occurrence and sequencing of these evolutionary changes. Nevertheless, some common threads in technology, social organization, and other elements of cultural adaptation can be discerned to integrate the period into a unified whole.

As a point of departure, it is worthwhile briefly considering the implications to be drawn from what is known of Archaic period lithic technology. Stone tools are the most widely represented artifactual constituent of preceramic archaeological sites in Mesoamerica, yet the lithic inventories consist mainly of casual flakes struck from locally available materials, used without retouch or minimally modified by edge retouch. Aside from widely shared styles of projectile points, to be discussed later, a few distinctive regional industries such as the lowland Belize macroblade tradition, and the groundstone *manos*, *metates*, bowls, and other utensils that appear beginning with the Middle Archaic, standardized tools are unusual. What formal similarities there are among most Archaic period stone implements are more likely to have been function-related than intentional markers of status or social identity. As such, these crude tools are still useful indicators of the changing economic uses to which they were put, as the Archaic economy shifted from an apparent reliance mainly on animal foods to a greater emphasis on wild plants, and finally to domesticated crops.

Projectile point design, on the other hand, is an informative indicator of overall Archaic integration. However much the long-lived popularity of projectile point types makes them ambiguous time markers, their widespread spatial distribution betokens a well-developed cultural interchange linking the different regions of Mesoamerica. Obsidian, a favored raw material for the production of projectile points and other cutting tools at Archaic period sites, but obtainable only at a limited number of geologic sources in the Mesoamerican highlands, testifies even more strongly to the development of interregional exchange during the Archaic. While hunter-gatherer groups living in the Basin of Mexico and highland Guatemala employed obsidian for toolmaking as early as the Paleoindian period, its distribution appears not to have extended much beyond the geological source areas from which it was quarried for most of the Archaic. By Late Archaic times, however, obsidian flakes and blades are common at most highland and lowland Mesoamerican sites. Since seeds and plants themselves may have been among the goods entering into the expanding exchange networks by which obsidian was

procured, evidence of increased interregional interaction must be considered in accounting for the development and spread of agriculture.

From the beginning of the Archaic, cobbles and slabs of coarser-grained stone were employed for grinding and pounding seeds and fibrous plant parts, their working surfaces shaped more by use than design at most sites dating to the earlier part of the period. Stone bowls, utilized as food containers, first appear about 5000 b.c. Baskets, nets, and cordage also came to be important in the material culture of Mesoamerica's Archaic foragers, although these perishable materials are preserved in the archaeological record at just a few dry cave sites. Scattered evidence of bone and wood tools, including awls, needles, *atlatls* and dart shafts, further indicates how incomplete and dependent on local conditions of preservation our material remains inventory is for the Archaic. Indeed, many of the stone tools themselves found in lowland Belize and Panama have been interpreted as woodworking implements used in the manufacture of artifacts that have long since disappeared.

Where animal and plant food remains have been recovered archaeologically, their increasing variety during the Archaic period points to the kind of diversified subsistence strategy Flannery called the "broad spectrum readaptation," a term he originally applied to the pre-Neolithic foraging economies of the Near East. This expansion of the food resource base, along with improved processing and storage technologies, may have been one means by which Mesoamerica's Archaic period foragers sought to cope with the changing post-Pleistocene environment and provide themselves with a more secure and reliable diet.

How different was the Archaic period lifestyle from that of hunter-gatherer societies of the terminal Pleistocene? Since Paleoindian sites, particularly those in North America, are typically associated with the remains of Ice Age megafauna, the archaeological record probably distorts the subsistence importance of big-game hunting, at least in Mesoamerica. The abundant jackrabbit food remains found in Early Ajuereado-phase Tehuacán should caution against an assumption that Mesoamerica's Paleoindian population depended on just a few large animal species. Moreover, the idea that a terminal Pleistocene "broad spectrum readaptation" set the stage for plant domestication has been challenged, at least for the Near East, by P. Edwards, whose examination of plant and animal data from the Levant indicates a varied exploitation of all kinds of animals, edible fruits, and seeds throughout the entire Late Pleistocene. Whether

or not a more diversified food-getting strategy was an adaptation to the changing Post-Pleistocene environment or was already practiced during the Paleoindian period, the earliest Archaic components in Mesoamerica with good organic preservation, such as those associated with the lower levels of Guilá Naquitz Cave in Oaxaca and Santa Marta Rockshelter in Chiapas, show that a mixed foraging economy was the way of life by at least 7000 b.c.

“Scheduling,” the prioritizing of food procurement alternatives to take advantage of the seasonal availability of wild plants and animals, was an adaptive regulatory mechanism developed by Mesoamerica’s Archaic foragers to gain more effective use of the nutritious but transitory resources of various highland ecological zones. The grasses, acorns, pine nuts, and leguminous seeds that were the major focus of early Archaic collecting strategies in these patchy upland environments were not abundant or perhaps desirable enough to provide a year-round subsistence base. As a consequence, campsites were occupied only seasonally, and those investigated so far lack evidence of significant storage facilities to accommodate more than small caches of food.

Tehuacán’s Coxcatlán Cave is thought to have been used as a rainy season “macroband” camp throughout the Archaic, its estimated occupation by fifteen to twenty-five people representing the aggregation of three or four families during a period of abundant food resources. For the remainder of the year the group would have split into its constituent family units whose separate, most likely briefer, residential locations are identified as “microband” camps. From the Oaxaca Archaic, three additional site types have been discerned that appear to be special activity locations utilized from time to time for such tasks as chert quarrying, maguey-heart roasting, and possibly intensive hunting.

It is Flannery’s impression that the number of specialized site types increases through the Archaic, as hunter-gatherers shifted from nomadic foraging to a collecting strategy. In this regard he follows a distinction made by L. Binford between foraging groups that move in small family units from site to site, opportunistically pursuing available resources, and bands of collectors that tend to remain in a single location, dispatching special task groups to gather desired foods and other resources. Thus the transition to a collecting strategy may have special significance for the development of permanent residence in Mesoamerica.

Not until the Late Archaic do we find architectural confirmation of

permanent residence, ambiguous even at that date. An isolated Abejas-phase “pit house” at an open-air Tehuacán Valley site, dated 3500–2300 b.c., is taken by MacNeish to represent a small year-round hamlet, but the diminutive size, crude construction, and isolated location of the house are consistent with an alternative explanation of its function as a temporary shelter. In some highland areas, particularly in lacustrine environments where food supplies were more bounteous, it is argued that sedentary life could have been established long before the development of agriculture. The same may be said for a number of lowland locations where abundant, concentrated seafood and other wild food resources could have easily supported permanent year-round residence, as has been documented for preceramic coastal Peru.

Unfortunately, the poorly preserved Archaic archaeological record for the coasts of Mesoamerica offers few concrete data for comparison. Not much is known until the Late Archaic, and then only at a handful of locations. What was once believed to be evidence for residential architecture at Chantuto in the Chiapas Pacific littoral zone has since been disclaimed. Only the testimony of site size and economic diversity at Santa Luisa, Veracruz is currently offered in support of year-round preceramic, preagricultural habitation on the Gulf of Mexico. In the central highlands of Mexico, the recovery at Middle Archaic Zohapilco of animal and plant remains indicative of multiseason hunting and gathering make a case for continuous occupation, but there is as yet no indication that the lakeside inhabitants of the site built any permanent structures to make a protracted stay more comfortable. Without solid archaeological evidence for early sedentism, the idea of a precocious development of permanently occupied, preagricultural villages in the more fertile habitats of Mesoamerica remains just a hypothesis.

Even if village life did not become widely established in Mesoamerica until after 2000 b.c., sedentism should not be seen merely as a consequence of the shift to food production. Indeed, quite the opposite could be the case. The greater settlement stability implicit where a collecting strategy of hunting and gathering replaced foraging may have had a number of social attractions, such as increased opportunities for group interaction and ceremonial elaboration. These attractions would have provided an additional incentive for developing economic strategies, such as plant domestication, to facilitate protracted stays at a single site.

THE ARCHAIC SUBSISTENCE SHIFT FROM WILD TO
DOMESTICATED FOODS

None of the domesticated animals that were to contribute to the prehistoric Mesoamerican diet – the turkey, the muscovy duck, the honeybee, or the dog – are represented in significant numbers archaeologically before the appearance of full-time farming villages. Even the earliest domesticated animal, the dog, was identified only in small numbers in Late Archaic faunal remains from Tehuacán. Their abundance in Formative and later deposits has led to the conclusion that dogs were not, as commonly assumed, important companions for earlier hunter-gatherers but were maintained only after the Tehuacán population had become economically dependent on cultivated foods, and then primarily as a dietary item themselves. The early history of domestication in Mesoamerica consequently focuses on the sequential patterns and underlying processes by which plant production was manipulated by Archaic period cultivators.

Important as the Archaic period is for understanding the origins of agriculture, only a handful of archaeological sites have produced substantial botanical evidence of early domesticated plants or their wild ancestors. Principal sites in the highlands are the Tamaulipas and Tehuacán Valley caves, the open-air site of Zohapilco in the Basin of Mexico, and the Guilá Naquitz Rockshelter in the Oaxaca Valley. In the lowlands, evidence is even more sparse, consisting mainly of pollen samples from sediment cores and other wetland contexts in the Yucatan area and Veracruz. With only the Tehuacán and Tamaulipas caves yielding a long enough sequence to demonstrate subsistence patterns over time, statements about when and where plants were first domesticated, let alone about how and why, are far from conclusive.

As previously noted, the recent redating of early domesticated corn and other archaeologically recovered cultigens from Tehuacán employing the technique of accelerator mass spectroscopy has so far failed to produce an uncalibrated date older than 3000 b.c. Lacking earlier macrobotanical or unequivocal pollen evidence of maize elsewhere in Mesoamerica, the earliest date for the development of corn agriculture in Mesoamerica could be fully two thousand years more recent than previously thought. However, since older maize phytoliths and pollen have been reported from lake sediments and archaeological contexts in Panama and South America, where it is considered to have been introduced in an

early domesticated state from Mexico, the case for Middle Archaic maize cultivation cannot yet be dismissed. Whatever the ultimate resolution of this issue through new archaeological finds or new AMS dates, current models for the process of plant domestication based on Tehuacán maize will require modification.

These problems notwithstanding, the absence of domesticates among the preserved plant remains from the lengthy sequence at the Santa Marta Rockshelter in Chiapas suggests that the spatial distribution of Archaic period cultigens in highland central and northeastern Mesoamerica delineates a core area of agricultural experimentation, at least for native seed plants. In the Mesoamerican highlands the cultivation and eventual domestication of maize, beans, and squash led to what was to become the staple triumvirate of the indigenous diet. While the economic history of many other food plants is documented in the highland archaeological record, it is these three that served as the subsistence foundation for the development of Mesoamerican civilization.

As for lowland Mesoamerica, the scarcity of excavated sites and lack of macrobotanical data have so far frustrated attempts to identify an Archaic agricultural complex for that environmental zone. It has been a matter of long-standing speculation that the coastal lowlands had a very different agriculture history than the highlands, one dominated by starchy root crops that complemented the readily available, high-protein, wild aquatic food resources. An early line of support for this hypothesis came from a proposal that the obsidian flakes commonly encountered in Formative period lowland archaeological sites were components of manioc graters, similar to those known ethnographically from South America, where the root crop agricultural complex may have originated. The hypothesis has recently been bolstered by the discovery of manioc pollen at the Belizean sites of Cobweb Swamp and Cob Swamp in stratigraphic levels radiocarbon dated as early as 2750 b.c. Aside from these finds, however, no botanical remains of root crops have been found in Mesoamerica before about 900 b.c., when manioc (*Manihot utilissima* *esculenta*) is first seen, not on the coast but in highland Tamaulipas, Tehuacán, and Chiapas.

Squashes (*Cucurbita* sp.) and bottle gourds (*Lagenaria siceraria*) are still the earliest Mesoamerican domesticates, although only the Oaxaca *C. pepo* squash seeds have yielded AMS dates confirming an Early Archaic stratigraphic context. Both domesticated *Lagenaria* and *C. pepo* were identified at Ocampo, Tamaulipas, but direct dating now places the

earliest occurrence there in the Middle Archaic, at about 3700 b.c. Cultivated *C. mixta* has been reported from El Riego phase Tehuacán. A single, unidentified cucurbit seed was recovered at Zohapilco from the Middle Archaic Playa phase. With a thin, inedible rind, early squashes would have been valued as much for their use as gourdlike containers for storing liquids as for their nutritious seeds. A similar role is thought to account for the domestication of a native variety of *C. pepo* in the Eastern Woodlands of North America around 2500 b.c.

Nondomesticated runner beans appear to have been eaten by Early Archaic foragers in the Oaxaca Valley and in southeastern Tamaulipas. Although the Guilá Naquitz, Oaxaca, specimens, unlike the wild *Phaseolus coccineus* found in Ocampo, are not from a species that ultimately was domesticated, their high archaeological frequency when compared with similar bean plants raises the possibility that wild seeds were intentionally planted or at least tended by the Archaic foragers. Archaeological evidence for domesticated *P. coccineus* is not confirmed until the Late Formative period. The Middle Archaic date given to the domestication of the common bean, *Phaseolus vulgaris*, based on finds from Tehuacán and Tamaulipas, has been challenged by the much more recent AMS date obtained for the Tehuacán specimen. At Tehuacán a large sample of tepary beans (*Phaseolus acutifolius* var. *latifolius*) recovered from a stratum dated to 3000 b.c. at Coxcatlán Cave shows clear morphological evidence of domestication, but only the wild tepary beans at Guilá Naquitz have had an age as early as 5000 b.c. confirmed by direct radiocarbon dating.

Botanists still have many unresolved questions about the emergence of domesticated forms from wild species of squashes and beans, but no controversy has been more heated than that surrounding the origins of corn/maize (*Zea mays*), the morphological properties of which have been so altered under human cultivation that no clear candidate for a wild ancestral species has been agreed upon. For years archaeologists working in Mesoamerica and the Southwest had accepted a model of corn domestication proposed by P. Mangelsdorf in which a now extinct wild form resembling the earliest archaeological specimens of *Zea mays* found at Tehuacán was postulated as the ancient ancestor. This small-eared pod corn, with eight rows of soft, glume-encased kernels borne on a slender bisexual spike, would have been able to disperse its own seeds, a property lost by its domesticated descendants.

An alternate hypothesis that the ancestor of corn was not some extinct

wild form of *Zea mays*, but rather its closely related cousin, teosinte (traditionally called *Zea mexicana*), did not receive much archaeological notice until the 1970s. Teosinte, which grows wild in certain semiarid highland zones of Mexico and Guatemala, readily invades abandoned corn fields and other disturbed habitats, and hybridizes easily with cultivated maize. It differs from maize in bearing its fruits on multiple, slender seed heads, from which the hard kernels individually disperse at maturity (Fig. 2.13).

G. Beadle has demonstrated through breeding experiments conducted in collaboration with M. Gutiérrez of the International Maize and Wheat Improvement Center in Mexico and W. Galinat, an early associate of Mangelsdorf, that only six to ten independently inherited genes distinguish maize and teosinte. Moreover it has been shown experimentally that the introduction of a single mutant gene produces free-threshing kernels in teosinte similar to the earliest long-glumed cobs from Tehuacán. Recent molecular genetic studies of maize and the extant varieties of teosinte by J. Doebley have confirmed the ancestral role of teosinte and linked the domesticated plant most closely to a population of the small-spikeleted annual, *Zea mays parviglumis*, which today is confined to the central portion of Mexico's Balsas River drainage. As the name of this wild relative indicates, a taxonomic revision of the *Zea* genus proposed by H. Iltis and Doebley subdivides teosinte into four species, three of which are perennial wild plants. The fourth species, *Zea mays*, now includes the three annual subspecies of teosinte as well as domesticated maize, all of which are considered to be closely related genetically despite their highly polymorphic appearance.

Acceptance of the ancestral role of teosinte implies that all the Archaic period corn found in the Tehuacán Valley is domesticated, since even the most primitive cobs show evidence of human selection for more advantageous morphological characteristics. Nor is it likely that the ancestral teosinte once grew wild in the valley where it was initially domesticated by the inhabitants of Tehuacán. The plant presently grows only at lower elevations with warmer average temperatures and somewhat higher rainfall than at Tehuacán. A plausible alternative for the early domestication of *Zea mays parviglumis* envisages an as yet unidentified band of Balsas River foragers selecting a desirable chance mutation of the hard-to-eat plant, nurturing it and its offspring, and passing cultivated seeds on to neighboring groups in similar habitats. Further hybridization with another wild teosinte like the one represented at Zohapilco at about



Figure 2.13. Experimentally grown teosinte from the Valley of Oaxaca. Photograph by authors.

5000 b.c. may have been necessary to allow the early domesticate to grow at higher elevations like Tehuacán.

Before the recent development of AMS dating technology the Tehuacán cave sequence seemed to indicate that Archaic foraging populations

worked long and persistently from 5000 b.c. on at developing more productive strains of a maize plant that did not initially offer much dietary benefit. Although it now seems likely that these efforts began 2,000–3,000 years more recently, even at that date maize initially constituted only about 2 percent of the total plant food consumed by the Late Archaic foragers, if we generalize from MacNeish's estimate of the volume of food attributable to wild and cultivated species recovered from Abejas-phase occupation levels at Tehuacán. By the Early Formative Ajalpan phase at Tehuacán, which began a little more than a thousand years after the earliest AMS-dated corn, there appears to have been a significant economic shift to maize cultivation. Maize constituted 68 percent of all edible plant remains recovered from this phase. Despite the small size of the Ajalpan sample and its susceptibility to distortion, the evidence is sufficient to indicate that the newly acquired dependence on maize initiated a trend that continued through the rest of the prehistoric occupation of Tehuacán. Thereafter maize contributed from 33 percent to 83 percent of the dietary plant material.

With regard to reconstructing trends in prehistoric subsistence strategies, it must be recognized that differences from one site to another in prehistoric methods of food collection, preparation, and waste disposal make it unlikely that even adequately large and well-preserved archaeological collections of plant and animal remains can precisely quantify prehistoric food intake. Nevertheless, with more than 13,000 corn cobs recovered from Formative period and later levels in Tehuacán, there is little doubt that sedentary villagers of the valley were highly dependent on maize, as were their contemporaries throughout Mesoamerica. For the Archaic period, however, no one food source was of such singular importance, and archaeological efforts to determine even the relative dietary importance of animals, wild plants, and cultigens from excavated remains may not be accurate.

In his gradualistic model of the increasing importance of cultigens in the diet of the Tehuacán cave occupants, MacNeish calculated that wild-animal food diminished in importance slowly over time from its dominant Early Archaic contribution of 54 percent of the total. But human coprolites from this same sequence analyzed by the late E. Callen contradict that interpretation and instead suggest that wild plants, particularly *Setaria* grass seed and *pochote* roots, were always the major food, even in late prehistoric times when maize cobs littered the cave floors. While the

fact that various foods are digested at different rates may distort the picture of dietary habits drawn from the analysis of ancient feces, such direct testimony as to what people ate cannot be ignored.

Lending further support to Callen's portrayal of a diet relying heavily on plant foods in both the Early and Middle Archaic El Riego and Coxcatlán phases are recent analyses of carbon and nitrogen isotope ratios in bone collagen from Tehuacán burials. Stable isotopes transferred from food to human bone have proven to be a useful indicator of prehistoric dietary patterns, allowing investigators to identify individuals whose lifetime nutrition was based on maize and other tropical grasses or on game animals that ate these plants. Although only two of the twelve Tehuacán burials analyzed by this technique date to the Archaic period, studies by DeNiro and Epstein, further refined by Farnsworth, Brady, DeNiro, and MacNeish, appear to indicate that, rather than a gradual increment in the importance of plants leading eventually to the establishment of an agriculturally dependent subsistence economy, a sudden and abrupt change occurred in the Coxcatlán phase, when wild grasses or maize came to constitute as much as 90 percent of the diet, a value at Tehuacán that remained consistently high into the Late Postclassic period.

Working with a larger sample of plant materials from a single temporal phase at Guilá Naquitz, Oaxaca, Flannery and his collaborators have grappled further with the issues of dietary quantification. In their research into food procurement and consumption, the rank order of nutritional contributions made by individual plant and animal species was calculated for each stratigraphic level of occupation. These figures were then examined in light of ecological data from the cave environment. For the thirteen most common plants, a sustaining area of only 5 to 15 hectares is calculated as having been necessary to provide all the plant food consumed during a four-month occupation.

Although the small band of Archaic foragers living at Guilá Naquitz had available more than enough plants in this small area to sustain themselves for the autumn season, they would have needed a significantly larger territory to procure the six to eight white-tailed deer they are estimated to have eaten during the same period. Based on food remains recovered archaeologically, dietary reconstructions for three of the occupational zones at Guilá Naquitz show deer and other animals contributing only 5–11 percent of the total number of kilocalories ingested daily by an adult member of the band, and 32–35 percent of the protein by weight. Apparently the major food source for even these earliest Archaic

Oaxaca foragers was plants that were in plentiful supply within a short distance of the seasonal camp. These calculations are, of course, based on the premise that there had been no significant intrusion of more recent food remains into the early Archaic levels of the shallow cave floor, a possibility raised by D. E. Dumond in a published review of the Guilá Naquitz excavations. Recent direct AMS dates on squash and runner bean specimens from these early stratigraphic levels, however, have confirmed the integrity of the excavations.

In the Mesoamerican lowlands, as already indicated, no macrobotanical remains have yet been found in an Archaic context. Nevertheless the strong Late Archaic temporal correlation between skeletal carbon isotope ratios indicating high dietary intake of grasses along with microfossil evidence for maize cultivation, and the apparently sudden archaeological increase in human settlement, are suggestive. Pohl and her collaborators propose that early maize consumption served to permit more stability in a foraging economy that exploited rich swamp-margin habitats; a similar argument could be made for the coastal Chantuto fisherfolk. In both locales, however, carbon isotope analysis of human skeletons dating to the later Formative period indicates a highly variable degree of dependence upon maize, the consumption of which may have been more important in some higher-status communities than in others. It appears that where abundant wild plant and animal resources were available, the development of settled village life and emerging social ranking need not have been dependent on more intensified maize agriculture.

TOWARD EXPLAINING THE DEVELOPMENT OF MESOAMERICAN AGRICULTURE

For archaeologists the most intriguing questions about the Mesoamerican Archaic are not those limited to dietary reconstructions but, rather, those concerning the dynamics of cultural innovation during this crucial period when agriculture evolved as the mainstay of human subsistence. In the 1960s prehistorians attempting to explain why agriculture came into being often attributed it to human innovation in so-called nuclear areas of development. There the discovery of plant selection and cultivation techniques was thought to have led naturally and inexorably in the direction of full-fledged farming and settled village life. Subsequently, theorists turned away from the idea that food production would necessarily have been perceived as an advantageous technological innovation

and looked more toward external causative forces in explaining why it was embraced by people who previously got by quite comfortably as hunters and gatherers of wild foods.

The class of explanations archaeologists currently find most appealing is that which sees a particular mode of subsistence technology – whether some form of hunting and gathering or agriculture – as functioning to effect a comfortable balance between the population-sustaining food potential of the local environment under that technology (commonly expressed as *carrying capacity* of the environment) and the nutritional needs of its inhabitants. Plant cultivation, which was probably more labor-intensive than hunting and wild-food gathering in the resource-rich habitats of Archaic Mesoamerica, would have offered little advantage to a foraging population unless something happened to undermine the equilibrium between environment and population. Such an imbalance would have provided the stimulus for a technological change like agriculture to increase the availability of food. That this disequilibrating occurrence was a worldwide phenomenon is supported by the fact that the earliest evidence for agriculture follows the end of the Pleistocene and the changing environmental conditions of the Holocene not only in Mesoamerica but in other parts of the New and Old Worlds as well.

Precisely how changes in plant and animal communities might have affected the capacity of the land to sustain the larger foraging populations at the end of the Ice Age is, however, more difficult to determine. Pollen studies in highland Mesoamerica, in concordance with those conducted in the Near East, show an expansion of the kind of environment – the thorn-scrub-cactus forest in Mesoamerica – in which the wild ancestors of many domesticated plants are found. Following an idea proposed by Flannery, this has suggested to some archaeologists that, while post-Pleistocene environmental change acted as an early facilitator of plant domestication, it was the desire for a strategy to deal with the year-to-year variation in the seasonal availability of desired plants owing to rainfall fluctuations that ultimately made agriculture a more attractive way to procure food.

In a complex computer simulation of the influence of different factors upon economic decisions made by the Early Archaic inhabitants of Guilá Naquitz, R. Reynolds corroborates the idea that considerations of foraging efficiency in the face of variable annual rainfall were of primary importance at the outset of this period. Contrary to the expectations of both environmental and demographic change theories, neither the intro-

duction to the computer model of long-term climate change nor population growth variables resulted in the adoption of cultivation strategies. Rather, it was the combination of wet years, during which the model society had the latitude to experiment with new plants, and dry years, in which the efficient use of these resources was tested, that encouraged the development of agriculture. As Flannery concludes from this and his own analysis, the adoption of agriculture in Mesoamerica may be best understood as an effort to manage unpredictable variability in climate and perhaps population size by hunter-gatherers who were actively involved in making decisions based on their own experience and that of past generations.

Other archaeologists subscribe to the idea that it was population pressure that pushed foraging peoples to adopt agricultural techniques, whether demographic growth is seen as a universal condition of humanity or as a special characteristic of certain more sedentary societies. Such theories are bolstered by the apparent association, in at least some parts of the world, between a rise in population – as indicated by increases in the number of archaeological sites or their size – and early stages of cultivation. Unfortunately, the data themselves are too crude to reveal whether population growth preceded, followed, or was interactive with the concomitant shifts in food procurement strategies. For Mesoamerica we have so few sites available for analysis, even in those areas with well-established Archaic sequences, that inferences about the timing and scale of population growth are compromised by critical sampling problems.

If farming was such a successful adaptation to the environmental variability of post-Pleistocene Mesoamerica, we are still left with the question of why a mixed subsistence strategy prevailed for several thousand years after the first domesticates appeared, not to be replaced until the end of the Archaic by a subsistence economy based primarily on maize cultivation. Why, in Mesoamerica, was there such a lengthy incipency, when agriculture and village life were established relatively rapidly and firmly in southwest Asia after the first domesticated wheat and barley appeared at 8000–7000 b.c.? The answer may lie in the new dates that would make the early domestication of maize a much more recent phenomenon, perhaps one beginning not much earlier than 3000 b.c. Under those circumstances the period of true incipient agriculture would be reduced to a thousand years, rather than the much more lengthy time span implied by dating early domesticated corn stratigraphically to 5000 b.c. Although squash may have been cultivated much earlier, no other

domesticated plant was capable of playing the dominant nutritional role that corn was to assume.

Operating under the older domestication chronology, investigators concluded that the genetically controlled attributes of maize were the critical factor preventing earlier dependence on farming. Based on estimates of the potential yield per hectare of the increasingly large corncobs recovered from Tehuacán cave components, Flannery, for example, has argued that it would have made little economic sense for highland foragers to invest in clearing mesquite-lined alluvium until maize reached productivity levels of 200–250 kilograms per hectare, surpassing the yield of natural harvests of mesquite pods. That threshold was not reached in Tehuacán until 2000 b.c. at the earliest.

It is the case that, beginning around 1500 b.c., more productive strains of hybridized maize dominate the Early Formative Ajalpan-phase components at Tehuacán, where Mangelsdorf's "Early Tripsacoid" and Naltet/Chapalote types account for 94 percent of the estimated contribution of corn to the diet. But both corn types are also found in earlier strata at Tehuacan, beginning during the Abejas phase when, using MacNeish's figures, they are estimated to have contributed 45 percent of the maize food volume, even though they constitute only 15 percent of the total sample. If these nutritionally superior maize varieties are not intrusive into the earlier strata, then the Late Archaic appears to have been a period of relatively rapid experimentation with a plant that was more genetically malleable in the hands of its early cultivators than archaeologists have assumed.

In our view, a better understanding of the process of early agricultural development might be gained by paying more attention to the role of intergroup social interaction during the Late Archaic. A 1978 article by B. Bender argued that the formation of exchange relationships among late Paleolithic hunter-gatherers in Europe and the Near East promoted the rise of diverse strategies to expand economic production. Citing evidence for increased social differentiation, particularly among more sedentary societies, Bender advanced the idea that group leaders had encouraged intensified production of commodities that either would be valued in intergroup exchanges or, by the very existence of accumulated surpluses, would enhance their society's social standing. A greater commitment to agriculture, where domesticated plants were already a component of an intensified exploitation of economic resources, could thus be seen in part as a consequence of pressures to in-

crease group size and complexity generated by emerging social alliances and competition.

One indication of the expanded role of interregional exchange during the Late Archaic in Mesoamerica is an observed increase in the distribution of nonlocal obsidian. Just what role cultivated plants and other perishable commodities might have played in the developing exchange networks through which obsidian was procured is difficult to document, but the broad geographic spread of *Zea mays*, a complex domesticate originating in a limited highland habitat zone, provides striking archaeological evidence of the distributive capacity of these Archaic alliances.

In light of this argument it is tempting to resurrect an old theory first proposed by the geographer Carl Sauer that coastal lowland and lacustrine environments, with their wealth of wild-food resources, were more central to the transition from incipient food production to full-fledged agricultural dependency than is currently acknowledged. Recently, B. Hayden has presented a model of agricultural development that combines aspects of both Sauer and Bender's hypotheses, attributing the impetus for agricultural production to the competitive feasting engaged in by chiefs in similar regions of natural abundance. Such a model seems better suited to the Late Archaic spread of maize agriculture on the coastal lowlands, however, than to its origin in the drier river valleys of Mesoamerica, as the work of M. Blake et al. has demonstrated.

If one no longer assumes a protracted period of incipient maize cultivation in highland environments, where patchy resources required their human inhabitants to be at least partly mobile, then some measure of the incentive for Late Archaic agricultural intensification might be found, as Bender suggested, in the accumulation of surpluses that facilitated alliances with semisedentary populations in resource-rich coastal lowland regions. Slim but tantalizing corroboration for this highland – lowland exchange may be seen in the Late Archaic marine shell specimen found in one Mitla cave. It may be no coincidence that the most precocious development of architectural sophistication, trade networks, and religious elaboration is found during the following Early Formative period in just these coastal lowland habitats.

THE FUTURE OF RESEARCH INTO THE PALEOINDIAN AND
ARCHAIC CULTURES OF MESOAMERICA

Archaeological investigations in the last half century, particularly the interdisciplinary research carried out in such places as the Tehuacán Valley and the Valley of Oaxaca, have provided the essential foundation for the study of the early inhabitants of Mesoamerica and have served to heighten scientific interest in this important era. At the current level of knowledge it is already obvious how much Mesoamerican civilization owes to its Paleoindian hunter-gatherers and Archaic cultivators, but it is also manifest that the archaeological database we draw upon to reconstruct the specifics of culture history, lifeways, and sociocultural development is provisional and far from complete. New analytical techniques such as AMS dating and pollen analysis are adding more refined tools for acquiring missing information and resolving problematic issues, but much more research needs to be conducted in the full range of environments exploited by Mesoamerica's first settlers.

Progress is painfully slow in this line of research, partly because not many archaeologists have the inclination, time, and funds to invest in pursuing the prosaic, often deeply buried and poorly preserved, remains of peoples who did not have many material possessions and who, for most of their prehistory, did not remain long in any one place. Nevertheless, research results from the few ongoing or recent archaeological investigations at Paleoindian and Archaic period sites and from more thorough restudies of data from previous projects, is helping to resolve some of the long-standing questions regarding the antiquity and nature of the very earliest inhabitants of Mesoamerica, the process by which an agricultural economy replaced one based on hunting and wild-food gathering, and the conditions for the establishment of settled village life.

Some of the new information from Mesoamerica, along with the exciting research currently being undertaken in North and South America, are good reasons to believe that a fundamental revision of ideas about Mesoamerica's early development is under way, particularly with respect to initial settlement and the development of agriculture. Of potentially equal importance, but much more challenging to current methods of archaeological interpretation, are questions about the role of aesthetics, ideology, and religion in the evolution of the area's Paleoindian and Archaic period cultures. Systematic research into these topics is only in its infancy.

BIBLIOGRAPHICAL ESSAY

Examples of the mostly outlandish early speculation about the ancestry of native Americans are found in L. E. Huddleston's *Origins of the American Indians: European Concepts, 1492–1729* (Austin, TX., 1967), J. Winsor's *Narrative and Critical History of America*, vol. 1 (Boston, 1889), and *Fantastic Archaeology: The Wild Side of North American Prehistory* (Philadelphia, 1991) by S. Williams. The sixteenth-century Jesuit friar José de Acosta, in his *Historia natural y moral de las Indias* (Mexico, 1962), stood almost alone in his early conjecture that the American Indians had migrated as early hunters across the Bering Strait from Asia. An exceptional eighteenth-century instance of scientific inquiry supplanting conjecture is credited to Thomas Jefferson, third president of the United States, whose *Notes on the State of Virginia* (London, 1787) describe a stratigraphic excavation he carried out to investigate the origins and nature of the Indian mounds on his plantation. Not until the early twentieth century did Jefferson's excavation methodology become standard practice in American archaeology, making it possible to reconstruct culture history and stages of development. Chronicling the growth of this archaeological sophistication are G. Willey and J. Sabloff in *A History of American Archaeology*, 3rd ed. (New York, 1993). The intellectual environment in which archaeology developed over the past centuries is examined by B. G. Trigger in *A History of Archaeological Thought* (Cambridge, England 1989).

A. Krieger in his article in J. D. Jennings and E. Norbeck, eds., *Prehistoric Man in the New World* (Chicago, 1964) discusses the origin and usage of the "stage" concept now commonly employed to classify early archaeological remains in the New World. Our nomenclature defines terms such as *Paleoindian*, *Lithic*, and *Archaic* as essentially delineating broad-scale chronological periods rather than developmental stages, thereby skirting the contentious issue of whether they represent evolutionary levels.

Beringia, the Ice Age land bridge considered by most scientists to be the locus of initial human entry into the New World, is discussed by J. F. Hoffecker, W. R. Powers, and T. Goebel in an important article in *Science* 259:46–53 (1993), "The Colonization of Beringia and the Peopling of the New World," and earlier in an edited volume by D. M. Hopkins, *The Bering Land Bridge* (Stanford, CA, 1967). The edited volume *Paleoecology of Beringia* (New York, 1982) deals with this topic from a variety

of perspectives. A comprehensive, up-to-date treatment of the archaeology and environment of Pleistocene Beringia is found in F. H. West's recent edited volume *American Beginnings: The Prehistory and Paleoecology of Beringia* (Chicago, 1996). The possibility of coastal versus inland travel south from Beringia was argued by K. Fladmark in an *American Antiquity* 44:55–69 (1979) article, "Routes: Alternate Migration Corridors for Early Man in North America." Recent discoveries of early Paleoindian settlement along the coast from California to Peru lend support to the hypothesis. The two important Peruvian finds are summarized in articles in *Science*, 281 (1998) by D. H. Sandweiss et al., "Quebrada Jaguay: Early South American Maritime Adaptation" (pp. 1830–32), and by Keefer et al., "Early Maritime Economy and El Niño Events at Quebrada Tachhuay, Peru" (pp. 1833–85). R. Gruhn's "Linguistic Evidence in Support of the Coastal Route of Earliest Entry into the New World," in *Man* 23: 77–100 (1988), offers another line of reasoning for a coastal migration route from Beringia. In a readable little book, *Quest for the Origins of the First Americans* (Albuquerque, NM, 1993), E. J. Dixon speculates about an alternative to the Bering Strait entry hypothesis; he proposes a trans-Pacific crossing from Austronesia to South America. Biological and linguistic arguments for the Asian origin and initial date(s) of entry of the first migrants are advanced in an article in *Genetics* 130:153–62 (1992) by Torrini et al., "Native American Mitochondrial DNA Analysis Indicates that the Amerind and Nadene Populations Were Founded by Two Independent Migrations"; in E. J. E. Szathmary's "Peopling of North America: Clues from Genetic Studies," in *Out of Asia: Peopling the Americas and the Pacific*, ed. R. L. Kirk and E. J. E. Szathmary (Canberra, 1984); and in a 1986 *Current Anthropology* article by J. Greenberg, C. Turner, and S. Zegura, "The Settlement of the Americas: A Comparison of the Linguistic, Dental, and Genetic Evidence" (27:477–97). A number of edited volumes, while somewhat dated, offer valuable compilations of reports and interpretations of evidence from archaeological sites claiming early human occupation in both North and South America. Among these are two collections edited by A. L. Bryan, *Early Man in America from a Circum-Pacific Perspective* (Edmonton, Alberta, 1978), and *New Evidence for the Pleistocene Peopling of the Americas* (Orono, ME, 1986), as well as the volumes by J. E. Ericson, R. E. Taylor and R. Berger, *Peopling of the New World* (Los Altos, CA, 1982), and R. Shutler, Jr., *Early Man in the New World* (Beverly Hills, CA, 1983). A more recent book, *The First Americans: Search and Research* (Boca Raton, FL, 1991), edited by T. D.

Dillehay and D. J. Meltzer provides a well-balanced, more up-to-date overview of the often contentious issues involving the initial settlement of the New World.

Until 1997 one of the most hotly debated issues related to initial settlement had to do with whether or not Clovis was the first indigenous American culture. The literature on this topic is voluminous. A few representative references pro and con the “Clovis-first” argument are D. F. Dincauze, “An Archaeo-Logical Evaluation of the Case for pre-Clovis Occupations” in *Advances in World Archaeology* 3: 275–324 (1984); W. N. Irving, A. V. Jopling, and B. F. Beebe, “Indications of pre-Sangamon Humans near Old Crow, Yukon, Canada,” in the Bryan, ed., 1986 volume already referred to; T. F. Lynch, “Lack of Evidence for Glacial-Age Settlement of South America,” in *American Antiquity* 56: 348–55 (1991); D. J. Meltzer, “Why don’t we know when the first people came to North America?” in *American Antiquity* 54: 471–90 (1989); R. C. Owen, “The Americas: The Case Against an Ice-Age Human Population,” in *The Origins of Modern Humans: A World Survey of the Fossil Evidence*, ed. F. H. Smith and F. Spencer (New York, 1984); D. Stanford, “Pre-Clovis Occupation South of the Ice Sheets,” in Shutler 1983; and D. S. Whitley and R. I. Dorn, “New Perspectives on the Clovis vs. pre-Clovis Controversy,” in *American Antiquity* 58:616–47 (1993). The meticulous excavation by T. D. Dillehay and his collaborators at the Monte Verde site in Chile appears to have finally convinced almost all the skeptics that human occupation in South America dates before 12,500 B.P. Volumes 1 and 2 of Dillehay’s report, *Monte Verde. A Late Pleistocene Settlement in Chile* (Washington, DC, 1989, 1997), describes the environmental setting of the site, the research strategy, excavation procedure, archaeological context, artifactual and nonartifactual evidence of human habitation, and the investigator’s interpretations. The unanimous consensus of a group of leading Paleoindian prehistorians who visited the site in 1997 at the invitation of Dillehay was that human occupation dates back at least 12,500 years, and possibly as much as 33,000 years ago. Their visit is summarized in the report by D. J. Meltzer et al., “On the Pleistocene Antiquity of Monte Verde, Southern Chile,” in *American Antiquity* 62:659–63 (1997).

A number of Clovis-type projectile points have been recovered in Mesoamerica, although all are surface finds. Typical examples are described by L. Finsten, K. V. Flannery, and B. Macnider in “Preceramic and Cave Occupations,” *Monte Albán’s Hinterland, Part II, Memoirs of*

the Museum of Anthropology, University of Michigan, No. 23, ed. S. A. Kowalewski et al., pp. 39–53 (1989), and by T. R. Hester, T. C. Kelly, and G. Ligabue in “A Fluted Paleo-Indian Projectile Point from Belize, Central America,” *Working Papers No. 1, Colha Project* (University of Texas, San Antonio, 1981).

New dates on bone remains from early sites are reported by R. E. Taylor et al. in “Major Revisions in the Pleistocene Age Assignments for North American Human Skeletons by ^{14}C Accelerator Mass Spectrometry: None Older than 11,000 ^{14}C Years B.P.,” *American Antiquity* 50:136–40 (1985). A popular article on pp. 70–81 of the June 16, 1997, issue of *The New Yorker* magazine, “The Lost Man,” by D. Preston, describes the discovery and subsequent battle between Native American and archaeological interests over rights to the Kennewick skeletal remains. A. L. Schneider offers a “Kennewick Man Update” in the American Anthropological Association’s *Anthropology Newsletter* 39(6): 22–23 (1998). A revised AMS date of 8750 B.P. for the skeleton has been reported by R. E. Taylor, D. Kirner, and J. Southon in the May 22, 1998, issue of *Science*.

Mesoamerican support for pre-Clovis occupation is substantial albeit controversial, as summarized in the article entitled “The preceramic of Mesoamerica,” by R. S. MacNeish and A. Nelken-Terner in the *Journal of Field Archaeology* 10:71–84 (1983). Another summary article on the same topic by MacNeish appears in the Shutler volume already cited. The evidence for very early human occupation in the Valsequillo region is reported by C. Irwin-Williams in several short articles: “Association of Early Man with Horse, Camel, and Mastodon at Hueyatenco, Valsequillo (Puebla, Mexico),” in *Pleistocene Extinctions*, ed. P. Martin (New Haven, 1967), “Comments on the Association of Archaeological Materials and Extinct Fauna in the Valsequillo Region, Puebla, Mexico,” in *American Antiquity* 34:82–83 (1969), and “Summary of Archaeological Evidence from the Valsequillo Region, Puebla, Mexico,” in *Cultural Continuity in Mesoamerica*, ed. D. L. Browman (The Hague, 1978). In the latter article and in a letter to the editor of *Quaternary Research* 16:258 (1981), Irwin-Williams rejects the dates for occupation earlier than 200,000 years ago as reported by B. J. Szabo, H. E. Malde, and C. Irwin-Williams in “Dilemma Posed by Uranium-Series Dates on Archaeologically Significant Bones from Valsequillo, Puebla, Mexico,” *Earth and Planetary Science Letters* 6:237–44 (1969), and by V. Steen-McIntyre, R. Fryxell, and H. E. Malde in *Quaternary Research* 16:1–17 (1981), “Geologic Evidence

for Age of Deposits at Hueyatenco Archaeological Site, Valsequillo, Mexico.”

Another stratigraphic excavation in Mesoamerica yielding radiocarbon dates in the 20,000–40,000 years b.p. range is described by R. Gruhn in “A Note on Excavations at El Bosque, Nicaragua,” published in the 1978 volume edited by A. L. Bryan already cited, and by J. Espinosa in his *Informe No 1* (Instituto Geográfico Nacional, Managua, 1976), “Excavaciones arqueológicas en el Bosque.” Excavations directed by J. L. Lorenzo and L. Mirambell are reported in *Tlapacoya: 35,000 años de historia del Lago de Chalco* (Instituto Nacional de Antropología e historia, Mexico, 1986), and in their “Preliminary Report on Archaeological and Paleoenvironmental Studies in the Area of El Cedral, San Luis Potosí, Mexico, 1977–1980” (also in the volume edited by Bryan). The validity of the ^{14}C date for the Tlapacoya site is questioned by C. V. Haynes in a “Comment” in *Current Anthropology* 10:353 (1969). Lorenzo and Mirambell present a more complete description of the research at El Cedral in their *Informe de la quinta temporada de excavaciones realizadas en El Cedral, S.L.P.* (Departamento de Prehistoria, Mexico, 1982). “Recent discoveries in the caves of Loltun, Yucatan, Mexico” by R. Velázquez Valadéz, published in *Mexicon* 2:53–55 (1980), describes the only archaeological site in lowland Mesoamerica currently attributed to this very early Paleoindian time period.

The subsequent big-game hunting tradition was defined by G. R. Willey for the North American Great Plains in *An Introduction to American Archaeology, Vol. 1, North and Middle America* (Englewood Cliffs, NJ, 1966). Its extension into Central America is delineated by R. S. MacNeish in his “Mesoamerica” chapter in the volume edited by Shutler already referred to. T. C. Kelly’s report on “Pre-ceramic Projectile Point Typology in Belize,” published in *Ancient Mesoamerica* 4:205–27 (1993), is a critique of MacNeish’s lithic typology. Undisputed is the evidence from Central Mexico dated to the terminal Pleistocene linking Paleoindian hunters with Ice Age megafauna. L. Aveleyra A. de Anda reports on these finds in “Association of Artifacts with Mammoth in the Valley of Mexico,” published in *American Antiquity* 18:332–40 (1953), and “El segundo mamut fósil de Santa Isabel Iztapan, Mexico y artefactos asociados,” in *Publicaciones de la dirección de Prehistoria, No. 1* (Instituto Nacional de Antropología e Historia, Mexico, 1955). An associated human skeletal find is the so-called Tepexpan Man, described in *Viking*

Fund Publications in Anthropology, No. 11 (New York, 1949) by H. de Terra, J. Romero, and T. D. Stewart. The hypothesis attributing extinction of the Pleistocene megafauna to overhunting is examined in a number of articles in P. S. Martin and H. E. Wright, eds., *Pleistocene Extinctions* (New Haven, 1967), and in P. S. Martin and R. G. Klein, *Quaternary Extinctions* (Tucson, AZ, 1984).

Much has been written about R. S. MacNeish's pioneering Tehuacán Archaeological – Botanical Project and its implications for the idea of a widespread “big-game hunting tradition.” Volume 1 of *The Prehistory of the Tehuacán Valley*, ed. D. S. Byers (Austin, TX, 1967), details the analysis of Late Paleoindian period environment and subsistence. Important syntheses of the Tehuacán research are R. S. MacNeish's “Ancient Mesoamerican Civilization,” in *Science* 143:531–37 (1964), and K. V. Flannery, “The Postglacial ‘Readaptation’ as Viewed from Mesoamerica,” in *American Antiquity* 31:800–805 (1966). Terminal Pleistocene human occupation in the Valley of Oaxaca is briefly reviewed by K. V. Flannery in *The Cloud People. Divergent Evolution of the Zapotec and Mixtec Civilizations* (New York, 1983), and in J. Marcus and K. V. Flannery, *Zapotec Civilization. How Urban Society Evolved in Mexico's Oaxaca Valley* (London, 1996). Archaeological evidence for Ice Age art and ideology in Mesoamerica is slim. L. Aveleyra describes the carved camelid sacrum from Tequixquiac in his *Prehistoria de México* (Mexico, 1950); the earliest example of an intentional human burial in Mesoamerica is the Tepexpan skeleton, already referred to in the Viking Fund publication.

Synthetic reviews of the Archaic period and the development of plant cultivation and sedentism are numerous. Most notable among recent publications are B. L. Stark's “The Rise of Sedentary Life,” in *Supplement to the Handbook of Middle American Indians*, vol. 1, ed. J. Sabloff, pp. 345–72 (Austin, TX, 1981), and the summaries by R. S. MacNeish, “The Preceramic of Middle America,” in *Advances in New World Archaeology* 5:93–129 (1986), and R. S. MacNeish and A. Nelken-Terner, “The Preceramic of Mesoamerica,” in the *Journal of Field Archaeology* 10:71–84 (1983). Among the many regional summaries and site reports, W. W. Taylor's article “Archaic Cultures Adjacent to the Northeastern Frontiers of Mesoamerica,” in the *Handbook of Middle American Indians*, vol. 4, *Archaeological Frontiers and External Connections*, pp. 59–94, ed. G. F. Ekholm and G. R. Willey (Austin, TX, 1966), remains the most comprehensive introduction to Mesoamerica's Desert Culture neighbors. Finding substantial temporal and spatial continuity in both stoneworking and

subsistence practices, Taylor disputed the multiplication of Archaic period phases that had been inferred for Tamaulipas in R. S. MacNeish's "Preliminary archaeological investigations in the Sierra de Tamaulipas, Mexico," *Transactions of the American Philosophical Society*, vol. 48, part 6 (Philadelphia, 1958), while acknowledging the unique documentation of plant cultivation found in these excavations. B. D. Smith recently reevaluated the Tamaulipas cave findings in light of AMS dates he obtained for the excavated cultigens in "Reconsidering the Ocampo Caves and the Era of Incipient Cultivation in Mesoamerica," *Latin American Antiquity* 8:342–83 (1997).

No single site or series of sites has played such a critical role in the interpretation of the processes of plant cultivation as have the Archaic-period dry caves and valley-floor sites of the Tehuacán Valley. R. S. MacNeish has published numerous articles on the Archaic sequence at Tehuacán, but his 1981 summary, "Tehuacán's accomplishments," in the *Supplement to the Handbook of Middle American Indians*, vol. 1, ed. J. A. Sabloff (Austin, TX, 1981), offers a succinct retrospective on the project's theoretical and methodological contributions. It is the five-volume report on these excavations, their cultural remains, and the recovered floral and faunal materials, *The Prehistory of the Tehuacán Valley*, however, that remains the most comprehensive resource. Volume 1, "Environment and Subsistence," ed. D. Byers (Austin, TX, 1967); vol. 2, "Nonceramic Artifacts," ed. MacNeish, A. Nelken-Terner, and I. W. Johnson (Austin, TX, 1967); and vol. 5, "Excavations and Reconnaissance," ed. MacNeish, Fowler, García Cook, Peterson, Nelken-Terner, and Neely (Austin, TX, 1972), are particularly relevant to the question of Archaic cultural adaptations. While the record of macrobotanical preservation at the Tehuacán sites is unparalleled for Archaic period Mesoamerica, the recent direct AMS dates on primitive maize cobs reported in *Radiocarbon* 31:1035–40 (1989) by A. Long, B. Benz, J. Donahue, A. Jull, and L. Toolin have cast doubt on the integrity of the cave stratigraphy. A similarly younger-than-expected AMS age determination for a Tehuacán bean specimen is among the findings discussed by L. Kaplan and T. Lynch in "Phaseolus (Fabaceae) in Archaeology: AMS Radiocarbon Dates and Implications for Domestication," *Economic Botany* 53 (1999).

R. García Moll reports on Archaic occupations in Puebla in "Análisis de los materiales arqueológicos de la Cueva del Texcal, Puebla," *Instituto Nacional de Antropología e Historia Colección Científica* 56 (Mexico, 1977). An English summary of her excavations at the ancient lakeside camp of

Zohapilco, "Early Sedentary Economy in the Basin of Mexico," was published by C. Niederberger in *Science* 203:131–42 (1979). To find a highland Mesoamerican region with both extensive stratified Archaic deposits and widespread preservation of plant materials approaching the scale of Tehuacán, however, one must turn to the Oaxaca Valley. In his edited volume *Guilá Naquitz: Archaic Foraging and Early Agriculture in Oaxaca, Mexico* (New York, 1986), K. V. Flannery provides documentation for the tool complexes, plant and animal remains, spatial patterning and local ecology of the Mitla cave sites. While that volume includes a brief summary of the Oaxaca Archaic in general, a more detailed comparison of sites from this period is given by Flannery, J. Marcus, and S. Kowalewski in "The Preceramic and Formative of the Valley of Oaxaca," *Supplement to the Handbook of Middle American Indians*, vol. 1, ed. J. A. Sabloff, pp. 48–93 (Austin, TX, 1981), and by Flannery in his contribution, "Settlement, Subsistence, and Social Organization of the Proto-Otomangueans," in *The Cloud People: Divergent Evolution of the Zapotec and Mixtec Civilizations*, ed. K. V. Flannery and J. Marcus, pp. 32–36 (New York, 1983).

Originally described by R. S. MacNeish and F. A. Peterson in "The Santa Marta Rockshelter, Ocozocoautla, Chiapas, Mexico," *Papers of the New World Archaeological Foundation* 14 (Provo, UT, 1962), the Archaic occupations of highland Chiapas have been studied through subsequent excavations at both Santa Marta and the lakeside camp of Aguacatenango. Details are found in J. García-Bárcena., J. D. Santamaría, T. Alvarez, M. Reyes, and F. Sánchez, "Excavaciones en el abrigo de Santa Marta, Chis," *Informes, Departamento de Prehistoria, No. 1* (Mexico, 1976), and J. García-Bárcena, "El precerámico de Aguacatenango, Chiapas, México," *Instituto Nacional de Antropología e Historia Colección Científica Prehistoria* 110 (Mexico, 1982).

R. S. MacNeish and A. Nelken-Terner recount the results of the BAAR project surveys and excavations in the *Final Annual Report of the Belize Archaic Archaeological Reconnaissance* (Boston: 1983); R. N. Zeitlin offers a somewhat more cautious review of the proposed phases in "A summary report on three seasons of field investigations into the Archaic period prehistory of lowland Belize," *American Anthropologist* 86:358–69 (1984). More drastic revisions of the BAAR lithic chronology were called for by T. C. Kelly in "Preceramic Projectile-Point Typology in Belize," *Ancient Mesoamerica* 4:205–27 (1993). Further research conducted by the Colha Preceramic Project is briefly summarized by H. Iceland, T. R.

Hester, H. J. Shafer, and D. Hudler in "The Colha Preceramic Project: A Status Report," in *The Newsletter of the Friends of the Texas Archaeological Research Laboratory* 3(2): 11–15 (Austin, 1995). The implications of new stratigraphic and palynological evidence for Archaic period cultivators in Belize is discussed by M. D. Pohl et al. in a 1996 *Latin American Antiquity* article, "Early Agriculture in the Maya Lowlands" (7:355–72).

Microbotanical and archaeological evidence from preceramic and early ceramic sites in Panama, although beyond the boundaries of Mesoamerica, reinforces the emerging Belizean pattern of Late Archaic mixed farming and foraging strategies. O. F. Linares and A. J. Ranere have compiled the results of ecological and archaeological studies in western Panama in "Adaptive radiations in Prehistoric Panama," *Peabody Museum Monographs* No. 5 (Cambridge, MA, 1980). The article "Prehistoric Human Adaptations to the Seasonally Dry Forests of Panama" in *World Archaeology* 24(1):114–33 (1992) by R. Cooke and A. J. Ranere reveals how these investigators in the Rio Santa María watershed build upon earlier research by McGimsey and Willey at the Pacific coastal sites of Cerro Mangote and Monagrillo.

Because Archaic coastal sites are little known for the Gulf of Mexico, S. J. K. Wilkerson's report on Santa Luisa, Veracruz, "Pre-Agricultural Village Life: The Late Preceramic Period in Veracruz," in *Studies in Ancient Mesoamerica, II. Contributions of the University of California Archaeological Research Facility* No. 27:111–18 (Berkeley, CA, 1975), has been an important and frequently cited resource. Late Archaic shell middens are much better known for the Pacific coast of Mesoamerica, particularly in Chiapas and Guatemala, where their occupational sequences have recently been reviewed by M. J. Blake et al. in "Radiocarbon Chronology for the Late Archaic and Formative Periods on the Pacific Coast of Southeastern Mesoamerica," *Ancient Mesoamerica* 6:161–83 (1995). A 1976 monograph by B. Voorhies on the best known of these sites at Islona de Chantuto, "The Chantuto People: An Archaic Period Society of the Chiapas Littoral, Mexico," originally in *Papers of the New World Archaeological Foundation*, No. 41 (Provo, UT), has been updated by G. H. Michaels and Voorhies in their article "Late Archaic Period Coastal Collectors in Southern Mesoamerica: The Chantuto People Revisited," published in *The Evolution of Archaic and Formative Cultures Along the Pacific Coast of Latin America*, ed. M. Blake (Pullman, WA, 1991). Farther north along the Pacific Coast, Late Archaic occupations were discovered by C. F. Brush underlying the more famous early pottery

levels at Puerto Marquez, Guerrero. Brush summarizes his work in "Pox Pottery: Earliest Identified Mexican Ceramic," *Science* 149:194–95 (1965). Aceramic shell midden sites, most dating to the Late Archaic, are reported for West Mexico by J. B. Mountjoy, R. E. Taylor, and L. H. Feldman in "Matanchén Complex: New Radiocarbon Dates on Early Coastal Adaptation in West Mexico," *Science* 175:1242–43 (1972), and by J. R. Shenkel's "Quantitative Analysis and Population Estimates of the Shell Mounds of the Marismas Nacionales," in *The Archaeology of West Mexico*, ed. B. Bell, pp. 57–67 (1974).

Analyses of the subsistence technologies and changing adaptations of Archaic groups have been a persistent focus of Mesoamerican archaeologists interested in the origins of maize agriculture, although the notion that they formed part of a worldwide terminal Pleistocene "broad spectrum revolution" has been challenged for the Near East by P. C. Edwards in "Revising the Broad Spectrum Revolution and Its Role in the Origins of Southwest Asian Food Production," *Antiquity* 63:225–46 (1989). K. V. Flannery, who coined the term *broad spectrum revolution*, introduced the systems perspective to the problem of Archaic period economic change in his 1968 "Archaeological Systems Theory and Early Mesoamerica," published in *Anthropological Archaeology in the Americas*, ed. B. Meggers, pp. 67–87 (Washington, DC, 1968). In another article, "The Origins of Agriculture," *Annual Review of Anthropology* 2:271–310 (1973), he presents a seminal comparison of Near Eastern and Mesoamerican processes of domestication. More recently, in his *Guila Naqitz* volume, Flannery has turned his attention to the role of risk avoidance in plant cultivation and in the shift from foraging to collecting strategies, as differentiated by L. R. Binford in "Willow smoke and dogs' tails: Hunter-gatherer settlement systems and archaeological site formation," *American Antiquity* 45(1): 4–20 (1980).

The hemisphere-wide synthesis of plant domestication histories offered by B. Pickersgill and C. Heiser in "Origin and Distribution of Plants Domesticated in the New World Tropics," published in *Origins of Agriculture*, ed. C. A. Reed, pp. 803–35 (The Hague, 1977), requires some revision in light of new archaeological discoveries and new botanical investigations. Some of these studies are reported in *Foraging and Farming: The Evolution of Plant Exploitation*, ed. D. R. Harris and G. C. Hillman (London, 1989), and in the supplement issue, "New Perspectives on the Origin and Evolution of New World Domesticated Plants," published by the journal *Economic Botany* 44 (1990). E. McC. de Tapia

updates the archaeological record for Mesoamerica cultigens with an article entitled "The Origins of Agriculture in Mesoamerica and Central America," in *The Origins of Agriculture: An International Perspective*, ed. C. W. Cowan and P. J. Watson, pp. 143–71 (Washington, DC, 1992). The Tehuacán and Guilá Naquitz botanical data are evaluated by D. Pearsall in "Domestication and Agriculture in the New World Tropics," her contribution to a broader analysis of New World domestication in the collection of papers presented at the School of American Research Seminar, edited by the organizers, T. D. Price and A. B. Gebauer, and published as *Last Hunters, First Farmers* (Santa Fe, NM, 1995).

Because of the centrality of maize to an understanding of Mesoamerican agricultural origins, some further notes on the "corn wars" literature are outlined here. P. C. Mangelsdorf's model of an extinct wild form of maize from which the domesticated varieties developed has had few adherents among archaeologists since G. W. Beadle's theory of a teosinte ancestor, summarized in "The ancestry of corn," *Scientific American* 242: 112–19, 162 (1980), became widely known. While the specific mutations by which the distinctive maize ear developed are still disputed (e.g., see the 1983 article by H. H. Iltis, "From Teosinte to Maize: The Catastrophic Sexual Transmutation," in *Science* 222:886–94), biological studies of isozymic and chloroplast DNA reported by J. Doebley in "Molecular Evidence and the Evolution of Maize" in *Economic Botany* 44 (Supplement): 6–27 (1990), appear to have resolved questions about which teosinte variety was ancestral to corn firmly in favor of the parviglumis subspecies native to the Balsas River drainage of western Mexico. A broader perspective on the prehistoric evolution and economic role of maize in the Americas is provided by the twenty-eight contributors to *Corn and Culture in the New World*, ed. S. Johannessen and C. A. Hastorf (Boulder, CO, 1994).

The dietary importance of maize and other domesticates for the Tehuacán cave occupants is estimated by MacNeish in "A Summary of the Subsistence," but E. Callen's "Analysis of the Tehuacán Coprolites" resulted in a different reconstruction. Both papers appear in *The Prehistory of the Tehuacan Valley*, Vol. 1, ed. D. Byers (Austin, TX, 1967). Stable carbon isotope analysis of the two Archaic period Tehuacán skeletons is reported by P. Farnsworth, J. E. Brady, M. J. DeNiro, and R. MacNeish in "A Re-Evaluation of the Isotopic and Archaeological Reconstructions of Diet in the Tehuacan Valley," *American Antiquity* 50(1): 102–16 (1985). A different approach to calculating the economic role of

plants recovered archaeologically is taken in the *Guilá Naquitz* study by Flannery and his collaborators (1986). While doubts concerning the reliability of the plant associations have been expressed by D. E. Dumond in his 1987 *American Anthropologist* 89:195 "Review of: *Guilá Naquitz: Archaic Foraging and Early Agriculture in Oaxaca, Mexico*, edited by K. V. Flannery," the volume's fine-grained ecological reconstruction of the foraging potential of the cave environs offers a sound approach to the problem of dietary quantification. B. Smith's report, "The Initial Domestication of *Cucurbita pepo* in the Americas 10,000 Years Ago," in *Science* 276:932–34 (1997) provides AMS verification of the early origins of squash domestication at Guila Naquitz.

Population pressure models, such as the one proposed by M. N. Cohen in *The Food Crisis in Prehistory* (New Haven, CT, 1977), have had little success explaining how and why agriculture began in Mesoamerica. In his "Origins of Agriculture" article already cited, Flannery first examined the cost-benefit issues that might explain the late commitment to maize farming in light of what seemed to be slow improvements in corn productivity over a 3,000-year period. While AMS dates on "early" Tehuacán corn have undermined the argument for a gradualist model of agricultural development in Mesoamerica, the presence of *Zea* pollen in Middle Archaic or earlier Oaxaca deposits must also be explained before we can accept an alternative model of the rapid diffusion of a Balsas-region early domesticated corn during the Late Archaic. Details are in the J. Schoenwetter and L. D. Smith article, "Pollen Analysis of the Oaxaca Archaic," in *Guilá Naquitz: Archaic Foraging and Early Agriculture in Oaxaca, Mexico*, ed. K. V. Flannery, pp. 179–237 (1986). Microbotanical remains of corn thought to date as early as 5000 B.C. have been reported from Panama by D. Piperno, K. H. Clay, R. G. Cooke, A. Ranere, and D. Weiland in "Preceramic Maize in Central Panama: Phytolith and Pollen evidence," *American Anthropologist* 87:871–78 (1985). D. M. Pearsall discusses the basis for inferring an early diffusion of maize into South America in "The Origins of Plant Cultivation in South America," published in *The Origins of Agriculture: An International Perspective*, ed. C. W. Cowan and P. J. Watson, pp. 173–205 (Washington, DC, 1992). Whatever the ultimate resolution of these dating issues, it is our sense that a model of agricultural diffusion that takes into consideration the social context of local and interregional interaction will best account for the Late Archaic archaeological data. Such a model was proposed for Southwest Asia in 1978 by B. Bender in "Gatherer-Hunter

to Farmer: A Social Perspective,” *World Archaeology* 10(2): 204–22. More recently, in an article entitled “Nimrods, Piscators, Pluckers, and Planters: The Emergence of Food Production” appearing in the *Journal of Anthropological Archaeology* 9:31–69 (1990), B. Hayden introduced the idea of competitive feasting as having been an inducement in terminal Pleistocene hunter-gatherer societies to intensify the production of prestige foods through domestication. The applicability of this model to the evidence for early sedentary communities in coastal Chiapas has been evaluated by M. Blake et al. in “Non Agricultural Staples and Agricultural Supplements: Early Formative Subsistence in the Soconusco Region, Mexico,” in *Transitions to Agriculture in Prehistory*, ed. B. Gebauer and T. D. Price (Madison, WI, 1992).

THE PRECLASSIC SOCIETIES OF THE CENTRAL HIGHLANDS OF MESOAMERICA

DAVID C. GROVE

BACKGROUND

The tall mountain ranges of the Sierra Madre Occidental and Oriental parallel the west and east coasts of northern Mexico. Near that country's midsection they are connected by a more recent mountain chain of volcanic origin that runs east-west across Mexico from nearly coast to coast. The uniting of those three mountain masses creates a vast highland (*altiplano*) region in central Mexico, characterized by lofty mountains, well-watered valleys, and temperate climates. A cultural focal point during much of the prehistory of that region has been the Basin of Mexico, a broad interior valley at an elevation of 2,200 meters. Two of Mexico's tallest volcanos, Iztaccihuatl ("White Woman"; 5,230 m) and Popocatepetl ("Smoking Mountain"; 5,465 m), loom over the southeastern fringes of the Basin, and modern Mexico City today spreads across the Basin floor and into the foothills. The tall mountains that surround the Basin now serve to enclose and contain the air pollution produced by one of the world's largest cities, while in prehispanic times those same encircling characteristics entrapped all waters to create an extensive but shallow lake across the valley floor that attracted animals and humans alike.¹ At the arrival of the Spanish in 1519 the lake was the location of the powerful Aztec island city of Tenochtitlan, precursor to modern Mexico City.

Not far to the north of the Basin is Mexico's great northern desert, a region of low rainfall and a land where agriculture was usually impossible. Extending as a lobe northeastward from the Basin is the Teotihuacan Valley, location of one of Mexico's great Classic period cities. Beyond

¹ During arid periods the lower lake levels created five or six smaller lakes across the Basin floor rather than one large body of water.

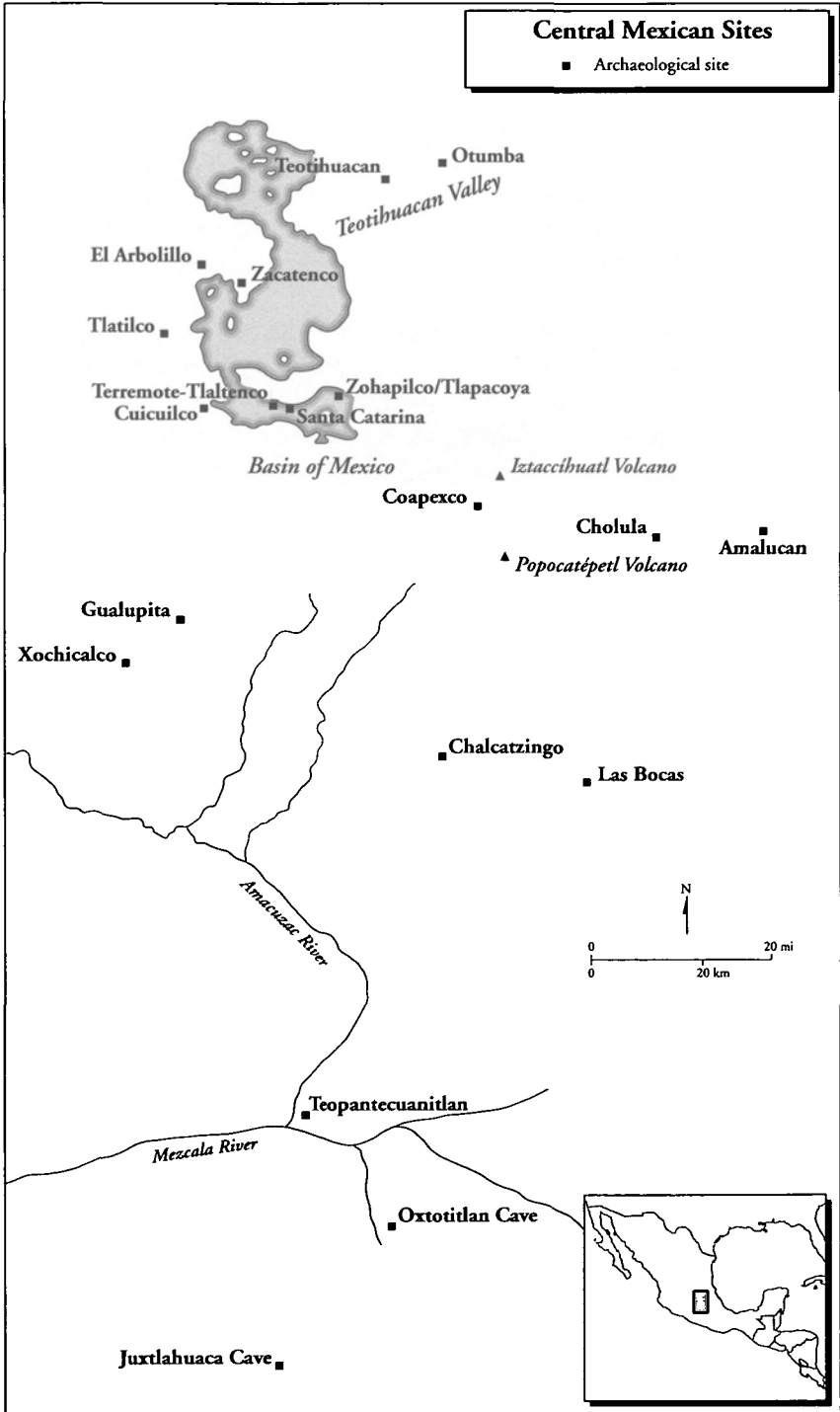
the mountains to the south are the extensive river valley systems of the states of Puebla, Tlaxcala, Morelos, and Guerrero, regions generally characterized by lower altitudes, temperate to subtropical climates, and fertile soils. Because of the central highlands' proximity to Mexico's arid northern desert, only the Basin's south and southwestern areas, and the river valleys beyond the mountains, provided the circumstances appealing to early farmers.

The geological complexity of the central highlands is matched by its great ecological diversity, the latter owing to rapid variations in elevation, rain shadow patterns, soil types, humidity, and the like. Those features combined to provide an unusually abundant and varied set of resources and materials available for exploitation by the societies there. The variation and uneven distribution of those resources within each valley and microarea throughout the *altiplano* often resulted in individual villages having access to quite different resources or commodities than their neighbors had. That inequality led to the creation of village craft specializations and unquestionably underlay the development over time of local and regional exchange networks that served to circulate desired commodities among villages.

The primary geographic focus of this chapter is the Basin of Mexico and its immediate southern neighbor, the state of Morelos (Map 3.1). Those areas have received more archaeological attention than other regions of the central highlands, and present a more complete picture of Preclassic society and lifeways.

THE EARLIEST AGRICULTURAL SETTLEMENTS (2500–1200 B.C.)

The Preclassic period in the central highlands is the stage classified elsewhere in the world as fully Neolithic, in that it is characterized by the presence of agriculturally based societies living in small settled villages and utilizing a ceramic technology. The timing and order of appearance of those three characteristics are not entirely clear, although agriculture and settled life seem to have preceded the utilization of pottery vessels and are usually classified within the Archaic period (see Zeitlin and Zeitlin, Chap. 2, this volume). The advent of ceramics is commonly used as a marker for the beginning of the Preclassic period. Exactly when pottery use began in the *altiplano* remains unclear and therefore a beginning date for the Preclassic is left open-ended here.



Map 3.1

Preceramic sedentary or semisedentary societies may have been present in the Basin as early as 4000 B.C., subsisting on the rich wild-plant and animal resources present along the shores of the lake. Some of the best data for this early time period come from the site of Zohapilco (also known as Tlapacoya) on the ancient southeastern lakeshore. The recovery there of grains of teosinte, the probable wild ancestor of maize, in levels dating to 5500–3500 B.C., suggests the possibility of incipient agriculture in the Basin at that early date. Although archaeological evidence indicates that domesticated maize was already being grown in other areas of central Mexico at that same time, the elevation and relatively lower temperatures of the Basin may have limited the viability and practicality of early agriculture there. Perhaps the early varieties of domesticated maize were not as easily adaptable to the Basin's marginal growing conditions as the hardier ancestral plant, teosinte, was. The question of whether the teosinte from Zohapilco at 5500–3500 B.C. indicates incipient agriculture remains equivocal. Unfortunately, while incipient agriculture would have been more likely and more productive, and faced fewer hazards in the lower, warmer areas of the central highlands, no good archaeological information exists for the same time period there.

If incipient agriculture was being carried out in the Basin six thousand years ago, lifeways there were quickly shattered around 3000 B.C. by devastating volcanic activity. Those geological forces created extraordinarily destructive pumitic ash deposits that may have rendered the area unlivable for nearly half a millennia. It is to one of those southern Basin villages, Zohapilco, that we must again turn for evidence on the time period immediately following the Basin's recovery.

Zohapilco

Zohapilco was a community situated on an island in the southeastern portion of the lake, and Christine Niederberger's deep excavation trenches along the island's ancient shoreline uncovered occupation levels there dating to 2500–2000 B.C. Stone alignments that may represent house foundations were discovered, indicating the possibility this had been at least a semipermanent settlement. Artifacts recovered included simple grinding tools for processing seeds, and cutting and scraping tools possibly used for working wood. The remains also demonstrate that Zohapilco's early inhabitants were extensively exploiting the lakeshore habitat for its plant and animal (fish, waterfowl) resources, as well as

hunting deer, rabbit, and other more inland species. While their diet probably also included agricultural products grown in well-watered areas adjacent to the lakeshore, the available archaeological evidence for those foods is poor.

Zohapilco also provides the earliest conclusive date, 1400 B.C., for ceramic utilization by agricultural communities in the Basin. That early ceramic assemblage (with a time range of 1400–1200 B.C.) includes a vessel form more common in lowland areas of southern Mesoamerica at that same time, the *tecomate*. *Tecomate* is a term commonly used today in southern Mexico and Guatemala for gourds as well as bowls and containers made from gourds. The ceramic vessel of the same name is a neckless globular bowl with a restricted mouth opening. The pottery vessel form thus closely replicates the gourd containers utilized both in rural areas of Middle and South America today and by some preceramic societies there in antiquity as well. The early *tecomates* at Zohapilco are buff- or light-brown colored and often have a band of red paint around their rims, another trait also common farther south. By 1200 B.C., white bowls decorated with incised motifs or by rocker stamping, and figurines with baby-like features, were also used by the early villagers there. The wide distribution, beginning about 1400 B.C., of certain ceramic styles, such as red-rimmed *tecomates*, among disparate early farming societies provides some of the earliest archaeological evidence for the spread of ideas, beliefs, and stylistic preferences across regional, ethnic, and linguistic boundaries. Such diffusion probably flowed indirectly through the regional and interregional exchange networks, and may never have involved direct mechanisms such as the long-distance trade characteristic of later Classic and Postclassic period societies.

DEVELOPING COMPLEXITY AND REGIONAL INTERACTION (1200–900 B.C.)

By 1200 B.C. the Basin and the broad river valleys of the regions lying across the mountains to the south and east saw a growth in human population and an ever increasing number of small villages expanding across the landscape. Those early societies were supported by a maize-based agricultural economy that depended heavily on rainfall and natural humidity for crop productivity, although some simple forms of irrigation may have been practiced as well. Hunting and wild-plant collecting supplemented their diets. Over the three hundred years that characterize

the latter portion of the Early Preclassic period (1200–900 B.C.), that population expansion also brought about a slow but nonetheless marked alteration of the natural environment, as pine and oak forests gave way to cleared agricultural fields.

Tlatilco

Of the excavated Early Preclassic sites, the best known and most famous is Tlatilco, a settlement that can serve as a basic model for discussing Early Preclassic agricultural societies. Tlatilco is located on the Basin's western piedmont slopes. Today the site has disappeared beneath a suburb of Mexico City. Fifty years ago it was a brickyard where, in the course of digging clay, the brickworkers would sometimes uncover human burials associated with a rich variety of ceramic bowls, exotic bottles, and figurines. Those objects were often sold to interested collectors who visited the brickyard. Among those whose attention was drawn to Tlatilco was artist and collector Miguel Covarrubias, who recognized the importance and antiquity of the Tlatilco finds and helped initiate the first official excavations there.

At the time Tlatilco was investigated, potsherds and domestic refuse covered an area of 50 hectares. Covarrubias's excavations, like those that came later, concentrated primarily on the innumerable burials, and little attention was paid to the possibility that the graves may have underlain or been associated with a village area. Yet the archaeological evidence strongly indicates that such a village existed, although house-by-house data, such as have been recovered elsewhere (e.g., see Marcus and Flannery, Chap. 8, this volume), are not available. If the 50-hectare distribution of surface refuse is reflective of Tlatilco's size, it would have been an extremely large settlement for its time. However, the refuse represents more than three hundred years of occupation within that 50-hectare area, and at any given time the village was probably significantly smaller.

The earliest inhabitants of Tlatilco settled inland from the lake, near a small, permanent river. They constructed their houses of wattle and daub, the latter creating a barrier against the Basin's sometimes frigid winter winds. Some houses, perhaps those of the village chief or other high-ranking members of the society, may have been built upon the raised clay-surfaced platforms observed in the excavation profiles. Deep underground bell-shaped pits adjacent to individual houses served for storage and, later, for refuse disposal.

Some aspects of Early Preclassic village life and ritual can be partially reconstructed from the hundreds of magnificent solid and hollow hand-modeled figurines recovered from the graves and refuse at Tlatilco and contemporaneous sites. The majority of the figurines are female and occur in greatest abundance in women's graves, but some males are also depicted. If the clothing depicted on the figures is indicative, dress was minimal, often only "saucy skirts or fancy bloomers," as Muriel P. Weaver so well characterized them (Fig. 3.1, a,b). Faces and unclothed areas of the body may have been decorated with red or yellow ochre designs applied by the cylindrical and flat ceramic seals with deeply incised motifs found in refuse and graves. Some figurines still display traces of similar body decoration. The female figurines also exhibit a remarkable variety of hairdos and head coverings, some of which suggest that women may have interbraided their hair with colored bands of cloth. Such a practice is still carried out today by some Indian groups in southern Mexico and Guatemala, where the colors frequently differ among villages and, together with other clothing distinctions, help to maintain village ethnic identity.

Many figurines occur in poses suggesting the act of dancing (Fig. 3.1b), while others occur in contorted "acrobatic" poses. A few depict individuals wearing small masks on their lower face, and actual clay masks have been unearthed in Tlatilco's graves and refuse deposits. Clay rattles, small clay ocarinas, and whistles in the form of birds and animals are also commonly found. These various objects imply that Early Preclassic village life included a rich variety of ceremonial and ritual activities.

Although houses and the evidence they can provide concerning life-ways may have been destroyed by brickyard activity or missed in the search for burials, a great deal can be learned about the society and its beliefs from the grave offerings. Paul Tolstoy's study of the Tlatilco burials shows that the graves occur in distinct clusters, suggesting the interments had been in close association with house structures, if not directly beneath the structures themselves, a common Preclassic practice. From his exhaustive analysis he suggests that the society may have been divided into two endogamous moieties, and although certain individuals within those moieties seem to have had higher rank or status than other moiety members, a continuum rather than marked class distinctions existed.

Tolstoy also believes that at Tlatilco an individual's rank in life may be discernable archaeologically in the burial treatment he or she received

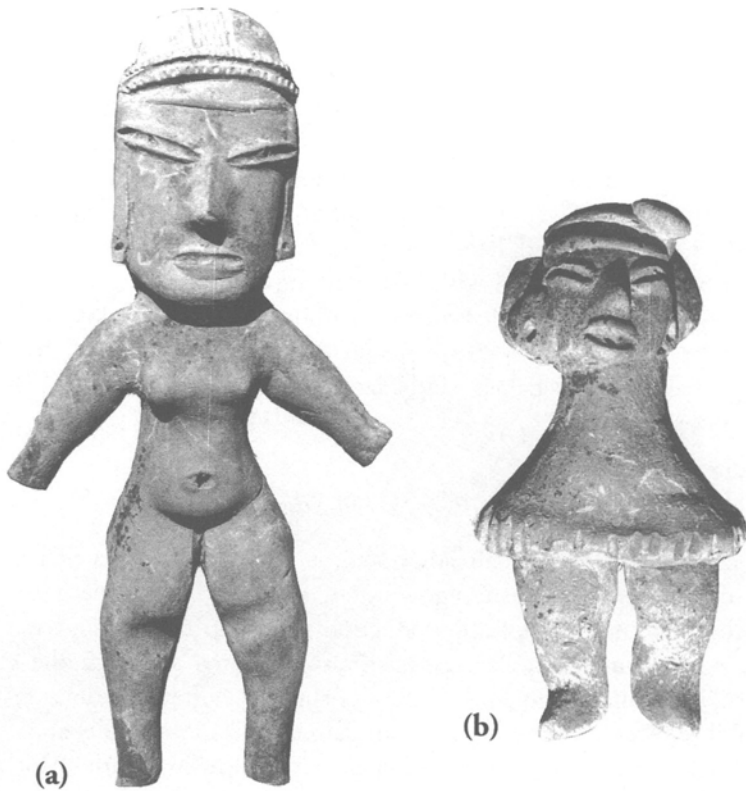


Figure 3.1. Typical Early Preclassic clay figurines. (a): 15 cm tall. (b): 9.5 cm tall. Both figurines are from the author's 1970 excavations at Nexpa, Morelos.

at death, and moiety affiliation possibly indicated by the grave's directional orientation. Highest-ranked individuals seem to have been buried in deeper graves, placed on their backs in an extended position, and to have received thirteen or more objects including small polished iron-ore mirrors. The latter were apparently acquired by trade from regions to the south and most frequently worn as pectorals. All in all, the pattern and level of social organization at Tlatilco appears to have been very similar to that of contemporaneous ranked societies elsewhere in Mesoamerica.

The nearly five hundred graves excavated by archaeologists at Tlatilco cover a time span of c. 1200–900 B.C. and with caution can be placed temporally within the general evolutionary sequence documented in the stratigraphic record at Zohapilco and other sites in the region. The

earliest villagers at Tlatilco used and were buried with pottery, which included red-on-buff bowls, and white flat-bottomed bowls with vertical or out-slanting sides. The latter in particular were often decorated with incised designs. “Differentially fired” bowls, created to achieve sharply contrasting white and black zones, particularly between body and rim, required sophisticated firing techniques and likely had important symbolic significance. Over time the popularity of various ceramic varieties waxed and waned, and later graves more commonly include red-on-brown bottles embellished with “smudge resist” decoration. These were made in an exotic variety of forms, including bottles with long tubular spouts or with unusual stirrup-shaped spouts. Figurines exhibit less change; bald-headed “babies” and a large variety of female figures continued in popularity.

Village Specialization

The central highlands, as already noted, is characterized by a rich diversity of resources, and many agricultural villages probably specialized in one form or another of craft production related to those resources. We have no notion of Tlatilco’s specialization, if any, although the great diversity exhibited in its burial ceramics suggests pottery production as a possibility. At a few other villages, specialization is more readily apparent. One such site is Coapexco, a settlement atypical in its location, for it is situated high above the Basin on the western slopes of the volcano Iztaccihuatl, at an altitude of 2600 m. Although in agricultural terms that area’s greater rainfall may compensate for the lower temperatures of that elevation, the site’s unique location suggests that it had been selected for reasons other than those strictly related to agriculture.

The settlement at Coapexco lasted perhaps only a hundred years and was coeval with the earliest period of occupation at Tlatilco. The village may have consisted of about two hundred wattle and daub houses at any one moment, implying a community of about 1,000 inhabitants. The size range (3.3 × 4m to 5.6 × 6m) of the four houses excavated there corresponds closely to that of contemporaneous houses in Oaxaca (see Marcus and Flannery, Chap. 8 this volume).

Two features of Coapexco’s material culture stand out. One is the presence at the site of *manos* and *metates* (grinding stones used in maize processing) produced from locally available igneous rock and occurring in various stages of manufacture. From that we may suppose that the

villagers specialized in the manufacture of those utilitarian objects and had located their village near both a good source of raw material and acceptable agricultural land. Probably the majority of the *manos* and *metates* they made were destined for villages in the Basin and elsewhere, and not merely for their own use.

Coapexco's second distinctive feature occurs in its obsidian (volcanic glass) artifacts. Among Mesoamerica's Early Preclassic farming villages, obsidian had rapidly become the preferred material for cutting tools, both in the form of flakes (common) and prepared prismatic blades (uncommon). With the exception of an obsidian source at Otumba in the eastern Teotihuacan Valley, most known sources lie far outside of the Basin: to the north in Hidalgo, to the west in Michoacan, to the east in Veracruz, or far to the south in Guatemala. For most Preclassic societies obsidian in either raw or manufactured form represented an imported commodity acquired through the exchange networks. When compared to the obsidian recovered from other early villages in the Basin, Coapexco's is uncommon in two respects: prismatic blades rather than flakes predominate, and obsidian from the far distant Mexican sources is significantly more abundant. Martin Boksenbaum has hypothesized that those differences may signify the Coapexcans had also been specialists involved in procuring raw obsidian from distant sources and in fashioning it into long prismatic blades for further trade regionally.

Tlatilco and Coapexco represent villages situated inland from the great lake that covered the Basin's floor. However, because the lake was rich in aquatic resources and the far southern lakeshore received good rainfall annually, that latter area was particularly attractive to early agriculturalists. Not all settlements were on the mainland. Three villages, Zohapilco, Terremote-Tlaltenco, and Santa Catarina, were situated on small islands or peninsulas in the southeastern thumb of the shallow lake. It is highly probable that various specialized activities were carried out by the lacustrine-based settlements, which could have included an emphasis on fishing and hunting waterfowl. Furthermore, there is excellent evidence that several centuries later the village at Terremote-Tlaltenco was specializing in the production of baskets and woven mats made from the reeds and rushes surrounding their island.

It is obvious that for those communities, agricultural land was more limited than for their lakeshore or inland neighbors yet more productive because of a shallow water table. Because of their circumstances, their subsistence base included quantities of fish, turtles, and ducks and other

waterfowl, in addition to agricultural produce such as maize, beans, and squash. Working on the assumption that the island villages were agriculturally self-sufficient units, the question can be raised, Where did they obtain sufficient land to grow their crops? The answer may be that they created it out of the marshlands surrounding their communities by building small raised fields and draining some marsh areas by digging small drainage canals. Those activities would have been limited in scope and complexity, yet precursors to the extensive system of raised agricultural fields (*chinampas*) in the southern lake area created nearly 2,500 years later by the Aztecs.

Morelos

Emphasis to this point has been on the Basin, the area of central Mexico that has received the greatest amount of archaeological research. However, the optimal conditions for early agriculture in central Mexico are found not in the Basin but across the mountains to the south, in the hot, well-watered, subtropical river valleys of Puebla, Morelos, and Guerrero. A greater abundance of Preclassic agricultural villages occurs in those regions, and it is conceivable that future research will demonstrate that agricultural village life began earlier there than in the higher and cooler altitudes of the Basin. Although the archaeological data from those areas are presently limited, they do provide some types of information unattainable beneath the concrete streets and urbanization now covering the Basin.

The Early Preclassic villages in the state of Morelos, directly south of the Basin, are of particular interest for mirroring so closely the lifeways and burial patterns of Tlatilco. Because of those strong similarities, some form of social integration between the regions can be hypothesized. The majority of the Morelos villages occur along the river valleys in the water-rich western two-thirds of the state. There, they sit on natural terraces above areas of river bottomland of sufficient size for farming. A three-tiered hierarchy of settlements occurs in every valley system: one large village, several smaller villages, and numerous hamlets. That distribution suggests each valley held a minor chiefdom focused on the largest village, the chiefly "center" for exchange and redistribution activities. In the villages and hamlets in all those valleys, the grave goods placed with burials are nearly identical to those of Tlatilco, and the pottery and

figurines (see Fig. 3.1) follow the identical evolutionary sequence. Very minor variations in the ceramics sometimes occur from valley to valley, but most of those may be attributable to the artistic licenses taken by the potters at each production village. The earlier discussion of lifeways and rituals depicted by figurines at Tlatilco applies equally well to the agricultural societies of Morelos.

Pottery and "Ethnicity"

While the pattern of ceramic similarities between Tlatilco, the western Basin, and villages in Morelos is remarkable, the distribution of that pattern is otherwise restricted and does not occur with the villages in Puebla, Guerrero, nor even at sites within the eastern Basin such as Zohapilco. To be sure, across central Mexico there are some ceramic similarities on a general level. Most regional pottery assemblages from the central highlands south to Guatemala include differentially fired vessels, flat-bottomed bowls with iconographic motifs incised on their vertical or out-slanting sides, and baby-faced figurines. However, nearly all such objects appear to have been locally produced and occur together with vessels and figurines that are regionally distinct. Furthermore, while some iconographic motifs decorating the pottery are shared with other regions, many are locally idiosyncratic. Although it does not seem illogical that societies settled along the rivers of Puebla or Guerrero might utilize a somewhat different pottery assemblage than that found at Tlatilco, it is perhaps more difficult to fathom why Tlatilco and the Basin's western villages had closer ceramically expressed links to distant villages over the mountains to the south in Morelos but few apparent ties to their more immediate neighbors in the southeastern Basin. The red-on-brown stirrup-spout bottles and similar exotic vessels, which brought early fame to Tlatilco and which seem to occur in even greater numbers in Morelos, have never been found across the Basin at sites such as Zohapilco. Why? Here the analogy already presented concerning colored ribbons and clothing as ethnic markers may be relevant again. We can speculate that the highland societies purposely created and maintained certain ceramic similarities and differences to mark themselves as separate from "others." Although the western and eastern areas of the Basin were in all probability on friendly terms and continually involved in economic interactions, the societies in those two regions perceived the need to

express their separateness symbolically by maintaining two relatively distinctive ceramic assemblages.² While the western Basin villages appear to have been maintaining a “ceramic” affiliation with villages to the south in Morelos, Zohapilco’s pottery seems to suggest ties with villages in the Izucar de Matamoros Valley of western Puebla (e.g., the site of Las Bocas), to the southeast.

Religion

Although it is impossible to accurately ascertain the religious notions held by the Early Preclassic societies in the central highlands, some inferences can be drawn from the archaeological data and in particular from the recurring iconographic motifs found on Early Preclassic pottery. Whereas many past and current reconstructions of Preclassic lifeways have treated those motifs primarily as indicative of “influences” emanating from the Olmec culture of Mexico’s Gulf Coast (see Bibliographic Essay in this chapter), it is more appropriate to consider them for the basic meanings they may have held for the villagers who utilized that pottery (see also Marcus and Flannery, Chap. 8 of this volume).

Various motifs seem idiosyncratic to particular regions, whereas others occur widely. Prominent among those latter designs are (as named by archaeologists) the “were-jaguar,” “fire serpent,” and “paw-wing” motifs, each always rendered abstractly. There seems little question that those motifs symbolize supernatural spirits or forces and not gods. Each supernatural mentioned seems to characterize a different realm of the cosmos: the earth’s surface, the sky above it, and an infraworld beneath it.³ Perhaps the most common motif is the “fire serpent,” abstractly represented in side view by a few features of its head: flamelike eyebrows above an upper mandible (Fig. 3.2, left). Rather than being “serpent,” it is actually a legged crocodile-like being. In one aspect (with the paw motif, Fig. 3.3a) it is associated with the surface of the earth, and in another (with the wing motif, Fig. 3.3b) with the upper world above that

² In his classic study *Political Systems of Highland Burma* (1965:86), social anthropologist E. R. Leach described this as a “paradox,” noting that “every social group that is to continue as a group must at one and the same time emphasize its difference from other like groups and yet maintain alliances with these other contrasted parties.”

³ The identification of such structures at San José Mogote, Oaxaca (see Marcus and Flannery, chap. 8, this volume), suggests they may have been present, but undiscovered, in other regions of Mesoamerica as well.

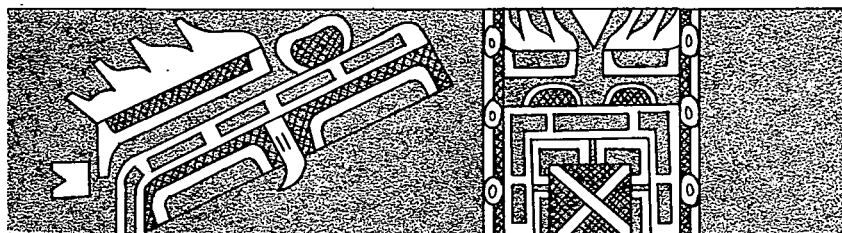
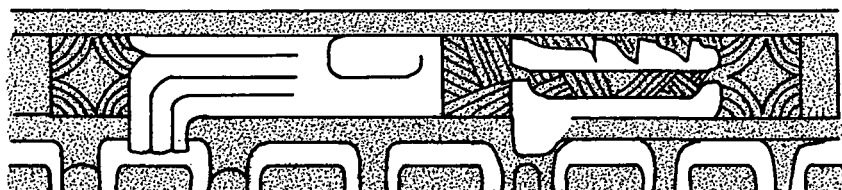
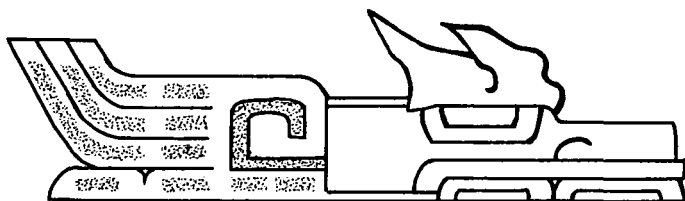


Figure 3.2. Crocodilian supernatural, Tlapacoya, showing both the “fire serpent” profile view (*left*) and the frontal “were jaguar” image (*right*).



(a)



(b)

Figure 3.3. Paw and wing motifs, Tlatilco: (a): Crocodilian supernatural with paw motif; (b): Crocodilian supernatural with wing motif. Shading added on the paw-motif representation to highlight features.

surface. Those same aspects can also be represented by a paw or wing symbol alone. A third motif, often called the “were-jaguar” (Fig. 3.2, right), is actually a frontal image of the fire serpent’s open maw. For millennia most Mesoamerican societies believed that the major supernatural forces associated with rain and crop fertility resided in the infraworld beneath the earth, a realm accessible through caves or fissures in the earth, or by passing below the surface of bodies of water. The fire serpent’s cavernous mouth (often containing a motif of crossed bands) symbolizes that opening to the infraworld.

A fish or sharklike supernatural, denizen of the watery infraworld, is frequently represented but usually in a highly “collapsed” or reduced abstraction as an empty U-shaped element within a crosshatched background (Fig. 3.4a). From more complete images it is known that the blank U-shaped motif is the eye of that aquatic supernatural (Fig. 3.4b). A few centuries later, the sharklike supernatural and its abstract representations had demonstrable associations with bloodletting, the drawing of one’s own blood for ritual purposes. That symbolism may also have been true during the Early Preclassic. There is evidence at Tlatilco and elsewhere to indicate that some males in the Early Preclassic societies of central Mexico ritually bled themselves (often from the groin area) using a variety of sharp instruments, including sharks’ teeth. Although rituals involving human sacrifice may also have been carried out, the data on that are more equivocal.

Public Architecture

While various public and religious ritual activities may have been carried out in special houselike structures that served ceremonial purposes, such specific buildings have not yet been identified at central highland village sites.⁴ In fact, very few Early Preclassic sites there contain raised platforms or mounds classifiable as public architecture. Whether the clay-surfaced platforms at Tlatilco fall within the category of “public architecture” is uncertain. However, several villages in Morelos and Guerrero do exhibit public architecture. Two that became major centers later in the Preclassic merit initial mention here.

Chalcatzingo, the largest Early Preclassic settlement in the Amatzinac Valley of far eastern Morelos, marks the known eastern extent of villages utilizing the “Tlatilco” ceramic assemblage. Though not a large settlement in comparison with villages in the valleys to the west, Chalcatzingo contained public architecture, a characteristic not yet found among those western villages. This implies that the Amatzinac valley chiefdom centered at Chalcatzingo was somehow special. Two probable public structures were discovered during excavations at Chalcatzingo, but neither

⁴ The generalized interpretation presented here is based on the motifs as utilized across all of Early Preclassic Mesoamerica. Some of the basic concepts were published in Grove, “Torches, Knuckle Dusters, and the Legitimization of Formative Period Rulership” (1987). Because of obvious regional variations in motifs, the slightly different interpretation proposed by Marcus and Flannery (Chap. 8, this volume) for Oaxaca may certainly be valid for that region.

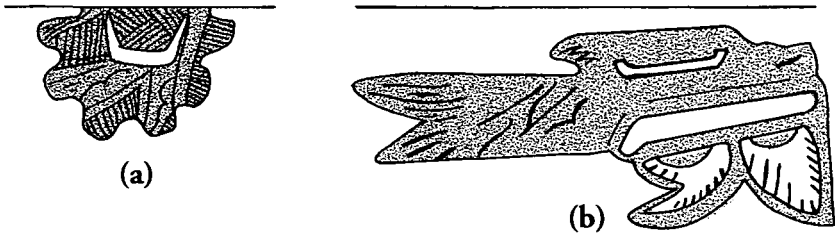


Figure 3.4. Sharklike supernaturals, La Bocas, Puebla. (a): abstracted motif; (b): entire supernatural. Shading has been added to highlight features.

could be adequately explored. The first is a 2-meters-tall earthen platform mound faced with a thin coating of mud plaster. It represents the earliest construction stage of a massive public mound which by 500 B.C. was 4 meters tall and extended 70 meters in length. The second example, in a different area of the village, may be either public architecture or the raised substructure for the residence of a high-ranking personage. It is a stone-faced rectangular platform, 1 meter in height.

An Early Preclassic village exhibiting a very different and unusual form of public architecture is Teopantecuanitlán, a recently discovered site in the mountains of Guerrero, about 100 miles southwest of Chalcatzingo. There the public construction is a large clay-faced sunken patio, whose earliest building phase is dated c. 1400–900 B.C.; it is unique in Mesoamerica at that time period. Even before the discovery of Teopantecuanitlán, scholars recognized that precocious and elaborate figurines and ceramic vessels had been created by the Early Preclassic farming societies living along the river valleys that cut through the arid mountainous Pacific slopes of Guerrero. Nevertheless, scholars tended to attribute Guerrero's developments to "influences" from central or southeastern Mexico. Teopantecuanitlán's unique public architecture suggests that the precocity exhibited in Guerrero was independently developed by its indigenous societies rather than externally inspired.

THE NEW ELITE (900–500 B.C.)

From 900 to 500 B.C. was a time during which population continued to increase rapidly, villages became larger and more numerous, and regions of poorer agricultural potential, such as the northern and eastern areas of

the Basin, became settled. Those changes took place in spite of drier than "normal" conditions and a continued declining lake level in the Basin. We may suppose that the growth of population and increasing number of farming villages across central Mexico were accompanied by an increase in local chiefdoms and thus even further alliances, more complex exchange networks, and increased competition for natural resources and nonlocal commodities. It is clear that on the village level, chiefly and elite rank rapidly increased in importance.

Chiefly and elite positions are generally insecure and can be ephemeral. Village chiefs and elite must constantly communicate their status and affirm their power by various means, including the acquisition, control, and display of scarce "exotic" objects or materials, and by generosity and gifts to their "cliente." To the ancient Mesoamericans the most valued of such commodities were jadeite and greenstone. In Middle Preclassic village societies a common means by which chiefs and other individuals of high rank proclaimed their special social position was through their possession of and adornment with jadeite jewelry. From our understanding of chiefdoms in other world-areas, we can presume that the chiefs themselves probably obtained and controlled access to such exotics as jadeite jewelry and iron ore mirror pendants, and distributed them as chiefly gifts to maintain allegiances within their own community, with their subordinate chiefs in nearby villages, or with peers in distant regions.

An important transformation that began in the archaeological record about 900 B.C. may thus be directly related to the rapidly growing importance of chiefly and elite ranks in village society. Over the period of a century or so, the elaborate exotic vessel forms, bowls incised with iconographic motifs related to the cosmos, and the clay baby-like figurines characteristic of the Early Preclassic were gradually replaced by plainer bowls with far simpler decorations and a wide variety of more modestly executed figurines. As the pottery became more "humble," jadeite and greenstone beads, pendants, necklaces, figures, and bloodletting lancets appeared for the first time in significant quantities. Importantly, some of those jadeite objects were adorned with iconographic motifs similar to those that only a few hundred years earlier had been executed on pottery.

If in the Early Preclassic certain significant differences in ceramic assemblages between neighboring societies (e.g., Tlatilco and Zohapilco)

reflected purposeful attempts by each to communicate and emphasize its identity, then the “simplification” of the pottery in the Middle Preclassic “erased” many of those ceramic markers. At the same time however, there was an increase in elite objects. Significantly, the iconography that disappeared from the ceramics reappeared in jadeite and greenstone, the medium now restricted to and controlled by the chiefs and elite. The symbols relating to the cosmos were now used to legitimize their status. Perhaps the Middle Preclassic chief and his prestige and power now assumed the major “identity” for his society as well.

While the transformations just described were major, village lifeways, domestic rituals, and farming techniques were not altered significantly. Climatic conditions may have had a more immediate and urgent impact on the people, for while many villages continued in the same location, others declined in size or were “relocated.” Zohapilco and Terremote-Tlaltenco continued their exploitation of lakeside resources, but at Tlatilco the settlement apparently shifted over time to a nearby hill. New villages appeared, including two on the northwestern lakeshore, El Arbolillo and Zacatenco, both excavated nearly sixty years ago by archaeologist George Vaillant. The continuation of some villages and the relocation of others may perhaps be attributed to the availability of water resources. The decline in rainfall affected lake-oriented villages less than those situated inland. For the latter, the necessity of water for everyday life and the possible need of water sources for simple irrigation to maintain agricultural productivity may have underlain the decision to move to new village locations.

Another new phenomenon of the Middle Preclassic is the appearance in central Mexico of a very few chiefdoms exhibiting certain special characteristics that made them unique to their individual regions. One such special attribute was the presence of public architecture. Two central Mexican sites definitely fall into that category, Chalcatzingo in Morelos, and Teopantecuanitlán in Guerrero. Cuicuiclo in the Basin of Mexico may also deserve that classification. Chalcatzingo and Teopantecuanitlán are also important because they were the only central Mexican centers at that time with another special characteristic, monumental stone art. Because Chalcatzingo is the most extensively published central highlands site of this period, it currently provides greater data on village lifeways and will receive most of the attention here. Cuicuiclo is discussed in the section on post-500 B.C. urbanism.

Chalcatzingo

Chalcatzingo had already been unique in Early Preclassic period Morelos because of its public architecture, and that special status continued after 900 B.C. The Middle Preclassic settlement spread across a series of broad terraces created by community labor activities that remodeled the natural hill slopes into a series of broad terraces and destroyed much of the earlier village area. Centrally positioned across the face of the large uppermost terrace was the earthen platform mound begun in the Early Preclassic and now rebuilt and enlarged several times. Its 70-meters-long mass towers above the terraces below it. Nearly 100 meters across the upper terrace, near the base of the stark cliffs of the Cerro Chalcatzingo, was an élite house compound, apparently the residence of Chalcatzingo's chiefly lineage. That upper terrace seems to have served as the village's main public area, demarcated on one side by the chiefly compound and on the other by the village's major public structure. Excavated into one of the lower terraces is another form of public architecture, a large, shallow stone-faced sunken patio, dominated at its south end by a rectangular stone altar. The face of the altar is carved in bas-relief with the eyes of an earth supernatural.

Located at one edge of each of the lower terrace units below the public area was a non-élite residence. Those houses each occupied only a small portion of the land, suggesting that their occupants farmed the remaining terrace area. The houses had been built using two different exterior wall constructions. Front walls (with entrance doors) seem to have been made from wattle and daub, set above a narrow stone foundation. A house's remaining three walls were of sun-dried mud brick, or bricklike blocks of *tepetate*, a hardened clay subsoil, held together with a mud mortar and laid upon a wide flat stone foundation. All of the houses were large by Early and Middle Preclassic standards, with their rectangular floor areas averaging over 60 square meters. Narrow stone foundations crossing the packed earthen house floors suggest the house interiors may have been partitioned into several rooms by simple cane walls. Roofs were probably of thatch.

Cooking in the houses appears to have taken place on ceramic braziers. Those had projecting tripod supports on their upper rims to hold the cooking vessels above the coals. As in the Early Preclassic, the basic diet consisted mainly of maize, beans, and squash, sometimes supplemented by the meat of domesticated dogs and by wild deer, rabbits, birds, and

iguana lizards. A major innovation in food preparation may also have begun at this time. For centuries every household in the central highlands utilized *manos* and *metates*, the basic tools for grinding maize, although the maize may have been primarily consumed in forms such as gruel. New additions to the household artifact assemblage sometime after 900 B.C. are ceramic “griddles” and processed lime, both of which are requisite to making the maize tortilla, an important Mexican dietary staple. Maize is not nutritionally advantageous without lime processing, and thus may only now have become a major staple in the diet. Also, because the entire tortilla-making process is an extremely time-consuming woman’s activity, it is probable that household labor roles underwent a significant reorganization with the adoption of the tortilla.

Villagers were commonly buried beneath the floors of their houses. Few of the villagers buried in the houses on the lower terraces were of a rank high enough to take any greenstone objects to their grave. Furthermore, their graves were usually unembellished. Conversely, many of those buried beneath the elite compound area on the upper terrace were associated with jadeite objects and had graves lined with stone. That practice is not limited to Chalcatzingo. Élite burials at other Middle Preclassic central Mexican villages, including El Arbolillo in the Basin of Mexico, have stone-associated and jadeite-associated burials. However, few burial “rules” can be ascertained at Chalcatzingo and those other sites. Some individuals buried in stone-embellished graves had no (preserved) associated offerings, and some jade-associated burials lacked stone embellishment. That is to be expected in ranked societies, for unlike social strata or classes, distinctions of rank are variable and vague.

Houses such as just described require occasional renovation, for they do not weather the ravages of time or vermin well. Those at Chalcatzingo were periodically dismantled, their adobe wall bricks and main roof-support poles and beams set aside, and the old thatch-and-wattle sections burned where they fell. The house area was then leveled. At that time ritual activities took place involving the smashing of pottery and the “scattering” of small fragments of broken jadeite jewelry, causing those objects, together with the ash from the fires, to become incorporated into the newly leveled subfloor area of the house. The structure was then rebuilt, frequently using most or all of the old stone wall foundations.

Human and animal clay figurines continued to play an important role in Middle Preclassic village ritual. At Chalcatzingo the anthropomorphic figurines occur primarily in household contexts, and particularly around

a house's kitchen area. They are only infrequently found with burials. Like their Early Preclassic predecessors, a great number of the Middle Preclassic anthropomorphic figurines are "generic" (nonspecific) in their facial and body features, while at the same time exhibiting variability in hair and "turban" forms and adornment. This suggests that the primary meaning or "message" communicated by the figurines resided in the head area. In that respect it is also important that complete figurines are seldom found. Heads were purposely broken from their bodies and discarded separately, an act implying that the ritual or symbolic importance of a figurine was ultimately terminated by the removal of the head.

Nearly half of the identifiable figurines at Chalcatzingo are of a type commonly designated as C.8, a figurine found in only minor quantities at Basin of Mexico sites such as El Arbolillo and Zacatenco. Such figurines have generalized bodies but such carefully hand-modeled facial features that they seem to be "portraits" of specific individuals. Multiple representations of at least twenty different persons have been identified at Chalcatzingo. These portraits figurines may represent particular chiefs or important lineage heads, perhaps elite ancestors revered after their death.

Nearly all the Middle Preclassic human figurines are depicted wearing ear ornaments. Archaeologically such adornments occur primarily as jadeite earspools and thus are symbols of high rank. Only a few clay earspools are known, and it is possible that unless non-élite individuals wore ear ornaments made of a perishable material such as wood, the figurines may all represent humans of "jade earspool" rank.⁵ It is also of interest that although most figurines bodies are generalized, without question some of them portray pregnant women. Archaeologist Ann Cyphers Guillén believes that, in fact, various stages of pregnancy are shown. It is perhaps significant, therefore, that anthropomorphic figurines found in house contexts are often associated with women's work areas.

Most zoomorphic figurines are hollow whistles or two-tone ocarinas, and were probably used in village and household rituals and dances. Ducks and canine-like forms (dogs?) predominate, but a wide variety of animals are depicted including turkeys, turtles, deer, peccaries, squirrels, opossums, and monkeys (monkeys are not native to the central high-

⁵ It is noteworthy that jade earspools are rare in Early Preclassic contexts, and that representations of ear ornaments are also less common on figurines of that period. However, some Early Preclassic clay earspools have been found archaeologically.

lands). The animal figurines also seem to have been terminated by decapitation.

In most respects the lifeways of the Middle Preclassic village at Chalcatzingo fairly accurately reflect those of its contemporaries across the central highlands. Yet in two important respects the chiefdom at Chalcatzingo was also greatly different. As already noted, it included public architecture, as did at least two subordinate villages in the same valley. However, unlike any other villages in Morelos or the Basin, Chalcatzingo's chiefs also displayed carved stone monuments,

Two different themes are apparent in the monumental art. On the Cerro Chalcatzingo behind the village are bas-relief carvings of ritual and mythico-religious importance. For example, one large boulder at the base of the cliffs is a carved scene portraying four humans (Monument 2; Fig. 3.5). Three wear tall turban-like headdresses and their faces are hidden behind birdlike masks. Each holds a staff-like object. Two of them approach a bearded personage seated before them, while the third leaves the scene, apparently having already performed his task. The seated personage receiving the ritual attention has once been masked, but now that mask hangs from the back of his head. Although we may not



Figure 3.5. Ritual scene, Monument 2, Chalcatzingo. Drawing by Barbara W. Fash.

understand the ceremony taking place, that carving literally depicts a ritual “frozen in time” and affords a brief glimpse into the richness of Middle Preclassic ceremonial activities not otherwise retrievable by regular archaeological means. A second major carving is found on a cliff face high above the village. It is a large bas-relief portraying a personage seated within U-shaped niche, the mouth of an earth supernatural, symbolically a cave, an entrance to the underworld (Monument 1; Fig. 3.6). Clouds with falling raindrops frame the top of the scene, and raindrops decorate the figure’s headdress and garment. That personage, portrayed seated at the point of access to the infraworld, was perhaps a deceased ancestral chief, now revered by the village as their mediator to the supernatural forces that bring rain and thus agricultural fertility.

In contrast to those cliffside reliefs, political carvings were erected on the village’s ritual plaza and at least two adjoining terraces. Those monuments are stone statues, or stelae with bas-relief carvings, which depict specific personages, apparently portrait carvings of the chief. At least three of the portrait stelae were erected beside low stone-faced platforms. Most of those monuments had suffered decapitation, a form of termination analogous to that of the clay figurines. An élite burial beneath the village’s chiefly residence had been interred with one such stone monument head, suggesting the monument decapitation may have taken place at the death of the person portrayed.

Teopantecuanitlán

Teopantecuanitlán, Guerrero, is near the junction of two major rivers, the Amacuzac and the Mezcala. This important center is just now coming to light archaeologically. Two types of public architecture dominate the Middle Preclassic village area: stone-faced mounds and a sunken patio. The latter structure, as already noted, was begun in the Early Preclassic; it maintained its sacred characteristics over many centuries, during which time it underwent modification and embellishment. By 800 B.C. the earthen patio walls had been faced with large cut-stone blocks, and an impressive stone-lined drain system had been added. Projecting upward from the center of each of the patio’s four walls were large monolithic supernatural faces carved in bas-relief on inverted T-shaped stone blocks.

Alliances are common among chiefdoms, and evidence suggests that the chiefs of Teopantecuanitlán were probably importantly allied with



Figure 3.6. Cliff carving of personage seated within a supernatural mouth-cave entrance, Monument 1, Chalcatzingo.

those at Chalcatzingo. Only those two central Mexican centers exhibit stone-faced patios and bas-relief monumental art. They also utilized and shared certain distinctive stone construction techniques in their public architecture. The greater antiquity of Teopantecuanitlán's sunken patio implies that Chalcatzingo's could have been "inspired" by contacts with the Guerrero center. The Chalcatzingo – Teopantecuanitlán relationship may possibly have been cemented at one time through a marriage alliance, and commemorated through the erection of a stone monument at Chalcatzingo. A bas-relief stela at the latter center depicts the only woman yet identified in Middle Preclassic monumental art (Monument 21; Fig. 3.7). Several symbols embellishing her carving appear to link her to Teopantecuanitlán, including one motif found only at Teopantecuanitlán and Chalcatzingo.

Implications of Highland Monumental Art

Stone monumental art is a phenomenon atypical of the Preclassic highland ideological and political systems, and is characteristic of only one culture of Early and Middle Preclassic Mesoamerica, the Olmec of Mexico's Gulf Coast, some 300 mountainous kilometers to the southeast (see Diehl, Chap. 4, this volume). Thus the presence of carved monuments at Middle Preclassic Chalcatzingo and Teopantecuanitlán indicates that at one time significant associations existed between those centers and one or more Gulf Coast Olmec chiefdoms. The motivation underlying such relationships may have involved the need by Gulf Coast chiefs to acquire central Mexican exotic commodities, such as serpentine and other greenstone from Guerrero. Alliances may have been formed to ensure the access to those long-distance resources. For a time, the chiefs at Chalcatzingo created and displayed certain Gulf Coast Olmec symbols of ideological and political power, yet those were executed in a quite distinctive "frontier" style. The monuments carved at the behest of the Teopantecuanitlán chiefs to adorn the sunken patio there, show even fewer direct similarities to those of Gulf Coast Olmec centers. Several other Guerrero villages also contain minor quantities of Middle Preclassic frontier-style monumental art, including painted art at the caves of Oxtotitlán and Juxtahuaca, to the west of Teopantecuanitlán. By displaying such "foreign" symbols, the chiefs of Chalcatzingo and Teopantecuanitlán would have enhanced their own prestige and power by publicly communicating

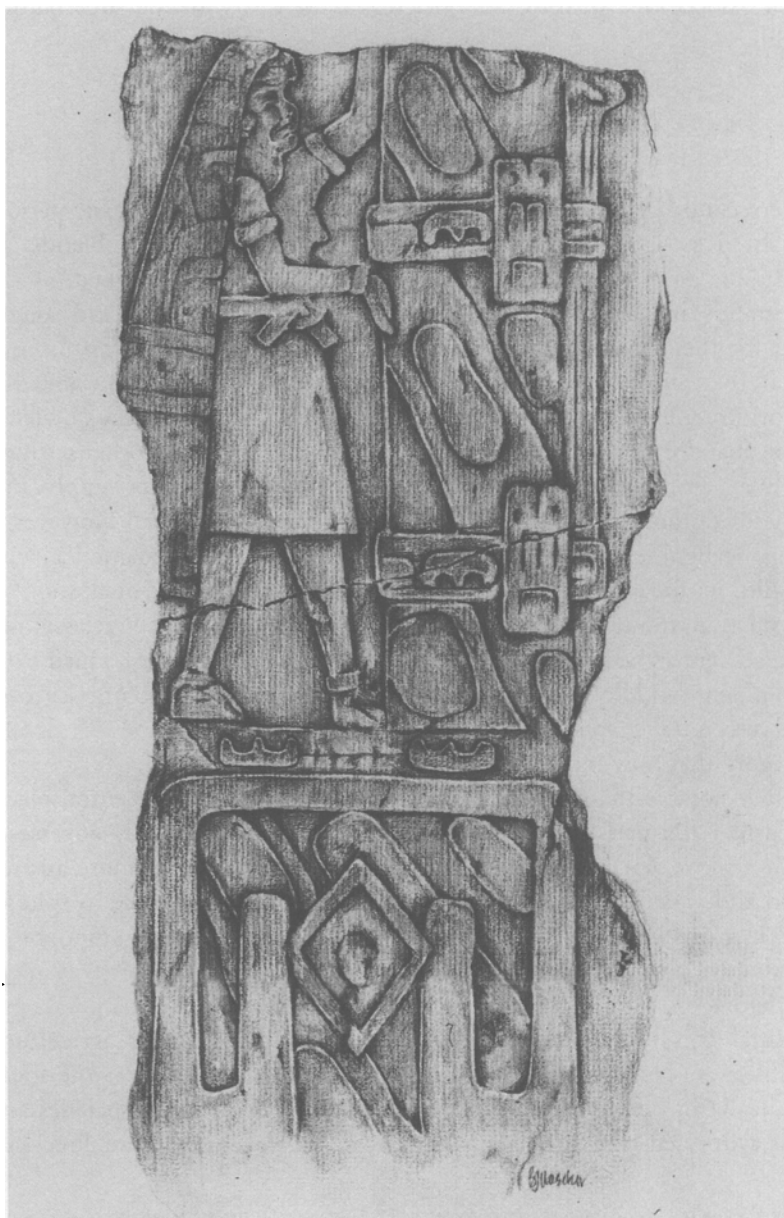


Figure 3.7. Stela depicting woman, Monument 21, Chalcatzingo. Drawing by Barbara W. Fash.

their associations with distant societies as well as with the supernatural realm.

THE RISE OF URBAN CENTERS (500–100 B.C.)

The second half of the first millennium B.C., the Late Preclassic period, persisted as a period of reduced rainfall in the central highlands. In addition, deforestation of the hill slopes and valleys continued, as the constantly increasing population cleared new land to farm and sought fuel for their cooking fires and wood for construction. By 500 B.C., or soon thereafter, a major realignment occurred in settlement location priorities. Chalcatzingo and a number of other Middle Preclassic village were abandoned as populations reestablished themselves in other settings. In many instances the need to resettle near an assured water supply, in a time of diminished rainfall, may again have been a factor.⁶ However, a social realignment was also under way across much of Mesoamerica, with a shift in focus to large “central place” villages and a nucleation of population around those settlements. Many of these Late Preclassic nucleated centers were newly important, rather than having developed from prominent Middle Preclassic chiefly villages. Characteristic of such centers was public architecture, previously so rare in central Mexico, a category that now included tall pyramidal structures.

It is notable that the nucleation of populations around central places occurred in a period when climatic conditions were actually adverse to such a move, for larger population concentrations require more assured food and water supplies. That those congregations took place in spite of the increased aridity suggests that agriculture now relied upon more productive farming methods, including systems of intensive irrigation.

Before 500 B.C. the Basin of Mexico offered primarily marginal agricultural conditions to Preclassic societies utilizing simple agricultural techniques. The hot and humid river valleys in the regions to the south of the Basin held greater attraction to those early agrarian societies and thus witnessed the early major advances. However, the Late Preclassic

⁶ The decline of Chalcatzingo as a major center may have been strongly related also to the decline of the Olmec centers on the Gulf Coast, and the site's diminished role in highland exchange (see Grove, *Chalcatzingo: Excavations on the Olmec Frontier* [1984], pp. 161–65, or *Ancient Chalcatzingo* [1987], pp. 438–41).

saw a significant transformation, and for at least the next millennium major cultural developments would focus on the previously marginal area, the Basin of Mexico.

Cuicuilco

Within the Basin the most favorable conditions for agriculture were always to be found along the southern lakeshore. The major Late Preclassic developments there initially focused on that area, and in particular on the village of Cuicuilco, situated on the largest expanse of agricultural land in the southern Basin. That village was soon to evolve into the central highland's first urban center.

The early prehistory of Cuicuilco is clouded because that area of the Basin, the southwest corner, today lies buried under a thick blanket of lava, the result of volcanic eruptions that began in the southern foothills about 100 B.C. Archaeological explorations of the site have always been difficult and have frequently depended on modern construction activities to remove the rock entombing Cuicuilco. A small quantity of pottery sherds, similar in appearance to some of the earliest pottery from Zohapilco but found in the earthen fill of some later-period mounds, suggests the possible presence of an Early Preclassic village in the immediate area, somewhere under the lava. A few earthen platforms uncovered by excavations in 1957 were attributed at that time to the Middle Preclassic period, and Cuicuilco was said to be "already very large." If those interpretations are correct, the Middle Preclassic chiefdom at Cuicuilco was unique in the Basin in size and the presence of public architecture.

Whatever its antecedents, Cuicuilco seems to have rapidly become the largest settlement in the Basin by 300 B.C. Its public architecture is larger and more numerous than at any other Late Preclassic settlement in the central highlands. The lava that buried Cuicuilco could not completely obliterate its most famous architectural construction, a 27-meters-high circular stone-faced pyramid whose upper stages still rise above the engulfing lava. This unusual construction, a truncated cone ascending in several stages, is 80 meters in diameter. During the relatively recent construction of high-rise apartments nearly a kilometer from the circular pyramid, eleven other pyramid structures (rectangular) were uncovered. At its height, Cuicuilco may have covered approximately 400 hectares and sustained a population of 20,000. The remains of large irrigation

canals preserved beneath the destructive lava flow provide evidence for the intensive agricultural activities that served to support what may have been “Mesoamerica’s first city-state.”

By 300 B.C. regional centers with significant public architecture were common across the central highlands. Irrigation systems and public architecture occur at Amalucan, Puebla, and Late Preclassic structures underlie the massive pyramid at the great Classic and Postclassic period city of Cholula. Among the Late Preclassic centers and villages in Morelos is a settlement at Xochicalco, another site destined to grow into a major Classic center. Guerrero’s Late Preclassic is less well known but probably experienced similar developments.

In the Basin, other centers flourished in addition to Cuicuilco, including Tlapacoya/Zohapilco, which like many of its contemporaries now exhibited a Late Preclassic pyramid mound. The eastern Basin, a region never previously greatly favored for settlement, rapidly gained in importance. There population soon was primarily concentrated around three large centers on the lower piedmont, each characterized by public architecture. However, the most extreme transformation occurring at that time took place slightly to the northeast in a side valley of the Basin, the Teotihuacan Valley.

During the initial stages of the Preclassic, the Teotihuacan valley had clearly been marginal to the developments occurring within the Basin proper. Its most exploitable resources consisted of a small river, a large spring near the center of the valley, and an obsidian source near modern-day Otumba at the valley’s eastern end. Although Otumba obsidian was “mined” and widely exchanged throughout the central highlands during the Early and Middle Preclassic, no Early Preclassic villages have ever been identified in the entire Teotihuacan valley, and the few small Middle Preclassic villages known there present no evidence of having been directly involved in the exploitation of Otumba obsidian. Two of those villages seem merely to have been small farming settlements situated near the valley’s best water source, the spring.

During the beginning centuries of the Late Preclassic the two farming villages grew in size and in time merged into one large settlement. By 300 B.C. the community and its public architecture covered 600–800 hectares, and contained between 20,000 and 40,000 inhabitants. For a time it obviously rivaled Cuicuilco in size and complexity, but about 100 B.C. a volcanic eruption in the hills behind Cuicuilco produced a lava flow that laid waste to much of that city, devastated prime agricultural

land, and forced most of the population elsewhere. A second eruption a few centuries later finished Cuiculco completely. The process of urbanization in the central highlands was left to the burgeoning center in the Teotihuacan Valley.

BIBLIOGRAPHICAL ESSAY

The Basin of Mexico is today the cultural, political, and population center of Mexico and because of that has received far greater archaeological attention than any other region of the central highlands. Basin prehistory and settlement patterns have been well summarized by William T. Sanders, Jeffrey R. Parsons, and Robert S. Santley in *The Basin of Mexico: Ecological Processes in the Evolution of a Civilization* (New York, 1979). Their book, which includes many useful maps, has an ecological deterministic viewpoint. An earlier and more general work by Sanders and Barbara J. Price, *Mesoamerica: The Evolution of a Civilization* (New York, 1965), follows a similar theme and, although written twenty-five years ago, still provides a useful summary of the highlands.

Until the 1970s, archaeological perceptions regarding the Preclassic in the highlands originated primarily from data recovered nearly four decades earlier at just three sites: Zacatenco, El Arbolillo, and Tlatilco. Two of the research reports, George C. Vaillant's "Excavations at Zacatenco," *Anthropological Papers of the American Museum of Natural History*, 32, pt. 1 (New York, 1930), and "Excavations at El Arbolillo," *Anthropological Papers of the American Museum of Natural History*, 35, pt. 2 (New York, 1935), developed many of the basic figurine and ceramic types still used today. Initial work at Tlatilco was described by Miguel Covarrubias in "Tlatilco, Archaic Mexican Art and Culture," *Dyn* 4-5 (Mexico, 1943): 40-46, and "Tlatilco, el Arte y la Cultura Preclásica del Valle de México," *Cuadernos Americanos* 3 (Mexico, 1950): 149-62. The first monograph on the site, by Muriel Noé Porter, "Tlatilco and the Pre-Classic Cultures of the New World," *Viking Fund Publications in Anthropology*, 19 (New York, 1953), still provides a valuable commentary and good illustrations, but unfortunately contains almost no data on individual burials. Based on those data, scholars believed that Tlatilco and Zacatenco were contemporaneous (Middle Preclassic), and preceded in time by El Arbolillo (Early Preclassic). Highland prehistory was interpreted accordingly and the Preclassic collections in Mexico's National Museum of Anthropology displayed chronologically following that assumption.

Using new research and insightful reanalyses of older data, Paul Tolstoy and Louise I. Paradis presented the first significant revision to the long-established Preclassic chronology and dogma, and laid the foundation for today's significantly different interpretations, with their article "Early and Middle Preclassic Culture in the Basin of Mexico," *Science* 167 (1970): 344–51. Tlatilco's burials were shown to be Early Preclassic, while El Arbolillo was repositioned to the Middle Preclassic with Zacatenco. An excellent synopsis of the updated chronology appears in Paul Tolstoy's "Western Mesoamerica Before A.D. 900," in *Chronologies in New World Archaeology*, ed. Robert E. Taylor and Clement W. Meighan, (New York, 1978), pp. 241–84. Tolstoy also provides a valuable chart of chronological changes in various Preclassic pottery attributes and figurine types in "The Olmec in the Central Highlands: A Non-Quintessential Approach," *American Antiquity* 44 (1979): 333–37.

A synthesis of the central highlands Preclassic (or Formative) period is included in David C. Grove's "The Formative Period and the Evolution of Complex Culture," in *The Handbook of Middle American Indians, Supplement 1: Archaeology*, ed. Jeremy A. Sabloff, (Austin, TX, 1981), 373–91. A comprehensive and up-to-date discussion of the Preclassic period in the Basin has recently been published in French by the *Centre d'Etudes Mexicaines et Centramericaines* in Mexico: Christine Niederberger's excellent two-volume monograph, "Paleopaysages et Archéologie Pre-Urbaine du Bassin de Mexico," *Etudes Mesoamericaines*, XI, (Mexico, 1987). Other pertinent discussions include Paul Tolstoy's "Settlement and Population Trends in the Basin of Mexico: Ixtapaluca and Zacatenco Times," *Journal of Field Archaeology* 2 (1975): 331–49, and "Early Sedentary Communities of the Basin of Mexico," *Journal of Field Archaeology* 4 (1977): 92–106, by Tolstoy, Suzanne K. Fish, Martin W. Boksenbaum, Kathryn Blair Vaughn, and C. Earle Smith, Jr.

The major archaeological research at Zohapilco–Tlapacoya has been well documented by Christine Niederberger in "Zohapilco. Cinco milenios de ocupación humana en un sitito lacustre de la Cuenca de Mexico," *INAH Coleccion Cientifica*, 30 (Mexico, 1976), which provides excellent illustrations of the pottery, design motifs, and figurines. Muriel Porter Weaver's "Tlapacoya Pottery in the Museum Collection," *Indian Notes and Monographs, Miscellaneous Series*, 56 (Museum of the American Indian, Heye Foundation, New York, 1967), also illustrates some of the Early Preclassic pottery motifs from the site, and additional designs can be found in P. David Joramelon's Dumbarton Oaks publication, "A

Study of Olmec Iconography,” *Studies in Pre-Columbian Art and Archaeology*, 7 (Washington, DC, 1971). Illustrations of ceramics and motifs from Tlatilco appear in Roman Piña Chan’s “Tlatilco,” *INAH Serie Investigaciones*, 1–2 (Mexico, 1958), Porter’s “Tlatilco and the Pre-Classic Cultures of the New World,” and Michael D. Coe’s *The Jaguar’s Children: Pre-Classic Central Mexico* (New York, 1965). The latter also illustrates ceramics and figurines from Las Bocas, Puebla. An excellent analysis of Tlatilco’s burials and their placement, together with a suggested ranking, is offered by Paul Tolstoy in “Coapexco and Tlatilco: Sites with Olmec Materials in the Basin of Mexico,” in *Regional Perspectives on the Olmec*, ed. Robert J. Sharer and David C. Grove (Cambridge, England, 1989), 85–119. That latter article is also an excellent source of information on Coapexco, as is “Surface and Subsurface Evidence for Community Size at Coapexco, Mexico,” *Journal of Field Archaeology* 2 (1975): 94–104, by Paul Tolstoy and Suzanne K. Fish. The site of Terremote – Tlatenco is discussed in a Universidad Nacional Autónoma de México publication by Mari Carmen Serra Puche, *Los Recursos Lacustres de la Cuenca de Mexico Durante El Formativo* (Mexico, 1988).

The first known Early Preclassic materials in Morelos were excavated by George G. Vaillant and Susannah Vaillant, and published in “Excavations at Gualupita,” *Anthropological Papers of the American Museum of Natural History* 35, pt. 1 (New York, 1934). A more current monograph relating to the Early Preclassic in Morelos is David C. Grove’s “San Pablo, Nexpa, and the Early Formative Archaeology of Morelos, Mexico,” *Vanderbilt University Publications in Anthropology* 12 (Nashville, 1974), which discuss minor excavations at two sites and summarizes other excavations in that region. Chalcatzingo’s discovery and early investigations were reported by Eulalia Guzmán in “Los relieves de las rocas del Cerro de la Cantera, Jonacatepec, Morelos,” *Anales del Museo Nacional de Arqueología, Historia e Etnografía*, 1 (época 5) (Mexico, 1934). An Instituto Nacional de Antropología e Historia (INAH) publication on the first excavations at the site, Roman Piña Chan’s “Chalcatzingo, Morelos,” *Informes*, 4 (Mexico, 1955), includes illustrations of several monuments not reported by Guzmán. Discussions of the monuments known before 1972 (#1–9) include David C. Grove, “Chalcatzingo, Morelos, Mexico: A Re-appraisal of the Olmec Rock Carvings,” *American Antiquity*, 33 (1968): 468–91, and Carlo T. E. Gay’s, *Chalcacingo* (Graz, Austria, 1972); the latter is of value mainly for its illustrations.

The recent and most extensive archaeological research at Chalcatzingo,

which included the discovery of public architecture and more than eighteen additional monuments, has been summarized in two separate books. A general synopsis of the investigations can be found in David C. Grove, *Chalcatzingo: Excavations on the Olmec Frontier* (London, 1984). A larger, detailed excavation report, *Ancient Chalcatzingo*, ed. David C. Grove (Austin, TX, 1987), contains more than two dozen chapters by various authors covering the ancient settlement, houses, burials, figurines, ceramics, and the monumental art. A discussion of the site, suggested dating of some carvings, and comments on the possible associations to Teopantecuanitlán, Guerrero, can also be found in Grove's "Chalcatzingo and Its Olmec Connection," in *Regional Perspectives on the Olmec*, ed. Robert J. Sharer and David C. Grove (Cambridge, England, 1989), 122–47. The possibility that Monument 21 commemorates a marriage alliance was first discussed by Ann Cyphers Guillén in "The possible role of a woman in formative exchange," in *Trade and Exchange in Early Mesoamerica*, ed. Kenneth G. Hirth (Albuquerque, 1984), 115–23. Her interpretation of the site's figurines as primarily female is found in "Thematic and contextual analyses of Chalcatzingo figurines," *Mexicon* 10, no.5 (1988): 98–102, while the portrait qualities of Chalcatzingo's C.8 figurines are discussed in both recent books on the site as well as in "Chalcatzingo's Portrait Figurines and the Cult of the Ruler," *Archaeology* 37, no.4 (1984): 27–33, by David C. Grove and Susan D. Gillespie.

Teopantecuanitlan, Guerrero, has received publicity under two other names as well: Tlacoztitlán and Copalillo. Two summary reports on the site, "Teopantecuanitlan, Guerrero: un sitio olmeca," *Revista Mexicana de Estudios Antropológicos*, 28 (1982) 128–33, and "Teopantecuanitlan," in *Arqueología y Etnohistoria del Estado de Guerrero*, (Mexico, 1986), 55–82, have been published by its excavator, Guadalupe Martínez Donjuan. Research at an associated Preclassic habitation area is discussed by Christine Niederberger in "Excavacion de un area de habitacion domestica el la capital 'olmeca' de Tlacoztitlán. Reporte reliminar," in *Arqueología y Etnohistoria del Estado de Guerrero*, (Mexico, 1986), 83–106. Although the hypothesis of Carlo Gay's *Xochipala: The Origins of Olmec Art* (Princeton, 1972) is outdated, the book is valuable for its photos of the precocious Preclassic figurines and ceramics from that area of Guerrero. Gay's "Oldest Paintings of the New World," *Natural History*, 76, no. 4 (1967): 28–35, brought attention to the elaborate paintings of Juxtlahuaca Cave. A second major cave discovery is discussed in monographs in English and Spanish by David C. Grove, "The Olmec Paintings of Oxtotitlan

Cave, Guerrero, Mexico,” *Studies in Pre-Columbian Art and Archaeology*, 6 (Washington, DC, 1970), and “Los Murales de la Cueva de Oxtotitlan, Acatlan, Guerrero,” *INAH Serie Investigaciones*, 23 (Mexico, 1970). Grove and Louise I. Paradis describe a Middle Preclassic carved-stone monument in “An Olmec Stela from San Miguel Amuco, Guerrero,” *American Antiquity*, 36 (1971): 95–102.

Preclassic religious beliefs must be interpreted primarily through iconography. P. David Joralemon’s seminal research on Preclassic period iconography, “A Study of Olmec Iconography,” in *Studies in Pre-Columbian Art and Archaeology*, 7 (Washington, DC, 1971), provides an excellent basic motif catalog for all researchers, although the categorization of ten deities is now questionable. A very a useful discussion of only one motif, the crocodilian, is found in Joralemon’s “The Olmec Dragon: A Study in Pre-Columbian Iconography,” in Volume 31 of the UCLA Latin American Studies Series *Origins of Religious Art and Iconography in Preclassic Mesoamerica*, ed. H. B. Nicholson, (Los Angeles, 1976). Blood-letting motifs and ritual bloodletting are the subject of a David C. Grove article, “Torches, Knuckle Dusters, and the Legitimization of Formative Period Rulership,” *Mexicon* 9, no. 3 (1987): 60–66.

Readers familiar with books and articles on Preclassic Mesoamerica will have noted that this chapter was written without once mentioning any “Olmec influences” on the lifeways of central Mexico’s farming villages. That reflects a developing change in scholarly perceptions of the Preclassic. The issue of Olmec influences is considered by several authors in the book *Regional Perspectives on the Olmec*, ed. Robert J. Sharer and David C. Grove (Cambridge, MA, 1989).

THE PRECOLUMBIAN CULTURES OF THE GULF COAST

RICHARD A. DIEHL

INTRODUCTION

The Gulf Coast lowlands form one of Mesoamerica's richest and most diverse regions. The equally rich and distinctive precolumbian societies that occupied the region played a crucial role in the development of the Mesoamerican cultural tradition. During three millennia preceding the Spanish conquest the region oscillated between epochs of cultural leadership when Gulf Coast societies occupied a strategic position in the pan-Mesoamerican world and periods of stagnation, isolation, and even foreign intrusions when outsiders, generally from highlands of central Mexico, dominated its people and resources. Much of the region's history reflects dynamic processes in which local innovation and growth alternated with foreign infringement. Thus, the Spaniards' use of the region as a staging area for their conquest of Mexico was merely the one act in a saga of cultural interaction that began when maize and other highland plants were first taken to the lowlands five thousand years ago and that still continues today.

The key to this history lies in the region's wealth and resources, specifically land, food, exotic luxury goods, and trade routes. The Aztecs understood this clearly when they made conquest of the region a top priority early in their imperial history. Their vision of the region's wealth is reflected in their names for it: Tamoanchan (an untranslatable name suggestive of a mythical utopia or earthly paradise), Tonacatlapan "Land of Food," and Tlalocan "Place of Wealth" (Sahagun Book 2: 208–9, 226). Fray Bernardino de Sahagun's Aztec informants described the inhabitants of the southern Gulf Coast lowlands as follows: "These were rich, their home, their land, was really a land of riches, a land of flowers, a land of abundance. There was all manner of food; there grew the cacao

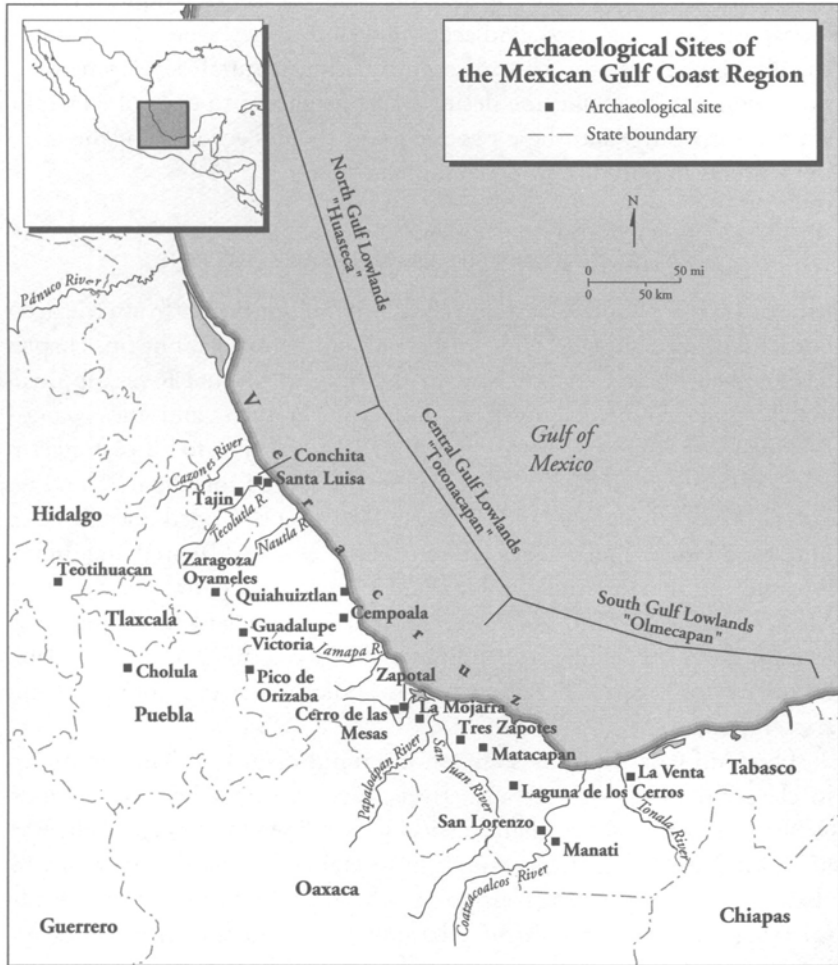
bean, and the 'divine ear' spice, and wild cacao, and liquid rubber" (Sahagun Book 10: 187). Adjacent lowland zones were described in equally glowing terms. Thus, the outstanding cultural developments of the region's cultures and the desires of its neighbors to control its wealth are not surprising, and these two recurrent themes account for the area's tremendous importance in precolumbian times.

THE REGION AND ITS CHARACTERISTICS

Mesoamerican's Gulf Coast lowlands extend southeast from Mexico's border with the United States to the Yucatan Peninsula, but this chapter deals only with the region between the Soto la Marina River, approximately 200 kilometers north of modern Tampico, and the swampy floodplain of western Tabasco (Map 4.1). In addition to all of Veracruz state, our region includes adjacent portions of Tamaulipas, San Luis Potosi, Hidalgo, Puebla, and Tabasco. The deeply eroded and dissected limestone ridges and valleys of the Sierra Madre Oriental mountains separate the region from the highland plateaus of central and southern Mexico, while the Gulf of Mexico formed what ancient Mesoamericans, lacking deep-sea sailing capabilities, considered their most inviolable boundary until Spanish sailing vessels appeared on the horizon in the sixteenth century.

The Gulf Coast lowlands are a hot, humid plain less than 800 meters in elevation laced with streams, rivers, lagoons, estuaries, and swamps. William T. Sanders has characterized it as follows (1972:543): "The area has a fundamental ecological unity in several characteristics: (1) frosts are absent, permitting all year cropping where precipitation cycles permit; (2) crops classed as tropical may be grown; (3) rainfall, with few exceptions, exceeds 1000 mm. a year and averages from 1500 to 2000; (4) natural plant coverage is exuberant and tends to be tropical forest; (5) there are abundant permanent streams in addition to several major river systems with large basins and extensive flood plains." While correct, this generalized description necessarily masks the tremendous diversity created by differences in altitude, topography, precipitation, drainage, and soils. The resulting dynamic environmental mosaic exerted considerable influence on the ancient inhabitants and their cultures, as will become apparent in the following pages.

Traditionally, scholars have divided the Gulf Coast lowlands into three geographic provinces defined by the predominant language spoken in



Map 4.1

each during the sixteenth century: the Huasteca on the north Gulf Coast; the Totonacapan of central Veracruz; and the Olmecapan of southern Veracruz and western Tabasco. More recently S. J. K. Wilkerson (1974) proposed a quadrupartite division into the North Gulf Coast, North-central Veracruz, South-central Veracruz, and Southern Veracruz–Western Tabasco. Wilkerson's classification is based on the distinctive histories of each region as revealed by archaeological investigations rather than

language distribution at one point in time. Each classification is useful in its own way and each will be employed here in turn. First, a look at the archaeological record of precolumbian cultures and traditions; then we will turn to the cultural and linguistic groups observed by Europeans after the Conquest.

THE ARCHAEOLOGICAL RECORD

Introduction

Archaeological investigations in the Gulf Coast lowlands have revealed some of ancient America's most spectacular remains. However, the intensive research necessary to achieve a real understanding of ancient cultures and the processes that account for their history has been largely absent in the region until recently. Instead, most research has emphasized recovery of sculptures, restoration of ancient buildings, and the construction of ceramic chronologies. The most intensively studied and best-known sites include La Venta, San Lorenzo, Tres Zapotes, Matacapán, Cerro de las Mesas, El Zapotal, Las Higueras, Remojadas, Cempoala, and El Tajín. The magnitude of our ignorance can be measured by the fact that thirty years ago the archaeological site files at the University of Veracruz contained references to more than six hundred large sites in central Veracruz and adjacent Puebla alone, a relatively small portion of the total Gulf Coast lowland region.

In recent decades archaeologists have begun to address well-formulated research problems through long-term field projects designed to study entire sites and regions. La Venta, San Lorenzo Tenochtitlan, Matacapán and its Tenochtitlan, Matacapán and its Tuxtla mountain hinterland, the Mixtequilla, Santa Luisa and the lower Tecolutla River zone, El Tajín, and the Tamuin and Rio Verde regions of San Luis Potosí all have been investigated by recent projects of this sort. Much of this research has yet to be published or is available only in preliminary form, therefore our understanding of the region's prehistory may change significantly as new data and interpretations appear.

With a few notable exceptions, the Gulf Coast archaeological chronologies are notoriously sketchy and poorly documented. This chapter employs the generalized Mesoamerican chronological framework used by most investigators, with the caveat that many placements depend more on faith and accepted wisdom than on archaeologically verified informa-

tion (Table 4.1, Chronology Chart). This generalized cultural sequence is divided into eight time periods: the Paleoindian and Archaic (?–2000 B.C.), Early Formative (2000–900 B.C.), Middle Formative (900–300 B.C.), Late Formative (300 B.C.–A.D. 300), Early–Middle Classic (A.D. 300–600), Late Classic (A.D. 600–900), Early Postclassic (A.D. 900–1200), and Late Postclassic (A.D. 1200–1519).

*The Origins of Settled Village Life and Agriculture – Late Archaic
and Early Formative Periods (3000–900 B.C.)*

By the end of the third millennium B.C. small, scattered groups of foragers and incipient agriculturalists occupied most if not all of the region. Very little is known about these groups because their remains have not attracted much interest on the part of archaeologists, but it is safe to assume that they provided the biological and cultural foundations for the later cultures of the region.

La Conchita and Santa Luisa, two Palo Hueco–phase (ca. 2900 B.C.) sites near the mouth of the Rio Tecolutla on the north-central Gulf Coast, are indicative of what future investigators should find elsewhere. The inhabitants collected oysters, clams, mussels, and other shellfish; fished; caught land crabs; and hunted locally available land mammals. They surely collected wild plants and may have cultivated a few domesticated species, although no botanical remains have been recovered. The excavator, S. J. K. Wilkerson (1975), has suggested that Santa Luisa was a permanent village rather than a seasonal campsite. Although the inhabitants were basically self-sufficient, they did import obsidian from the El Paraiso source in Queretaro 330 kilometers to the west.

The oldest known remains of permanent villages occupied by farmers who cultivated maize are the Early and Middle Bari–phase sites (2250–1400 B.C.) near the later Olmec center of La Venta, Tabasco. According to W. F. Rust and R. J. Sharer (1988), Bari villagers constructed round and rectangular houses with wattle-and-daub walls, packed-earth floors, thatched roofs, and subterranean storage pits. The small villages occupied the same rich, easily worked river levees where their inhabitants planted crops. Bari trash deposits suggest a varied and plentiful diet that included maize (*Zea mays*), palm nuts, mollusks, fish, turtles, crocodilians, deer, armadillos, racoons, and the ubiquitous domesticated dog, *Canis familiaris*. They also contain grit-tempered pottery with brushed surfaces,

Table 4.1. *Chronological history of major Gulf Coast archaeological sites*

	Archaic ?-2000 B.C.	Early Formative 2000-900 B.C.	Middle Formative 900-300 B.C.	Late Formative 300 B.C.-300 A.D.	Early Classic 300-450 A.D.	Middle Classic 450-600 A.D.	Late Classic 600-900 A.D.	Early Postclassic 900-1200 A.D.	Late Postclassic 1200-1519 A.D.
La Venta									
San Lorenzo									
Matacapan									
Tres Zapotes									
Cerro de las Mesas									
Teotihuacan									
El Zapotal									
Cempoala									
Santa Luisa									
El Tajin									

basalt grinding tools for processing maize and possibly palm nuts, and obsidian tools.

Similar remains occur in the Ojochi phase (1500–1350 B.C.), the earliest occupation at the Olmec center of San Lorenzo in the Rio Coatzacoalcas basin, and in the Raudal and Almeria phases (1700–1350 B.C.) at the Santa Luisa site on the banks of the Rio Tecolutla. The pottery found at these sites is quite similar in form, decoration, method of manufacture, and, presumably, function. Furthermore, it bears striking resemblances to pottery from Pacific Coast lowlands of Chiapas and Guatemala just across the low-lying Isthmus of Tehuantepec. Most archaeologists believe that the idea of pottery originated in lowland coastal Ecuador and Colombia and later diffused to Central America and southern Mesoamerica via the Pacific Coast (D. Grove 1992). Early Pacific and Gulf Coast vessel forms include jars, shallow bowls, and *tecomates* (rimless jars with restricted mouths, which may have been used to cook maize).

None of the remains just discussed suggest the existence of social hierarchies, pronounced economic differences between families or communities, or political power concentrated in the hands of a few people. Thus it is safe to infer that these societies were basically egalitarian groups of the type anthropologists call *tribes*. However, inequalities of wealth and status came into existence at San Lorenzo, La Venta, and elsewhere in the southern Veracruz – Tabasco region when what archaeologists call Olmec culture or civilization made its first appearance after 1500 B.C.

The Rise of Complex Societies – Early and Middle Formative Periods

The civilizations which flourished in the Gulf Coast lowlands after 1200 B.C. have fascinated archaeologists for almost a century. However, most of the investigations have focused on architecture, sculpture, ritual objects of stone and clay and other remnants of elite culture while neglecting many equally important but less spectacular topics. Although this one-sided approach has begun to change in recent decades, what we know about public architecture, sculpture, and art far exceeds what we know about subsistence, trade, and the ordinary utilitarian implements that made life possible. Thus, we can write a reasonably accurate chronicle of the history of cultures as mirrored in the spectacular remains of the elite but, with few exceptions, cannot explain what happened or why.

Civilizations are special kinds of human societies that have appeared

only infrequently in the human past. They are more complex than the smaller-scale, simpler societies that preceded them. Their defining characteristics include complex social hierarchies, economic structures, and political systems; clearly defined territories or spheres of influence; “capitals” that are larger than the satellite communities subordinate to them and that, in some cases, are true cities or urban centers; and high attainments in the arts. Architecture, calendrics, religion, ritual, written and oral literature, and other branches of esoteric knowledge reflect the presence of an upper class or elite, perhaps the trait that most distinguishes civilizations from their less complex and organized predecessors.

The Formative Olmecs of southern Veracruz and western Tabasco were the earliest civilization in our region and perhaps in the entire Americas. Their name is a modern corruption of *Olmecat*l (Nahuatl “Rubber People” or “People of the Rubber Country”), by which the Aztecs referred to the inhabitants of the region during the Late Postclassic period.

G. Lowe (1989:36) has divided Formative Period Olmec culture into five phases: Pre-Olmec (1500–1200 B.C.), Initial Olmec (1200–900 B.C.), Intermediate Olmec (900–600 B.C.), Late Olmec (600–300 B.C.), and Epi-Olmec (300 B.C.–1 A.D.); Although recent investigations at *la Venta* and elsewhere suggest that this developmental scheme may require substantial revision in the future, it is useful for our present purposes.

Pre-Olmec cultures similar to the *Barí*-phase remains already described lack any indications of social complexity or the other characteristics of civilization. The Initial and Intermediate Olmec phases date to the Early and Middle Formative periods; Initial Olmec coincides with *San Lorenzo*’s growth and development, its emergence as an important cultural power in southern Mesoamerica, and its ultimate decline at the beginning of the first millennium B.C. *La Venta* replaced *San Lorenzo* during the Intermediate Olmec phase and climaxed in subsequent Terminal Olmec times. *Tres Zapotes* and other sites located northwest of the *Tuxtla Mountains* came into power in Epi-Olmec times while under the strong stylistic influence of societies on the Pacific coastal region of *Chiapas* and *Guatemala*.

Olmec commoners lived in small villages indistinguishable from those of earlier times, but the newly emergent élites along with their dependents and retainers occupied larger settlements that we can justifiably call towns. These communities became the foci of economic power, political influence, and religious leadership. Many such towns probably existed,

but only San Lorenzo, la Venta, Laguna de los Cerros, and Tres Zapotes have been studied by archaeologists. Not only were these towns larger than the subordinate villages surrounding them, they also contained stone sculptures; temples and elite houses placed on the summits of earth mounds; and buried caches and offerings containing discarded monuments, greenstone celts, and figurines as well as other rare and highly prized objects.

Magnificently carved stone sculptures are the hallmark of Olmec culture. Stones quarried in the Tuxtla Mountains, some weighing many tons, were transported over distances of more than 150 kilometers by water and land. The corpus of sculptures includes colossal human heads that may be portraits of rulers (Fig. 4.1); huge flat-topped “altars” or thrones; realistically depicted life-size human figures; and a bewildering assortment of human, animal, and intermediate forms that combine traits of both. Scores of monuments must have been displayed simultaneously at every large Olmec center, but since few if any have been found in their original placement, it is impossible to know how they were arranged. It does seem likely that each monument formed an element in the visual expression of some now lost myth or epic tale concerned with the lives of the rulers or their ancestors.

A unique Olmec style is evident in both the monumental sculptures and the smaller portable objects of jadeite, serpentine, clay, and other materials (Fig. 4.2). According to one authority, “the Olmec style is strongly contrasted with all other Middle American styles not only in its iconographic content of baby-faced, snarling were-jaguars and cleft heads but in its formal qualities of shape, line, and space. In the sense that it eschews geometric abstraction for curvilinear naturalism, the style is “realistic”; in fact, it is more ‘realistic’ than even the Classic Maya, if one takes into account that the Olmec artists were depicting creatures that they believed actually existed, no matter how monstrous or far-fetched” (M. D. Coe 1965b: 747–48). So distinctive is this style and its components that pieces that display it can be readily attributed to Olmec artisans regardless of where the object was discovered in modern times.

The hearth of the Olmec style has been debated vigorously for decades. Most authorities believe that it grew out of an earlier artistic complex indigenous to the Olmec heartland but executed in wood, cloth, and other media that have failed to survive the ravages of time. Not everyone agrees, however, and some scholars still seek its antecedents in Guerrero, Oaxaca, Chiapas, or other regions of southern Mesoamerica.

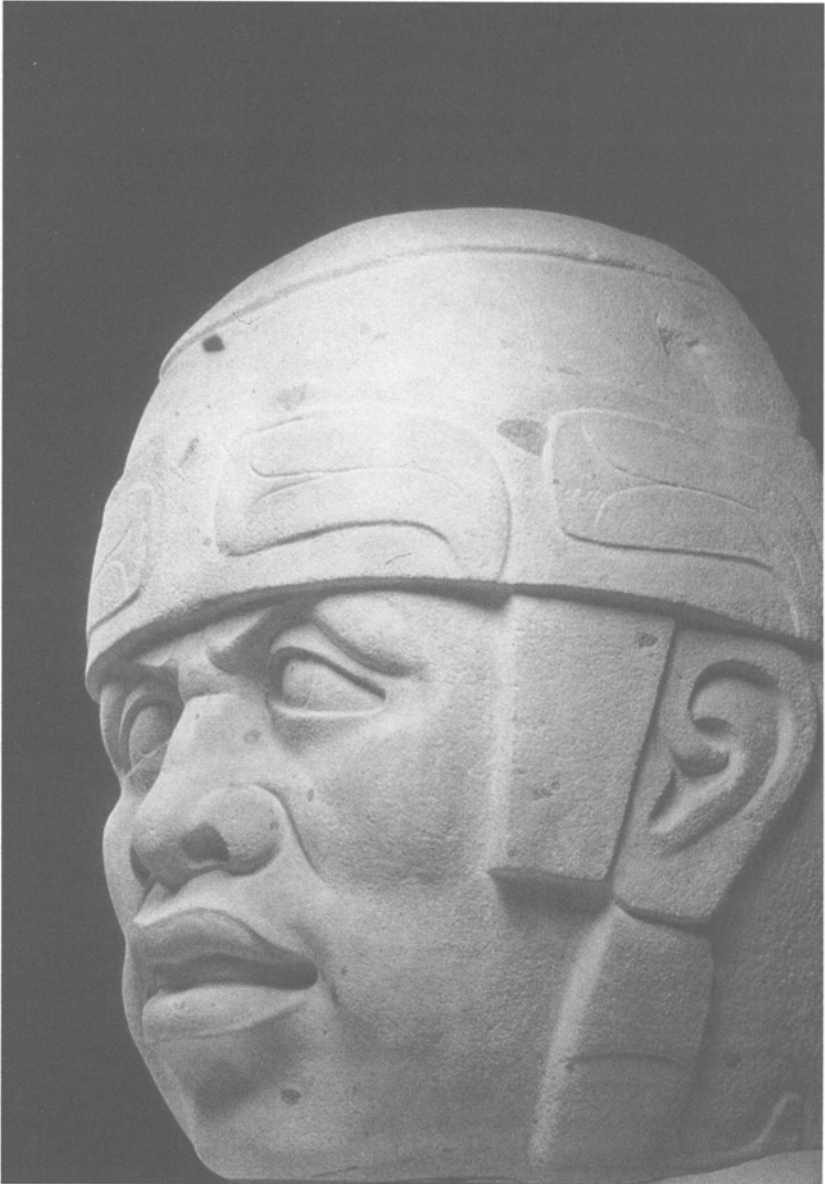


Figure 4.1. Olmec Colossal head. San Lorenzo Monument 61. Basalt. Height 220 cm. Early Formative period. Detected in a magnetometer survey in 1968, this life-like portrait of an Olmec ruler is notable for its sense of proportion and excellent preservation. Museo de Antropología, Xalapa, Veracruz, Mexico. Courtesy of the National Gallery of Art, Washington, D.C.



Figure 4.2. Olmec figurine. Diopside-jadeite. Provenience unknown. Height 23.9 cm. Probably Middle Formative period. This standing male wears a goatee and a penis sheath or breechcloth and is an outstanding example of the abilities of Olmec artisans to craft objects in three dimensions. Courtesy of Dumbarton Oaks Research Library and Collections, Washington, D.C.

Recent investigations at El Manati, a small Olmec site in the Coatzacoalcos river basin, have revealed well-preserved wooden sculptures and objects of rubber and other perishable materials immersed in a permanently wet spring (Ortiz and Rodriguez 1989). The first objects were exposed by the local inhabitants in 1988, since then Ponciano Ortiz C. and his colleagues have conducted careful excavations during numerous field seasons. The total inventory of objects recovered include forty-plus wooden busts, ten wooden scepters, nine rubber balls, and more than one hundred greenstone celts, including one beautifully polished example with a child- or dwarf-size footprint carved into the surface. The busts are worked from an easily carved soft wood and feature faces stylistically identical to Olmec carvings in stone. Most of the wooden scepters are shaped like serpents, and one has a shark's tooth mounted on the end. They may have signified royal power in a manner analogous to the Manikin Scepter of later Classic period Maya culture. The rubber balls probably were used in ballgame rituals carried out on "Palangana"-style ballcourts enclosed by four earth mounds similar to that excavated at nearby San Lorenzo. The remarkable preservation of this treasure trove owes to their objects' deliberate placement in the bottom of the spring, perhaps as offerings to a water deity at sometime after 1000 B.C. Someday even older wooden objects may appear in the Olmec region, providing the long-sought-for answers to questions about the origins and antiquity of the Olmec art style, the root stock from which all later Mesoamerican styles grew.

Olmec society contained at least two social strata: a small ruling elite and a much larger group of commoners. Monuments depict rulers wearing sumptuous capes, headdresses, jewelry, and other articles of clothing symbolic of their high status. The elite mobilized large work parties, perhaps numbering in the thousands, to construct earthen mounds, transport basalt from quarries in the Tuxtlas, and carry out other projects requiring the efforts of entire communities. They also controlled long-distance trade and exchange systems that supplied them and their supporters with obsidian, serpentine, jadeite, pottery, feathers, iron ore ornaments, and other raw materials and luxury goods that enhanced their prestige. These goods and materials came from central Mexico, Morelos, Guerrero, Oaxaca, coastal Chiapas, and Guatemala and probably were paid for with cacao, jaguar pelts, crocodilian skins, stingray spines, and an array of finished products in the Olmec style.

While most scholars agree that the Olmecs "influenced" their neigh-

bors and later Mesoamerican civilizations, the nature and extent of their impact is the subject of spirited debate (cf. essays in Sharer and Grove 1989). Some maintain that the Olmecs were Mesoamerica's mother culture, the precocious base civilization that set the example for its less highly developed neighbors. Others maintain that Olmec societies were no more complex than their contemporaries' elsewhere in Mesoamerica and that the widespread occurrence of Olmec motifs and stylistic conventions result from preexisting ideas and practices in many areas, rather than diffusion from a single Olmec source. Similarly, some authorities stress the continuities, especially in art, ideology, and religion, between Olmec culture and later civilizations; while others emphasize the differences that appeared during the later evolution of urban life.

The Late Formative (300 B.C.–300 A.D.)

The Gulf Coast regions west of the Olmec heartland were occupied by egalitarian village farmers during the Early and Middle Formative periods. After 600 B.C. the pace of cultural change quickened and increasingly complex societies evolved in the territory between the Tuxtla Mountains and the Panuco River. Unfortunately, virtually nothing is known about Late Formative occupations in the region beyond the simple fact of their existence. The only exception to this generalization is Tres Zapotes, a large site located at the northern edge of the Tuxtla Mountains.

Tres Zapotes has a long, complicated, and poorly defined history of occupation. It is most famous for its stone monuments, including three colossal heads clearly in the Olmec genre yet notably distinct from those of San Lorenzo and La Venta found at or near the site. Although scattered Early Formative ceramics indicate an Initial Olmec period population, the majority of the occupation and virtually all of the known twenty-four stone monuments belong to the Late Formative Epi-Olmec phase. Many of these carvings reflect the Izapa sculptural tradition native to southern Mesoamerica's Pacific Coast and piedmont zone, suggesting a reversal in the directionality of cultural influences over the earlier situation in which Olmec heartland societies left a strong imprint on their southern neighbors.

Tres Zapotes is famous for Stela C, a rectangular stone block with a post-Olmec Izapa-style mask on one side, and a Long Count date ex-

pressed in bars and dots on the other (Fig. 4.3). The date, 7.16.6.16.18 6 Eznab (31 B.C.), is one of Mesoamerica's oldest calendrical inscriptions.

When Matthew W. Stirling discovered the monument in 1939, his reading of the date sparked a debate about the origins of Mesoamerican writing and calendrics that remains unresolved even today. Many scholars assumed that since these elite arts reached their highest development in the lowland Maya region, they must have originated there. Others pointed to Stela C and the Tuxtla statuette – a small greenstone sculpture of a duck or a person wearing a duckbill mask with a carved hieroglyphic inscription thought to be of Late Formative date – as evidence of a Gulf Coast origin of writing and calendrics. In 1957, Michael D. Coe argued cogently that Mesoamerica's earliest known inscriptions occur on Late Formative Izapa-style monuments in Chiapas and Guatemala rather than in the Maya lowlands homeland, a reconstruction that remained unchallenged for many years. However, recent studies show that while Coe's conclusions are correct for Maya writing systems and calendrics, Zapotec writing and calendrics may have appeared in Oaxaca at least several centuries before the earlier Maya inscriptions.

A fortuitous discovery in 1986 at La Mojarra, a small archaeological site on the banks of the Acula River, in the Papaloapan drainage, has further complicated the issue (Winfield Capitaine 1988; Morell 1991). A local fisherman encountered a submerged stone stela that had eroded into the shallow river from the edge of the site. The carving on its face depicts an elaborately dressed man standing in profile surrounded by more than 500 glyphs, which form one of the longest-known inscriptions in Mesoamerica (Fig. 4.4). The text contains two Long Count dates read as A.D. 143 and 156. The man's features are deeply cut and well carved in a style strongly reminiscent of Izapa and early Maya sculpture, but the glyphs forming the text are shallow, crudely done scratches reminiscent of modern graffiti.

The stylistic differences between the glyphs and the figure have led to the suggestion that the text is a later addition to an existing monument and perhaps even a modern forgery. Other scholars accept the authenticity of the text, but suggest that the monument fell off the raft into the river in front of La Mojarra while in transit to some larger, more important center.

Today most authorities accept the authenticity and early date of the text. In 1993, linguists John S. Justeson and Terrence Kaufman proposed

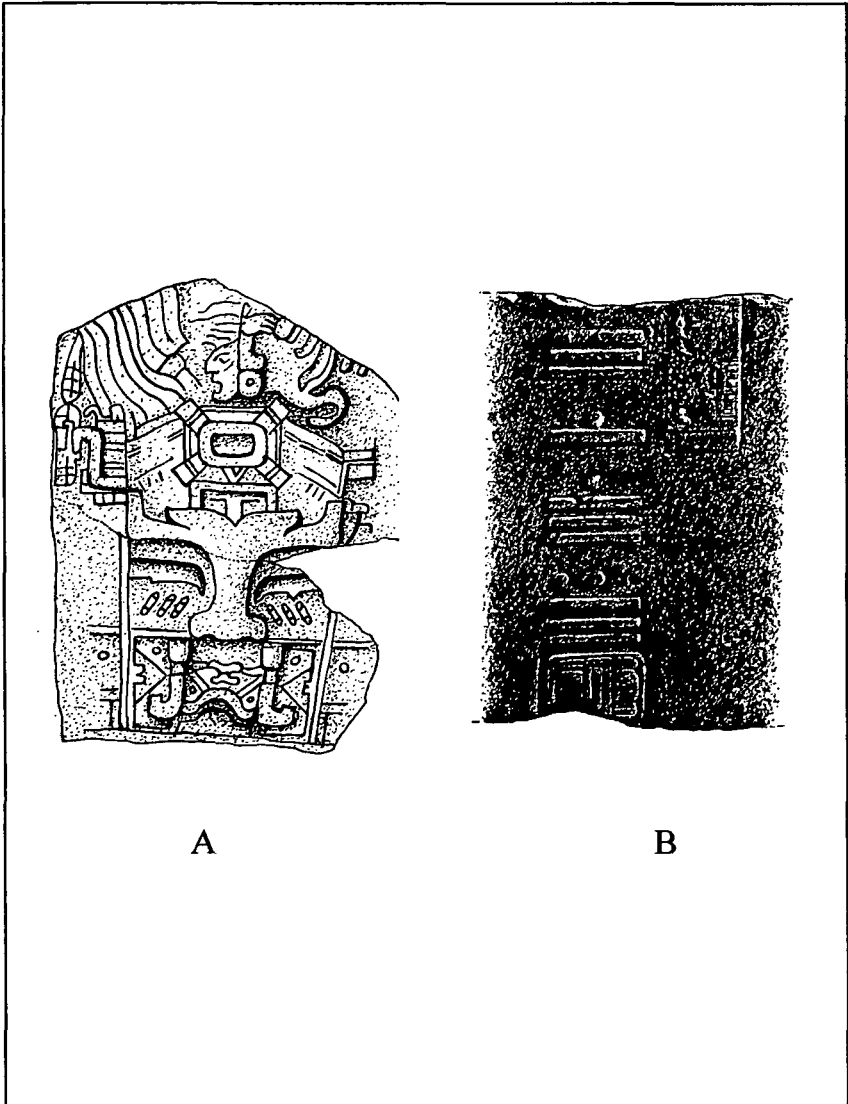


Figure 4.3. Tres Zapotes Stela C. Basalt. Minimal height of the two existing fragments 160 cm. Later Formative period. The bottom (A) was found in 1939, the upper segment (B) appeared thirty years later. (A) after Roman Pina Chan, *The Olmec: Mother Culture of Mesoamerica* (New York: Rizzoli, 1989), fig. 154. (B) after M. D. Coe, *Mexico* (London: Thames and Hudson, 1966), fig. 18, original drawing by Avis Tulloch.

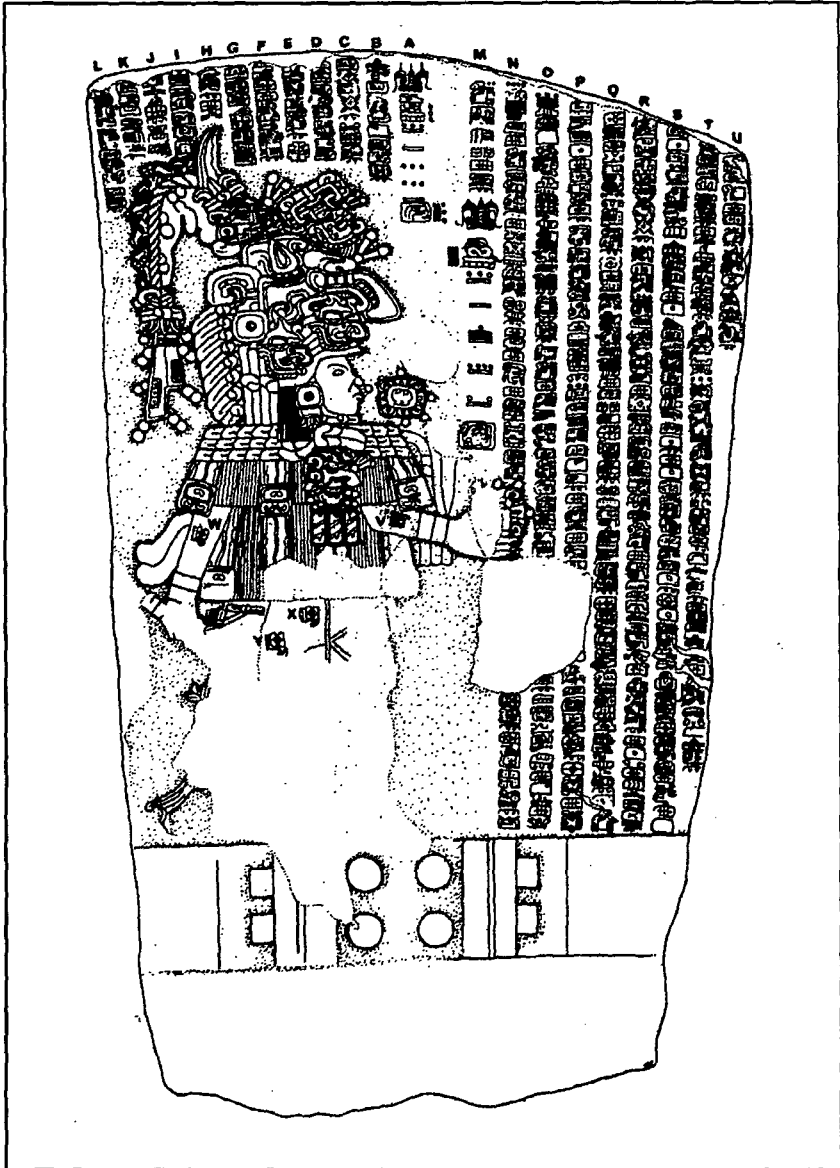


Figure 4.4. La Mojarra Stela 1. Basalt. Height 234 cm. Terminal Formative Period. Recent investigation at La Mojarra failed to reveal additional monuments. Taken from Fernando Winfield Capitaine, *La Estela 1 de La Moharra*, Veracruz, Mexico. Center for Maya Research, Washington, D.C., fig. 7, drawing by George Stuart.

a widely accepted decipherment of the script, which they refer to as Epi-Olmec, and the La Mojarra text. They maintain that the Epi-Olmec script is in Zoquean languages still spoken in the greater Isthmian region. According to their reading, the La Mojarra stela documents the rise to power of the ruler depicted on it while mentioning warfare, ritual activity, and astronomical events.

At the moment the stela is one of only four or five known Epi-Olmec texts; unfortunately, the others are too short to help epigraphers improve their understanding of the script. Many puzzles remain to be solved, despite the recent breakthrough by Justeson and Kaufman. Did the script originate in the southern Veracruz/greater Isthmian region or somewhere else? Do its roots lie in an undiscovered Olmec script? How is it related to later Classic Maya writing? Why did it disappear, apparently the only Mesoamerican writing system to die out in precolumbian times? Why is its only lengthy text, one of the longest inscriptions known on any precolumbian stone monument, found at such a modest archaeological site located in what appears to be a cultural backwater zone? These and similar issues will be resolved only after archaeologists recover additional inscriptions in controlled and well-documented excavations.

The Classic Period (A.D. 300–900)

The Classic period was a time of cultural florescence throughout Mesoamerica. Populations grew in size and density, social complexity increased, long-distance commerce intensified, warfare motivated by political and economic considerations became the norm, and artistic accomplishments, especially in religious and elite realms, achieved new heights. These processes culminated in the brilliant Early and Middle Classic urban civilization of Teotihuacan and the less urban but equally brilliant Late Classic cultures of Monte Albán, the lowland Maya, and El Tajin. The Gulf Coast lowlands shared in these developments, albeit while maintaining a distinctly regional flavor to its cultures and their material and artistic manifestations.

The Early (A.D. 300–450) and Middle (A.D. 450–600) Classic periods. The first half of the Classic Period was a time of gradual evolution rather than radical change in the Gulf Coast lowlands. Hierarchically organized societies were established everywhere and local populations appear to have grown in size. Although Early and Middle Classic occupations are re-

ported from virtually every portion of the region, most of the published accounts are sketchy preliminary reports of field projects or detailed descriptions of pottery types that neglect other aspects of culture. The best known Early Classic site is Cerro de las Mesas, located in the low-lying Mixtequilla region northwest of the Tuxtlas. Maticapan, a large center a few hours from Lake Catemaco in the heart of the Tuxtlas, is the best single source of information on the Middle Classic.

Cerro de las Mesas' initial occupation occurred during the Late Formative, but the center grew and prospered during the Early and Middle Classic periods. Fifteen stelae, many with unreadable glyphs or empty cartouches that may have contained painted glyphs, have been reported from Cerro de las Mesas. Many of these sculptures display stylistic elements traceable to the earlier Izapa-related sculptures at Tres Zapotes, La Mojarra, and other sites in the region. The relationship between the Cerro de las Mesas inscriptions and the older La Mojarra stela is not clear, but both may belong to the same writing system. Indeed, one authority has suggested that the La Mojarra stela was being shipped from the quarry to Cerro de las Mesas when it fell off the raft at the riverbank in front of La Mojarra. Two stela contain Long Count dates, interestingly enough, both fall within the Middle Classic: Stela 6 (9.I.12.I4.10 or A.D. 468) and Stela (8-9.4.18.16.8 or A.D. 533), a time when Cerro de las Mesas pottery shows strong Teotihuacan influence.

The highland Mexican city of Teotihuacan emerged as Mesoamerica's largest and most influential metropolis in the Middle Classic period (A.D. 450-600). Commerce was the driving force behind Teotihuacan's ventures into distant lands as far away as highland Guatemala, the Peten jungles of the Maya lowlands, and west Mexico. Teotihuacan merchants were naturally attracted to the Gulf Coast lowlands where they could obtain highly prized tropical commodities such as cacao, rubber, jaguar pelts, caiman skins, marine shells, stingray spines, and bright feathers in addition to lucrative markets for Teotihuacan merchandise. Furthermore, the region contained several natural communication routes to the southeast and the Maya area that were unobstructed by any existing major power. All these routes ultimately converge upon the Papaloapan River and Tuxtla Mountains, so it is not surprising that many archaeological sites in the Tuxtlas region exhibit evidence of sustained Teotihuacan contacts.

Recent investigations at Maticapan have shed considerable light on Teotihuacan contacts with Tuxtlas and the entire the Gulf Coast. Mata-

capan was established during the fifth century by migrants from Teotihuacan. They chose a location adjacent to a major deposit of kaolin clay, an excellent raw material for pottery. In addition, the location was ideally situated to monitor military and commercial movement through the region. They constructed houses quite similar to the ubiquitous apartment compounds at Teotihuacan and erected at least one temple with Teotihuacan-style *talud* and *tablero* facades. In addition to copying the architectural models of their mother city, the residents of Maticapan used ritual paraphernalia virtually indistinguishable from that found at Teotihuacan. These objects included pottery vessels, figurines, and *candeleros* (small rectangular incense burners made of clay). Pottery manufacture was a big industry at Maticapan, and recent archaeological investigations have identified large workshop zones with scores of kilns and debris from pottery-making activities (Fig. 4.5). Much of this pottery was exported to nearby communities in southern Veracruz, but some was traded as far away as Teotihuacan itself. The Teotihuacan colony also served as a way station for highland merchants en route to the Maya area, and while the residents apparently maintained close ties with the home city, they do not appear to have been under its direct control.

Research at Teotihuacan also reveals evidence of commercial contacts with Maticapan and the Tuxtlas. While there is no evidence to support older hypotheses that Teotihuacan was established, or conquered, by migrants from the coast, there is considerable evidence of close ties with Gulf Coast groups in the later history of the highland city. Veracruz ceramics have been identified in the "Merchant's Barrio," a section of the city believed to be occupied by long-distance traders, and certain Gulf Coast stylistic motifs appear frequently in Teotihuacan art. It is interesting and perhaps significant that Teotihuacan maintained connections with its Gulf Coast partners for at least a century after the severance of its ties with other regions of Mesoamerica. In fact, these relationships persisted until Teotihuacan went into a complete eclipse as a Mesoamerican power in the eighth century.

In the remainder of the area the Classic cultures are a muddle. For the most part site chronologies lack the most elementary supporting evidence, and the "archaeological record" consists of vast quantities of poorly excavated, inadequately documented, and even looted pottery vessels, clay sculptures, and figurines. The justly famous clay statues and figurines, virtually synonymous with Veracruz archaeology, are an excellent case in point. A bewildering army of styles, subtraditions and re-



Figure 4.5. Ceramic kiln. Matacapan. Fired earth. Middle Classic. Numerous such kilns for firing pottery were uncovered at Matacapan and surrounding Classic period communities. Originally much taller, only the lower walls and floor survive today. Photograph by author.

gional variants have been defined, frequently in the complete absence of any archaeological data. The tradition is most highly developed in central and south-central Veracruz and appears to have lasted from the Late Formative until the Late Classic period. Those assigned to the Early Classic include the Upper Remojadas I and Nopiloa I styles, named for archaeological sites located between the Tuxtlas and Veracruz City. In addition to the small human and animal effigy figurines, some larger ceramic statuary has been assigned to this period, foreshadowing the flowering of this tradition in Late Classic times.

The Late Classic (A.D. 600–900). Gulf Coast lowland populations reasserted themselves culturally and politically during the Late Classic period. It is not clear whether this resurgence provoked a break in the contacts with Teotihuacan or simply reflected it. In any case the geographical focus of power and innovation shifted northwestward to El Tajin, in the densely forested hilly terrain along a tributary of the Rio Tecolutla.

El Tajin was occupied between A.D. 100–1100, but its florescence

occurred during the tenth and eleventh centuries, at the very end of the Late Classic or what some call the Epi-Classic. At this time it dominated much of the surrounding area and maintained commercial and perhaps political relationships with centers in Yucatan and the Pacific Coast lowlands from Chiapas to El Salvador.

El Tajin contains many large buildings erected on the artificially terraced ridge sides ascending from the small stream that drains the area. They include scores of temples, eleven ballcourts, a palace complex, and numerous other public buildings covering 2.5 square kilometers. El Tajin is famous for its distinctive art style reflected in architecture, sculpture, and portable carved stone objects; the large number of ballcourts; and its preoccupation with death and the underworld.

In the realm of architecture El Tajin is noted for the use of recessed niches, stepped-fret panels, and outward-projecting, “flying” cornices. The Pyramid of the Niches is the best-known exemplar of this style (Fig. 4.6). This temple base was constructed in seven levels, each with a sloping *talud* and vertical *tablero*. Three hundred sixty-five recessed niches adorn the four sides. The correspondence between the number of niches and the number of days in the solar year is surely not a coincidence, especially since Mesoamericans utilized a 365-day solar calendar divided into eighteen months of twenty days each with five additional days added to the end of the cycle. Most of El Tajin’s buildings were painted vibrant colors, the Pyramid of the Niches was red while the niches themselves were black. Other buildings were painted a very distinctive blue, of which substantial traces remain even today.

El Tajin is famous for its stone sculptures depicting narrative scenes, especially the finely carved round stone pillars that supported the roof of the Building of the Columns and the panels placed in the playing-field walls of the North and South Ballcourts. According to S. J. K. Wilkerson, the scenes on the pillars depict myths or historical accounts (be they true history or not) of the exploits of a ruler named 13 Rabbit. The one scene which is complete enough to be reconstructed shows this tenth-century ruler observing the sacrifice of captured enemies.

The six panels on the walls of the South Ballcourt exemplify pre-Columbian narrative art at its finest (Fig. 4.7). They portray sequential stages in a ball game and sacrifice ritual. The account begins with (1) ceremonial preparation in which the protagonist dresses, followed by (2) music and dance prior to a ball game, (3) the actual playing of the ball game, (4) the end of the game with sacrifice of one of the players, (5) the descent



Figure 4.6. El Tajin. Pyramid of the Niches. Height 25 mt. Late Classic. The niches and cornices of this building are characteristic of the El Tajin architectural style. The surfaces originally were painted red and a masonry temple occupied the summit of the pyramid. Photograph by author.

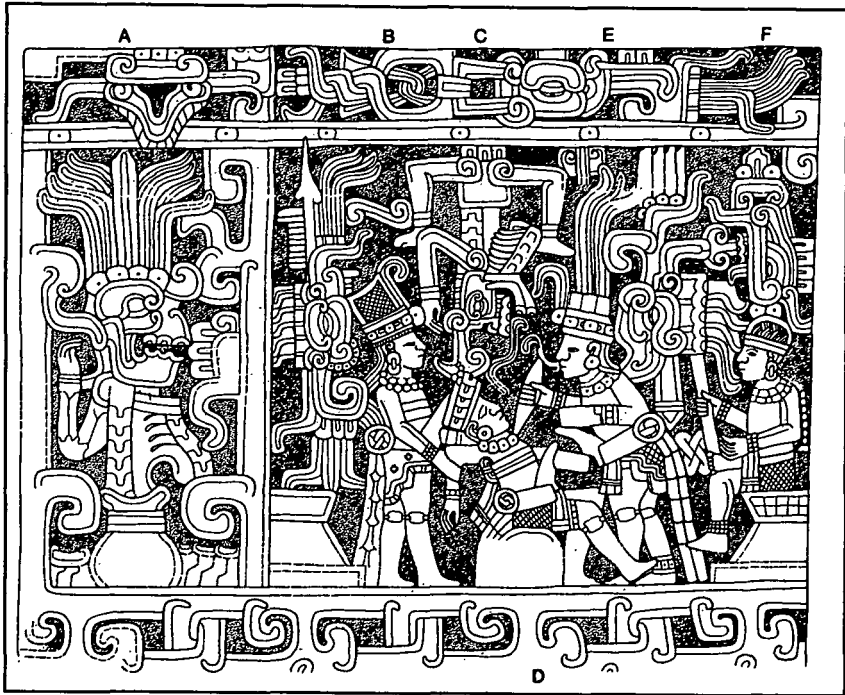


Figure 4.7. Carved panel. El Tajin South Ball Court. Sedimentary stone. Length 198 cm. Late Classic. The central figure is undergoing sacrifice by heart removal at the hands of the figure standing on the right. All three figures in the center wear yokes, palmas, and other ball game paraphernalia and the scene is placed within the sloping walls of the ball court. From Michael E. Kampen, *The Sculptures of El Tajin, Veracruz, Mexico*, University of Florida Press, 1972, fig 23.

of sacrificial victim into the underworld to obtain pulque, an intoxicating fermented cactus sap with sacred qualities. In the last scene (6) a god refills the pulque container by perforating his penis and allowing the blood to enter the pulque vat, thus completing the cycle.

The Mesoamerican ball game was a ritual rather than a sport in the modern sense. It played a crucial role in rituals conducted when classic Maya rulers ascended to the throne, and the Aztecs played it in order to foretell the future. It may have functioned similarly at El Tajin, but the large number of courts at the site suggests that ball game rituals were celebrated much more frequently there than elsewhere.

The precise relationship among the ball game, human sacrifice, death,

and the skeletal figures so common at El Tajin and other Gulf Coast lowland sites is not clear. Some scholars believe that the death “cult” personified by Mictlantecuhtli and his consort, Mictlancihuatl, the Nahuatl Death God and Goddess, originated on the Gulf Coast. Whether that is true or not, there is good evidence that the Olmecs played the ball game; rubber balls have been recovered at El Manati, a mound complex at San Lorenzo has been identified as a ballcourt, and Olmec clay figurines depict men dressed in protective garb while holding balls in their hands.

Further evidence for the importance of the ball game in Late Classic lowland Gulf Coast culture can be seen in portable stone sculptures called yokes, hachas, and palmas. Yokes are U- or oval-shaped stone belts. Some are open on one end, others are closed; many have plain surfaces, while a few have intricate low-relief carving on their surfaces. Stone yokes seem to be replicas of the wood or cloth protective belts worn by ballplayers during the game (Fig. 4.8). Some yokes are large enough to fit slender adults, but their weight suggests that they were worn in ceremonies rather than actual play. Hachas are thin stone anthropomorphic or zoomorphic three-dimensional heads while palmas are fanlike devices. Stone sculptures occasionally show men wearing yokes with hachas attached to the front and palmas placed on the back.

El Tajin must have been the capital of a major regional state encompassing much of northern Veracruz and adjacent areas. Remnants of drained fields in swampy terrain, evidence of intensive agriculture dating to the Late Classic, suggest that populations were sufficiently dense to permit and even require substantial investments of time and energy in agriculture. Commercial “cash crop” cultivation of cacao or cotton also seems likely.

El Tajin fell on bad times during the late tenth or perhaps the eleventh century. The nature of the difficulties is not known, but the city was ultimately burned and abandoned. Unfortunately, the processes that led to its decline are as unclear as the date of its abandonment. Although the area continued to be occupied, no immediate successor to El Tajin has been identified.

Late Classic sites are abundant in central and southern Veracruz, but the information available on them is very confused. The hollow figurine tradition reached its climax with the renowned “smiling face” figurines, hollow clay whistles depicting standing boys or girls with outstretched arms, grotesquely flattened heads, pillbox headdresses, and idiotic smiles



Figure 4.8. Stone yoke. Basalt. Said to be found near Xalapa, Veracruz. Length 53 cm. Classic period. Closed yokes are less common than those with an open end. This example depicts a monkey whose body extends around the sides and back. From Alfonso Medellín Zenil, *Obras Maestras del Museo de Xalapa* (1983), p. 128.

(Fig. 4.9). Various explanations have been offered for the bizarre facial expressions, but the most likely is that they portray intoxicated or drugged sacrificial victims. Smiling face figurines are only one of many Late Classic figurine types placed in caches and burial offerings in central southern Veracruz. Other small clay sculptures depict people sitting on swings, animals mounted on wheels, seated skeletonized figures with grinning countenances and cross-legged old men with braziers on their heads, perhaps a variant Huehueteotl, the Old Fire God of highland central Mexico.

The Late Classic potters in central Veracruz also produced spectacular life-size ceramic sculptures unparalleled in the rest of Mesoamerica. The most remarkable of these come from El Zapotal, near Cerro de las Mesas. Here Mexican archaeologists uncovered a sanctuary containing a seated



Figure 4.9. Smiling face figurine. El Zapotal, Veracruz. Height 50 cm. Late Classic period. This female wears a collar with a pendant, an elaborately decorated skirt, and has a rattle in her right hand. From Alfonso Medellín Zenil, *Obras Maestras del Museo de Xalapa* (1983), p. 115.

life-size skeletal figure made of unaired but painted clay. Elsewhere in the same structure they found lines of large hollow sculptures of Cihuateotls, women wearing skirts held in place by serpent belts (Fig. 4.10).

The Postclassic Period (A.D. 900–1521)

The archaeology of the Postclassic period is even more poorly known than that of the Classic. Nevertheless, several general trends can be discerned: political fragmentation followed by the initial steps of reintegration, small-scale population movements, and renewed intrusions by central Mexican imperialists.

The period opened with the aftermath of El Tajin's decline in the north and the abandonment of most Classic sites in the central and southern portions of the region. Many new centers sprang up to replace the deserted Classic communities, but none were able to establish hegemony over large areas until Cempoala, in the Misantla region north of modern Veracruz City, emerged as the Totonac capital a century before the Spanish Conquest. Many of these centers were placed on hilltops or other easily defended settings, suggesting that warfare and strife were a fact of daily life.

The contacts with the Maya region that were so prominent during the Late Classic withered at the end of the period and ultimately were replaced with renewed ties to central Mexico. Groups in the Huasteca maintained fairly close ties with the Toltecs of Tula and their Aztec successors. The relationships with the Toltecs appear to have been social and commercial in nature, but the Aztecs actually conquered several Huastec-speaking areas and extracted regular tribute payments from them. Farther south, Early Postclassic ceramics in central Veracruz show strong highland Mixteca–Puebla stylistic influence, and central Mexican architectural designs and concepts appear in Cempoala, Quiahuiztlan, and other Totonac centers in Late Postclassic times. As had happened farther north, the Aztecs ultimately incorporated the Totonac realm into their empire at the end of the fifteenth century.

The unsettled conditions during the early centuries of the Postclassic encouraged small-scale population movements within the region, which culminated in the basic tripartite geolinguistic distribution that existed when the Spaniards arrived. The names of the regions – Huasteca, Totonacapan, and Olmecapan – are corruptions of the Nahuatl names Bernardino de Sahagun recorded in his encyclopaedic work on Aztec life



Figure 4.10. Monumental hollow sculpture. Clay. El Zapotal, Veracruz. Height 153 cm. Late Classic period. One of many ceramic sculptures uncovered in a ritual offering at El Zapotal, this exquisitely executed female is thought to depict the Totonac version of a Cihuateteotl, the apotheosized woman who died in childbirth. From Alfonso Medellin Zenil, *Obras Maestras del Museo de Xalapa* (1983), p. 138.

and culture. In addition, Sahagun's work contains short descriptions of the Gulf Coast peoples prepared by his Aztec informants. Although these descriptions are as biased and ethnocentric as the Spanish accounts of the Aztecs, they do contain invaluable information of the sort not normally available to archaeologists.

The Huasteca

Huasteca language, related to the Maya language family of southern Mesoamerica, predominated in northern Veracruz and adjacent portions of Tamaulipas, San Luis Potosi, Queretaro, and Hidalgo in the sixteenth century. Small enclaves of speakers of Nahuatl, Nahuat, and Otomi lived interspersed with the Huastec majority. Huastec was long established in the region, but Nahuat was a relatively recent arrival and Nahuatl was probably introduced during the Aztec conquest in the fifteenth century.

According to the Aztecs, the hot Huastec lands were rich in food and other desirable goods. Cotton textiles, especially mantles, were the primary tribute the Aztecs exacted from their Huastec subjects. According to Sahagun, Huastec men dyed and parted their hair, letting it hang over the earlobe; filed and stained their teeth; and inserted feathers, palm leaves, or gold plugs into openings in their nasal septa. They dressed in gorgeous feathered capes, leather arm and leg bands, and greenstone bracelets, and they wore circular devices of brilliant feathers and woven palm leaves on their backs. Huastec women wore skirts and braided their hair with multicolored strips of cloth wound with feathers. Huastec warriors employed the bow and arrow with effectiveness, and their valor earned the respect of the Aztecs.

The Huastecs suffered two very serious defects in the eyes of the rather puritanical Aztecs. The men generally did not wear loincloths, preferring to leave their genitals exposed, a practice that scandalized Aztecs and Spaniards alike. Furthermore, they loved pulque, an intoxicating drink made by fermenting sap from the maguey or agave cactus, in what the Aztecs considered excessive quantities. Although most imbibing probably occurred during rituals that the participants viewed as serious worship, the Aztecs considered their Huastec neighbors to be drunken carousers. Aztec legend tells of a Huastec lord at Tula who, not satisfied with just four cups of pulque, had a fifth, after which he removed his loincloth in public. Upon sobering up, he was so ashamed that he fled to his homeland, where he instilled his wicked ways in his descendants. This perhaps

apocryphal event is reflected in the Aztec saying applied to drunkards: "He is the image of a Huasteca. He drank not only the four wine jars, he finished the fifth (Sahagun Book 10:194).

Little is known about Late Postclassic archaeological remains in the Huasteca beyond the basic ceramic typology, the remarkably well-preserved temple at Castillo de Teayo, and a large corpus of stone sculpture (Figs. 4.11, 4.12). The ceramics include very distinctive black-on-white vessels, which were traded into the highlands of central Mexico. The temple at Castillo de Teayo, virtually the only example of an intact temple sanctuary in Mesoamerica outside the Maya region, has pronounced affinities with Aztec architecture from the Basin of Mexico.

Scores of stone monuments attest to the popularity of sculpture as a form of artistic expression in the Huasteca during the Postclassic, but unfortunately the basic chronology of their development remains a mystery. They frequently depict deities or at least people wearing godly insignia, especially related to the Wind God Ehecatl.

The Totonacapan

The Totonacapan covered a broad band of territory centered on the Sierra de Chiconquiaco in central Veracruz. When Hernando Cortés (or Cortéz) arrived in their territory in 1519, the Totonacs of Cempoala dominated the region but were in turn under Aztec subjugation. They quickly turned on their highland overlords by becoming Cortés's first Indian allies, without whom he never could have conquered the Aztecs. Although scholars tend to credit the Totonacs with more accomplishments than are really their due, including the construction of El Tajin, they certainly played an important role in lowland history. Tepehua, a language closely related to Totonac, is still spoken in isolated portions of the mountains and may have been more widespread in the past.

Sahagun's informants considered the Totonacs to be a cut above their Huasteca neighbors: "To these corresponded a humane, civilized life." The Aztecs found them attractive physically, "and the men and women were beautiful, fair, tall, slender, firm." Their clothing, hair, and accoutrements are described as elegant, and the Totonacs were famed for their woven and embroidered cotton garments. They were skilled in song and dance and famous for their meat tamales, tortillas, and chile peppers. On the other hand, the Aztecs had scant respect for the Totonacs as warriors.

Totonacapan's wealth attracted the Aztecs early in their imperial his-



Figure 4.II. Huastec sculpture. Sandstone. Castillo de Teayo, Veracruz. Height 70 cm. Late Postclassic period. This male figure is thought to represent the Huastec analog of the Aztec deity Macuilxochitl. He wears an elaborate head-dress and a long necklace made of spherical and tubular beads. Seated figures are relatively rare in Mesoamerican sculpture but numerous Aztec examples are known, as well as one other from Castillo de Teayo. Photograph by author.



Figure 4.12. Pyramid base with temple, Castillo de Teayo, Veracruz. Masonry. Late Postclassic period. The partially original temple at the pyramid summit is one of very few such Mesoamerican structure to survive into the twentieth century outside the Maya region. Photograph by author.

tory. The region supplied crucial foodstuffs to central Mexico during the devastating famines of the early 1450s. It is said that during these hard times families in the Basin of Mexico sold their children into slavery in exchange for maize from the Totonacapan, and some highland groups may have migrated to this fertile paradise where hunger was unknown. Shortly thereafter the Aztecs subjugated southern Totonacapan during the reign of Moctezuma the Elder (1440–69); the northern sector escaped the Aztec yoke until Moctezuma the Younger conquered it at the beginning of the sixteenth century. Aztec tribute demands included vast quantities of cotton bales and cloth; warriors costumes with shields; cacao; liquid amber; feathers; and ornaments made of gold, crystal, and amber. Maize and other foodstuffs, although not mentioned in the tribute lists, probably entered the highlands through the market system rather than the state-directed tribute system.

Archaeologists have not directed much serious attention to Late Postclassic sites in the Totonacapan. At Cempoala, the historic Totanac

capital where Cortés formed his first alliance against the Aztecs, some of the temples have been cleared and restored. The hilltop site of Quiahuiztlan, another historic community which overlooks Cortés's landfall and the site of La Villa Rica de la Veracruz, the first Spanish settlement in Mesoamerica, is famous for the multitude of tombs in the form of miniature temples that lie scattered about its plazas (Fig. 4.13).

Olmecapan

The ethnolinguistic situation east of the Papaloapan River is not well documented. The Aztecs called the inhabitants the Olmeca, the "Rubber People" and the Uixtotin, the "Saltwater People," but these are geographical referents rather than languages. The languages recorded for the area in the sixteenth century include Popoluca and Nahuat. Popoluca appears to be an ancient language in the area related in some way to the Mixe and Zoque languages spoken in the Isthmus of Tehuantepec. The Nahuat was similar, if not identical, to that spoken in northern Veracruz. Both languages were spoken from the Tuxtla Mountains to the western Tabascan floodplain. The evidence suggests that speakers of both languages lived intermingled with each other rather than in discrete isolated blocks. Finally, Mixtec speakers may have occupied portions of the Papaloapan basin, but the evidence is ambiguous.

The Aztecs controlled the Papaloapan River basin from Tochtepec, a garrison town located in modern Oaxaca near the Veracruz border, but it is not clear whether they also controlled the Tuxtla Mountains. Although Aztec merchants traveled into the Coatzacoalcos basin and western Tabasco, these regions were independent politically and did not pay tribute to Aztec overlords. However, some evidence suggests that the Aztecs had imperial designs on the region, designs aborted by the arrival of the Spaniards. The Aztecs certainly were impressed with the wealth of the area. They also believed it to be Tlapallan, homeland of Quetzalcoatl, the deified culture-hero who brought civilized life to their Toltec ancestors. According to Aztec legend, Quetzalcoatl returned to Tlapallan after his enemies defeated and shamed him at Tula. He then sailed off to the east on a raft of serpents, promising to return one day. When the Spaniards came out of the east in strange boats, Moctezuma and his advisors quite naturally mistook the bearded strangers for Quetzalcoatl and his followers. This mistake proved costly, creating divisiveness and

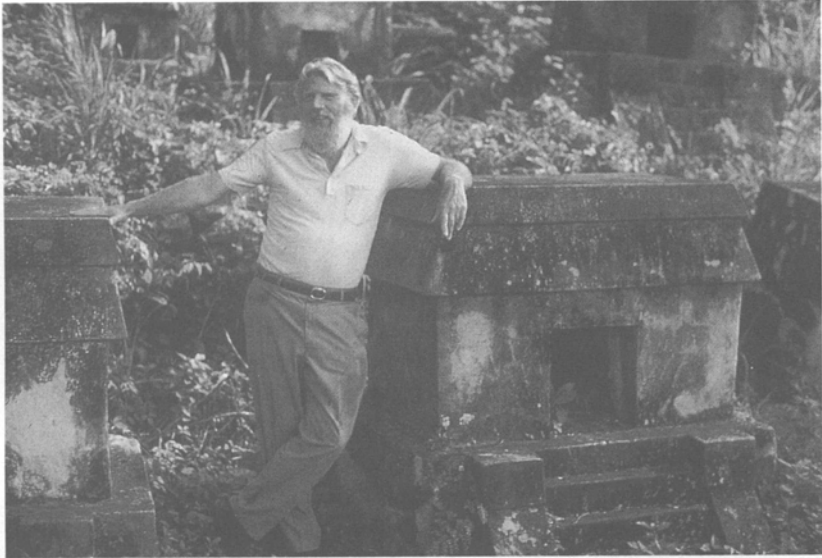


Figure 4.13. Tombs in the form of miniature temples. Hiahuiztlan, Veracruz. Masonry. Height approximately 1.5 m. Late Postclassic period. Archaeologist William T. Sanders stands between two of the forty-plus such structures at Quiahuitzland, the first Totonac center visited by Cortes and his army. Tombs in the form of temples are common on Late Postclassic sites in central Veracruz. Photograph by author.

causing procrastination when only swift and unified action could have saved the day for the Indians.

The Olmecapan was involved in a further irony of the Spanish Conquest. It was here that Cortés received a group of women as the gift of a local chief. They included Doña Marina, sometimes called La Malinche, the daughter of a noble family who became his interpreter, confidante, and mistress (Fig. 4.14). Time and again her intelligence and advice helped him avoid ambushes and thread his way through interminable mazes of political intrigue. So effective was she that today in Mexico her name is used as a synonym for traitor. Thus, the Land of Wealth fronting on the Gulf of Mexico, so important to precolumbian Mesoamerica, provided both geographical springboard for the European conquest and the woman who perhaps more than anyone else made it possible.



Figure 4.14. Hernán Cortés and Doña Marina after landing on the beach in front of Quiahuiztlan. Veracruz. Early Colonial period drawing. She interprets for Cortes as he talks to the Indian noble standing behind him. From Fray Diego de Duran. *The History of the Indies of New Spain*, translated by Doris Heyden. University of Oklahoma Press 1994, plate 55.

BIBLIOGRAPHICAL ESSAY

Publications dealing with the archaeology and ethnohistory of the Gulf Coast are scattered through a vast array of often inaccessible sources. Unfortunately there are no detailed syntheses of the topic, nor is there a satisfactory up-to-date bibliography covering the entire region. Ignacio Bernal's *Bibliografía de arqueología y etnografía de Mesoamérica y norte de México, 1514–1960* (Mexico, 1962), 101–19, contains the most comprehensive bibliography on the subject up to 1960. Subregional syntheses of the prehistory and ethnohistory included in the *Handbook of Middle American Indians*, 16 vols., ed. Robert Wauchope, (Austin, TX, 1964–76), include articles by Michael D. Coe, Matthew W. Stirling, and France V. Scholes and David Warren in Vol. 3 and José García Payón, Richard S. MacNeish, William T. Sanders, and Guy Stresser Pécán in Vol. 11. These useful summaries contain extensive bibliographies of significant works, but unfortunately all are rather dated.

Several collections of papers deal with the precolumbian cultures of the region; *Huastecos, Totonacos y sus Vecinos*, ed. Ignacio Bernal and Eusebio Davalos Hurtado (Mexico, 1953), contains many important original contributions on the north-central and north Gulf Coast subregions, while Lorenzo Ochoa's *Huastecos y Totonacos: Una antología histórica-cultural* (Mexico, 1989) includes reprints of useful but hard-to-find older works dealing with the same territory. Ochoa's *Olmecas y Mayas en Tabasco* (Villahermosa, 1985) serves a similar function for the south Gulf Coast. S. J. K. Wilkerson's "Cultural Time and Space in Ancient Veracruz," in *Ceremonial Sculpture of Ancient Veracruz*, ed. Marilyn M. Goldstein, (Brookville, NY, 1988), 7–18, is the only culture historical synthesis of the entire Gulf Coast.

The bibliographical corpus dealing with Formative period Olmec culture is enormous and even includes a novel by Paul Westheimer, *The Olmec Head* (New York, 1974). General syntheses include *America's First Civilization: Discovering the Olmec* by Michael D. Coe (New York 1968); *The Olmec World* by Ignacio Bernal (Berkeley and Los Angeles, 1969); *The Olmecs: The Oldest Civilization in Mexico* by Jacques Soustelle (Garden City, 1984); and *The Olmec: Mother Culture of Mesoamerica*, Roman Piña Chan (New York, 1989). Unfortunately, none reflect current thinking or include information from recent investigations. Francisco Beverido P., "Breve Historia de la Arqueología Olmeca," *La Palabra y El Hombre* 64 (1987): 161–94, succinctly summarizes the history of investigations of

Olmec culture. David Grove, "The Olmec Legacy: Updating Olmec Prehistory," *National Geographic Research and Exploration* 8 (1992): 166–79, discusses some of the recent research on Olmec culture in the south Gulf Coast heartland, and *Regional Perspectives on the Olmec*, ed. David Grove and Robert Sharer (Cambridge, England, 1989), contains new interpretations of Olmec culture and its relationships with the rest of Mesoamerica. Two volumes edited by Elizabeth Benson, *Dumbarton Oaks Conference on the Olmec (Washington, DC, 1968)*, and *The Olmec and Their Neighbors* (Washington, DC, 1981) contain original articles on many aspects of Olmec culture and art. Reasonably current bibliographies can be found in *Bibliografía Olmeca*, by Francisco Beverido Perea (Xalapa, 1986) and *Corpus Bibliográfico de la Cultura Olmeca* by Nelly Gutierrez Solana and Daniel G. Schavelson (Mexico, 1980).

The early literature on La Venta includes Frans Blom and Oliver La Farge's classic account *Tribes and Temples*, 2 vols. (New Orleans, 1926). Matthew W. Stirling and Philip Drucker initiated modern investigations at La Venta in 1942; the results are reported in Stirling's *Stone Monuments of Southern Mexico* (Washington, DC, 1943) and Drucker's *La Venta, Tabasco: A Study of Olmec Ceramics and Art* (Washington, DC, 1952). *Excavations at La Venta, Tabasco, 1955*, by Philip Drucker, Robert F. Heizer, and Robert J. Squier (Washington, DC, 1959), contains a detailed excavation report of the 1955 National Geographic Society–Smithsonian Institution field project and the first radiocarbon determinations for an Olmec occupation. More recent research at La Venta is reported in numbers 3, 4, 5, 8, 11, 13, 24, and 41 of the *Contributions of the University of California Archaeological Research Facility* (Berkeley, 1967–79). Investigations in the 1980s are briefly reported in William F. Rust and Robert J. Sharer, "Olmec Settlement Data from La Venta, Mexico," *Science* 242 (1988): 102–4, and Rebecca Gonzalez Lauck, "Proyecto Arqueológico La Venta," *Arqueología* 4, (1988): 121–65. Lorenzo Ochoa and Marcia Castro Leal's *Archaeological Guide of the Park-Museum of La Venta* (Villahermosa, 1986) provides a succinct description of the Parque La Venta in Villahermosa and the La Venta monuments on display in this open-air setting. *In the Land of the Olmec*, Vols. 1 and 2, by Michael D. Coe and Richard A. Diehl (Austin, TX, 1981), is a detailed consideration of the Formative Olmec occupation at San Lorenzo Tenochtitlan. The spectacular Olmec offerings at the nearby site of El Manatí are described by Ponciano Ortiz C. and Maria del Carmen Rodríguez in "Proyecto Manatí 1989," *Arqueología* 1 (1989): 23–52.

Juan Valenzuela's "Las Exploraciones Efectuadas en los Tuxtlas, Veracruz," *Anales del Museo Nacional de Arqueología, Historia y Etnología* 3 (1945): 83–107, reports the first serious archaeological investigations in the Tuxtla Mountains. Ponciano Ortiz C. describes the basic ceramic sequence for the Tuxtlas in *La Cerámica de los Tuxtlas* (Xalapa, 1975). A joint University of New Mexico–Universidad Veracruzana project in the 1980s produced considerable new data about Matacapán's history, economy, and connections with Teotihuacan. Robert S. Santley, Philip J. Arnold III, and Christopher A. Pool discuss some of the results in "The Ceramics Production System at Matacapán, Veracruz, Mexico," *Journal of Field Archaeology* 16 (1989): 107–32 and the bibliography of that article contains an extensive list of technical papers on other facets of the project.

The archaeology of Tres Zapotes is described in C. W. Weiant, *An Introduction to the Ceramics of Tres Zapotes, Veracruz, Mexico* (Washington, DC, 1943), and Philip Drucker, *Ceramic Sequences at Tres Zapotes, Veracruz, Mexico* (Washington, DC, 1943). M. W. Stirling describes the Tres Zapotes sculptures in Matthew W. Stirling, *Stone Monuments*; Stirling discusses Stela C in detail in "An Initial Series from Tres Zapotes, Vera Cruz, Mexico," in *National Geographic Society Contributed Technical Papers 1* (Washington, DC, 1940). P. Ortiz, *La Cerámica*, describes more recent excavations at Tres Zapotes.

La Mojarra Stela 1 is described by Fernando Winfield Capitaine in "La estela 1 de La Mojarra, Veracruz, Mexico," *Research Reports on Ancient Maya Writing* 16 (Washington, DC, 1988); Virginia Morrell has done an outstanding job of untangling the controversies surrounding it in "New Light on Writing in the Americas," *Science* 251 (1991): 268–70. Thomas S. Barthel and Hasso von Winning provide a detailed but controversial interpretation of the glyphic text in "Some observations of Stela 1, La Mojarra, Veracruz," *Tribus* 38 (1989): 91–120, and "La Mojarra Stela 1 revisited," *Tribus* 40 (1991): 43–82. John Justeson and Terrence Kaufman provide a generally accepted, linguistically based decipherment of the La Mojarra script in "A Decipherment of Epi-Olmec Hieroglyphic Writing," *Science* 259 (1993): 1703–711. Barbara Stark, *Patarata Pottery: Classic Period Ceramics of the South-central Gulf Coast, Veracruz, Mexico* (Tucson, 1989), is the best source of information on archaeological sites in the Papaloapan basin.

Cerro de las Mesas is discussed in P. Drucker, *Ceramic Stratigraphy at Cerro de las Mesas, Veracruz, Mexico* (Washington, DC, 1943), and M. W.

Stirling, *Stone Monuments*. B. Stark, ed., summarizes recent investigations at the site in *Settlement Archaeology of Cerro de las Mesas, Veracruz, Mexico* (Los Angeles, 1991).

Virtually nothing is known about the Postclassic archaeological sites of the south Gulf Coast. Michael D. Coe, "Archaeological Synthesis of Southern Veracruz and Tabasco," *Handbook of Middle American Indians*, Vol. 3 (1965), 679–715, summarizes everything known at the time of writing; the only new information can be found in the descriptions of the Villa Alta-phase remains at San Lorenzo in M. D. Coe and R. A. Diehl, *In the Land of the Olmec*. Conquest period Olmeca and Uixtotin cultures are described in Book 10 of Fray Bernardino de Sahagun's *Florentine Codex*, ed. Arthur J. O. Anderson and Charles E. Dibble, (Santa Fe, NM, 1961), and summarized by France V. Scholes and David Warren, "The Olmec Region at Spanish Contact," *Handbook of Middle American Indians*, Vol. 3 (1965), 776–86.

The archaeology of central Veracruz is summarized in Alfonso Medellín Zenil, *Ceramicas del Totonacapan*, and José García Payón, "Archaeology of Central Veracruz," 505–42. The recent literature on the region is primarily concerned with the art; especially useful publications include Marilyn Goldstein, ed., *Ceremonial Sculpture of Ancient Veracruz* (Brookville, NY, 1988), *Ancient Art of Veracruz*, (Los Angeles, 1972), and Tatiana Proskouriakoff, "Classic Art of Central Veracruz," in *Handbook of Middle American Indians*, Vol. 11 (1971), 558–72. The spectacular clay sculptures of El Zapotal are profusely illustrated and analyzed in detail in Nelly Gutiérrez Solana and Susan Hamilton, *Las Esculturas en Terracota de el Zapotal, Veracruz* (Mexico, 1977). A. Medellín Zenil, *Nopiloa: Exploraciones Arqueológicas* (Xalapa, 1987), contains descriptions of the excavations and artifacts, especially small clay figurines, from that poorly understood site. In one of the few archaeological publications that does not deal with ceramics, architecture, or art, Alfred Siemens et al. present information on prehispanic intensive agriculture in "Evidence for a Cultivar and a Chronology from Patterned Wetlands in Central Veracruz, Mexico," *Science* 242 (1988): 105–7.

In 1891–92, the Mexican savant Francisco Paso y Troncoso carried out the first systematic archaeological studies of Cempoala, the Conquest period Totonac capital, as part of Mexico's commemoration of the fourth centenary of Columbus's first voyage. The results of this effort were published by J. Galindo y Villain, "Las Ruinas de Cempoala y del Templo del Tajín," *Anales del Museo Nacional de Arqueología, Historia, y*

Etnología de Mexico (Mexico, 1912). Jesse Walter Fewkes, "Certain Antiquities of Eastern Mexico," *Bureau of American Ethnology, Annual Report* 25 (1907): 223–84, contains an early description of Cempoala in English. The ruins of Quiahuixtlan are described in A. Medellín Zenil, *La Cerámica*. Eyewitness descriptions of Cempoala and Quiahuixtlan are found in Bernal Díaz del Castillo's *The Discovery and Conquest of Mexico* (New York, 1958) and in Hernán Cortés's letters to King Charles of Spain, as compiled by his biographer Fernando López de Gómara in *Cortés: The Life of the Conqueror by His Secretary* (Berkeley and Los Angeles, 1966). These works also present an account of the Conquest and Doña Marina's role in it from the Spanish perspective. Book 12 of Fray Bernardino de Sahagún's *Florentine Codex*, ed. Arthur J. O. Anderson and Charles Dibble (Santa Fe, 1955), provides a contrasting native view on the events.

The precolumbian cultural sequence for the north-central Gulf Coast is best studied in the Tecolutla river valley; its details are presented in S. J. K. Wilkerson, *Ethnogenesis of the Huastecs and Totonacs: Early Cultures of North-Central Veracruz at Santa Luisa, Mexico* (New Orleans, 1972). A brief summary is found in Wilkerson's "Eastern Mesoamerica from Pre-historic to Colonial Times: A Model of Cultural Continuance," *Actes du XLII Congrès International des Americanistes*, 8 (1979): 41. The formative period cultures of the entire subregion are discussed in Wilkerson's "The northern Olmec and pre-Olmec frontier on the Gulf Coast," in Elizabeth Benson, ed., *The Olmec and Their Neighbors*.

The first modern description of El Tajín in English can be found in Ellen Spinden, "The place of Tajín in Totonac Archaeology," *American Anthropologist* 35 (1933): 225–70. José García Payón's many field seasons of excavation and restoration at El Tajín are reported in widely scattered sources; the results are summarized in S. J. K. Wilkerson, *El Tajín: A Guide for Visitors* (Xalapa, 1987). That publication also contains the best and most complete description of El Tajín. Wilkerson analyzes the importance of the ball game at El Tajín in "And Then They Were Sacrificed: The Ritual Ballgame of Northeastern Mesoamerica Through Time and Space," in *The Mesoamerican Ballgame*, ed. Vernon L. Scarborough and David R. Wilcox (Tucson, 1991). Recent investigations at El Tajín are reported in Juerger Brueggemann and René Ortega Guevara, "El Proyecto Tajín," *Arqueología* 5 (1989): 153–90.

Fray Bernardino de Sahagún's accounts of Totonac life and culture in Book 10 of the *Florentine Codex* (Santa Fe NM, 1961) are invaluable but

must be recognized as Aztec perceptions of their recently subjugated neighbors rather than balanced, unbiased descriptions. Isabel Kelley and Angel Palerm, *The Tajin Totonac: Part 1. History, Subsistence, Shelter, and Technology*, (Washington, DC, 1952), is the best and indeed the only reliable synthesis of Totonac ethnohistory and contact-period culture.

Lorenzo Ochoa's *Historia Prehispánica de la Huasteca* (UNAM, Mexico City, 1979) presents a detailed summary of the archaeology of the north Gulf Coast subregion, supplanting the older *La Huasteca: Época Antigua* by Joaquín Meade (Mexico, 1942). Gordon F. Ekholm, "Excavations at Tampico and Panuco in the Huasteca, Mexico," *Anthropological Papers of the American Museum of Natural History XXXVIII* (1944), contains detailed discussions of excavations that revealed remains of all time periods in the lower reaches of the Panuco River. Richard S. MacNeish reports Formative remains in "An early archaeological site near Panuco, Veracruz," *Transactions of the American Philosophical Society* 44 (1954): 539–641. Ignacio Marquina, *Arquitectura Prehispánica* (Mexico, 1952), contains descriptions of many large Classic and Postclassic sites. The sculpture of Castillo de Teayo is analyzed by Felipe Solís in *Escultura de Castillo de Teayo, Veracruz, Mexico* (Mexico, 1981).

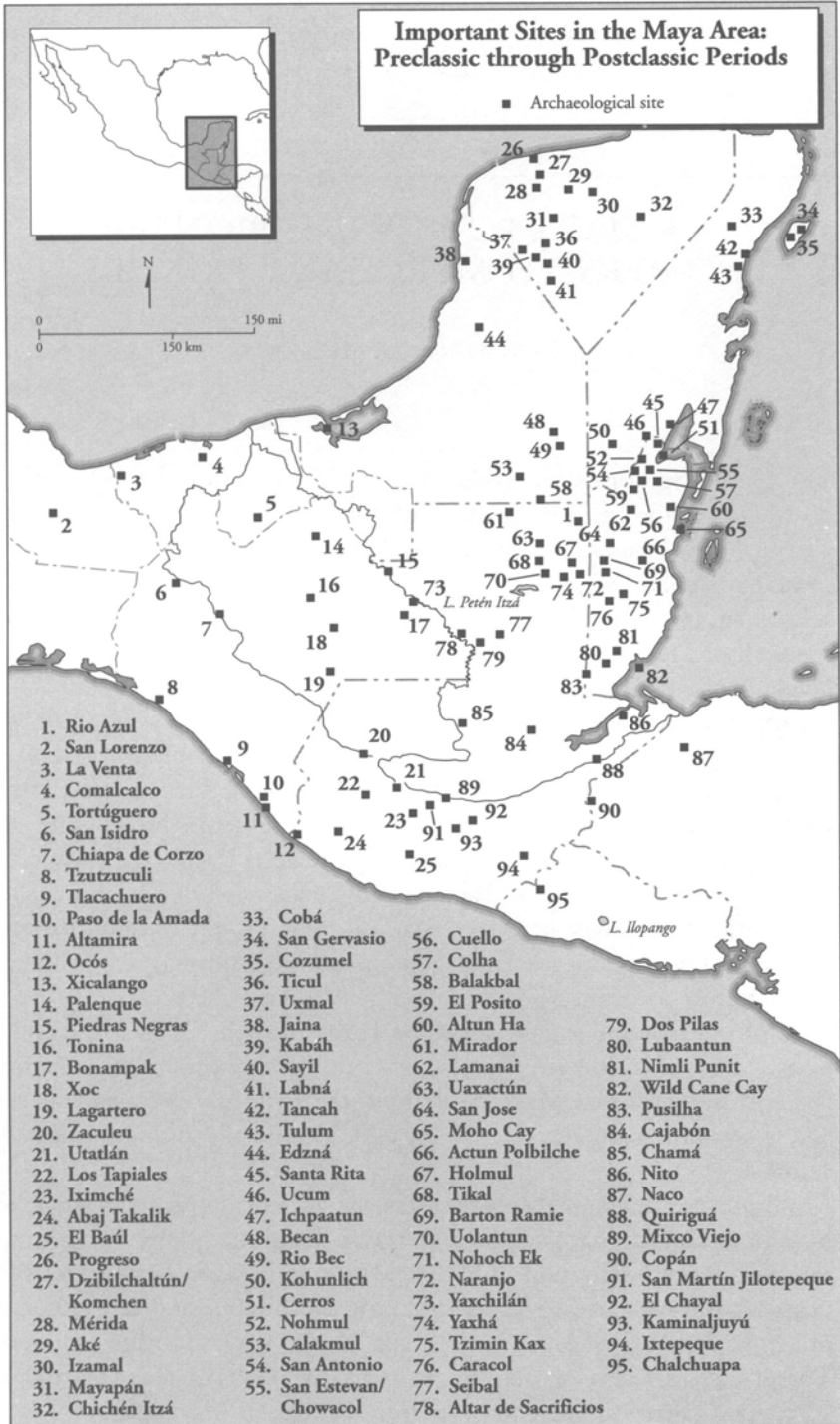
Sahagún describes the Huastecs in Book 10 of the *Florentine Codex*, while Guy Stresser Pégan summarizes the ethnohistory of the region and its inhabitants in "Ancient sources on the Huasteca," *Handbook of Middle American Indians*, II (1972): 582–602.

THE MAYA LOWLANDS: PIONEER FARMERS TO MERCHANT PRINCES

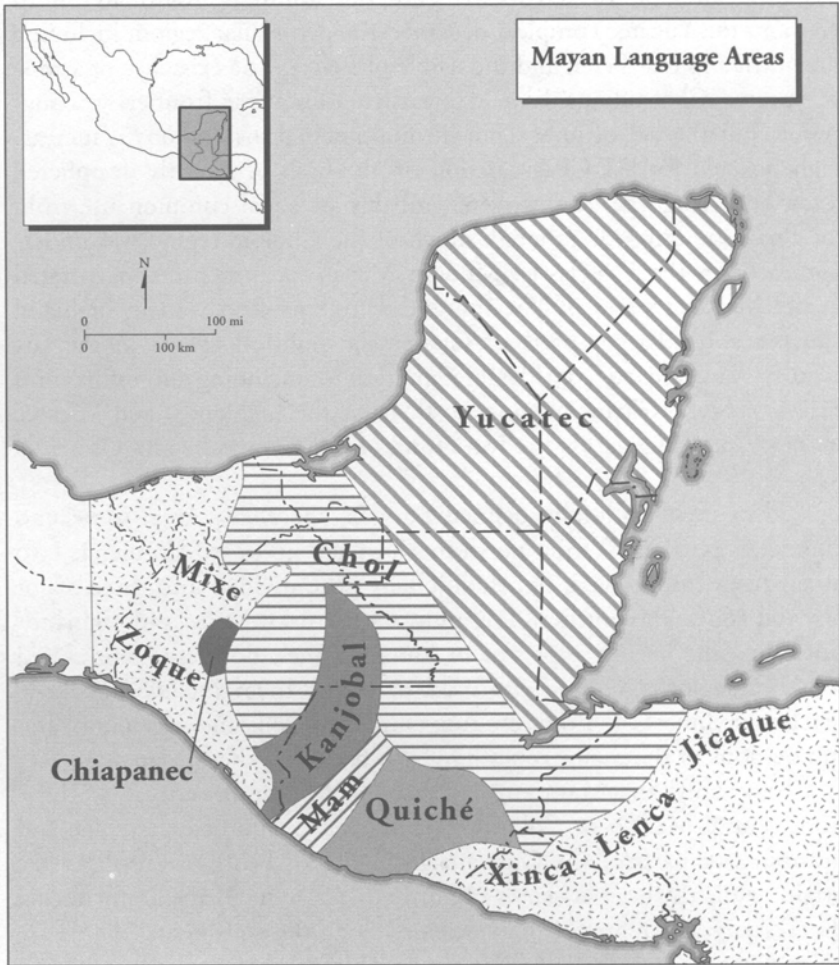
NORMAN HAMMOND

The Maya Area forms the eastern part of Mesoamerica, defined by the distribution of archaeological sites with the distinctive material culture of Classic Maya civilization and by the historical distribution of Mayan-speaking peoples (Maps 5.1, 5.2). It runs from the flat, low-lying peninsula of Yucatan, thrusting north into the Caribbean and dividing it from the Gulf of Mexico, southward through the highlands of the continental divide to the Pacific Coast of Chiapas, Guatemala, and El Salvador. On the east the formal boundary of the Maya lands has been defined along the valleys of the Uluu, flowing north into the Caribbean, and the Lempa, running through central El Salvador to the Pacific, but recent field research has shown that this frontier is, rather, a broad zone of shifting cultural and linguistic affiliations. The same is true of the western boundary, which runs across Tabasco and Chiapas east of the Isthmus of Tehuantepec, although here the historical linguistic interface of Mayan and Mixe-Zoque groups is fairly close to the western margin of Classic Maya culture as defined archaeologically. Although the prehispanic cultures of the Isthmus region and those farther west in Oaxaca, the Gulf Coast, and central Mexico were as early in their emergence and in many respects as complex as Maya civilization, the boundary between eastern and western Mesoamerica is strikingly clear in spite of continuous contact across it.

Within the limits of the Maya Area the ancient populations seem to have been almost exclusively of the Mayan linguistic group, apart from some eastward penetration of the highlands and Pacific coastal area by peoples from western Mesoamerica during the late first and early second millennia A.D. (see Sheets, Chap. 9, and Sharer, Chap. 10, this volume). The greatest diversity of language is in the highlands of Guatemala and adjacent Chiapas, thought to have been the area of Maya origins: Terr-



Map 5.1



Map 5.2

ence Kaufman recognized twenty-three languages clustered in ten groups and three main divisions, of which the majority are in the highland zone (Map 5.2). His eastern division of Quichean and Mamean in Guatemala adjoins the Kanjobal and Chuj of the western division; this also includes the Tzeltal–Tzotzil of Chiapas and the Cholan, Chol, and Chorti, who formerly occupied almost the entire Usumacinta basin as well as the lower Motagua Basin, thus spanning the base of the Yucatan Peninsula

from the Gulf of Mexico to the Gulf of Honduras. Kaufman's third division, the Yucatec complex, occupied the peninsular region, including the north and east Peten and the whole of Belize. The existence of a zone of Yucatec–Chol bilingualism, rather than a linguistic frontier, was suggested, but the use of only Chol in monumental inscriptions is increasingly attested for the Classic period on the basis of recently deciphered texts: both language groups were probably of equal common use from the Preclassic onward, although much of the Choloid region was underpopulated in the Postclassic. Modern Mayan-speakers are concentrated in the Mexican states of Yucatan and Quintana Roo, and in highland Chiapas and adjacent parts of Guatemala; political events in the last century have led to considerable migration, including an influx into Belize of both Kekchi, moving north from the highlands, and Yucatec speakers spreading across the Rio Hondo from Campeche and Quintana Roo.

Within these culturally defined bounds, the Maya Area, some 900 kilometers (550 miles) from north to south and up to 550 kilometers (350 miles) from east to west, has traditionally been divided into three major physical zones: the northern lowlands, southern lowlands, and highlands (including the Pacific slope); or in some schemes, northern, central and southern regions. The criteria used to define them included geology, relief, and climate, and the resulting patterns of soils and vegetation, and subdivisions of the major zones have also been proposed (Map 5.3).

Geologically, the Maya Area is part of "Middle America," reaching from central Mexico to Colombia; it has four zones of diverse age and history, with parts of the Guatemalan highlands being of pre-Paleozoic origin, while the level lowlands of northern Yucatan emerged only during the Tertiary and many of the volcanoes along the continental divide are of geologically recent date. Five basic physiographic regions resulting from these events are the metamorphic and volcanic uplands, the volcanic zone penetrating and overlying them through Guatemala into El Salvador, the steep and narrow Pacific slope to the south, the limestone peninsula of Yucatan to the north, and the alluvial plain of Tabasco along the Gulf Coast to the west. Tabasco and the Pacific lowlands, and other narrow strips of alluvium along the north coast of Yucatan and the Caribbean shore of Quintana Roo and Belize are recent, while the northern third of the peninsula is of Tertiary limestone and marl (*sascab*). The base of the peninsula, from Chiapas east across the Peten to Belize, has older and more crystalline limestones of more rugged relief. The Maya



Map 5.3

Mountains, an upthrust block of metamorphic rocks around a granite batholith, rise through the limestone in southern Belize to form an outpost of the highlands.

Relief is determined primarily by the underlying geology, and changes from a virtually flat plain near sea level in northern Yucatan through a rolling topography with karstic hills, to dramatic mountains and valleys where the Yucatan Platform has thrust southward against the ancient

rocks of the highlands. These rise to more than 3,000 meters (10,000 feet), but the volcanic peaks of southern Guatemala reach still higher, with several exceeding 4200 meters (14,000 feet) and enclosing fertile basins of great beauty. Some of the volcanoes, such as Fuego and Izalco, are still active.

The climate is tropical or subtropical, warm and humid, and changing rapidly with altitude and local topography. Areas above 2,000 meters (6,600 feet) are classified by the inhabitants as *tierra fria*, those to 1,000 meters as *tierra templada*, and land below 1,000 meters as *tierra caliente*. Moist winds blow onshore from the Caribbean and Pacific, resulting in high rainfall along the northern edge of the Chiapas Mountains and the Alta Verapaz, and along the Pacific slope. These areas receive more than 3,000 millimeters annually, while most of the southern lowlands get more than 2,000 millimeters; rain shadow cuts precipitation in the deep trenches of the upper Grijalva and Motagua rivers to around 1,000 millimeters, while northwestern Yucatan, the driest part of the Maya Area, has less than 500 millimeters of rain a year. Rainfall is seasonal, with little of it falling in the dry season from December through May, and this governs the agricultural cycle.

Of five principal drainage zones, three radiate from the highlands of Guatemala. The Pacific slope has numerous short, steep, and seasonal streams crossing the 25 to 40 kilometers of the coastal plain. The largest river system is that of the Usumacinta, with its principal tributaries, the Pasión and the Chixoy, draining northwest from the Maya Mountains and Verapaz respectively, joined by the rivers of Chiapas farther downstream. Originating and debouching close to the Usumacinta but taking a deeply entrenched course west and then north through Chiapas and Tabasco, the Grijalva drains the western Maya highlands; while rising close to it but flowing eastward, the Motagua reaches the Caribbean close to the eastern frontier of Mesoamerica. Northward, the Sarstun and the Belize rivers frame the Maya Mountains, while a series of short streams descends from the granite uplands to the Caribbean. In northern Belize the New River and the Rio Hondo flow along asymmetrical folds in the landscape, the headwaters of the Hondo draining northeastern Peten as far inland as Tikal.

North of the Hondo, and of the Candelaria and Champoton on the Gulf, the Yucatan Peninsula has a karstic subterranean drainage with no surface streams and few lakes: the prime water sources are *cenotes*, sink-holes where the limestone caprock has collapsed into an underground

river. The most noted of these is the Cenote of Sacrifice at Chichen Itza, but other Maya cities such as Dzibilchaltun also centered on them. Dry *cenotes* often hold fertile soil and are used by the Maya for specialist crops. A zone of inland drainage centers on the lake district of northern Peten; although ancient cities such as Yaxha stood on the lake shores, and Postclassic communities such as Topoxte used peninsulas and islands as defensive redoubts, large sites are surprisingly few. Both lakes and rivers were arteries of communication, in addition to the coastal canoe routes, and only short portages were required between the headwaters of the Usumacinta and those of the Sarstun, Belize, and Hondo, so that the southern lowlands were effectively penetrated by water transportation as well as by overland trails.

The vegetation of the Maya Area ranges from the luxuriant to the sparse, in a complex pattern produced by geology and soils, relief and climate, which often results in dramatic changes within a short distance horizontally or vertically. The tropical forest, ranging from true rain forest to gallery forest and savanna, that occupies most of the lowlands and the Pacific slope covers the largest area, while in the highlands a montane formation of low and often open forest is dominated by pines. Northwestern Yucatan has a dry scrub forest because of its low rainfall, while poor acid soils in coastal Belize and excessive water in the Tabasco plain both result in a savanna grassland. The tropical forest is rich in economically useful trees and plants, utilized by the ancient Maya for food, shelter, and medicine, although its present extent is greater than it would have been in the prehispanic period when population and agriculture were more widespread.

The natural environment of the Maya Area that results from the combination of these factors can be broken down into a series of contrasting environmental zones, each offering characteristic resources and problems to the Maya. The traditional trinal division offered a clear physical frontier between the highlands and the southern lowlands along the northern edge of the Verapaz uplands, although the border between the southern and northern lowlands was always rather vaguely defined, less by changes in forest type or the northern limit of surface drainage than by the cultural criterion of an apparent paucity of sites across southern Campeche and Quintana Roo (which more recent exploration has begun to correct).

Current criteria suggest an initial division into highland and lowland zones, each divided into three major regions. The highland/lowland

frontier runs along the northern edge of the Alta Verapaz and Chiapas uplands; the bulk of the lowland zone lies below 1,000 meters, the bulk of the highland above that elevation (with the Maya Mountains and the Pacific coastal plain the salient exceptions). Vegetation patterns exhibit rapid and dramatic transitions in short distances in the highlands, whereas the lowlands, while certainly not uniform, have large areas of closely related plant assemblages.

The three lowland regions are, from north to south: northwestern Yucatan; central Campeche and Quintana Roo; and the region of surface drainage south of a line from the Laguna de Terminos to Chetumal Bay. The first two of these approximate the traditional northern lowlands; the third, the southern lowlands or central area. The northernmost embraces virtually all of the modern state of Yucatan and northern Campeche: it is flat and low-lying, a karstic landscape with little rain and thin soil supporting a low scrub forest. *Cenotes* are the major water sources, but in spite of these constraints there was human occupation early in the Holocene at Loltun Cave, and settled village life began in the Middle Preclassic, in the second quarter of the first millennium B.C.

The Campeche–Quintana Roo region has little surface drainage, but several lakes lie in folds in the limestone; the gallery and savannah forest is highest in the south and east, and a cultural corridor similarly extends north through Quintana Roo with Classic sites such as Coba being remarkably similar to those of the Peten.

The southern region includes all of Peten and Belize, the lower Motagua drainage in the southeast and the lower Grijalva in the west, and the entire lowland basins of the Usumacinta and the rivers of the Caribbean coast. Its characteristics include high rainfall, abundant surface drainage, and available water for much of the year, with rivers dissecting a rolling topography descending to alluvial plains, and a dominant tropical forest vegetation with areas of gallery forest and savanna. Human occupation of this region also began early in the Holocene on the evidence of finds such as the Ladyville projectile point of generalized Clovis type (see Chap. 2, this volume). Forest clearance and cultivation were initiated by 2000 B.C. and village settlements were present by the late second millennium B.C. at latest.

The three highland regions, the human history of which is dealt with in Chapter 10 of this volume, are the Pacific slope and coastal plain, the volcanic spine along the continental divide in Guatemala and El Salvador, and the ancient metamorphic uplands that lie mainly to the north

of the entrenched upper valleys of the Motagua and Grijalva. The first of these has Preclassic villages earlier than any currently known in the lowland zone; the second supported Kaminaljuyu, one of the major centers of Preclassic Mesoamerica, and was the source of obsidian and other volcanic minerals; and the last, abutting the lowlands, was to some extent penetrated by lowland Maya culture and peoples. Although the highland zone did not develop a culture to match that of the Classic Maya in terms of monumental architecture and sculpture, vase painting, and other sumptuary arts, it remained an important source of resources and maintained close ties with the lowlands throughout the prehispanic period.

That period is, like the geography of the area, traditionally divided into three parts after the end of the Archaic and the beginnings of village settlement: the idea of a Classic Period, flanked by an earlier Preclassic and a succeeding Postclassic, is one developed in the Maya Area and extended by scholars to the rest of Mesoamerica. The Classic was defined as the time during which monumental stone inscriptions were carved and erected in the lowlands, especially in the southern part, using a hieroglyphic script and a method of reckoning the passage of time known as the Long Count. The most striking feature of the latter is that events are dated to the precise day, so that with an acceptable correlation between the Maya and Christian calendars we can accurately place any event recorded in the inscriptions; the correlation most widely accepted places the Maya date 11.16.0.0.0. on November 12, A.D. 1539, and the Classic period of 8.10.10.0.0–10.4.0.0.0 between about A.D. 250 and 900. The earliest Long Count date presently known from the Maya lowlands is one of 8.12.14.8.15, equal to July 6, A.D. 292, on Tikal Stela 29, and the latest is 10.4.0.0.0., January 18, A.D. 909, on Tonina Monument 101. In each case the Arabic numerals are a convention for expressing the cumulative passage of days since the base date of the Long Count in 3114 B.C. (well before the earliest settled villages in Mesoamerica, and probably representing the most recent creation of the world): Tikal Stela 29 records, using a bar for the number 5 and a dot for 1, and with vertical positional notation to differentiate values, a date 8 *baktuns* of 144,000 days, 12 *katuns* of 7,200 days, 14 *tuns* of 360 days, 8 *uinals* of 20 days, and 15 *kins* or single days from the beginning of the great cycle that will end at 13.0.0.0.0 on December 21, A.D. 2012.

Until the development of radiocarbon dating forty years ago, the Long Count was the only absolute chronology in the prehispanic New World:

trade items in secure contexts and stylistic similarities were used to extend it across the rest of Mesoamerica, but before the first millennium A.D., chronology was a matter of guesswork. The Classic period was held to follow on from a Preclassic or Formative, during which village farmers laid the foundations for subsequent developments; the beginning of the Preclassic, and the end of an assumed Archaic phase during which a gathering-and-hunting rather than agricultural economy supported the sparse population of Mesoamerica, was placed around 2000–1500 B.C. Radiocarbon dating has provided a more detailed chronology for the Preclassic and Archaic, and strong support for the accepted calendric correlation of the Classic, while still presenting problems in the tropical environment. The Classic was followed by a Postclassic, from A.D. 900 to the Spanish Conquest in the sixteenth century: in western Mesoamerica, especially in the Toltec and Aztec realm of central Mexico and the Zapotec–Mixtec province of Oaxaca, noble genealogies were preserved in screenfold codices and oral traditions. The Maya Area probably had similar records, but many codices were destroyed soon after the Conquest, and much of what we can reconstruct from nonarchaeological sources comes from the convoluted and gnostic texts of the various Books of Chilam Balam.

Settled life began in the Maya lowlands some time before 1200 B.C.: vegetation disturbances recorded in pollen cores from lakes in the Peten and swamps in Belize, and a number of radiocarbon dates from different sites suggest activities including cultivation of maize perhaps as early as the middle of the third millennium B.C. Dating studies at Cuello now indicate that the first sedentary occupation there was around 1200 B.C. The pottery and other items of material culture from the initial occupation at Cuello are not, however, in a tentative or experimental tradition, but an established and recognizably Maya lowland one that strongly suggests antecedent settlement of the region. Although a millennium later than the initial dates suggested, Cuello remains the earliest Maya lowland site, although nearby Colha and K'axob have yielded comparable Middle Preclassic structures and ceramics.

The Swasey phase at Cuello is dated to 1200–900 B.C.; although the initial occupation has only timber-framed houses built directly on the soil, low plaster-surfaced platforms with rubble fill were built shortly afterward, and by 1000–900 B.C. these stood up to 20 centimeters high and had a regular apsidal plan. Structure 326, almost completely exposed in the 1980 excavations at Cuello, was about 8 by 4 meters, with the



Figure 5.1. Structure 326 at Cuello, Belize, seen from above: a Middle Preclassic house platform of c. 900 B.C., apsidal in plan and with a timber-framed superstructure indicated by postholes. The walls would have been of thin poles plastered with daub, and the roof of palm thatch.

postholes of an apsidal superstructure (Fig. 5.1). Daub fragments show that the walls were of parallel thin poles tied with vines and covered with clay, which was smoothed and sometimes given a white lime wash. By the end of the Swasey phase such houses were clustered around a plaster-floored patio 15 meters across; hemispherical hearths lined with clay, stones, or sherds were set into both patio and platforms, and the dead were interred beneath the floors of houses. The earliest lie in simple graves, supine and with few or no grave goods.

Intensive screening and flotation of occupation deposits yielded numerous carbonized plant remains, including seeds, fruits, roots, and wood charcoal. Maize was abundantly present from the earliest layers, and showed a secular increase in cob diameter (hence, arguably, cob length and overall productivity) from Swasey through Cocos Chicanel times; most significantly, it was already adapted to the humid tropical lowland environment, suggesting an earlier introduction from the highlands. The high percentage of forest tree species in the Swasey phase indicated relatively little disturbance of the natural cover and a long fallow cycle;

forest species also provided food, and timber for construction and other purposes. Other cultivated plants included manioc (cassava) and other root crops, squashes, small-seeded varieties of bean and chile pepper (the latter within the wild size-range). Scarce fragments of cacao tree charcoal suggest utilization of wild stands rather than cultivated groves. Toward the end of the Swasey phase a decrease in forest tree charcoal, an increase in successional species, and a rise in mollusk species associated with an open or disturbed rather than forest environment suggest an increase in farming activity within a long-cycle economy.

The artifacts recovered from Swasey-phase contexts include chalcedony and chert bifaces, scrapers, and a T-shaped tool of unknown function; some of the chert comes from a zone to the east where the major workshops of Colha developed later in the Preclassic, and may well have been imported from that locus, 27 kilometers away, but most of the chipped-stone industry is on local and microlocal siliceous stone.

Pottery of the Swasey ceramic complex, defined in 1975 by Duncan Pring and refined by Laura Kosakowsky in 1980, is dominated by red monochrome open dishes and bowls of the Consejo group, decorated with simple grooved and incised circumferential lines. Around 90 percent of the pottery is slipped in red, orange, or black, with a few sherds in other tones that may be experimental or accidental firings. Plain jars have a striking squared lip and double-cylinder handle, and some unslipped vessels have pattern burnishing on the body. The overall impression is of an established, not a tentative, ceramic tradition and one that is distinctively lowland Maya, with no close ties to the Gulf Coast Olmec region to the west and relatively loose ones with the Maya highlands to the south.

The succeeding Bladen phase (900–600 B.C.) has pottery related both to Swasey and to that of other parts of the Maya Area, including the Xe sphere in the Pasion basin and the Eb complex at Tikal. There are also some parallels with highland ceramics, especially in Verapaz. Decorative techniques become more elaborate, including dichromes and, toward the end of Bladen, negative organic resist designs.

The first imported commodities appear in late Swasey and Bladen, with sandstone *manos* and *metates* from the east side of the Maya Mountains, 150 kilometers south, as the earliest evidence for long-distance procurement. Obsidian appears in late Bladen contexts (although the earliest fragment, from the San Martín Jilotepeque source, yielded a hydration date of c. 1100 B.C. and was redeposited in Bladen fill), as does

jadeite. The latter, most often in the form of beads from burial contexts, includes several pieces of a blue rather than green color; one such is of a “spangle” shape matched at La Venta, another a jade imitation of a magnetite mirror. The green jades are small but of brilliant color, and probably come from sources in the Motagua Valley of Guatemala; some of the earliest are found with child burials, along with numerous carefully made shell beads, suggesting an acquisition of exotic goods by family membership rather than personal achievement.

Burial rites were simple and fairly uniform, with most individuals interred below the floors of buildings in single graves, accompanied by one or more pottery vessels and personal jewelry; nothing beyond the well-stocked childrens’ graves suggests social ranking, although it must be noted that some Bladen-phase buildings at Cuello are much larger than others, attaining a length of 11.5 meters.

Other sites were occupied by 600 B.C., including Colha and K’axob, where a similar degree of cultural complexity has been documented; Bladen (or Swasey)-sphere pottery has also been found at Nohmul, San Estevan, El Pozito, Becan, and Santa Rita Corozal, all subsequently prosperous Late Preclassic communities exploiting the limestone ridges and bordering wetlands of the eastern central lowlands. Broad links to the pottery of the Belize Valley, Eb-phase Tikal and the Xe sphere in the Pasion Valley indicate widespread village settlement across the central lowland area, although the early Middle Preclassic deposits at most of these sites are deeply buried under later construction and are not well known.

The subsequent period (600–400 B.C.), in which Mamom-sphere pottery is found across the entire lowland zone, is rather better understood, although until recently, excavated material was sparse. Regarded as a phase of simple village settlement as recently as the 1970s, Mamom now appears to be a period when major developments took place in Maya society. The uniformity of the waxy monochrome and dichrome ceramic fabric and vessel forms is striking, arguing for a high degree of interaction between regions as distant as northern Yucatan (Nabanche complex at Dzibilchaltun), the southern Peten (Escoba at Seibal) and Belize (Lopez at Cuello): a common set of ideas about material culture is accepted across the lowlands and into the highland zone, where clay figurines from Chalchuapa match those from the Peten and Belize. Broader similarities exist with other Middle Preclassic cultures to the west: recent consideration of the Olmec phenomenon suggests that it

consists of a set of regional traditions sharing some common Mesoamerican ideas and images, and that the Xe- and Mamom-sphere Maya fit into that cultural landscape. Although monumental architecture and sculpture are documented in western Mesoamerica from at least 1350 B.C. onward, similar developments in the Maya Area seem to begin later. There is as yet no known distinctively public architecture from Xe: the earliest buildings that are nondomestic in format date from around 600 B.C. at Altar de Sacrificios and Tikal, and perhaps a century later at Komchen. Large structures of Mamom date from Nakbe, Rio Azul, and Wakna (Güiro) suggest that the organization of society and the marshaling of human and material resources had by 400 B.C. reached the level of a complex chiefdom; although no complete site-layout of this period has been disentangled from later accretions, small centers such as Cerro Ortiz and settlement patterns deduced from survey and excavation data at Seibal, Cuello, and elsewhere indicate a hierarchy of community size and complexity.

Such a view articulates well with the dramatic revision of our understanding of Late Preclassic Maya society that has occurred over the past two decades. This period (400 B.C.–A.D. 250) was also perceived as one of simple village communities, until data from the Tikal project in the late 1950s showed that many of the criteria used to define Classic Maya civilization applied equally to the last centuries of the Preclassic. Masonry superstructures, vaulted roofs, polychrome ceramics, stone stelae, and the use of hieroglyphic writing and bar-and-dot dot numerals were all found to exist before the third century A.D., and unappreciated earlier discoveries such as the elaborate Holmul I pottery and Uaxactun Str. E-VII-Sub fitted into this new pattern. The settlement evidence for large and quite dense communities from the mapping of Tikal and Seibal corroborated this, as did the regional survey of northern Belize, showing both that every site of subsequent Classic period importance had been occupied by the Late Preclassic, and that occupations of this period were four times more frequently encountered than those of the Mamom phase.

Projects at several sites documented the nature of Late Preclassic Maya culture: at Cuello, never a major center, the Middle Preclassic ceremonial precinct around a small courtyard was engulfed c. 400 B.C. by a massive open platform, the construction of which involved interment of numerous human sacrifices. Associated carved-bone tubes bearing the *pop* (woven mat) motif, which in the Classic period signified regnal power, indicated that the reality of political authority was now complemented

by its symbolic expression. At Cerros, also in northern Belize, occupation was almost solely confined to the Late Preclassic and revealed substantial public architecture, including a ceremonial precinct built in one massive operation over a preexisting village. One of the smaller pyramids was decorated with elaborate polychrome masks of complex imagery, matched at El Mirador, Lamanai, and Uaxactun, while a dedicatory cache included a set of jade deity heads replicated at Nohmul: a supraregional iconography reflecting a shared belief system existed by the second century B.C., interpreted for Cerros, at least, as devoted to the reinforcement of the ruler's authority.

Cerros also had an enclosing canal some 1,200 meters long and up to 6 meters wide, dating to 200–50 B.C. and associated with a small cluster of drained fields. This impressive public work was, however, dwarfed by the water-control features found on the far side of the lowlands at Edzna, where a canal 12 kilometers long ran south from the ceremonial precinct toward the Rio Champoton. At its northern end lay a moated platform, probably ceremonial rather than defensive in function, with the shallow moat up to 100 meters across and its excavation yielding some 253,000 cubic meters of fill for construction of the ceremonial complex. Fanning out from the north side of the center of Edzna were seven shorter canals that fed reservoirs and allowed canoe traffic within the community. An estimated 1.7 million person-days went into the excavation and construction at Edzna, which took place between 200 B.C. and A.D. 100 and provided some 2.25 million cubic meters of water storage.

The Preclassic water-management facilities at Cerros and Edzna show a high degree of labor organization, although the numbers involved at any one time may not have been vast. Similar terrain modification was used in the creation of drained fields along the margins of wetlands such as Pulltrouser Swamp, and across enclosed areas like the Bajo de Morocoy in nearby Quintana Roo, but the evidence for dating these to the Preclassic is equivocal; the same must be said for hillside terracing, bringing steep areas into cultivation: the technology for creating artificial econiches to support intensive agriculture, widespread in the Classic period and in some loci certainly of Early Classic date, cannot in any substantial way be placed earlier than A.D. 300 on current evidence.

Organizational complexity in Late Preclassic society can, however, be argued in the production, as opposed to subsistence, economy. Some of the best evidence for this comes from the chert-tool factory at Colha, where at least thirty-two of the eighty-nine workshops were functioning

at this time. A limited range of tool types, including large oval bifaces, tranchet adzes, and stemmed “daggers” made on large flakes of brown and gray chert was produced in very large numbers: the distinctive “orange peel” waste flakes from the final edging of adzes suggest that more than two million of these were made, while the debitage deposits at Colha are up to 1.5 meters deep. Such output is in excess of that required locally, and Colha-type chert tools have been found at many sites across the eastern lowlands, as far west as El Mirador: taken with the evidence for obsidian distribution from the El Chayal source, a regional rather than community economy is indicated.

The communities themselves were larger, denser, and more internally complex: at Komchen a nucleated settlement of some 3,000 people occupied only 2 square kilometers, with a central plaza 150 by 80 meters enclosed by five large platforms and a *sacbe* leading out to a sixth. At Nohmul, somewhat later, a plaza 130 meters on a side was dominated by an acropolis 10 meters high and covering 6,000 square meters, built in a single operation; more than 100,000 cubic meters of quarried limestone and marl fill were used in the East Group of Nohmul, which was linked by a *sacbe* to a smaller coeval western complex. Similar massive investment of labor and material has been documented in Groups A and D at Seibal, in Structure 2 at Calakmul and Structure N10-43 at Lamanai, at Nakbe, in the “Lost World” zone of central Tikal, the possibly 25 kilometers of defensive ditch and parapet at Tikal, and the defensive ditch and rampart around central Becan with its circuit of 1.9 kilometers. Dwarfing all of these, however, are the colossal buildings of El Mirador: the ceremonial core covers an area 1 kilometer by 800 meters, and within it the El Tigre and Monos pyramids, erected c. 150 B.C., rise up to 55 meters and each contain more than 250,000 cubic meters of fill. Two kilometers east of El Tigre, the Danta Pyramid, rising on top of hillside terraces more than 300 meters wide, is arguably the tallest construction ever built by the Maya. Excavations show that many buildings were painted red; Structure 34, adjacent to El Tigre, had deity masks flanked by huge jaguar paws similar to those at Cerros. This cosmological symbolism is complemented by evidence of astronomical observation: from El Tigre in certain years around the vernal equinox Mercury, Mars, Jupiter, and Saturn all appear to rise out of the Danta pyramid. In addition, the solar observatories typified in the Early Classic by Uaxactun Group E and the Lost World complex at Tikal may well have Preclassic antecedents. Other special-purpose structures in use by the Late Preclassic

probably include ballcourts: two sets of parallel buildings at Cerros have been thus interpreted, and a Preclassic construction certainly underlies the Classic ballcourt at Colha.

Another feature of Classic Maya civilization now known to have occurred during the Late Preclassic is the erection of stone stelae: a plain shaft set in front of Structure 350 at Cuello (Stela 1) dates to c. A.D. 100, while carved monuments bearing a standing figure occur at El Mirador (Stelae 2 and 4, the former with a hieroglyphic text) and Nakbe. The looted "Hauberg Stela" has a date read as equivalent to A.D. 197 (although stylistically later), and the rock carvings at Loltun Cave and San Diego are stylistically Preclassic in date, with traits found also on the jade Pomona flare, of c. A.D. 100, and on various unprovenanced jades, some inscribed. Possibly the earliest lowland monument is Polol Altar 1, where the composition of twin ruler figures flanking an Initial Series date matches that on Abaj Takalik Stelae 2 and 5, the latter of A.D. 126. Thus the collocation of the stela format, the ruler image, hieroglyphic text, and Initial Series dates probably begins no later than the early second century. Texts remain short in the Maya lowlands, in comparison with those from the Pacific slope (Chalchuapa Stela 1) and the Gulf Coast (La Mojarra Stela 1 [A.D. 159] and the Tuxtla Statuette [A.D. 162]), as late as the Early Classic: Tikal Stela 29, at 8.12.14.8.15 (A.D. 292) still the earliest legible Initial Series monument in the lowlands (see Fig 5.4), has a text including little beyond the date and the ruler's identity; the same applies to the Leyden Plate and the early stelae of Uaxactun.

The palpable complexity of Late Preclassic Maya society has marginalized an earlier debate about the existence and nature of a "Protoclassic" period. This can now be seen as simply the period in which traits formerly thought characteristic of the Classic first manifested themselves within Late Preclassic culture. The polychrome pottery of Holmul I and Nohmul is known to be widely distributed, but uncorrelated with other postulated indices of complexity such as vaulted stone architecture and dated stone monuments. The excavations of the North Acropolis at Tikal, and more recently in the Lost World group there and at Rio Azul in northeastern Peten, have shown unbroken development through into the Early Classic. Previously advanced theories of population replacement, elite invasion, or other drastic causes of culture change lack support from these investigations.

Nevertheless, there are clear cultural changes at the beginning of the Early Classic, c. A.D. 250, which still justify the definition of a new

period in Maya history. The prime innovation is indeed the transition from a society that we perceive as prehistoric owing to its lack of surviving written records, to one where historicity is proclaimed on hundreds of monumental inscriptions. Of some 250 Early Classic carved monuments, more than 200 are inscribed and about 170 bear Initial Series dates within the period 8.10.0.0.0.–9.8.0.0.0. (A.D. 238–593). The initial concentration is in the northeast Peten, especially in and around Tikal: in Baktun 8 their distribution reaches south and west to Polol and El Peru, north to Balakbal and east to La Sufricaya in the vicinity of the noted Terminal Preclassic site of Holmul (where at Cival there is also an undated stela in Preclassic style). The number of monuments for any dedicatory date is three or fewer, the total per *katun* at most half a dozen: only after 9.0.0.0.0. (A.D. 435) do we find a substantial and sustained increase in monument dedication. The same is true of the appearance of Emblem Glyphs, designators of proclaimed polity identification: only Tikal and El Peru (with a single occurrence at Bejucal) initiated the use of EGs before 9.0.0.0.0., but another sixteen centers adopted them by 9.8.0.0.0. in an area from Tonina in the west to Copan in the southeast. The size of polities, so far as can be judged from the distances between coeval centers claiming autonomy, is less than 2,000 square kilometers and remained so, with a few short-lived exceptions in the Late Classic, throughout the Classic period. An alternative hypothesis discounts many such claims, and argues for fewer and much larger regional states; those of Tikal and Calakmul do indeed appear on epigraphic evidence to have held greater sway than many other polities.

While monument chronology, and that of associated buildings and offerings, is fairly secure, the looser chronology based on ceramic sequence has been called into question. The division of the Early Classic at Uaxactun, the first lowland sequence to be elucidated, into three successive phases of the Tzakol ceramic complex, each spanning a century of the period A.D. 300–600, was for several decades assumed to apply throughout at least the southern lowlands; as a result, a paucity or absence of Tzakol pottery (as at Seibal) was taken to denote a corresponding lack of occupation. Such an apparent depopulation after the florescence of the Late Preclassic was documented at numerous sites before it was suggested that earlier Tzakol pottery, at least, may well have been of limited spatial distribution, concentrated in northeastern Peten and paralleled elsewhere by other ceramics, including a persistence of Chicanel and Holmul I modes from Preclassic times. Assessment of both Late

Preclassic and Early Classic settlement patterns and demography will be inhibited until this problem is resolved.

Knowledge of Early Classic architecture and settlement is also limited by the superimposition at many sites of Late Classic structures: the best data at present come from two recent major projects in the northeast Peten, at Tikal and Rio Azul. The Tikal discoveries come from the North Acropolis and from the earlier "Mundo Perdido" group in the southwest of the site core, centered on the large pyramid 5C-54 and the line of buildings 5D-84-88 facing it from the east side of the plaza. The locus was occupied from Middle Preclassic times onward, including the initial phases of the pyramid and the eastern platform, which are interpreted as a prototype astronomical observatory similar in function, and by the Early Classic in form, to that in Group E at Uaxactun. Successively larger versions of the pyramid acquired multiple terraces and elaborate masks, and the eastern platform bore three temples by the final phase of the Preclassic, when the entire plaza area was enlarged and remodeled. Ritual burials marked the dominant east-west axis of the group, and in the fourth century A.D. it became the locus for elite burial, perhaps of the "Jaguar Paw" ruling lineage; Burial PNT-021 in Structure 5D-86-5 is suggested as the interment of the ruler on Stela 29, and the Stela itself may have stood on a low platform in the plaza below that covered a mass sacrificial burial. Stela 39, dated to 8.17.0.0.0 (A.D. 376) and commemorating the ruler Jaguar Paw Skull I, was found redeposited in a later phase of Structure 5D-86; he may be buried in tomb PNT-019, while other lineage interments were placed in the flanking Structures 5D-84-6 and 88-6. Pyramid 5C-54 was by this time some 31 meters high, with ten terraces, outset stairs, and many of the traits of Classic period northeast Peten architecture; it also incorporated, however, large *tableros* as part of an architectural eclecticism drawing on ideas from western Mesoamerica and Teotihuacan that is even more strikingly expressed in the neighboring Structures 5C-49, 51 and 52.

Evidence of a competing elite lineage has emerged from excavations in Group 6C-XVI, an elaborate residential complex some 350 meters south of the Mundo Perdido. *Talud-tablero* architecture and corniced balustrades show strong external influence in the group's design, matching those seen on Stelae 4 and 31 in the North Acropolis. A monument in the form of a disk set atop an orb and cone on an inscribed pillar, erroneously dubbed a "ballcourt marker" from its similarity to the monument from La Ventilla at Teotihuacan, dates to 8.17.1.4.12 11 Eb 15 Mac

(A.D. 378) and apparently commemorates the death of Jaguar Paw Skull I and the inauguration of Smoking Frog as the fourth ruler of Tikal and founder of the dynasty that included Curl Nose and Stormy Sky in the following century. Uaxactun seems to have come under Tikal's control, and some of the elite burials there excavated in the 1930s have been identified as members of this lineage in the fourth and fifth centuries: the growth of the A-V temple/palace complex paralleled that of the dynastic architectural ensembles at Tikal and elsewhere. The placing of three buildings in a closely spaced triad around an open space, first seen in the Late Preclassic at Lamanai and elsewhere in the eastern lowlands, it has been suggested, reflects the presence of three dominant lineages in these communities.

At Rio Azul, some 60 kilometers northeast of Tikal, an allied lineage ruled, although the center possessed its own Emblem Glyph and was certainly the major power of its time in the region. Some 729 major structures of the period A.D. 400–550 lie along an artificially leveled ridge bounded by the wetlands, some containing drained fields. Substantial settlement surrounded the site core, and satellite centers such as BA-20 yielded evidence of economic specialization. The layout of Rio Azul is similar to that of Late Classic sites in the region, with the principal temple and palace groups linked by paved plazas and causeways, interspersed with minor palaces and housemound clusters (Fig. 5.2): the Classic community pattern can thus be dated back to at least the fourth century. Here, as elsewhere in the southern lowlands, Preclassic patterning is obscured by later occupation.

Four classes of residence were defined and investigated, the upper two (large and small palaces) being confined to the center of Rio Azul. The third, of well-built houses on platforms, with perishable superstructures, and the fourth, perishable and on low crude platforms, were found throughout the settlement, although the highest-status dwellings also occupied the high points in the landscape where breeze and drainage made life more pleasant. Class I (4% of the total) and II (8%) residences were larger, suggesting that the ruling elite lived in extended families, probably with servants also. Class III households (31%) were those of farmers, and Class IV (57%) of laborers, governed by a feudal system of obligation. The Early Classic population is estimated at 3,500, with a density of 2,700 per square kilometer within the site and virtually no rural population. After a sixth-century decline the level rose again by the early eighth century, with a rural population at BA-20 of about 300 per

square kilometer, before final depopulation by A.D. 880. The high degree of Early Classic nucleation may be the result of Rio Azul's postulated frontier-fortress role, although so few sites of this period are well known that normality cannot yet be defined.

Nine major groups of elite residences and associated funerary temples form the core of the site; some of the latter were embellished with stucco decoration. Structures A-2 and A-3 in particular yielded important fourth-century material, including column altars with bound captives. The social hierarchy is reflected in a series of painted tombs of the early fifth century A.D., of which Tomb 19 was unlooted and showed what a noble burial of this period was like. Among its contents were gauzy textiles and vessels imitating the coeval ceramics of Teotihuacan and containing traces of cacao; one of the latter bears statements of function and ownership. Tomb structure and paintings suggest that Early Classic religion emphasised ancestor veneration and the power of natural forces, including the deities of sun, rain, and storms. Tomb 1 had elaborate murals and a glyphic text recording the birth in A.D. 417 and Tikal royal ancestry of its occupant: the occupants of adjacent Tombs 19 and 23 are thought to be from Teotihuacan. Marine shells from the Gulf Coast indicate the likelihood of canoe traffic down the Rio Hondo and around Yucatan en route to Teotihuacan's own coastal ports in Veracruz, probably shipping Maya cacao among other commodities. The Early Classic history of the city ended, perhaps in war, c. A.D. 530.

Text and image suggest that an independent Rio Azul was conquered by Tikal c. A.D. 385, and that the tombs and temples are those of the imposed dynasty and its Teotihuacano allies. Such a link with the central highlands of Mexico has been detected in several other southern lowland Maya sites, including Tikal, Yaxha, Uaxactun, Becan, Nohmul, and Altun Ha, going back to the third century A.D. and lasting into the fifth. The nature of the evidence for Teotihuacan penetration varies greatly: at Tikal several major buildings in the Lost World group are in *tabud-tablero* architectural format, and some monuments (e.g., Stela 4) and grave goods (e.g., Burial 10) present a mediated Teotihuacan art style. At both Becan and Altun Ha offerings, including pottery vessels and green Pachuca obsidian, were made in a manner implying direct knowledge of Teotihuacan ritual practice, while at Nohmul imported green obsidian was also present but the Teotihuacan-style pottery was locally made. This Teotihuacan impact has been used to define a "Middle Classic" period in the fifth and sixth centuries, although the precise strength and nature

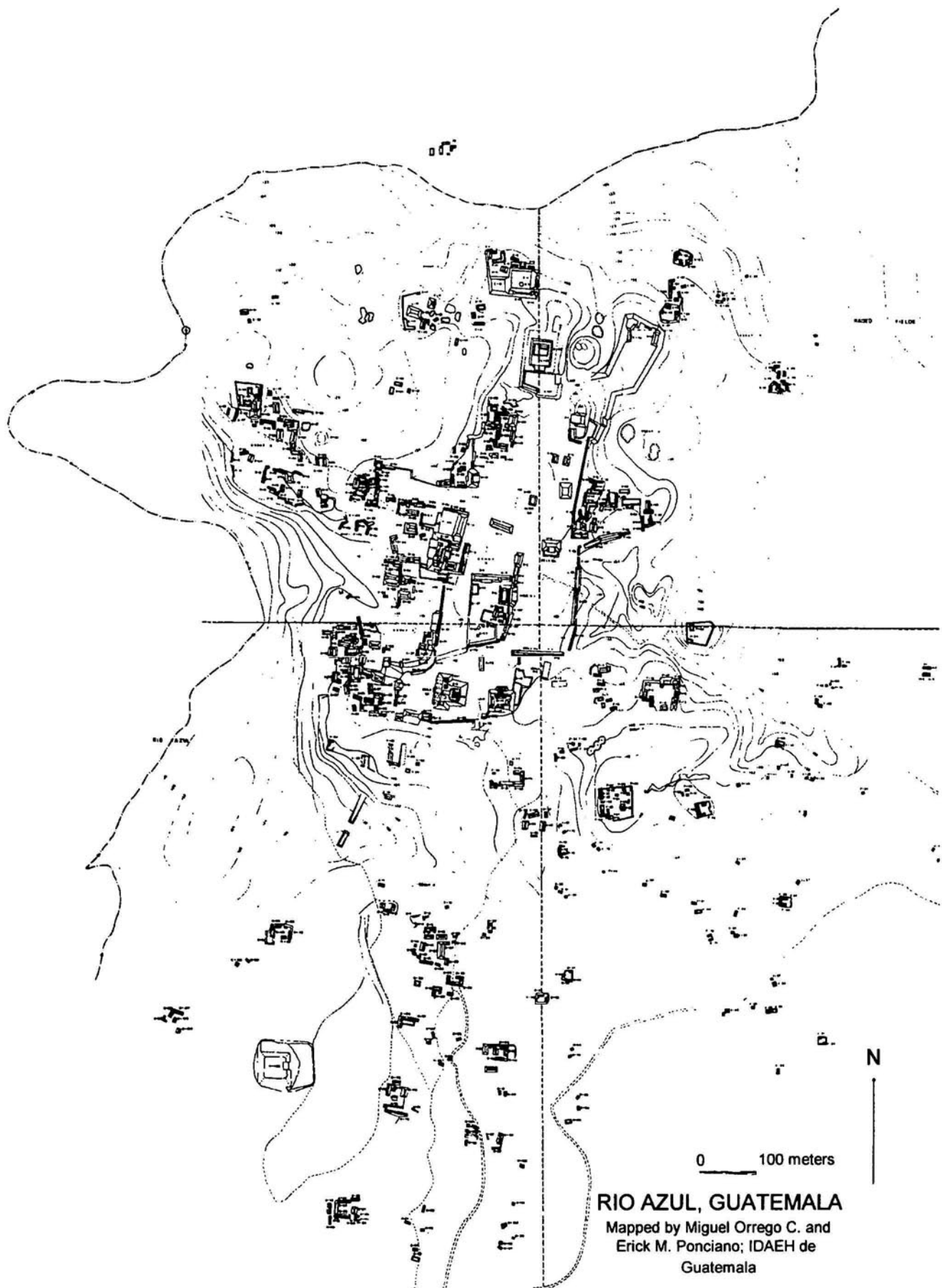


Figure 5.2. Rio Azul: an Early Classic city.

of the influence exertable by a city, however powerful, 1,000 kilometers away is hotly debated. Direct military intervention seems unlikely, and trade goods apart from rather small quantities of green obsidian and some pottery vessels have not been found: similarly, the quantities of Maya material found in the “Merchants’ Barrio” at Teotihuacan are small. But the high social level at which penetration occurred argues for contact between the Maya and Teotihuacano elites, and must be fitted into a pattern of subsequent highland – lowland contacts that resulted in, among other monuments, the reliefs at Xochicalco and the murals of Cacaxtla.

This Middle Classic also embraces the phenomenon of the “Hiatus,” a period of sixty years (A.D. 534–93; 9.5. – 9.8.0.0.0) when few dated monuments were erected in the central Maya lowlands, although cities around the margins continued, and in some cases began, to dedicate stelae. The Hiatus was especially marked at Tikal, where the stela tradition was already nearly 250 years old; it was especially remarked because of the concentration of research at Tikal in the 1960s, and taken to be a broad processual phenomenon perhaps comparable with the ninth-century collapse of Classic civilization. More recent research, including both the decipherment of texts and the exploration of the cities of Calakmul in southern Campeche and Caracol in western Belize, suggests that the Hiatus and its localized persistence into the seventh century was a political event. This turmoil appears to have been caused by Calakmul’s attempt to encircle Tikal with a series of alliances with other polities, including El Peru, Dos Pilas, and Caracol.

The end of the Hiatus marks the beginning of the Late Classic, the apogee of Maya civilization between A.D. 600 and 800. It is from this period that the bulk of our evidence for Maya elite and commoner culture comes: the population reached its greatest size and density, and earlier monumental architecture is, in most Late Classic cities, largely buried by constructions of this period. The site maps and visual reconstructions with which we are familiar are in essence palimpsests dominated by Late Classic data.

The transformation of our knowledge extends far beyond the visible remains of Classic cities, however: one of the most dramatic reevaluations has been of ancient Maya subsistence agriculture. The traditional model was that prehispanic farming was similar to that practiced in colonial times: a *milpa* field would be cut from the forest every year or two at the beginning of the dry season in January, the felled bush allowed to dry

until the rains were expected, and then burned. Maize kernels, mixed with black beans and squash seeds, were planted in scattered holes poked with a stick through the ash layer into the soil. Over the summer the field was weeded, and in the fall of the crop harvested and stored to keep the family going over the rest of the year. Sometimes early or late minor corn crops were planted as insurance: but maize grown in the annual *milpa* was the basis of subsistence, contributing as much as 75 percent of the diet.

After one or two seasons the *milpa* would be abandoned, because of perceived soil depletion and weed competition. The land was allowed to revert to *huamil* (second growth) and was not reused for agriculture for ten to fifteen years. Thus a family needed to have considerably more land in reserve than was under crop at any one time, and since like all farmers they needed to live close to their fields, settlement tended to be fairly scattered and villages small.

The model of Maya settlement that stemmed from this understanding of prehispanic farming was, therefore, one that precluded urban concentrations: the “empty ceremonial center” model promulgated by J. Eric S. Thompson and Sylvanus G. Morley from the 1920s until well after World War II was based partly on this and partly on the observed settlement patterns of the Maya highlands, where a municipal center with its *cabildo* (town hall) and church would have almost no adjacent houses: these were scattered across the surrounding terrain in clusters, each housing related family groups and based on a common water source. The ethnographic work of the Harvard Chiapas project under Evon Z. Vogt, Jr., in communities such as Zinacantan was particularly influential in maintaining the power of the empty-center model for Classic Maya civilization even when archaeological evidence on settlement and subsistence began to raise serious questions about its validity.

The existence of dense settlement had been proposed at Uaxactun by Oliver G. Ricketson in the 1930s, and as ribbon development along the Belize River by Gordon R. Willey in the 1950s, but it was only with the mapping of Tikal that the potential size and density of a major Maya city became apparent. Dense suburbs spread out from the center – well known since the nineteenth century – for miles, with clusters of house platforms too closely spaced for sufficient *milpa* land to lie around them. A transect north from Tikal to Uaxactun, 18 kilometers away, showed that while the density of habitation diminished away from one center, it rose again toward the other, with no broad belt of open terrain. A second

transect southeast from Tikal to Yaxha confirmed this, while the discovery of yet another major site, El Zotz, some 20 kilometers to the west made it clear that the the supposed wide-open spaces between the Maya centers were in fact filled with hungry suburbanites. The extensive *milpa* regime of historic Maya communities was, it seemed, a least-effort response to low overall population size and density, with land an unconstrained resource: Classic period agriculture must have used land more intensively.

One obvious solution was a lower fallow ratio, allied to a higher labor input for weeding and perhaps mulching to maintain soil fertility: recent studies at Copan suggest that such short-fallowing was for a time a solution, but that it eventually resulted in land degradation. The *milpa* field itself could accommodate a wider range of crops: roots such as sweet potato (*Ipomoea batatas*, *camote*), manioc (*Manihot esculenta*, *cassava*), cocoyam or *Malanga* (*Xanthosoma* sp.), and jicama (*Pachyrhizus erosus*) could be grown beside maize, beans, and squash, providing bulk starch staples.

Among the most imaginative responses was Dennis Puleston's notion that the seeds of the common breadnut tree (*Brosimum alicastrum*, or *ramon*) were a prime carbohydrate source; experiment showed that a single tree could yield several hundred kilograms, that they were nutritious and could be stored in artificial *chultun* chambers dug into bedrock. *Ramon* trees were especially common around Maya ruins, and Puleston suggested that they descended from ancient orchards. Botanical study showed that its close relationship to ruins was one of postabandonment colonization, however, and flotation studies of ancient middens have not yielded *ramon* seeds, or even charcoal: the historic Maya view of *ramon* as a famine food would seem to have held in prehispanic times as well.

Certainly intensive collection of forest fruits and seeds could have augmented the Maya diet: charcoal and carbonized seeds from Late Preclassic Cuello showed that avocado, guava, and mamey were among a dozen tree crops. Surveys at Coba in northern Quintana Roo showed that economically useful trees were more frequent around ancient house sites, and across the Classic settlement area as a whole, than would be expected in a natural forest. Orchard crops such as cacao were also grown or gathered: silviculture, either as the result of deliberate planting or selective culling that led to a gradual rise in the density of useful trees, may have made a greater contribution to the Maya diet, and to short-distance trade, than hitherto envisaged.

The question of supplying the cities with enough basic foodstuffs remained: in the early 1970s evidence began to accumulate that artificial econiches were developed by the Maya to complement simpler farming techniques. Hillside terracing had been reported decades earlier but had lacked perceived relevance: the documentation of high population densities at Tikal and elsewhere led to suggestions that such terraces had been constructed to make steep hillslopes cultivable, while also acting as silt traps and countering erosion. Studies at Becan showed that both of these functions would be fulfilled, but also that some of the slopes terraced were quite shallow in comparison with *milpas*, and that downslope walls were as frequent and as well built as the terraces themselves. Since these seemed to function primarily as property lines, implying assertion of ownership, intensive or even continuous use of the land appeared likely. Although terracing around Caracol begins by the Early Classic, most dated instances are of the Late Classic.

A second type of artificial econiche was constructed in the wetlands along river valleys and in swamps, by digging drainage canals to carry off surplus rainfall and provide fertile silty soils just above the water table. Such “drained fields” had been long known in South America, but were not reported in the Maya lowlands until 1972. Many further reports followed, especially in northern Belize, where study of Pulltrouser Swamp suggested that two kinds of fields had been created: one, on the edges of wetlands, was simply drained of excess rain at the end of the wet season, leaving a damp, fertile surface for an early dry-season crop. The other, defined as “raised fields,” were further into the swamp and had been built up above the water table by the addition of marl and earth fill. Such fields would have been potentially cultivable year-round in the manner of the *chinampas* of Aztec times, and could have supported some nineteen persons per hectare. The Pulltrouser Swamp fields lay on the eastern margin of the major community of Nohmul, and could have supported its Late Preclassic or its Terminal Classic florescence; but fields on the western side, in the Rio Hondo Valley, seem to date to the later period only. The drained fields near Rio Azul are believed to be of Early Classic date.

That Preclassic drained fields existed is demonstrated by those at Cerros, integral with the canal network surrounding the center, and by radiocarbon dates from canals at San Antonio Rio Hondo suggesting Middle Preclassic construction. The use of airborne radar revealed numerous networks of potential canals and associated fields in northern

Belize and adjacent areas, and several of these were confirmed by surface investigations. At present, controversy continues on whether enclosed, as well as riverine, swamps were widely drained for cultivation, with positive data reported from the Bajo de Morocoy in Quintana Roo and ambiguous results from the *bajos* around Tikal and El Mirador. The overall extent of wetland drainage and its contribution to the ancient Maya economy is also debated, with earlier optimism that this answered the problem of how the cities fed themselves now tempered by the realization that drained fields do not occur everywhere, and not necessarily in proximity to the largest cities or in large agglomerations; it has even been suggested that large-scale shipping of foodstuffs from producer to consumer areas took place, using canoes.

Wetlands are also believed to have played a part in boosting protein supplies: fish and turtles could have been farmed in the canals, and edible *Pomacea* snails collected from damp ground; the frequency of snail shells and turtle remains at Cuello suggests more intensive than random exploitation of these resources. Marine fish was heavily exploited around the coasts, and perhaps shipped inland as dried or salted fillets.

The bulk of Maya animal protein intake came from mammals, however, with white-tailed deer (*Odocoileus virginianus*) providing more than half the total where quantitative studies have been made. The preponderance of venison in the diet suggests that deer may have been loose-herded, or kept around communities without attempting domestication. Other forest mammals such as peccary, agouti, and armadillo are much less frequently found in middens. One protein source that was certainly domesticated was the dog; those at Cuello were killed toward the end of their first year of life, having eaten a maize-rich diet close to that of the Maya themselves. Control of such diverse protein sources as dogs and fish would have enabled the Maya to offset the low protein content of root crops.

Although few sites have yet been sampled using the kinds of recovery techniques (fine-screening, flotation) that would allow more accurate assessment of diet, there is a consensus that *milpa* fields, albeit more intensively farmed on a shorter fallow cycle than in colonial times, are likely to have provided much of the plant food, supplemented in certain areas by the conversion of steep hillsides and wetlands to usable land by terracing or drainage, which would because of the capital investment involved have been fairly continuously cropped. Animal protein came from a mix of domesticated, controlled, and caught mammals and fish.

The size and density of settlement that this subsistence regime supported has been under continuous investigation for nearly half a century: Willey's 1953–56 study of Barton Ramie, a rural site beside the Belize River some distance from even the medium-sized local centers of Baking Pot and Xunantunich, showed how much and how different an understanding of Maya settlement could be obtained by moving away from the great sites that had hitherto been the focus of interest. The mapping of Tikal a few years later reinforced this trend, which was maintained by Willey's own inclusion of settlement surveys around the Pasion Valley centers of Altar de Sacrificios and Seibal when he investigated them in the 1960s, and by the treatment of center and settlement as a single entity in projects such as those at Dzibilchaltun, Altun Ha and Lubaantun. The smaller grants and higher costs of the 1970s made small-settlement survey popular for its high yield, although the mapping of large sites continued at Coba, Calakmul, El Mirador, Rio Azul, and Nohmul, and Willey developed his integrated approach further in launching a study of the community of Copan in its clearly demarcated upland valley. The results there, expanded by two decades of further survey and intensive excavation, have yielded the most detailed picture yet of Maya settlement structure.

The basic unit of habitation was a group of low house-platforms around a courtyard or patio: each platform supported a thatched timber-framed superstructure, with walls usually of thin poles coated with clay daub and plaster; remains of such cladding have been recovered from structures as early as 700 B.C. In some instances, either the lower part of the wall or the entire wall was built in stone: such variants seem to reflect higher social standing. The courtyard floor might be simply leveled ground, or the surface of a shallow broad platform supporting the house platforms; here again, increased investment appears to denote higher status. The buildings, the open terraces in front of them, and the enclosed patio form a *plazuela*, interpreted as the residence of a household, usually an extended family, by analogy with historic Maya groups. Single house-platforms within the community are taken to be the homes of new single-generation family units budded off from their parents: detailed excavation of courtyards such as Tikal Group 2G-1 shows how they grew from single to multiple platforms over several generations.

In many sites the distribution of *plazuelas* across the landscape is clearly topographically determined, as at Lubaantun in southern Belize, where each little knoll between steep stream valleys supports a group; at

Copan, however, they cluster into neighborhoods which may represent clans of related families, a situation found in the *sna* waterhole groups of the modern Chiapas highlands. At sites such as Tikal or Calakmul, where the topography is undulating rather than dramatic, supra-household clusterings are much less clear; at Nohmul, where gross relief is gentle, there nevertheless seems to be a correlation with the microtopography of the limestone ridge, with the largest and grandest plazuelas strung along the crest of the ridge overlooking the valley of the Rio Hondo, and obtaining optimal ventilation and drainage. Around them, however, are much less impressive structures, perhaps the dwellings of lesser members of the social group, or even members of a lower class of servants or slaves attached to the leading family. Residential groups seem to be spaced around 100 meters apart even where the topography does not mandate it, presumably giving space for privacy and a dooryard garden and orchard for nonstaple crops.

Clusters of *plazuelas*, or even of single houses, are the simplest type of ancient Maya community: they exist both around major ceremonial centers as part of the urban fabric and also distant from them as rural villages. At intervals more elaborate clusters of buildings occur, termed “minor ceremonial centers,” and interpreted as local elite residences and seats of administration for a small district of perhaps 4 square kilometers. A typical minor center will include a small pyramid set on a formal plaza and often a second plaza lined by long substructures resembling large house-platforms. The pyramid, long interpreted as a focus for community worship, seems more likely to be the funerary shrine of the elite family and the focus of its ancestor cult. One such minor center at Tikal has been convincingly identified as the “dower house” for a deposed ruling family that still maintained elite standing. The larger minor centers, on the other hand, like the Classic period precinct at Cuello, have several plazas and attached courtyards with considerable circumambient settlement, and were the administrative and religious foci for fairly large districts – there is no site of comparable size within at least a 5-kilometer radius, suggesting a zone of control of 80 square kilometers or more. The term minor ceremonial center is, in fact, too imprecise, covering a wide range of sites of differing political and social levels: but so few have been investigated that a more analytical terminology has not yet been developed.

The next larger class of Maya sites, the “major ceremonial centers,” is,

in contrast, extremely well studied: these are the polity capitals, with substantial public architecture and carved and inscribed monuments erected by dynastic rulers, which have been the focus of Maya exploration since it began over 150 years ago. Here again, the terminology is too inclusive, since recognized major centers range from sites like San Estevan, in northern Belize, through larger precincts such as Copan, Palenque, and Uxmal, to the massive architectural agglomerations of Calakmul and Tikal, each covering an area several dozen times the size of San Estevan. The latter has one major plaza, divided by a ballcourt and flanked by four temple-pyramids, the highest some 15 meters; north of this is a court enclosed by ranges, probably the residence of the rulers, with a plain stela set into the access stair; and to the west are two more plazas with residential buildings and a pyramidal shrine. In the surrounding area are discrete residential compounds on raised platforms, smaller *plazuelas*, and single platforms. The minor center of Chowacol, just over a kilometer away, has its own small shrine and elite residence, each facing onto its own tiny plaza, and a scatter of surrounding residences.

Tikal, by contrast, has a core by itself large enough to embrace the entire settlement zone of San Estevan and Chowacol, with room to spare: in the Late Classic, a network of broad causeways, *sacbeob*, ran for several kilometers through the heart of Tikal, linking the Great Plaza with Temple IV 750 meters to the west and the Temple of the Inscriptions a kilometer southeast. Within that framework lay the Classic heart of Tikal, the Great Plaza bordered by Temples I and II, the six interlinked courtyards of the Central Acropolis, seat of Tikal's dynasty, and the North Acropolis where the Early Classic rulers lay entombed. Surrounding this were numerous other palace groups, ballcourts, acropoleis, and ceremonial and administrative buildings.

The North Acropolis, deeply trenched by the University of Pennsylvania in the 1960s, revealed nearly 1,500 years of architectural development as Tikal grew from a farming village to a preindustrial city. More recent work by Guatemalan archaeologists in the Lost World zone, just south of Temple III and the *sacbe* leading to Temple IV, has shown that the first ceremonial core lay there, around Structure 5C-54, a pyramid that by the end of the Late Preclassic was one of the larger structures in the Maya world. Although the plaza was much altered in later centuries, a set of temples on the east side combined with 5C-54 to form an "E-Group" layout (first identified at Uaxactun Group E) that has been

interpreted as a solar solstitial and equinoctial observatory; although this function has been challenged, the recurrence of this pattern of structures as a marker for early ceremonial precincts is striking.

Other structures in this zone showed clear Teotihuacan traits, including *talud-tablero* facades on Structure 5C-49 dating to the fourth century A.D. and a low “dance platform” (Str. 5C-53) in the center of the western plaza. At this time Structure 5C-54 attained its final form, more than 30 meters high and with stairways on all four sides leading to a flat top, which may have supported a perishable superstructure. A few hundred meters south of this group, one of the few elite residence compounds to have been systematically excavated (Group 6C-16) has revealed murals of ballplayers, elaborate stucco masks and other relief sculpture, and buildings with Teotihuacan characteristics. Although central Mexican cultural influence was notably strong in elite areas of Tikal in the fourth and early fifth centuries, it was mediated by Classic Maya traits on the same buildings and monuments, suggesting a utilization rather than imposition of exotic ideas.

Tikal is the most extensively investigated of the large lowland cities; publication of the work is now under way, although the huge body of data will not be fully available to scholars until after the year 2000. A center of equal magnitude where serious study is only now beginning is Calakmul, 100 kilometers to the north. More than a hundred stelae of Late Classic date are known, though few are in good condition, and the recent map by William Folan’s team shows a concentration of monumental urban architecture and surrounding settlement similar in scale to Tikal. Although Calakmul lacks the *sacbe* network and associated towering pyramids of Tikal, its largest building, Structure 2, is of Late Preclassic date, comparable in scale with the colossal Tigre and Danta complexes at El Mirador, 30 kilometers away, and far bigger than anything at Tikal; Structure 7 on the same plaza has yielded a royal burial of the Early Classic, with jade mosaic masks as fine as any known hitherto, as has Structure 3.

Over the past decade, Copan, a major center of medium size, has been investigated with an intensity comparable with Tikal: epigraphic and iconographic work have been closely integrated with architectural excavation and reconstruction, enabling many buildings to be ascribed to specific rulers within the sixteen-generation dynasty attested by inscriptions. Recent tunneling within the acropolis and below the Hieroglyphic Stairway has resulted in the discovery of the tombs of several early rulers, including Yax K’uk Mo’, founder of the dynasty. The internal history of

Copan, including the roles played by nobles in a balkanizing political situation in the eighth century, is better understood than almost anywhere else in the Maya area except Palenque, where another dynasty has been documented in detail from the numerous and well-preserved hieroglyphic texts. The ceremonial precinct of Copan consists of a great plaza, filled with monuments of the thirteenth ruler (Waxak Iahun Bah K'awil (8 Rabbit) (A.D. 695–738), and an acropolis with numerous temples and other buildings around two internal courtyards; current tunneling has shown many earlier constructions and different layouts from the previous three centuries. One of the most successful projects has been the restoration of the *popol na* or council house (Str. 10L-22A: Fig. 5.3), a two-roomed building decorated with *pop* mat symbols of rulership and glyphs apparently denoting the local lords of discrete parts of the realm of Copan, who met here with the fourteenth ruler K'ak' Haplah Chan K'awil (Smoke Monkey) in conclave in A.D. 746, and with his successors for three-quarters of a century thereafter.

Palenque, slightly smaller than Copan and lacking its grand public spaces, nevertheless has a series of striking royal buildings. The palace, a



Figure 5.3. The *popol na* or council house at Copan after restoration: its function is indicated by the *pop* mat motifs and other symbols along the cornice.



Figure 5.4. The palace at Palenque, a complex of rulers' dwellings set around courtyards and built up over a period of nearly two centuries.

set of courtyards enclosed by ranges (Fig. 5.4), was built up over the reigns of three rulers, beginning with Hanab Pakal (A.D. 615–683); each acceding ruler seems to have built his own throne room, and several sculptured tablets document the progress of both palace and dynasty through the eighth century. Hanab Pakal's funerary monument, the Temple of the Inscriptions, with its subterranean vault and massive carved sarcophagus, epitomizes the commitment of material and intellectual resources to elite service. The long text in the temple itself, linking to those on the Cross Group tablets and detailing the mythic and historic ancestry of the Palenque dynasty, gives an account of Maya rulership that must have been duplicated, albeit not similarly documented, in scores of other cities across the lowlands.

The social structure of those cities has also been the subject of much recent inquiry; for many years the governing model of Classic Maya society was the "priest-peasant" thesis advanced by Eric Thompson, in which there were only two social levels. An upper stratum of theocratic aristocrats ruled by divine right and popular consent, living in the cere-

monial centers and acting as mediators between the gods and their people. These were farmers, dwelling among their *milpa* fields in hamlets or small villages and paying periodic visits to the ceremonial center to bring tribute, worship the gods, and pay respect to their priestly rulers. It was a society without strife, an arcadian vision of the past unlike any other complex society ever known.

Thompson's model was destroyed by the influx of new data from 1960 onward, especially from the mapping of Tikal that showed Maya centers to be the cores of preindustrial cities with dense and substantial populations, themselves highly stratified in terms of the material investment visible in their dwellings. At the same time, structural analysis of monumental texts at Piedras Negras and then Yaxchilan by Tatiana Proskouriakoff showed that they reflected the careers of human rulers, not musings on esoteric aspects of the calendar and the universe. Classic Maya society began to look much like its documented successor at the time of Spanish contact, with a *halach uinic* and nobility holding the positions of power and ruling over a majority of commoners, themselves divided among different occupations and statuses. Three decades of research concentrated on aspects of settlement pattern and economic organization, together with the increasing quantity of information from the decipherment of texts, has shown ancient Maya society to have been a complex and many-layered phenomenon.

The ruling élite is estimated to have comprised only 2 percent of the population, but we have more, and more detailed, information about it than about the remaining 98 percent of commoners. The uppermost level in the élite was occupied by the ruler, as war leader and link with the cosmos and the deified ancestors. He held the inherited rank of *ahau* or lord, a title of nobility also shared with the aristocracy who formed the next layer of the hierarchy. They shared responsibility for administration, holding subordinate positions such as *sahal* or governor of part of the realm, and are shown (as on La Pasadita Lintel 2) receiving the honor of a visit from their king. Elaborate burials in smaller sites that were not polity capitals may well have been of such nobles and their families, the equivalent of the *batabob* and *holpopob* in Postclassic and colonial times. *Ahauob* acted as ambassadors, for example from Tikal to Yaxchilan and Piedras Negras, from El Peru to Yaxchilan, and from Yaxchilan to Dos Pilas; in the Bonampak murals they stand alongside the ruler Chan-Muan to celebrate the designation of his heir (a rite that emphasizes the importance of dynastic descent to the Maya). Other aristocrats are iden-

tified by name as scribes and vase painters, and some sculptors are also thus identified, suggesting that they too may have been members of the élite.

Below this aristocracy were the gentry, the *principales* of colonial record, still within the élite as *almehenob*, those who could trace their ancestry through both male and female lines, but lacking noble rank. Analysis of colonial social rankings shows that *batab* lineages controlled the positions of ruler, head of the religious hierarchy, patron of the *cofradia*, and *escribano* (town clerk), conferring power over archives and land titles, thus neatly drawing into their hands all civil, social, legal, and religious power in the community. Classic period control of daily life was undoubtedly similarly organized. The *principal* lineages supplied the executive bureaucracy and council in colonial towns, self-perpetuating oligarchies that also controlled other secular and religious offices explicitly distinguished from those open to commoners. The general structure of this two-tiered élite, with the ruling dynasty distinct within the upper level, is compatible with what we know of Classic Maya society from inscriptions and iconography, although the carefully portrayed gradation of costume and accoutrements in the Bonampak murals suggest that there were layerings even within the tiers.

Commoners do not feature in elite art or monumental inscriptions: evidence for the lower tiers of Classic Maya society has to come from archaeology. Here, the range of size and investment in house platforms at well-mapped sites such as Tikal, Copan, and Seibal indicates economic stratification, whatever the social correlates; at Nohmul and elsewhere the presence of houses built directly on the ground surface suggests a yet less privileged sector of society, while colonial accounts record the presence of serfs and slaves in Postclassic times. Analysis of occupations suggests unskilled, semiskilled, and skilled levels, of which the latter might well have been full-time specialists. Jade-workers, sculptors, and musicians may have fallen into this class, and such scribes and other intellectual specialists who were not members of élite lineages. Semi-skilled work would have included much stoneworking, including chert- and obsidian-knapping, pottery manufacture, and probably much trade. Unskilled labor would have included farming, and the myriad jobs within the supporting infrastructure of urban society including cleansing, transport, and building work. Colonial texts suggest two recognized levels of commoners with different occupations, apart from serfs and slaves, and at least this degree of social organization seems likely for Classic times.

Taking élites and commoners together, a social pyramid with six or more defined levels, with membership dictated by birth or occupation (or more likely both), formed the framework of Maya society from at least the Late Preclassic onward.

At each level the basic unit was the family, probably an extended one of three generations on the basis of settlement data such as Tikal Group 2G-1 at the commoner level or Copan Group 9N-8 at the élite end of the range. The distinct occupations and social roles of men and women were depicted in artistic media ranging from the royal murals of Bonampak to the common pottery figurines of Lubaantun. Servants and clients may well have formed part of the household unit as well: many high-status household clusters include small and simple as well as elaborate large dwellings. That inheritance was patrilineal at the élite level seems demonstrable from Classic texts, although inheritance by younger brothers and not just primogeniture is apparent at Palenque, as is an acceptance of matrilineal inheritance in unusual circumstances. The practice of bringing in brides for royal marriages, documented at Naranjo and elsewhere, argues for élite patrilocality; whether inheritance was patrilineal or residence patrilocal for commoners is unknown. The extended family and its household were often organized into clusters, which have been defined at Copan and elsewhere on locational criteria and which may well match the *sna* waterhole groups documented ethnographically in highland Chiapas and perhaps the neighborhood barrios of highland Mexico; whether there was lineage relationship or occupational specialization within these clusters is unknown, although ethnohistoric evidence from elsewhere in Mesoamerica suggests that both are likely.

The dynasty proclaimed its right to rule in many cases by use of an "Emblem Glyph," a designator now known to read "holy lord of X." The polity seems to have been defined more by its center than its boundaries, as the territory controlled by a dynasty from its capital; the extent of this may well have varied with the fortunes of war, and Maya polities certainly seem to have been highly variable in size. Study of interpolity relationships indicated by royal marriages, ambassadorial visits, and warfare suggests, however, that a modal size of around 2,000 square kilometers is likely. Some conquest states emerged, notably Tikal, which took over Uaxactun and probably Rio Azul, and Dos Pilas, which subjugated Seibal, and for a few generations these multicenter polities may have been as large as 4,000 square kilometers (although proponents of the "regional state" hypothesis argue for enormously greater polities,

with that of Tikal approximating 50,000 square kilometers; at the other end of the scale, Copan in its highland valley may have been little more than a city-state for much of its history.

The Maya lowlands were occupied by a mosaic of polities, but we have dynastic histories for relatively few of these: they were recorded on stelae, altars, lintels, and hieroglyphic stairways set up by rulers, usually but not always in the ceremonial precinct of the polity capital, and to a limited extent on portable objects such as jewelry and painted vases. Whether Maya genealogies were recorded in screenfold books, as they were for the Mixtec, is unknown.

The longest dynastic sequences are from cities in the southern lowlands, especially Tikal, where the earliest stela dates from A.D. 292 and the last ruler to commemorate himself does so in A.D. 869, being at least the thirtieth in the documented line of accession. Sixteen rulers are commemorated on Altar Q at Copan, from Yax K'uk Mo', who was on the throne in 9.0.0.0.0. (A.D. 435); to Yax Pasah (Pac), ruler in 9.19.0.0.0. (A.D. 810); and even they had successors: U Ci Tok', reigning in A.D. 822; and precursors, the "first seated *abau*" mentioned on Stela 24. At both cities numerous buildings can be associated with the construction programs of individual rulers, and responses to political setbacks such as the possible defeat of Tikal by Calakmul in A.D. 562 or the capture of "18 Rabbit" of Copan in A.D. 738 can be seen in architectural terms in constructions like the Hieroglyphic Stairway of Copan (Str. 10L-26).

Along the Pasion and the Usumacinta the epigraphic record is unusually rich, and has allowed both dynastic history and possible geopolitical organization to be reconstructed for a period of several centuries. Half a dozen centers began using Emblem Glyphs, proclamations of political autonomy, in the mid-fifth century, and Yaxchilan at least was in formal contact with Tikal; the region shared in the quasi-hiatus in monument erection in the late sixth century, whatever its cause, before several cities, among them Palenque, Piedras Negras, Yaxchilan, Bonampak, Altar de Sacrificios, Itzan, and Dos Pilas, began programs of dedication that document their Late Classic dynasties in considerable detail. The careers of Itzamna Balam and "Bird Jaguar" of Yaxchilan, including their capture of rival lords and their exchange of royal visits with other rulers, are exemplars of this biographical practice, while the expansionist policies of Dos Pilas can be traced over four generations and a century and a half. The late rise of Seibal to apparent regional hegemony in the ninth century matches archaeological evidence from sites elsewhere in the low-

lands, such as Nohmul, while the sudden appearance of a few late monuments at small sites such as Xunantunich and Nim li Punit accords with the picture of a balkanizing political situation and a proliferation of (possibly self-proclaimed) holders of power documented at Copan. Classic Maya realms were small states involved in endemic low-level warfare with their neighbors, making opportunistic alliances with more distant polities, but all operating within the same cultural oecumene: that we are able to name the protagonists, chart their careers, and even speculate about their methods and motives reflects one of the greatest advances in Maya studies this century, the decipherment between 1960 and 1990 of much of the content and many of the signs in the hieroglyphic script.

The Maya kings were not, in spite of their aggressive external policies, isolationists: trade networks established during the Middle Preclassic operated uninterruptedly for more than 1,500 years overland and by canoe along the rivers and around the coasts of the Yucatan Peninsula. Columbus's encounter with a Maya trading canoe off the Bay Islands in 1502 documented a cargo that included copper axes and bells and chert or obsidian weapons, materials that survive from earlier times in archaeological contexts; but perishable goods including textiles, foodstuffs, and ritually important cacao beans were also carried. Other perishables that were traded over long distances, on the basis of iconographic and circumstantial artifact evidence, included animal pelts and bright feathers for elite costumes, as well as salt. Maya exchange networks can be postulated at three levels: the local trade in food, utilitarian pottery, and other quotidian artifacts; an intrapolity market, perhaps centered at the polity capital and occurring episodically, at which the products of different environmental zones were recirculated; and external procurement of resources with restricted production locations and wide demand. The last probably included salt, cacao, and some costume materials such as quetzal feathers from the cloud forests of the highlands; they certainly included jade jewelry and chert and obsidian tools, some of the geological sources of which have been established and their distribution documented by scientific analysis.

Of these materials, obsidian is the most useful in reconstructing exchange networks because each source is chemically distinct, and because obsidian was used at all levels of ancient Maya society for practical as well as ritual purposes. This deep social penetration results in its recovery from almost every Maya site so far investigated, and from contexts ranging from the trash deposits of rural farmers to the tomb

offerings of Classic kings. The principal obsidian sources lie in highland Guatemala, at Ixtepeque near the border with El Salvador; El Chayal and San Martín Jilotepeque (SMJ) near Guatemala City; and Tajumulco in the west. Stone from these sources was acquired by lowland sites before the middle of the first millennium B.C., with the SMJ outcrops the first to be extensively exploited, followed from the Late Preclassic onward by El Chayal. Ixtepeque began production in the Preclassic, but became the major supplier to the lowlands only in Late Classic times. Mapping the sites at which obsidian from each source has been found has allowed two major route networks to be posited: one ran overland from central Guatemala to the headwaters of the Pasión, west down the Usumacinta to Palenque and the Gulf Coast, and northeast across country to Tikal and into Belize. SMJ and El Chayal obsidian went largely, though not exclusively, along this network, while Ixtepeque obsidian was shipped down the Motagua Valley and by canoe up the east coast of Yucatán, entering the lowlands along feeder routes up rivers and on overland trails across the peninsula. Coastal ports, often on small islands, acted as intermediate stops where goods could be transferred from large long-distance coasting canoes to smaller river craft: Wild Cane Cay and Moho Cay, off the shores of Belize, have yielded substantial evidence for Classic period trade in chert tools, pottery, obsidian, jade, and other goods. The Caribbean coastal route reached as far east as Costa Rica, and perhaps to Panama.

The two obsidian networks operated simultaneously and apparently in effective, if tacit, competition during part of the Classic period, but with the decay of the Classic cities of the southern lowlands in the ninth century the coastal network attained dominance. Yet a third route, via the Gulf of Mexico, brought green Pachuca obsidian from the region of Teotihuacan to a few cities of the lowlands in the Early Classic and Terminal Classic periods. Whether the obsidian trade was controlled by the source producers, by the middlemen who transported the goods, or by rulers in the destination states is unknown: a free market is as likely, on the archaeological evidence, as administered trade.

Jade was also widely distributed, although with less social penetration and a tendency to accumulate in polity capitals and in elite burials. Sources are known in the middle Motagua Valley, and may have been controlled by Quirigua or San Agustín Acasaguastlan; but most of the value in jade is added by carving, and there are indications that this often took place away from the sources, perhaps even on commission at the

destination, and by local retained specialists rather than the trader. Scientific analysis has matched some artifact jades with some Motagua sources, but the inhomogeneity of the stone makes source characterization much more difficult than with obsidian or even chert. What seems clear, however, is that jade sources other than those so far known were exploited by the Maya, including one that yielded translucent blue jade and that was used only during the Preclassic; the geological structure of the metamorphic highlands of Guatemala and adjacent regions suggests that jade may be found farther west, in Quiché and Huehuetenango.

Pottery vessels have also been shown to have been shipped over long distances, although most were made and used locally; Tikal supported several production centers within its wide settlement area, and the small center of Lubaantun imported utilitarian ceramics from 6 kilometers away. At Palenque, pottery was found to have been made in several parts of the polity, as defined by the distribution of the Palenque Emblem Glyph, and brought to the capital. Vessels traded between polities tended to be quite small, unsurprising given their fragility, decorated and thus of higher value: some may well have been sent as formal gifts on embassies or for funeral offerings, and may also have been valued for their contents: cacao, copal incense, and salt would all have been welcome. The Terminal Classic/Early Postclassic plumbate ware produced in southwestern coastal Guatemala could have been used for at least two of these commodities, and was distributed as far north as Yucatan. Terminal Classic fine paste pottery at Seibal and Altar de Sacrificios on the Pasion was shown by neutron activation analysis to have been traded, most distantly from Seibal to Lubaantun around A.D. 850, and the latter site also received slipped redware made in the Belize River valley, on the far side of the Maya Mountains, and a few decorated vessels from its neighbor Pusilha. Research is currently under way into Late Classic figure-painted polychromes, to define regional schools of vase painting and their distribution although scholarship is inhibited by the lack of archaeological context for the majority of the vessels, which were looted.

Although most of the goods documented in Classic long-distance trade have been functional in a social sense rather than economically vital – jade, fine pottery and chert pieces, decorative marine shells, and even obsidian contributed more to status than to survival – the local workmanship demonstrable or inferable suggests both merchant artisans processing their raw materials on commission and retained craftsmen working within an established design tradition. In the Terminal Classic

there was a broadening of the commodity base, with mass-produced goods such as plain pottery bowls (sometimes even designed for easy stacking and shipment) indicating that Maya exchange now had a commercial as well as a social function.

The political and economic infrastructure just outlined supported a series of regional Maya elite cultures, variants on a common theme but with distinct styles in architecture, sculpture, ceramics, and other applied arts; even the calendar operated slightly differently in Yucatan, with dates being expressed one day different, and monumental inscriptions in the southern lowlands were far longer, more frequent, more explicit, and more closely linked to elite iconography than in the north. Regional style is most striking and obvious in the public buildings of the polity capitals: the towering temples of Late Classic Tikal, nine-tiered pyramids topped by a small sanctuary, itself capped by a tall roofcomb adorned with sculpture, are not replicated outside the northeast Peten (although imitated on Rio Bec palaces at Xpuhil and nearby sites). The northeastern Peten use of inset corners and heavy apron moldings on substructures does not occur elsewhere, except for a corridor of “petenized” sites running down the Rio Hondo and north through Quintana Roo to Coba. Similarly, the Palenque style of mansard roofs, with highly decorated panels and crowned by openwork roofcombs, set over buildings with abundant external polychrome stucco decoration expressing dynastic themes, is restricted to the lower Usumacinta region, with a western outpost at Comalcalco.

Northward, in the center of the lowlands, the Rio Bec style, with its false-temple towers, melds into that of the Chenes region in northern Campeche, marked by monster-maw doorways. Becan and Chicanna, close together just west of Xpuhil, share both styles in original architectural compositions. Chenes in turn overlaps with the Puuc style of Yucatan, notably at Uxmal, and the entire tradition seems to draw on a common repertoire of motifs reflecting an iconography recognized across the lowland polities. The Puuc style employs a dramatic contrast between plain lower and highly decorated upper façades, the decoration being “spare-part” or “plug-in” sculpture made up from numerous simple and repetitive elements worked into unique combinations (Fig. 5.5). Among the tours de force of Puuc style are the Palace of the Governors at Uxmal, with long step-frets against a continuous background of latticework (itself probably representing the woven *pop* mat of regal authority), and the Codz Pop at Kabah, where the entire frontage is covered with ranks of

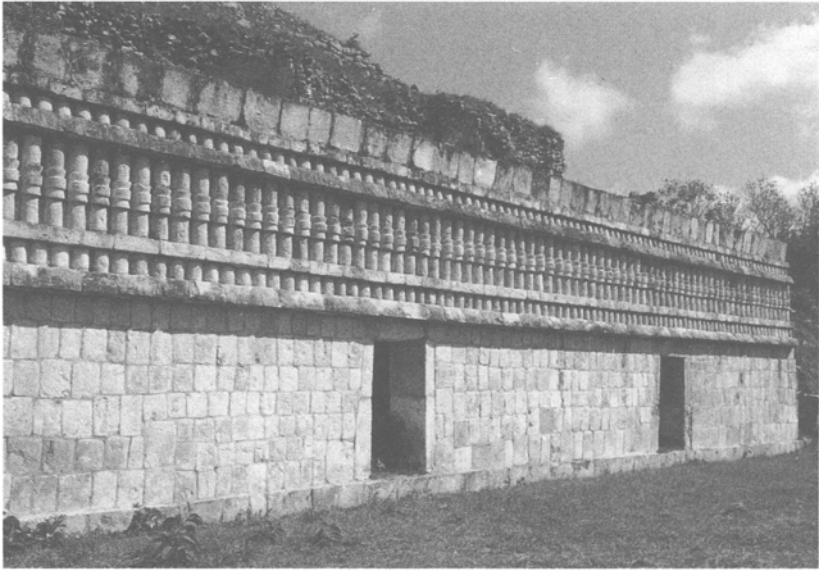


Figure 5.5. Part of the palace at Sayil, a typical building in the Puuc style.

masks of Chaac, the rain god, adjacent pairs sharing earflares and the long, curled snouts of some acting as steps up into the building.

Many of the finest Puuc buildings date to around A.D. 900, a period of florescence in Yucatan while the southern cities of the Peten and Belize were in decline. The style is found across most of the north of the peninsula, including Chichen Itza, although the most striking buildings there belong to a syncretistic tradition that combines elements otherwise found much farther west in central Mexico (Figs. 5.6, 5.7), including colonnades, round temples, skull racks, and decoration with feathered serpents, multiple warriors, and semirecumbent *chacmool* figures. The accepted derivation of this style from Tula, Hidalgo, the result of a tenth-century Toltec invasion, and its chronological position following Puuc in the tenth through twelfth centuries have both been cogently challenged: an earlier beginning for the syncretistic style, contemporaneity of Chichen Itza with Uxmal and other Puuc centers in the second half of the ninth century (although possibly a longer persistence), and coeval construction of both styles of buildings in the same architectural ensembles at Chichen are all now broadly, though not totally, accepted. Much of the resemblance to Tula is now known to be the result of reconstruction



Figure 5.6. The Castillo at Chichén Itzá, the principal temple-pyramid in the major expansion of the city center built probably in the early tenth century A.D.

work there in the 1940s and 1950s copying buildings already restored at Chichen Itza. The central Mexican elements remain but can be seen as reflecting a much broader influence, much of it drawn by the Maya rather than injected by invaders; the origin of the legends of such intrusion remains unexplained, however.

Cultural traits most strongly expressed at Chichen Itza, including certain pottery types, and some building formats including small circular temples and hollow-square buildings with a central patio, have been recognized southward through Quintana Roo and into northern Belize, where they seem to be associated with a southward expansion in the ninth century, perhaps militaristic in places. Although the Tecep-phase occupation at Nohmul shows no signs of such militarism, in spite of numerous buildings attesting to a renewed and substantial occupation of a site in decline as well as buildings in northern style; there is a suggestion not of invasion from Chichen Itza itself but, rather, of a movement of people from the peninsula into the power and demographic vacuum left by the collapse of the southern cities.

The Classic Maya collapse remains an enduring mystery: although the



Figure 5.7. The Great Ballcourt at Chichén Itzá, the largest in Mesoamerica. Its use of vertical walls and central scoring rings, instead of lower sloping benches and flat markers, contrasts with Late Classic Maya practice and reflects architectural forms more commonly found in central Mexico.

facts – the cessation of monument erection at site after site from A.D. 790 onward, accompanied by coeval or slightly later abandonment of the ceremonial centers and their occupation by squatters, if anybody – are well documented, no single explanation has yet attained general acceptance. Monocausal theories involving only revolt, invasion, plague, crop failure, and the like have been discarded in favor of multicausal models in which combinations of these stresses operated, but all have been challenged. Some general conditions are, however, agreed: in the eighth century, before the collapse began, the Maya politics attained their apogee. Cities were larger, more densely populated, and more closely packed into the landscape than ever before. The range of residential architecture suggests a wider range of economic classes, and a growing gap between rulers and ruled that was pasted over by the common devotion to ancestor veneration and deities of the natural forces. Burials show a similar social spread, and the skeletons of those in the lower classes demonstrate a decline in stature and an increase in deficiency diseases relative to those

in elite tombs. There is still no good evidence for social revolution, but the underlying conditions to provoke it were there, as were those that might have stimulated external attack. Recent exploration at sites such as Dos Pilas has shown crude fortifications thrown up around the heart of the city, enclosing a tiny area and riding roughshod over elite structures presumably no longer in use. Fortifications have also been found in Yucatan, however, at Uxmal, Chunchucmil, and elsewhere, so whatever change in the pattern of warfare was involved – and it seems to have been one that for the first time included polity capitals as well as peripheral zones within the region attacked – it was not restricted to the area of the collapse in the southern lowlands.

One possible explanation is that the rate of urban growth outran the capacity of the managerial apparatus to sustain the cities with food: we have no Maya economic texts beyond a few tribute records, and know nothing about their logistic abilities, but this lacuna itself suggests that such matters were not highly institutionalized even in the Late Classic. If this were true, then adequate production in the hinterland would still have left shortages in the cities; inadequate production as the result of crop disease or bad harvests would intensify this. Those who suffered first and hardest would not have been the elites, with their privileged access to resources of all kinds, or the rural farmers, with direct access: it would have been the urban lower orders, those responsible for maintenance of the fabric of the cities as cleaners, laborers, and porters. An increase in the rate of malnutrition, sickness, and death among these occupations would have led to an immediate decrease in the transport potential for bringing supplies in, and such a reaction would have been self-enlarging. In addition, the fabric of urban life would have begun to unravel as vital tasks remained undone. One response could have been outward migration by city dwellers to areas where they could establish a satisfactory standard of living closer to food sources and with a shorter and less fragile supply line. Such depletion of population – with or without any overt dissatisfaction with the ruling élite expressed in either monument destruction or merely failure to continue monument creation and the manufacture of patronage art – would have swiftly removed the cultural underpinnings of the élite. Maya society could have moved below a plane of archaeological visibility, even while population levels remained high and social organization still relatively complex. Destruction of the managerial apparatus, however, would result in overall lower production and distribution of subsistence resources, and to a steady,

though not necessarily catastrophic, decline in overall population over the following decades, until things stabilized at a small-town level of organization. Such towns were reported in the Peten by the first Spanish explorers although subsequently wiped out by European diseases: the real collapse of the Maya may well have been in the sixteenth century rather than the ninth.

Whatever the reasons behind the abandonment of the Classic cities, there was continued occupation of some parts of the Peten: recent exploration has shown that fortified sites existed on peninsulas on several of the lakes, including Topoxte on Lake Yaxha and sites on lakes Macanche, Salpeten, Quexil, and Peten-Itza, with occupation continuing the cultural traditions of the Classic and persisting until after the Spanish Conquest. In the northern Maya area, abandonment of Chichen Itza was not accompanied by regional depopulation: pilgrimage use of the Sacred Cenote continued, and political power seems to have been fragmented until the rise of Mayapan in the thirteenth century some 100 kilometers west of Chichen Itza. Historical traditions record that the Cocom rulers of Mayapan made marriage alliances with other northern dynasties, and also held members of their ruling families as genteel hostages in Mayapan (a practice also well attested in medieval Europe). Mexican mercenaries were employed, perhaps descended from immigrants who had come to Chichen Itza in earlier times.

Mayapan itself aped some of the elite structures of Chichen Itza, with a miniature version of the Castillo (also linked in legend with Kukulcan) and a round temple not unlike the Casa Redonda, although much less elaborate than the Caracol. Architecture was cruder, with thick plaster covering deficiencies of stonework, and the buildings were smaller than those of the Classic sites. Several impressive clusters of dwellings and shrines in the heart of Mayapan were probably the gilded cages of the provincial rulers. The city covered a total area of 4 square kilometers and was enclosed within a stone fortification wall with defended gateways; more than four thousand buildings held a population estimated at over 12,000. Each house compound was walled and, like more dispersed Maya communities, included a dooryard garden for the production of fruit, flowers, and flavorings. Basic subsistence supplies were brought in from the outside and from the subject provinces, however. In many ways Mayapan matched the contact period towns described by Diego de Landa, where "in the middle were their temples with beautiful plazas, and all around stood the houses of the lords and priests, and then those

of the most important people; then the houses of the richest . . . at the outskirts of the town were the houses of the lower class." The city stood for more than two centuries, before being destroyed, along with its Cocom rulers, by a revolt in A.D. 1441.

Other walled cities of the Middle and Late Postclassic periods are known along the east coast of Quintana Roo, including Tulum and Ichpaatun. Tulum was the fortified successor to the much larger Classic community of Tancah, centered just to the north, and was enclosed by a substantial wall affording protection against attack from inland. A ceremonial precinct included a "Castillo" still visibly related to the architectural traditions of Chichen Itza and the Puuc, and several other temples, by now so small that they were difficult to enter. Interior and exterior murals were in a syncretistic style related to that of the Mixtec codices of central Mexico, the "International Style of the Late Postclassic." Similar murals were found in 1896 by Thomas Gann at Santa Rita in northern Belize, a site that has recently yielded other striking evidence of Mexican contacts, including a pair of gold and turquoise ear ornaments, and that Eric Thompson convincingly identified as the eponymous capital of the Postclassic polity of Chetumal. The builders of these coastal fortresses, accessible from the sea and heavily defended against neighbors on land, may have been the Putun, people from the area of Tabasco where the great Usumacinta and Grijalva rivers both come down to the sea, creating a wide alluvial plain interlaced with rivers, lagoons, and swamps. Thompson saw the Putun as the trading navigators of eastern Mesoamerica, and the carriers of central Mexican cultural traits from the isthmian zone north into Yucatan, then east and south around the coast to Belize; their influence may have begun in the Late Classic, and the Santa Rita murals suggests that six centuries later their network of communications was still active. At this date, the Aztecs had made contact with the Maya Area, perhaps as a prelude to further military expansion: they maintained an entrepôt at Xicalango, in Putun territory on the Laguna de Terminos, and burials found at Atasta nearby have central Mexican characteristics.

Off the northeast coast of Yucatan, the island of Cozumel flourished in the Late Postclassic as a trading port and pilgrimage center, with a famous shrine of Ixchel, the moon goddess. A survey of the entire island showed numerous coastal shrines, similar to those of Tulum and the Quintana Roo coastline, which could have acted as beacons or lookouts, with a major central settlement at San Gervasio, areas apparently devoted to commodity storage and shipment, and a network of walled fields

suggesting permanent demarcation of the landscape for intensive farming.

Farther south in Belize, Lamanai on the New River Lagoon has yielded a continuous sequence of occupation from the Late Preclassic through the seventeenth century. Classic buildings N10-7 and N10-9 were remodeled from Terminal Classic to Middle Postclassic times; the latter, a major pyramid at the south end of the site core, had successive new additions flanking its stairway, the last of which were built in the fourteenth or fifteenth century. After the building was abandoned, a substantial midden accumulated over the stair, documenting both continued occupation and stylistic conservatism in ceramics. Nearby stood a twelfth-century timber-columned structure, resembling coeval stone buildings in Yucatan, and numerous burials, some with copper work and a few with sheet gold decorating wooden discs and staffs, take the record down into the sixteenth century. The first Spanish church at Lamanai, built late in the century, adapted an existing prehispanic platform; but the second, adjacent to it, had a custom-built stone sanctuary with a timber-framed, thatched nave extending west (Fig. 5.8). Abandoned as a church after 1640, the sanctuary continued to be used as a dwelling and burial place until the end of the seventeenth century.

Still farther south, the ultimate encounters between Maya and Spaniards took place in the Belize Valley and the Peten lakes: at Tipu, the most distant of all the *visita* churches was built in 1567–68, facing onto a Spanish-style plaza in the heart of the preexisting community. It had low stone walls, a slightly raised sanctuary area, and a superstructure of timber and thatch. Abandoned after the Maya rebellion of 1638–40, the church precincts were still used for Christian burial and Tipu remained semi-independent until its population were forcibly removed in 1707, after Martin de Ursua's final violent conquest of the Itza capital of Noh Peten in 1697 had extinguished the last Maya polity to remain outside even nominal Spanish rule. The remains of the churches at Tipu and at Lamanai, at Tancah and Ecab in Quintana Roo, built by Maya labor for Spanish priests, are the last ceremonial constructions in a cultural tradition that had run unbroken for more than 2,500 years.

BIBLIOGRAPHICAL ESSAY

General books on the Maya include R. J. Sharer, *The Ancient Maya* (5th ed., 1994, Stanford University Press), and N. Hammond, *Ancient Maya*



Figure 5.8. The first and second churches at Lamanai: in the foreground the earlier church, built c. 1570, was constructed on the remains of a Postclassic building, while the later had a purpose-built sanctuary abutted by a *ramada* nave, now vanished.

Civilization (1982, 5th ed., 1994, Rutgers University Press); both have extensive bibliographies up to the early 1980s. J. A. Sabloff, *The New Archaeology and the Ancient Maya* (1990, W. H. Freeman), has a shorter but useful reading list. V. R. Bricker and J. A. Sabloff, eds., *Handbook of Middle American Indians, Supplement 1: Archaeology* (1981, University of Texas Press), includes essays on Tikal and Dzibilchaltun as well as more general processual studies.

Period-specific volumes include G. R. Willey and P. Mathews, eds., *A Consideration of the Early Classic Period in the Maya Lowlands* (1985,

Institute of Mesoamerican Studies, SUNY-Albany); J. A. Sabloff and J. S. Henderson, eds., *Lowland Maya Civilization in the Eighth Century A.D.* (1993, Dumbarton Oaks); J. A. Sabloff and E. W. Andrews V, eds., *Late Lowland Maya Civilization*, (1986, University of New Mexico Press); J. W. G. Lowe, *The Dynamics of Apocalypse: A Systems Simulation of the Classic Maya Collapse* (1985, University of New Mexico Press); A. F. Chase and P. M. Rice eds., *The Lowland Maya Postclassic* (1985, University of Texas Press); N. M. Farriss, *Maya Society under Colonial Rule* (1984, Princeton University Press); G. D. Jones, *Maya Resistance to Spanish Rule* (1989, University of New Mexico Press).

Settlement and subsistence are dealt with in W. Ashmore, ed., *Lowland Maya Settlement Patterns* (1981, University of New Mexico Press); R. R. Wilk and W. A. Ashmore, eds., *Household and Community in the Mesoamerican Past* (1988, University Of new Mexico Press); T. P. Culbert and D. S. Rice, eds., *Precolonian Population History in the Maya Lowlands* (1990, University of New Mexico Press); K. V. Flannery, ed., *Maya Subsistence* (1982, Academic Press); B. L. Turner II and P. D. Harrison, eds., *Pulltrouser Swamp: Ancient Maya Habitat, Agriculture, and Settlement in Northern Belize* (1983, University of Texas Press); M. D. Pohl, ed., *Prehistoric Lowland Maya Environment and Subsistence Economy* (1985, Peabody Museum, Harvard University). P. A. McAnany and B. L. Isaac, eds., *Prehistoric Maya Economies of Belize* (1989: JAI Press), deals more with production than subsistence economics, H. McKillop and P. F. Healy, eds., *Coastal Maya Trade* (1989, Trent University Department of Anthropology), with distribution networks. Ceramic classification and chronology are covered in P. M. Rice and R. J. Sharer, eds., *Maya Ceramics: Papers from the 1985 Maya Ceramics Conference* (1987, BAR International Series 345).

Political structure is examined in T. P. Culbert, ed., *Classic Maya Political History: Hieroglyphic and Archaeological Evidence* (1991, Cambridge University Press); and forms a part of the subject matter of L. Schele and D. Freidel, *A Forest of Kings: The Untold Story of the Ancient Maya* (1990, William Morrow); both books utilize the recent decipherment of Maya hieroglyphic writing, the story of which is told by M. D. Coe in *Breaking the Maya Code* (1992, Thames & Hudson). The nature of the Maya script is discussed in J. Justeson and L. Campbell, eds., *Phoneticism in Maya Hieroglyphic Writing* (1984, Institute of Mesoamerican Studies, SUNY-Albany), L. Schele, *Maya Glyphs: The Verbs* (1982, University of Texas Press), and S. D. Houston, *Maya Glyphs* (1989,

University of California Press). The decipherment of Maya iconography is dealt with by L. Schele and M. E. Miller in *The Blood of Kings: Dynasty and Ritual in Maya Art* (1986, George Braziller), by D. A. Freidel, L. Schele, and J. Parker in *Maya Cosmics* (1993, William Morrow), and in E. P. Benson and G. G. Griffin, eds., *Maya Iconography* (1988, Princeton University Press); text and image are both considered in W. F. Hanks and D. S. Rice, eds., *Word and Image in Maya Culture* (1989, University of Utah Press), and in L. Schele and P. Mathews, *The Code of Kings* (1998, Thames & Hudson).

There have been numerous single-site and regional reports of fieldwork over the past decade, including settlement pattern and ceramic analysis, of which only a few can be noted here: the Tikal excavations of the 1950s and 1960s are beginning to appear in print in the University Museum of the University of Pennsylvania's *Tikal Reports* series; notable volumes include W. R. Coe's TR 14 (1990) on the Great Plaza/North Acropolis excavations and C. Jones and L. Satterthwaite's TR 33A on the monuments and inscriptions. Four of the five volumes of M. G. Robertson's *The Sculpture of Palenque* have now appeared, covering the Temple of the Inscriptions (1983), the palace (2 vols., 1985), the Cross Group and other buildings (1991) (other aspects of Palenque archaeology appear in the successive *Palenque Round Table* volumes, although these have become progressively more general conferences on Maya art). The final volumes on Seibal have been published as *Memoirs of the Peabody Museum*, Harvard University, edited by G. R. Willey, on the major architecture and caches (Memoir 15, A. L. Smith, 1982), settlement pattern (Memoir 16, G. Tourtellot, 1988), and monuments, burials, subsistence, and summary (Memoir 17, various authors, 1990). Volumes 2 and 3 (1982, 1990, Royal Ontario Museum) of D. M. Pendergast's five-volume Altun Ha report have been published, as have volumes 2–4 of the French excavations at Tonina (1982, 1982, 1990, Mission archéologique et ethnologique française au Mexique). Four volumes of R. E. W. Adams's series on Rio Azul (1984, 1986, 1987, 1989) have been published by the Center for Archaeological Research at the University of Texas at San Antonio, together with the 1982 report on T. R. Hester and H. J. Shafer's 1981 research at Colha; a new series of Colha Papers now deals with specific aspects of the project (1986–). Two volumes of studies on Caracol edited by A. F. and D. Z. Chase, have been published (1987, 1994, Pre-Columbian Art Research Institute). Four volumes have appeared from the Spanish Mission in Mexico, reporting M. Rivera Do-

rado's work at Oxkintok (1988, 1989, 1990, 1992), and also in the Puuc region, J. A. Sabloff and G. Tourtellot's report on the mapping of Sayil (M.A.R.I. Publication 60, 1991).

At the far end of the Maya Area, there have been many publications on Copan, including C. Baudez's three-volume *Introduccion a la Arqueologia de Copan* (1983, IHAH), subsequent reports by W. T. Sanders, a synoptic book by W. L. Fash, Jr., *Scribes, Warriors and Kings: The City of Copan and the Ancient Maya* (1991, Thames & Hudson), and a series of *Copan Notes* on epigraphy edited by L. Schele. The second volume of Quirigua Reports (#8–15, University Museum, University of Pennsylvania), and a general book by R. J. Sharer, *Quirigua: A Classic Maya Center and Its Sculpture* (1990, Carolina Academic Press), bring reporting on that site up-to-date. P. A. Urban and E. M. Schortman, eds., *The Southeast Maya Periphery* (1986, University of Texas Press), E. H. Boone and G. R. Willey, eds., *The Southeast Classic Maya Zone* (1988, Dumbarton Oaks), and R. A. Joyce, *Cerro Palenque* (1992, University of Texas Press), add to understanding of the the Maya frontier zone within which Copan and Quirigua lie.

Preclassic developments are reported in N. Hammond, *Cuello: an early Maya community in Belize* (1991, Cambridge University Press); D. A. Freidel (series ed.), *Archaeology at Cerros, Belize, Central America* (vol. 1, *Interim Report*, 1986; vol. 2, *Artifacts*, by J. Garber, 1989; vol. 3, *Settlement System*, by V. Scarborough, 1991); and the first volumes on the New World Archaeological Foundation's work at El Mirador have appeared. Few Postclassic excavations have been reported; D. Z. Chase and A. F. Chase's *A Postclassic Perspective*, on work at Santa Rita Corozal, and papers on the later periods at Lamanai by D. M. Pendergast and E. A. Graham are useful.

Journals in which Maya papers appear with some frequency include *American Antiquity*, *Latin American Antiquity*, *Ancient Mesoamerica*, *Journal of Field Archaeology*, *Mexicon*, *Yaxkin*, and *Estudios de Cultura Maya*; other journals, including *American Anthropologist*, *Antiquity*, and *Current Anthropology*, occasionally publish them. International congresses, including recent Mayanist congresses in Guatemala, the International Congress of Americanists, and more specialized conferences also produce publications: the Bibliography section of the German journal *Mexicon* is an excellent source of such references and also book titles and journal contents in general.

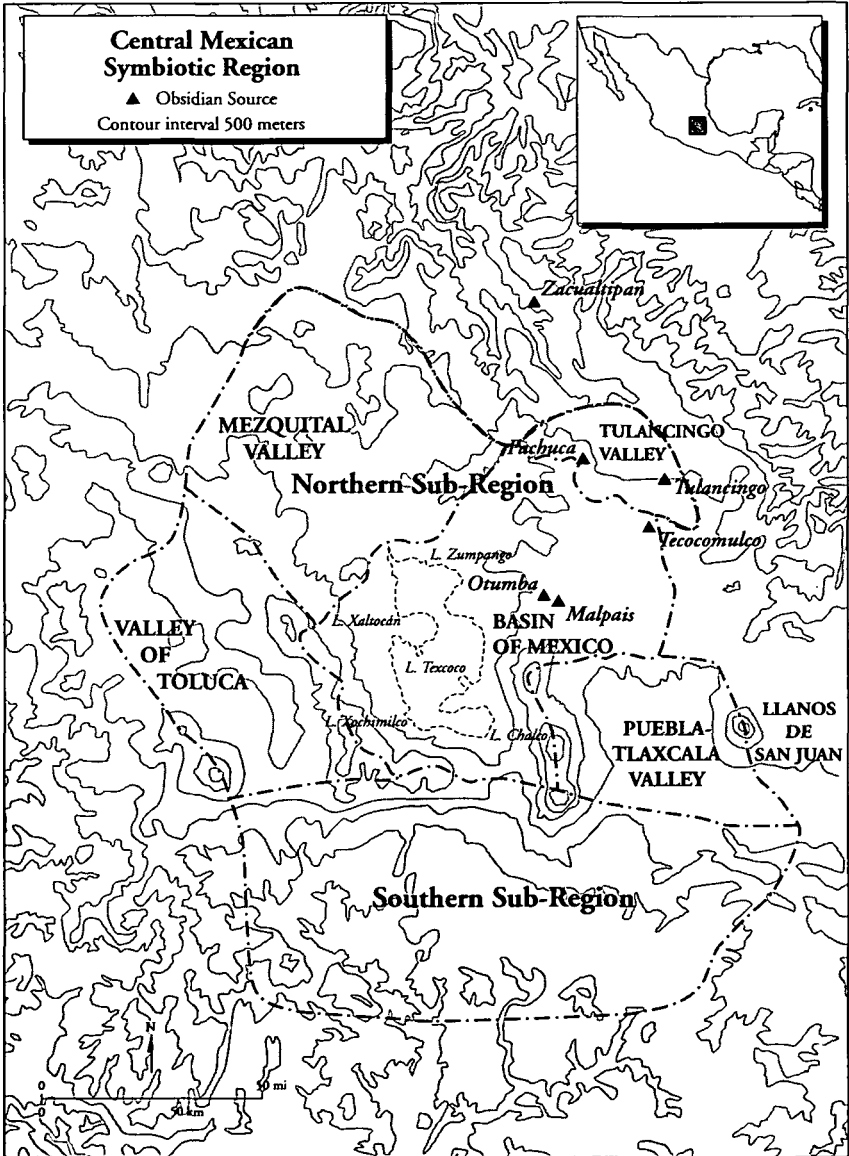
THE CENTRAL MEXICAN HIGHLANDS FROM THE RISE OF TEOTIHUACAN TO THE DECLINE OF TULA

GEORGE L. COWGILL

THE SETTING

I concentrate on a region of about 50,000 square kilometers, roughly the size of New Hampshire and Vermont combined, a little less than a third the size of England. It runs some 260 kilometers east-west by 170 kilometers north-south, covering the state of Mexico, southern Hidalgo, central Puebla, Tlaxcala, and Morelos. It is centered on Mexico City and the Basin of Mexico, whose flat, broad floor slopes up from about 2,240 meters above sea level (Map 6.1). Interconnected shallow lakes formerly occupied the central part of the Basin; Xaltocan and Zumpango to the north and Xochimilco and Chalco to the south, all connecting with the somewhat lower Lake Texcoco, which was moderately salty owing to the absence of exterior drainage. The Basin is limited on the west, south, and east by high mountains that extend above 3,000 meters, including in the southeast the snowcapped volcanos Iztaccíhuatl and Popocatepetl (5,452 meters). The northwestern margin is not well marked, and a low divide leads to the drainage of the Tula region, whose streams ultimately flow into the Gulf of Mexico. On the northeast the Teotihuacan Valley runs by a gentle gradient into the plains of central Puebla and Tlaxcala. These plains in turn stretch east and northeastward toward the Gulf Coast and southeastward to southern Puebla and Oaxaca. Much of central Puebla is part of the Basin of Mexico drainage, which covers about 12,000 square kilometers in total (Lorenzo 1968). It is better, from a cultural point of

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Map 6.1.

view, to define the Basin as a more compact area that includes the Teotihuacan Valley and is centered on the lakes, running about 80 kilometers north-south by 50–60 kilometers east-west, and covering about 4,000 or 5,000 square kilometers.

West of the Basin lies the Valley of Toluca, whose floor is also relatively flat, at around 2,600 to 2,700 meters (Sugiura 1990:192). The plains of Tlaxcala and central Puebla are a little lower than the Basin, except near La Malinche, which rises to 4,461 meters. To the south is Morelos, significantly lower at about 1,000 to 1,500 meters (Grove 1987a:6).

The region as a whole is semi-arid, and rainfall is markedly seasonal, mostly from June to October (Sanders, Parsons, and Santley 1979:82). It tends to be higher in the south and lower in the north; averaging more than 1,000 millimeters in parts of Morelos and the southern Basin, around 600 millimeters in the Teotihuacan Valley (Sanders et al. 1979: 83, fig. 4.1), and 400 to 600 millimeters in the region around Tula (Diehl 1989a:8). Actual precipitation varies greatly from year to year and over quite short distances. In many parts of the region rainfall can sometimes yield a fair harvest of maize but – everywhere – irrigation makes yields larger and more secure. No large streams are available, and floodwater irrigation is feasible only in limited areas. Winter frosts are common, and an unusually early frost can destroy the maize crop. Irrigation from permanent year-round springs is better than floodwater because it is more reliable and because it permits earlier planting, which reduces the frost hazard. However, clusters of year-round springs are few and scattered and do not provide a very large volume of water. Those in the Teotihuacan Valley irrigated about 3650 hectares (36.5 sq. km) in 1954 (Sanders et al. 1979:258) by means of a technically simple system, with an average flow of about 590 liters per second. As recently as 1922 the flow seems to have been nearly twice as much (Sanders et al. 1979:256), but this may not mean that twice the area was ever irrigated, since a limit is set by the land area reachable by gravity flow from the springs. Flows from other groups of springs in the Basin of Mexico, such as the Amanalco system above Texcoco, are considerably smaller (Sanders et al. 1979:270).

Drainage and intensive *chinampa*-like agriculture is practiced today in about 100 hectares of naturally swampy land just downstream from the main Teotihuacan spring cluster (Sanders et al. 1979:273–81). There is evidence for all these types – drainage, spring-fed canals, and floodwater – at least as early as Teotihuacan times. It is virtually certain that all were well developed several centuries before the beginning of Teotihuacan.

Plants other than maize, such as amaranths and maguey and *nopal* (prickly pear), were grown, and it is likely that the latter two were important in areas less suitable for maize. Morelos differs significantly because frost is not a hazard, and crops such as cotton, which could not be grown at higher elevations, were important.

CHRONOLOGY

I largely follow the local chronology used by René Millon (1981), slightly modified by Cowgill (1997). Terms in parentheses are those used by the Instituto Nacional de Antropología e Historia. Sanders and his colleagues use a chronology that differs, often by a century, sometimes by more. There are still too few radiocarbon or other absolute dates for central Mexico, and dating is partly by cross-ties with the Maya, accepting the Goodman-Martinez-Thompson correlation. The dates I use may be off by a century or more. I avoid *all* pan-Mesoamerican schemes because they tend to have different meanings in different areas and to different scholars, masking confusion rather than avoiding it. Millon (1973:50; 1976) cogently criticizes the mixing of developmental concepts and chronology in the terms Preclassic or Formative, Classic, and Postclassic. The scheme of horizons and intermediate periods set out by Price (1976) is better because it is more focused on chronology, but it pressures us to think in terms of sharply alternating pulses of regionalism and area-wide diffusion. These concepts were extremely useful in the 1960s but do not do justice to the more complex patterns now apparent. I note this horizon scheme's equivalences to local periods, but I discuss relations among regions in terms of their own local sequences or approximate years in the European calendar.

TEOTIHUACAN

My main focus is the great ancient city of Teotihuacan, which flourished from about 150 B.C. to around A.D. 650. During much of this time it covered roughly 20 square kilometers (2,000 ha) and had a population on the order of 100,000 or more. It was one of the largest and most imposing cities anywhere in the New World before the nineteenth century (Fig. 6.1).

Teotihuacan seems markedly different from many other Mesoamerican societies, and in some ways rather strange compared with nonindustrialized complex societies in general. It lasted seven or eight centuries

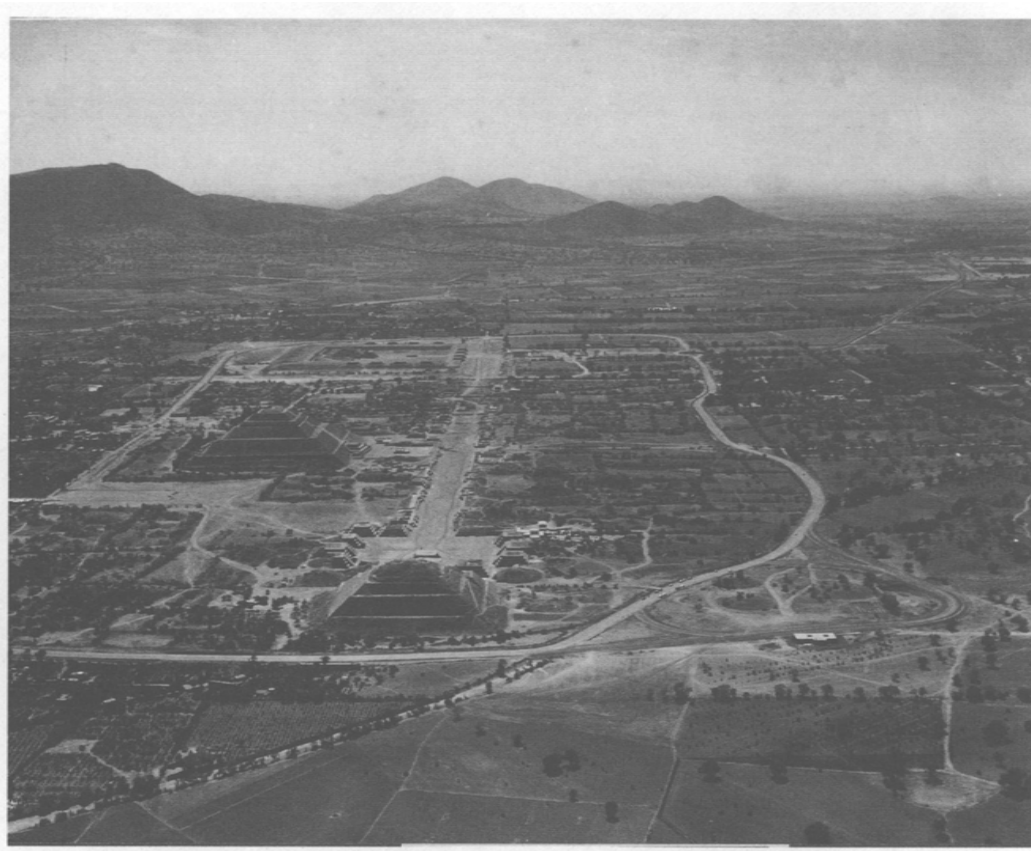


Figure 6.1. An aerial view of Teotihuacan (copyright René Millon).

without visible major interruptions. From about A.D. 300 onward, a high proportion of the city's population lived in architecturally substantial compounds of a unique kind; each composed of multiple apartments. In sharp contrast to the explicit representations of conquest and victorious warfare so prevalent in the monumental art of many other Mesoamerican societies, clear references to conquest have not been detected at Teotihuacan. Not long ago the explanation for this last seemed simple enough: Teotihuacan was not very warlike. We now have ample evidence that war was important for Teotihuacan from early times, and martial themes are well represented in the city's art. Nevertheless, clear references to conquest, vanquished towns, or captured foes are absent. The contrast is especially sharp with the partially contemporary Classic Lowland Maya, whose monuments named rulers, celebrated great events in their lives, and proclaimed their exalted pedigrees. Other Mesoamericans as early as the Middle Preclassic Olmecs had already depicted specific powerful individuals in colossal stone sculptures. In Teotihuacan art, representations of hierarchical relations among humans are not known and there are no identifiable rulers (except possibly in some late murals at Techinantla, discussed below).

Classic lowland Maya society used to seem highly unusual, but recent research has shown that it was not, after all, so very different from many other societies. As we learn more, will the apparent strangeness of Teotihuacan be confirmed or diminished?

Misconceptions about Teotihuacan abound. One is that the drab color of the ruins and their overwhelming horizontality give a good impression of how the city looked in its prime. To be sure, horizontality *was* characteristic of Teotihuacan architecture. It is visible in numerous long, low platforms and the pervasive use of alternating vertical panels and sloping aprons, each much wider than high (the *talud-tablero* style, Fig. 6.2). However, we see only the foundations on which temples and other structures once stood. The "Kneeling Jaguar" mural (Fig. 6.3) shows that temples had large and ornate roof decorations, mostly of perishable materials. Furthermore, enough remains of murals or red or white surfaces on the exteriors of pyramids and platforms to show that at least the central parts of Teotihuacan were very colorful.

Another misconception is that most of Teotihuacan has been excavated. We do have a relatively intensive surface survey of the whole city; René Millon's Mapping Project, carried out in the 1960s and early 1970s (Millon 1973, 1981; Millon, Drewitt, and Cowgill 1973). It has been

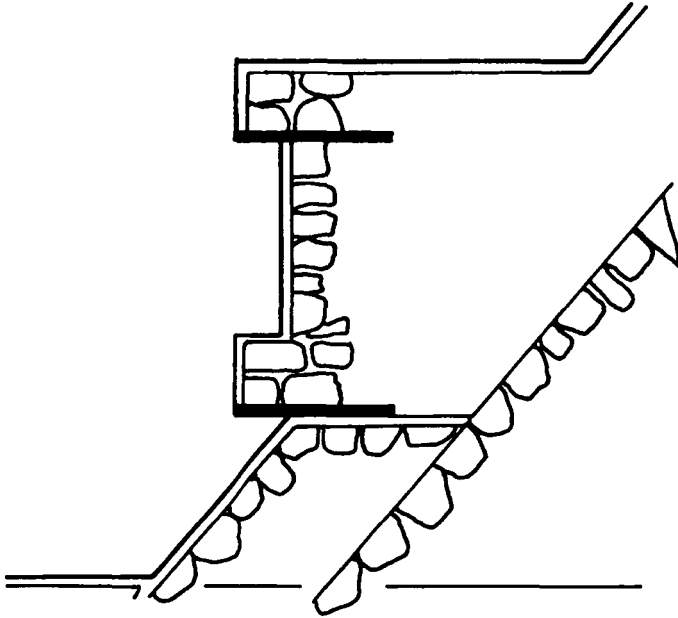


Figure 6.2. Teotihuacan *talud-tablero* architecture.

extremely informative but the survey has unavoidable limitations. Excavations cover no more than 50 hectares (Cowgill 1993), little more than 2 percent of the city. Most of these excavations are concentrated near the center, many have aimed more at restoring relatively well-preserved late stages of structures than at investigating the history of their construction and use; many were done before modern concepts and techniques of excavation and data recovery came into practice; a distressingly large number have never been adequately published; and important collections have been discarded. A great deal has been learned, but an exceedingly small proportion of the ancient city has been excavated and reported adequately.

Elsewhere in the central highlands, the situation is worse. There have been very impressive survey projects (Sanders et al. 1979; García Cook 1981; Mastache and Crespo 1974, 1982; Sugiura 1990; Hirth 1978, 1984a; Hirth and Angulo 1981), but they have been at low intensity and need to be followed up by more intensive surveys and excavations. Only a tiny fraction of any major site has been excavated. Resources for a great deal



Figure 6.3. One of the “Kneeling Jaguar” murals from the Tetitla apartment compound. Note the temple with elaborate roof above the temple platform on the left.

more excavation and intensive survey must be found before it is too late. Many sites are already destroyed by the growth of modern settlement, deep plowing, and other changes. Low-intensity surveys and small-scale excavations are all the archaeological data we will ever have for significant parts of the region.

Native documents and oral traditions are also important. They are of uneven quality, often contradictory, and mythic and political purposes played a large role in shaping their content. One is very apt to go astray with these materials. It is often futile and deeply misguided to try to fit various passages into something like a concrete rational historical narrative in the Euro-American sense. Of course, even when narrative history eludes us, native and colonial documents are extremely important for the light they can shed on religion, idea systems, and iconography. Kelley (1987) provides an especially helpful evaluation of sources and some problems in their use.

Some scholars question whether enough continuity between Aztec and earlier cultures can be assumed to warrant even limited reliance on sixteenth-century and later materials for Teotihuacan. Undoubtedly some central concepts of Teotihuacan society perished, and others changed drastically. Nevertheless, there is evidence for much continuity in other aspects of thought and symbolism. Later materials are a very valuable resource, and it would be as foolish to neglect them as to project them uncritically onto the past. However, a great deal of hard work, control of sources, and sophistication about the social roles of myth and traditions are needed to avoid serious mistakes.

Linguistic data are highly relevant, even though there is no simple relationship between languages and societies. Besides linguistic phylogenies, examples are lexicostatistical dating (if used with acute awareness that resulting estimates are only very approximate guesses); geographical distributions of languages and their dialects; the identification of loan words and some idea of their dates of entry into recipient languages; and the knowledge of homonyms that is needed in the search for “rebus” elements in writing systems.

Thus, almost anything one says about this period in the central Mexican highlands may be drastically changed by further work in the near future. Many statements must be qualified with *it seems that*, *probably*, and the like. Only part of this caution is required by *inherent* limitations of the archaeological, ethnohistoric, and linguistic record, however. The data still survive to clarify much that is now uncertain.

Before about 150 B.C.

The time from roughly 500 B.C. to about 150 B.C. is the Ticoman phase in the general Basin of Mexico ceramic chronology. Its local manifestation in the Teotihuacan Valley is called Cuanalan. It is Phase Two of the First Intermediate Period in the pan-Mesoamerican chronology of Millon and Price. There were sizable settlements in Puebla – Tlaxcala by this time (García Cook 1981; Fowler 1987), and there were some towns with respectable ceremonial centers in the southern part of the Basin, notably Cuicuilco, which may have had a population of 5,000 to 10,000 (Sanders et al. 1979:97). However, the northern part of the Basin, including the Teotihuacan Valley, was marginal to these developments. There were a number of agricultural villages, including a quite sizable settlement that covered between 15 and 30 hectares and had a population perhaps around 1,000–2,000. It was near the year-round springs that originate in the town of San Juan Teotihuacan (Fig. 6.4, around map square S1W6), and thus was well situated for irrigated agriculture.

From roughly 150 B.C. to about A.D. 150

This period spans the local ceramic phases called Patlachique and Tzacualli (Proto-Teotihuacan I, Teotihuacan I and IA). It corresponds to Phases Three and Four of the First Intermediate Period. Ceramics develop primarily out of Ticoman/Cuanalan antecedents and do not suggest any massive population replacement in the Basin. Cuicuilco seems to have reached its maximum size early in this period, with pyramids up to 80 meters in diameter. Sanders et al. (1979:99) estimate its population at around 20,000. Cuicuilco was seriously damaged by a lava flow, probably midway in this period, although it may have survived as a small regional center as late as A.D. 200 (Sanders et al. 1979:106–107).

In the Teotihuacan Valley and elsewhere in the Basin, especially in the north, the poorly understood Tezoyuca Complex – distinctive ceramics that occur unmixed in a few small hilltop centers and elsewhere mixed with Patlachique materials – may date to the beginning of this period. The defensible locations suggest that warfare was important (Sanders et al. 1979:104–105). Very likely several political units within the Basin contended with increasing intensity for territorial control. Statistical analyses by Steponaitis (1981) reinforce other reasons to think that regional centers were exacting tribute from subordinate settlements. Perhaps Cui-

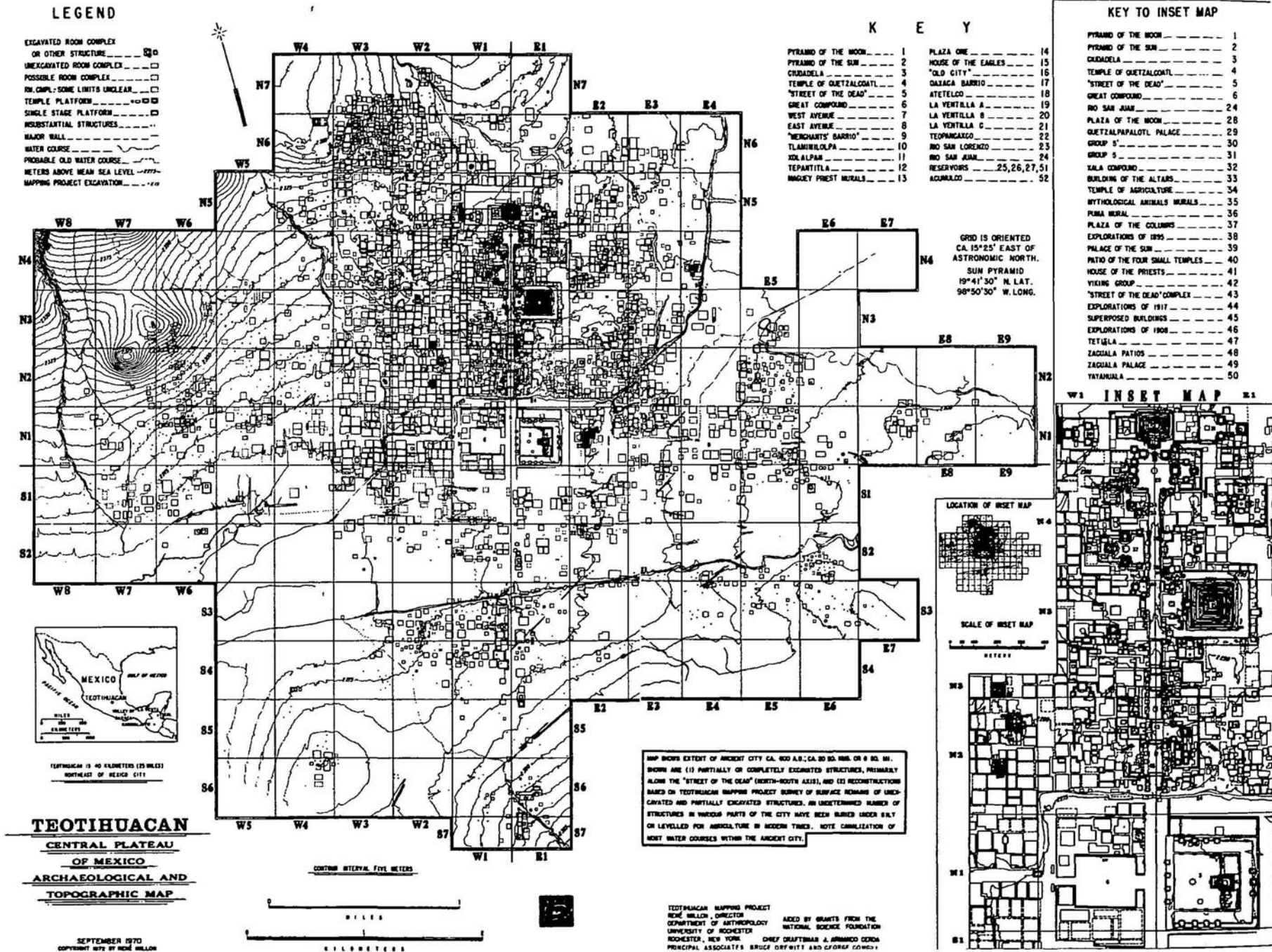


Figure 6.4. The archaeological map of Teotihuacan (copyright René Millon).

cuilco and Teotihuacan defeated all others and became sole rivals for dominance over the whole Basin, a rivalry that ended when Cuiculco was crippled by lava.

In the neighborhood of Teotihuacan there is an abrupt shift away from the Cuanalan-phase settlement. From a new center, about a kilometer west of where the Moon Pyramid is now, a city grew explosively, and covered about 20 square kilometers (8 square miles) by the end of this period. We do not know why the settlement was moved, but the fact that the new center was more than 2 kilometers farther than the Cuanalan village had been from the prime farmland near the springs suggests that sheer proximity to the best-irrigated land was no longer the main consideration. There is also no obvious defensive advantage. The *Patlachique* urban core is in an area with numerous cave entrances. In view of evidence for rituals performed in the cave under the Sun Pyramid, it is likely that religion, connected at least in part with caves, played a significant role in the city's new location and rapid growth.

There is no satisfactory basis for estimating population, but the area and density of sherd coverage suggest it may have been around 60,000 to 80,000 by the end of this period. Even if the population were much less, Teotihuacan must already have been one of the largest settlements that ever existed in Mesoamerica before the twentieth century. It seems that midway in this period, around A.D. 1, almost the entire population of the Basin of Mexico moved into Teotihuacan. This migration accounts in part for the rapidity of the city's growth. The commercial and sacred significance of Teotihuacan must have offered many attractions, but (in spite of the amount of choice irrigable land near the city) relocation of most of the Basin's farmers would have put them inconveniently and uneconomically far from much of the good land in the Basin, especially in the southern part. Almost surely a considerable degree of coercion was required to effect the shift, probably involving both naked force and religious sanctions.

Construction of the enormous Sun Pyramid began about the same time as the population movement; doubtless the events were related. By the end of this period the pyramid reached nearly its final volume of around a million cubic meters, one of the largest prehispanic structures in the New World. It was built above a natural cave altered by the Teotihuacanos. The sacred significance of the cave, probably related to one and perhaps several origin myths, was surely the immediate reason for building the pyramid at this spot (Millon 1981).

By the end of the period about twenty other pyramid groups, mostly three-temple complexes, were in existence, and at least the northern 1.5 kilometers of the great north-south central axis of the city, the so-called Avenue of the Dead, had been laid out. At its northern end this ceremonial way widens into a great plaza in front of the Moon Pyramid, which is surrounded by many other temples (see Fig. 6.5). It runs southward from the Moon Plaza, passes in front of (west of) the Sun Pyramid, and continues for several kilometers. The Moon Pyramid is about one-fourth the volume of the Sun Pyramid. Its early history is still unknown, although excavations in progress in 1998 confirm major structures there by this time (Sugiyama, personal communication, 1998). Somewhat over a kilometer south of the Sun Pyramid, there were already structures where the Ciudadela now stands, but building in the following period so nearly obliterated earlier remains that at present nothing more can be said about this area during this period. Teotihuacan was already a majestic city, awe-inspiring both in the size of individual temples and in the scale of the overall layout. It is not certain whether a single integrated master plan governed the spatial organization of the entire center. This may have been the case along the Avenue of the Dead (Sugiyama 1993), but I doubt if a single plan incorporated other important pyramid complexes situated several kilometers away from the avenue.

Monumental structures and the Avenue of the Dead already followed the distinctive Teotihuacan orientation of 15.5 degrees east of true north. The reasons for this orientation are not fully understood, but it was probably related to astronomical and calendric phenomena of religious significance.

There is as yet no evidence for *talud-tablero* architecture at Teotihuacan during this period, although it was already in use in Puebla (García Cook 1981). Laporte and Fialko (1990:46) report elements of the form, such as recessed panels, in use at Tikal by A.D. 250–300. Little is known of residential architecture at Teotihuacan at this time (Millon 1992). Residences were probably of adobe and other perishable materials. There is no evidence for the concrete-surfaced apartment compounds that began to appear by A.D. 200 and became typical by A.D. 300.

By this time Teotihuacan surely exercised tight political control over the entire Basin, but it is unclear how much farther Teotihuacan's power or influence extended. A society that could dominate the Basin and carry out projects such as building the Sun Pyramid should have been capable of campaigning very successfully well beyond the Basin, at least in some

directions. However, control probably did not extend to Morelos. Ceramics in the eastern Valley of Morelos, about 130 kilometers by air from Teotihuacan, are Tzacualli, but settlement evidence suggests two “chiefdoms,” independent from one another and from Teotihuacan (Hirth 1978; Hirth and Angulo 1981).

Thin Orange Ware, made in southern Puebla, about 160 kilometers away by air (Cook de Leonard 1954; Lackey 1988; Rattray 1990), was already imported, but it formed only a tiny percentage of local inventories (Rattray 1981:59). I see no reason to think the producers were controlled by Teotihuacan at this time. Mapping Project surface collections include a few sherds that appear to be of lowland Maya waxy wares, probably Sierra Red. Smith (1987) reports two Late Preclassic Maya sherds from the Sun Pyramid. Evidently there was already some sort of interaction with the Maya lowlands, but it could have been indirect and tenuous. Ball (1983) reports that, of about five hundred Maya sherds at Teotihuacan he examined, only a few seem slightly earlier than A.D. 250.

Teotihuacan must have already had very strong leadership in order to accomplish what it did during this period. There is some evidence for specialized production of obsidian (Spence 1981, 1984, 1987), but it is unlikely that commerce was the only factor contributing to Teotihuacan's growth. Perhaps a combination of powerful religious attraction, successful warfare, and politically skilful leadership played the largest role in that development. Almost certainly the state was deeply involved in aspects of religion associated with beneficent rain, vegetation, fertility, and abundance; and probably there were some high and politically important priestly offices that had little or nothing to do with warfare. At the same time, warfare was probably highly sacralized, and military command was very likely also a kind of priestly office. It is possible that Teotihuacan's “explosive” growth was effected by leaders who based their power on naked force, but more likely an astute combination of violence and religiously based legitimate authority was used.

At present it is hard to go beyond such speculations. Years ago René Millon called attention to evidence suggesting a major tomb within the Sun Pyramid (Millon, Drewitt, and Bennyhoff 1965). Search for such a tomb will be very enlightening about the ideology and politics of this period. It is also very desirable to know more about other monumental complexes in the vicinity of the Sun Pyramid, such as the “House of the Priests,” the Palace of the Sun, and the Xala compound (see Fig. 6.5,

numbers 41, 39, and 32), since it is likely that at this time heads of the state lived somewhere near the Sun Pyramid.

A.D. 150–300

This period spans the Miccaotli and Early Tlamimilolpa ceramic phases (Teotihuacan II and IIA, Phase Five of the First Intermediate Period and beginning of the Middle Horizon). The uppermost part of the Sun Pyramid was added at this time (Millon 1981, 1992) rather than later, as Smith (1987) argues, as was the fore-platform that adjoins its front (Millon et al. 1965). By far the most notable new building was the so-called Ciudadela, a great rectangular enclosure bounded on the north, east, and south by platforms about 400 meters long, 80 meters wide, and 7 to 8 meters high (see Fig. 6.5, number 3). Eleven pyramids are set atop these platforms. On the west is a lower and narrower platform with four more pyramids. In the center is a 65-by-65-meters pyramid, originally about 20 meters high, the third largest in the city. It is known as the Temple of Quetzalcoatl, but calling it the Feathered Serpent Pyramid begs fewer questions about continuities with the sixteenth century (Berrin 1988). It is famed for the monumental feathered serpents that were carved in relief and in the round in the massive blocks of stone of its façades. Almost surely some of the ideas represented by these serpents are related to some of the ideas the Aztecs associated with Quetzalcoatl, but it would be very unsound to project the whole Aztec complex back onto Teotihuacan.

Two entities are represented in these carvings. One is clearly a feathered rattlesnake (Fig. 6.5). The other is often called “Tlaloc,” but it has only a few traits in common with the Teotihuacan Storm God (Fig. 6.6). Caso and Bernal (1952) pointed this out long ago, and suggested a connection with the Fire Serpent. Even the rings it bears are situated some distance from its eyes. Absence of a body to go with this entity has always been a problem, and efforts to see it as a second head for the Feathered Serpent have not been satisfactory. Sugiyama (1989b) and Taube (1992) independently argue that it is not a head at all, but a headdress. Sugiyama associates it with the Feathered Serpent, while Taube argues that it pertains to a second kind of serpent, associated with fire and a cult of sacred war (see also Carlson 1991). Serpents and other reptilian creatures doubtless had several meanings at Teotihuacan,



Figure 6.5. West facade of the Feathered Serpent Pyramid (Temple of Quetzalcoatl) (copyright René Millon).

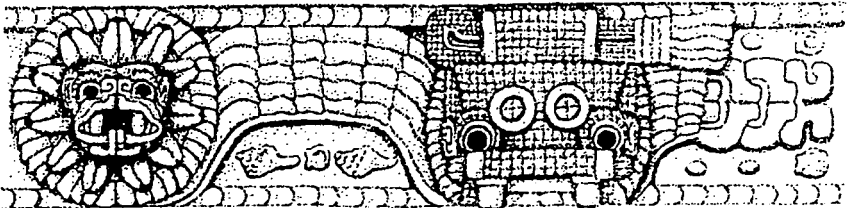


Figure 6.6. One of the feathered serpent and headdress pairs on the Feathered Serpent Pyramid (López A., López L., and Sugiyama 1991).

marked by diverse attributes and contexts. Some had to do with the earth and fertility, but it is very likely that others were connected with war and political leadership (Grove 1987b). The seashells that accompany the feathered rattlesnakes pyramid seem benign and related to watery abundance. Nevertheless, it is tempting, especially in view of other unmistakable military associations with this pyramid, to see military symbolism also on its façade.

It bears repeating that no reference to any human individual has been identified on the exterior of this pyramid. Such absence is not a Teotihuacan innovation. Grove and Gillespie (1992) argue that absence of personalized representations was a long-standing tradition in western Mesoamerica. It certainly does not argue against strong political authority. What is noteworthy is Teotihuacan's persisting rejection of the kinds of personal representation that became so characteristic of the Maya.

The Feathered Serpent Pyramid is flanked on its north and south sides by large apartment compounds, the North and South "Palaces," widely thought to have been residences of the heads of the Teotihuacan state (e.g., Armillas 1964). The western part of the Ciudadela consists of a great plaza covering about 4.4 hectares, without buildings except for two small platforms and an extension of the North Palace into one corner of the plaza.

By this time, reasonably heavy settlement extended some distance south and east of the Ciudadela, although the city's growth rate must have been considerably slower than before. Just west of the Ciudadela, on the other side of the Avenue of the Dead, an even larger but much lower pair of platforms, the "Great Compound," was built. A Teotihuacan Mapping Project excavation showed that it was begun about the same time as the Feathered Serpent Pyramid (Millon 1992:378–380, figs. 8a, b, c), and it must have been planned as part of the same megacomplex. The plaza of the Great Compound may have been a major marketplace (Millon 1981), while structures on its platforms (still little studied) may have been used for storage, specialized craft activities, bureaucracies, the military, or some combination of these and other functions (Sloand 1987; Rodríguez 1991).

Wide eastern and western avenues may also be this early. The western one leads into the large central plaza of the Great Compound. The eastern avenue does not lead into the Ciudadela (whose only public entrance is on the west side, directly facing the Avenue of the Dead), but apparently turns northward a few hundred meters before reaching it.

Nevertheless, the projected lines of East and West Avenue pass through the middle of the Ciudadela and the Great Compound, crossing the Avenue of the Dead at the midpoint of the megacomplex formed by this pair of structures. Thus, the pair are centered on the place where the two spatial axes of the city converge. This spot may have been regarded by the Teotihuacanos as the center of their universe. However, there is no sign of any ancient marker at this geometric center, and more likely they thought of the cosmic center as within the Ciudadela itself, possibly at the Feathered Serpent Pyramid. Millon (1981) characterizes the Ciudadela as the political and symbolic focal point of the ancient city.

Construction of the Ciudadela shortly after the Sun Pyramid suggests a possible shift in the ideological basis of rulership, but (contra Healan, Cobean, and Diehl 1989:251) it does not suggest any major discontinuity. The Sun Pyramid continued to be one of the principal religious foci of the city.

Remains of more than 130 persons have been found in mass burials within and just outside the Feathered Serpent Pyramid, made at the time it was built (Sugiyama 1989a, 1995; Cabrera, Cowgill, and Sugiyama 1990; Cabrera, Sugiyama, and Cowgill 1991). Given the amount of the pyramid still unexcavated, the total number of victims is probably around 200. Three large pits, two underneath the pyramid and one in front of its stairway, were looted long ago, possibly by later Teotihuacanos. Most of the victims had been bound. Possibly they were enemy prisoners or low-status persons decked out in arms and finery for ritual purposes. More likely they were members in good standing of Teotihuacan society, who actually held the ranks and offices indicated by the goods that accompanied them. Prisoners would probably have been buried stripped and perhaps mutilated. That most had been bound means only that they did not go to their deaths willingly, and says nothing about their status before execution. If they were indeed relatively high-status Teotihuacanos in good standing, their mass sacrifice implies a strong, even despotic, central authority, whether they were slain to accompany a dead ruler or dedicated to a nonhuman deity.

These sacrificial burials fall into well-defined ranked categories. Lowest are individuals in their early teens, probably females, with few surviving grave goods except beads, disks, and earspool components of shell, and some large and small bifacial obsidian projectile points (most of their attire would have been textiles, feathers, and other perishable materials). Persons of this category tend to be buried in sets of eight.

The second level consists of males, usually a few years older, with abundant obsidian bifacial points, slate disks worn on the lower back that were probably backings for pyrite mirrors similar to those shown on soldiers in Teotihuacan and later Mesoamerican art, and collars composed of numerous platelets cut from marine shell, from which “trophy” jaws were suspended. Most of these jaws were imitation human maxillae made of teeth carved from marine shell and set in a perishable matrix covered with stucco; occasional variants include real human maxillae (Fig. 6.7), mandibles, and both real and imitation canid maxillae. Persons of this level were probably army officers of moderately high rank, or perhaps elite bodyguards. They were buried in sets of eighteen, sometimes with two additional individual burials of other types that bring the total to twenty.

The third rank were accompanied by numerous greenstone (rarely jade) ornaments, including beads, earspools, and nose pendants in the form of rattlesnake terminal rattles (O. Cabrera 1995) (Fig. 6.8). Many of these finds were worn by the victims; others were included as offerings, as was one set of unusual conical greenstone objects (Berrin and Pasztor 1993:104, Cat. No. 173), great quantities of marine shell, very long, delicate obsidian prismatic blades, obsidian figurines of humans and serpents, figurines of greenstone and other stone (but not ceramic figurines), and some obsidian bifacial points. Clusters of diverse kinds of objects associated with traces of organic materials suggest that bags with rather standardized sets of objects were placed over the bodies (Cabrera, Sugiyama, and Cowgill 1991). “Trophy” jaws are not associated with this category. Ceramic offerings were nearly absent; two incomplete “Tlaloc” vessels and a few coarse ware *cajetes* were found. This class of burial is best represented by the group of twenty persons buried at the exact center of the pyramid. Other examples are some of the burials of single individuals outside the pyramid, such as Burial 203 (Sugiyama 1989a:95, fig. 8). Disturbed remains found atop the pyramid by Gamio and Marquina (Gamio 1922) possibly also belong to this category. There are some military associations, but probably these people were connected with a broader range of activities.

Another level is represented by the one undisturbed individual left in an almost totally looted multiple burial in a large pit on the centerline of the pyramid (Cabrera, Sugiyama, and Cowgill 1991). This unusually robust male had exceptionally large greenstone earspools and a “Tlaloc”-type nose pendant consisting of a rectangular crossbar from which a split



Figure 6.7. A sacrificed person in military attire with trophies composed of real human maxillae, in one of the mass sacrificial pits at the Feathered Serpent Pyramid.

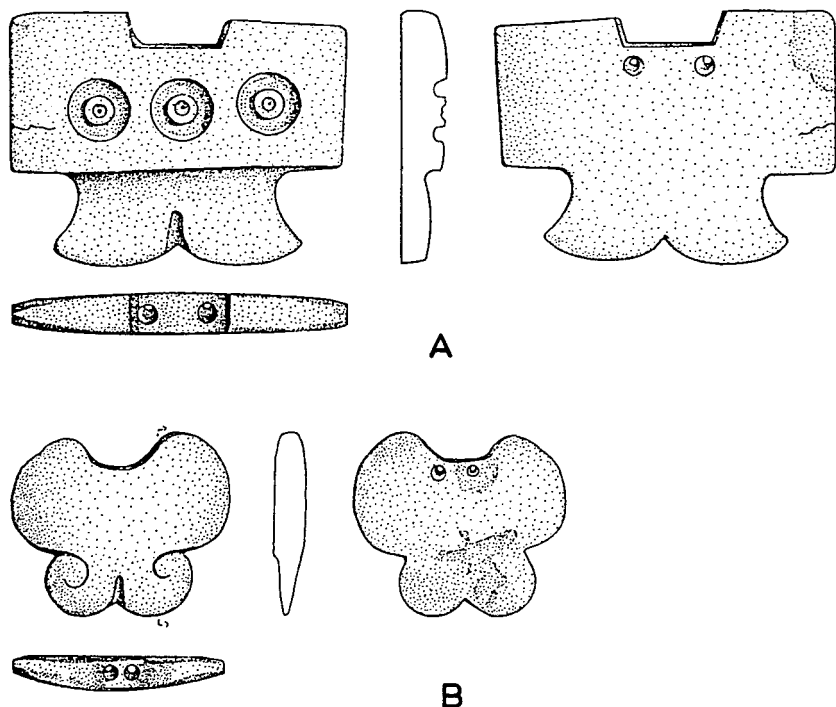


Figure 6.8. Nose pendants worn by sacrificed victims at the Feathered Serpent Pyramid: A is the “Tlaloc” type, B is the so-called “butterfly” type, actually a rattlesnake terminal rattle (courtesy of Oralia Cabrera C.).

tongue depends (see Fig. 6.8). It is similar to other barlike nose pendants from which fangs depend, sign 150 of Langley (1986:276), found on a carving at the Avenue of the Dead Complex (Pasztory 1988:70–71; Cowgill 1997) and elsewhere. Another example is on a pyrite-incrusted disk at Kaminaljuyu (Kidder, Jennings, and Shook 1946, fig. 175).

A fifth level is probably represented by whatever else the large looted pits once contained. They may have held one or more heads of the Teotihuacan state, but the extent of the looting means that, at least at present, we cannot be sure of this.

These finds tell us that hierarchy was already publicly symbolized at Teotihuacan by marked differences in costume. Early Teotihuacan was not egalitarian, even in theory. In openly recognizing status differences, it resembled other early states, in Mesoamerica and elsewhere. What was

unusual about Teotihuacan (contrasting especially with the Classic Period lowland Maya) was the suppression of individuality, at least at lower and intermediate levels. *Within* at least the first three of the levels just sketched (the data for higher levels are too few to enable one to say much), differences in grave goods are slight.

Only a few fragments of mural paintings survive from this period; none show humans (Millon 1992:420–429, Appendix). The numerous murals of the following period (A.D. 300–600/750) show humans subordinated only to deities, never to other humans (Millon 1992). Nevertheless, most are shown in costumes so elaborate and unwieldy that they cannot possibly be the everyday attire of ordinary people; they must be special people on special occasions. Thus, hierarchy is also clearly presupposed in later times, even though ordinary people are rarely shown. However, individuality is suppressed, and multiples of the same figure are commonly repeated. The only known exception is in the late murals at Techinantitla, where otherwise virtually indistinguishable figures are associated with different glyphs (C. Millon 1988). Later Teotihuacan art is also markedly stiff and formalized. Nothing could be more different from the Classic Maya artists' naturalism and interest in variety and individuality (Pasztor 1988, 1992, 1997).

I do not think the Teotihuacanos set out, in reaction to Maya and other styles, to be self-consciously different. Probably they were drawing on stylistic traditions that had deep roots in the central Mexican highlands (mainly in media that have not survived). However, in strong contrast to the eclecticism of later sites such as Cacaxtla and Xochicalco, the Teotihuacanos were relatively uninterested in copying from their neighbors, except those in the Gulf lowlands, with whom they may have had close connections. Some Maya motifs and possibly glyphs occur (Taube, personal communication, 1998), but they had little impact on Teotihuacan style.

Later Teotihuacan art is not just impersonal; it is characterized by *multiplicity* and *replication*. These properties are already conspicuous in the hundreds of essentially identical serpent heads and headdresses on the Feathered Serpent friezes and the standardization of costumes and offerings in the sacrificial burials associated with the pyramid. In the next period the same characteristics are seen in mural paintings, where a series of figures will be shown, all dressed just alike and doing the same thing in the same pose. An important message seems to be that no one person is irreplaceable – everyone has many counterparts who, in the respects

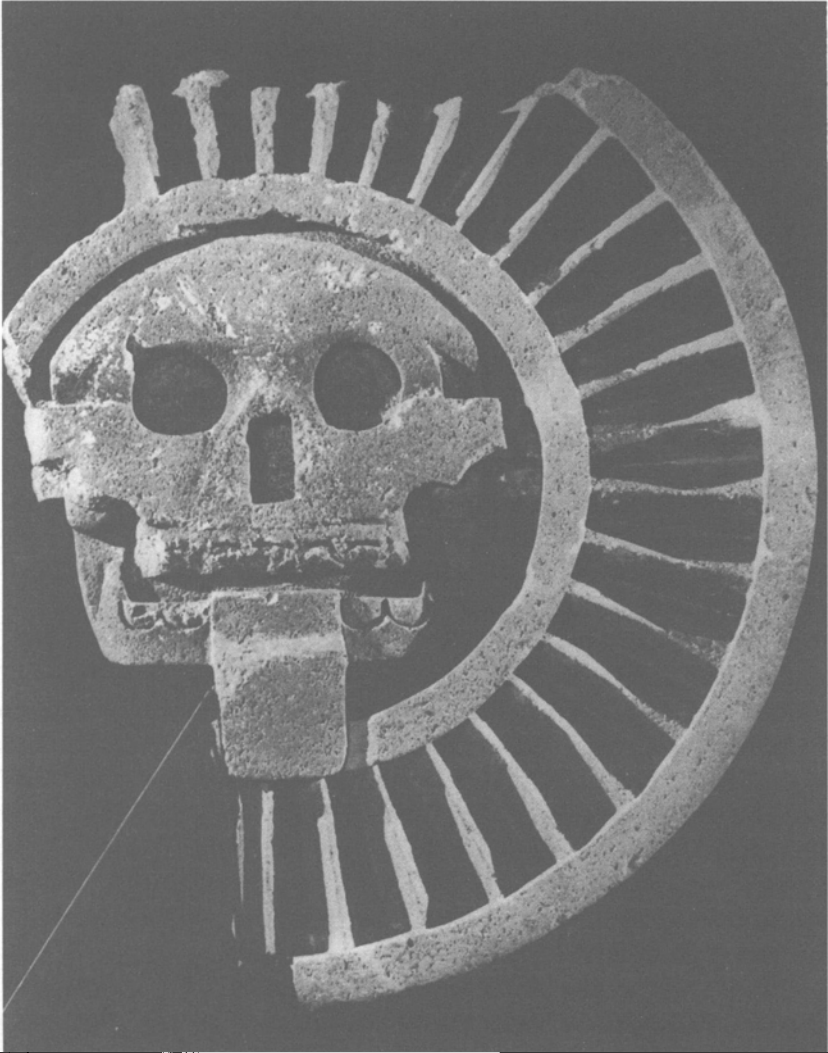
that matter for the contexts being depicted, are no different from one another. This outlook seems to have been well developed by the time of the Feathered Serpent Pyramid and to have continued after the social and political changes at the beginning of the next period.

There is a good deal of monumental sculpture at Teotihuacan besides that in the Ciudadela. Most, from the circumstances of its discovery, is without stratigraphic context. Much could belong to this period. Especially interesting are stone skulls of Teotihuacan style found in the plaza in front of the Sun Pyramid, which probably belonged to the freestanding platform in the middle of this plaza (Fig. 6.9). Sixteenth-century sources say carvings of skulls were visible in this place and worshiped by the Aztecs, but Umberger (1987) argues convincingly that they date to Teotihuacan. They could be later than A.D. 300, but if so, they probably continued an earlier tradition for this locality.

Felines are among sculptures that apparently stood on the foreplatform built up against the Sun Pyramid, probably in the Miccaotli phase (Millon et al. 1965). The Aztecs related the great pyramid to the sun, but also connected it with Tonacatecuhtli, "Lord of Sustenance" (Umberger 1987:83). René Millon (personal communication, 1991) argues for an association of the Sun Pyramid with the "Great Goddess" (believed by many to have been the principal deity of Teotihuacan, although I find this problematic) as well as with the sun. It seems that the complex of meanings connected with the Sun Pyramid had both positive and sharply negative aspects, the latter being embodied by the human skulls. These may have been associated with death as a natural phenomenon rather than with warfare, but they help to alter the image of Teotihuacan as a society wholly preoccupied with peace, fertility, and abundance.

Ceramics show many innovations, including some that may be of Gulf lowlands inspiration, but none that suggest a major influx of newcomers, although the city's population probably increased somewhat. There must have been a steady flow of migrants just to maintain the city's numbers, if the death rate inferred for occupants of one low-status residence in the next period can be generalized (Storey 1985, 1992). Characteristic forms include outcurving bowls and everted-rim vases, both with solid nubbin supports (Fig. 6.10 a, b). Less abundant are *floreros* and "Tlaloc" vessels (see Fig. 6.10 c, d). Fine straight-line incising on blackware, done when the clay already hard, often with cross-hatching and triangles, is shared generically, if not in detail, with Veracruz, Chiapas, and other regions to the southeast, although vessel shapes are not

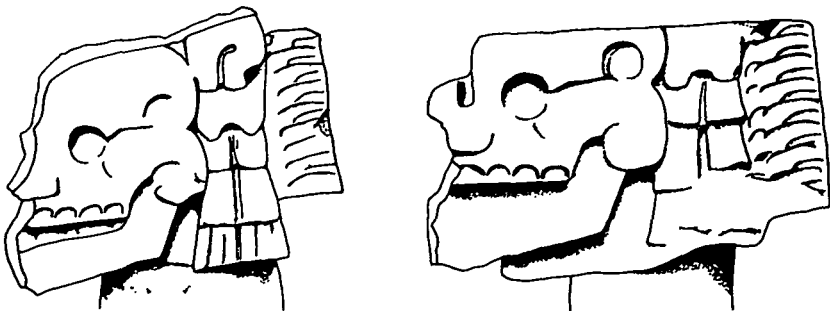
usually very similar. One example is some of the vessels from Cerro de las Mesas, in southern Veracruz, shown by Philip Drucker (1943, Pl. 19-f, and several vessels in figs. 82–114, though many of these are cylinder vases with tripod supports that relate to the next period at Teotihuacan).

**A**

Broader-line curvilinear incising in soft clay is fairly rare until late in this period.

A few vessels have a deep red slip, sometimes enhanced by flecks of specular hematite. There is some red-on-natural. Coarse Matte censers with hourglass bodies are logical predecessors for the elaborate composite censers of the following period. Barbour (1975) discusses figurines, which are characteristically handmade, often with slit eyes and somewhat prognathous profiles. Some wear “wide band” headdresses.

Ceramic categories significantly absent in the local repertoire of this period are cylinder vases, rectangular supports, *candeleros* of all kinds, and elaborate composite censers. It is unlikely that direct-rim cylinder vases with lids and hollow tripod supports, so characteristic of Teotihuacan in the next period, were developed locally, and it should not be assumed that every cylinder vase in Mesoamerica carried a message of strong symbolic (let alone political or commercial) ties with Teotihuacan. Objects as distant as some Horcones-phase tetrapod vases from Chiapa de Corzo, dated around A.D. 1–100, while unlikely as immediate sources for Teotihuacan, are no more improbable prototypes than anything at Teotihuacan (Lowe 1962, pl. 15e). Moreover, some cylinder vases suggest metal antecedents, a point made years ago by Gordon Ekholm. It should not be ignored, however disquieting the implications. Lustrous Ware imports at Teotihuacan in this period, likely from somewhere in lowland Veracruz, include sherds that are probably from tripod cylindrical vases,



B

Figure 6.9. Stone skulls from the Sun Plaza, Teotihuacan: (A, opposite page) is a frontal version (copyright René Millon), (B) shows two skulls carved in profile (after Gamio 1922).

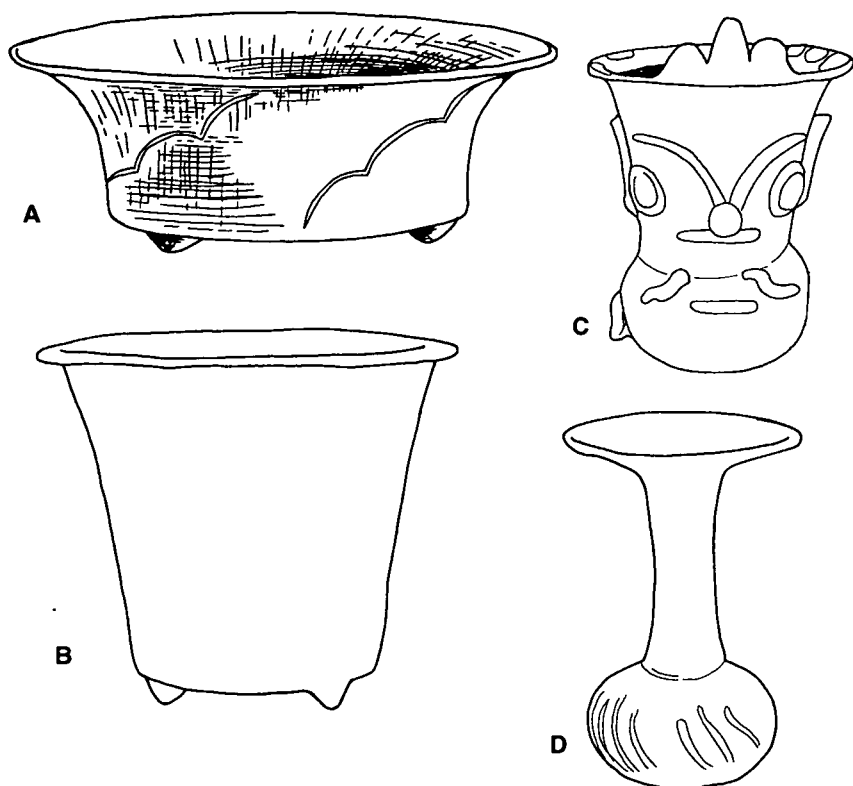


Figure 6.10. Some Miccaotli-Early Tlamimilolpa ceramics: “A” is an outcurving bowl with incised “cloud” motif, “B” is an everted-rim vase with nubbin supports, “C” is a “Tlaloc” vessel, and “D” is a *florero* (all after Séjourné 1966a).

apparently produced in Veracruz significantly earlier than at Teotihuacan. This supports Bennyhoff’s suggestion (1967:26) that the form probably originated in central Veracruz.

Thin Orange Ware is imported in slightly higher proportions than before, reaching 3 percent to 4 percent of some collections (Rattray 1981: 59). Grayware, probably from Oaxaca, appears in small quantities. A few fine paste sherds are probably imports from the Gulf lowlands.

The ceramic connections with Veracruz do not include utility wares, and massive population movement is unlikely. The language of Teotihuacan is unknown, but there is a sixteenth-century tradition that it was Totonac. This is considered a serious possibility by several recent schol-

ars, who also give reasons for doubting that Nahuatl speakers were important before about A.D. 500 (Justeson et al. 1983; Kaufman n.d.). This need not imply a migration to or from the Gulf Coast; only that language may have been shared, which would have facilitated interactions. Jimenez Moreno (1974) argues for Nahuatl speakers very early but suggests a “symbiosis” with Totonac speakers in Tzacualli and Miccaotli times. Strong Veracruz influences in several Teotihuacan sculptures, notably in interlocking scroll designs, are well known, but these are undated and may be later. Scrolls also occur in Cholula reliefs.

Several sites in southeastern Veracruz, including Cerro de Las Mesas and Tres Zapotes, show some Teotihuacan ties (Stark 1991), and there are a few stone monuments with marked Teotihuacan affinities, notably a relief from Soyoltepec (von Winning 1987, vol. II:22, fig. 27a). The figure on this monument, with serpent-jaw headdress, eye rings, bar-type nose pendant, and flaming-bundle torches, strikingly displays symbols associated with war and political authority at Teotihuacan (Fig. 6.11). This and other Teotihuacan manifestations in Veracruz may well pertain to the next period, but I suspect some are as early as A.D. 150–300.

It has been thought that widespread Teotihuacan influences are not much earlier than A.D. 400. However, it would be very odd if, after having drastically altered societies throughout the Basin of Mexico and having built the great monuments of their city by A.D. 200, the Teotihuacanos waited another two centuries to make their power felt much beyond their core area.

Quantities of marine shells at Teotihuacan indicate that it had direct or indirect access to these exotic materials, but the fact that great concentrations, unworked as well as worked, are found only in special contexts, implies that they were hard to obtain and regarded as precious and special.

Caso, Bernal, and Acosta (1967) and Caso and Bernal (1952) report several ceramic objects from the Monte Albán II-IIIa transition phase so similar to Teotihuacan examples that they suggest close contact. Monte Albán, in Oaxaca, is about 375 kilometers by air from Teotihuacan. Outcurving bowls and everted-lip vases, both with nubbin supports, are characteristic of the Miccaotli–Early Tlamimilolpa interval at Teotihuacan. The “Tlaloc” vessels and *floreiros* illustrated by Caso and Bernal (1952:36–37, figs. 39 and 40) and by Caso et al. (1967) probably also belong to this period. Perhaps neither site strongly influenced the other, but there was significant contact this early. Recent excavations in an

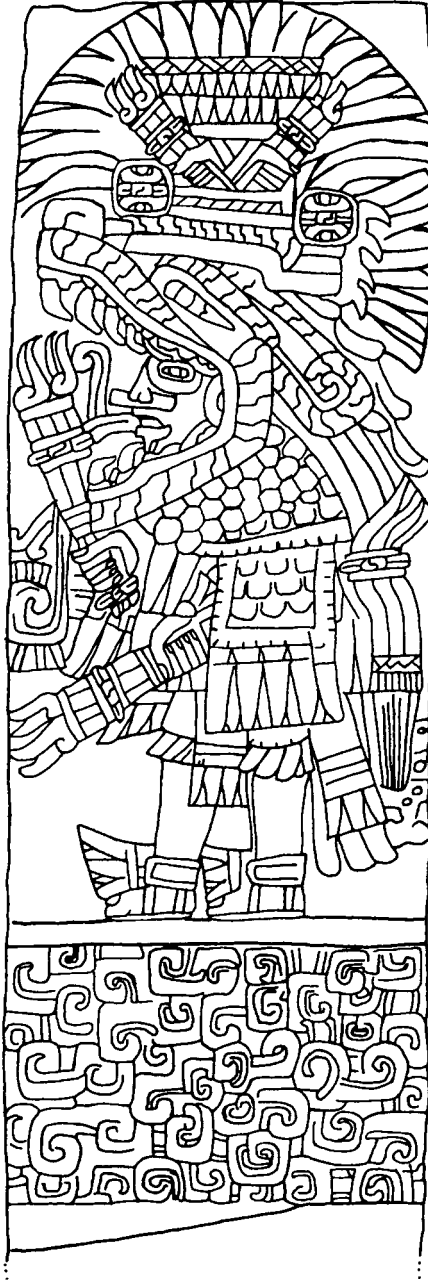


Figure 6.II. Relief carving from Soyltepec (after von Winning 1987).

enclave of apartment compounds in Teotihuacan map square N1W6 indicate that Oaxaca-related ceramics appeared there by the end of this period (Spence 1992).

An offering at Altun Ha, a relatively modest lowland Maya site near the coast of Belize (Pendergast 1971, 1990; Pring 1977), is exceptionally significant because its contents unmistakably relate to this early period at Teotihuacan. The numerous green obsidian objects include large bifacial spearpoints, smaller bipointed objects, anthropomorphic figurines, and a very long and thin bifacial skewer. All so closely resemble objects from the Feathered Serpent Pyramid that they were probably made by Teotihuacan artisans. The ceramics were not made at Teotihuacan, but include outcurving bowls with solid nubbin supports quite similar to the Teotihuacan form typical of this period. Cylinder vases are absent. Pring (1977) argues that the offering dates to the Early Classic, rather than the Protoclassic, in the Maya sequence. If so, given the unambiguous connection with Miccaotli–Early Tlamimilolpa at Teotihuacan, it could only mean that the Teotihuacan chronology is later than we now think. This is unlikely, and I suspect that Pendergast's original Protoclassic date is more accurate. Most recently Pendergast (1990) suggests an absolute date of around A.D. 200–275, which agrees well with my chronology for Teotihuacan.

As Pendergast (1971) points out, the objects form a set and are not just an assortment of Teotihuacan items that somehow found their way to this site. Their burial as a unit clearly reflects a significant episode of contact on an élite level. It is strange that nothing else like this has been found. With wider awareness of the cultural inventory of Teotihuacan in this pre-cylinder vase era, perhaps more such instances will be recognized.

Later Maya elites adopted some symbols associated with Teotihuacan, and most of these are associated with war. It has been argued convincingly that these were not imposed by Teotihuacan but were adopted by groups independent of it, for their own (largely political) ends (e.g., Stone 1989). Probably Teotihuacan never exercised lasting direct political authority very far beyond central Mexico (Bernal 1966). Nevertheless, nothing would have so effectively imbued Teotihuacan military symbolism with an aura of great potency as the memory of some highly successful campaigns. A tempting speculation is that soon after gaining firm control of the Basin of Mexico and drastically reshaping its society, settlement system, and organization of production, the powerful early

rulers of Teotihuacan turned their attention outward and overwhelmed many of their neighbors. At least in parts of Veracruz, this may actually have resulted in more than ephemeral political domination. However, I doubt that any large long-lived empire was created. The most enduring effect was probably, like those achieved by Alexander, Charlemagne, and Napoleon, the memory of dazzling successes.

A.D. 300–600/750

This period comprises the Late Tlamimilolpa, Xolalpan, and Metepec ceramic phases (Teotihuacan IIA–III, III, IIIA, and IV), essentially the Middle Horizon of the Millon and Price scheme. It ends with the violent destruction of major temples, perhaps as late as A.D. 750, although recent radiocarbon dates suggest it may have been a century or more earlier. It is apparently the heyday of Teotihuacan influence abroad, but most of the excitement within the city seems to be over. There is evidence of great material prosperity, perhaps tapering off in the last century or so. Many masons and others must have been busy building and rebuilding the large stone rubble-and-concrete apartment compounds that now housed most of the city's population, which had grown to something like 100,000, possibly even twice this figure. Many of the temples, platforms, and other civic structures already in existence were renovated and enlarged, sometimes substantially, but nothing was undertaken that compares with the mind-boggling achievements of the period between about A.D. 50 and 250. If a single word were used to characterize the look of the centuries that followed, it would be *stability*. There may have been many episodes experienced by the Teotihuacanos who lived through them as times of tension, crisis, uncertainty, and struggles for power. It is possible that the locus of active political management shifted from the Ciudadela to the Avenue of the Dead macrocomplex (see Fig. 6.5, number 43; Cowgill 1983). Nevertheless, change in material culture was moderate and there was no interruption or disruption on a scale large enough to leave gross archaeological signs. There is no good evidence that an episode of widespread destruction intervened between Late Xolalpan and Metepec, as thought by Acosta (1972). Nothing suggests major incursions of outsiders, although infiltration of smaller numbers from various sources was probably chronic. Possibly the number of Nahuatl speakers was increasing significantly. Such a long period of comparative stability is unusual, and it demands explanation.

Perhaps a series of autocratic rulers in the preceding period committed what were perceived as excesses, climaxing in the mass sacrifices at the Feathered Serpent Pyramid, and these may have led to a reaction. René Millon (1992) argues for such a reaction, on the part not of the masses but of the elite. He suggests that a new ethic of collective leadership and institutionalized restraints on the exercise of personal power was adopted around A.D. 300 and remained effective for the next several centuries, with a possible trend toward increasingly autocratic rule in Teotihuacan's final century. I agree that very likely there was a shift to less enterprising and less overbearing leadership, but the change may have been less drastic than Millon suggests and may have involved differences in individual personalities of rulers as much or more than radical institutional changes. During this period representations of Teotihuacan society in figurines, decorated ceramics, monumental sculpture, and mural paintings in private and public places are indeed characterized by impersonality, multiplicity, lack of visible hierarchy, and emphasis on costume, insignia, regalia, and ritual performance. Nevertheless, there is no evidence of markedly different symbolic emphases in the preceding period. The relation between Teotihuacano representations and their concrete social actions remains puzzling and in need of elucidation. What *is* clear is how greatly their representations differed from those of other Mesoamericans, especially the lowland Maya.

A distinctive kind of apartment compound became very widespread and eventually housed nearly the entire population of the city. These vary considerably in size. Possibly a quarter of the total residential space in Teotihuacan (not counting insubstantial structures) was made up of buildings that covered less than 2,000 square meters (about 45m × 45m) and another quarter by buildings that covered more than 4,500 square meters (67m × 67m). A tenth of the area may have consisted of buildings of less than about 1,200 square meters (35m × 35m) and a tenth of structures larger than 6,400 square meters (80m × 80m). There are substantial differences in typical apartment-compound sizes in different parts of the city. Most were large enough to have housed several extended families, and many probably held sixty or more individuals. Occupants were probably related in part by descent and marriage, but perhaps also by other principles. Millon (1992:340) emphasizes how different these compounds were from the residential units of other societies in central Mexico and elsewhere. Occupants of a compound probably formed a social unit above the extended family/household level but below the

barrio level. The existence of such units would have been a distinctive factor in the constitution of Teotihuacan society.

Cylindrical tripod vases, considered a “hallmark” of Teotihuacan but significantly absent in the previous period, began to be made at Teotihuacan around A.D. 300. They have a variety of support forms, including hollow with circular cross-section and hollow and solid slabs. Small, cream pitcher-like vessels (*copas*) occur in small quantities; similar vessels occur in sites in Veracruz and Chiapas such as Mirador (Agrinier 1975) and as far away as Kaminaljuyu. The small, rather crudely made incense burners called *candeleros* appear. At first some have only a single chamber, but soon nearly all are twin-chambered (Fig. 6.12). Larger coarseware censers with flowerpot-like bodies, often with lids and pedestals of similar shape (but inverted), continue from before but now assume elaborate composite “theater” forms in which intricate arrays of finer moldmade elements are attached to a hand-modeled framework extending from a cylindrical chimney projecting up from the lid (Fig. 6.13).

Cooking, storage, and transport vessels such as ollas, amphoras, open cazuelas and craters, and *comales* (griddles) continue without dramatic changes from the previous period. This is true also of vessels for serving and other purposes, such as jars, convex-sided bowls, and the very numerous outcurving bowls. Most of these were probably made in a number of local workshops, by not very specialized potters, for neighborhood consumption (and certainly not for export) (Krotser 1987). Midway in the period, a distinctive utility ware, San Martín Orange, was developed and produced in great quantities in certain districts, especially Tlajinga (see Fig. 6.4, map squares S₃W₁ and S₃W₂). Most of this ware consists of two quite standardized forms: amphoras and large open craters. It is fired at a temperature significantly higher than that used for most Teotihuacan ceramics, and there is little doubt that specialists produced it for wide distribution within the city, although movement of San Martín Orange more than a short distance beyond it seems to have been slight.

Figurine types develop out of those of the preceding period, but use of molds increases, at first for heads attached to featureless hand-modeled nude bodies (often in active poses), which probably had perishable clothing and ornaments. Molds are later used for bodies as well, and costumes are often elaborate (Barbour 1975).

The vast majority of known Teotihuacan murals and perhaps most stone carvings pertain to this period. Major publications on Teotihuacan

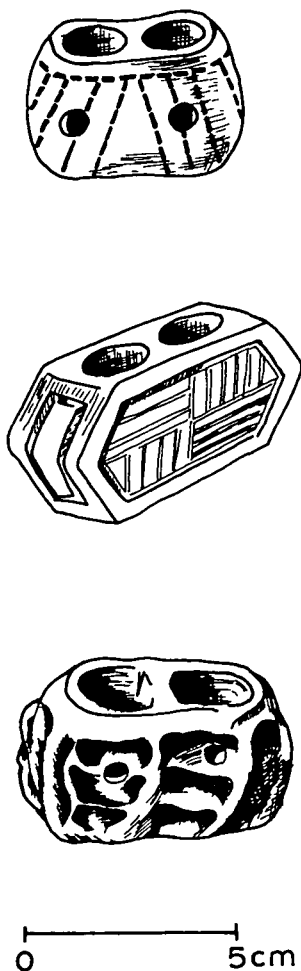


Figure 6.12. Teotihuacan *candeleros*, Xolalpan-Metepec phases. The lowest of the three is a “common” *candelerero*, with finger-jabbed decoration, the most abundant type (after Séjourné 1966a).

art, iconography, and symbol systems are listed in the accompanying bibliographic essay.

There were at least two sharply defined and localized residential concentrations with outside connections. One was a long-lasting enclave with strong Oaxacan ties near the western outskirts (Millon 1981; Spence

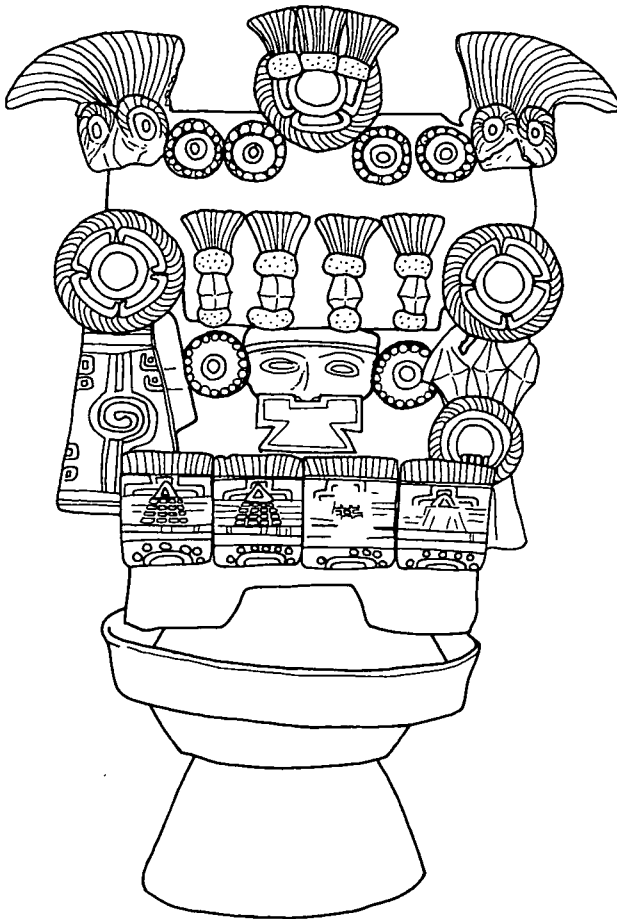


Figure 6.13. A Teotihuacan composite censer, Xolalpan-Metepec phase (after Séjourné 1966a).

1989, 1992). The other was the so-called Merchants enclave, which has significant amounts of pottery imported from the Gulf lowlands and lesser amounts from the Maya lowlands (Millon 1981; Ball 1983; Rattray 1989).

Teotihuacan remained a “primate” city, by far the largest settlement in the Basin of Mexico, although small settlements seem to have become more numerous than in the preceding period (Sanders 1981). It is possible, though somewhat unlikely, that many isolated rural households were

missed by the Basin of Mexico survey, but it is clear that small and medium-sized settlements were very scarce relative to earlier and later times. From a purely technical point of view, the settlement pattern of the Basin was inconsistent with the most efficient use of subsistence resources, and this is strong evidence that other considerations were more important. Farmers, through coercion or compensating rewards of some kind, accepted arrangements that must have been perceived as inferior in some respects to other possibilities. There were, however, a few good-sized regional centers, such as Azcapotzalco (Tozzer 1921; García Chávez 1991; García Chávez et al. 1990) and probably Cerro Portezuelo (Nicholson and Hicks 1961; Branstetter-Hardesty 1978), and these should not be overlooked.

The region under rather tight political control by Teotihuacan certainly extended beyond the Basin of Mexico, but René Millon (1988:113) thinks its core area may have been no more than about 25,000 square kilometers, with a population of not more than half a million. This may be a little conservative, but I doubt if either the area or the population was more than twice that – far less land and far fewer people than the Aztec state controlled. There is a strong Teotihuacan presence to the northwest, in the Tula region, almost certainly administered through a major center at Chingú (Díaz 1980). Beyond that the data are less clear, but I suspect that political control did not extend much farther. There are iconographic connections as far west as Jalisco. Possible influences in Zacatecas or Durango and farther to the northwest seem tenuous. Little is known about the Toluca region, but Teotihuacan control may have been strong. Drastic settlement pattern changes in eastern Morelos were probably due to Teotihuacan intervention (Hirth 1978; Hirth and Angulo 1981), and it was very likely part of the Teotihuacan polity. There is a clear Teotihuacan presence in the Yautepec Valley of central Morelos (L. Montiel, personal communication, 1998). Teotihuacan influence in western Morelos was perhaps not so strong, although it certainly extended, in some form, well into Guerrero.

The situation in Puebla–Tlaxcala remains unclear. Some sites in the parts of this region most accessible to Teotihuacán were culturally very close to the city and probably under its political control (e.g., Linné 1942), and García Cook (1981) has argued for “corridors” of Teotihuacan-related sites traversing the region. Cholula was an important Teotihuacan-related settlement, but its political status is a major puzzle. Perhaps Teotihuacan politically controlled producers of Thin Orange Ware near

Tepeji de Rodríguez, in south-central Puebla. Teotihuacan imported the ware in huge quantities, and it forms up to 10 percent of ceramic inventories in this period (Rattray 1981).

The picture in the Gulf lowlands is even more obscure. In addition to ceramics imported from a wide range of Gulf lowlands sources, there are shared styles and vessel forms such as cylinder tripod vases, “cream pitchers,” and interlocking scroll patterns, but the Gulf lowlands may have been as much donor as recipient. Sculptural evidence of Teotihuacan connections at Cerro de las Mesas is slight (M. Miller 1991), but sculptures elsewhere, such as the Soyoltepec relief (von Winning 1987), suggest a Teotihuacan-related military presence. Maticapan had some sort of connection (Santley 1983, 1989; Ortiz and Santley 1998), although its intensity has been exaggerated. Perhaps Teotihuacan never had direct political control over any part of the Gulf lowlands, but possibly there was an unusually direct relation of some sort with the area around El Tajín, which is the section of the coast geographically closest.

It seems there was a large region in which the development of other centers with major monumental architecture or impressive art was inhibited for several centuries. Perhaps Teotihuacan armies could easily squelch any rival that threatened to offer serious competition. Very likely this applied to commerce as well as to symbolic claims. It is unlikely that Teotihuacan monopolized trade throughout Mesoamerica, but it very likely overshadowed all potential rivals in central Mexico.

The rise of centers such as Xochicalco and Cacaxtla marks the decline of this dominance, probably in the 600s. Possibly Teotihuacan was already in ruins by then, but the rise of these centers may have been coeval with the Metepec phase – a century or so during which Teotihuacan culture continued to function without drastic changes and the city remained fairly prosperous in spite of weakening power farther afield. The population of the city probably declined in its last century, but mainly by shrinkage around the edges; Metepec ceramics are especially abundant in the center. This contrasts with all later periods, during which occupation in the former center of the city was much lighter than in various noncentral districts.

The Monte Albán state in Oaxaca was clearly independent of Teotihuacan, and surviving monuments represent interactions between emissaries who seem roughly equals, rather than celebrating victories of either over the other (Marcus 1983). Teotihuacan-related manifestations are stronger in highland Guatemala, nearly 1,100 kilometers away. At Kamin-

aljuyu these include *talud-tablero* pyramids in Teotihuacan style, rich burials with elite ceramics and other objects imported from Teotihuacan, and locally made elite materials in Teotihuacan style (Kidder et al. 1946; Sanders and Michels 1977). Persistence of local utility wares strongly suggests continuity of the local population. Locally made ceramics of Teotihuacan inspiration are found elsewhere in the highlands and Pacific slopes and plain, notably composite theater-type censers (Berlo 1984). The nature of this “presence” remains controversial. It is hard to believe that any part of Guatemala was politically controlled from Teotihuacan. Nevertheless, the large Teotihuacan-style pyramids at Kaminaljuyu with rich burials and costly offerings laden with symbolism of the state religion strongly suggests something other than, or at least more than, a trading colony. Teotihuacan probably never sent out prosetizing missionaries, although they may have demanded participation in the state religion as part of political control, quite a different matter. I suspect that well-armed and powerful adventurers from Teotihuacan staged a takeover in highland Guatemala, set up a local state that was either autonomous from the start or quickly became so, replicated the elite religion and culture of the metropolis, and maintained fairly close ties with it. This is much like what Kidder et al. (1946:255) suggest. The later Cotzumalhuapa style is not closely connected with Teotihuacan (Braun 1982) and Teotihuacan probably did not have any lasting impact on highland Guatemala.

Strong Teotihuacan influences are also evident in the Maya Lowlands, especially at Tikal (see especially Stone 1989 and several papers in A. Miller 1983 and Clancy and Harrison 1990) and Copán (Stuart 1997). The nature of Teotihuacan–lowland Maya interactions is poorly understood, but it is unlikely that they involved direct political control or high-volume commerce. Clearly there was some elite exchange of precious objects. Persons with direct or indirect Teotihuacan connections played important roles in Maya politics for a time, and possibly some new techniques and aims of warfare were inspired by Teotihuacan (Schele and Freidel 1990). At any rate, symbols shared with Teotihuacan and almost surely connected with it in Maya thought became important in the Maya iconography of rulership.

Trade was unquestionably important for the Teotihuacan state and society, but its significance has been exaggerated by some writers, notably Robert Santley (1983, 1989), at the expense of other factors, such as warfare and religion. Some of Santley’s claims have been criticized (Clark

1986*; Drennan et al. 1990; Stark et al. 1992), but many Mesoamericanists have been disconcertingly credulous. Besides making dubious assertions about the volume of Teotihuacan production and movement of goods, Santley accepts many kinds of objects as good evidence of a Teotihuacan connection whose relation to Teotihuacan is problematic, such as cylinder vases and Thin Orange Ware. Especially questionable is the supposed Teotihuacan enclave at Matacapán, in southern Veracruz, some 415 kilometers by air from Teotihuacan. Originally this was thought to be a very localized concentration of Teotihuacan-related materials (Santley 1983), but it was subsequently recognized that these materials are scattered widely over the site (Santley 1989). Since it is hard to believe that the entire site was occupied by Teotihuacanos (the vast majority of the ceramics are non-Teotihuacan), this implies that the Teotihuacan “connection” was based on something other than a distinct Teotihuacan settlement. To be sure, some objects at Matacapán are unmistakably and strongly linked to this period at Teotihuacan, including some motifs on cylinder vase supports and, notably, twin-chambered *candeleros*. These small objects are mostly rather crude and were probably used in household or personal ritual. Their presence at Matacapán is puzzling and suggests the spread of a cult. Such a cult seems too modest to have been part of the Teotihuacan Great Tradition, yet the abrupt disappearance of these objects after the destruction of Teotihuacan suggests a close tie with the state. Matacapán figurines also show some general resemblances to those of Teotihuacan (Warren Barbour, personal communication).

There is little doubt that Teotihuacan controlled access to the highly valued green obsidian from the Pachuca source (about 55 km away), as well as the much closer source near Otumba, and some Pachuca obsidian appears in widely scattered sites throughout much of Mesoamerica at this time. However, most of what spread beyond Teotihuacan’s political sphere was ideational and symbolic, together with some manufactured goods that embodied these ideas (often on an élite level). I suspect that Teotihuacan traded green obsidian so extensively simply because Mesoamericans widely appreciated its superior properties, and it was one (perhaps almost the only) raw material controlled by Teotihuacanos that

*I agree with Clark that we are still very unsure of the scale and character of obsidian production, consumption, and export at Teotihuacan, and there is little doubt that it was less important than Santley claims. However, I think Clark (1986:41) grossly underestimates the quantity of obsidian below the surface at Teotihuacan, and I strongly suspect that it represents the output of considerably more than ten full-time specialists per year.

could be offered in exchange for products that Teotihuacanos wanted to import. I doubt very much that Teotihuacanos controlled the production or distribution of obsidian from sources outside central Mexico, or that they could ever gain much manipulative leverage by threatening to withhold obsidian from potential foreign customers. We have little evidence about perishable materials that Teotihuacanos may also have traded, such as textiles produced from cotton obtained from Morelos, the coastal lowlands, or both.

The notion of a great Teotihuacán trade empire is based partly on careless use of data and wild extrapolation, and partly on extraordinary blindness to the political and ideological dimensions of Teotihuacan influence. The iconographic evidence indicates that Teotihuacan *meant something of surpassing importance* far beyond its core area. The military imagery also suggests that, on a very concrete level, warfare by Teotihuacan or Teotihuacan-related groups left a wide-ranging and long-lasting impression. Of course, merchants often keep a low profile and do not always commemorate their exploits in monumental form; nevertheless, I see no really good evidence for large-scale commerce. It is interesting, for instance, to note how small a part commercial considerations played in the creation of the Roman Empire (Millett 1992). I suspect that warfare and religious and other symbolism have the most to do with the spread of Teotihuacan-related manifestations in Mesoamerica.

If Teotihuacan's influence was based more on what it meant than on actual political control or commerce, its decline in the 500s and 600s cannot have been a central factor in the decline of lowland Maya society centuries later, although internecine Maya warfare may have intensified in part because new opportunities were perceived when Mesoamerica was no longer overshadowed by Teotihuacan.

Decline, Fiery Destruction, and Aftermath

Perhaps around A.D. 650, but possibly a century later, the principal temples and many of the residences in the central part of Teotihuacan were burned and carved figures were smashed. Millon (1981, 1988) emphasizes how violent and selective the destruction was; most residences outside the central district were abandoned without burning. He argues that only insiders would have been so selective and that the sustained effort involved implies a high level of pent-up anger. I cannot see that outsiders would have had trouble identifying the temples and palaces

most strongly connected with the Teotihuacan state and its religion, and the sustained effort may have resulted from a perceived need to thoroughly destroy the objects of and setting for state-related ritual in order to permanently disable Teotihuacan as a political force. Nevertheless, whether the immediate agents of destruction were insiders, outsiders, or some combination, only a decline in the system that had worked so well for Teotihuacan in the past could have made the city vulnerable to such destruction. What ended was not just a dynasty, it was the belief system that had supported the state. One implication is that a considerable part of Teotihuacan ideology failed to survive, in spite of the continuities with the sixteenth century. I suspect there were many Teotihuacan survivors, but the political and ideological breakdown had such devastating social and spiritual consequences that they scattered, and probably most of their descendants quickly lost their cultural identity. It is possible, however, that there is some truth in later traditions that suggest that elements of the Teotihuacan tradition persisted in Cholula.

In any case, there were marked changes in material remains, on both élite and ordinary levels. Both the distinctive *talud-tablero* style for temples and the “apartment compound” type of residences disappear, and a whole range of ceramic forms vanishes. These include cylindrical vases, Thin Orange ware, *candeleros*, composite censers (which are replaced by very different forms, such as ladle censers), and San Martín Orange Ware. Ollas and other cooking and storage vessels assume quite different shapes. Some distinctive figurine types, such as “portraits,” disappear, although there are continuities in some other figurine forms (Barbour 1987). The city may have been briefly abandoned or nearly abandoned; a very poorly understood “Oxtoticpac” complex may represent peoples who lived in and near the city (Sanders 1986a; Millon 1992).

Teotihuacan soon became a large settlement again. The quantity and extent of sherds of the Xometla phase (a local phase within the broader category called Coyotlatelco) found by the Teotihuacan Mapping Project suggest that settlements covered around 12 square kilometers and may have amounted to around 40,000 people. Contrary to Diehl (1989b:11–12), the locations of highest sherd concentrations changed markedly; it was the greatest spatial shift since the onset of the Patlachique phase some eight or nine centuries earlier. Altogether, the abruptness and intensity of changes suggest a considerable in-migration of ethnically different people, who may well have been Nahuatl speakers, a possibility discussed shortly.

In the ensuing Mazapan phase the city remained quite large. Judging

by the area and quantity of sherd cover and the estimated duration of the phase, it is unlikely that the average population was much less than 30,000. Sanders et al. (1979:140, 207) are surely wrong in thinking that it was as few as 10,000 to 20,000 or an “estimated maximum [of] 10,000.” Mazapan ceramics are quite different from Coyotlatelco. They may be a Basin of Mexico innovation or they may represent another sizable influx of newcomers.

CACAXTLA, CANTONA, XOCHICALCO, AND CHOLULA

Discussion of the Coyotlatelco and Mazapan occupations of the Basin of Mexico has already brought us into Phases One and Two of the Second Intermediate Period in the Millon and Price scheme. Elsewhere in the central highlands noteworthy sites appeared. I limit my discussion to summary remarks on a few of the most spectacular.

In central Puebla–Tlaxcala, Cacaxtla is a hilltop site that may have been coeval with Metepec Teotihuacan or may have developed soon after the collapse of that city. It will probably not be possible to resolve this important question until better data on ceramics are available. The site is not exceptionally large but is notable for its extraordinary murals. These include a scene in which defeated soldiers are cruelly slain. Cacaxtla painting differs greatly from Teotihuacan in its naturalistic and animated style, individuality of pose and dress, and gruesome explicitness. The murals are eclectic, with elements from several sources, including Teotihuacan, but Nagao (1989) shows that lowland Maya features dominate. Almost surely the artists were Maya, but the rulers were very likely from parts of the Gulf lowlands that were nearer by (perhaps the “Olmeca–Xicalanca” of later traditions), or perhaps even natives of the central highlands. In any case, it served their purposes to proclaim connections with the Maya rather than with Teotihuacan. Additional recently discovered Cacaxtla murals show the distinctively Maya God L as a merchant and other figures with strong Venus connections (Carlson 1991; Stuart 1992). At Cacaxtla, commerce as well as warfare is celebrated with unusual clarity.

Cantona, farther east in Puebla, covered some 12 square kilometers (Nalda 1998). Some ceramics, such as a jar with “stepped skirt” below the rim, have close counterparts in Metepec-phase Teotihuacan, but apparently most ceramics are quite different. It is thought to date around A.D. 600–900.

Xochicalco is a hilltop site, in western Morelos, considerably larger

than Cacaxtla. Ceramic evidence is much better than for Cacaxtla (Hirth and Cyphers 1988). The style of its public art is also eclectic, but Nagao (1989) argues that it drew more evenly on more sources and reinterpreted them more extensively than did Cacaxtla.

Cholula needs to be mentioned because it, more than any other central Mexican center, may have spanned the transition between the preceding periods and this one. However, as already noted, it remains enigmatic (McCafferty 1996).

TULA

The archaeological site of Tula lies just north of the modern city of Tula de Allende, in Hidalgo. Long-standing tradition held it to be “Tollan,” the ancient Toltec capital, but the notion arose that Teotihuacan was the real Tollan. This was corrected in the 1930s, 1940s, and 1950s, especially through the ethnohistoric work of Jiménez Moreno (1941) and the excavations of Acosta (1940, 1941, 1942/1944, 1945, 1956, 1957, 1960, 1961, 1964b). To summarize a very complex situation, many sixteenth-century references to Tollan *do* mean Tula. Some almost surely refer to Teotihuacan or other sites. Many are so abstract and mythical that it is impossible, and in an important sense inappropriate, to try to relate them to any concrete specific place. The term *Toltec* is also polysemic, and often denotes people who are urban, urbane, skilled craftsmen, rather than any particular ethnic group.

Tula was an important central Mexican city that first rose to prominence after the decline of Teotihuacan, and in turn declined well before the Mexica rose to power. Charnay (1887) explored it in the 1880s, but major work began with Acosta’s excavations at Tula Grande, the principal ceremonial center (Fig. 6.14), where he restored a ballcourt, a pyramid with famed colossal soldiers, and a complex of many-columned rooms at the north side of the main plaza. In the late 1960s and early 1970s Matos directed research at Tula (Matos 1974, 1976, 1978) that included a survey by Yadeun (1974, 1975), and a University of Missouri project directed by Diehl and Benfer made the first detailed study of non-élite residences, as well as a survey of the entire urban zone and collections from selected sample tracts (Diehl 1983; Healan 1989). A regional survey by Mastache and Crespo (1974) covered about 1,000 square kilometers. In 1980, Healan excavated in an obsidian production area (Healan, Kerley, and Bey 1983).

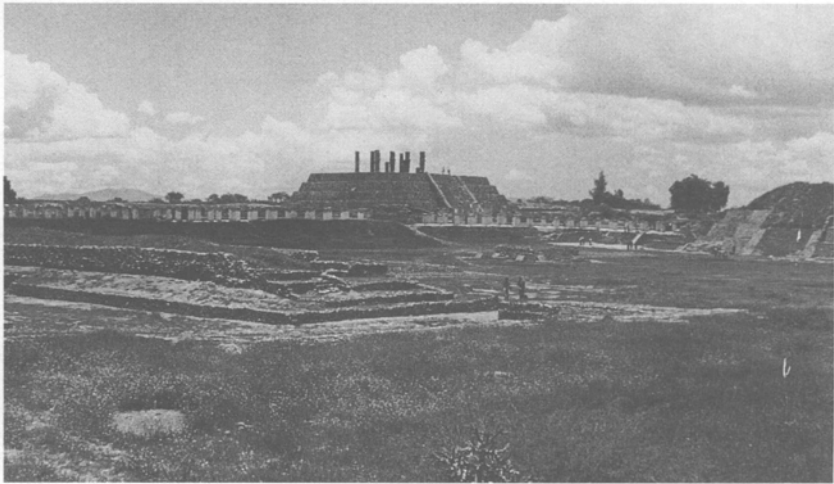


Figure 6.14. Principal buildings at Tula Grande (courtesy of Dan M. Healan).

Archaeological knowledge of Tula is still sketchy. Probably five or ten times as much fieldwork would give us a good idea of the character and variety of its districts. It was a quite densely settled city, with two major ceremonial precincts (Fig. 6.15). Tula Chico, with Coyotlatelco ceramics, is the earlier; Tula Grande is the later, approximately coeval with Mazapan, although Healan and Stoutamire (1989:235) emphasize that most of the ceramics of Tula at this time are *not* Mazapan, which is far more common in the Basin of Mexico. The scale and quality of the civic buildings are less than Teotihuacan's, and the city's layout is different. Nevertheless, there are continuities, such as a sculptured frieze of alternating felines and coyotes that echoes a mural in the Atetelco apartment compound of Teotihuacan. Tula shows innovations but does not represent a complete break with the past. I emphasize this because it shares some highly specific features with Chichén Itzá, in northern Yucatan, some 1,150 kilometers (by air) to the east, and there is excellent and varied evidence for an incursion of people either from central Mexico or with strong central Mexican connections. Kubler (1961) argues that the new style was developed at Chichén and then Tula built in imitation, but there is no good reason to think this (Cohodas 1989). It depends too much on the assumption that the first manifestation of anything new must be the finest. Chichén is larger and finer because its rulers had

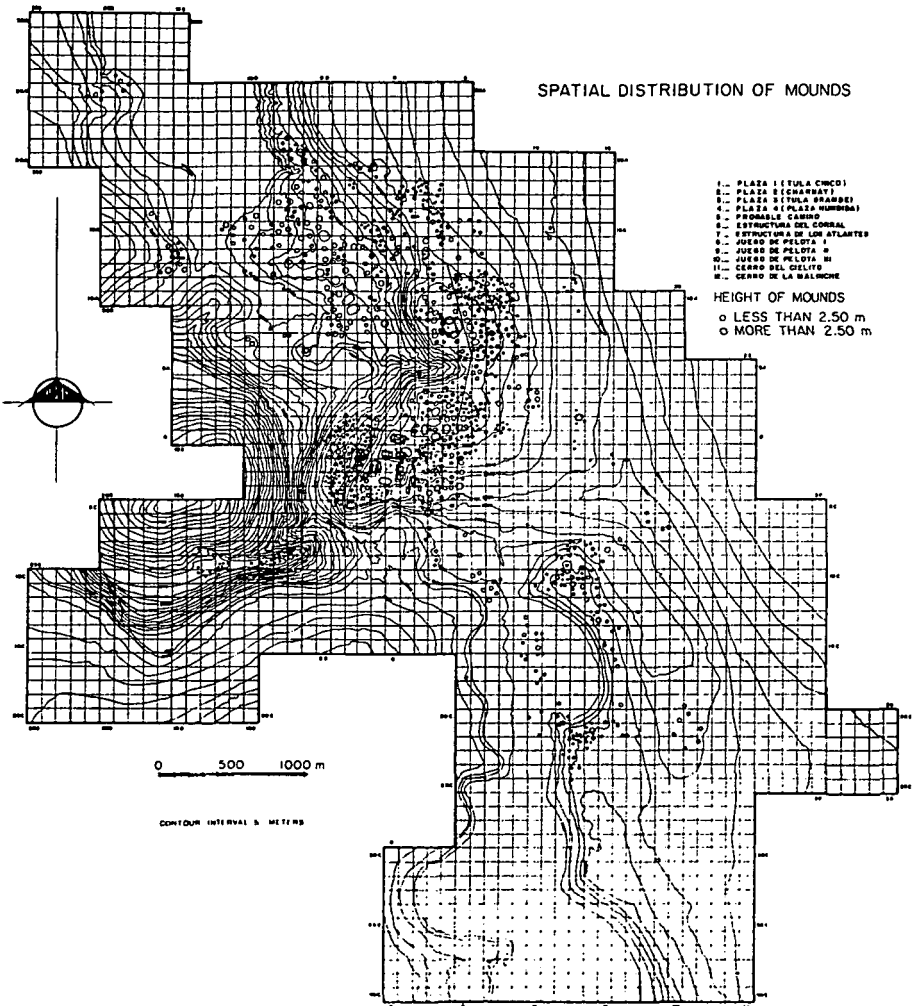


Figure 6.15. Map of the archaeological site of Tula, Hidalgo (after Matos 1974).

more skilled masons and sculptors at their disposal, raw material that was more easily worked (limestone rather than volcanic rocks), and perhaps control over more labor. Many buildings at Chichén show a mix of earlier Maya and Tula-like attributes, but this is because contact was more complex than Tozzer (1957) and others thought and not simply a Toltec juggernaut obliterating and replacing local traditions. The break

between earlier Maya styles and the Tula-related styles is far more drastic than the contrast between Tula and earlier central Mexican manifestations.

The remains of Tula are somewhat modest in comparison with many other major Mesoamerican centers. The Tula state probably was never very wealthy and never controlled the resources to assemble many highly talented artisans. The region was harsh and probably environmentally marginal, although there is evidence of much richer soils at the time Tula was settled, and land use may have led to irreversible environmental degradation (Healan 1989:71). Other important sites coexisted with Tula in central Mexico, and the area dominated by the Tula state was probably never very extensive. Nevertheless, Tula should not be underestimated; it is a serious mistake to think of it as no more than a small town. It covers around 12 to 13 square kilometers (Healan and Stoutamire 1989:235). Attempts to estimate its population are beset by the usual difficulties, but a reasonable guess is around 60,000 (Healan and Stoutamire 1989:235).

The contrast between the splendors of Tollan in native tradition and the appearance of Tula has been puzzling, and was partly responsible for thinking Teotihuacan was Tollan. One reason Tollan was described as a place of such wonders is that it was useful for the Aztecs to create a mythic Golden Age; if contemporary status and authority were legitimated by ties to the Toltec past, then that past should have been glorious indeed. Another reason is that many Aztec traditions about Tula probably had taken shape by early in the fifteenth century, when Tenochtitlan itself was not very distinguished architecturally or aesthetically. It is by comparison with the achievements of Late Aztec art, underwritten by an empire that far exceeded the Tula state, that Tula art looks less impressive.

The civic art of Tula is mainly derivable from central Mexican antecedents, but ceramics show many outside affinities. This change began in the Prado phase, tentatively dated to around A.D. 700 to 800 but perhaps earlier, before Tula itself became an important settlement. Some of the sites of this period are on hilltops and may have been chosen partly for their defensive and offensive value (Mastache and Cobean 1989). Some of the ceramics have resemblances to those in the Bajío region (around Guanajuato) and farther to the northwest, while others are more like the Coyotlatelco complex of the Basin of Mexico. The styles were probably older in the northwest than in the Basin. The ensuing Corral phase is characterized by the Coyotlatelco complex, per-

haps around A.D. 800 to 900, but perhaps as early as A.D. 600–800, to judge by recent calibrated radiocarbon dates for related ceramics in the Basin of Mexico (Parsons et al. 1996). Coyotlatelco and the Metepec ceramics of Teotihuacan have little in common except a liking for red-on-natural painted decoration. Metepec motifs are quite different, and painted lines are usually much broader, although some are thinner and more like Coyotlatelco. Sanders (1989) emphasizes continuities and plays down differences, but this is belied by his own more concrete discussion elsewhere (Sanders 1986a). There is a strong case for substantial migration into the central highlands from somewhere to the northwest, which began when Teotihuacan was in decline and perhaps intensified after its end as a major political center. There may have also been considerable continuity with earlier populations, but the impact of outside peoples from the northwest was probably strong (Acosta 1972).

Further support for this view comes from linguistic evidence that suggests that Nahuatl speakers (whose Uto – Aztec linguistic affinities are to the northwest) first entered central Mexico in any numbers at about this time (Luckenbach and Levy 1980; Justeson et al. 1983). The case is far from being ironclad, but ceramic and linguistic evidence are consonant.

Tula itself could not have had a hand in the destruction of Teotihuacan because it did not become a significant settlement until later. However, ancestors of the people who built Tula may have moved into the area because Teotihuacan had declined sufficiently (for other reasons) to be unable to prevent it. Newcomers who felt they owed nothing to Teotihuacan and were impressed but perhaps not overawed by its symbolism, could have added significantly to Teotihuacan's problems and hastened its final collapse, even if they had not yet put together a powerful center of their own.

Following a transitional Terminal Corral phase, it was only in the Tollan ceramic phase – perhaps about A.D. 950 to 1150 or 1200 but more likely around A.D. 800–1000, to judge from recent Basin of Mexico dates and its association with Tohil Plumbate imported ceramics – that Tula became a major center. Ceramics of the Mazapan complex, noted for parallel wavy line decorations by means of a multiple brush, supposedly a Tula hallmark, are quite rare and mainly concentrated in the south of the city, possibly representing an enclave with Basin of Mexico affiliations (Cobean and Mastache 1989). Mazapan ceramics are more abundant in the Basin and may have developed there.

The decline and abandonment of Tula are poorly understood, but excavations in a residential locality document a time when abandoned rooms were used for dumping trash, and offerings in domestic shrines were torn out. Mandeville and Healan (1989:199) are cautious in interpreting dismembered remains of adults and children in one room, but the case for a massacre looks strong.

Aztec II ceramics are sparse and limited in their distribution at Tula; Aztec III ceramics are considerably more abundant. Aztecs excavated extensively at Tula and damaged many buildings, but it would be anachronistic to call this "looting." Their excavation technique was no better than that of the nineteenth-century Western world, but I doubt if private gain or idle curiosity were their main motives. Because of Tollan's role in the mythical charter of the Aztec state, things associated with it were heavily laden with meaning. Besides actual objects from Tula (and, to a lesser extent, Teotihuacan, Xochicalco, and other sites), many Late Aztec products hark back to Tula and earlier styles (Umberger 1987). The extent of Aztec digging at Tula is probably more than anything a mark of their respect for it.

BIBLIOGRAPHICAL ESSAY

References to publications before the 1970s are limited to a few landmarks; readers should turn to recent general volumes for further citations. I have listed dissertations, theses, and works that are unpublished or in press only when I thought their existence might be difficult to discover otherwise.

General Works on the Central Mexican Highlands

Materiales para la Arqueología de Teotihuacán, edited by José Lorenzo (1968), is especially important for environmental data. *The Valley of Mexico*, edited by Eric Wolf (1976), presents the ecological approach of Sanders and his associates, a dissenting view by Richard Blanton, a chapter by Millon on social relations in ancient Teotihuacan, and chapters by Millon and Price setting out the chronological scheme of horizons and intermediate periods and its rationale. *Middle Classic Mesoamerica*, edited by Esther Pasztory (1978), is still important, although subsequent research has shown a need for modifications. Sanders, Parsons, and Santley (1979) summarize and interpret a monumental survey of most of

the Basin of Mexico, covering all preconquest periods. Volume One of the *Supplement to the Handbook of Middle American Indians* (Bricker and Sabloff 1981) includes very useful summaries by Sanders on the Basin, Millon on Teotihuacan, García Cook on Puebla–Tlaxcala, and Diehl on Tula. Other recent edited volumes with important chapters bearing on the central Mexican highlands in the Teotihuacan–Tula interval include *Interacción Cultural en México* (Rattray, Litvak, and Díaz 1981); *Highland–Lowland Interaction in Mesoamerica* (A. Miller 1983); *Trade and Exchange in Early Mesoamerica* (Hirth 1984b); *Economic Aspects of Prehispanic Highland Mexico* (Isaac 1986); *A Pot for All Reasons: Ceramic Ecology Revisited* (Kolb and Lackey 1988); and *La Epoca Clásica: Nuevos Hallazgos, Nuevas Ideas* (Cardós de Méndez 1990).

Teotihuacan

In 1966 the Sociedad Mexicana de Antropología devoted a roundtable to Teotihuacan, published in two volumes (1967, 1972). It remains an important overview of what was known and believed about that city in the mid-1960s, including some results of just completed Instituto Nacional de Antropología e Historia (INAH) excavations under the direction of Ignacio Bernal, and work in progress on the surface survey and mapping of the city directed by René Millon. A major conference on Teotihuacan was held at the Universidad Nacional Autónoma de México (UNAM) in 1981; its proceedings are published as *Teotihuacan: Nuevos Datos, Nuevas Síntesis, Nuevos Problemas*, edited by Emily McClung de Tapia and Evelyn Rattray (1987). Matos (1990) is a useful and richly illustrated survey. Special sections in the Spring and Fall 1991 issues of *Ancient Mesoamerica* are devoted to recent work on Teotihuacan. *Art, Ideology, and the City of Teotihuacan*, edited by Janet Berlo (1992), is based on a 1988 Dumbarton Oaks symposium; of particular bibliographical relevance is a long essay by René Millon on Teotihuacan studies from 1950 to 1990 and beyond. *Teotihuacan: Art from the City of the Gods*, edited by Kathleen Berrin and Esther Pasztory (1993), includes important topical articles as well as a wealth of illustrations. *La Pintura Mural Prehispánica en México 1: Teotihuacan*, edited by Beatriz de la Fuente (1995), is a rich source on Teotihuacan mural paintings, including many discovered since 1980, such as the remarkable glyphs on the floor of a patio in the La Ventilla district. *Teotihuacan: An Experiment in Living*, by Esther Pasztory (1997), is the first modern book-length overview of the ancient city.

Saburo Sugiyama has created a Teotihuacan web site: <http://archaeology.la.asu.edu/vm/mesoam/teo>.

I turn from recent overviews and collections of articles to a roughly chronological survey of publications on specific topics. A sketch of principal ruins at Teotihuacan appears in the 1580s *Relaciones Geográficas* (Nuttall 1926). Plans, photographs, observations, and some poorly reported excavations were published by several workers in the mid- and late 1800s (Schávelzon 1981 reproduces some of the figures), including important drawings and photographs of parts of the unexcavated city by W. H. Holmes and others. Reports by Leopoldo Batres (1906, 1908) are sources of no longer extant data. Eduard Seler (1915, English translation 1991) pioneered in the detailed study of Teotihuacan symbolism and iconography. Alfred Tozzer (1921) reported work at the important Teotihuacan regional center of Azcapotzalco; this is outdated but remains one of the few published excavations of a Teotihuacan site outside the city.

A new era in Teotihuacan studies began with the work of Manuel Gamio, Ignacio Marquina, and others between 1917 and 1922 (Gamio 1922, reprinted 1979). Involving large-scale excavations, analyses of diverse materials, ethnography, ethnohistory, and environmental studies, it was multidisciplinary and ahead of its time. It remains an indispensable resource. The work included extensive excavations in the Ciudadela and the first tunnel into the Sun Pyramid, running from the east side to the center, a little above ground level. In 1933, under the direction of Eduardo Noguera, a second tunnel was dug from west to east at ground level, joining the first by a stairway. Results, reported by Marquina (in Gamio 1922), Kroeber (1925), Pérez (1935), Noguera (1935), and Vaillant (1935, 1938) indicated that there were no major interior structures in the pyramid and that the materials found pertained to a previously unrecognized “Archaic” stage (later called Teotihuacan I). In the 1930s Vaillant conducted further fieldwork, much of which remains unpublished. Sigvald Linné (1934, 1942) studied sites in Puebla–Tlaxcala and within Teotihuacan. He excavated at two apartment compounds, Xolalpan and Tlamimilolpa. His reports are selective and sketchy but include important architectural data and illustrations of many of the objects associated in burials.

Reports of other excavations appeared in the 1920s, 1930s, 1940s, and 1950s. Especially important was work by Pedro Armillas, who excavated in several apartment compounds, including Tetitla, Tepantitla, and the “Viking” group. He published on the deities of Teotihuacan, its ceramic

chronology, and the distinction between Teotihuacan and "Toltec" culture (Armillas 1944, 1945, 1947, 1950). He is also notable for bringing a culture-ecological outlook into Mesoamerican studies (Armillas 1951).

Other apartment compounds were excavated in the 1950s and 1960s from a markedly different point of view, concentrating on art and religion, by Laurette Séjourné (1959, 1966a, 1966b, 1966c). Her publications are weak on stratigraphic sequences and anything like household archaeology, but are important for data on building layouts and mural paintings, and they furnish abundant illustrations of ceramics and lithic artifacts.

René Millon, with James Bennyhoff and others, studied early stages of Teotihuacan's development in stratigraphic excavations in Plaza One, a pyramid group nearly a kilometer west-northwest of the Moon Pyramid (Millon 1960; Millon and Bennyhoff 1961), and through closer examination of the previously made tunnels in the Sun Pyramid (Millon, Drewitt, and Bennyhoff 1965). This made it clear that ceramics as early as those in the pyramid could be found over a large area in the northwestern part of the city.

Between 1960 and 1964 extensive excavations were carried out along the Avenue of the Dead by the Instituto Nacional de Antropología e Historia. Ignacio Bernal (1963) summarized these, Jorge Acosta (1964a) reported on the Quetzalpapalotl Palace, and Eduardo Matos (1980) described work within the Avenue of the Dead complex. Other reports from this project remain in manuscript form and may eventually be published.

The true extent and nature of the city first became clear from the detailed mapping and surface collecting directed by Millon between 1962 and 1971. The map itself has been published in 147 sheets with interpretive overlays (Millon 1973; Millon, Drewitt, and Cowgill 1973) as the first volume of the Urbanization at Teotihuacan series edited by Millon. Another volume, on mortuary practices and skeletal remains, has appeared (Sempowski and Spence 1994), and others are in preparation. Also starting in the 1960s, a large survey of the Teotihuacan Valley and most of the rest of the Basin of Mexico was carried out by Sanders and his associates. A general volume on the results has been published (Sanders, Parsons, and Santley 1979), and a series of final reports of the Teotihuacan Valley project is now appearing (Sanders et al. 1970; Sanders et al. 1975; Sanders 1986b; Sanders 1994–96).

The Proyecto Arqueológico Teotihuacán, directed by Rubén Cabrera

Castro, began in 1980. Three volumes resulting from this major project have appeared so far (Cabrera, Rodríguez, and Morelos 1982a, 1982b, 1991). Morelos (1993) reports excavations of this project in the Avenue of the Dead complex. Other notable field projects between about 1980 and 1990 include excavations in a residential pottery workshop by Rebecca Storey and Randolph Widmer; in the Oaxaca enclave by Michael Spence; household archaeology in a residence in the northwest of the city and geophysical searches for caves by Linda Manzanilla, Luis Barba, and others; excavations at the far east of the city at the hacienda Metepec and, later, in the so-called Merchants' enclave, by Evelyn Rattray; and the discovery of massive human sacrifices at the Feathered Serpent Pyramid by Cabrera, Sugiyama, and Cowgill (Sugiyama 1989a reports the earliest of these finds, Sugiyama 1995 is the most comprehensive report so far; final reports are in preparation). Reports on aspects of these various projects can be found especially in the volumes edited by McClung and Rattray (1987) and Berlo (1992), the special sections on Teotihuacan in volume 2 of *Ancient Mesoamerica*, and recent issues of *Arqueología*, published by INAH. Rattray (1993) reports earlier work in the Oaxaca enclave. Díaz (1980) reports work at Chingú, an important Teotihuacan regional center not far from the later site of Tula.

Many important discussions of specific topics are included in the publications already cited. With few exceptions, I will not list them here and will concentrate on others published elsewhere. The detailed ceramic sequence now in use for Teotihuacan was developed primarily by James Bennyhoff in the 1960s, in association with Millon's Mapping Project and with Florencia Müller of INAH, building on earlier work by Armillas, Tolstoy (1958), Vaillant, and others. Unfortunately, it remains virtually unpublished (Bennyhoff 1967). The ceramic sequence has subsequently been revised by Rattray (n.d.) in a manuscript whose appearance is eagerly awaited. Also useful, but problematic in some respects, are the volumes on ceramics by Müller (1978) and Robert Smith (1987). Charles Kolb (1986, 1988a, 1988b, 1988c) has published studies of Thin Orange Ware, Granular Ware, Copoid Ware, and *candeleros*. Krotser (1987) and Krotser and Rattray (1980) provide preliminary discussions of ceramic workshops. Dissertations by Sheehy (1992) and Hopkins (1995) discuss technological aspects of utility wares.

Spence (1981, 1987) and Charlton (1978) discuss obsidian production. Castañeda (1976) and Biskowski (1986, 1997) discuss ground stone. Margaret Turner describes the lapidary industry in McClung and Rattray

(1987) and Berlo (1992). Studies of human skeletal remains include Serano and Lagunas (1975) and Spence (1976; Sempowski and Spence 1994). Spence (1974) infers postnuptial residence patterns from distributions of skeletal anomalies. Storey's (1992) work on the paleodemography of an apartment compound is outstanding. Mortuary offerings are discussed by Sempowski (Sempowski and Spence 1994) and Rattray (1992).

McClung de Tapia (especially 1977, 1978, 1987) reviews the paleoecology of the city and its environs, especially as inferred from botanic remains. Kolb (1987) provides a study of marine shells. Monzón (1989) gives data on Teotihuacan residences. Manzanilla (1993, 1996) and Manzanilla and Barba (1990) report on multidisciplinary studies of household archaeology.

The literature on Teotihuacan art and iconography is vast and my list is selective. Rubín de la Borbolla (1947) describes finds made in 1939 in the Ciudadela. A. Miller (1973) illustrates a considerable proportion of the murals then known. Many more are now to be found in the two volumes edited by Beatriz de la Fuente (1995). Some major interpretive studies, in addition to the volumes with multiple contributors already mentioned (especially Berlo 1992, Berrin 1988, Berrin and Paztory 1993, and Cardós de Méndez 1990) include Kubler (1967, 1973), Clara Millon (1973), Caso (1942), Paszatory (1974, 1976), Berlo (1983, 1984), Taube (1983, 1986, 1992), von Winning (1987), and Headrick (1996). Heyden (1975, 1981) discusses the significance of the cave under the Sun Pyramid. Caso (1937) reviews evidence for Teotihuacan calendrics. Langley (1986) is the most systematic and comprehensive compendium of Teotihuacan symbolic notation yet available and is indispensable for further work. Sugiyama (1989b) and Carlson (1991) offer interpretations of symbolism at the Feathered Serpent Pyramid and elsewhere.

Economic relations have been discussed in a series of articles by Robert Santley (1983, 1984, 1989) and by Santley, Kerley, and Kneebone (1986), unfortunately resting on a flimsy and problematic database criticized by Clark (1986), Drennan et al. (1990), and Stark et al. (1992). Charlton (1977) is an example of sounder work.

Cowgill (1974) and Cowgill, Altschul, and Sload (1984) summarize some results of quantitative studies of spatial structure within the city, based on Teotihuacan Mapping Project data. See also the chapters by Cowgill, Sload, and Altschul in McClung and Rattray (1987). Robertson (1999) carries these studies much further. The issue of differential status

is also addressed, through variations in mortuary practices, by Martha Sempowski (in Berlo 1992 and in Sempowski and Spence 1994).

In addition to chapters in the recent edited volumes and other publications already cited, more general publications on Teotihuacan history, politics, and society include Cowgill (1977, 1979, 1983, 1992a, 1992b, 1997) and Millon (1974, 1988).

Important publications on Teotihuacan's impact on other regions include Kidder, Jennings, and Shook (1946), Sanders and Michels (1977), and Berlo (1983, 1984) for highland Guatemala; Rattray (1978), Pendergast (1971, 1990), Ball (1983), Coggins (1980, 1990), and Laporte and Fialko (1990) for the lowland Maya; Santley (1989) and Stark (1991) for southern and central Veracruz; and chapters in Flannery and Marcus (1983) and Marcus and Flannery (1996) for Oaxaca.

After Teotihuacan

The numerous contributors to the volume edited by Diehl and Berlo (1989) provide the broadest and most up-to-date overview of the central Mexican highlands in the centuries following the decline of Teotihuacan. Sanders, Parsons, and Santley (1979) discuss this period in the Basin of Mexico, and Sanders (1986b, 1987) gives details for the Teotihuacan Valley. A special section of *Ancient Mesoamerica* in 1996 discusses chronological issues. For Tula itself, the volume edited by Healan (1989) reports on a major University of Missouri project. An earlier volume on this project is by Diehl (1974), who has also provided important summaries of what is known of Tula (Diehl 1981, 1983). Cobean (1990) describes Tula ceramics, and Rattray (1966) is an important earlier discussion of Coyotlatelco wares.

The first serious excavations at Tula were begun by Acosta about 1940 and continued at least to the late 1950s; they are documented in a long series of annual reports (Acosta 1940, 1941, 1942/44, 1945, 1956, 1957, 1960, 1961, 1964b). Dutton (1955) remains a valuable summary of the earlier stages of this work. Another important INAH project at Tula is reported by Matos (1974, 1976). Paredes (1990) discusses residential units at Tula. Davies (1977, 1980) offers interpretations of the ethnohistoric sources for this period. David Kelley (1987) provides an important evaluation of these and other ethnohistoric studies.

In addition to chapters in Diehl and Berlo (1989), especially important

for Puebla and Tlaxcala are García Cook (1981), García Cook and Merino Carrión (1995), Dumond and Müller (1972), Ferriz (1985), and Snow (1969). Hirth and Cyphers (1988), and Hirth (1984a) should be noted for Xochicalco, and Sugiura (1990) reports on the Epiclassic of the Valley of Toluca.

FURTHER READING

(Abbreviations)

- Am. Ant.*: *American Anthropologist*
Am. Antiq.: *American Antiquity*
 BARIS: British Archaeological Reports International Series, Oxford
 ENAH: Escuela Nacional de Antropología e Historia, Mexico City
 HMAI-S1: Supplement to the *Handbook of Middle American Indians. Volume One: Archaeology*, ed. V. Bricker and J. Sabloff. University of Texas Press, Austin
 MADT: *Mesoamerica After the Decline of Teotihuacan: A.D. 700–900*, ed. R. Diehl and J. Berlo. Dumbarton Oaks, Washington, DC.
 IIA: Instituto de Investigaciones Antropológicas, Mexico City
 INAH: Instituto Nacional de Antropología e Historia, Mexico City
 TTES: *Tula of the Toltecs: Excavation and Survey*, ed. Dan M. Healan. University of Iowa Press, Iowa City
 SAR: School of American Research, Santa Fe
 SMA: Sociedad Mexicana de Antropología, Mexico City
 RMEA: Revista Mexicana de Estudios Antropológicos
 UNAM: Universidad Nacional Autónoma de México, Mexico City

- Acosta, Jorge R. 1940. Los últimos descubrimientos en Tula, Hgo. 1940. *RMEA* 4:172–94.
 1941. Los últimos descubrimientos en Tula, Hgo. 1941. *RMEA* 5:239–46.
 1942/44. La tercera temporada de exploraciones arqueológicas en Tula, Hgo. 1942. *RMEA* 6: 125–57.
 1945. Las cuarta y quinta temporadas de exploraciones arqueológicas en Tula, Hgo. 1943–44. *RMEA* 7: 23–64.
 1956. Resumen de las exploraciones arqueológicas en Tula, Hidalgo, durante las VI, VII, y VIII temporadas, 1946–1950. *Anales del INAH* 8: 37–116.
 1957. Resumen de los informes de las exploraciones arqueológicas en Tula, Hgo., durante las IX y X temporadas, 1953–1954. *Anales del INAH* 9: 119–69.
 1960. Las exploraciones en Tula, Hidalgo durante la XI temporada, 1955. *Anales del INAH* 11: 39–72.
 1961. La doceava temporada de exploraciones en Tula, Hidalgo. *Anales del INAH* 13: 29–58.
 1964a. *El Palacio del Quetzalpapalotl*. INAH.
 1964b. La decimotercera temporada de exploraciones en Tula, Hgo. *Anales del INAH* 16: 46–76.

1972. El epílogo de Teotihuacan. *Teotihuacan, XI Mesa Redonda*, pp. 149–56. SMA.
- Agrinier, Pierre 1975. *Mounds 9 and 10 at Mirador, Chiapas, Mexico*. Papers, New World Archaeological Foundation, No. 39, Provo, Utah.
- Armillas, Pedro. 1944. Exploraciones recientes en Teotihuacán, México. *Cuadernos Americanos* 16 (4): 121–36.
1945. Los dioses de Teotihuacan. *Anales del Instituto de Etnología Americana* 6: 35–61. Universidad Nacional de Cuyo, Mendoza.
1947. La serpiente emplumada, Quetzalcoatl y Tlaloc. *Cuadernos Americanos* 31 (1) 161–78.
1950. Teotihuacán, Tula, y los Toltecas. *Runa* 3 (1): 37–70. Buenos Aires.
1951. Tecnología, formaciones socio-económicas y religión en Mesoamérica. In *The Civilizations of Ancient America: Selected Papers of the XXIXth International Congress of Americanists*, ed. S. Tax, pp. 19–30. University of Chicago Press, Chicago.
1964. Northern Mesoamerica. In *Prehistoric Man in the New World*, ed. J. Jennings and E. Norbeck, pp. 291–329. University of Chicago Press, Chicago.
- Ball, Joseph W. 1983. Teotihuacan, the Maya, and Ceramic Interchange: A Contextual Perspective. In *Highland–Lowland Interaction in Mesoamerica: Interdisciplinary Approaches*, ed. A. Miller, pp. 125–45. Dumbarton Oaks, Washington, DC.
- Barbour, Warren. 1975. *The Figurines and Figurine Chronology of Ancient Teotihuacan, Mexico*. Doctoral dissertation, Department of Anthropology, University of Rochester. University Microfilms, Ann Arbor, MI.
1987. Ceramic Figurines from Oxtotitpac. In *The Teotihuacan Valley Project Final Report – Volume 4: The Toltec Period Occupation of the Valley: Part 2 – Surface Survey and Special Studies*, ed. W. Sanders, pp. 697–754. Occasional Papers in Anthropology, No. 15. Department of Anthropology, Pennsylvania State University, University Park.
- Batres, Leopoldo. 1906 *Teotihuacán*. Fidencio S. Soria, Mexico City.
1908. *Exploraciones y consolidación de los monumentos arqueológicos de Teotihuacán*. Buznego y León, Mexico City.
- Bennyhoff, James A. 1967. Continuity and Change in the Teotihuacan Cultural Tradition. *Teotihuacan: Onceava Mesa Redonda*, pp. 19–29. SMA.
- Berlo, Janet Catherine. 1983. The Warrior and the Butterfly: Central Mexican Ideologies of Sacred Warfare and Teotihuacan Iconography. In *Text and Image in Pre-Columbian Art*, ed. J. Berlo, pp. 79–117. BARIS 180.
1984. *Teotihuacan Art Abroad: A Study of Metropolitan Style and Provincial Transformation in Incensario Workshops*. BARIS 199.
1992. (ed.) *Art, Ideology, and the City of Teotihuacan*. Dumbarton Oaks, Washington, DC.
- Bernal, Ignacio. 1963. *Teotihuacan: Descubrimientos, Reconstrucciones*. INAH.
1966. Teotihuacan ¿Capital de imperio? *RMEA* 20: 95–110.
- Berrin, Kathleen (ed.). 1988. *Feathered Serpents and Flowering Trees: Reconstructing the Murals of Teotihuacan*. The Fine Arts Museums of San Francisco, San Francisco.
- Berrin, Kathleen, and Esther Pasztory (eds.). 1993. *Teotihuacan: Art from the City of the Gods*. Thames & Hudson, New York.
- Biskowski, Martin. 1986. *Metates and the Teotihuacan Socioeconomic System: A Preliminary Analysis*. Ms. Department of Anthropology, University of California, Los Angeles.

1997. *The Adaptive Origins of Prehispanic Markets in Central Mexico: The Role of Maize-Grinding Tools and Related Staple Products in Early State Economics*. Doctoral dissertation, University of California, Los Angeles.
- Brambila, Rosa, and Rubén Cabrera (coordinators). 1998. *Los ritmos de cambio en Teotihuacán: reflexiones y discusiones de su cronología*. INAH.
- Branstetter-Hardesty, Barbara. 1978. *Ceramics of Cerro Portesuelo: Mexico: An Industry in Transition*. Doctoral Dissertation, University of California at Los Angeles. University Microfilms, Ann Arbor, MI.
- Braun, Barbara. 1982. Teotihuacan and Cotzumalhuapa. *Baessler-Archiv: Beitrage zur Völkerkunde*, Neue Folge, 30: 235–53.
- Bricker, Victoria Reifler, and Jeremy A. Sabloff (eds.). 1981. *Supplement to the Handbook of Middle American Indians: Volume One: Archaeology*. University of Texas Press, Austin.
- Cabrera C., M. Oralia. 1995. *La Lapidaria del Proyecto Templo de Quetzalcoatl 1988–1989*. Thesis, ENAH.
- Cabrera C., Rubén, George Cowgill, and Saburo Sugiyama. 1990. El proyecto Templo de Quetzalcoatl y la práctica a gran escala del sacrificio humano. In *La Epoca Clásica: Nuevos Hallazgos, Nuevas Ideas*, coordinated by Amalia Cardos de Méndez, pp. 123–46. INAH.
- Cabrera C., Rubén, Ignacio Rodríguez G., and Noel Morelos G. (coordinators). 1982a. *Teotihuacan 80–82: Primeros Resultados*. INAH.
- 1982b. *Memoria del Proyecto Arqueológico Teotihuacan 80–82*. INAH.
1991. *Teotihuacan 1980–1982: Nuevas Interpretaciones*. INAH.
- Cabrera C., Rubén, Saburo Sugiyama, and George L. Cowgill. 1991. The Templo de Quetzalcoatl Project at Teotihuacan: A Preliminary Report. *Ancient Mesoamerica* 2: 77–92.
- Cardós de Méndez, Amalia (coordinator). 1990. *La Epoca Clásica: Nuevos Hallazgos, Nuevas Ideas*. INAH.
- Carlson, John B. 1991. *Venus-Regulated Warfare and Ritual Sacrifice in Mesoamerica: Teotihuacan and the Cacaxtla “Star Wars” Connection*. Technical Publication No. 7, Center for Archaeoastronomy, College Park, MD.
- Caso, Alfonso. 1937. ¿Tenían los teotihuacanos conocimiento del Tonalpohualli? *El México Antiguo* 4: 131–43.
1942. El paraíso terrenal de Teotihuacan. *Cuadernos Americanos* 6: 128–36.
- Caso, Alfonso, and Ignacio Bernal. 1952. *Urnas de Oaxaca*. INAH.
- Caso, Alfonso, Ignacio Bernal, and Jorge R. Acosta. 1967. *La Cerámica de Monte Albán*. INAH.
- Castañeda Saldaña, Hilda. 1976. *Utensilios de molienda de Teotihuacan*. ENAH.
- Charlton, Thomas H. 1977. Teotihuacan: Trade Routes of a Multi-tiered Economy. In *Los Procesos de Cambio en Mesoamérica y Areas Circunvecinas*. XV Mesa Redonda, SMA.
1978. Teotihuacan, Tepeapulco, and Obsidian Exploitation. *Science* 200: 1227–236.
- Charnay, Désiré 1887. *Ancient Cities of the New World*. Harper, New York.
- Clancy, Flora S., and Peter D. Harrison (eds.). 1990. *Vision and Revision in Maya Studies*. University of New Mexico Press, Albuquerque.
- Clark, John E. 1986. From Mountains to Molehills: A Critical Review of Teotihuacan's

- Obsidian Industry. In *Economic Aspects of Prehispanic Highland Mexico*, ed. B. L. Isaac, pp. 23–74. JAI Press, Greenwich, CT.
- Cobean, Robert H. 1990. *La Cerámica de Tula, Hidalgo*. INAH.
- Cobean, Robert H., and Alba Guadalupe Mastache. 1989. The Late Classic and Early Postclassic Chronology of the Tula Region. *TTES* 34–46.
- Coggins, Clemency Chase 1980. The Shape of Time: Some Political Implications of a Four-Part Figure. *Am. Antiq.* 45:727–39.
- 1990 The Birth of the Baktun at Tikal and Seibal. In *Vision and Revision in Maya Studies*, ed. F. Clancy and P. Harrison, pp. 77–99. University of New Mexico Press, Albuquerque.
- Cohodas, Marvin. 1989. The Epiclassic Problem: A Review and an Alternative Model. *MADT*, 219–240.
- Cook de Leonard, Carmen. 1954. Algunos antecedentes de la cerámica tolteca. *VI Mesa Redonda*, SMA.
- Cowgill, George L. 1974. Quantitative Studies of Urbanization at Teotihuacan. In *Mesoamerican Archaeology: New Approaches*, ed. N. Hammond, pp. 363–96. Duckworth, London.
- 1977 Processes of Growth and Decline at Teotihuacan: The City and the State. *Los Procesos de Cambio en Mesoamérica y Areas Circunvecinas, XV Mesa Redonda* 1: 183–93. SMA.
- 1979 Teotihuacan, Internal Militaristic Competition, and the Fall of the Classic Maya. In *Maya Archaeology and Ethnohistory*, ed. N. Hammond and G. Willey, pp. 51–62. University of Texas Press, Austin.
- 1983 Rulership and the Ciudadela: Political Inferences from Teotihuacan Architecture. In *Civilization in the Ancient Americas: Essays in Honor of Gordon R. Willey*, ed. R. Leventhal and A. Kolata, pp. 313–43. Peabody Museum, Harvard University, Cambridge, MA.
- 1992a Social Differentiation at Teotihuacan. In *Mesoamerican Elites: An Archaeological Assessment*, ed. D. and A. Chase, pp. 206–20. University of Oklahoma Press, Norman.
- 1992b Toward a Political History of Teotihuacan. In *Ideology and Precolumbian Civilizations*, ed. A. Demarest and G. Conrad, pp. 87–114. SAR Press, Santa Fe.
- 1993 What We Still Don't Know About Teotihuacan. In *Teotihuacan: Art from the City of the Gods*, ed. K. Berrin and E. Pasztor, pp. 116–25. Thames & Hudson, New York.
- 1997 State and Society at Teotihuacan, Mexico. *Annual Review of Anthropology* 26: 129–61.
- Cowgill, George L., Jeffrey H. Altschul, and Rebecca S. Sload. 1984. Spatial Analysis of Teotihuacan: A Mesoamerican Metropolis. In *Intrasite Spatial Analysis in Archaeology*, ed. H. Hietala, pp. 154–95. Cambridge University Press, Cambridge.
- Davies, Nigel. 1977 *The Toltecs, Until the Fall of Tula*. University of Oklahoma Press, Norman.
- 1980 *The Toltec Heritage: From the Fall of Tula to the Rise of Tenochtitlan*. University of Oklahoma Press, Norman.
- de la Fuente, Beatriz (ed.). 1995. (2 vols.) *La Pintura Mural Prehispánica en México 1: Teotihuacan*. Instituto de Investigaciones Estéticas, UNAM.

- Díaz Oyarzábal, Clara Luz. 1980. *Chingú: Un Sitio Clásico del Area de Tula, Hgo.* INAH.
- Diehl, Richard A. 1974. *Studies of Ancient Tollan: A Report on the University of Missouri Tula Archaeological Project.* Monograph No. 1, Museum of Anthropology, University of Missouri, Columbia.
1981. Tula. HMAI-S1, 277–295.
1983. *Tula: The Toltec Capital of Ancient Mexico.* Thames & Hudson, London.
- 1989a. The Physical Setting. TTES, 7–12.
- 1989b. A Shadow of Its Former Self: Teotihuacan During the Coyotlatelco Period. MADT, 9–18.
- Diehl, Richard A., and Janet Catherine Berlo (eds.) 1989. *Mesoamerica after the Decline of Teotihuacan: A.D. 700–900.* Dumbarton Oaks, Washington, DC.
- Drennan, Robert D., Philip T. Fitzgibbons, and Heinz Dehn. 1990. Imports and Exports in Classic Mesoamerican Political Economy: The Tehuacan Valley and the Teotihuacan Obsidian Industry. *Research in Economic Anthropology* 12: 177–99.
- Drucker, Philip 1943. *Ceramic Sequence at Tres Zapotes, Veracruz, Mexico.* Smithsonian Institution, Bureau of American Ethnology, Bulletin 140, Washington, DC.
- Dumond, Don E., and Florencia Müller. 1972. Classic to Postclassic in Highland Central Mexico. *Science* 175: 1208–215.
- Dutton, Bertha P. 1955. Tula of the Toltecs. *El Palacio* 62: 195–251.
- Ferriz, Horacio. 1985. Caltonac, a Prehispanic Obsidian-Mining Center in Eastern Mexico?: A Preliminary Report. *Journal of Field Archaeology* 12: 363–70.
- Flannery, Kent V., and Joyce Marcus (eds.). 1983. *The Cloud People: Divergent Evolution of the Zapotec and Mixtec Civilizations.* Academic Press, New York.
- Fowler, Melvin L. 1987. Early Water Management at Amalucan, State of Puebla, Mexico. *National Geographic Research*, 3 (1): 52–68.
- Gamio, Manuel (ed.) 1922. *La Población del Valle de Teotihuacan.* 3 vols. Secretaria de Agricultura y Fomento, Dirección de Antropología, Mexico City. Republished in 1979 in 5 volumes by the Instituto Nacional Indigenista, Mexico City.
- García Chávez, Raul E. 1991. *Desarrollo Cultural en Azcapotzalco y el Area Suroccidental de la Cuenca de México, desde el Preclásico Medio hasta el Epicalásico.* ENAH.
- García Chávez, Raul E., Michael D. Glascock, J. Michael Elam, and Harry B. Iceland. 1990. The INAH Salvage Archaeology Excavations at Azcapotzalco, Mexico: An Analysis of the Lithic Assemblage. *Ancient Mesoamerica* 1:225–32.
- García Cook, Angel 1981. The Historical Importance of Tlaxcala in the Cultural Development of the Central Highlands. HMAI-S1, 244–76.
- García Cook, Angel, and Beatriz Leonor Merino Carrión (coordinators). 1995. *Antología de Cacaxtla.* INAH.
- Grove, David C. (ed.). 1987a. *Ancient Chalcatzingo.* University of Texas Press, Austin.
- 1987b. Middle Formative Serpent Imagery: Early Symbols of Rulership. Ms. in possession of author.
- Grove, David C., and Susan D. Gillespie. 1992. Ideology and Evolution at the Pre-State Level: Formative Period Mesoamerica. In *Ideology and Pre-Columbian Civilizations*, ed. A. Demarest and G. Conrad, pp. 15–36. SAR Press, Santa Fe.
- Headrick, Annabeth. 1996. *The Teotihuacan Trinity: UnMASKing the Political Structure.* Doctoral dissertation, University of Texas, Austin.

- Healan, Dan M. (ed.). 1989. *Tula of the Toltecs: Excavations and Survey*. University of Iowa Press, Iowa City.
- Healan, Dan M., Robert H. Cobean, and Richard A. Diehl. 1989. Synthesis and Conclusions. *TTES*, 239–51.
- Healan, Dan M., Janet M. Kerley, and George J. Bey. 1983. Excavation and Preliminary Analysis of an Obsidian Workshop in Tula, Hidalgo, Mexico. *Journal of Field Archaeology* 10: 127–45.
- Healan, Dan M., and James W. Stoutamire. 1989. Surface Survey of the Tula Urban Zone. *TTES*, 203–36.
- Heyden, Doris. 1975. An Interpretation of the Cave Underneath the Pyramid of the Sun in Teotihuacan, Mexico. *Am. Antiq.* 40: 131–47.
1981. Caves, Gods, and Myths: World-View and Planning in Teotihuacan. In *Mesoamerican Sites and World-Views*, ed. E. Benson, pp. 1–39. Dumbarton Oaks, Washington, DC.
- Hirth, Kenneth G. 1978. Teotihuacan regional population administration in eastern Morelos. *World Archaeology* 9: 320–33.
- 1984a. Xochicalco: Urban Growth and State Formation in Central Mexico. *Science* 225: 579–86.
- 1984b. (ed.). *Trade and Exchange in Early Mesoamerica*. University of New Mexico Press, Albuquerque.
- Hirth, Kenneth G., and Jorge Angulo Villaseñor. 1981. Early State Expansion in Central Mexico: Teotihuacan in Morelos. *Journal of Field Archaeology* 8: 135–50.
- Hirth, Kenneth G., and Ann Cyphers Guillén. 1988. *Tiempo y Asentamiento en Xochicalco*. IIA, UNAM.
- Hopkins, Mary R. 1995. *Teotihuacan Cooking Pots: Scale of Production and Product Variability*. Doctoral dissertation, Brandeis University, Waltham, MA.
- Isaac, Barry L. (ed.). 1986. *Economic Aspects of Prehispanic Highland Mexico. Research in Economic Anthropology, Supplement 2, 1986*. JAI Press, Greenwich, CT.
- Jiménez Moreno, Wigberto. 1941. Tula y los toltecas según las fuentes históricas. *RMEA* 5: 79–83.
1974. Los portadores de la cultura teotihuacana. *Historia Mexicana* 24: 1–12.
- Justeson, John S., William M. Norman, Lyle Campbell, and Terrence Kaufman. 1983. The Foreign Impact on Lowland Mayan Language and Script: A Summary. In *Highland–Lowland Interaction in Mesoamerica: Interdisciplinary Approaches*, ed. A. Miller, pp. 147–58. Dumbarton Oaks, Washington, DC.
- Kaufman, Terrence. n.d. *The Geographical Spread and Linguistic Diversification of Nahuatl Foreign Contacts*. Ms. in possession of author.
- Kelley, David H. 1987. Imperial Tula. *Quarterly Review of Archaeology* 8(1): 14–16.
- Kidder, Alfred V., Jesse D. Jennings, and Edwin M. Shook. 1946. *Excavations at Kaminaljuyu, Guatemala*. Carnegie Institution of Washington, Washington, DC.
- Kolb, Charles C. 1986. Commercial Aspects of Classic Teotihuacan Period “Thin Orange” Wares. *Economic Aspects of Prehispanic Highland Mexico. Research in Economic Anthropology, Supplement 2, 1986*, ed. by B. Isaac, pp. 155–205. JAI Press, Greenwich, CT.
1987. *Marine Shell Trade and Classic Teotihuacan, Mexico*. BARIS 364.

- 1988a. Classic Teotihuacan Granular Wares: Ceramic Ecological Interpretations. In *Ceramic Ecology Revisited, 1987*, ed. C. Kolb, Part ii, pp. 227–344. BARIS 436(ii).
- 1988b. Classic Teotihuacan Copoid Wares: Ceramic Ecological Interpretations. In *Ceramic Ecology Revisited, 1987*, ed. by C. Kolb, Part ii, pp. 345–448. BARIS 436(ii).
- 1988c. Classic Teotihuacan *Candeleros*: A Preliminary Analysis. In *Ceramic Ecology Revisited, 1987*, ed. C. Kolb, Part ii, pp. 449–646. BARIS 436(ii).
- Kolb, Charles C., and Louana Lackey (ed.). 1988. *A Pot for All Reasons: Ceramic Ecology Revisited*. Ceramica de Cultura Maya et al., Philadelphia.
- Kroeber, Alfred L. 1925. Archaic Culture Horizons in the Valley of Mexico. *University of California Publications in American Archaeology and Ethnology* 17(7): 373–408, Berkeley.
- Krotser, Paula H. 1987. Levels of Specialization Among Potters of Teotihuacan. In *Teotihuacan: Nuevos Datos, Nuevas Sintesis, Nuevos Problemas*, ed. E. McClung and E. Rattray, pp. 417–27. IIA, UNAM.
- Krotser, Paula H., and Evelyn C. Rattray. 1980. Manufactura y distribución de tres grupos cerámicos de Teotihuacan. *Anales de Antropología* 17(1): 91–104.
- Kubler, George. 1961. Chichen Itza y Tula. *Estudios de Cultura Maya* 1: 47–80.
1967. *The Iconography of the Art of Teotihuacan*. Dumbarton Oaks, Washington, DC.
1973. Iconographic Aspects of Architectural Profiles at Teotihuacan and in Mesoamerica. In *The Iconography of Middle American Sculpture*, pp. 24–39. Metropolitan Museum of Art, New York.
- Lackey, Louana M. 1988. Traditional Mexican Pottery Technology and Thin Orange Wares. In *A Pot for All Reasons: Ceramic Ecology Revisited*, ed. C. Kolb and L. Lackey, pp. 199–211. Ceramica de Cultura Maya et al., Philadelphia.
- Langley, James C. 1986. *Symbolic Notation of Teotihuacan: Elements of Writing in a Mesoamerican Culture of the Classic Period*. BARIS 313.
- Laporte, Juan Pedro, and Vilma Fialko C. 1990. New Perspectives on Old Problems: Dynastic References for the Early Classic at Tikal. In *Vision and Revision in Maya Studies*, ed. F. Clancy and P. Harrison, pp. 33–66. University of New Mexico Press, Albuquerque.
- Linné, Sigvald 1934. *Archaeological Researches at Teotihuacan, Mexico*. Stockholm: The Ethnographical Museum of Sweden, n.s., 1.
1942. *Mexican Highland Cultures: Archaeological Researches at Teotihuacan, Calpulalpan, and Chalchicomula in 1934–35*. Stockholm: The Ethnographical Museum of Sweden, n.s., 7.
- Lorenzo, José L. (ed.). 1968. *Materiales para la arqueología de Teotihuacán*. INAH.
- Lowe, Gareth W. 1962. *Mound 5 and Minor Excavations, Chiapa de Corzo, Chiapas, Mexico*. Papers of the New World Archaeological Foundation, No. 12, Provo, Utah.
- Luckenbach, Alvin H., and Richard S. Levy. 1980. The Implications of Nahua (Aztec) Lexical Diversity for Mesoamerican Culture-History. *Am. Antiq.* 45: 455–61.
- McCafferty, Geoffrey G. 1996. Reinterpreting the Great Pyramid of Cholula, Mexico. *Ancient Mesoamerica* 7(1): 1–17.
- McClung de Tapia, Emily. 1977. Recientes estudios paleo-etnobotánicos en Teotihuacán. *Anales de Antropología* (Mexico City: UNAM) 14: 49–61.
1978. Aspectos ecológicos del desarrollo y la decadencia de Teotihuacán. *Anales de Antropología* (Mexico City: UNAM) 15: 53–65.

1987. Agriculture and the Formation of the Teotihuacan State. In *Studies in the Neolithic and Urban Revolutions: The V. Gordon Childe Colloquium, Mexico, 1986*, ed. L. Manzanilla, pp. 353–64. BARIS 349.
- McClung de Tapia, Emily, and Evelyn C. Rattray (eds.). 1987. *Teotihuacan: Nuevos datos, Nuevas síntesis, Nuevos Problemas*. IIA, UNAM.
- Mandeville, Margaret D., and Dan M. Healan. 1989. Architectural Remains in the El Corral Locality. *TTES*, 171–99.
- Manzanilla, Linda (ed.). 1993. *Anatomía de un Conjunto Residencial Teotihuacano en Otzoyohualco*. IIA, UNAM.
1996. Corporate Groups and Domestic Activities at Teotihuacan. *Latin American Antiquity* 7(3): 228–46.
- Manzanilla, Linda, and Luis Barba. 1990. The Study of Activities in Classic Households: Two Case Studies from Coba and Teotihuacan. *Ancient Mesoamerica* 1: 41–49.
- Marcus, Joyce. 1983. Teotihuacan Visitors on Monte Albán Monuments and Murals. In *The Cloud People: Divergent Evolution of the Zapotec and Mixtec Civilizations*, ed. K. Flannery and J. Marcus, pp. 175–81. Academic Press, New York.
- Marcus, Joyce, and Kent V. Flannery. 1996. *Zapotec Civilization*. Thames & Hudson, London.
- Mastache, Alba Guadalupe, and Robert H. Cobean. 1989. The Coyotlatelco Culture and the Origins of the Toltec State. *MADT*, 49–67.
- Mastache, Alba Guadalupe, and Ana María Crespo. 1974. La ocupación prehispánica en el área de Tula, Hgo. In *Proyecto Tula, Primera Parte*, ed. E. Matos, pp. 71–103, INAH.
1982. Análisis sobre la traza general de Tula, Hgo. In *Estudios sobre la antigua ciudad de Tula*, pp. 11–36. INAH.
- Matos Moctezuma, Eduardo. 1974. (Ed.). *Proyecto Tula, Primera Parte*. INAH.
1976. (Ed.). *Proyecto Tula, Segunda Parte*. INAH.
1978. The Tula Chronology: A Revision. In *Middle Classic Mesoamerica: A.D. 400–700*, ed. E. Pasztory, pp. 172–177. Columbia University Press, New York.
1980. Teotihuacan: Excavaciones en la Calle de los Muertos (1964). *Anales de Antropología* 17 (1): 69–90.
1990. *Teotihuacan, the City of the Gods*. Rizzoli, New York. Miller, Arthur G. 1973. *The Mural Painting of Teotihuacan*. *Dumbarton Oaks*, Washington, DC.
1983. (Ed.). *Highland–Lowland Interactions in Mesoamerica: Interdisciplinary Approaches*. *Dumbarton Oaks*, Washington, DC.
- Miller, Mary Ellen. 1991. Rethinking the Classic Sculptures of Cerro de las Mesas, Veracruz. In *Settlement Archaeology of Cerro de las Mesas, Veracruz, Mexico*, ed. B. Stark, pp. 26–38. Institute of Archaeology, University of California, Los Angeles.
- Millert, Martin. 1992. *The Romanization of Britain*. Cambridge University Press, Cambridge.
- Millon, Clara. 1973. Painting, Writing, and Polity in Teotihuacan, Mexico. *Am. Antiq.* 38: 294–314.
1988. A Reexamination of the Teotihuacan Tassel Headdress Insignia. In *Feathered Serpents and Flowering Trees: Reconstructing the Murals of Teotihuacan*, ed. K. Berrin, pp. 114–34. The Fine Arts Museums of San Francisco, San Francisco.
- Millon, René. 1960. The Beginnings of Teotihuacan. *Am. Antiq.* 26: 1–10.

1973. *The Teotihuacan Map. Part One: Text*. University of Texas Press, Austin.
1974. The Study of Urbanism at Teotihuacan, Mexico. In *Mesoamerican Archaeology: New Approaches*, ed. N. Hammond, pp. 335–62. Duckworth, London.
1976. Chronological and Developmental Terminology: Why They Must be Divorced. In *The Valley of Mexico: Studies in Pre-Hispanic Ecology and Society*, ed. E. Wolf, pp. 23–27. University of New Mexico Press, Albuquerque.
1981. Teotihuacan: City, State, and Civilization. HMAI-St, 198–243.
1988. The Last Years of Teotihuacan Dominance. In *The Collapse of Ancient States and Civilizations*, ed. N. Yoffee and G. Cowgill, pp. 102–64. University of Arizona Press, Tucson.
1992. Teotihuacan Studies: From 1950 to 1990 and Beyond. In *Art, Ideology, and the City of Teotihuacan*, ed. J. Berlo, pp. 339–429. Dumbarton Oaks, Washington, DC.
- Millon, René, and James A. Bennyhoff. 1961. A Long Architectural Sequence at Teotihuacan. *Am. Antiq.* 26: 516–23.
- Millon, René, Bruce Drewitt, and James A. Bennyhoff. 1965. The Pyramid of the Sun at Teotihuacan: 1959 Excavations. *Transactions of the American Philosophical Society*, Vol. 55, Part 6, Philadelphia.
- Millon, René, R. Bruce Drewitt, and George L. Cowgill. 1973. *The Teotihuacan Map. Part Two: Maps*. University of Texas Press, Austin.
- Monzon, Marta. 1989. *Casas Prehispanicas en Teotihuacan*. Instituto Mexiquense de Cultura, Toluca, Mexico.
- Morelos García, Noel. 1993. *Proceso de Producción de Espacios en Teotihuacán*. INAH.
- Müller, Florencia. 1978. *La Cerámica del Centro Ceremonial de Teotihuacan*. INAH.
- Nagao, Debra. 1989. Public Proclamation in the Art of Cacaxtla and Xochicalco. *MADT*, 83–104.
- Nalda, Enrique. 1998. El reajuste mesoamericana. *Arqueología Mexicana* 6(32): 32–40.
- Nicholson, Henry B., and Frederic Hicks. 1961. A Brief Progress Report on the Excavations at Cerro Portezuelo, Valley of Mexico. *Am. Antiq.* 27: 106–8.
- Noguera, Eduardo. 1935. Antecedentes y relaciones de la cultura teotihuacana. *El México Antiguo* 3(5–8): 3–90, 93–95.
- Nuttall, Zelia. 1926. Official Reports on the Towns of Tequizistlan, Tepechpan, Acolman, and San Juan Teotihuacan . . . *Papers of the Peabody Museum of American Archaeology and Ethnology, Harvard University*, Vol. 11, No. 2. Cambridge, MA.
- Ortiz, Ponciano, and Robert S. Santley. 1998. Maticapan: un ejemplo de enclave teotihuacano en la costa del Golfo. In *Los Ritmos de Cambio en Teotihuacán*, ed. Rosa Brambila and Rubén Cabrera, pp. 377–460. INAH.
- Paredes Gudiño, Blanca Luz. 1990. *Unidades Habitacionales en Tula, Hidalgo*. INAH.
- Parsons, Jeffrey R., Elizabeth Brumfiel, and Mary Hodge. 1996. Developmental Implications of Earlier Dates for Early Aztec in the Basin of Mexico. *Ancient Mesoamerica* 7: 217–30.
- Pasztor, Esther. 1974. *The Iconography of the Teotihuacan Tlaloc*. Dumbarton Oaks, Washington, DC.
1976. *The Murals of Tepantitla, Teotihuacan*. Garland Publishing Company, New York.
1988. A Reinterpretation of Teotihuacan and Its Mural Painting Tradition. In *Feathered*

- Serpents and Flowering Trees: Reconstructing the Murals of Teotihuacan*, ed. K. Berrin, pp. 45–77. The Fine Arts Museums of San Francisco, San Francisco.
1992. Abstraction and the Rise of a Utopian State at Teotihuacan. In *Art, Ideology, and the City of Teotihuacan*, ed. J. Berlo, pp. 281–320. Dumbarton Oaks, Washington, DC.
1997. *Teotihuacan: An Experiment in Living*. University of Oklahoma Press, Norman.
- Pasztor, Esther (ed.). 1978. *Middle Classic Mesoamerica: A.D. 400–700*. Columbia University Press, New York.
- Pendergast, David M. 1971. Evidence of Early Teotihuacan–Lowland Maya Contact at Altun Ha. *Am. Antiq.* 36: 455–60.
1990. *Excavations at Altun Ha, Belize, 1964–1970, Volume 3*. Royal Ontario Museum, Toronto.
- Pérez, José R. 1935. Exploración del túnel de la Pirámide del Sol. *El México Antiguo* 3(5–8): 91–92.
- Price, Barbara J. 1976. A Chronological Framework for Cultural Development in Mesoamerica. In *The Valley of Mexico: Studies in Pre-Hispanic Ecology and Society*, ed. E. Wolf, pp. 13–21. University of New Mexico Press, Albuquerque.
- Pring, Duncan C. 1977. The Dating of Teotihuacan Contact at Altun Ha: The New Evidence. *Am. Antiq.* 42: 626–28.
- Rattray, Evelyn C. 1966. An Archaeological and Stylistic Study of Coyotlatelco Pottery. *Mesoamerican Notes*, Numbers 7–8, pp. 87–211.
1978. Los contactos Teotihuacan–Maya vistos desde el centro de México. *Anales de Antropología* 15: 33–52.
1981. Anaranjado delgado: cerámica de comercio de Teotihuacan. In *Interacción Cultural en México Central*, ed. E. Rattray, J. Litvak, and C. Díaz, pp. 55–80. IIA, UNAM.
1989. El barrio de los comerciantes y el conjunto Tlamimilolpa: un estudio comparativo. *Arqueología* 5: 105–29. INAH.
1990. New Findings on the Origins of Thin Orange Ceramics. *Ancient Mesoamerica* 1: 181–95.
1992. *The Teotihuacan Burials and Offerings*. Vanderbilt University Publications in Anthropology, No. 42. Nashville, Tennessee.
1993. *The Oaxaca Barrio at Teotihuacan*. University of the Americas, Puebla.
- n.d. *The Teotihuacan Ceramic Chronology: Early Tzacualli to Metepec Phases*. Ms.
- Rattray, Evelyn Childs, Jaime Litvak King, and Clara Díaz Oyarzabal (ed.). 1981. *Interacción Cultural en México Central*. IIA, UNAM.
- Robertson, Ian G. 1999. Spatial and Multivariate Analysis, Random Sampling Error, and Analytical Noise: Empirical Bayesian Methods at Teotihuacan, Mexico. *Am. Antiq.* (in press).
- Rodríguez García, Ignacio. 1991. Un modelo para la investigación arqueológica: a propósito del Gran Conjunto. In *Teotihuacan 1980–1982: Nuevas Interpretaciones*, ed. R. Cabrera, I. Rodríguez, and N. Morelos, pp. 377–85. INAH.
- Rubín de la Borbolla, Daniel F. 1947. Teotihuacán: Ofrendas de los Templos de Quetzalcóatl. *Anales del INAH* 2: 61–72.
- Sanders, William T. 1981. Ecological Adaptations in the Basin of Mexico: 23,000 B.C. to the Present. HMAI-S1, 147–97.

- 1986a. Ceramic Chronology. In *The Toltec Period Occupation of the Valley: Part 1 – Excavations and Ceramics*, ed. W. Sanders, pp. 367–73. Department of Anthropology, Pennsylvania State University, University Park.
- 1986b. (Ed.). *The Toltec Period Occupation of the Valley: Part 1 – Excavations and Ceramics*. The Teotihuacan Valley Project Final Report – Volume 4. Occasional Papers in Anthropology, No. 13. Department of Anthropology, Pennsylvania State University, University Park.
1987. (Ed.). *The Toltec Period Occupation of the Valley: Part 2 – Surface Survey and Special Studies*. The Teotihuacan Valley Final Report – Volume 4. Occasional Papers in Anthropology, No. 15. Department of Anthropology, Pennsylvania State University, University Park.
1989. The Epiclassic as a Stage in Mesoamerican Prehistory: An Evaluation. *MADT*, 211–18.
- 1994–96. (Ed.). *The Teotihuacan Valley Project Final Report, Vol. 3 The Teotihuacan Period Occupation of the Valley*. 4 parts. Pennsylvania State University Press, University Park.
- Sanders, William T., Anton Kovar, Thomas Charlton, and Richard A. Diehl. 1970. *The Teotihuacan Valley Project. Final Report – Volume 1. The Natural Environment, Contemporary Occupation and 16th Century Population of the Valley*. Occasional Papers in Anthropology, No. 3. Department of Anthropology, Pennsylvania State University, University Park.
- Sanders, William T., and Joseph W. Michels (ed.). 1977. *Teotihuacan and Kaminaljuyu: A Study in Prehistoric Culture Contact*. Pennsylvania State University Press. University Park.
- Sanders, William T., Jeffrey R. Parsons, and Robert S. Santley. 1979. *The Basin of Mexico: Ecological Processes in the Evolution of a Civilization*. Academic Press, New York.
- Sanders, William T., Michael West, Charles Fletcher, and Joseph Marino. 1975. *The Formative Period Occupation of the Valley*. The Teotihuacan Valley Project Final Report – Volume 2. Department of Anthropology, Pennsylvania State University, University Park.
- Santley, Robert S. 1983. Obsidian Trade and Teotihuacan Influence in Mesoamerica. In *Highland – Lowland Interaction in Mesoamerica: Interdisciplinary Approaches*, ed. A. Miller, pp. 69–124. Dumbarton Oaks, Washington, DC.
1984. Obsidian Exchange, Economic Stratification, and the Evolution of Complex Society in the Basin of Mexico. In *Trade and Exchange in Early Mesoamerica*, ed. K. Hirth, pp. 43–86. University of New Mexico Press, Albuquerque.
1989. Obsidian Working, Long-Distance Exchange, and the Teotihuacan Presence on the south Gulf Coast. *MADT*, 131–51.
- Santley, Robert S., Janet M. Kerley, and Ronald R. Kneebone. 1986. Obsidian Working, Long-Distance Exchange, and the Politico-Economic Organization of Early States in Central Mexico. In *Economic Aspects of Prehispanic Highland Mexico*, ed. B. Isaac, pp. 101–32. JAI Press, Greenwich, CT.
- Schávelzon, Daniel. 1981. *Planimetría Arqueológica de Teotihuacán*. IIA, UNAM.
- Schele, Linda, and David Freidel. 1990. *A Forest of Kings: The Untold Story of the Ancient Maya*. Morrow, New York.

- Séjourné, Laurette. 1959. *Un Palacio en la Ciudad de los Dioses: Exploraciones en Teotihuacan, 1955–58*. INAH.
- 1966a. *Arqueología de Teotihuacan: La Cerámica*. Fondo de Cultura Económica, Mexico City.
- 1966b. *Arquitectura y Pintura en Teotihuacan*. Siglo Veintiuno, Mexico City.
- 1966c. *El Lenguaje de las Formas en Teotihuacan*. Gabriel Mancera 65, Mexico City.
- Seler, Eduard. 1915. *Die Teotihuacan-Kultur des Hochlands von Mexico*. Gesammelte Abhandlungen zur Amerikanischen Sprach- und Alterthumskunde, Part 5, pp. 405–585. Unger, Berlin. English edition, 1991, Labyrinthos, Culver City, CA.
- Sempowski, Martha L., and Michael W. Spence. 1994. *Mortuary Practices and Skeletal Remains at Teotihuacan*. Urbanization at Teotihuacan, Mexico, Vol. 3, ed. René Millon. University of Utah Press, Salt Lake City.
- Serrano, Carlos, and Zaíd Lagunas. 1975. Sistema de enterramiento y notas sobre el material osteológico de La Ventilla, Teotihuacán, México. *Anales del INAH* 4(52): 105–44.
- Sheehy, James J. 1992. *Ceramic Production in Ancient Teotihuacan, Mexico: A Case Study of Tlajinga 33*. Doctoral dissertation, Pennsylvania State University.
- Sload, Rebecca. 1987. The Great Compound: a forum for regional activities. In *Teotihuacan: Nuevos datos, Nuevas síntesis, Nuevos Problemas* ed. E. McClung and E. Rattray, pp. 219–41. IIA, UNAM.
- Smith, Robert Eliot. 1987. *A Ceramic Sequence from the Pyramid of the Sun, Teotihuacan, Mexico*. Papers of the Peabody Museum of Archaeology and Ethnology, Vol. 75. Harvard University, Cambridge, MA.
- Snow, Dean R. 1969. Ceramic Sequence and Settlement Location in Pre-Hispanic Tlaxcala. *Am. Antiq.* 34: 131–45.
- Sociedad Mexicana de Antropología. 1967. *Teotihuacan. Onceava Mesa Redonda. México, 1966*. Mexico City.
1972. *Teotihuacan. XI Mesa Redonda*. Mexico City.
- Spence, Michael W. 1974. Residential Practices and the Distribution of Skeletal Traits in Teotihuacan, Mexico. *Man* 9: 262–73.
1976. Human Skeletal Material from the Oaxaca Barrio in Teotihuacan, Mexico. In *Archaeological Frontiers: Papers on New World High Cultures in Honor of J. Charles Kelley*, ed. R. Pickering, pp. 129–48. Southern Illinois University Museum, Carbondale.
1981. Obsidian Production and the State in Teotihuacan. *Am. Antiq.* 46:769–88.
1984. Craft Production and Polity in Early Teotihuacan. In *Trade and Exchange in Early Mesoamerica*, ed. K. Hirth, pp. 87–114. University of New Mexico Press, Albuquerque.
1987. The Scale and Structure of Obsidian Production in Teotihuacan. In *Teotihuacan: Nuevos Datos, Nuevas Síntesis, Nuevos Problemas*, ed. E. McClung and E. Rattray, pp. 429–50. IIA, UNAM.
1989. Excavaciones recientes en Tlailotlaca: El barrio oaxaqueño de Teotihuacan. *Arqueología* 5:81–104. INAH.
1992. Tlailotlacan, a Zapotec Enclave in Teotihuacan. In *Art, Ideology, and the City of Teotihuacan*, ed. J. Berlo, pp. 59–88. *Dumbarton Oaks*, Washington, DC.

- Stark, Barbara L. (ed.). 1991. *Settlement Archaeology of Cerro de las Mesas, Veracruz, Mexico*. Monograph 34, Institute of Archaeology, University of California, Los Angeles.
- Stark, Barbara L., Lynette Heller, Michael D. Glascock, J. Michael Elam, and Hector Neff. 1992. Obsidian-Artifact Source Analysis for the Mixtequilla Region, South-Central Veracruz, Mexico. *Latin American Antiquity* 3:221–39.
- Steponaitis, Vincas P. 1981. Settlement Hierarchies and Political Complexity in Nonmarket Societies: The Formative Period of the Valley of Mexico. *Am. Ant.* 83: 320–63.
- Stone, Andrea. 1989. Disconnection, Foreign Insignia, and Political Expansion: Teotihuacan and the Warrior Stelae of Piedras Negras. *MADT*, 153–72.
- Storey, Rebecca. 1985. An Estimate of Mortality in a Pre-Columbian Urban Population. *Am. Ant.* 87:519–35.
1992. *Life and Death in the Ancient City of Teotihuacan: A Modern Paleodemographic Analysis*. University of Alabama Press, Tuscaloosa.
- Stuart, George E. 1992. Mural Masterpieces of Ancient Cacaxtla. *National Geographic* 182(3): 120–36.
1997. The Royal Crypts of Copán. *National Geographic* 192(6): 68–93.
- Sugiura Yamamoto, Yoko. 1990. *El Epiclásico y el Valle de Toluca: Un Estudio de Patrón de Asentamiento*. Doctoral thesis, UNAM.
- Sugiyama, Saburo. 1989a. Burials Dedicated to the Old Temple of Quetzalcoatl at Teotihuacan, Mexico. *Am. Antiq.* 54:85–106.
- 1989b. Iconographic Interpretation of the Temple of Quetzalcoatl at Teotihuacan. *Mexican* 11(4): 68–74.
1993. Worldview Materialized in Teotihuacan, Mexico. *Latin American Antiquity* 4(2): 103–29.
1995. *Mass Human Sacrifice and Symbolism of the Feathered Serpent Pyramid in Teotihuacan, Mexico*. Doctoral dissertation, Arizona State University, Tempe.
- Taube, Karl A. 1983. The Teotihuacan Spider Woman. *Journal of Latin American Lore* 9(2): 107–89.
1986. The Teotihuacan Cave of Origin: The Iconography and Architecture of Emergence Mythology in Mesoamerica and the American Southwest. *RES* 12:51–82.
1992. The Temple of Quetzalcoatl and the cult of sacred war at Teotihuacan. *RES* 21: 53–87.
- Tolstoy, Paul. 1958. Surface Survey of the Northern Valley of Mexico: The Classic and Post-Classic Periods. *Transactions of the American Philosophical Society*, Vol. 48, Part 5. Philadelphia.
- Tozzer, Alfred M. 1921. *Excavation of a Site at Santiago Ahuizotla, D.F., Mexico* Smithsonian Institution, Bureau of American Ethnology, Bulletin 74, Washington, DC.
1957. *Chichen Itza and Its Cenote of Sacrifice*. Peabody Museum, Harvard University, Memoirs 11–12. Cambridge, MA.
- Umberger, Emily. 1987. Antiques, Revivals, and References to the Past in Aztec Art. *RES* 13.
- Vaillant, George C. 1935. Early Cultures of the Valley of Mexico: Results of the Stratigraphical Project of the American Museum of Natural History in the Valley of Mexico, 1928–1933. *American Museum of Natural History, Anthropological Papers*, Vol. 35, No. 3. New York.

1938. A Correlation of Archaeological and Historical Sequences in the Valley of Mexico. *Am. Ant.* 40: 535–73.
- von Winning, Hasso. 1987 *La Iconografía de Teotihuacan: Los Dioses y los Signos*. (2 vol.) UNAM.
- Wolf, Eric R. (ed.). 1976. *The Valley of Mexico: Studies in Prehispanic Ecology and Society*. University of New Mexico Press, Albuquerque.
- Yadeun Angulo, Juan. 1974. Análisis espacial de la zona arqueológica de Tula, Hgo. In *Proyecto Tula, Primera Parte*, ed. E. Matos. INAH.
1975. *El Estado y la Ciudad: El Caso de Tula, Hgo.* INAH.

WESTERN AND NORTHWESTERN MEXICO

SHIRLEY S. GORENSTEIN

INTRODUCTION

Until recently, Western and Northwestern Mexico had been regarded as a backwater of Mesoamerica. Ironically, though not unexpectedly, the Aztec view, chauvinist as it was and should have been, was adopted by the conquistadores and succeeding generations of Spaniards, Mexicans, and ultimately by the worldwide scholarly community. That view placed the Aztecs and their cultural antecedents in Central Mexico at the center of Mesoamerican studies. By comparison Western and Northwestern Mexico was little studied, and when it was, the primary objective was to relate it to Central Mexican culture history and development. The result was that these investigations, having been designed for another purpose, were too fragmentary to delineate western and Northwestern Mexican culture history or its developmental progression. Based on the fragmentary data that had emerged, Western and Northwestern Mexico was considered comparatively simple and therefore not Mesoamerican. When later investigations revealed a high culture and complex society, archaeologists, driven by the Central Mexican model as defining Mesoamerica, again declared Western and Northwestern Mexico as not Mesoamerican; this time because it did not follow the variant form of civilization that existed in Central Mexico.

Since the 1970s, archaeologists have worked more extensively in Western and Northwestern Mexico and have realized that this subarea has a complicated and complex history and development. A number of scholars have come to the conclusion that the definition of Mesoamerican high culture should be based on the range of cultural manifestations in an interactive area and should not be constrained by current political boundaries or internalist interpretations of past culture history. With the con-

tinuing aggregation of data from and unfettered interpretations of Western and Northwestern Mexico, the concept of Mesoamerica is being amended to the benefit of the archaeological understanding of civilization. The concept that integrates Western and Northwestern Mexico refers to the full manifestation of civilization in Middle America as Greater Mesoamerica.

There has been some attempt to define the boundaries of Western and Northwestern Mexico. Western Mexico ranges from about 26° north to 17° north. The western border is defined by the coastline, and the eastern border undulates around the 101° west longitude line. The states either whole or in part that constitute Western Mexico are Sinaloa, Durango, Nayarit, Zacatecas, Jalisco, Guanajuato, Michoacan, and Guerrero. Northwestern Mexico consists of parts of Jalisco, Durango, Zacatecas, Chihuahua, and Sonora. There is no consensus as to the regions within this subarea. Currently, the regions noted in the scholarly literature are broadly drawn, based on modern states, and reflect the history of scholarly opportunity. Because geography informs us about ecology and population and thereby subsistence pattern, population density and distribution, and political boundaries, it can suggest potential prehistoric cultural regions.

Robert C. West has described the major tectonic areas and natural regions of Mexico. Recognizing these geographical divisions and combining them with the known archaeological data led to the designation of the following archaeological regions within Western and Northwestern Mexico: (1) Western Mesa Central (including Nayarit and Jalisco), (2) Central Mesa Central (including Guanajuato and Michoacan); (3) Balsas-Tepalcatepec Basin (including Michoacan and Guerrero); (4) Coastal West Mexico (including Guerrero, Michoacan, Colima, Jalisco, Nayarit, and Sinaloa); (5) Sonora and Northern Sinaloa; and (6) Sierra Madre Occidental and Western Mesa del Norte (including eastern Sonora, Chihuahua, Zacatecas, and Durango).

WESTERN MESA CENTRAL (SEE MAP 7.1)

The tomb complex of Western Mexico, discussed in Chapter 2 of this volume, has been the subject of several kinds of discussion. The first concerns its chronology; the second, its role in religion; and the third, its cultural predecessors. On the first point, radiocarbon dating places it within a few hundred years of the beginning of the Christian Era from



Map 7.1

the second century B.C. until the fifth century A.D. Its religious significance has been discussed both conservatively (Stanley V. Long) and liberally (Peter Furst). Certainly two points are agreed upon, no matter the interpreter: the tombs were connected to ideas about the supernatural world and these ideas were different from those held in other parts of Greater Mesoamerica at the same or earlier times. This leads to the third discussion, namely, the cultural precedents for tomb building. Similarities with South America have been postulated by a number of authors, and that hypothesis has achieved widespread acceptance among many

archaeologists, abetted as it is by the indications of South American contact in the introduction and development of metallurgy, albeit hundreds of years later.

There were contemporary cultures that were not part of the tomb complex. A site investigated by Betty Bell, outside the tomb complex region although related to it, is El Cerro Encantado in northeastern Jalisco, about 175 kilometers northeast of the Magdalena Lake Basin tombs. Although it was not a tomb complex site, the offerings in association with the burials found there were similar to those found at tomb complex sites, including the large, hollow, redware figurines. This site, dated at about A.D. 100, is also linked to Chupícuaro (see below). By connecting sites in these three regions, archaeologists are developing a description of Western and Northwest Mexican culture in the Preclassic.

Isabel Kelly (1949) described a Tuxcacuesco complex and phase in southern Jalisco that was in part contemporary with the later tomb complex. She saw a connection to the Ortices phase in Colima, and indeed the connection between or even unity of southern Jalisco and Colima was ongoing until Conquest times. Kelly described the architectural features of the complex as including hillside terracing, simple quadrangular masonry enclosures (perhaps some contiguous, multiple quadrangular masonry enclosures), and masonry laid in mud mortar. She also located eleven burials, some primary extended and some secondary, the latter in a group. *Tepetate* slabs as well as ceramic vessels were in association. The characteristic ceramic wares were a plain redware and an incised redware. There is also a less frequently found black-on-red ware and two "utility" wares.

There has been some interest in finding the larger cultural context for the tomb complex and in looking at the cultural continuity and change in the time after its demise. Phil Weigand has studied the Jalisco highland lake system with this viewpoint. The lakes are shallow and flat-bottomed, and their size is variable, affected by rainfall patterns. They have large and varied biotic communities: reeds, birds, reptiles, amphibians, fish, and insects. The lacustrine soils also support intensive agriculture. In the case of the Magdalena Lake Basin, there were obsidian flows and copper deposits in and near the lake zone. Weigand sees this region as crucial in two major prehispanic systems of communication: from central Mexico via the Lerma Valley to coastal Jalisco, Nayarit, and Sinaloa; and between the Bolaños–Juchipila barrancas and the América Valley.

Weigand discovered 112 sites of the tomb complex period. Working in the Etzatlan area, he identified five types of sites. Type 5 were hunting stations and kill sites located at a distance from the other types of sites and with no architecture, no mounds and no tombs.

Type 4 sites had a small central mound and three to six larger, but still small, mounds in a semicircle around the central mound. Tombs are found in Type 4 sites. These tombs, however, were not deep and had few offerings. Type 4 sites were between and around Type 2 and Type 3 sites.

Type 3 sites were similar in ground plan to Type 4 sites, but the mounds as well as the sites were larger. The sites have habitation and workshop zones, and Weigand believes the sites were occupied by a core resident population and became ceremonial centers several times during the year. The tombs found at the sites are "elaborate in depth and internal complexity."

Type 2 sites were larger still, with a slightly different ground plan. A second circle or semicircle of outlying mounds was added. The tombs at this site contained very elaborate offerings, invariably with several figurine types. Weigand, by using infrared film, believes he may have discovered that the tomb walls were painted. Inferring from a variety of material culture data, Weigand suggests a bilateral lineage social organization and an ancestor-oriented religion.

Weigand located one Type 1 site in the Etzatlan area, the Ahualulco site. This was different from the other types in its location (on pasture ground surrounded by valley bottoms and lake remnants), its lack of natural resources (despite the presence of numerous obsidian workshops), and its large population (indicated by the dense habitation debris). The ground plan, while similar to others, was significantly different. The site comprised six separate mound groups (with an imposing central mound group), each with a primary central mound surrounded by secondary mound-circles. The size and elaborateness of the tombs varied according to their placement near primary or secondary mounds. Weigand suggested that the differences among tombs at this site might reflect hierarchical lineages in the valley social organization.

Weigand suggested a chronological relationship between Types 2 and 3 and Type 1. In the Preclassic, until about A.D. 150–200 (El Arenal phase), there were a number of independent ceremonial cult centers of equal importance (Types 2 and 3). In the Late Preclassic/Early Classic, until about A.D. 350–400 (Ahualulco phase), there developed a single

important political and ceremonial center for the valley (Type 1), on which the other former independent centers were now dependent. Weigand described a Teuchitlan tradition with a San Felipe phase (c. 1000–300 B.C.) characterized by village-based ceremonial centers with circular or oval burial mounds and platforms. It was in the next El Arenal phase (c. 350/300 B.C.–A.D. 150/200) that the tomb complex reached its limits. Perhaps the northern lake zone with its ceremonial circles, ballcourts, and monumental and true-shaft tombs became the cultural core for coastal west Mexico and for the region to its north.

According to Weigand, the Classic period in the northern lake district of Jalisco is represented by the Teuchitlan tradition. He described three phases: the Ahualulco phase (A.D. 200–400), the Teuchitlan I phase (A.D. 400–700), and the Teuchitlan II phase (A.D. 700–1000). In the Teuchitlan tradition, he recognized a population implosion and the development of the district as a key economic area. Apparently, a statelike organization developed in the Ahualulco phase and a connection was made to Central Mexico in the Teuchitlan phase. Social and political systems were stratified, and political centralization developed. Weigand thought that political centralization came about as a result of the need to organize a redistributive cycle for the district's rare resources, which also were crucial in long-distance trade. Architectural features were improved and amplified, especially the ballcourt; the tomb complex subsided and disappeared. Weigand has also noted a Huistla phase (A.D. 800–1200) and an Etzatlan phase (c. A.D. 1200 to Conquest).

Stanley V. Long identified two post-tomb complex phases at the Etzatlan site: the Teculotl and the Huistla. He characterized the Teculotl by the absence of tomb complex traits. The Huistla phase is marked by great change. There was increased population density, large mounds were constructed, and new forms of domestic and ceremonial ceramic vessels were made. The dead were buried in simple graves with few or no grave goods.

Elsewhere in this region, Classic and Postclassic remains have been identified at Preclassic sites or vicinities. For Ixtlan del Rio, E. W. Gifford described an Early Period that he aligned with Early Chametla, a Middle Period comparable to Late Chametla 2 and Early Culiacan 2 (Aztatlan complex) and a Late Period, which he related to Late Culiacan and the Autlan Complex. Early Ixtlan is Classic Period, and Middle and Late Ixtlan are Postclassic.

In the Autlan zone, Kelly (1945) identified three ceramic complexes:

the Cofradia, the Mylpa, and the Autlan in a rough chronological sequence and placed them in the Postclassic. Using Conquest period data, she inferred a large dense population, the presence of markets, and trade in maize and chile.

MESA CENTRAL (SEE MAP 7.1)

The central Mesa Central region of Western and Northwestern Mexico is important mainly because of the development of Tarascan culture in the Late Postclassic. A little of the region's history in pre-Tarascan times is known. Although the tombs at El Opeño date to around 1200 B.C., not much is known about the region until the Preclassic. For the Late Preclassic period, the Chupicuaro site, in the Lerma River Valley in the state of Guanajuato, has provided the richest source of information. Chupicuaro was excavated in 1949 before it was flooded in the creation of the Solis dam. Muriel Porter Weaver has provided the most extensive information about the site, which had nearly four hundred graves with associated grave goods and several types of constructions. She described black-brown unpainted wares and elaborate polychrome wares. Design motifs were invariably geometric, but shapes were highly varied and included attributes such as stirrup spouts, spider-leg supports, and effigy and elongated vessel bodies. Figurines were both hollow and solid. There were also a variety of musical wind instruments as well as rattles. She located stone alignments (house foundations?) and burnt-clay floors. In the cemetery area were "mud-packed" basins filled with fine ash indicating their use as fire receptacles. R. B. Brown and E. Bejarano have reported a circular pyramid at Chupicuaro.

Interpretations and fieldwork by Beatriz Braniff and Charles Florance note that Chupicuaro culture in the Lerma River Valley from 100 B.C. to A.D. 100 was characterized by a small-village settlement pattern. They suggested that Chupicuaro first flourished in the Lerma River Valley and then moved into the larger Mesa Central, where it is known from the Basin of Mexico and the Valley of Morelos. Ultimately, it moved into regions west of the Lerma Valley, where it has been found from Lake Cuitzeo west to Zacapu and, perhaps, into the Mesa del Norte. Chupicuaro occupations have been found also at Acambaro in the Lerma River Valley and the Lake Cuitzeo Basin, and with local variation near Morelia and in the Zacapu and Patzcuaro basins.

In the northern Mesa Central of Western and Northwestern Mexico

in the Classic period, there was a florescence of settlement and architecture. R. B. Brown (1985) described an increase in the number of settlements in the Tunal Grande, the Rio Laja drainage, and the Bajío (although there was a population decrease in this district in the later Classic). Settlements ranged from farming villages with wattle-and-daub structures to ceremonial centers with architectural features that included stepped pyramids, platforms, walled and sunken plazas with low square altars within them, and stone causeways. In the Early Postclassic period, there was a change in settlement in this region with a decrease in the number of settlements, even the abandonment of settlements, and few new sites.

A little is known about the heart of the Western and Northwestern Mesa Central in the Classic period. Helen Perlstein Pollard has summarized and interpreted the current findings. Between A.D. 400 and 900 ceremonial centers were established. They are known from diverse locations: near Jiquilpan (El Otero), near Cuitzeo (Tres Cerritos), near Lake Patzcuaro (Tingambato), and possibly near Lake Cuitzeo at Querendaro or Zinapecuaro; but it is difficult, at this stage of archaeological investigation, to assess their influence. However, they were full-blown ceremonial centers with monumental architecture including tombs with elaborate grave goods. In a study of the culture history of this part of the Western and Northwestern Mesa Central, primary research questions are being asked concerning the origin and development of these centers. Three alternative explanations are possible at present. Were the centers an indigenous development stemming from roots here and to the north and west; or were they an indigenous development whose form was profoundly influenced by interactions within a Teotihuacan economic network; or does their presence reflect a migration of Teotihuacan élite in the Epiclassic?

The scant evidence currently available for the Early and Middle Postclassic documents settlements with populations of at least 5,000, with monumental architecture and a material culture that included polychrome ceramics and metal artifacts indicating occupational and social stratification.

In the Late Postclassic, it is the Tarascan civilization that dominated the Mesa Central of Western and Northwestern Mexico. Tarascan ruins have been noted for the south shore of Lake Chapala, and the sites near Jacona, Tangancicuaro, and Huetamo. The Tarascan presence has been documented in recent archaeological investigations in the Balsas River

Basin (González Crespo, Maldonado Cárdenas, and Cabrera Castro), at Acambaro (Gorenstein), at Zacapu (Michelet), and in the Cuitzeo Basin (Macías Goytia).

However, the Tarascan civilization has been identified, both archaeologically and ethnohistorically, mainly through the work in the Lake Patzcuaro Basin. Over the last fifty years there have been limited investigations in this basin, among them those of J. Acosta, A. Caso, R. Gali, E. Noguera, D.F. Rubín de Borbolla, R. Piña Chan, H. Perlstein Pollard, R. Carera Castro, and C. Silva Rhoads.

The major ethnohistorical source for the Tarascan civilization is the *Relación de las ceremonias y población y gobierno de los indios de la provincia de Michoacán*. Written in 1540–41 by a Franciscan friar, it describes the history and culture of the Tarascans. There are other ethnohistorical sources as well, including the ethnohistorical field and document study by Gorenstein and Pollard, and Pollard has written a full narrative and interpretive account of the Tarascan civilization.

In the Early Postclassic, the Mesa Central as well as other regions of Western and Northwestern Mexico hosted a number of complicated societies manifested by large, even monumental, centers with associated and independent smaller, largely residential, settlements. The archaeological evidence indicates that they were societies with elaborated and specialized economic, political, religious, and social institutions. At this time there were a number of population movements, either because of climatic change and its consequences or because of cultural changes.

An indigenous proto-Tarascan-speaking population of the Lake Patzcuaro Basin occupied all parts of the basin from the lakeshore to the sierra. The Tarascan language is well known for its differences from other Mesoamerican languages. These differences, combined with the similarities between Tarascan and southern Central American and northwest South American indigenous languages, have led some linguists to postulate a Central or South American source for Tarascan. The idea of such an origin is also supported by other evidence, such as the tomb complex and the introduction of metallurgy for a continuing maritime connection between West Mexico and these southern regions.

Tarascan culture is known for its distinctive architecture, particularly the *yacatas*; for its ceramics with unique combinations of attributes including its animal effigies, spouted vessels, and red and/or white paint on a cream slip; for its highly specialized lapidary work, including the use of turquoise mosaics and gold leaf; and for its metallurgy.

The Tarascan religious system had as a main component its connection to and its support of the political system. Its creation myth assigns a special role to the royal and noble lineages, the members of which took their power and virtue from their relationship to the god Curicaueri and were required to use them on behalf of the commoners. As the Tarascans expanded their territory, the religious élite, although mindful of regional beliefs, fashioned a state religion. Rituals, as one would expect, were connected to agriculture, but there was also a set of major rituals that affirmed the importance of the state and its military.

At the time of this Middle Postclassic migration, Nahuatl speakers settled into the Lake Patzcuaro Basin, an earlier migration of Chichimecs took up residence on the lake islands, and a later group of Chichimecs, who had been resident at Zacapu, settled first in Uayameo and then fanned out, taking up residence in other basin settlements, including Tzintzuntzan. At the same time, a significant environmental event was taking place within the basin. A change occurred in the distribution of lake water, affecting the extent of irrigable land and the amount of lake and marsh resources. Settlements were differentially affected by this change, some advantageously, others disadvantageously. At the time of this environmental fluctuation, a small political move seems to have taken place. Tzintzuntzan gained control over Uayameo's irrigable land. The combination of its resident high élite and what was the richest resource base gave Tzintzuntzan an edge over other settlements, which was parlayed into a control of the entire basin. Although there were independent polities, they were not interacting to the point of coordinating their activities. In such coordination, one polity comes to dominate the others, but it must be ever mindful of the potential power of the dominated polities. Tzintzuntzan used the strategy of absorption rather than coordination of defeated polities, and created new polities. Thus, power was not shared, which was necessary in the coordinated mode, but was exclusive in Tzintzuntzan. Even in its heyday Tzintzuntzan was a comparatively small urban center with a Protohistoric population of between 25,000 and 35,000. While it had important economic and religious functions, its growth was generated by political factors, and it functioned most importantly as an administrative center.

The study of settlement in relation to optimizing economic, religious, and administrative functions shows that the Lake Patzcuaro Basin was organized for administration. The Tarascan state was characterized by its administrative and political priorities and by the centralization of political

power in its capital, Tzintzuntzan, where an extraordinarily high 37 percent of the basin's population lived, an indication of its administrative role not only within the basin but also in the larger Tarascan territory.

The Tarascan state began its expansion outside the basin very early in its history. By the time of the Spanish Conquest it controlled a territory – an empire – of 75,000 square kilometers ranging north to the Lerma River system, south to the Balsas River system, west to the Sayula Basin, and east to the vicinity of the modern Michoacan–Mexico states border. The territory was incorporated into a vast centralized and hierarchically organized tribute network. While the tribute system was under the political control of the Tzintzuntzan royal family, it was managed by the administrative system, which received, stored, and distributed the tribute of both goods and services. Items commonly on the tribute lists were maize, cotton cloth and clothing, slaves, sacrificial victims, fruit, cacao, gourds, animal skins, feathers, and metals.

The conflict on the Tarascan eastern border is well known through both Tarascan and Aztec histories. For the Aztecs, warfare with the Tarascans did not result in the victory they knew so well from other areas. And, indeed, for the Tarascans it was the same. Although each army penetrated the territory of the other, neither encroached upon the other's empire of the other. There remained between them a borderland occupied by local groups who served both the great powers, which, although in enough contact to learn from each other, formed no alliance. In the end, at the time of the conquest of Mexico, when the Aztecs asked for help from the Tarascans, they refused, distrusting the Aztecs more than they distrusted the Spaniards.

COASTAL WEST MEXICO (SEE MAPS 7.1 AND 7.2)

Coastal West Mexico includes the coastal plains of the present states of Guerrero, Michoacan, Colima, Jalisco, Nayarit, and Sinaloa, and is characterized by its coastal lowland ecology. In prehistoric times, the region supported a large and comparatively dense population by the high production of nonagricultural foods. It is also the possible locus of waterborne contacts to Central and South America and an overland trade route to the Greater American Southwest.

A survey of 250 kilometers of the Guerrero littoral and an investigation of four sites – the Barnard, San Jeronimo, Puerto Marques, and Zanja – yielded tentatively established sequences that may begin in the third



Map 7.2

millennium B.C. and may possibly continue through the Postclassic. There is some evidence that subsistence was based on the resources of the lagoon, estuary, and riverine environments.

Two sites in Guerrero at the Balsas River delta are Las Tamacuas–Cacatula and, downstream from it, El Naranjito–San Francisco. They may be as late as Contact period. The Melchor Ocampo site in Michoacan is also at the Balsas River delta. It is a large site, 2 by 0.5 kilometers with perhaps two hundred mounds, mostly house mounds. Excavations in one mound revealed five burials with associated ceramic vessels. Metal

artifacts as well as radiocarbon dates placed the site in the Late Postclassic. Another site in Michoacan, Las Guayacamayas, noted in a survey, is considered Late Postclassic as well. These Balsas River delta sites may be more properly connected culturally to the Balsas River region than to the coast.

The Morett site, investigated by Clement Meighan, is in northern Colima, about 12 kilometers south of Barra de Navidad. It lies on the flanks of the low hills that border the Jalisco–Colima coastal plain and has a different ecology from the sites on the coast. The site is about 250 meters in diameter, with the dense occupation on the lower levels of the slope. Meighan interpreted the settlement data as revealing a small farming village composed of wattle-and-daub houses with clay floors and inhabited by several hundred persons. The adjacent flatlands with rich alluvial soil was used for farming. Although the site is only a few miles from the coast, there is no indication from the remains, especially from the faunal analysis, that marine resources were important. Meighan concluded that shellfish were probably a supplemental, rather than major, part of the diet.

Meighan described two assemblages, the Early Morett dated at 300 B.C. to A.D. 100, followed by a fifty-year abandonment of the site, and the Late Morett dated at A.D. 150 to A.D. 750, followed by a second fifty-year abandonment and a minor reoccupation from A.D. 800 to A.D. 1000. The most intensive occupation of the site was between 200 B.C. and A.D. 600. The two periods were differentiated on the basis of material culture: Early Morett was defined by its extended burials and particular types of figurines and ceramics as well as ceramic attributes. Late Morett was characterized by figurine and ceramic types as well as the presence of spindle whorls and *molcajetes*. Burials are not known. Found in both periods are stone, bone, and shell artifacts. Meighan saw similarities between Early Morett and the Tuxcacuesco complex of Jalisco. Beyond Mexico, he saw “striking” similarities between Morett ceramics and ceramics from Guatemala, Honduras, and Ecuador.

Barra de Navidad is a small mangrove swamp–shell mound site near a saline lagoon in southern coastal Jalisco (the Bay of Navidad). The investigators, Stanley V. Long and Marcia Wire, dated the site tentatively at A.D. 650–Contact. They described the site as either seasonally occupied by inland people or permanently occupied by people who subsisted mainly on shellfish but who also traded salt, fish, and shellfish to people inland for products indigenous to that ecological niche.

In the southern Sinaloa–northern Nayarit coastal plain Joseph Mountjoy has found and named a series of complexes, beginning with the Matanchén, whose earliest dates are around 2000 B.C. The sequence continues with the San Blas complex, dated at 700 B.C. to 400 B.C., for which Mountjoy has obtained considerable data. He described the ecology of the San Blas complex as intensive and complicated. The occupants of the site at that time used the resources of the sea, lagoon, and lowland forests, and apparently did so very efficiently. These resources included shellfish, fish, crabs, sea turtles, land turtles, birds, and mammals. Vegetable forest resources include the oil nut palm (*coyul*), fruits, and seeds.

Mountjoy concluded that the exploitation of these microenvironments supported permanent settlements (although perhaps seasonally occupied), and that such a subsistence and settlement pattern was widespread along the coasts of Guerrero, Michoacan, and Colima. Perhaps the northern Mexican coastal adaptation was an expansion of a Pacific littoral adaptation from Chiapas or Guatemala. He also suggested that some ceramic as well as other attributes of the San Blas complex may point to San Blas as a source for the development of Pioneer Hohokam in the Greater Southwest, through a route beginning in this coastal plain and continuing through Sonora and then northward up the river drainages into the Southwest.

The three subsequent complexes in this district are Early Ixtlan, Los Cocos, and Santa Cruz. The Early Ixtlan complex, beginning at the onset of the Christian Era and continuing until about A.D. 500, is the coastal expression of the Early Ixtlan Complex described by E. W. Gifford for the type site at Ixtlan del Rio, in the Western Mesa Central region. Mountjoy also noted indications of Early Ixtlan at the coastal site of Peñitas, Nayarit. Los Cocos was dated at A.D. 500–900. Its settlements were small, on terraced hills, and included house platforms. The Los Cocos complex appeared different from the earlier complexes in its adaptation to small-scale slope agriculture. The Santa Cruz complex is dated A.D. 700–1500. In that time, there was a population increase and a settlement pattern that, in addition to small habitation sites, included large sites (average size was 35,000 square meters) with many mounds (an average of fourteen per site), which were presumed to have had domestic and public functions. The population was concentrated in the fertile lowland riverine valleys. Fish, oysters, and cotton were the important products. In addition to ceramic and lithic artifacts, a small amount of copper was found.

The Amapa site, investigated by Clement Meighan, lies on the coastal plain of Nayarit, about 25 kilometers from the ocean. The chronological sequence for Amapa begins in the Classic around A.D. 250 with the Gavilan phase. (There are few remains from the Preclassic and these are all in the Late Preclassic.) Meighan described the farming village of the Gavilan phase (A.D. 250–500) with its wattle-and-daub houses. Material culture included polychrome ceramics, hand-modeled figurines, ceramic earspools, and a lithic assemblage consisting of *metates* and large flint stemmed points. The succeeding Amapa phase (A.D. 500–700/750) showed little change in subsistence or sociopolitical organization, but there were some changes in material culture. The Tuxpan phase that followed (A.D. 700/750–900) was separated out because of its distinctive ceramics, but there were no Tuxpan deposits at Amapa, suggesting an occupational hiatus. A major change took place with the Cerritos phase, A.D. 900–1050/1100, namely, the construction of mounds and plazas, along with architectural features such as masonry facing and stairways. There were also cemeteries with sitting burials and grave goods, as well as a wide range of ceramic attributes including those of form and decoration. Figurines were moldmade, and there were ceramic earspools, spindle whorls, and stamps. The lithic assemblage included *metates* in changed styles and points, some smaller than previously. Metal artifacts such as copper bells and needles were manufactured. The Ixcuintla phase (A.D. 1050/1100–1350/1400) showed a continuation of Cerritos material culture, although there was a trend toward stylistic simplicity, especially in design. Cenotaphs and microblades and drills were among the few innovations. The Santiago phase, beginning at A.D. 1350–1400, may have lasted until Contact. No new mounds were built, but existing mounds were used. Perhaps the previous ceremonial areas were used for habitation. Material culture appears to have declined, both in the absence of formerly manufactured artifacts and in the lessening of quality of those artifacts that continued to be manufactured.

Interpretations of Amapa emphasize two matters: its complexity and its prime location for long-distance communication to the U.S. Southwest by land and to Central and South America by sea. Short-distance communication is attested to by the foreign pottery indicating contact with Colima, Sinaloa, highland Nayarit, and Durango. Amapa, along with other sites, exemplifies the complex Classic and Postclassic of Western Mexico. In this light, Amapa is one of the important sites of Greater Mesoamerica.

An investigation of the coastal marshlands within the border province of Nayarit and Sinaloa was the goal of the *Marismas Nacionales of Western Mexico* project that began in 1968 and focused on the Teacapan Estuary. The researchers described the estuary as a rich and varied environment, including mangrove forest, the marine estuary and lagoon system, salt playas, beach sand, riverine, and low-scrub microenvironments. More than six hundred shell mounds were located, most of which contained the shells of oysters and clams.

Ceramics were found in strata without shells beneath two of the shell mounds as well as in the shell strata. Rosemary Sweetman did an analysis of ceramics found at sites in this vicinity. The earlier ceramics were identified with the *Tierra del Padre* and *Baluarte* phases from the *Chametla* sequence. The dates for these phases ranged from A.D. 250 to A.D. 700/750. (Radiocarbon dates, however, placed these nonshell strata as later than A.D. 700.) Ceramics associated with shells were identified with *Chametla*, 50 kilometers to the north (*Lolandis* and *El Taste* phases), and *Amapa*, 125 kilometers to the south (*Tuxpan*, and possibly *Cerritos* and *Ixcuintla* phases), and ranged from A.D. 700/750 to A.D. 1300. Interpretations of the archaeology suggested that before or around A.D. 700/750, shellfish were not exploited. Later, exploitation techniques were developed, perhaps by people who arrived from the north. The population of between 300 and 600, also engaged in farming, and collecting, and in trading dried shellfish meat for ceramics. J. Richard Schenkel also identified a mound, possibly a temple mound, constructed of shells. This mound, called *El Calón*, is in the shape of an irregular oval. Its maximum dimensions are 158 by 90 meters, and its summit is about 23 meters above the mangrove swamp at its base. It may have been constructed between A.D. 700 and A.D. 1000 by people affiliated with *Chametla*.

Archaeological remains, essentially from the coastal plain of Sinaloa but extending into Nayarit, were subsumed under three broad cultural horizons: the *Chametla*, the *Aztatlan*, and the *Culiacan*. They are essentially sequential, but with some overlap of the *Aztatlan* with the other two. The *Chametla* horizon is dated to the Classic, possibly beginning around A.D. 250, and was characterized by polychrome and engraved ceramic vessels, figurines, and spindle whorls. The *Aztatlan* horizon is known by its distinctive, elaborate polychrome and engraved vessels and by its copper, silver, and gold artifacts. It is dated to the Postclassic and ended about A.D. 1400. The *Culiacan*, also a Postclassic horizon both contemporary with and later than the *Aztatlan*, continued until Contact.

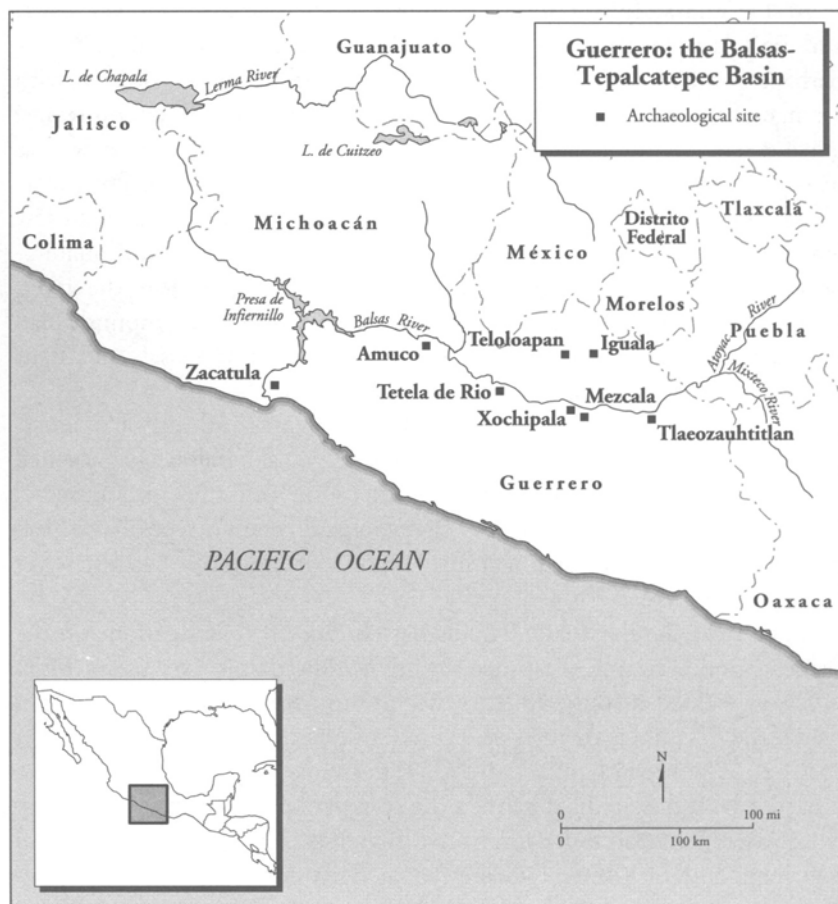
It had its own distinctive and elaborate polychrome ceramic vessels. Its architecture and sculpture, on the other hand, appear simple. The extent of these horizons are not known. (Recently, J. Gandt R., A. Peschard F., and J. Lazalde M. have reported many Aztatlan features at the site of El Canon del Molino in Durango.) However, they provide models for identifying and relating other archaeological sites in western and north-western Mexico.

THE BALSAS–TEPALCATEPEC BASIN (SEE MAPS 7.1 AND 7.3)

The Balsas Basin is a large area of more than 110,000 square kilometers. The Balsas River has five major tributaries, including the Tepalcatepec, which occupies the northwest extension of the Balsas depression. The Balsas plateau contains large quantities of ground water. In prehispanic times the streams were used for irrigation, and the southern tributaries contained gold placers.

Apatzingan (Michoacan) is in the Tepalcatepec Basin. In the 1940s, Isabel Kelly conducted an investigation that revealed data about the chronology and culture of the zone. She defined five ceramic-based phases that were dated from the Preclassic to Conquest: the Chumbicuaro, the Delicias, the Apatzingan (coeval with Delicias and later), the Tepetate, and the Chila. She noted an important oddity of the ceramic sequence, namely, that there was a complete absence of transitional ceramic styles. Yet the ceramic assemblages were different from neighboring regions. There were no typed redwares such as those found in Colima, Tuxcacuesco, and elsewhere in the first three phases, and few modeled and effigy vessels. Among the nonvessel ceramic artifacts were whistles, rattles, drums, and pipes (all primarily Chila); figurines (60% from Chila, none from Chumbicuaro); and spindle whorls (mostly dated Tepetate and Chila). There were also shell ornaments (none from the Chumbicuaro and Apatzingan phases) and shell and pyrite-slate artifacts (unique to Delicias phase). Exclusively lithic artifacts included mirrors, pendants, earrings, and beads. Obsidian artifacts included points and blades, and there were ground stone bark mallets and pestles, *manos* and *metates*. Copper artifacts, found exclusively in the Chila phase, included bells, hooks, needles, and awls.

Little is known about settlement pattern at Apatzingan. Low mounds containing a masonry enclosure may have been the remnants of substruc-



Map 7.3

tures. Burials in the Tepetate and Chila phases were securely associated with mounds.

In the 1960s, the Instituto Nacional de Antropología e Historia conducted surveys and excavations in the lower Balsas region. At El Infiernillo, data were recovered concerning occupation beginning around A.D. 700. More than a hundred sites, many with structural remains, were assigned to the El Infiernillo phase. In addition to ceramic and lithic artifacts, there were metal ornamental and utilitarian objects and fragments of textiles.

At La Villita, INAH found evidence of Preclassic, possibly Classic, and Postclassic occupations. The Preclassic burials (Infiernillo phase – perhaps 800 B.C. to 100 B.C.) were accompanied by ceramic vessels with a range of plastic decorative techniques. One burial contained impressive grave goods, including a conch shell trumpet, shell ornaments as well as ornaments in other materials, and hundreds of plaques. The Postclassic phases (El Romanse and El Poche) are characterized by burials with few grave goods in mounds. Rectangular stone enclosures indicating habitations were found, many grouped and built on slopes near the river. Other sites showed habitations around plazas and later mounds had central stairways. In addition to characteristic ceramic vessels and figurines, bark beaters and metal artifacts were found.

The Huetamo district, about 150 kilometers east-southeast of Apatzingan and on the northern, Michoacan side of the Balsas, has yielded evidence of Classic and Postclassic occupation. Vast sites, monumental architecture, and stelae as well as characteristic ceramic types have been noted by a number of investigators. The district, however, has not as yet been well defined.

Since 1970, Louise Iseult Paradis has conducted investigations on the Balsas region. The site of Amuco, in the Middle Balsas river basin (*tierra caliente*), yielded a long sequence beginning about 1600 B.C. The first phase, the Sesame, is divided into three subphases that lasted until about 800 B.C. The second phase, the Guacamole, is dated from about 400 B.C. to A.D. 100. Paradis described the occupation as a series of sedentary villages with a local and conservative material culture. The presence of two fragments of Olmec figurines at an Early Sesame-phase date raises questions about the relationship of this part of West Mexico and the Gulf of Mexico where the Olmec style flowered. Using both archaeological and ethnohistorical data, Paradis postulated a cultural pattern. Agriculture and settlement were intensive in the riverbank and valley floor zones, and hunting and fishing were important parts of the subsistence base. She also postulated that this district was active in an extensive exchange network, beginning as early as the second millennium B.C., involving Olmec and later Teotihuacan. Products from this region included obsidian and Pacific shell, perhaps jade.

Paradis has done extensive work in the Mezcala subregion. She surveyed the Tepecoacuilco river basin and excavated the site of La Trincheras, which lay within the surveyed area. Sites located in the survey were dated from 800–500 B.C. to Conquest. The investigation defined five

ecological zones: the riverbanks, the alluvial plain, the base of the piedmont, the piedmont itself, and the hills. The first three zones have excellent agricultural potential. She classified them according to their size and structural remains: regional centers, ceremonial centers, large pueblos, and small pueblos. She classified sites without structural remains as hamlets, camps, and workshops. For each regional center she defined an interaction zone. Although the number of sites within each zone was about the same, there appeared to be a difference in the types of sites. Paradis defined two styles: the Chontal to the north and the Mezcala to the south of the Balsas River. Miguel Covarrubias brought attention to the unique style of the Mezcala lithic artifacts, which are characterized by their austere geometrical style.

Sites of the Balsas River delta, namely, Las Tamacuas–Cacatula and El Naranjito–San Francisco and Melchor Ocampo and Las Guayacamayas, may be more closely related to the Balsas than the coastal cultural complexes.

SONORA AND NORTHERN SINALOA (SEE MAP 7.4)

Because Sonora and northern Sinaloa fall within a distinctive natural region, the extratropical drylands, they are discussed separately in this section. The coast of Sonora as well as that of northern Sinaloa, however, like the coasts of the states to the south, were characterized by a maritime adaptation, marked by shell middens. The middens also contain stone implements, such as *manos* and *metates* and flake tools, as well as ceramics. The ceramics have dated at least some of the middens to the Postclassic. It has been suggested that the midden sites were camps either for settled inland groups or for transhumant groups who gathered shells. Another cultural manifestation of the coastal plain, and centered in southern Sonora, is found at the site of Huatabampo. Artifacts include ceramics and stone *manos* and *metates*. The Huatabampo complex has been identified as early to middle Postclassic and is related to the Guasave phase (from the type site of Guasave in northern Sinaloa), which is dated Middle to Late Postclassic.

Inland from the coastal plain is the Serrana, a series of foothills extending from north to south (even into northern Sinaloa) and criss-crossed by a number of major rivers, among them the Sonora River, that create large valleys. The discovery of stone house foundations and incised plainware ceramics in the Serrana, first defined the Rio Sonora cultural



Map 7.4

tradition. This material culture represents the tradition's northern Early phase, which probably ended by A.D. 1000. Richard Pailes's work, in the south between the Mayo and Fuerte rivers, revealed over a hundred sites and permitted the development of a cultural sequence. Another major project, in the north between Baviacora and Aconchi and between Huepac and Banamichi, was undertaken by Pailes, Victoria Dirst, and William Doolittle. Beatriz Braniff completed work in the northern Serrana at the site of Ojo de Agua.

The sites that have been located in the Serrana and identified as part of the Rio Sonora cultural tradition have been found, for the most part, on the margins of mesas and foothills overlooking floodplains. Some have been found along the edges of the large arroyos. In the north the Early phase was followed by the Postclassic Middle and Late phases. The Middle phase (c. A.D. 1000–1200) was marked by houses in pits (although these were probably present in the Early phase) and textured red-on-brown ceramics. The Late phase (A.D. 1200 – Contact) was marked by surface habitations and by public architecture, including walled plazas and ballcourts. In the south of the Serrana, two sequences have been laid out. In the first sequence, a Classic period Batacosa phase is followed in the Late Classic by a Cuchujaqui phase in the lower foothills. In the second sequence, the Batacosa phase continues into the Early Postclassic, where it is followed by the Los Camotes phase in the upper foothills, which is succeeded by the San Bernardo phase.

There is some controversy as to whether the Rio Sonora cultural tradition was an indigenous development or a development affected by Casas Grandes. William Doolittle, guided by a settlement model, argued for the indigenous development of three- and four-tier settlement hierarchies focused on regional centers with primarily economic functions. Pailes saw the “statelets” as the product of the Casas Grandes economic system. Certainly by Protohistoric times, as Carroll Riley has shown, these statelets were in engaged in active trade within the subarea of the U.S. Southwest and northern Mexico.

The Trincheras cultural tradition was located in northwestern Sonora. Thomas Bowen has defined the tradition as characterized by *cerros de trincheras*, hills or knolls with circular or rectangular rock structures on their summits and walls on their slopes. Other characterizing traits are purple paint and distinctive polychrome pottery. Despite the work of Beatriz Braniff, Alfred Johnson, and others in addition to Bowen, the Trincheras cultural tradition is not well understood. The region was continuously occupied from Paleoindian until Postclassic times, but the Trincheras cultural tradition did not form until Late Classic or perhaps even Postclassic times. The *cerros de trincheras* themselves date to the Postclassic. There seems to have been little interchange between the Rio Sonora and Trincheras traditions. However, work by Beatriz Braniff in the San Miguel river valley, which lies between the regions of these cultural traditions, indicated a connection between it and Trincheras.

Perhaps Trincheras and the Hohokam of the U.S. Southwest were connected, but the nature of that connection is not clear and a matter of disagreement.

SIERRA MADRE OCCIDENTAL AND WESTERN MESA DEL
NORTE (SEE MAPS 7.3 AND 7.4)

The Sierra Madre Occidental and the western Mesa del Norte are extra-tropical highland and dry lands regions that include eastern Sonora and parts of Chihuahua, Zacatecas, and Durango. Interpretations of the archaeology of this region have been affected by the concept of the “Mesoamerican frontier.” These interpretations include, implicitly or explicitly, ideas such as the definition of Mesoamerican culture, the diffusion and influence of the culture from the south to cultures in the north, shifting ecological adaptations that made “mesoamericanization” possible or not possible, and a particular pattern of complexity that indicates mesoamericanization. Since one of the premises of this chapter is that “Mesoamerica” has been too narrowly defined, a discussion concerning the placement of the frontier at different times in prehistory is obviated. All regions discussed here are considered part of Greater Mesoamerica, and the focus is on the culture history and development of the regions as well as their changing connections with other regions.

A long-lived and widespread occupation of this region has been identified through the Loma San Gabriel sites (recently investigated and interpreted by Michael Foster and Richard Brooks) located in the lower elevations (1,880m to 2,320m) of the highland zones of the eastern foothills of the Sierra Madre Occidental. This tradition began in the Preclassic and lasted until the Postclassic. Many of the detailed data on Loma San Gabriel came from the Weicker site (Durango). Probably around 200 B.C., small hamlets and villages were established on elevated loci overlooking streams and arable land. Some Loma sites, however, have been located in caves (Zape and Durango, Durango). Although most of the structures were residences, there is some indication of public constructions. The population was sustained on a mixed subsistence base. Evidence from the Classic period (Zape Cave) indicates that maize, beans, cucurbits, and possibly cotton were cultivated. Mushrooms, cacti, agave, and yucca, the latter two used for weaving mats, baskets, and cordage, were gathered. Faunal remains included coyote, jackrabbits,

squirrels, rodents, and deer, some of which are presumed to have been in the diet.

Loma San Gabriel material culture is represented primarily by ceramic vessels, for the most part plainware with domestic functions. There were, however, a small number of ceramic spindle whorls, disks, beads, and figurines. The lithic assemblage consisted of both chipped stone, such as projectile points, knives, and scrapers; and ground stone, such as *manos*, *metates*, abraders, and adzes. Shell was used in the manufacture of beads.

Loma San Gabriel is interpreted as an essentially village culture and has been compared and, indeed, connected to the historical Tepehuan. Sometime in the Middle Classic, Loma San Gabriel appears to have interacted with an archaeologically much better known cultural tradition, the Chalchihuites, and probably continued in existence throughout the Chalchihuites tradition.

The Chalchihuites cultural tradition found in Zacatecas and Durango began in the Classic period and continued into the Postclassic, but did not survive to Contact. The tradition is divided into three branches based on location and chronology: the Suchil, primarily in Zacatecas and dated from the Classic, and the Guadiana, dated primarily Postclassic.

The Suchil branch, centered in the Suchil and Colorado river valleys, had two Classic period Phases: the Canutillo, the Vesuvio and the Alta Vista. The Calichal was a transitional phase, and the Retoño is clearly Postclassic. J. Charles Kelley has described the range of Suchil sites including village sites (Vesuvio, Cofradia, and Calichal), ceremonial centers (Alta Vista, Cerro de Moctehuma, and Cerro de los Viveras), and stronghold sites (Cruz de la Boca, Cerro de Gualterio). In addition, some nonresidential sites have been identified as mines, and their importance in the culture history of the Chalchihuites tradition has been carefully interpreted by Phil Weigand.

In general, the tradition is described as beginning as a simple agricultural, egalitarian, village-based society. Then, at Alta Vista, dramatic changes began to occur. Construction of the ceremonial center was undertaken. Ultimately, there were pyramids and patios, separated by walkways, and interior rooms. Houses were made of adobe bricks in addition to cut stone. Elaborated ceramic wares were manufactured. The lithic assemblages contained few hunting implements compared with the number of such artifacts commonly found in cultures with a comparable agricultural subsistence base.

Weigand has rooted these changes in the development of the mining industry and its importance in Greater Mesoamerica. He has described the mining sites where blue-green stones, cinnabar, rhyolite, cherts, and ocher were obtained. The tunnels were well designed. They ran for kilometers and branched out into vast chambers whose arched ceilings were supported by pillars. There was a specialized tool assemblage for mining, including ocote splint torches and stone picks and pounders. In addition, Alta Vista was probably a processing center and staging ground for trading expeditions for turquoise obtained from the north and traded to the south and to Central Mexico.

In the Postclassic the Chalchihuites tradition returned gradually to a simple agriculture-based village society. The process may have been accelerated or affected by the migration of some members of the large residential population to the Guadiana Valley in Durango. The sites of the Guadiana branch of the Chalchihuites tradition lie not only in the Guadiana Valley, but also along the eastern foothills of the Sierra Madre Occidental as far as Zape.

Two Guadiana branch sites, well known through the excavations of J. Charles Kelley and his associates, are the Schroeder site and the Navacoyan site, both within a few kilometers of Victoria de Durango. Navacoyan was a huge burial ground, but it has been looted and not much is known about it. The Schroeder site lies on two hills, the saddle between them, and the adjacent lowlands on the Tunal River. Most impressive was the architectural treatment of the hills. A pyramid was at the summit of the eastern hill, and the western hill was terraced to form a trompe l'oeil pyramid. The site had many constructions. There were a ballcourt, a circular platform with a stairway, a central court for platforms, other courts and platforms, walkways, and stairs. The ceramic complex is characterized by polished red, buff, and black wares. The stone assemblage was basically like that of the Suchil branch, but in the Guadiana branch there were carved stone bowls, ring stone, cup stones, paint palettes, various pestles, and incense burners in a characteristic style. Also, there were copper (copper alloy?) items including bells, needles, hooks, and a chain, as well as a variety of shell artifacts.

Kelley, correlating the chronologies of these two branches of the Chalchihuites tradition, placed an early Postclassic Ayala phase as partly contemporary with Calichal, though beginning somewhat later, and a Las Joyas phase as beginning with Retoño. The later Postclassic phases for the Guadiana tradition were Rio Tunal, Calera, and Molino.

During this development of the Chalchihuites tradition in the north, there was a cultural florescence to the south in the Malpaso–Juchipila drainage basin in south-central Zacatecas. This florescence is represented by the extravagantly fortified ceremonial center of La Quemada, which Charles D. Trombold, who has worked extensively at the site and in the vicinity, saw as fitting into an overall Chalchihuites cultural tradition. He placed it in the Classic period, with its major occupation at about A.D. 600–800.

The characterizing aspects of the site area, according to Trombold, were the very high indigenous population level, the overriding concern for defense, and the dominance of the citadel. He also noted the large communal terracing and the extensive road network. The scenario Trombold put forward was based on population pressure in the south forcing a migration of southern socially stratified agricultural populations to the north in Middle to Late Classic times. Because the Malpaso Valley and vicinity were at the limit of a zone with good agricultural potential and abutted the hostile groups of the sierra, the population accumulated in what Trombold described as the “bottleneck effect.” The result was the introduction of intensive agricultural techniques such as terracing and the creation of a citadel for protection and aggression against the local sierra groups. He saw La Quemada engaged in long-range trade with the Pacific Coast, with the Alta Vista region, and with the south. It was well positioned to act as a trade intermediary between the American Southwest and the Mesoamerican heartland. Ben Nelson’s and Peter Jiménez Bett’s research at La Quemada indicates that the site’s florescence is not tied to the apogee of the Central Mexican states, as has been thought: rather, La Quemada is an Epiclassic West Mexican phenomenon.

According to Trombold, sometime at the end of the Classic a progressive environmental deterioration based on a climatic shift or a population growth led to a crisis in agricultural productivity and a decline in population, whether by premature death or emigration. By the turn of the Postclassic (A.D. 850–900) the La Quemada vicinity was abandoned, as were the sites of Suchil branch at about the same time.

The Casas Grandes zone lies in the state of Chihuahua and is marked by the Sonoran Bavispe Basin on the west, by the Médanos de Samalayuca on the east, the international border on the north, and the Aros (Papagochic) River on the south.

Charles Di Peso, who directed the major work at Casas Grandes, identified two major prehispanic periods: the Viejo and the Medio. The

Viejo began in the Classic and ended at the beginning of the Postclassic. In the Viejo period, there was an early phase of village life with houses-in-pits. Within two hundred years, there was a change: although the settlement remained a village, the community house was rebuilt and settlement size increased. In addition, houses-in-pits were supplanted by pit houses, and ultimately, by semisubterranean or partly surface buildings. But the major change was in the ceramic industry. Along with indigenous ceramic types, there appeared ceramics made by northern groups, identified as Anasazi, Mogollon, and Ootam. By the beginning of the Postclassic, the pit houses and community house were razed and clusters of contiguous rectangular surface rooms were built around a plaza. At the same time, material cultural well known from the south appeared: ceramic types, copper (copper alloy?) objects, pyrite plaques and figure-eight-shaped beads.

The Postclassic Medio period was marked by the construction of the great settlement of Paquimé. The Buena Fé phase of single-storied house clusters gave way to multistoried constructions, and the water system was revamped to accommodate the new residences. In addition, ceremonial structures were built: effigy mounds, ballcourts, a marketplace, and open plazas. Paquimé was a production center, drawing on the raw materials of the hinterlands. Hundreds or even thousands of smaller settlements existed in the valleys and mountains, perhaps covering an area of 85,000 square miles. Their varying sizes suggest a hierarchical relationship with the primary center, sustained by pathways, fortresses, and communication towers. Their agriculture was based on extensive irrigation systems.

The heyday of Paquimé, apparently, was short-lived. The center's character changed. New public buildings were not constructed, and old buildings were not repaired. Indeed, the public areas became residences. The water system fell into disrepair. Yet artisanship and the market seemed to have continued amid the public ruins. In a short while, Paquimé was both burned and destroyed. Ultimately, not only the center was abandoned but also many of the villages in its sphere. Studies of material culture have found that artisans were scattered and moved into these villages or migrated north to the U.S. Southwest.

The importance of Casas Grandes as a production center and trading center for long-distance trade from the Mesoamerican heartland to and from the U.S. Southwest has been discussed in two ways. Some archaeologists have examined the distribution of material culture and ideology (as represented by material culture), and other archaeologists have chosen

to use models of trade as exemplars for interpreting this aspect of Casas Grandes' economic function. Further discussion of this relationship appears in the next section.

PERSPECTIVE

A first premise for this chapter has been that Western and Northwestern Mexico was an integral part of Greater Mesoamerica. At different times and in different regions of the subarea, there were adaptations that resulted in what must be described as high culture or civilization. These include settlements with large, dense, resident populations and public functions; populations that were stratified or specialized, economically, occupationally, socially, and politically; and material culture that reflect these conditions. The subarea is part of Greater Mesoamerica not only because it is geographically contiguous, but also because it is comparable with other parts of Mesoamerica in the structure of society, as well in the content of culture. Whether these developments were autochthonous in Western and Northwestern Mexico or whether they were the result of influence from or connection to other parts of Mesoamerica can barely be sorted out, and, in any case, such discoveries should be part of historical narrative and not part of an archaeological analysis that identifies cultural entities.

Although part of Greater Mesoamerica, Western and Northwestern Mesoamerica had aspects of society and culture that were distinctive to it and contribute to an enlarged understanding of the nature of Greater Mesoamerica. These aspects are its role in long-distance trade, the development of metallurgy, and the evolution of a particular form of the state.

Throughout this chapter, the interaction within Western and Northwestern Mexico as well as between it and other areas has been noted. As Richard Pailes has pointed out, there is evidence of overlapping local egalitarian and stratified trade networks, stretching over considerable distances throughout Western and Northwestern Mexico from the Preclassic to Contact. Certainly, long-distance interaction was commonplace in Greater Mesoamerica from the Preclassic through Contact. There is disagreement among archaeologists concerning the nature of the interaction between Central Mexico and this subarea. In the simple technical procedure of cross-dating, archaeologists have noted connections between the two subareas. Led by the concept of Central Mexican primacy or by the knowledge of Central Mexican economic power, some archaeologists

have seen western and Northwestern Mexico as part of a Central Mexican-dominated trade network in both the Classic and Postclassic. However, most archaeologists are primarily concerned with what Philip Weigand (following Fernand Braudel) has recognized as the trade structure, which transcends any particular politically and economically defined trade network and acknowledges an ongoing macroeconomic connection among regions.

What has been postulated and demonstrated is a trade structure between Western and Northwestern Mexico and the archaeological subarea in the United States called the Southwest. For the late Preclassic – and, in some vicinities, for the Classic and even for the Early Postclassic – it would be misleading to refer to the influence of one subarea on the other. Rather, similar adaptation to similar environments blurs distinctions between the two, making the concept of influence inappropriate. As Michael Foster has noted, before A.D. 1000, there was a Loma San Gabriel–Mogollon cultural configuration that occupied a region along the eastern foothills of the Sierra Madre Occidental from central Zacatecas to the central mountains of western New Mexico and eastern Arizona.

However, probably around the end of the Preclassic and the beginning of the Classic, cultural changes began to take place in these regions of Western and Northwestern Mexico that differentiated it from the U.S. Southwest. During the Classic and Postclassic, there were cultural florescences in Western and Northwestern Mexico, some of which have been associated with florescence and expansion in Central Mexico, and some of these, in addition to others, have been closely associated with a trade structure that included the U.S. Southwest.

J. Charles Kelley in outlining the trade structure notes that Teuchitlan in the Jalisco highland lake district was an important center, connected to the Chalchihuites tradition of Zacatecas and Durango, particularly with the great center of Alta Vista, although, he points out, the Chalchihuites region was engaged in trade even before the rise of Alta Vista. Philip Weigand, surveying the Chalchihuites region of the Colorado–Suchil river drainage of western Zacatecas, found eight mining areas with 750 mines. These appear to have been exploited over a period of four hundred years and to have been associated with ceremonial-political centers. Their major rare resource were blue-green stones that were very high-quality crysocolas, averaging 20 to 25 percent copper and malachites. The mines also yielded cinnabar, rhyolite, chert, weathered chert, and red and yellow ocher. Central Mexico was the important consumer of

the blue-green stones. In addition, the Chalchihuites district was crucial in the importation of resources from the north. Alta Vista has been identified by Kelley as a center of a local extractive economy, and a port of entry and processing center for chemical turquoise imported from the U.S. Southwest and Coahuila then sent down the line to west Mexico and Central Mexico. Weigand has identified La Quemada in the Malpaso region to the south as playing a major role in the trade structure and has suggested that it directed most of the flow of turquoise into Central Mexico.

For the Classic and Early to Middle Postclassic, at least, archaeologists including Kelley and Weigand have described two major long-distance routes through Western and Northern Mexico. An inland route connecting La Quemada to the south, particularly Central Mexico, moved north from La Quemada through the Chalchihuites area, the Schroeder site, a new port of entry, to Zape and then to Casas Grandes, still a major port of entry, before it reached the heart of the U.S. Southwest. A coastal route connected to a route that originated in Central Mexico, followed the Rio Lerma to Lake Chapala, and then, perhaps picking up a Western Mexico route, continued to Ixtlan and then to Amapa on the west coast. It moved northward along the coast through Chametla to Culiacan and Guasave and either continued directly northward or turned eastward across the Sierra Madre Occidental to Casas Grandes.

Kelley noted that in the Early Postclassic, the coastal trade route, although used in the turquoise trade, also was used to distribute the knowledge of copper metallurgy to the U.S. Southwest and throughout Western Mexico. It also served to bring cotton, cotton textiles, and parrots to the north, and very likely lead, tin, and perhaps gold. This route may very well have branched southward from western Mexico to the Maya Area where it served to transport metals and cotton.

By the Late Postclassic, the Tarascans took over these routes, cutting off their eastern or Central Mexican branch, and developed their own connection with the U.S. Southwest. A small Late Postclassic trade network of the Sonoran statelet region with the U.S. Southwest has been described by Carroll Riley. Parrots and macaws, their feathers, coral, shell, and metal ornaments were traded northward from this region to the U.S. Southwest. Products traded southward from the Southwest to and through the Sonoran statelets were turquoise, dressed hides, jasper, cotton, salt, and slaves, among others.

In the Contact and colonial periods, it seems that most of the old

routes, including those of the Classic period, were resurrected by the Spaniards to facilitate transport in their native-based mining industry.

Metallurgy first appeared in Greater Mesoamerica in Western and Northwestern Mexico in the current states of Jalisco, Michoacan, and Nayarit, probably by A.D. 800, though possibly earlier. What is startling about this appearance is that copper metallurgy, at least, was technically well developed. Hosler postulates that design characteristics, fabrication techniques, and often materials were derived from Ecuador, Columbia, and lower Central America. She traces the changes in copper metallurgy and new artifact designs, beginning in A.D. 1200–1300 and lasting until Contact, to indigenous technological development and to continuing connection with the original areas as well as to contact with a new region: southern Peru and the adjacent Bolivian highlands. Archaeologists who have agreed on this contact have postulated a maritime connection and an exchange system. Joseph Mountjoy, looking for a powerful stimulus for such a long-distance exchange system, has suggested that west Mexican peyote may have been sought by South American traders.

Metallurgy was a far more vital activity in Western and Northwestern Mexico than in other parts of Greater Mesoamerica, at least for several hundred years after its appearance, and was an early center of influence in Greater Mesoamerican metallurgy. That influence, which appears to have exceeded the influence from the southern Maya Area, a second early center of metallurgy in Mesoamerica, reached the U.S. Southwest and Central Mexico. It was only later that metallurgy in the southern Maya Area and in Central Mexico affected the industry in west Mexico.

David M. Pendergast has done synthetic work on west Mexican metallurgy. Dealing only with those artifacts that show true metallurgical technology – namely, those that have been cast or hammered from smelted ore – he examined utilitarian objects, objects of personal adornment, and ceremonial objects. Among the utilitarian objects found in west Mexico were needles, awls, tweezers, axes, punches, knives, fish-hooks, wire, and pins. Articles of personal adornment included bells, beads, earspools, finger rings, pendants, pins, and bracelets. Ceremonial objects made of metal were disks, figurines, tubes, plaques, rattles, shells, and “baskets.”

Dorothy Hosler, who has done technical studies of west Mexican metal artifacts, has combined those results with information from excavated collections and chemical analyses of excavated and unexcavated materials and has developed a chronology for west Mexican metallurgy.

She has defined two technological periods based on artifact composition and design. In the first period, about A.D. 800 until A.D. 1200–1300, metal objects were made from copper, and possibly from a low arsenic-copper alloy. Particular types of bells, needles, rings, and tweezers were made from copper, using lost-wax and open-mold casting that was followed by cold work and then annealing. In the second period, A.D. 1200–1300 to 1520, copper-tin bronze, a high arsenic copper-arsenic alloy, a copper-silver alloy, and a copper-arsenic-tin alloy were used, in addition to copper and the low arsenic-copper alloy. Although the same functional artifact types were made, the period is also defined by the appearance of new subtypes: thin-walled wirework bells and loop-eye needles, among other artifacts. The alloys were necessary to or made possible the new designs. Several new objects appeared as well: copper-silver sheet ornaments, lost-wax cast ornaments, and ax-monies. The great similarities between the ax money of west Mexico and the Andes has been important in the task of confirming the long-distance maritime trade between west Mexico and the Andean region.

These technological changes took place primarily in the Tarascan region and in coastal Guerrero. Both Hosler and Helen Perlstein Pollard have identified Tarascan metallurgy as a marker for elite social status. Hosler discovered that the achievement of a desired color was a prime requisite of west Mexican metallurgy in general and of Tarascan metallurgy in particular. Objects were made of unalloyed copper, alloyed copper, and sometimes of silver and gold. The compositions of alloyed copper metals were manipulated to achieve either a gold or a silver color. The study of bells combined with a study of hair loops, tweezers, and sheet metal objects led her to conclude that in the metallurgical production of these objects, other qualities were sacrificed to achieve the desired gold and silver colors, whose meaning – sun and moon – was connected to elite status.

Pollard has shown that nonutilitarian metal goods were almost exclusively in the possession of the ruler and his family and those with high achieved or ascribed statuses, or were state property under the control of the royal head of the state, or were simply the property of the state. She has shown that although some metal objects reached the Tarascan elite and state through conquest and tribute, mining was both the product and support of an unusual Greater Mesoamerican form of the state. The culmination of political development in Western and Northwestern Mexico was the Tarascan state. It was different in its formation from the

three polities in Central Mexico, dominated by Teotihuacan, Tula, and Aztec Tenochtitlan. In comparison with the Aztec state, the Tarascan state can be characterized as more centralized and as organized for administration. The Aztec state, in contrast, was built in a coordinated mode in which one small polity came to dominate others in a district but had to continue to negotiate its power with defeated polities. The Aztec state was created largely by its development of economic relations not only with neighboring polities but also with polities throughout its empire. The Tarascan state had a different history of development. It was formed through the political defeat and the creation of small polities. This enabled the Tarascans of Tzintzuntzan to centralize rather than coordinate political power within the Lake Patzcuaro Basin. The centralization of political power, an idea and system forged in the Basin, served the Tarascan state well in administering its greater territory. By putting political and administrative priorities first and economic interests second, the Tarascans created an empire that was secured through a tight regional network, whose ultimate authority lay only one or, at most, two levels away in the Lake Patzcuaro Basin itself.

In considering the culture history of Western and Northwestern Mexico, archaeologists have been struck by both its similarities and its differences to what has been regarded traditionally as Mesoamerican culture. One way of interpreting this similar–different phenomenon has been to see periods of greater and lesser “Mesoamericanization” in Western and part of Northwestern Mexico. Another, less strained, interpretation is to include the unique high culture configurations of Western and Northwestern Mexico – such as particular trade networks, the high technological development of metallurgy, and the development of a characteristically centralized state – in Mesoamerica. Certainly, it is clear that Western and Northwestern Mexico had been in the mainstream of high culture developments since the Classic period. The term *Greater Mesoamerica*, by including Western and Northwestern Mexico, contributes to a more accurate delineation of the development of high culture in Middle America and changes our understanding of the full nature of that high culture.

BIBLIOGRAPHICAL ESSAY

There are a few works that are largely if not entirely devoted to western and northwestern Mexico. Volume XI, Part 2 of the *Handbook of Middle*

American Indians, ed. Robert Wauchope, 16 vols., Austin, TX 1964–76), has six synthetic articles covering much of the subarea. Volume IV in the same series has two synthetic articles and an article on the connection between Mexico and the U.S. Southwest. Two other general resources are *The Archaeology of West Mexico*, ed. Betty Bell (Sociedad de Estudios Avanzados del Occidente de México, Ajijic, Jalisco, México, 1974), and *The Archaeology of West and Northwest Mexico*, ed. Michael S. Foster and Phil C. Weigand (Westview, Boulder, CO, 1985). The geography of Mexico has been described in Volume I of the *Handbook of Middle American Indians* in the articles by Robert C. West and by Jorge L. Tamayo in collaboration with West.

For the Western Mesa Central, sites contemporary with the tomb complex have been described in “Archaeological excavations in Jalisco, Mexico,” *Science* 175 (1972): 1238–39 and “Excavations at El Cerro Encantado, Jalisco,” *The Archaeology of West Mexico*, ed. Bell, 147–67, both by Betty Bell, and in “The archaeology of the Autlan–Tuxcacuesco area of Jalisco,” *Ibero-Americana* 26 and 27 (1945 and 1949), by Isabel Kelly. Some of Philip C. Weigand’s work on the Jalisco highland lake district can be found in “The Aqualulco site and the shaft-tomb complex of the Etzatlán area,” in *The Archaeology of West Mexico*, ed. Bell, 120–31; in “The Formative-Classic and Classic-Postclassic transitions in the Teuchitlán–Etzatlán zone of Jalisco,” *Los procesos de cambio en Mesoamérica y áreas circunvecinas*, Sociedad Mexicana de Antropología (1977), 413–23; and in “Evidence for complex societies during the Western Mesoamerican Classic period,” *The archaeology of West and Northwest Mexico*, ed. Foster and Weigand, 47–92. Stanley V. Long reported on Etzatlán in his doctoral dissertation, *Archaeology of the municipio of Etzatlán, Jalisco*, University of California (1966), and E. W. Gifford reported on Ixtlán del Río in “Surface archaeology of Ixtlán del Río, Nayarit,” *University of California Publications in American Archaeology and Ethnology*, XLIII, 2 (1950).

For the Mesa Central, important work on Chupicuaro has been done by Muriel Porter Weaver. These are *Excavations at Chupicuaro, Guanajuato, México*, Transactions of the American Philosophical Society, XLVI, 5 (Philadelphia, 1956), and “A reappraisal of Chupicuaro,” in *The Natalie Wood collection of pre-columbian ceramics from Chupicuaro, Guanajuato, México at UCLA*, ed. Jay D. Frierman (Los Angeles, 1969), 5–18. Other work on Chupicuaro and Guanajuato are Beatriz Braniff, “Oscilación de la frontera septentrional mesoamericana,” in *The Archaeology of West*

Mexico, ed. Bell, 40–50; Charles Florance, “Recent work in the Chupicuaro region”; and R. B. Brown, “A synopsis of the archaeology of the central portion of the northern frontier of Mesoamerica,” both in *The Archaeology of West and Northwest Mexico*, ed. Foster and Weigand, 9–46 and 219–36. Emilio Bejarano has written “La cultura Chupícuara” in *Guanajuato Turismo* (La Dirección de Turismo del Estado, Guanajuato, 1974).

A general review was written by Robert Chadwick, “Archaeological synthesis of Michoacan and adjacent regions,” in *Handbook of Middle American Indians*, ed. Wauchope 657–93. Extensive work on the Tarascans has been done by Helen Perlstein Pollard, particularly *Tariacuri’s legend* (Norman, Oklahoma, 1993); her doctoral dissertation, *Prehispanic Urbanism at Tzuntzuntzan, Michoacán* (Columbia University, 1972); “An analysis of urban planning in prehispanic Tzintzuntzan,” *Proceedings of the American Philosophical Society* XII, 1 (1977): 46–69; and “Ecological variation and economic exchange in the Tarascan state,” *American Ethnologist* IX, 2 (1982): 250–68. Shirley Gorenstein and H. P. Pollard have provided an ethnohistorical and archaeological synthesis, focusing on the Lake Patzcuaro Basin in *The Tarascan civilization: a late prehispanic cultural system*, Vanderbilt University Publications in Anthropology, 28 (Nashville, 1983). For an analysis of the Tarascan eastern frontier and Tarascan–Aztec interrelationships, see Gorenstein’s *Acambaro: a settlement on the Tarascan–Aztec frontier*, Vanderbilt University Publications in Anthropology, 32 (Nashville, 1985). The most important ethnohistorical work on the Tarascan civilization is the *Relación de las ceremonias y población y gobierno de los indios de la provincia de Michoacán*, Fimax Publicistas Editores (Morelia, 1980). An English version was translated and edited by Eugene R. Craine and Reginald C. Reindorp, entitled *The chronicles of Michoacán* (Norman, OK, 1970).

For Coastal West Mexico, there are a number of reports. The Balsas River delta sites are noted in H. B. Nicholson and Clement W. Meighan, “The UCLA Department of Anthropology program in West Mexican archaeology–ethnohistory, 1956–1970,” in *The Archaeology of West Mexico*, ed. Bell, 6–18. The report on the Morett site is found in *Archaeology of the Morett site, Colima*, University of California Publications in Anthropology VII (Berkeley and Los Angeles, 1972). A report on Barra de Navidad is by Stanley V. Long and Marcia V. V. Wire, “Excavations at Barra de Navidad, Jalisco,” *Antropológica*, 18 Instituto Caribe de Antropología y Sociología (Caracas, 1966), 1–81. Joseph B. Mountjoy’s work

on the southern Sinaloa–northern Nayarit coastal region has been published in his doctoral dissertation *Prehispanic culture history and cultural contact on the southern coast of Nayarit, Mexico*, Southern Illinois University (Carbondale, 1970); in “San Blas complex ecology,” in *The Archaeology of West Mexico*, ed. Bell, 106–19; and presented at the 1983 Mesa Redonda of the Sociedad Mexicana de Antropología in the paper “Nuevos Hallazgos sobre el Formativo Medio en San Blas, Nayarit.” The Amapa site was investigated by Clement W. Meighan, who edited *The Archaeology of Amapa, Nayarit*, Monumenta archaeológica, 2, University of California (Los Angeles, 1972). Gordon Grosscup did the work on “The ceramic sequence at Amapa,” published in that monograph. The investigations of the Teacapan Estuary are discussed by Stuart D. Scott, “Core vs. marginal Mesoamerica: a coast West Mexican perspective,” in *The Archaeology of West and Northwest Mexico*, ed. Foster and Weigand, 181–92, and “Archaeology and estuary: researching prehistory and paleoecology in the Marismas Nacionales, West Mexico”; by J. Richard Schenkel in “Quantitative analysis and population estimates of the Marismas Nacionales, West Mexico”; and by Rosemary Sweetman in “Prehistoric pottery from Coastal Sinaloa and Nayarit.” The three latter articles are all in *The Archaeology of West Mexico*, ed. Bell, 51–56, 57–67, and 68–82. The Chametla, Aztatlan, and Culiacan horizons have been discussed by J. Charles Kelley and Howard D. Winters in “A revision of the archaeological sequence in Sinaloa, Mexico,” *American Antiquity* XXV (1960): 547–61, and by Clement W. Meighan, “Archaeology of Sinaloa,” *Handbook of Middle American Indians*, XI, 2, ed. Wauchope. Michael A. Glassow has discussed connections with Aztatlan in “Ceramics of Huistla,” *American Antiquity* XXXII, 1 (1967): 64–83. The paper concerning newly found Aztatlan features is a manuscript by J. Gandt R., A. Peschard F., and J. Lalalde M., “The archaeological site El Canon del Molino, Durango, Mexico.”

The work on Apatzingan in the Tepalcatepec Basin was done by Isabel Kelly, *Excavations at Apatzingan, Michoacan*, Viking Fund Publications in Anthropology, 7 (New York, 1947). Louise Iseult Paradis has reported on her work in the Balsas region in a number of publications, among them: “Patrones de intercambio precolombino en el estado de Guerrero, México,” in *Rutas de intercambio en Mesoamérica y el norte de México*, Sociedad Mexicana de Antropología (Mexico, 1980), 211–18; “Les échanges en Mésoamérique précolombienne,” *Recherches amérindiennes au Québec*, XII, 3 (1982): 163–77, and, with C. Bélanger, “Le Projet Mexcala

et le Guerrero précolombien," *Recherches amérindiennes au Québec* XVI, 2 and 3 (1986): 103–12.

Sonora and northern Sinaloa have been investigated by a number of archaeologists. Alfred E. Johnson wrote a useful overview as of 1966 in "Archaeology of Sonora, Mexico," *Handbook of Middle American Indians*, ed. Wauchope, IV 26–37. Beatriz Braniff and R. Felger have edited *Sonora: antropología del desierto*, Colección Científica de Instituto Antropología e Historia, 27 (1976). It includes an article by Thomas Bowen on Trincheras, "Esquema de la historia de la cultura Trinchera," 267–80, and Richard Pailes's identification and perspective on the Rio Sonora tradition, "Relaciones culturales prehistóricas en el noreste de Sonora," 213–28. Pailes has also published "The Upper Rio Sonora Valley in prehistoric trade," in *Transactions of the Illinois State Academy of Science* LXXII, 4 (1980): 20–39, and "The Rio Sonora culture in prehistoric trade systems," in *Across the Chichimec Sea: papers in honor of J. Charles Kelley*, ed. Carroll L. Riley and Basil C. Hendriks (Carbondale, IL, 1978), 134–43. Among Braniff's own work concerning Sonora are "De la apropiación de la agricultura en el norte de México," in *Los procesos de cambio en Mesoamérica y áreas circunvecinas*, Sociedad de Antropología e Historia, (1977), 77–94, and "Preliminary interpretations regarding the role of the San Miguel River, Sonora, Mexico," in *Across the Chichimec Sea: papers in honor of J. Charles Kelley*, ed. Riley and Hendriks, 67–82. Her doctoral dissertation from the Universidad Nacional Autónoma de México (1985) is *La frontera protohistórica Pima–Opata en Sonora, México: proposiciones arqueológicas preliminares*. The results of William Doolittle's investigations appear in "Settlements and the development of 'statelets' in Sonora, Mexico," *Journal of Field Archaeology* 11 (1984): 13–24, and in *Pre-hispanic occupance in the Valley of Sonora, Mexico*, Anthropological Papers of the University of Arizona (1988). Victoria Dirst's doctoral dissertation is *A prehistoric frontier in Sonora* (1979). Carroll L. Riley's and Joni L. Manson's view of the Sonora statelets and trade is presented in "The Sonoran connection: roads and trail networks in the Protohistoric period," in *Ancient road networks and settlement hierarchies in the New World*, ed. Charles D. Trombold (Cambridge England, 1992).

One overview for the Sierra Madre Occidental and the Western Mesa del Norte is provided by J. Charles Kelley in "Archaeology of the northern frontier: Zacatecas and Durango," in *Handbook of Middle American Indians*, ed. Wauchope, XI, part 2, 768–804. On this subject he has written "Speculations on the culture history of northwestern Mesoamer-

ica,” in *The archaeology of West Mexico*, ed. Bell, 19–39, and “The chronology of the Chalchihuites culture,” in *The archaeology of West and Northwest Mexico*, ed. Foster and Weigand, 269–88.

Michael Foster has written extensively on Loma San Gabriel: “Loma San Gabriel: una cultura de noroeste de Mesoamérica,” in *Rutas de intercambio en Mesoamérica y el norte de México*, Sociedad Mexicana de Antropología (1980): 175–82; “Loma San Gabriel Ceramics,” *Publicaciones Antropológicas de Occidente* (1981): 17–36; “Loma San Gabriel subsistence patterns: a preliminary discussion,” *Anthropology* VIII, 1 (1984): 13–30; “The Loma San Gabriel occupation of Zacatecas and Durango, Mexico,” in *The archaeology of West and Northwest Mexico*, ed. Foster and Weigand, 327–52; and “The Weicker site: a Loma San Gabriel hamlet in Durango,” *Journal of Field Archaeology* XIII (1986): 7–19. I have also used a manuscript by Foster, “The prehistory of northern Sonora: an overview.”

Results of Philip C. Weigand’s work in Zacatecas and his interpretations can be found in “Prehistory of the state of Zacatecas,” *Anthropology* II, 1 and 2 (1978): 67–87, 103–117, and in “The mines and mining techniques of the Chalchihuites culture, Zacatecas, Mexico,” *American Antiquity* XXXIII, 1 (1968): 45–61; “Mining and mineral trade in prehispanic Zacatecas,” in *Anthropology* VI, 1 and 2 (1982): 87–188.

For La Quemada, the Instituto Nacional de Antropología e Historia guide written by Eduardo Noguera in 1960 is still valuable. More recently, Charles D. Trombold has investigated La Quemada, and his publications include “Spatial distribution, functional hierarchies and patterns of interaction in prehistoric communities around La Quemada, Zacatecas, Mexico,” in *Archaeological frontiers: papers on New World high cultures in honor of J. Charles Kelley*, ed. R. B. Pickering, Southern Illinois University Museum (Carbondale, 1976), 149–79; “A summary of the archaeology in the La Quemada region,” in *The Archaeology of West and Northwest Mexico*, ed. Foster and Weigand, 237–68; “A reconsideration of chronology for the La Quemada portion of the northern Mesoamerican frontier,” *American Antiquity* LV, 2 (1990): 211–43; and “Causeways in the context of strategic planning in the La Quemada region, Zacatecas, Mexico,” in *Ancient road networks and settlement hierarchies in the New World*, ed. Trombold. Ben A. Nelson has written “Observaciones acerca de la presencia Tolteca en La Quemada, Zacatecas,” in *Mesoamerica y Norte de Mexico, Siglo IX–XII*, Instituto Nacional de Antropología e Historia and Museo Nacional de Antropología (Mexico, n.d.), and “Pre-

liminary Report of SUNY-Buffalo Investigations at La Quemada, Zacatecas, 1987 and 1988 Seasons,” Department of Anthropology (Buffalo, 1989). Peter Jiménez Betts has written “Perspectivas sobre la arqueología de Zacatecas,” *Arqueología* 5 (1989): 7–50.

The extraordinary site of Casas Grandes has been described by the primary investigator, Charles Di Peso, in the series of volumes with that title (Dragoon & Northland, Flagstaff, 1974).

There has been a great deal written about trade between this subarea and the U.S. Southwest. Richard Pailes, Philip C. Weigand, and J. Charles Kelley’s work have been cited already. To these can be added R. Pailes and J. Whitecotton, “The greater southwest and the Mesoamerican ‘world’ system: an exploratory model of frontier relationships,” in *The Frontier*, II, ed. W. W. Savage, Jr., and S. I. Thompson (Norman, OK, 1979) 105–21; P. C. Weigand, G. Harbottle, and E. Sayre, “Turquoise sources and source analysis: Mesoamerica and the southwestern USA,” in *Exchange systems in prehistory*, ed. T. K. Earle and J. E. Ericson (New York, 1977), 15–33; J. Charles Kelley, “Alta Vista, Chalchihuites: ‘port of entry’ on the northwestern frontier of Mesoamerica,” in *Rutas de intercambio en Mesoamérica y el norte de México*, Sociedad Mexicana de Antropología (Mexico, 1980), 53–64; and with E. A. Kelley, “An alternative hypothesis for the explanation of Anasazi culture history in *Collected papers in honor of Florence Hawley Ellis*, ed. T. Frisbie, Archaeological Society of New Mexico, 2 (1975), Carroll L. Riley has written “Sixteenth-century trade in the Greater Southwest,” *Mesoamerican Studies* 10 (1976): 1–54; “Trade and contact in the prehistoric southwest,” *Transactions of the Illinois State Academy of Science*, LXXII, 4 (1980): 13–19; *The frontier people: The Greater Southwest in the protohistoric period*, Center for Archaeological Investigations, Southern Illinois University (Carbondale, 1982); and “Spanish contact and the collapse of the Sonoran statelets,” in *The archaeology of West and Northwest Mexico*, ed. Foster and Weigand, 419–30. Two additional views of the Mexican–U.S. Southwest interaction can be found in Jonathan E. Reyman, “Mexican–southwestern interaction: the Puebloan ethnographic evidence,” in *Archaeological Frontiers: papers on New World high cultures in honor of J. Charles Kelley*, ed. Pickering, 87–128 and Michael S. Foster, “The Mesoamerican connections: a view from the south,” in *Ripples in the Chichimec Sea*, ed. F. J. Mathien and R. H. McGuire (Carbondale, IL, 1984), 55–69.

Dorothy Hosler has been working on the subject of New World metallurgy. Her publications include “Cultural organization of technol-

ogy: copper alloys in ancient West Mexico,” Colección bibliográfica, Banco de la Republica (Bogota, 1985), 70–86; “The metallurgy of ancient West Mexico,” in *The beginning of the use of metals and alloys*, ed. R. Maddin (Cambridge, England, 1988), 328–43; “Ancient West Mexican Metallurgy: a technological chronology,” *Journal of Field Archaeology* XV, 2 (1988): 191–217; “Ancient West Mexican metallurgy: South and Central American origins and West Mexican transformations,” *American Anthropologist* XC, 4 (1988): 832–55; and with H. Leuchtman and O. Holm, “Axe-monies and their relatives,” *Studies in Pre-Columbian Art and Archaeology* 30 (Dumbarton Oaks, Washington, DC., 1990). Other articles on the subject are David Pendergast, “Metal artifacts in prehispanic Mesoamerica,” *American Antiquity* XXVII, 4 (1962): 520–45; Joseph B. Mountjoy, “On the origin of West Mexican Metallurgy,” in *Precolumbian Contact Within Nuclear America*, ed. J. C. Kelley and C. L. Riley, Southern Illinois University Museum (Carbondale, 1969), 26–42; H. P. Pollard, “The political economy of prehispanic Tarascan Metallurgy,” *American Antiquity*, LII, 4 (1987): 741–52; Ma. Dolores Flores de Acirrezábal, “Primeras consideraciones sobre la distribución de los metales en el occidente de México (Nayarit, Jalisco, y Colima),” and Felipe Rodríguez Betancourt, “Distribución de los objetos de metal encontrados en el occidente de México (Guerrero y Michoacán),” both in *Los procesos de cambio en Mesoamérica y áreas circunvecinas*, Sociedad Mexicana de Antropología (Mexico, 1980), 13–23, 79–88.

CULTURAL EVOLUTION IN OAXACA: THE ORIGINS OF THE ZAPOTEC AND MIXTEC CIVILIZATIONS

JOYCE MARCUS AND KENT V. FLANNERY

THE NATURE OF OAXACA PREHISTORY

South of Mexico City, the eastern and western *sierras madres* slowly converge to form a massive block called the Oaxaca highlands. In contrast to the broad, open basins of Central Mexico, this landscape consists mainly of narrow canyons and alluvial river valleys surrounded by rugged mountains. The cooler, pine-forested peaks receive moisture from both the Atlantic and Pacific, and deliver it to the lower, drier valleys in the form of springs and streams.

These valleys vary greatly in size and altitude, with the largest being the semitropical Valley of Oaxaca (Map 8.1). Shaped like a Y or three-pointed star, this valley has 2,000 square kilometers of alluvial floor, gentle piedmont, and higher mountain slopes. Oaxaca lies at 1,550 meters above sea level and receives an average of 550 millimeters of rain, concentrated in the summer. Before it was cleared for agriculture, the valley would have had alder, willow, and baldcypress along the Atoyac River and its tributaries; an open woodland of mesquite and grass on its alluvial plains; thickets of cactus, agaves, and thorny legume trees on its piedmont; and forests of oak and pine on the mountains, which rise to 2,500 meters. It seems to have been in this large, broad valley that Zapotec civilization began, but that culture eventually spread both into the sierras north of the valley and to the tropical Tehuantepec coast on the south-east.

To the west lie a whole series of smaller valleys where Mixtec civilization began. The central part of this region, called the Mixteca Alta, consists of high, temperate valleys like that of Tilantongo and Yanhui-tlán–Nochixtlán, with alluvial floors at 2,000 meters elevation and humid, pine-forested mountains above them. The northern part, called the



Map 8.1. The State of Oaxaca in southern Mexico, showing the principal places mentioned in the text. Mixtecs occupy the region enclosed by the westernmost dashed line, a zone further divisible into the Mixteca Baja, Alta, and Costa. Zapotecs occupy the region enclosed by the easternmost dashed line, a zone further divisible into sierra, valley, and isthmus.

Mixteca Baja, consists of lower semitropical valleys like Tequixtepec and Huajuapán, with alluvial floors at 1,000–1,500 meters elevation and drier, thorn-forested mountains above them. The southern part of this region is the Mixteca de la Costa, an area on the Pacific Coast where sites like Tututepec rise out of hot, tropical deciduous forest.

The Mixtec and Zapotec speak languages of the Otomanguean family, and both tongues probably evolved from a common ancestor that existed somewhere in the Oaxaca region before 4000 B.C. Over thousands of years, the speakers of both languages spread over the region and adapted to many environments, learning how to irrigate the drier valleys and to avoid frost in the higher ones. The Zapotec developed a major urban center at Monte Albán in the Valley of Oaxaca; the Mixtec developed a system of *cacicazgos* (semi-independent polities) in the smaller valleys of their rugged province. Both cultures were militaristic and highly stratified, with rulers' genealogies recorded in hieroglyphic texts. Because of the semi-arid environment, the archaeological sites of both Mixtec and Zapotec cultures often have superb preservation of wattle-and-daub structures, adobe walls, cut stone masonry, human burials, plant remains, and animal bones.

Each archaeological region of Oaxaca has its own set of chronological periods, too numerous to list here. We will refer simply to generic periods such as Early Formative (1900–850 B.C.); Middle Formative (850–350 B.C.); Late Formative (350–150 B.C.); Protoclassic (150 B.C.–A.D. 150); Early Classic (A.D. 150–500); Late Classic (A.D. 500–750); Early Postclassic (A.D. 750–1000); and Late Postclassic (A.D. 1000–1530).

THE ORIGINS OF SEDENTARY VILLAGE LIFE

After thousands of years of seminomadic hunting, wild-plant collecting, and incipient agriculture (see Zeitlin and Zeitlin, Chap. 2, this volume), the Indians of Oaxaca finally became sedentary in hamlets and villages. For all of the Early Formative period (1900–850 B.C.), the most common structure was a wattle-and-daub house of 3 by 5 to 4 by 6 meters, about the right size for a nuclear family. Over a frame of upright posts, Early Formative villages built walls of reeds lashed together and covered with clay, sometimes whitewashed; roofs were of thatch, and floors were of stamped earth, sometimes with a surface of sand. Depending on the size and density of the village, such houses could be spaced 20 to 40 meters apart, and each was surrounded by a dooryard with open-air work space,

storage pits, earth oven, lean-tos, or other features for household activities.

So far, the oldest of these structures is House 20 at San José Mogote in the northern Valley of Oaxaca. This house, dated somewhere between 1900 and 1400 B.C., produced the oldest ceramics for the area: 262 sherds of plain, buff-to-brown hemispherical bowls and globular jars without paint, slip, or plastic decoration. There is not a single shape in the collection that could not have been produced by molding a clay vessel inside (or outside) one of the gourd containers used by the hunter-gatherers of the previous Archaic period.

Maize, beans, and squash had been cultivated for thousands of years when this first house was built at San José Mogote. It was in this period of Early Formative villages, however, that the ancestors of the historic Zapotec and Mixtec gave up the seminomadic life of the Archaic and made a commitment to year-round living adjacent to the best alluvial farmland in Oaxaca. By creating permanent improvements such as houses and storage facilities, and by burying their parents and grandparents near those facilities, they established *de facto* rights to highly productive agricultural localities, many of which have been occupied continuously by their descendants until the present day.

EARLY EGALITARIAN VILLAGE SOCIETY

Between 1400 and 1150 B.C., sedentary populations grew rapidly in the Zapotec and Mixtec regions of Oaxaca. For the most part, this growth took the form of a proliferation of small (1–3 ha) hamlets over the countryside. In small valleys, such as the Yanhuitlán–Nochixtlán Valley of the Mixteca Alta, there might be only three to five villages along the main river at places such as Yucuita and Coyotepec. In the much larger Valley of Oaxaca, there were perhaps eighteen to twenty hamlets of this period, mostly in localities where rainfall agriculture could be practiced on high water-table alluvium without the benefit of sophisticated irrigation.

Subsistence in the Early Formative can be reconstructed from the animal bones and carbonized plant remains from 1400 and 850 B.C. These villagers grew maize (*Zea mays*), accompanied by (and perhaps interplanted with) teosinte (*Zea mexicana*), its wild ancestor; the resulting back-crosses gave maize drought resistance and hybrid vigor, but kept its cobs relatively small. Farmers also grew squashes and pumpkins (*Cucur-*

bita spp.), beans (*Phaseolus* spp.), chile peppers (*Capsicum* sp.), and avocados (*Persea americana*), and continued to collect such wild plants as maguey (*Agave* spp.), prickly pear (*Opuntia* spp.), West Indian cherry (*Malpighia* sp.), and other species. They raised domestic dogs (*Canis familiaris*), which were eaten, and they hunted deer (*Odocoileus virginianus*), rabbits (*Sylvilagus* spp. and *Lepus mexicanus*), peccary (*Dicotyles tajacu*), and small game such as raccoons, opossums, gophers, doves, quail, and mud turtles.

At sites like San José Mogote and Tierras Largas in the Valley of Oaxaca, each household unit of the period 1400–1150 B.C. seems to have consisted of a 300-square-meter area that included a wattle-and-daub house, a series of storage features, perhaps a few burials, and sometimes a midden of ashy debris. Left behind on the floors of the houses were ceramics whose shapes were relatively simple, but whose decoration now included red slips, red stripes or chevrons, and plastic techniques such as dentate rocker-stamping. There were also small handmade figurines, frequently of women with elaborate hairstyles that run the gamut from braids to “permanent waves.”

Largest of all known sites of this period was San José Mogote, which at 1400–1150 B.C. is estimated to have consisted of 71–186 persons dispersed over 6.8 hectares. Around 1350 B.C., Oaxaca’s first known “public building” was constructed near the western edge of the site. Although it was a one-room building of wattle-and-daub construction, this structure differed from ordinary residences of the period in several ways. First, it had the same orientation (8 degrees west of north) as later public buildings in Formative Oaxaca. Second, the floor and interior walls were covered with lime stucco, which no contemporary residence had, and it was built on a platform-like foundation of crushed bedrock, clay, lime, and sand. The room was swept clean of artifacts, and had two features never seen in ordinary residences: (1) a low, rectangular platform, possibly a step or altar, set against the south wall; and (2) a storage pit incorporated into the center of the floor and filled with powdered lime. What this building reminds us of are the “Men’s Houses” that ethnographically documented egalitarian village societies have; we suspect that the stored lime might have been for ritual use, such as mixing with a narcotic like wild tobacco or *Datura*. Such public buildings were rebuilt several times on virtually the same spot, always with the same orientation and the same lime-filled pit (see Fig. 8.1 for the second one built).

While it is possible that each reasonably large community of this



Figure 8.1. Workmen build a protective wall around the remains of Structure 6, a small public building at San José Mogote. Dating to roughly 1350 B.C., the building had a white stuccoed interior and a central storage pit for powdered lime.

period had an analogous Men's House, no smaller site has so far yielded stuccoed examples like those known from San José Mogote. Burials and ordinary residences do not provide us with much evidence for differences in rank or social status among individuals or families at this period, nor do we as yet see any major differences between the Zapotec and Mixtec regions. What we see are small egalitarian communities spreading over the river valleys of highland Oaxaca wherever conditions were favorable for agriculture.

THE ORIGINS OF SOCIAL RANKING

During the latter stages of the Early Formative period, from 1150 to 850 B.C., a number of important changes took place in the Valley of Oaxaca. These changes, which had something to do with the beginnings of social

inequality, also affected the distribution of population in the valley, the development of craft activity, and many trade relationships between the Zapotec and their Formative neighbors.

There were perhaps forty hamlets and villages in the Valley of Oaxaca at this time, most of them 1–3 hectares in extent. In stark contrast to the smaller sites was the community of San José Mogote, which had undergone enormous growth. The “downtown” area of the site, where all known public buildings and better-made residences are concentrated, had reached 20 hectares in size; if all the smaller residential areas clustered nearby are treated as outlying barrios, “greater San José Mogote” at this time is estimated to have been occupied by 791 to 1,976 persons spread over more than 70 hectares. No other site in the valley came close.

Burials and residences of this period suggest there were developing status differences in society, and that these took the form of a continuum from relatively higher to relatively lower status, without the true division into social classes that took place in the Protoclassic period. Societies with hereditary differences in rank, such as the more modest of the ethnographically documented “chiefdoms” of Polynesia, may provide an analogy.

Higher-status individuals seem to have had greater access to deer meat, magnetite and marine shell ornaments, mica, and high-quality chert for tools. Their houses were often better made, with burnished outer surfaces of limey clay. Higher-status individuals might also be buried in graves lined with stone slabs, rather than the simple pits used for lower-status individuals; they might also have jade ornaments for their earlobes, lips, or chest, rather than the single bead found in the mouths of ordinary burials. In one cemetery at Tomaltepec, where most burials were fully extended, a small number of flexed adult male burials (12.7% of the cemetery) had 88 percent of the jade beads and 66 percent of the stone slab burial coverings.

There are also hints of other subdivisions within society. The period 1150–850 B.C. was one in which many pan-Mesoamerican iconographic elements (see Grove, Chap. 3, this volume) were featured on pottery. Included were representations of two supernatural beings that Marcus has identified as Sky (Lightning) and Earth (Earthquake) (Fig. 8.2). Vessels with these two beings were negatively correlated in space, with Sky/Lightning dominant at villages like Abasolo and Earth/Earthquake dominant at villages like Tierras Largas. San José Mogote, the largest site, was divided into at least four residential wards, some featuring bowls

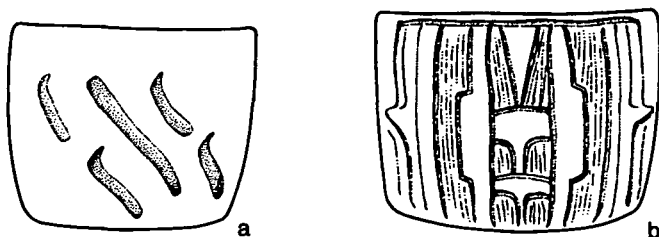


Figure 8.2. Vessels of the period 1150–850 B.C., showing stylized depictions of (a) “Lightning” and (b) “Earthquake.”

with Lightning and some with Earthquake. Since only male burials were accompanied by either type of vessel, the two beings could represent the fictive ancestors of male descent lines.

Residential Ward A at San José Mogote (a “Lightning” area) seems to have been a focus for craft production of small iron ore (magnetite) mirrors. Trace element analyses indicate that Oaxaca mirrors were traded as far as the Valley of Morelos and the site of San Lorenzo, Veracruz. On the other hand, Residential Ward B (an “Earthquake” area) seems to have been a focus for the production of bifaces from heat-treated chert, while Ward C yielded evidence for the production of celts from metamorphic rock.

When one looks at the paucity of evidence for similar craft production at smaller villages, it appears that at least some of San José Mogote’s growth may have resulted from the concentration of craftsmen into this one large village. There are reasons to believe that such a concentration occurred under the auspices of “chiefly” individuals who virtually monopolized exchange relations with areas outside the valley. For example, the frequencies of obsidian from various distant sources (also determined by trace elements) are so uniform from house to house within San José Mogote as to suggest that one agency was receiving, pooling, and redistributing that commodity. The site’s far-flung exchange network also brought in more pearl oyster, *Spondylus* shell, stingray spines, conch shell trumpets, and turtle shell drums than any other village.

The ritual life of San José Mogote was extremely rich and took place on both “public” and “household” levels. On the public level, villagers continued to build one-room ceremonial structures with stuccoed interiors, but now these were occasionally placed on earthen platforms, whose sloping outer surfaces were faced with dry-laid stone masonry; occasion-

ally, a crude stairway might lead to the surface of the platform. Because these platforms contain basketloads of earth of many different types, and stones from widely dispersed geological sources, we assume that the residents of a fairly wide area participated in their construction.

On the household level, at least one dooryard had a stuccoed, red-painted basin that may be a ritual feature. Still more ritual information came from beneath the floor of a lean-to near a house in Residential Ward B, where four figurines had been arranged in the form of a scene. Three of them lay fully extended with their arms folded across the chest; the fourth was seated with his legs crossed tailor-fashion. Both are positions in which Formative individuals have been found buried. Small figurines were common in the households of this period. They played a role in household ritual, and in many cases, including the one just mentioned, were probably related in some way to a specific household's ancestors. We know that the ancestors, or *binigulaza*, were very important to the later Zapotec, especially the ancestors of the Classic and Postclassic elite. Significantly, Early Formative figurines are never found in or around public buildings, but only in domestic contexts. These figurines disappeared by Protoclassic times, precisely when commoners' ancestors ceased to be important.

MIDDLE FORMATIVE "CHIEFDOMS"

The half millennium between 800 and 350 B.C. was an important one in Oaxaca. In addition to continuing population growth in the Mixteca and the Valley of Oaxaca, this period witnessed the rise of a number of rank societies (or "chiefdoms") throughout the area, with the construction of still more impressive public buildings, and with increasing evidence that simple irrigation techniques had been added to rainfall and high water-table farming.

In the Yanhuitlán–Nochixtlán Valley of the Mixteca, the number of sites occupied had risen to seventeen, with the most frequent locations being (1) on the lower ends of piedmont spurs reaching down to the river's edge; (2) at stream confluences, such as Etlatongo; or (3) on low rises in the central portion of the valley, such as Coyotepec and Yucuita near the main river (Fig. 8.3). While most villagers continued to live in thatched huts, some elite members of society now lived in houses up to 25 square meters in extent with adobe walls, often set on low stone foundations. A very large earthen platform at Etlatongo, exposed in an

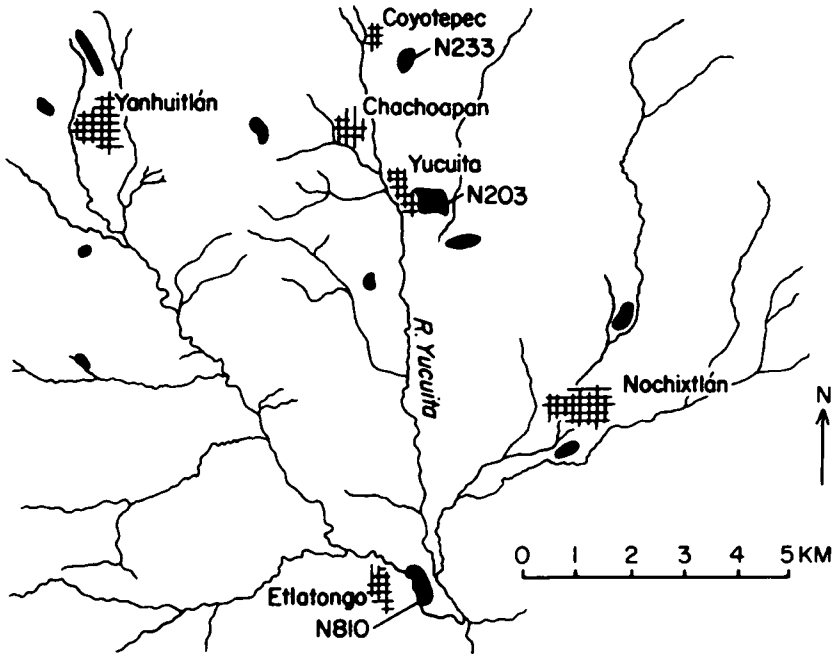


Figure 8.3. Late Formative settlements (shown as black areas) in the Yanhuitlán–Nochixtlán Valley of the Mixteca Alta (survey by R. Spores).

arroyo cut but still unexcavated, may be an important Middle Formative public building.

In the Valley of Oaxaca, the first adobes were plano-convex (“bun-shaped”) and appeared around 850 B.C.; by 650 B.C. they had been replaced by rectangular adobes of various sizes. Adobes were first used in public buildings, but later in Middle Formative times they were also used in the houses of the highest-ranking members of society. As hereditary differences in rank increased, the continuum between lowest and highest status grew broader, with some people living in wattle-and-daub huts on the edge of the village while others lived in adobe residences near the public buildings in the village center.

By 600 B.C. there were perhaps eighty-five communities in the Valley of Oaxaca, not all of them in locations where rainfall farming can be assumed. In some parts of the valley, where the water table is only 3 meters or so below the surface, irrigation is practiced year-round by dipping water from shallow wells. Formative wells occur as early as 900–

700 B.C., and one well-preserved example dates to about 450 B.C. In other areas, what appear to be small drainage ditches (the forerunners of simple irrigation canals) are known from 900 B.C., and by 350 B.C. there were at least two clear irrigation systems in use. One, excavated by J. A. Neely in the mountains on the eastern rim of the valley, used the water from a series of springs to irrigate an artificially terraced slope. The other, near Xoxocotlán, used water from the reservoir created by blocking a seasonal arroyo with a boulder dam 10 meters high and 80 meters long. No single irrigation system in early Oaxaca was very large, but their use intensified agriculture and extended settlement into previously underused areas.

While San José Mogote remained the largest population center in the valley until 500 B.C., one of the significant events of the Middle Formative was the growth of another civic-ceremonial center at Huitzo, less than 20 kilometers to the north. Huitzo had a main residential zone of at least 2.7 hectares and a ceremonial precinct of at least 3,500 square meters. Included in the latter was a lime-stuccoed wattle-and-daub public building on a platform 1.3 meters high and 11.5 meters long, constructed of fill between retaining walls of bun-shaped adobes; the building was oriented 8 degrees west of north, and had a stairway 7.6 meters wide (Fig. 8.4).

By 650 B.C., Tomaltepec, 23 kilometers southeast of San José Mogote, had also become a modest civic-ceremonial center. Structure 12 at that site was an adobe platform more than 3 meters high, set on a series of stone slabs up to a meter long and filled with earth and stone rubble. However, there are other small Middle Formative sites that have no evidence of public buildings at this time. There seem to be three tiers in the site-size hierarchy: (1) one very large center, San José Mogote, whose various barrios may have covered 60–70 hectares; (2) a handful of 3-hectare sites with significant public buildings; and (3) a much larger number of agricultural villages, in the 1–3 hectare range, with no civic-ceremonial functions.

San José Mogote continued to have the largest number and greatest diversity of public buildings and elite residences at this time. It reached a peak between 650 and 500 B.C., during which time it grew to be the civic-ceremonial focus for an estimated twenty to thirty hamlets and villages in the northern part of the valley (Fig. 8.5). Abandoning the old bun-shaped adobe platforms in the western part of the village, the architects of San José Mogote turned to a natural hill in the center of the

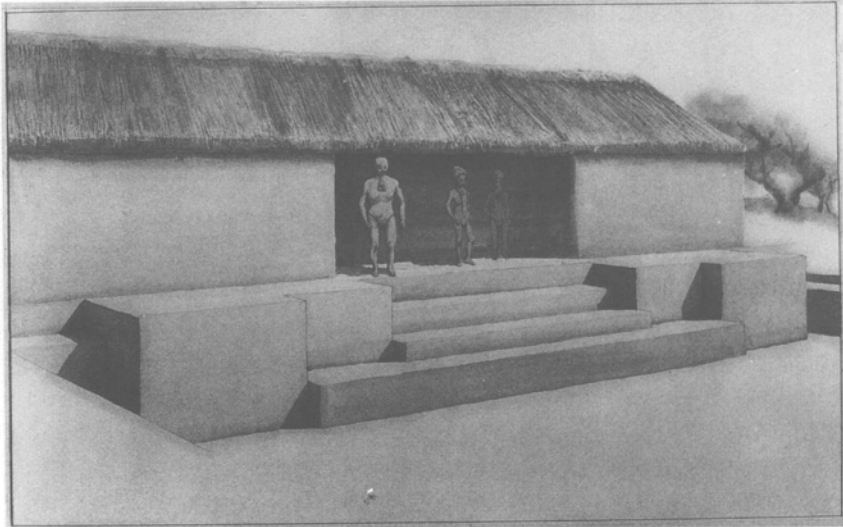


Figure 8.4. Artist's reconstruction of a Middle Formative public building at Huitzo.

village and began to turn it into an acropolis of public buildings. One of these was Structure 28, a 13.4-by-14.2-meter platform of rectangular adobes standing 1.5 meter high and supporting a large wattle-and-daub “temple” that was eventually burned (Fig. 8.6). In turn, Structure 28 was supported by Structure 19B, a stone masonry platform with earthen fill. Over time, Structure 19B was enlarged twice and its orientation changed from 8 degrees west of north to true north. The final stage, called Structure 19, was composed of multi-ton limestone blocks brought from a quarry 5 kilometers away; it stood 2 meters high and measured 22 by 28 meters, with a stone stairway on the west. The inclusion of travertine blocks from Fábrica San José, also 5 kilometers away, indicates that other communities in the area participated in the construction of Structure 19.

Just to the north of Structure 19 lay Structure 14, first built during this period but greatly modified in later times. In the narrow corridor between the two buildings lay Monument 3, the oldest carved monument with Zapotec hieroglyphs so far known (Fig. 8.7). The stone slab, which depicts a slain or sacrificed prisoner, was laid flat as the threshold for the corridor, and the streamers depicting blood flowing from the prisoner's chest cavity run from the upper surface of the slab down the east edge.

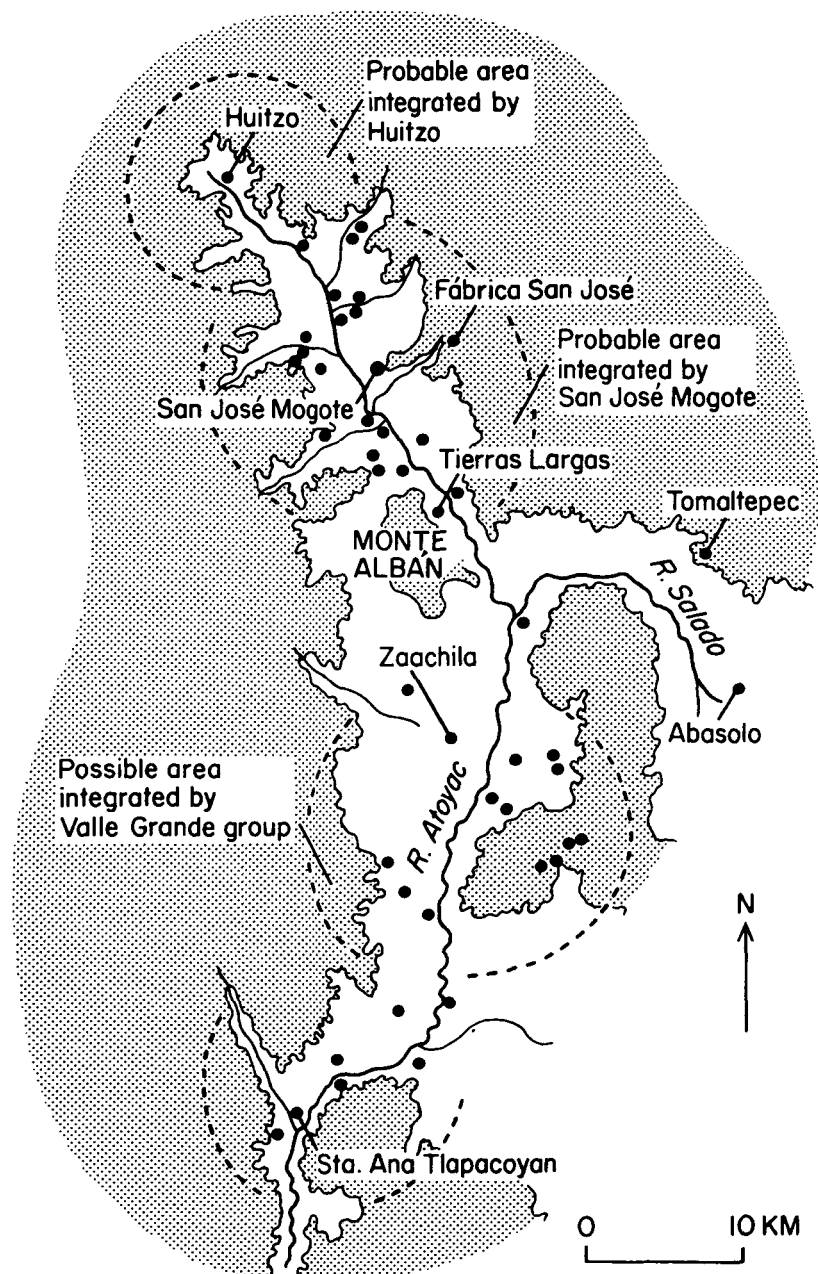


Figure 8.5. Villages and hamlets (shown as black dots) in the western Valley of Oaxaca between 700 and 500 B.C., with dashed lines encircling areas thought to have been integrated by various chiefly centers.

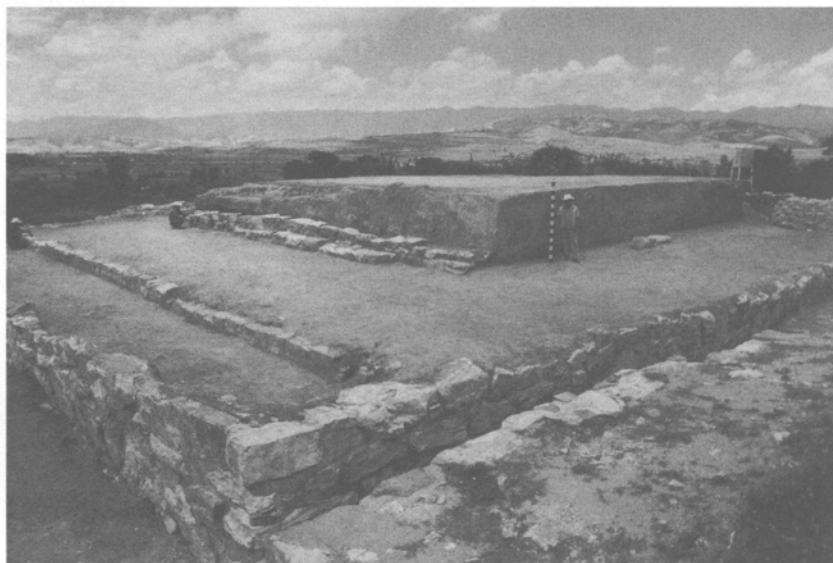


Figure 8.6. A public building from San José Mogote, dating to 700–500 B.C. The workman with the 2-meter pole stands beside a plastered adobe platform that originally supported a large wattle-and-daub building. In turn, the adobe structure sits on a stone masonry platform that was enlarged at least twice.

A powerful visual pun is created by the slab's being placed horizontally so that anyone entering the corridor would tread on the prostrate body of the naked victim. Such depictions are common in later Mesoamerican art, such as the "prisoner galleries" and "prisoner staircases" of the Maya region.

Like other Mesoamerican peoples, the Zapotec had a ritual calendar composed of thirteen numbers and 20 day names, totaling 260 days. The names of important persons were often taken from their birth date in this calendar; in later times, names such as "1 Tiger" and "8 Deer" were used by native elites in Oaxaca. Carved between the feet of the victim on Monument 3 is the phrase "1 Earthquake," a date (and probably a personal name) in the 260-day calendar.

What the evidence from San José Mogote may suggest is that the level of raiding or low-level warfare among Middle Formative–rank societies was as high as that among ethnographically documented "chiefdoms" in places like North America and Panama. We do not know whether the



Figure 8.7. Upper surface of Monument 3 at San José Mogote, a carved stone showing a sprawled nude slain or sacrificed figure with a stream of blood flowing from his open chest cavity. The hieroglyphic inscription “1 Earthquake” appears between his feet (total length: 1.45m).

fighting was between rival chiefdoms or among rival units within a single chiefdom, nor do we know the source of the conflict. However, we have reason to suspect that this warfare set the stage for the appearance of fortifications after 500 B.C.

THE ORIGINS OF URBANISM

One of the most significant events in Oaxaca prehistory was the founding of Monte Albán, the mountaintop city that was to be the capital of the Zapotec for more than one thousand years. That event took place around 500 B.C., and was noteworthy for the unique location chosen and the clearly ambitious vision of its founders.

During all of the Early and Middle Formative, preferred locations for settlement had been on the alluvial valley floor or on low rises adjacent to it. Suddenly a previously unoccupied mountain, rising 400 meters above the plain at the point where all three arms of the valley came together, was chosen as the place on which the largest public buildings in the region would be built (Fig. 8.8). Waterless except for a few small springs, and much farther from good farmland than places like San José Mogote, Zaachila, or Santa Ana Tlapacoyan, the mountain had two advantages – it was eminently defensible, and it was a central location from which all three arms of the valley could be subjugated.

Monte Albán went with astonishing speed from being a totally unoccupied hill to becoming the first truly urban center in the valley; R. Blanton has estimated its population as 3,600–7,200 by 400 B.C., and 10,000–20,400 by 250 B.C. As this rapid growth took place at Monte Albán, many previously occupied villages were abandoned or shrank significantly, among them San José Mogote, Huitzo, Tierras Largas, and Fábrica San José. This suggests that the founders of Monte Albán came from the nearby valley floor, a suggestion reinforced by continuities in ceramics and architecture. The whole demographic center of gravity of the valley shifted south from San José Mogote to the area around Monte Albán, however (Fig. 8.9), and as public buildings were abandoned at valley-floor villages, newer and larger ones were being erected at Monte Albán.

One of the earliest and largest of these was Building L at Monte Albán (Fig. 8.10). In its original form, this building evidently contained a huge gallery of more than three hundred carved stones depicting slain captives like the one shown on Monument 3 at San José Mogote. Although set



Figure 8.8. Aerial view of the Main Plaza at Monte Albán and the architectural terraces on the steep slopes below it.

vertically as orthostats in the east wall of the building, each stone showed a naked victim as he would appear when seen from above, sprawled on the ground in awkward position, eyes closed in death, sometimes with a scroll of blood issuing from some part of the body. It is the grotesque position of each body (a technique the Maya also used in their stelae and prisoner staircases) that confused early observers and led them to call these victims *danzantes*, or “dancers.” Some carvings of prisoners were even placed as risers in the Building L staircase so that anyone ascending the steps could tread on their bodies.

This public display of military prowess, coupled with the mountaintop location of Monte Albán and the defensive walls it erected between 300 and 100 B.C., suggest that warfare was one consideration in the location of the city. Monte Albán also went on to become a major religious

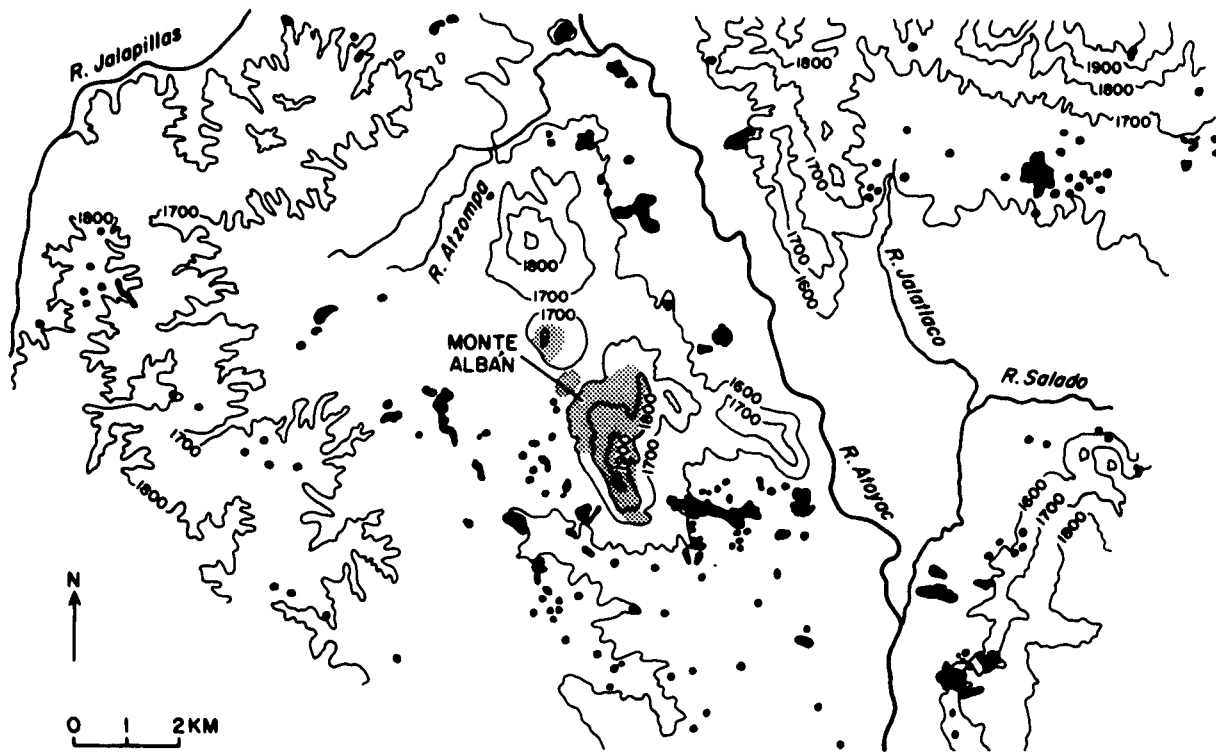


Figure 8.9. Settlements (shown as black areas and dots) in the central Valley of Oaxaca c. 300 B.C., showing the tendency for valley-floor villages to cluster near Monte Albán (survey by S. Kowalewski).

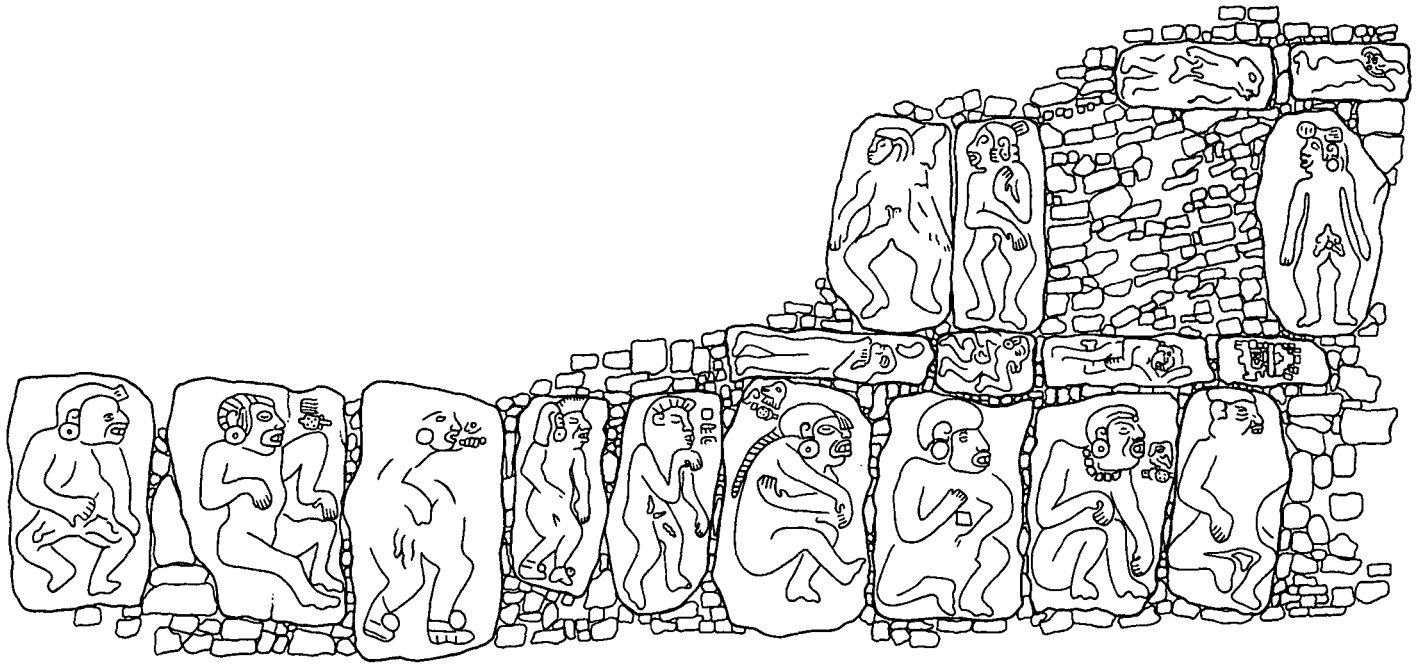


Figure 8.10. Surviving remnant of Building L at Monte Albán (c. 500–400 B.C.), with its large display of slain or sacrificed captives in awkward positions. Some carvings in the lowest row include hieroglyphic texts of names and events.

capital, with the largest number of temples of any site in the valley. Nor was it the only site of this period to seek a defensible location; a number of smaller Late Formative sites, such as Peña de los Corrales in the northern valley (Fig. 8.11), were also founded on rocky hilltops. There are two further clues to the process by which Monte Albán was founded. First, no previously occupied community in the valley was large enough to have provided Monte Albán with the population we see in its earliest stage; to account for its size, we must assume that its founders came from many different valley-floor sites. Second, the earliest residential settlement at Monte Albán seems to have taken the form of three discrete wards, separated by areas of lighter occupation. As a result, Blanton has proposed that Monte Albán may have been founded by a confederacy of villages from several areas of the valley. We have compared this to the process the ancient Greeks called *synoikism*, the deliberate relocation of rural populations on a defensible mountaintop.

Whatever the case, Monte Albán's founding would seem to have been part of a widespread political process that affected the Mixteca Alta as well. For example, in the Valley of Tilantongo, only 50 kilometers west of Huitzo, a civic-ceremonial center contemporary with early Monte Albán was also constructed on a 400-meter mountaintop. Called Monte Negro, the site featured an L-shaped line of limestone masonry buildings running 140 meters east-west and 60 meters north-south (Fig. 8.12). The buildings include one-room temples with their roofs supported by columns, erected on platforms with stone stairways like the earlier one on Structure 19 at San José Mogote. There are also elite residences consisting of an open patio with a column in each corner, surrounded by three or four rooms; the walls were of adobe or wattle-and-daub over a stone foundation. Some elite residences were connected to nearby temples by a roofed corridor, allowing the occupants to enter or leave a temple without being seen. High-ranking residents of the site were buried in adobe tombs. Some wore jade spools in their earlobes, had pyrite inlays in their teeth, and displayed cranial deformation – all signs of high status in ancient Mesoamerica.

In the Yanhuitlán–Nochixtlán Valley of the Mixteca Alta, the beginning of urbanization took place somewhat later. Around 200 B.C. the site of Yucuita, which had already been occupied for a thousand years, began to grow rapidly until it covered 2 square kilometers. Since Yucuita was already on a hill, no relocation of population, such as occurred at Monte Albán or Monte Negro, was necessary. Significantly, Yucuita went on to



Figure 8.11. Aerial view of Peña de los Corrales, a Late Formative site on a defensible escarpment in the northern Valley of Oaxaca.

become an important urban center during the succeeding Classic period, whereas Monte Negro became abandoned.

THE ORIGINS OF STATE POLITICAL ORGANIZATION

During the Protoclassic period, Monte Albán's Main Plaza – a 300-by-150-meter area surrounded by public buildings – was superimposed on the earlier structures of the Late Formative (Fig. 8.13). Between 200 B.C. and A.D. 100, the city grew to the point where Blanton estimates its population at 10,000–19,000 persons. Just as important as this population growth was the evidence for political evolution that accompanied it. A whole series of new institutions, not seen in the archaeological record

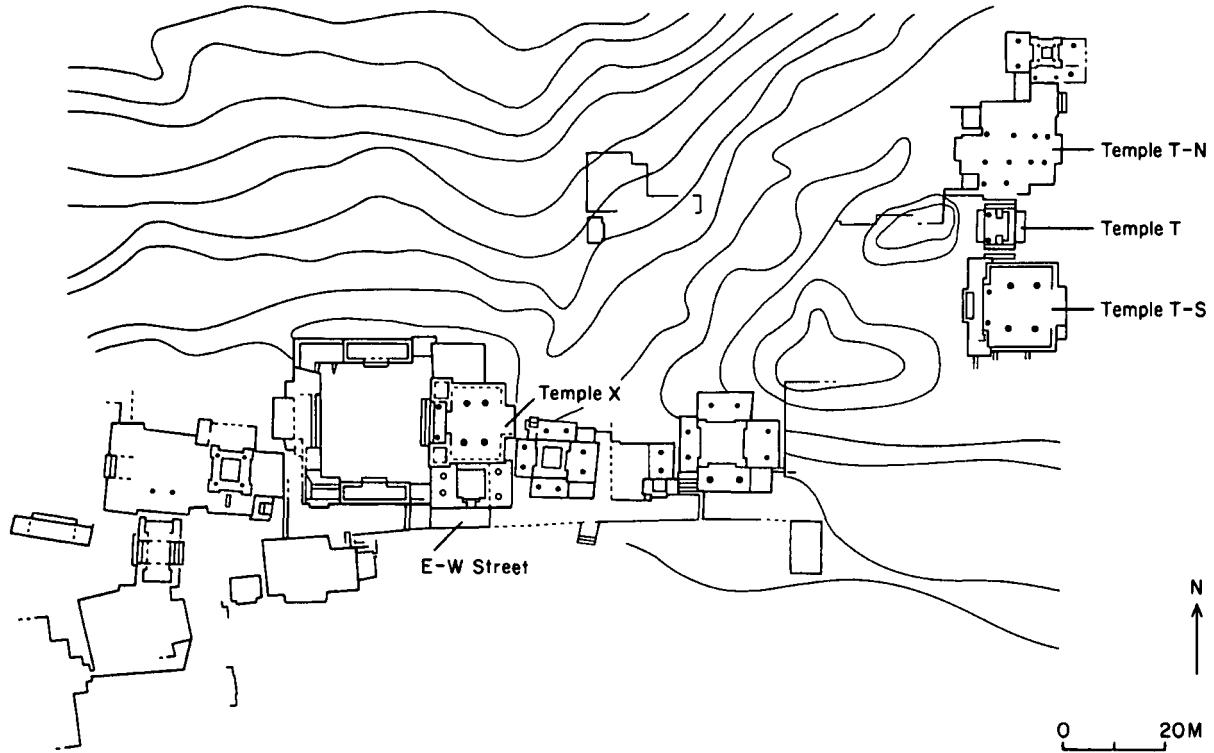


Figure 8.12. Plan of Monte Negro in the Mixteca Alta, a Late Formative mountaintop civic-ceremonial center with colonnaded temples and elite residences with interior patios.

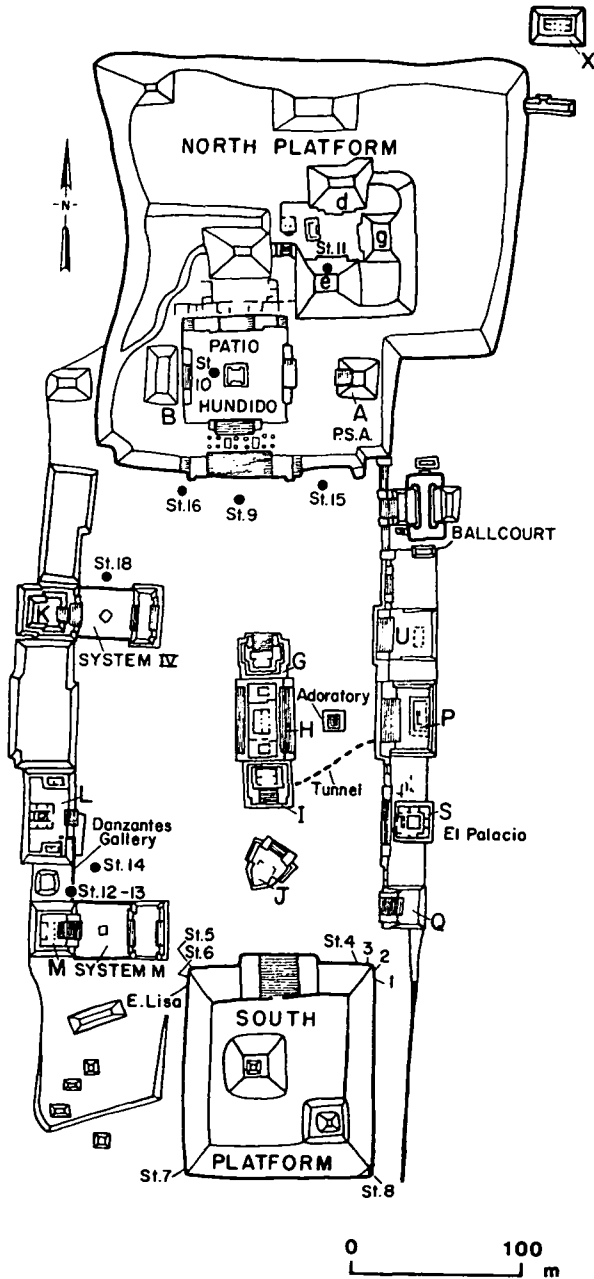


Figure 8.13. Plan of the Main Plaza at Monte Albán. Major buildings have been given letters, while stone stelae (St.) have numbers.

before 200 B.C., suggests that the Zapotec had now reached what anthropological theorists call a state level of political organization.

One of those new institutions was kingship, and one of its architectural manifestations was the governmental palace (Fig. 8.14), a monumental structure consisting of both habitation areas and audience halls, and requiring *corvée* labor to build. Another manifestation was the royal tomb. By A.D. 500, some residential palaces had stone lintels weighing several tons, and some tomb walls were covered with polychrome murals.

Royal ancestor worship seems to have accompanied these other developments. Some Classic tombs contain funerary urns depicting members of royalty or nobility, often with their names taken from the ritual calendar (Fig. 8.15). Sometimes these figures wear masks depicting Cociyo (Lightning), a bat, a jaguar, or some supernatural being. The names of deceased rulers were carved on commemorative beakers used in Classic rituals, with “Lord 1 Tiger” being particularly common. Another new

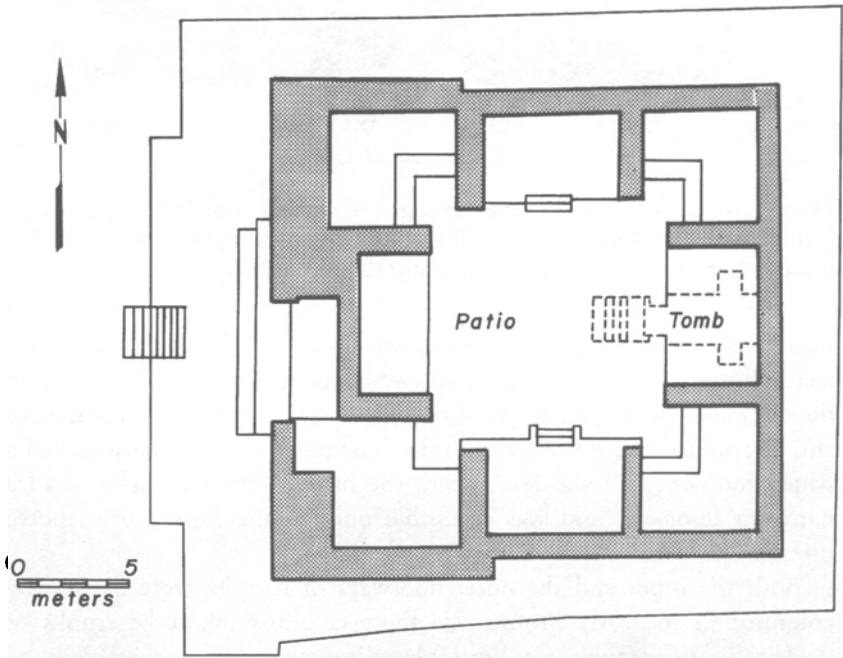


Figure 8.14. A Classic period palace at Monte Albán, showing the interior patio, subfloor tomb, and “curtain wall” that provides privacy by screening off the doorway on the left.



Figure 8.15. Classic Zapotec effigy vessels. On the left is a double-spouted jar with a person masked as Cociyo, "Lightning." On the right is an urn with a royal female whose headdress bears her hieroglyphic name, 2 Flower.

institution of the Protoclassic period was a state religion, reflected architecturally in a series of standardized two-room temples (Fig. 8.16). Often these temples were built in pairs, one facing east (toward the rising sun) and one west (toward the setting sun). The outer room was lower, had a wider doorway, and was less sacred; the inner room was higher, had a narrower doorway, and was accessible only to the *bigaña* or Zapotec priests.

Both the inner and the outer doorways of temples were flanked by columns; in the early Protoclassic these columns might be trunks of baldcypress (*Taxodium* sp.), but by late Protoclassic times they could be built of stone masonry. Some temples had elaborate offerings of jade or pottery under the floors. The floors themselves, occasionally littered with fragments of the obsidian knives or razors used in sacrifice, were often

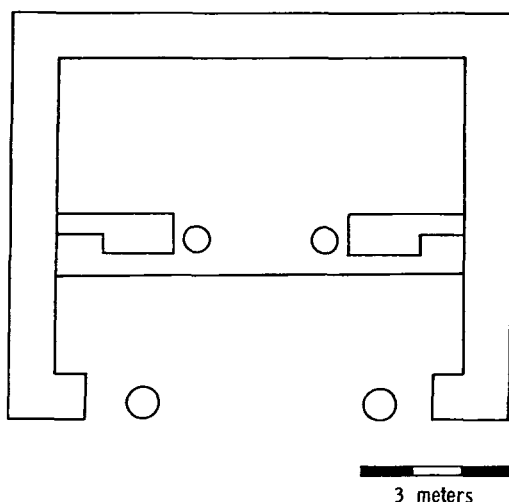


Figure 8.16. Classic period temple from Monte Albán, divided into a higher and more private inner room and a lower, more public outer room. The circles represent column bases.

discolored by the burning of incense in braziers. Temples of this type were used up until the arrival of the Spaniards, who wrote that Zapotec priests sacrificed quail, turkeys, infants, adult slaves, and prisoners taken in combat.

As for combat, the evidence for it continues to escalate. Sometime during the period 300–100 B.C., the Zapotec completed a 3-kilometer-long wall along the north and northwest limits of Monte Albán, where the natural slope is the least steep. Where this wall crossed a large barranca in the northern section of the city, it appears to have dammed up a reservoir 2.25 hectares in area, which could have held up to 67,500 cubic meters of water.

No nearby site was large enough to have threatened Monte Albán at this time. There were other large sites on defensible hilltops at the valley's southern extreme (Ayoquesco) and northern extreme (Cerro de la Campana) (Fig. 8.17), but for all we know those sites may have been guarding the entrances to the valley rather than defending themselves against Monte Albán. For various reasons, we consider Monte Albán's military preparedness at this time to be offensive rather than defensive. As early as the Protoclassic, we see Monte Albán as the aggressor against a number



Figure 8.17. Monumental structures cover the ridgetop at Cerro de la Campana, a hilltop civic-ceremonial center contemporary with Monte Albán.

of weaker neighbors outside the valley, primarily in regions where a different range of products could be produced.

One important Protoclassic structure in Monte Albán's Main Plaza was Building J, which has yielded more than forty carved stones known as "conquest slabs." Caso interpreted these as depicting places subjugated by Monte Albán. In its simplest form, each carving displays a "hill" sign meaning "the place of" or "the hill of"; a glyph (or set of glyphs) specifying the place mentioned (i.e., "the Hill of the Rabbit"); and often a human head, shown upside down or "conquered," wearing a distinctive regional headdress that probably reinforces the name of the province.

Although we will probably never know where all these subjugated places were, Marcus has suggested that six of them were Ocelotepec ("Hill of the Jaguar"), Tututepec ("Hill of the Bird"), Cuicatlán ("The Place of Song"), Miahuatlán ("In the Canal of the Maize Tassels"), Sosola ("Place of the Pierced Face"), and Chiltepec ("Hill of the Chile Plants"). Several of these places are known to have substantial Protoclassic occupations with Monte Albán-style pottery. The best known is

Cuicatlán, where research by E. Redmond and C. Spencer shows a clear military takeover by the Zapotec around 200–100 B.C., including the establishment of a 15-hectare fortress with defensive walls and Monte Albán – style tombs. Cuicatlán lies in a canyon 1,000 meters lower than the Valley of Oaxaca, where tropical crops can be grown by irrigation, and the invading Zapotec seem to have effected increased production with aqueducts. The six subjugated provinces just listed indicate a subject territory with a radius of 80–150 kilometers from Monte Albán.

Finally, another innovation of the Protoclassic was the ballcourt, on which a prehispanic ball game was played. Zapotec ballcourts had the shape of a Roman numeral I, with the long axis usually running north-south for about 41 meters; they lacked the stone rings seen in Maya ballcourts, and we do not know how the scoring system worked.

One characteristic of many archaic states is a hierarchy of settlements, including a capital, secondary administrative centers, tertiary administrative centers, and agricultural villages with no administrative functions. Thanks to surveys by S. Kowalewski, R. Blanton, G. Feinman, L. Finsten, L. Nicholas, and their colleagues, we can see the outlines of such a hierarchy in the Valley of Oaxaca. During the Protoclassic, Monte Albán was a capital covering more than a square kilometer and having the greatest diversity in public buildings of any site in the area. Below it were four or five secondary centers, one of which (San José Mogote) covered 60–65 hectares and had a palace, a ballcourt, and perhaps as many as ten temples. Below this were tertiary centers like Fábrica San José and Tomaltepec, which covered 5–8 hectares and had only one temple, no ballcourt, and (apparently) no palace. At the base of the hierarchy were more than four hundred sites in the 1–3 hectare range, with no apparent public buildings.

The transformation of the Mixteca Alta to an urban society also occurred in the period from 200 B.C. to A.D. 300, although R. Spores believes that some of the crucial transformations took place slightly later, and may have lasted longer, than in the Valley of Oaxaca. The Yanhuitlán–Nochixtlán Valley underwent a doubling of its population in this period, and a site-size hierarchy of at least three tiers emerged. At the top was Yucuita, a complex urban center covering 2 square kilometers and presumably integrating the entire valley. Below it were ten towns (or secondary centers) and twenty sites in the village (tertiary?), hamlet, or rancho size range.

On a series of hills that rise from the center of the valley plain, Yucuita

is described by Spores as consisting of at least ten major mound complexes with megalithic walls, patios, plazas, a subterranean tunnel system, habitational terraces, stone quarries, adobe and stone-slab tombs, and magnificent stone and adobe residences for the elite. By A.D. 300–1000, Yucuita was surpassed by a new site, Yucuñudahui, which emerged full-blown as a planned urban center on the crest of one of the highest mountains in the valley (Fig. 8.18). We do not know whether this shift in the valley's capital represents the replacement of one local ruler by another, or an effort to seek a higher and more defensible location because of a perceived threat from someplace like Monte Albán.

Other great Classic centers in the Mixteca Alta included Mogote del Cacique near Tilantongo, Yatachío near Tamazulapan, and Cerro de la Virgen near Tlaxiaco. In the Mixteca Baja, such sites as Cerro Caja near Tequixtepec and Nuyoo near Huajuapán, as well as Miltepec and Silacayoapan, were all important. Classic Mixtec capitals had ballcourts like their Zapotec counterparts, but most excavated Mixtec temples lack the division into inner and outer rooms seen in the Zapotec area. Perhaps the most striking contrast, however, is the fact that no single great Mixtec city seems to have integrated so large a region as did Monte Albán. It is now clear that the single Zapotec state centered at Monte Albán was militaristic and expansionist, and exerted its hegemony over a wide area outside the Valley of Oaxaca. In the Mixteca, on the other hand, there were many different polities, some of which may only occasionally have achieved a site-size hierarchy with more than three tiers.

MONTE ALBÁN'S RELATIONSHIP WITH TEOTIHUACÁN

At its peak in A.D. 600, Monte Albán was the largest urban center in the southern Mexican highlands; it covered 6.5 square kilometers and had a population conservatively estimated by Blanton at 30,000. Some 350 kilometers to the north, across rugged mountains and inland river valleys, lay the even larger city of Teotihuacán (Cowgill, chap. 6, this volume). At its peak Teotihuacán covered 20 square kilometers, with a population estimated by R. Millon and G. Cowgill at 125,000–200,000. These two cities were in contact with each other, and seem to have had what Millon calls "a special relationship."

Monte Albán was founded earlier than Teotihuacán, but never grew as large; in addition, there were differences in its urban layout. Monte

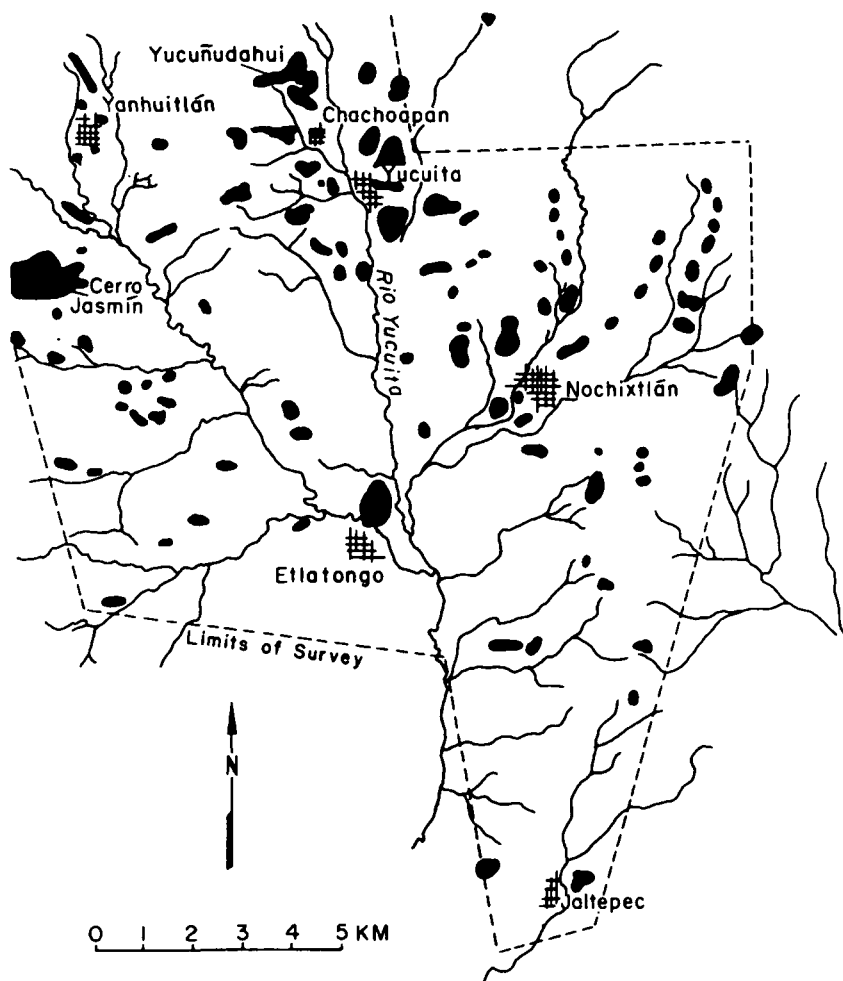


Figure 8.18. Classic period sites (shown as black areas) in the Yanhuitlán–Nochixtlán Valley of the Mixteca Alta (survey by R. Spores).

Albán was not laid out on a grid or any other geometric plan, and seems to have grown over its series of hills in an unplanned way. The winding roads that served the city did not lead to any major public structures, and in fact, the Main Plaza was one of the least accessible areas in ekistic terms. This is in striking contrast to Teotihuacán, which was laid out on

a cruciform plan, and whose major north-south and east-west streets seem designed to carry people right to the important buildings of the downtown area.

Just as significant as these differences in layout were the differences in commercial production. Millon estimates that 400–700 of Teotihuacán's 2,200 apartment compounds were occupied wholly or partly by craftsmen and their families, and surveys of the rural sustaining area suggest that large numbers of artisans were drawn into the city from the surrounding countryside. On a much larger scale, this is the kind of near monopoly of artisans we saw earlier at San José Mogote; but in the Classic period, the Zapotec no longer exhibited this pattern. While Monte Albán had its share of artisans, it does not seem to have drawn others out of the countryside and concentrated them in the city. Instead, many villages in the surrounding countryside, both large and small, had concentrations of pottery kilns and other evidence for craft production.

One could summarize these contrasts by describing Monte Albán as a controlled-access, fortified, religious, and regal administrative capital on a mountaintop, whereas Teotihuacán was a planned, accessible, unfortified, administrative, religious, and commercial city on an irrigated plain. One of the most fascinating discoveries at Teotihuacán was a 1–2 hectare residential ward near the western outskirts of the city, which was the site of a resident colony of Zapotec. The adobe compound in which these people lived conforms to the Teotihuacán orientation of walls, but the pottery found within it is of clear Monte Albán style. Most diagnostic are two Zapotec funerary urns, and a masonry tomb with the hieroglyphic name of 9 Earthquake (from the 260-day calendar) carved on one of its jambs. The available evidence suggests that this was an enclave of people of “intermediate status” (perhaps trade middlemen) who adopted Teotihuacán customs while continuing to use domestic items of Oaxaca style.

No comparable “Teotihuacán enclave” has been found at Monte Albán; however, there is evidence for diplomatic contact with Teotihuacán in the stone monuments of A.D. 200–500. Most monuments at Monte Albán during this period continued the militaristic themes seen in earlier times. There were stelae showing important prisoners with their arms bound behind their backs, and at least one depiction of a Zapotec ruler thrusting his spear into a conquered territory. There are five other monuments, however, that seem to show peaceful ambassadorial relations between Monte Albán and Teotihuacán.

The South Platform at Monte Albán, a huge pyramidal structure at the south end of the Main Plaza, was dedicated in the Early Classic period. Four carved stones, one in each corner of the platform, have inscriptions that tell the same story: eight persons, wearing Teotihuacán headdresses, leave a place with temples decorated in Teotihuacán style and arrive at a place called “The Hill of 1 Jaguar,” where they are met by a lord wearing a Zapotec headdress. Each Teotihuacán visitor carries a bag of *copal* (incense) and wears the kind of headdress C. Millon has associated with high-ranking Teotihuacán diplomats engaged in foreign relations. These eight “ambassadors,” who carried no weapons, may have attended the inauguration of a Zapotec ruler or the dedication of the South Platform; thus “The Hill of 1 Jaguar” may have been the name of one of the hills constituting Monte Albán.

We also have the famous “Lápida de Bazán,” a travertine slab from Mound X at Monte Albán which seems to show the meeting of a Teotihuacán ambassador and a Zapotec lord dressed in a jaguar costume (Fig. 8.19). The two vertical columns of hieroglyphs on this slab constitute a text that is narrative (historical and political) in content. Teotihuacán is referred to twice, by a Teotihuacán-style headdress (Column A, Glyph 6) and a Teotihuacán-style sandal (Column B, Glyph 4). Other glyphs suggest that these two nobles traveled, met, engaged in “flowery speech,” consulted diviners, and burned incense to put their encounter in a sacred context. What we may have here is a record in stone of some kind of diplomatic agreement by which Monte Albán and Teotihuacán maintained their social distance, tribute boundaries, and “special relationship.”

THE BREAKDOWN OF CLASSIC URBANISM

The period A.D. 600 to 900 witnessed dramatic changes in Oaxaca and throughout Mesoamerica in general. For reasons as yet unexplained, the great metropolis of Teotihuacán in the Basin of Mexico began to decline, and by A.D. 700 it had ceased to exist as a major urban center, a collector of tribute, or a focal point of the religious and economic life of central Mexico. Almost as if by chain reaction, other great cities, including Monte Albán, followed. The great Classic mountaintop centers of the Mixteca Alta seem to have hung on longer, and their eventual decline (at A.D. 900 or later) took the form of a functional change rather than an abandonment. The old hilltop localities continued to serve as modest



Figure 8.19. The Lápida de Bazán, a carved stone showing a Teotihuacán visitor (left) meeting with a jaguar-suited Zapotec lord (right). Two columns of text (A and B), each consisting of eight hieroglyphs, flank the human figures (maximum height: 26.5cm).

ritual centers, while the bulk of the population lived on the valley floor nearby.

If the demise of all these great Classic cities had been separated more widely in time, it would be tempting to seek an ad hoc explanation for each collapse in the local environmental or political conditions of its region. But their declines are so close in time that one has to suspect some political chain of events, whatever the local factors may have been.

The collapse of Monte Albán was gradual, making it difficult to date with precision. By A.D. 750 the public buildings in its Main Plaza were

crumbling, many of its occupational terraces had been abandoned, and many members of its élite population had moved away, probably to areas of the valley where they had noble relatives or affines. Even after these members of the élite had left, however, Monte Albán was considered an appropriate place for important Zapotec burials, with at least forty tombs known from the Early Postclassic period (A.D. 750–1000). Some of these tombs contain vessels of Tohil Plumbate pottery from the Maya area, showing that Zapotec nobles still had extensive trade relations. J. Acosta reported a small “enclave” of Early Postclassic occupation on the north slope of Monte Albán proper, where most of the tombs of this period were found.

Blanton has offered two suggestions for the decline of Monte Albán, one related to internal pressures and one to external pressures. While Teotihuacán was in an expansionist mode, the autonomy of the Valley of Oaxaca may have been preserved by keeping Monte Albán large. As that threat declined, other Zapotec centers rose to challenge Monte Albán. The mountaintop center of Jalieza, in the southern valley, became larger than Monte Albán in the Early Postclassic and undoubtedly siphoned off tribute and manpower from the old capital. In turn, after the threat of an expansionist Monte Albán was reduced, many valleys in the Mixteca may have felt there was one less reason to keep their administrative elites on defensible mountaintops.

Monte Albán’s decline paved the way for the rise of still other towns that had formerly been secondary centers in the political hierarchy below the capital. Many of these sites – Zaachila, Mitla, Cuilapan, Macuilxochitl, Teotitlán, Yegüih, and others – had long histories of occupation, and many had been important places before Monte Albán was founded. Most were growing in the centuries before Monte Albán’s collapse and appear to have grown faster after it declined, almost certainly keeping more and more tribute for themselves and sending less and less to the capital. With the decline of Monte Albán, each of these former secondary centers seems to have become the head town of its region, investing in impressive palaces and temples and continuing to flourish – in many cases, long enough to be seen and described by the sixteenth-century Spaniards.

During Monte Albán’s apogee, it had exerted a virtual monopoly on hieroglyphic writing in the Valley of Oaxaca. Other sites (e.g., in the Dainzú–Macuilxochitl–Teotitlán area) had erected stone monuments, but these were mainly pictorial scenes. However, as Monte Albán de-

clined and places such as Cuilapan, Zaachila, Noriega, Xoxocotlán, Lambityeco, and Matatlán came to the fore, a new type of hieroglyphic monument made its appearance. Unlike the large stelae set up in Monte Albán's plaza during the Classic period, these new monuments, called "genealogical registers" by Marcus, were small enough to be placed in the antechambers of royal tombs for future consultation. The most elaborate genealogical registers, such as the one from Zaachila shown in Figure 8.20, depict members of the parental and grandparental generations of a royal bride and groom, or trace royal infants through life-crisis situations. Ancestors' names (taken from the 260-day calendar) are given, as well as what appear to be the names of places. The royal couple is often shown in a marriage scene with the woman kneeling and the man seated facing her, while a supernatural "cloud ancestor" watches from above. These monuments suggest that during this period a major concern of the Zapotec élite was the establishment of the right to rule through carefully kept genealogies and politically arranged marriages.

In the Mixteca Alta, as we have suggested, the decline of Classic urban centers seems to have occurred later than in the Valley of Oaxaca. Spores's work in the Nochixtlán Valley shows that Classic "multiplex" urban centers such as Yucuñudahui, Cerro Jasmín, and La Palmita may have lasted until A.D. 900 or even 1100. They eventually shrank to half their former size, however, with the major loss occurring in the habitational areas; ceremonial activity continued at these sites, though any new architecture was less impressive. The new pattern that emerged was to have the residential areas on undefended valley-floor localities, while the old hilltop centers became small ritual precincts.

Here we see interesting similarities and differences between the Mixtec and Zapotec. No genealogical registers in stone accompanied the decline of Yucuñudahui and the other hilltop centers of the Classic Mixteca. The Postclassic Mixtec were just as interested as the Zapotec in recording

Figure 8.20. A Zapotec "genealogical register" of the period A.D. 600–900. In the upper register, a woman named 3 Water/Serpent and a man named 6 Earthquake are shown in a marriage scene. The lower register shows an elderly couple (Lady 11 Monkey and Lord 6/8 Flower), who are probably near ancestors. In the upper register, a semidivine remote ancestor is shown descending from the "jaws of the sky" with a necklace. A long series of names taken from the 260-day calendar (probably a genealogical sequence) runs down the right side of the monument (maximum height: 60cm).



genealogies, royal marriages, conquests, and so on; however, instead of carving them in stone, they painted them on a series of codices – screenfold manuscripts of deer hide that had been given a sizing of lime. Interestingly enough, both the Mixtec codices and the most complex Zapotec genealogical registers were designed to be read in the zigzag style the Greeks called *boustrophedon* (“as the ox plows”), suggesting a shared conceptual relationship far back in time.

THE POSTCLASSIC AND HISTORIC ZAPOTEC AND MIXTEC

The period from A.D. 1000 to 1530 in Oaxaca was one of balkanization. No single city emerged to serve as a “capital” for the Zapotec or Mixtec. Most regions were divided into numerous small polities that were hostile to one another, and archaeological evidence for fortification is widespread. We know more about the politics of this period than any other because the Spaniards who conquered the area collected ethnic histories and left us eyewitness accounts. We also have pictorial manuscripts or codices written by the Indians themselves, some of which miraculously survived the Spanish friars who considered them “devil words.”

Ethnohistoric sources describe frequent battles between rulers, interrupted by ephemeral truces brought about through royal marriages or military alliance. Mixtec nobles warred among themselves, but united with the Zapotec to resist Aztec expansion into the Oaxaca region. Zapotec and Mixtec military officers were nobles, entitled to wear quilted cotton armor into battle; their footsoldiers were often dressed only in loincloths. Fighting was with bows and arrows, slings, the *atlatl* or dart-thrower, wooden broadswords edged with obsidian blades, clubs, spears, and hide-covered cane or wooden shields. Captives were often brought back nude, led by a bowstring tied around their neck or genitals to prevent escape.

Almost certainly, one of the underlying preconditions for the events of the Late Postclassic was enormous population growth in the Mixteca Alta, a mountainous region where agricultural land is at a premium. Spores’s settlement survey in the Yanhuitlán-Nochixtlán Valley illustrates this growth (Fig. 8.21). A total of 159 sites in the survey area were occupied between A.D. 1000 and 1520, some 113 of them intensively; demographic data taken from Spanish documents provide an estimate of 50,000 people in A.D. 1530.

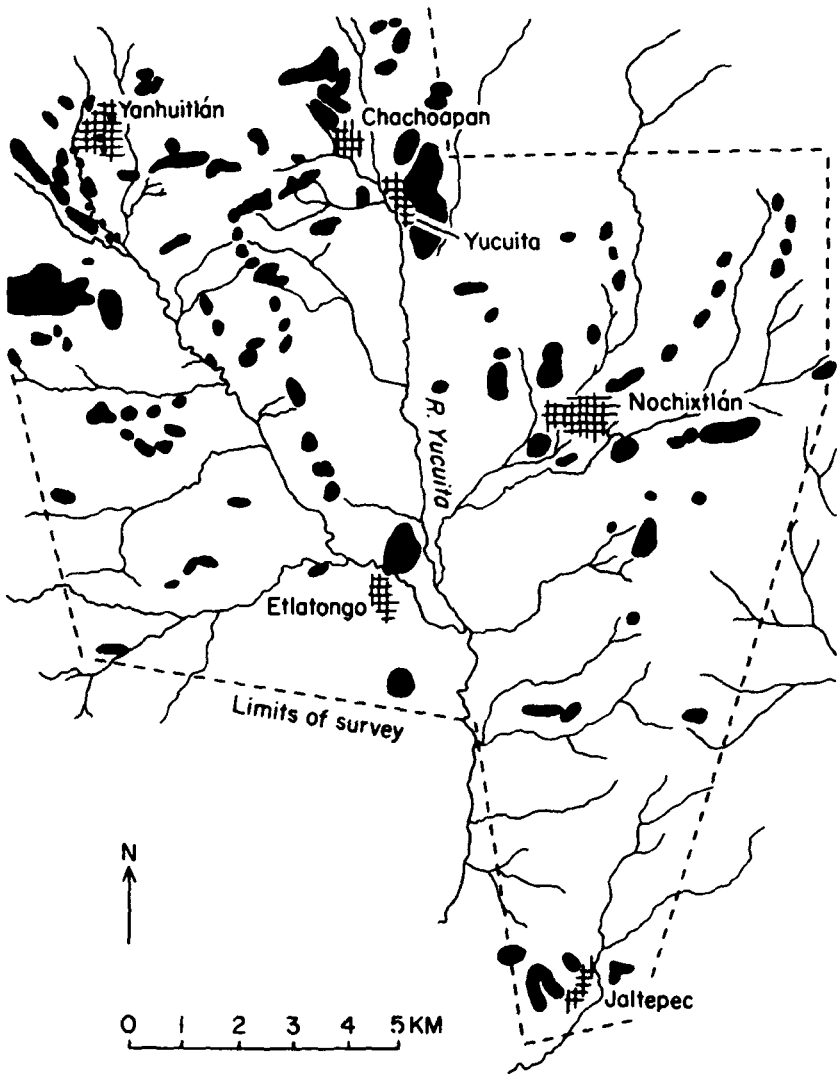


Figure 8.21. Postclassic settlements (shown as black areas) in the Yanhuitlán–Nochixtlán Valley of the Mixteca Alta (survey by R. Spores).

In a valley with only 250 square kilometers of flat land, such population pressure was partially counteracted with an ingenious system of cultivation called *lama* and *bordo*. Vast areas of hills and slopes were cleared of forest, hastening erosion. As gullies began to cut through the caliche of the upper valley, they exposed the red earth of the Tertiary Yanhuitlán Beds. Calcareous, more fertile, and more moisture-retentive than the volcanic soils of the lower valley, these soils washed downslope and began to convert V-shaped ravines to U-shaped valleys. By constructing stone and rubble dikes 1–4 meters high in these valleys, Mixtec farmers learned how to trap enough good soil (*lama*) in artificial terraces (*bordos*) to create a new niche for intensive maize agriculture. Ultimately, Yanhuitlán became the richest kingdom in the Mixteca Alta.

Yanhuitlán was but one example of the kind of political unit the Spaniards called a *cacicazgo*, using the borrowed Carib word *cacique*, or “hereditary lord.” At the head of each *cacicazgo* was a ruler known as *yaa tnuhu* in Mixtec; below him were a series of nobles (*tay toho*) who, because of their decreasing proximity to the main line of descent, were of lesser rank. Below this class-endogamous upper stratum of Mixtec society came a lower stratum of commoners (*tay yucu*, “hill people”), servants, and slaves. Among the commoners were people called *tay situndayu*, landless farmers who worked the fields of the ruler and went wherever he told them to go.

Not all parts of the Mixteca had the agricultural potential of Yanhuitlán. Some Mixtec rulers evidently coveted the alluvial Valley of Oaxaca – especially the western valley, which surveys show to have been less densely populated in the Late Postclassic. Blanton has suggested that a real or perceived labor shortage may have prompted some Zapotec elite to marry into elite Mixtec families as a way of bringing agricultural laborers into the valley. Ethnohistoric documents mention one thirteenth-century marriage that brought a Mixtec princess and her retinue from land-poor Almoloyas to marry a Zapotec prince from Zaachila in the western Valley of Oaxaca. According to another account, Mixtec immigrants founded Sa’a Yucu, a large foreign enclave near the base of Monte Albán, which may be site C-V-132 of Kowalewski’s survey (Fig. 8.22). Whatever the reasons, there were both Mixtecs and Zapotecs in the Valley of Oaxaca when the Spaniards arrived; surveys reveal a staggering 2455 Late Postclassic sites there, more than twice the number known for the Early Classic.

A. Caso, I. Bernal, and J. Paddock believed that the Mixtecs were

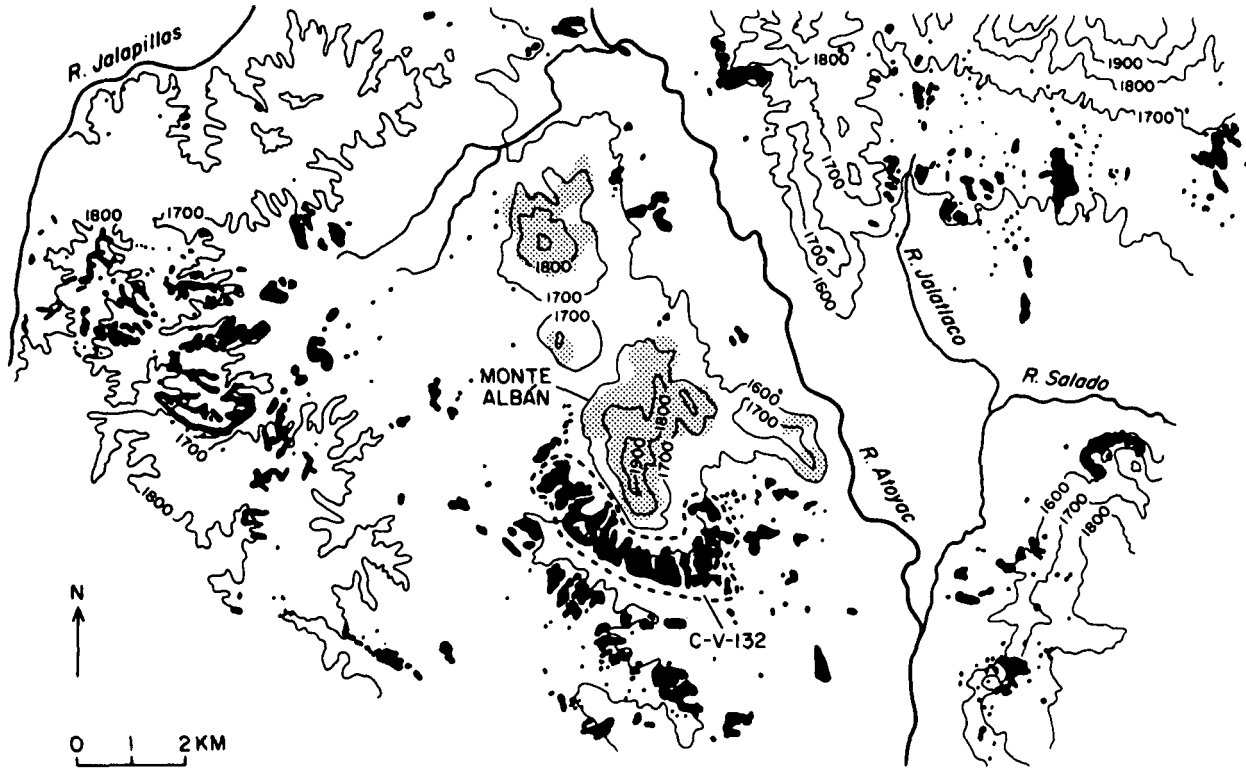


Figure 8.22. Postclassic settlements (shown as black areas) in the central Valley of Oaxaca. The site marked C-V-132 may be the remains of Sa'a Yucu, a Mixtec colony on the south slope of Monte Albán (survey by S. Kowalewski).

responsible for a whole set of new pottery and artifact types which appear in the Oaxaca Valley in the Late Postclassic. One of the first of these was Yanhuitlán Red-on-cream ware, which may appear in the Valley of Oaxaca as early as A.D. 1000–1100. By A.D. 1400, polychrome pottery in the so-called Mixteca–Puebla style (Fig. 8.23) was present in both Zapotec and Mixtec elite residences. Important tombs of the Late Postclassic may include objects of gold, as well as small jadeite figures (Fig. 8.24) that ethnohistoric sources say were sometimes tied to the deceased's hair. In spite of these possible Mixtec influences, however, much of the gray pottery of the Valley of Oaxaca shows continuity from earlier Zapotec wares.

One of the most expansionist Mixtec rulers of this period was the lord 8 Deer “Tiger Claw,” whose exploits are recorded in several pictorial manuscripts, including the codices Nuttall, Bodley, Colombino, and Selden (Fig. 8.25). During the eleventh century A.D., 8 Deer conquered



Figure 8.23. A Postclassic polychrome dish with eagle effigy supports, painted in Mixteca–Puebla style.



Figure 8.24. Small figurine of jadeite (or similar green metamorphic stone), which often accompanied Postclassic Oaxaca burials.

an estimated 75–100 places in Oaxaca, and seems briefly to have created a large regional state extending from Tututepec on the Pacific Coast to Tilantongo in the Mixteca Alta. This state broke down when his rivals captured and sacrificed him at the age of fifty-two, and no subsequent Mixtec ruler was able to unify so large an area.

Like the Mixtec, the Zapotec had a class-endogamous upper stratum including the *coqui*, or hereditary lord, and a series of lesser nobles called *xoana*. An unusually powerful ruler might be called by the augmentative *coquitáo*, “great king.” At the time of the Spanish Conquest the greatest Zapotec kings were probably those of the dynasty ruling Zaachila in the western Valley of Oaxaca. While Zaachila was considered the political



Figure 8.25. A scene from the Codex Bodley, a Postclassic Mixtec screenfold or “painted book.” On the left we see the ruler 8 Deer seated on a jaguar hide throne, while a priest pierces the septum of his nose with a bone awl to insert a nose ornament designating him an *yya* (“great lord”). The deer head and string of 8 dots at upper left give 8 Deer’s calendric name.

capital, the religious capital was Mitla, today a well-preserved ruin in the eastern valley. At Mitla, the *uija-táo* or high priest of the Zapotec (described by the Spaniards as “like our pope”) lived in the “Hall of the Columns” (Fig. 8.26). Clearly an evolution out of the earlier two-room temple, this building consisted of a colonnaded public hall attached, by means of a private corridor, to a priest’s residence with an interior patio and a series of rooms decorated with stone mosaics.

Like many Late Postclassic places in the eastern valley of Oaxaca – including Yagul and Corral de Piedra – Mitla had a fortified hill nearby to which the population could retreat in times of war (Fig. 8.27). In A.D. 1486, the Aztec ruler Ahuizotl acceded to the throne and began a series of military campaigns against places in southern Mexico; above all, he wanted a pacified route through Oaxaca to the Isthmus of Tehuantepec and Guatemala. The Zapotec king Zaachila III is said to have allied himself with a Mixtec lord (from either Tilantongo or Achiutla) to defend the northern entrance to the Valley of Oaxaca. The resulting “Battle of Huitzo” was a typical Zapotec diplomatic coup, in which the Mixtec did most of the fighting while Zaachila III made a secret deal to allow the Aztec to establish a “peaceful” garrison in the valley.

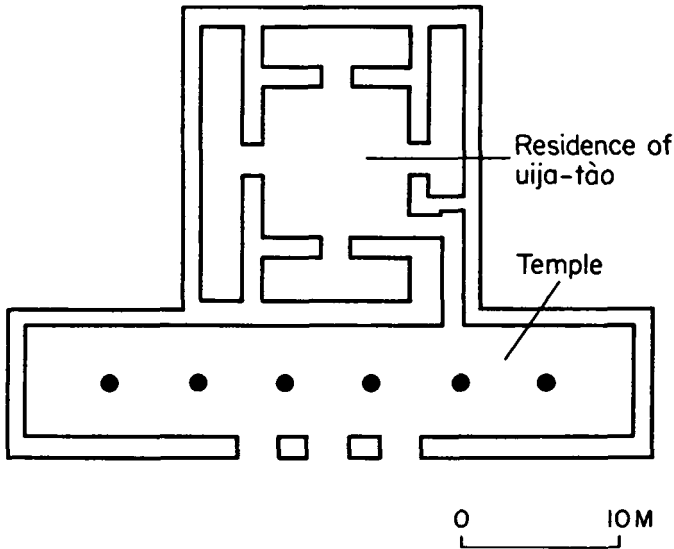


Figure 8.26. The Hall of Columns at Mitla, a monumental Postclassic structure that combines an outer, colonnaded temple with an inner residence for the Zapotec high priest or *uija-tào*.

Around A.D. 1495 the Zapotec ruler Cociyoeza, son of Zaachila III, formed a new alliance with the Mixtec ruler of Achiutla. At this time, the armies of Ahuitzotl were in the Isthmus of Tehuantepec, and Cociyoeza reasoned that they could not resist a joint Zapotec–Mixtec offensive. The Zapotec chose to use the fortress of Guiengola, a rugged, hot, tropically forested mountain, as their base of operations; the Mixtec defended the opposite bank of the Tehuantepec River. Far from home and exhausted by the heat of the Isthmus, the beleaguered Aztec decided to try to starve the Zapotec out.

While the Mixtec waged a war of attrition on their enemies from the Basin of Mexico, the Zapotec, under cover of darkness, captured unwary Aztec guards and carried them to the top of the mountain. There they were “butchered like deer,” their flesh dried and salted as future provisions, and their skulls shown to a captured Aztec officer who was released to tell of the horrifying scene. Finally, after months of military stalemate in the tropical heat, Aztec ambassadors were sent to arrange a truce with the Zapotec. One outcome of this truce was an arranged marriage be-



Figure 8.27. The rocky fortress of Mitla, one of many Postclassic hilltop redoubts in the eastern Valley of Oaxaca, rises above the lower piedmont like a Zapotec version of Masada.

tween Cociyoeza and the Aztec princess Coyolicatzin, daughter of Ahuitzotl. The offspring of that Aztec–Zapotec marriage, a prince named Cociyopii, lived to be baptized by the conquering Spaniards.

MIXTEC AND ZAPOTEC AT THE SPANISH CONQUEST

The Spaniards entered Oaxaca in the 1520s and 1530s with Aztec interpreters. They found one highly stratified society occupying the Isthmus of Tehuantepec, the Valley of Oaxaca, and the sierra to the north of the valley; those people referred to themselves as *peni zaa*, “people of the clouds,” but the Aztec called them Zapotecatl. Another highly stratified society bordered the Zapotec on the west; those people referred to themselves as *ñusabi* or *ñuu dzavui*, “people of the rain (deity),” but the Aztec called them Mixtecatl. These terms became Zapoteco and Mixteco to the Spaniards.

In 1520, despite their shared ancestry, the Mixtec and Zapotec spoke mutually unintelligible languages. Both, however, viewed the universe as

divided into four great quarters, and regarded lightning as a major supernatural force. The Mixtec, perhaps influenced by their Toltec and Aztec neighbors to the north, wrote the number 5 with five dots, and shared some calendric signs with the Basin of Mexico. The Zapotec, whose trade relations had brought them Plumbate and Fine Orange pottery from the Maya area, had always written the number 5 with a bar, like their neighbors to the south. The Zapotec were considered great architects and diplomats, the Mixtec great warriors and jewelers. The Mixtec were so highly stratified that they had a different vocabulary for the body parts of nobles and commoners; in contrast, Zapotec noblewomen were said to be “still willing to grind their own corn.” The Zapotec had recorded their royal genealogies in stone, the Mixtec in painted books. Both societies had bilateral kinship systems of the type anthropologists call “Hawaiian,” but the Mixtecs distinguished first cousins from siblings, whereas the Zapotec did not. Each group made its contributions to the whole we call Mesoamerica. The Zapotec may have been the first to use hieroglyphic writing, stone masonry, and stucco, while the Mixtec may have created the styles of polychrome painting and goldworking that dominated Postclassic Mexican art.

Today there are more than 300,000 speakers of Zapoteco and more than 200,000 speakers of Mixteco living in Mexico. Thus we can happily report that the descendants of these two remarkable civilizations are still among us.

BIBLIOGRAPHICAL ESSAY

A comprehensive list of works on Oaxaca archaeology and ethnohistory from 1514 to 1960 can be found in Ignacio Bernal's *Bibliografía de arqueología y etnografía de Mesoamérica y norte de México, 1514–1960* (Mexico, 1962). A considerable amount of work was carried out in Oaxaca between 1966 and 1983, and much of it can be found in the bibliography of *The Cloud People: Divergent Evolution of the Zapotec and Mixtec Civilizations*, ed. Kent V. Flannery and Joyce Marcus (New York, 1983). Further bibliographic references can be found in chapters by Alfonso Caso, Ignacio Bernal, Jorge R. Acosta, and Ronald Spores in the *Handbook of Middle American Indians*, Vol. III, Part 2, ed. Robert Wauchope and Gordon R. Willey (Austin, TX, 1965) and in *Zapotec Civilization: How Urban Society Evolved in Mexico's Oaxaca Valley*, by Joyce Marcus and Kent V. Flannery (London and New York, 1996).

The great pioneer of Oaxaca prehistory was Alfonso Caso, a Mexican archaeologist, ethnohistorian, and epigrapher whose numerous early works on both Zapotecs and Mixtecs from 1928 to 1960 are listed in Bernal's *Bibliografía*. Caso and associates excavated for eighteen seasons at Monte Albán in the Valley of Oaxaca. Caso also excavated Monte Negro in the Mixteca, published the first description of Zapotec hieroglyphic writing, and did innovative work on the Mixtec codices. He produced students such as Ignacio Bernal (archaeology) and Mary Elizabeth Smith (Mixtec codices). Bernal went on to excavate in the Valley of Oaxaca (Dainzú, Yagul, Mitla, Cuilapan) and the Mixteca (Coixtlahuaca) and to produce students such as John Paddock (archaeology, ethnohistory). In turn, ethnohistorians such as Ronald Spores (Mixtecs) and Joseph Whitecotton (Zapotecs), and archaeologists such as Donald Brockington, Kent Flannery, Stephen Kowalewski, and James Neely (Zapotecs) studied with Paddock. Charles Spencer and Richard Blanton (Zapotecs) studied with Flannery, and Gary Feinman (Zapotecs) studied with Blanton. Settlement patterns in the Valley of Oaxaca have now been published in a three-volume series, *Monte Albán's Hinterland, Part I*, by Richard E. Blanton, Stephen A. Kowalewski, Gary M. Feinman, and Jill Appel (Ann Arbor, MI, 1982), and *Monte Albán's Hinterland, Part II* (2 vols.), by S. A. Kowalewski, G. M. Feinman, Laura Finsten, R. E. Blanton, and Linda M. Nicholas (Ann Arbor, MI, 1989). Settlement patterns at the city of Monte Albán can be found in Richard E. Blanton's *Monte Albán: Settlement Patterns at the Ancient Zapotec Capital* (New York, 1978). Settlement patterns in the Yanhuitlán–Nochixtlán Valley of the Mixteca Alta can be found in Ronald Spores's *An Archaeological Settlement Survey of the Nochixtlán Valley, Oaxaca* (Nashville, 1972). Settlement patterns on the Río Verde Coast of Oaxaca have been reported by Donald L. Brockington, Maria Jorrín, and J. Robert Long in *The Oaxaca Coast Project Reports: Part I* (Nashville, 1974) and by D. L. Brockington and J. Robert Long in *The Oaxaca Coast Project Reports: Part II* (Nashville, 1974). The Miahuatlán Valley of the Zapotec region has been surveyed by Donald Brockington (*Archaeological Investigations of Miahuatlán, Oaxaca* [Nashville, 1973]) and Charles W. Markman (*Prehispanic Settlement Dynamics in Central Oaxaca, Mexico: A View from the Miahuatlán Valley* [Nashville, 1981]). The Valley of Tamazulapan (Mixtec) has been surveyed by Bruce Byland, and the Valley of Ejutla by Gary M. Feinman and Linda Nicholas ("The Prehispanic Settlement History of the Ejutla Valley, Mexico: A Preliminary Perspective," *Mexicon* 10: 5–13

[1988]; "At the Margins of the Monte Albán State: Settlement Patterns in the Ejutla Valley, Oaxaca, Mexico," *Latin American Antiquity* 1: 216–46 [1990]); full publications of both surveys are in preparation at this writing.

The results of excavations in the Mixtec region by Ronald Spores are reported fully in his *Stratigraphic Excavations in the Nochixtlán Valley, Oaxaca* (Nashville, 1974) and summarized in Spores's chapters in *The Cloud People*. Other excavations in the Mixteca include Michael Lind's *Postclassic and Early Colonial Mixtec Houses in the Nochixtlán Valley, Oaxaca, Mexico* (Nashville, 1979), and Margarita Gaxiola's *Excavaciones en San Martín Huamelulpan, Oaxaca, 1974* (Mexico, 1976). The results of excavations in the Valley of Oaxaca by Kent Flannery, Joyce Marcus, Robert D. Drennan, Michael E. Whalen, and John Paddock are summarized in *The Cloud People*. The bibliography in this latter volume will direct the reader to monograph-length treatments of many of the sites involved, such as Drennan's *Fábrica San José and Middle Formative Society in the Valley of Oaxaca* (Ann Arbor, MI, 1976), and Whalen's *Excavations at Santo Domingo Tomaltepec* (Ann Arbor, MI, 1981). Survey and excavation in the nearby Cuicatlán area are reported in Charles S. Spencer's *The Cuicatlán Cañada and Monte Albán: A Study of Primary State Formation* (New York, 1982); Elsa M. Redmond's *A Fuego y Sangre: Early Zapotec Imperialism in the Cuicatlán Cañada, Oaxaca* (Ann Arbor, MI, 1983); and Joseph W. Hopkins's *Irrigation and the Cuicatec Ecosystem* (Ann Arbor, MI, 1984). Survey and excavation in the Tehuantepec region have been reported by Judith F. Zeitlin ("Changing Patterns of Resource Exploitation, Settlement Distribution, and Demography on the Southern Isthmus of Tehuantepec, Mexico," in *Prehistoric Coastal Adaptations*, ed. Barbara L. Stark and Barbara Voorhies [New York, 1978]), and Robert N. Zeitlin ("Long-Distance Exchange and the Growth of a Regional Center: An example from the Southern Isthmus of Tehuantepec, Mexico," in *Prehistoric Coastal Adaptations*, ed. B. L. Stark and B. Voorhies [New York, 1978]).

Recent work on the Mixtec codices can be found in the bibliographies of Mary Elizabeth Smith (*Picture Writing from Ancient Southern Mexico: Mixtec Place Signs and Maps* [Norman, OK, 1973]); Jill L. Furst (*Codex Vindobonensis Mexicanus I: A Commentary* [Albany, NY, 1978]); Maarten Jansen (*Huisi Tacu* [Amsterdam, 1983]); Nancy Troike ("Fundamental Changes in the Interpretations of the Mixtec Codices," *American Antiquity* 43: 553–68 [1978]); and in a volume edited by Joyce Marcus and

Judith F. Zeitlin (*The Caciques and Their People: Essays in Honor of Ronald Spores* [Ann Arbor, MI, 1994]). Recent work on Zapotec hieroglyphs and iconography, building on Caso's pioneering *Las estelas zapotecas* (Mexico, 1928), can be found in a series of papers by Joyce Marcus in *The Cloud People* and in her *Mesoamerican Writing Systems: Propaganda, Myth, and History in Four Ancient Civilizations* (Princeton, NJ, 1992).

Ethnohistoric works on the Mixtec include Ronald Spores's *The Mixtec Kings and Their People* (Norman, OK, 1967) and *The Mixtecs in Ancient and Colonial Times* (Norman, OK, 1984), and Barbro Dahlgren de Jordán's *La mixteca: su cultura e historia prehispánicas* (Mexico, 1954). For the Zapotec we have Joseph Whitecotton's *The Zapotecs: Princes, Priests, and Peasants* (Norman, OK, 1977) and John K. Chance's *Conquest of the Sierra: Spaniards and Indians in Colonial Oaxaca* (Norman, OK, 1989). In addition, many of the sixteenth- and seventeenth-century sources used by Oaxacan ethnohistorians can be found in Bernal's *Bibliografía*; in Ronald Spores and Miguel Saldaña's *Documentos para la etnohistoria del Estado de Oaxaca: Índice del Ramo de Indios del Archivo General de la Nación, Mexico* (Nashville, 1973); in John Chance's *Índice del Archivo del Juzgado de Villa Alta, Oaxaca* (Nashville, 1978); and in María de los Angeles Romero and Ronald Spores's *Índice del Archivo del Juzgado de Teposcolula, Oaxaca* (Oaxaca, Mexico, 1976).

THE SOUTHEAST FRONTIERS OF MESOAMERICA

PAYSON D. SHEETS

INTRODUCTION

Although the scholarly investigations of Classic Maya civilization in the lowlands of Guatemala and Yucatan began more than a century ago, similar work in the southeastern Mesoamerican frontier of El Salvador and Honduras began only three or four decades ago. The serious investigation of the social dynamics of intersocietal contact in prehistory began in the past two decades. Although data are not ample for El Salvador and Honduras, they are sufficient to consider the countries as a frontier in prehistory, and explore how that frontier changed. Many theoretical models have been employed, including diffusion, acculturation, conquest, religion, trade, emulation, interaction spheres, frontiers and boundaries, dependency theory, and world system approaches among others.

The frontier model is emphasized in this chapter. Although it is in common usage, I try to avoid the term *periphery* because of its pejorative connotations. Viewing the area as peripheral to Mesoamerica or the Maya tends to discount autochthonous achievements. Scholars in southeastern Mesoamerica are beginning to separate indigenous traditions in architecture, artifacts, settlement patterns, and society from the effects of external groups. The use of the plural in the title is deliberate, as

This text was written in 1989 and 1990 and reflects knowledge at that time. What was thought to have been a codex at Ceren turns out to have been a collapsed polychrome painted gourd.

The assistance of Richard E. W. Adams is gratefully acknowledged. Brian McKee was helpful in critiquing two earlier drafts of this chapter; his sharp editorial eye and pen have improved a number of sections. The permission of E. Wyllys Andrews to use his artist's reconstruction of central Quelepa (Fig. 9.2) is appreciated.

there are different kinds of frontiers (e.g., political, economic, ethnic, and religious), and frontiers change their location and nature through time.

A boundary or border is a line, while a frontier is a zone. A boundary such as the U.S.–Canadian boundary, may be static for long periods of time. A frontier usually is more dynamic, with internal ethnic or adaptive differentiation, and assumes contact of at least two different societies. That contact could occur when a more complex society expands into the territory of a less complex one, such as the western U.S. frontier in the nineteenth century, or it could be the contact between religious groups, as in the frontier between Christians and Moslems in the Near East. This frontier contrasts with the religious boundary that was the “Green Line” in Beirut. Likewise, it can be an economic frontier where a more centralized economy expands to exploit a resource in the territory of a decentralized economy, as illustrated by Brazilians exploiting Amazonian resources in the territories of native peoples. Occasionally, less complex societies expand into the territories of more complex societies, as with the Visigoths into Rome or the Mongols into China.

A frontier at a single time should not be assumed to be a uniform diminution zone, but often has pockets or enclaves of the expanding society and of the autochthonous society within the frontier. Frontier interaction can facilitate social differentiation, as emerging elites exploit resources or labor and distance themselves from other social components. The social, political, religious, and economic dynamics including diversity, competition, and differential acculturation are what make frontier studies so challenging and rewarding.

The southeastern boundary of Mesoamerica is generally defined as a north-south line following the Uluá and Lempa Rivers (Map. 9.1), or somewhat to the east of that line along the Uluá–Comayagua–Choluteca rivers. Numerous scholars have emphasized various characteristics to define Mesoamerica, and Willey (1966:85–87) provides a good example. Mesoamerican cultures were complex societies, with 260- and 365-day calendars, hieroglyphic writing, barkbeaters and bark paper, *incensarios* (incense burners), maize-based subsistence, monumental construction

Map 9.1. Map of southeastern Mesoamerica and northwestern Intermediate Area, currently the countries of Guatemala, El Salvador, and Honduras.



Map 9.1

and sculpture, ballcourts, and other elements of stratified societies. In contrast, Willey (1971:277–78) characterized the Intermediate Area (lower Central America and the northwestern corner of South America, ending where more complex Andean cultures began) as emphasizing manioc and maize for subsistence, and having simpler societies, smaller polities, ceramic traditions affiliated with South America, metallurgy, a shared stone-carving tradition, and fewer integrative characteristics that united the culture area than in Mesoamerica.

THEORETICAL MODELS: FRONTIERS AND OTHER APPROACHES

A large number of models, or interpretive frameworks, have been used by scholars to try to understand cultural dynamics in this zone of contact between Mesoamerican and Intermediate Area peoples. Some have used no model whatsoever, as they merely described sites and artifacts. Others have emphasized economics, as trade and acculturation have affected settlements. Interpretations emphasizing frontiers, and core, and buffer zones, have been common in the past couple decades. Interaction spheres and the “world system” approaches have begun to be applied recently.

Because of a lack of comparative data or disinterest in theory, many early scholars working in the southeastern Mesoamerican frontier maximized description and minimized interpretation. Often implicit in studies was a simple diffusionism based on the flawed age-area hypothesis, which held that a nuclear area was the center of innovation, and traits radiate from it. More widespread traits had a more ancient origin, but they are more recent at greater distances from their sources (Kroeber 1948). Because the southeastern frontier inhabitants were passive recipients of innovations made at a distance, they were behind in cultural development, and often an implicit pejorative crept into interpretations. Frontier societies were characterized as belated, marginal, poor cousins, or simply slow to progress.

Turner (1932) defined the frontier of the American West as a dynamic society expanding into an undeveloped and underpopulated territory. By analogy, the southeastern Mesoamerican frontier was the territory into which Mesoamerican societies were expanding. Lange (1976) characterizes lower Central America as the culture area between the Mesoamerican and Andean frontiers, an intriguing approach to frontier studies where the area is delimited by two frontiers.

Only vast oversimplification could reduce the centuries of societal interactions between Mesoamerica and the Intermediate Area into a single line on a map, even at a particular time, because of different kinds of boundaries and frontiers and the complexity of societal interaction. As Lothrop (1926:413) stated, "We thus find it impossible to draw on the map a line which can be said definitely to mark the boundary between north and south [Mesoamerica and the Intermediate Area]. . . . In short, a culture frontier is not like a political frontier which can be definitely demarcated, but rather like the running together of two colors which blend to variegated hues along the line of contact." Lange (1986) innovatively viewed both the northern and southern frontiers of Mesoamerica in terms of cultural processes and variable interactions. He also suggested distinguishing contact from impact, thus clarifying prehistoric interaction. In Costa Rica the known artifacts of Mesoamerican derivation, consisting of a few dozen jade artifacts, slate mirrorbacks, and other artifacts, could have been brought in the carrying bag of a single person. That hieroglyphic passages and specific deities were cut into smaller forms indicates local peoples were viewing these items more as raw materials for their own uses rather than understanding and using them in Mesoamerican ways. Hence, using Lange's terms, the Mesoamerican–Costa Rican contacts were minimal and the impacts were even less – and Costa Rica effectively was beyond the Mesoamerican frontier.

The core and buffer zone approach identifies a center of development and the buffer area beyond. At worst, this can define the buffer zone as the inferior area where the core characteristics are lacking. Thus, the buffer zone's characteristics and achievements are generally overlooked.

Caldwell (1964) proposed the interaction sphere concept to explain the Hopewell spread of nonutilitarian objects over a wide geographic area including many different cultures. Abel-Vidor (1981) applied the concept to Mesoamerican–Greater Nicoya interaction. Greater Nicoya includes the Pacific side of Nicaragua and the province of Guanacaste (northwestern Costa Rica). Although the various societies, in this case in Greater Nicoya, may differ in language, culture, and many other aspects, they can share a package of nonutilitarian material goods and symbols. The interaction sphere concept is useful as a first step toward understanding shared goods and symbols, but the analyst must immediately ask why the artifacts were so distributed. Was it because of elite interaction over a widespread trading network? Was it because the emerging elite needed physical expression of their increasing centralization by distant goods and

powerful symbols? Was it a religious spread or merely decorative use of religious symbols in distant societies? Was it a conquest and imposition of foreign artifacts? Was new complex technology involved, such as gold lost-wax casting? Answering questions like these move research from descriptive to interpretive and explanatory levels.

Two societies in frequent or sustained contact often grow to resemble each other, and the process, called *acculturation*, is often asymmetrical. Particularly where one society is more powerful and affluent, the smaller society often changes to resemble the larger. However, as the more complex society declines and retracts, indigenous societies often reassert themselves. As complex Mesoamerican societies were in contact with less complex Intermediate Area societies, the chiefly or élite sectors of the simpler societies often adopted the symbols and accoutrements of the Mesoamerican elites. Over time, this could be seen as a kind of “creeping élitism” as emulation spread the symbols of power and wealth. The study of élite emergence, perpetuation, decline, and elite interaction deserves careful attention. Sometimes it is difficult to identify the material evidence for chiefly or élite status in a prehistoric society, yet in other instances it is very obvious, such as in the Barriles Chiefdom in western Panama (Linares, Sheets, and Rosenthal 1975). Both context and frequency of élite goods must be assessed carefully; undoubtedly jade figurines functioned as élite identifiers in the Olmec heartland, but as isolated items far from their origin they could have functioned as curiosities, as raw material for carving localized items (e.g., Costa Rica), or possibly as nascent élite identifiers. When a consistent “package” of specialized items co-occur, a case can be made for an elite in the southeastern Mesoamerican frontier; these can include large pyramids, palaces, economic centralization and control over partially to fully specialized occupations, technologically demanding crafts, and monumental sculpture.

Acculturation during culture contact certainly is not universal, as there are many cases of deliberate resistance to acculturation, and cases where societies will deliberately deintensify or migrate to avoid the pressures of intruding complex societies. Some societies in the Intermediate Area avoided “creeping élitism” as they maintained economic self-sufficiency and an exceptional stability over millennia; the Arenal area is an example (Sheets 1984, n.d.).

Acculturation often accompanies trade, and Renfrew’s modes of trade (1975) differ in their opportunities for acculturation. Acculturative approaches offer the opportunity to study political, social, economic, and

religious components of culture within a regional perspective. Acculturation and frontier studies can be used as complementary approaches; both can be used as dynamic processual approaches that do not assume equivalence of societies in contact.

Economic models pervade recent interpretations of Middle American prehistory. Some scholars adopt classical and neoclassical economic approaches, and assume that the profit motive, rational choice, and accumulation of wealth characterized prehistory. This approach, often called formalist, argues that people make informed, rational decisions on allocating labor, materials, land, and food, particularly when there is perceived scarcity. However, ethnographers have documented exchanges embedded within social networks, kin obligations, or rituals. The substantivist approach argues that economic behavior cannot be removed from the functioning society with its matrix of social, political, and religious institutions.

Wallerstein (1976) developed the “world system” model in which an exploiting core produces finished goods and an exploited periphery provides labor, basic commodities, and raw materials. The core is the center of power and wealth, and has the most complex social system and a concentration of occupational specialists. The interaction of core and periphery is the world system. The Olmec obtained obsidian from the southeastern Mesoamerican frontier and processed it into finished implements during the Formative, as did the Maya during the Classic period, fitting the world system model well. Perishable items such as cacao, feathers, cotton, and salt may have been obtained in the periphery and shipped to the core, but data are scarce.

PROCESSUAL AND CULTURE HISTORICAL RECONSTRUCTION BY PERIOD

The frontiers of Mesoamerica become much clearer in the later prehistoric periods, for a number of reasons. As a culture area, Mesoamerica did not exist during the Paleoindian and Archaic periods, as defined by Willey’s characteristics or by any of the other standard definitions. Mesoamerica began to emerge toward the end of the Archaic, as the egalitarian hunting-gathering and horticultural societies changed into sedentary and more complex societies. With the growth of population, intensification of subsistence systems, and the emergence of centralized political, economic, and religious authority during the Formative and later periods

we can better define the zone of Mesoamerican frontier interaction with less complex nearby societies. Understanding of later periods is better, owing to better site preservation, and during the sixteenth century we have the advantage of ethnohistoric documentation of native peoples.

Paleoindian Period

There is very little evidence of human occupation of what is now El Salvador and Honduras during this period. A few fragments of fluted points, perhaps Clovis-style, are included in private collections in El Salvador, but they are without provenance (Sheets 1984). Healy (1984) notes the lack of Paleoindian artifacts and sites from Honduras. However, Bullen and Plowden (1963:384) reported two bifacially flaked points with fluted bases from the La Esperanza obsidian source and workshops in Honduras (Fig. 9.1); they almost certainly date to the Paleoindian Period. The lack of documented Paleoindian sites in the area is probably due to research methods and lack of visibility of these types of sites. Most research has been directed toward large architectural sites of the Formative and later periods, and site visibility is obscured by vegetation, volcanic ash overburden, and alluviation. Numerous Paleoindian sites are known within a few hundred kilometers to the northwest and southeast of this zone, and certainly Paleoindians must have inhabited this zone.

The Archaic Period

Unfortunately, the paucity of data noted for the Paleoindian period continues for El Salvador and Honduras during the Archaic period (Sheets 1984, Healy 1984), for the same reasons. Some of the artifacts recovered by Bullen and Plowden (1963) at the La Esperanza obsidian outcrops and workshops may date to the Archaic. Healy (1984) thinks that the deeply buried artifacts excavated by Longyear (1948) at Copan could be Archaic. The artifacts are about one hundred “flint” flakes and about seventy obsidian chips along with charcoal and animal bone. Similarly, some of the large, thin obsidian bifacially flaked implements in private collections in El Salvador could date to this period, but there is no concrete evidence. The lack of data makes accurate chronological assessments difficult. In the absence of other data, Henderson’s (1981:101) date of 2500 B.C. is used as the Archaic–Formative boundary.



Figure 9.1. Excavations at the base of the main Middle Formative pyramid (E-3-1) in the Trapiche area of Chalchuapa, El Salvador. The pyramid probably dates to about 1000 B.C., and is conical in shape. The Cara Sucia – style carved stone mask visible in the middle ground is buried by the volcanic ash from the Ilopango eruption, visible as the whitish horizontal level.

The Formative (Preclassic) Period (2500 B.C.–A.D. 250)

The period can be subdivided into three units: Early (2500–1000 B.C.), Middle (1000–500 B.C.) and Late (500 B.C.–A.D. 250) following Henderson (1981). Although no securely dated sites are known for this area at the beginning of the period, the work of Demarest and Amaroli (Henderson 1989:865) may document the earliest sedentary societies in the two countries, in the extreme western corner of El Salvador, by about the middle of the second millennium B.C. Henderson (1989:865) reports Ocos-related ceramics with four radiocarbon dates averaged to 1590 \pm 150 B.C., from deep inside a structure. Marcus (1989) speculates that the Pacific coastal zone from Chiapas through Guatemala and into El Salva-

dor may have witnessed development of complex society coeval with, or prior to, the Olmec.

By about the middle of the Formative period, along much of the western portion of El Salvador and Honduras, scholars note the appearance of Olmec characteristics in pottery, figurines, and other artifacts. Unfortunately, it is all too easy to describe a few artifacts from a given site that have “Olmec” stylistic or formal characteristics and assume that there was significant contact with the Olmec core area on Mexico’s Gulf Coast. Both the degree and nature of interaction must be carefully assessed, and the reasons for contact explored, but thorough research of that sort is rare. All too often the few “Olmec” artifacts are given prominence and the predominant assemblages reflecting the autochthonous tradition are largely ignored. A similar and equally unfortunate tendency is that archaeologists overemphasize Maya characteristics relative to indigenous developments in the late Formative and throughout the Classic period. Another unfortunate bias is that the predominance of archaeologists working in the zone are Mesoamerican-trained, and thus tend to use interpretations appropriate to Mesoamerica, but scholars with experience in the Intermediate Area or South America are rare. This does not assist in recognizing Intermediate Area and South American accomplishments and influences.

Yarumela, in central Honduras, is an intriguing site with strong affiliations with lower Central America during the second millennium B.C. (Joesink-Mandeville 1987). The ceramics show more South American than Mesoamerican affiliations, with applique and fillet decoration. The closest analogs are on Ometepe Island of Nicaragua and in the Arenal area of Costa Rica. Refreshingly, Joesink-Mandeville (1987) views this area as the northwest periphery of South American culture rather than the southeast periphery of Mesoamerican culture.

Chalchuapa’s beginning as an agriculturally based sedentary village in western El Salvador is reasonably well dated to about 1200 B.C. Ceramics and figurines are similar to those of Pacific coastal Guatemala, especially the Cuadros phase of the Ocos area (Coe and Flannery 1967, Sharer 1978). The chipped stone and ground stone implements were Mesoamerican-derived rather than coming from the Intermediate Area. Implements involved time-consuming craftsmanship, in contrast to the specialized mass-production characteristic of the Late Classic and Postclassic. The obsidian at Chalchuapa comes from Ixtepeque volcano 50 kilometers to the north. It appears that Chalchuapa was the principal workshop and

provisioning center for a trade route that led along the Pacific coastal plain, across the Isthmus of Tehuantepec, and into the Olmec area. At about this time Ixtepeque obsidian appears at San Lorenzo in the Olmec Gulf Coast (Cobean et al. 1971), beginning a resource exploitation and trade route that continued to the Spanish Conquest.

Middle Formative (1000–500 B.C.) A few key sites in El Salvador and Honduras (Map. 9.2) grew to prominence during the Middle Formative. They had quite strong effects on secondary sites and the hinterlands surrounding them.

From 1000 to 500 B.C. Chalchuapa grew at least to a chiefdom, with the central ritual zone dominated by a 20-meter-high conically shaped pyramid (see Fig 9.1). It may have been modeled after the conical pyramid at La Venta. The Olmec presence is seen in ceramics, sculpture, and other artifacts, and probably indicates at least part-time Olmec settlement at Chalchuapa. The trade route included Ixtepeque obsidian and also, apparently, jadeite, amphibolite and other greenstones, and probably hematite, cotton, cacao, and salt. Jadeite and other greenstones occur naturally in the Sierra de las Minas, particularly near Guaytan (see Map 9.2). Chalchuapa headed its own polity from about 600 B.C. to 200 A.D., capitalizing on the resource exploitation and commodity distribution system set up by the Olmec and their precursors in southern Mesoamerica. Sharer (1974) discussed the internal developments and external affiliations of Chalchuapa from 1200 B.C. to A.D. 1500.

The earliest settlement of the Cerron Grande (Paraiso Basin) area of El Salvador, just north of Cihuatan (see Map 9.1), was during the Middle Formative (Earnest and Demarest 1987), possibly before 800 B.C. Based on artifactual similarities and chronologies, people probably came from the Chalchuapa area. Artifactual similarities with Chalchuapa decreased during the Concepcion phase (700–400 B.C.), and locally available microcrystalline lithics afforded some economic independence from the Mesoamerican long-distance obsidian trade networks. Obsidian constituted more than 99 percent of the lithics of Chalchuapa throughout its prehistoric existence, yet it made up only 20 percent of the Middle Formative chipped stone assemblage in the Paraiso Basin. That is in spite of the La Esperanza obsidian source being only 100 kilometers to the east-northeast and the Ixtepeque source being only 70 kilometers to the west-northwest. The ceramics showed isolation from rapidly evolving western Salvadoran types as they retained earlier characteristics.



Map 9.2. The southeastern Mesoamerican frontier during the Middle Formative, 1000–500 B.C.

The Lake Yojoa region provides the earliest well-dated evidence for Formative populations in Honduras. The Jaral phase (800–400 B.C.) at Los Naranjos was characterized by a 6-meters-high earthen structure and a ditch, surprisingly large for this time period, measuring 7 meters deep, 20 meters wide, and 1,300 meters long (Baudez and Becquelin 1973). The

structure contained an elite burial with jade ornaments including a cinabar-covered ax. The ditch probably served a defensive purpose; if this interpretation is correct, it probably indicates a more densely populated and competitive cultural landscape during the Middle Formative than most scholars have previously thought. An intensive survey of the area surrounding the site, at least within a 5-kilometer radius, is urgently needed. The excavators interpret many ceramic form and design elements as being of Olmec derivation, and they do have some shared elements, but the contact was not as strong as it was in Chalchuapa. The society probably was a chiefdom.

North of Lake Yojoa is the Playa de los Muertos site, dated by Kennedy (1980) to 650–200 B.C. Although the site has been largely eroded by the Ulua River, work over the past hundred years has found at least three and possibly four horizons of occupation. Housing was of wattle-and-daub, with thatch roofs, and the dead were buried in cemetery areas. The richness of ceramic, figurine, and jade offerings may indicate a chiefdom or ranked society. Some Olmec characteristics were identified by Kennedy (1980), but they probably signify fleeting visits by the Olmec at most. She interprets the society as being non-Mayan.

Southeast of Lake Yojoa is the Formative site of Yarumela. The site center is dominated by a series of mounds, one 20 meters tall, with artifacts covering at least a square kilometer. The site is not well dated, but some ceramics may date to as early as 1,000 B.C., based on comparisons to Chalchuapa. Stone (1972:38) interpreted some of the Yarumela ceramics as contemporary with Ocos, but that remains to be confirmed.

Healy (1984: 129–32) found surprisingly diverse and sophisticated ceramics in the Cumayel burial caves in far northeastern Honduras. He suspects occupation and burials predate 1000 B.C., and ceramics show clear Olmec connections. It is possible that the society was ranked, but evidence is weak.

Honduras was more uniform and cohesive as a prehistoric subarea, and more Meosamerican, from about 1000 to 300 B.C., than at any later time (Healy 1984: 133). The same is true of El Salvador. In part that can be attributed to the dispersed impact of the Olmec on local societies, to the emergence of sedentary societies from a likely homogeneous Archaic stratum, and in large part to the precocious growth in fertile alluvial river valleys of indigenous populations that remained in communication with each other by active trade networks.

Late Formative (500 B.C.–A.D. 250) The Salvadoran landscape (Map 9.3) was densely populated during the Late Formative (Sheets 1984:90–91). Chalchuapa was one of a number of large chiefdoms located in the intermontane basins of central and western El Salvador (Sharer 1978). Each seems to have emerged as its own polity, following the decline in Olmec influence, and thrived on controlling its component of the long-distance trade routes in commoner and elite commodities. The chiefdoms centered on a complex of pyramid-plaza groups, with pyramids 10 to 15 meters high generally made of earthen fill with internal stone-fill retaining walls, and surfaced with a clay-pumice mixture. Craft areas for ceramic and lithic manufacture, as well as lower-class residential areas, occupied the site peripheries.

Demarest (1986) thinks the earliest occupation of Santa Leticia in western El Salvador dates to about 500 B.C. It had grown by the time of Christ to a Late Preclassic village with some small mounds/pyramids and “pot-bellied” sculptures set on an artificial terrace. As at Chalchuapa, Demarest found Cara Sucia-style large carved stone masks. Maize, sunflower seeds, mamey, avocado, and *jocote* (a tree fruit) provide qualitative evidence of the Late Formative diet.

The Dulce Nombre phase in the Cerron Grande area (400 B.C.–A.D. 250) is marked by exceptional conservatism as residents retained Early Middle Formative artifact styles; Earnest and Demarest (1987: 220) summarize culture change from the preceding phase into this one as “almost nothing happens.”

A degree of self-sufficiency and isolation may have been beneficial to this simpler society, as less surplus production per household or village would have gone to supporting elites, occupational specialists, and long-distance trading systems. At most, the society may have been minimally ranked, but many egalitarian villages probably continued. A large ridged, irrigated field was found at the Rio Grande site, with cotton pollen in the swales, buried by a thick layer of volcanic ash from the Ilopango eruption (Fowler and Earnest 1985).

The important site of Quelepa, in eastern El Salvador, was founded about 400 B.C. or shortly thereafter (Andrews 1976). A platform of mud plaster and pumice had been built and refurbished multiple times. The abundant and well-used *manos*, *metates*, and *comales* indicate an agricultural subsistence base. Core-blade technology in obsidian, a Mesoamerican indicator, was practiced throughout all phases at Quelepa. The mas-



Map 9.3. Mesoamerica, the Intermediate Area, and the frontier during the Late Formative, 500 B.C.–A.D. 250.

sive, monolithic carved “Jaguar Altar” that measures about 3 by 3 meters, with the Cara Sucia – style carved face in the front, dates to this time. It shows a strong stylistic relationship with Izapan and Kaminaljuyu carved monuments. Usulután decoration (multiple-applicator resist) dominates the pottery, and external connections appear to have

been with western El Salvador and highland Guatemala, with some connections to the north in Honduras. Andrews (1976: 181) proposed a Late Formative ceramic sphere, called Uapala, for eastern El Salvador and southern and western Honduras, to include the following sites: Quelepa, Copan, Los Naranjos, Lo de Vaca II, Yarumela, and Santa Rita. He suspects the ceramic sphere may reflect the Lenca peoples' splitting from the Maya or Macro-Maya to the west. He guesses that the split occurred approximately two millennia ago, based on the frequency of cognate words in the two languages. It is possible that the eruption of Ilopango volcano, about 1,800 years ago, helped isolate the Lenca from the Maya. Weeks, Black, and Speaker (1987) agree with Campbell that Quelepa probably was Lenca, and they argue that the makers of Usulután ceramics may have been prehistoric Lenca, and the historic Lenca and may be the direct descendants of Late Formative inhabitants of central and southern Honduras and El Salvador. In the Protohistoric period the Lenca were organized into competitive chiefdoms, with the larger settlements having populations in the 2,000–4,000 range, and fortified hilltop retreats nearby (Weeks et al. 1987). The settlements do not show centralized planning, as structures were not oriented to the same azimuth, gridded, or standardized.

The effects of the Ilopango eruption on central and western El Salvador were severe, as many sites were abandoned (Sheets 1984). More than 20 cubic kilometers of acidic volcanic ash were draped across the countryside, making agriculture impossible for generations in many areas. The numerous Late Formative sites throughout the Pacific coastal plain of Guatemala were also abandoned or severely disrupted at about this time (Bove 1989:9). Reoccupation of various areas may have involved Maya migrating in from the north, Lenca from the east, and some small remnant populations expanding as soils, flora, and fauna recovered from the natural disaster. Some remnant populations may have survived and provided the basis for the reoccupation of certain areas (Demarest 1988). Fowler and Earnest (1985) note the virtually complete depopulation of the Paraiso Basin during the Early Classic because of the Ilopango eruption, but one site was found with occupation at this time. It may have assisted the reoccupation of the basin, which was considerable during the Middle and Late Classic periods.

Much like El Salvador at the same time, numerous sites dating to the Late Formative are known from Honduras, particularly from the west, central, and southern parts of the country (but excluding the northeast

and far east), indicating a population increase in those areas (Healy 1984: 133). Usulután-decorated pottery becomes a widespread horizon-marker. Mammiform supports, Z-angle bowls, rocker stamping, and bichrome and some polychrome decoration appear toward the end of the period. *Metates* are common and well used, indicating widespread agriculture. Sites show greater cultural complexity. Dressed stone architecture is absent. Many sites have habitation zones surrounding ritual centers characterized by earthen mounds surfaced with river cobbles or other unshaped stone. Obsidian is common, with core-blade technology found throughout this region, as well as occasional informal core-flake technology in obsidian and some use of microcrystalline stone.

Northeastern Honduras showed fewer indications of influence from Mesoamerica during this period than before. Pyramid-plaza complexes were absent, as were Mesoamerican core-blade technology and Usulután ceramics. Unfortunately, there is a gap in the archaeological record from about 300 B.C. until the end of the Late Formative (Healy 1984), which may indicate a depopulation of the area. If it was in fact largely depopulated, and then reoccupied by peoples from the east or south, that could explain the “marginalization” of the area during the Classic and Postclassic. Northeastern Honduras was a part of the Mesoamerican frontier during the Middle Formative, but became a culture area largely independent of Mesoamerican interaction by the Classic, and thus better considered part of the Intermediate Area (Linares 1979).

A marked increase in construction occurred at Los Naranjos, where the defensive earthwork was lengthened to 5 km. It generally is 4 m deep, about 10 m wide, with an earthen embankment along the southwestern margin. The ritual center took shape with the construction of large earthen pyramids (up to 18 m tall), plazas, and ramps. Some sloping architectural elements were stabilized by rough limestone blocks set in clay mortar.

Yarumela and Los Naranjos are unusually large compared with their contemporaries in Honduras. At Yarumela a number of stepped rectangular pyramids over 10 m tall were constructed, ordered to the cardinal directions (Baudez 1970).

Classic Period (A.D. 250–900)

Eastern El Salvador (Map 9.4) was largely spared the direct effects of the Ilopango eruption because the prevailing winds pushed the immense



Map 9.4. Mesoamerica, the Intermediate Area, and the frontier during the Early Classic, A.D. 250–600. An effect of the massive natural disaster created by the Ilopango volcanic eruption is the marginalization of central and western El Salvador; that area is shown on this map as a part of the frontier.

tephra clouds to the west and north. However, sites in eastern Salvador were cut off from central and western Salvadoran sites and Guatemalan sites by the eruption, and after the eruption eastern Salvadoran sites show a stronger affiliation with Honduran sites to the north and Intermediate Area sites to the southeast. Eastern El Salvador became a Mesoamerican

frontier in the Early and Middle Classic period as an effect of the Ilopango regional disaster.

Large-scale earthmoving began at Quelepa in the Shila phase (A.D. 150–625). Large artificial terraces were surmounted by paved ramps and specialized structures (Fig. 9.2) (Andrews V 1976:182). Both cut-stone and undressed-stone masonry were incorporated into structures. The Shila phase was the apex of construction techniques at Quelepa. The ceramics show some connections with western El Salvador, but they show closer connections with the Honduran sites of Los Naranjos and Copan. After the devastation of central El Salvador, it is not surprising that Quelepa increased connections with sites to the north and east. Both Quelepa and Los Naranjos share the feature of long paved ramps. Quelepa also shows more Intermediate Area characteristics than at any other time. Andrews V (1976: 183) thinks the carved-legged *metates*, stone balls in sets of three, and the small carved-jadeite beads may derive from Costa Rica. Andrews V (personal communication 1989) is considering a phase-ending date of A.D. 700.

Two reoccupations occurred in this zone during the Classic period – central El Salvador and northeast Honduras – and they differ in almost all aspects. The reasons for the depopulation were different as well, as El Salvador was devastated by the Ilopango eruption, and the reason for the apparent depopulation of northeastern Honduras is unknown. Northeastern Honduras was repopulated in the fourth century A.D. by largely self-sufficient peoples not depending on long-distance Mesoamerican trade networks. Social differentiation was minimal, as the housemounds were uniformly small and artifacts were equitably distributed. Societies probably were egalitarian. It is possible that this was beneficial at the household level, as surplus production would not have to support chiefs, occupational specialists, and outside traders and the goods they delivered.

In contrast to northeast Honduras, the reoccupation of central El Salvador was by thoroughly Mesoamerican peoples (Map 9.5). They brought with them social differentiation, Mesoamerican core-blade technology, polychrome ceramics, elaborate earthen residential architecture, commitment to long-distance trade, and even a codex, as exemplified by the Ceren site. Primary regional centers such as Campana–San Andres exhibit formal pyramid-plaza groups on a large scale, and centralized economic control. Fowler and Earnest (1985) view the repopulation of the Paraiso Basin as occurring first along the Lempa floodplain and then moving up into secondary drainages as ecologic recovery was spreading.

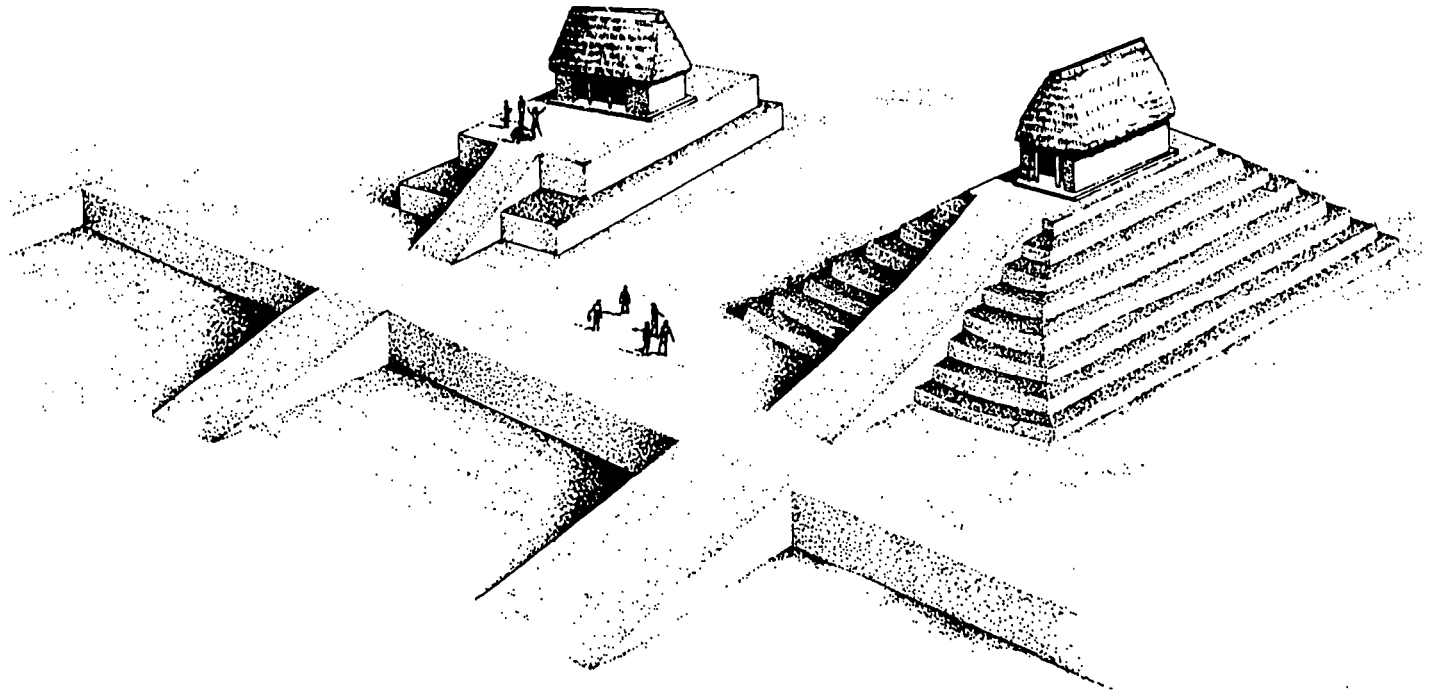


Figure 9.2. Artist's reconstruction of the two principal structures of Quelepa, El Salvador (Shila phase, A.D. 150–625). The smaller is Structure 4, the larger is Structure 3. Note the large platforms and the use of ramps instead of the Mesoamerican characteristic of stairways up pyramids. Courtesy E. Wyllys Andrews V.



Map 9.5. Mesoamerica, the Intermediate Area, and the frontier during the Late Classic period, A.D. 600–900.

They believe the reoccupants were Chorti Maya or a related Maya group, in part based on strong ceramic similarities with Copan. Larger sites have *plazuela* groups in the centers of tightly nucleated settlements. A settlement hierarchy ranging from isolated farmsteads to civic-religious centers was encountered. This settlement diversity and ethnic affiliation were both abruptly truncated at the end of the period.

The Ceren site provides an exceptional opportunity to study domestic architecture and family life in the middle of the Classic period, as the Zapotitan Valley recovered from the Ilopango eruption. The site was preserved by the eruption of nearby Laguna Caldera volcano at about A.D. 600 (Fig. 9.3.). All structures were oriented 30° east of magnetic north, indicating village planning overarching the household. Each household constructed three or four buildings for their specific activities and needs, with the communal activity structure being the most prominent. All communal buildings share elevated benches in their innermost rooms, apparently for sleeping and family daytime activities such as food consumption. The niche in the bench of the Household 2 (Figs. 9.4 and



Figure 9.3. View of part of Structure 1, the communal building of Household 1 at the Ceren site, El Salvador. The whitish layer is the remains of the Ilopango volcanic ash layer; it separates the Formative period soil from the Classic period construction. The floor, adobe columns, and wattle-and-daub walls are visible. The hole in the left wall was created when a tree was blown into the wall by a lateral blast from the Laguna Caldera volcano early in the eruption.

9.5) communal structure even had a polychrome food serving vessel with the finger-swipes of food consumption still preserved. A gourd was found near the unwashed vessel. Niches within structures may be indicators of status, as the most elaborate structure (Structure 3) had four niches (Figs. 9.6, 9.7), the intermediate structure had one, and the most humble structures had none. Separate bodegas for storage of food, chipped stone and ground stone implements, wood ash, animals, and for food processing were located south of communal structures. Food storage was primarily in large ceramic vessels with caps, but two species of ants and a small fieldmouse got inside some vessels and were eating grains. Other foods were stored hanging from the rafters or in partial vessels (large sherds from broken ollas) resting on top of roof support beams.

All structures were built on top of substantial fired clay platforms, with walls of wattle-and-daub or solid puddled adobe. Roofs were primarily of palm thatch, with some use of grass thatch. Roofs, collapsed onto floors but preserved by the volcanic ash, were substantial to protect the architecture from the elements. Obsidian blade edges were protected by being placed in the thatch roofs when they were not being used. That probably was also to protect young children from being cut inadvertently.

A survey of a representative fraction – 15 percent of 546 square kilometers – of the Zapotitan Valley surrounding Ceren encountered an elaborate hierarchy of sites, implying centralized political, economic, and religious components, was in effect in the Late Classic period. Settlement types ranged from agrarian households and small villages up to secondary and primary regional centers. Black (1983:82) estimates valley populations to have been at least 40,000 in the Late Classic, 38,000 in the Early Postclassic, and 27,000 in the Late Postclassic, which represent population densities of about 70, 70, and 50 people per square kilometer respectively. A clear conclusion is that there is no single site in the Zapotitan Valley, during the Classic or Postclassic periods, that is representative or could be considered “typical.” Rather, the reality was a complex and interrelated series of different settlements. Even sites of egalitarian societies show variation because of seasonality, size of occupation, duration of occupation, proximity of specific resources, or other reasons.

Chalchuapa suffered a marked decline or hiatus in the Early Classic, due to the Ilopango eruption, but the Late Classic resurgence is impressive. Large-scale ritual construction resumed in what is now recognized as the central and southern parts of the site core, as El Trapiche was

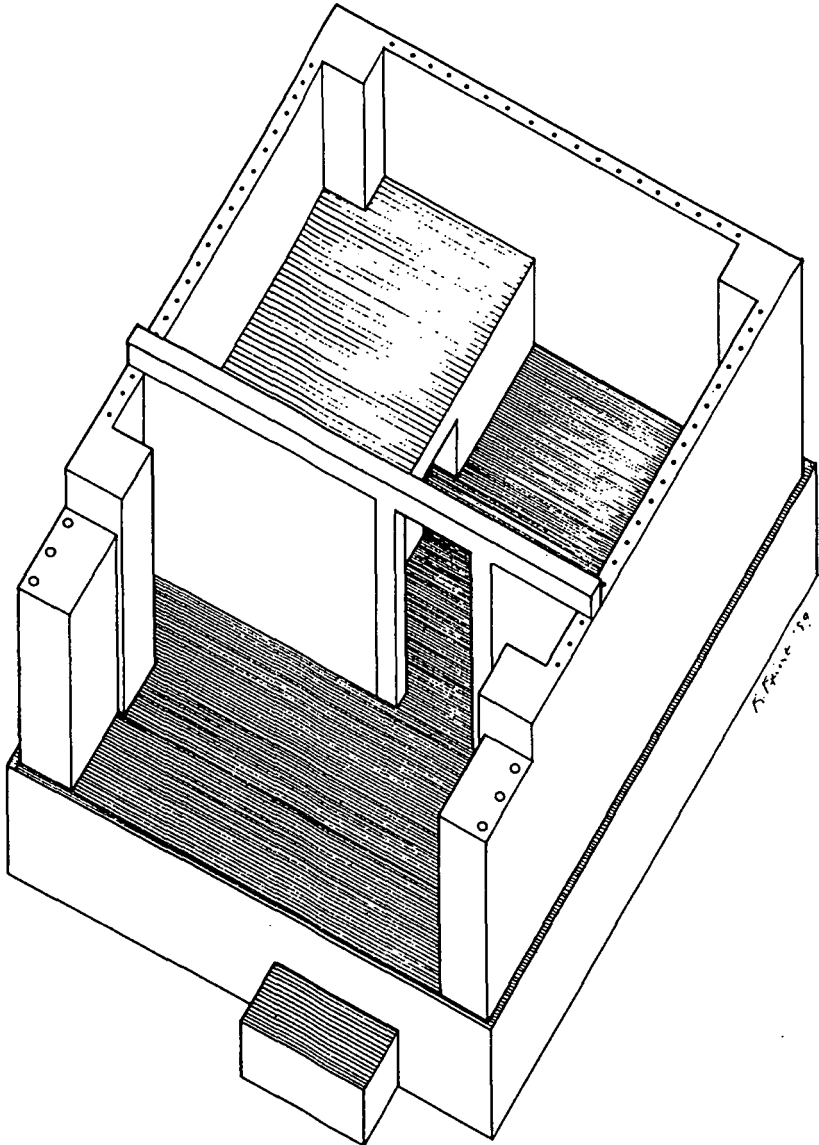


Figure 9.4. The Ceren site, El Salvador. Isometric drawing of Structure 2a, the communal structure of Household 2. The building was constructed on top of a solid earthen platform. Most walls are of wattle-and-daub, anchored by solid earthen columns. Note the offset front step and offset doorway. The adobe lintel probably was supported by a wooden lintel. Drawing by Karen Kievit.

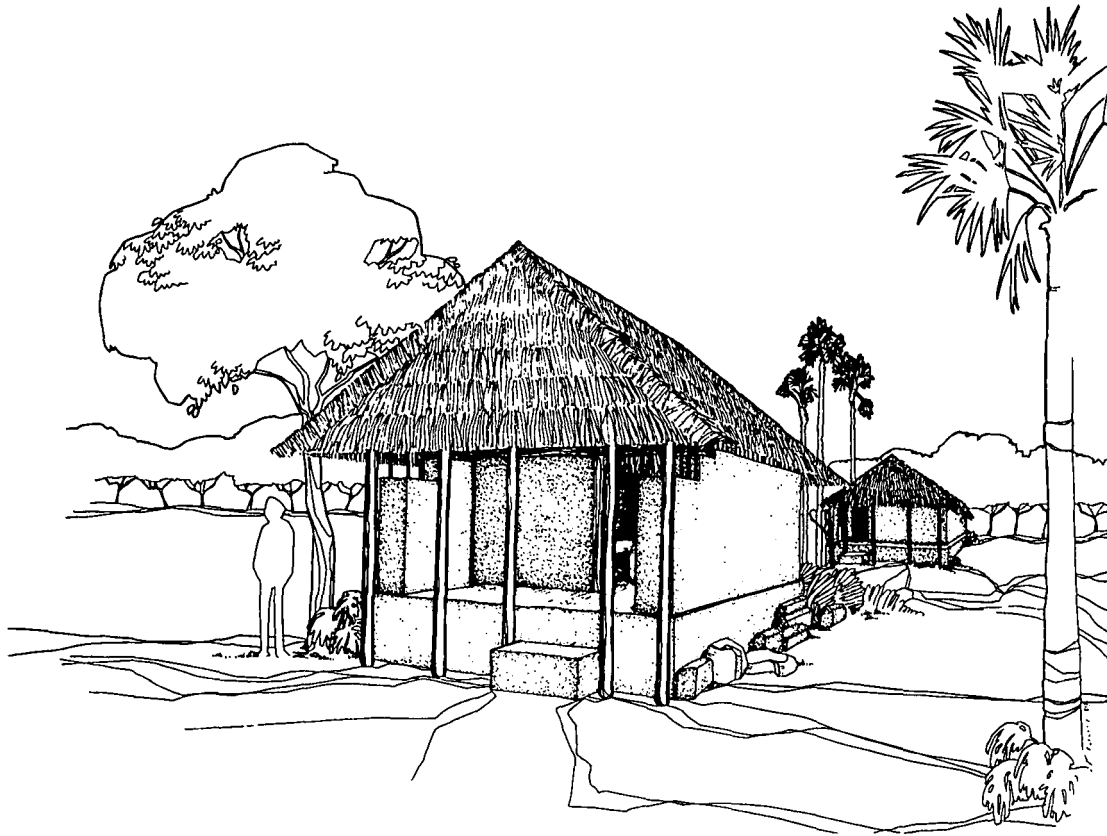


Figure 9.5. Reconstruction drawing of Structure 2a, with an ancillary structure behind it. Drawing by Karen Kievit.

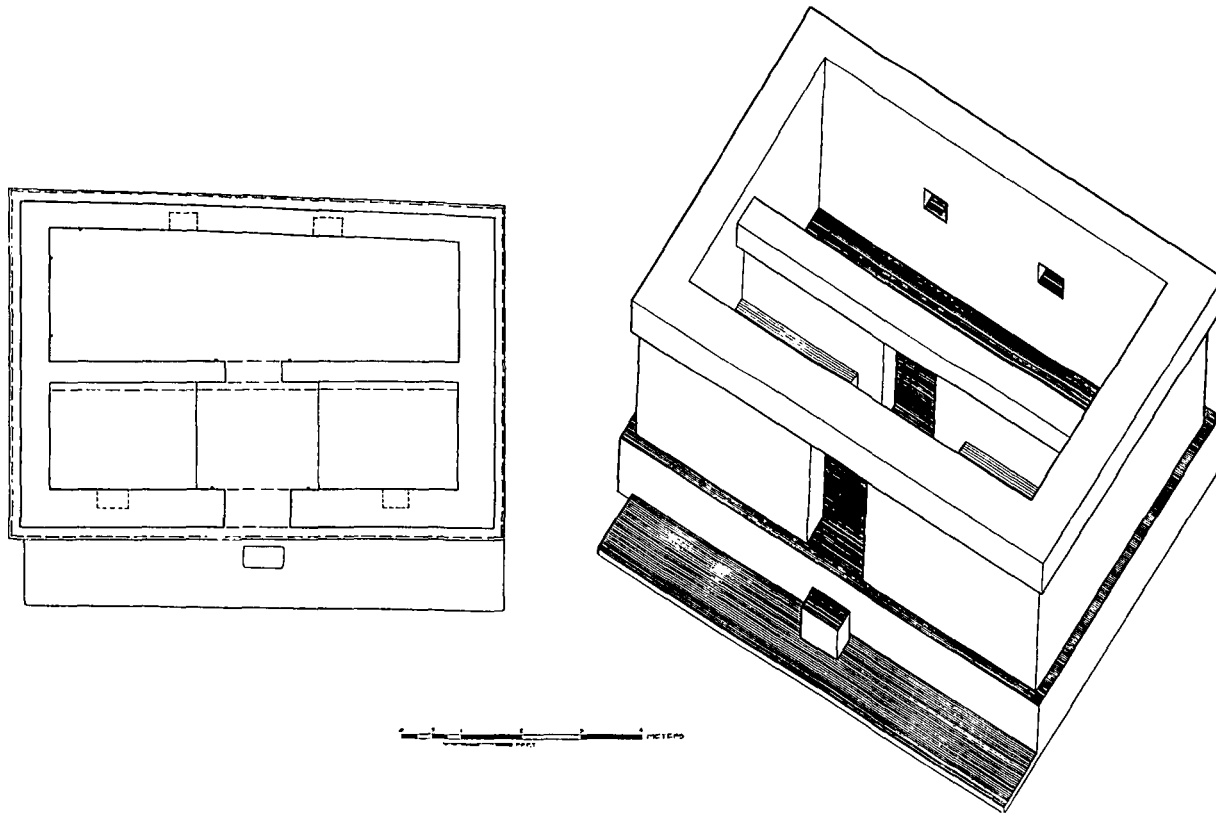


Figure 9.6. Isometric drawing and plan of Structure 3 at the Ceren site. The structure was built on top of a substantial earthen platform; walls were of solid tamped earth. The structure featured two large benches in the outer room, and niches in the front and the back wall. Adobe lintels were supported by wooden lintels. Drawing by Karen Kievit.

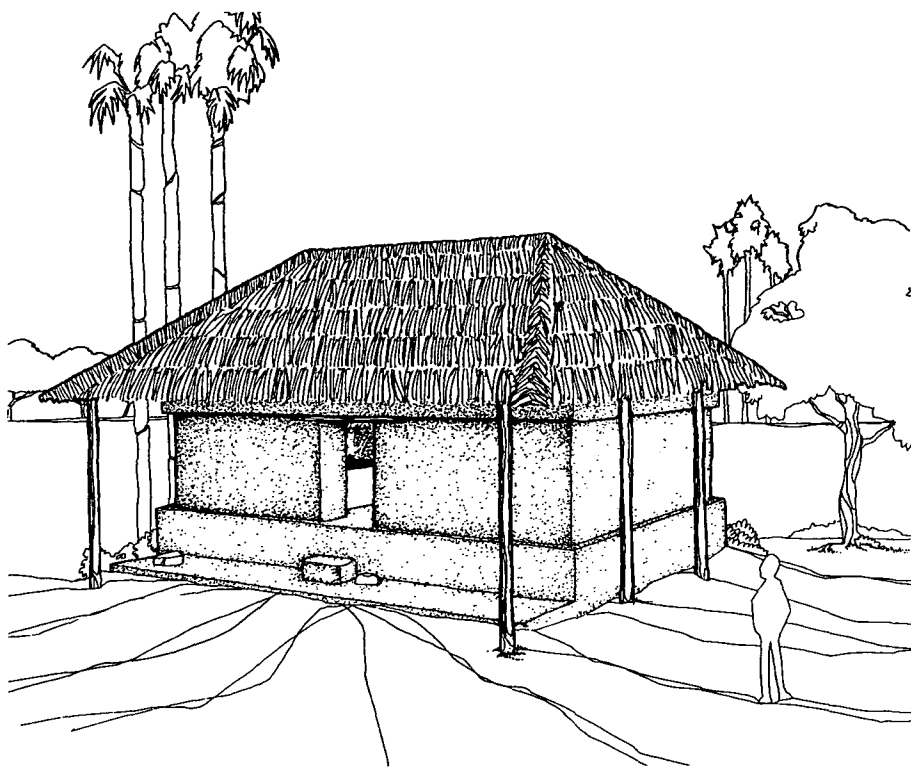


Figure 9.7. Reconstruction drawing of Structure 3, Ceren. Although it was considerably larger than Structure 2a, the roof of Structure 3 was more independent of the earthen architecture. Drawing by Karen Kievit.

largely abandoned (Sharer 1978). Numerous plazas, and pyramids 10–15 meters high, were constructed. Construction was earthen, with uncut rock fill-retaining walls, and surfacing was by a weather-resistant mixture of clay and pumice. Ceramics and lithics were clearly Mesoamerican in character, showing relationships with Copan and other sites to the north and west. The three lost-wax cast gold ornaments found at Tazumal, which may be eighth century, indicate some contacts with lower Central America.

Quelepa's Lepa phase (A.D. 625–1000) witnessed an abandonment of the previous ritual zone in favor of a new concentration of smaller structures around a small rectangular plaza. The influence is seen as coming from Mesoamerica, probably from the Gulf Coast (Andrews V

1976: 183) or linking Quelepa with Travesia and Terminal Classic Seibal (Andrews V personal communication 1989). Terrace facing is cruder, and staircases were used for structure access instead of ramps. A masonry ballcourt was constructed. Usulután pottery disappeared and a white-slipped polychrome appeared. A striking cache of ballgame paraphernalia, including elaborately carved yokes, palmas, and a hacha, were found under a cutstone slab. Flutes with rolling pellets and wheeled toys also show close connections with the Gulf Coast. In sum, Andrews argues convincingly for a site-unit intrusion, a sudden arrival of a package of characteristics with no local antecedents. Quelepa's smaller contemporary, Los Llanitos, also has an I-shaped ballcourt with cut-stone slabs (Longyear 1944), and probably experienced a similar site-unit intrusion. Longyear related the Los Llanitos polychrome to the Las Vegas polychrome in the Comayagua Valley. By the Late Classic the Mesoamerican frontier had shifted farther east, toward the Choluteca River, as Quelepa, Los Llanitos, and other sites resumed fuller participation in Mesoamerican affairs.

Copan, the major Maya city in the far west of Honduras, had a considerable effect on primary and secondary regional centers throughout western and central Honduras. Copan apparently stimulated trading relationships, the emergence of local elites, civic construction, and concentrated wealth in these larger sites. However, that Mesoamericanization did not affect all people, as the commoners, and particularly the rural households, were minimally involved. That is in contrast to the Middle and Late Classic in the Zapotitan Valley, where all settlements were integrated into a hierarchical system (Sheets 1984).

The general cultural and artifactual uniformity of the Late Formative in the southeastern periphery of Mesoamerica was replaced by differentiation (Joyce 1987). Diversity can be detected within sites, and among sites on a regional basis. Copan was not a monocultural Maya city, as demonstrated by Gerstle's (1987) finding an ethnic enclave, probably Lenca, within the community. Gerstle separated cultural variation into language, ethnicity, material culture, and use of space, and extensively utilized ethnographic, ethnohistoric, and archaeological sources to explore ethnicity.

Copan strongly influenced Gualjoquito, 100 kilometers away, which grew to a sizable center (Schortman and Urban 1987). The two sites' fortunes were so intertwined that Copan's monumental construction hiatus in the decades surrounding A.D. 600 affected Gualjoquito strongly.

Gualjoquito was strategically located along major trade and communication routes, and thus felt a stronger acculturative pressure than did more isolated settlements to the north and west, in adjacent drainages (Shortman and Urban 1987:22). Those smaller and more isolated settlements retained their indigenous characteristics more thoroughly. The acculturative influences of Copan can be seen at Gualjoquito itself but not in its hinterlands. However, the infusion of wealth and trade goods may have encouraged the growth of the regional population, and it appears that the non-Maya local elite emulated symbols of status and wealth used at Copan. Its growth and demise as the primary regional center in a three-tier hierarchy was not representative of the region, as the Late Classic regional population did not experience the drastic decline suffered at Gualjoquito. The power center collapsed, but dispersed agrarian populations continued in the region through the Early Postclassic.

Schortman (1986) explored multicultural interaction near Copan's sister city Quirigua. He found evidence of Maya and at least one more ethnic group, and perhaps two non-Maya ethnic groups during the Late Classic period.

As at Copan and Gualjoquito, population maxima occurred at the Lake Yojoa sites of Los Naranjos and La Ceiba during the Late Classic. Los Naranjos, during the Yojoa phase (A.D. 550–950), had better-quality but less volume of construction than before, with stucco floors and stairways (Baudez and Becquelin 1973), thus resembling more “down-town” Mesoamerican public construction.

During the Late Classic, the highly elaborate and distinctive ceramics known as Ulua–Yojoa polychrome were made in northwestern and central Honduras and were traded widely in Mesoamerica. Although manufactured locally, they show some artistic and perhaps technological inspiration from the Classic Maya, probably via Copan and Quirigua.

The nearby Ulua–Sula–Chamelecon area also experienced population growth, as seen in an increase in the numbers of sites and in their sizes. Ulua–Yojoa polychromes are common, and may even have originated in this area (Baudez and Becquelin 1973). The famous Ulua marble vases date to this period; the artistry in their elaborate geometric carving is impressive. It is likely that these artifacts are elite-indicators, but until they are found in context and excavated carefully, we cannot know for sure. Detailed studies regarding their manufacture, use, exchange, and interment are needed.

Similar increases in population and sociocultural complexity occurred

in the Naco Valley, as La Sierra and a number of other similar sites emerged and prospered (Henderson et al. 1979). La Sierra was not a large site, but it occupied more than a square kilometer, with more than four hundred individual structures, yet there is no visible overall site organization. It apparently grew by accretion with little centralized planning. The site core is dominated by a ballcourt, some mounds over 5 meters high, and earthen construction with plastered surfaces and stairways. La Sierra and the other nearby sites are within the Mesoamerican frontier, as evidenced by the ballcourt, mound group, and ceramics and core-blade technology in lithics. The site and its cousins were abandoned shortly after the end of the Classic period.

In the Comayagua valley settlement density and competitiveness, or at least the perceived threat of hostility, reached the point of requiring site fortifications. Tenampua is the most prominent example, as it occupies the top of a steep hill (Stone 1957) with undressed stone wall fortifications at the summit. The site features tall pyramids and a ballcourt, indicating relationships with Mesoamerica. However, this terminal Classic site also has lower Central American characteristics such as elaborately carved metates, and many features similar to central Honduran sites (Dixon 1987). It is not clear whether Tenampua is bi-ethnic, or primarily an indigenous Intermediate Area settlement with an elite emulating Mesoamerican architectural cores, or some other complex combination of characteristics. Certainly it is within the Mesoamerican frontier, but the internal dynamics of the society are unclear. The frequency of fortified sites indicates perceived threats, and probably is related to population density and competition for productive resources. Most of these sites were abandoned within a century of the end of the period (c. A.D. 1000).

Sites in extreme southern Honduras appear to be small and were not participating in the regional economic and cultural interactions just described. They seem to have been slightly beyond the Mesoamerican frontier at this time, except for those closest to eastern El Salvador.

Northeastern Honduras witnessed a slight population increase during the Classic period, but sites remained relatively small. Some sites were ringed by ditches, which Healy (1984:144) interprets as defensive. Some sites were located on top of small hills, which could be for defensive or drainage purposes, or both. At the end of the period painted pottery was being replaced by plastic decoration, a lower Central American characteristic. Their isolation from matters Mesoamerican increased as influences from the southeast strengthened. Epstein (1957:277) notes that the with-

drawal of Maya influence from northeastern Honduras was followed by an influx of “Chibchan or south Central American cultures from the south [with] a definite suggestion of almost mechanical replacement, that southern influences filled a vacuum created by the absence of Mayoid and Mayan stimuli.” However, Healy (1984) argues that the area, following the Olmec contact, was largely devoid of Mesoamerican influence. Thus, Healy might assign the area to the Intermediate Area during the Late Formative and Classic periods, earlier than would Epstein.

The Postclassic Period (A.D. 900–1500)

During the Postclassic period (Map 9.6) much of central and western El Salvador avoided the demographic declines experienced by eastern El Salvador and most of Honduras. That was in spite of strong acculturative influences from outside groups and perhaps because of migration by Mesoamerican groups into central and western El Salvador. Chalchuapa smoothly moved across the Classic–Postclassic boundary, yet central Mexican characteristics appear in the central ritual zone. Probably Pipil-associated, they include a generalized *talud-tablero* style architecture (without the recessed *tablero* panel), a circular pyramid, a ball court, a life-size ceramic Xipe Totec sculpture, *chac mools*, Marihua red-on-buff and Plumbate pottery, and other artifacts. The Early to Late Postclassic transition was more dramatic at Chalchuapa, with the virtual cessation of monumental construction and sculpture, and the movement of the habitation zone slightly westward (under the present town). The arrival of Chinautla Polychrome may herald the arrival of Pokomam Maya speakers.

Cihuatan was a short-lived terminal Classic–Early Postclassic site at the southern edge of the Paraiso Basin (Kelley 1988). It has a medium-sized central ritual zone dominated by a formal pyramid-plaza-ballcourt complex. The site has *talud-tablero* architecture, ceramic drainpipes, Marihua red-on-buff and Plumbate pottery, Tlaloc braziers, ceramic Xipe Totecs, and other central Mexican characteristics (Kelley 1988). Kelley found Cihuatan to be surprisingly homogeneous internally, as did Fowler and Earnest (1985) throughout the Paraiso Basin during the Early Postclassic period, in marked contrast to the same area during the Classic. There is little doubt that Cihuatan was occupied by Pipil peoples. Although somewhat smaller, Santa Maria, 16 kilometers east, had most of the same Pipil characteristics. Cihuatan and Santa Maria may have been



Map 9.6. Mesoamerica, the Intermediate Area, and the frontier during the Postclassic period, A.D. 900–1500.

burned and deliberately destroyed upon abandonment, which could have occurred as a termination ritual by the inhabitants rather than as an attack by hostile outsiders. After the abandonment of Cihuatán and Santa María, the Paraiso Basin did not have any primary regional centers with significant long-distance trade connections (Kelley 1988:207). In fact, Fowler and Earnest (1985) could find virtually no evidence for Late

Postclassic occupation of the Paraiso Basin, but feel that it probably was not completely depopulated.

The Pipil–Nícarao migrations into El Salvador, Honduras, and Nicaragua were multiple, taking place over a few hundred years (Fowler 1989), evidently to escape demographic and political pressures in central Mexico, especially from Oaxaca to Veracruz. They were not the first migrations of Mesoamerican peoples into Nicaragua, as the Chorotegans had preceded them, perhaps by a few centuries. The Chorotegans spoke an Otomanguean language related to languages in Oaxaca.

Early in the Postclassic period in Honduras, by about A.D. 1000, there was a marked population decline of the primary regional centers of many areas. This includes Copan and the far west, Lake Yojoa, and the Ulúa–Sula–Chamelecon areas. Los Naranjos was only lightly occupied during the early half of the period, and then was abandoned (Baudez and Becquelin 1973). The Classic Maya expansion into Honduras was over, and the Mesoamerican frontier receded westward to the Motagua River or beyond. The effect of the Classic Maya had been to encourage and support greater local populations, probably in part to consume obsidian, jade and greenstones, fine cotton cloth, pigments, salt, ceramics, and other products under Maya control. Larger indigenous populations would be advantageous to the local elite and the Maya to produce surplus commodities or serve as traders as the commerce increased. The demise of the Maya set countertrends into action, but why the depopulation was so drastic during the Postclassic is not clear. Perhaps the strain on soils by excessive production during the Late Classic, with slow natural recovery rates, combined with economies that had become dependent on commodities traded long-distance, accelerated a downward spiral leading to a significant depopulation of many areas. A depopulation or demise of a primary regional center can be advantageous for an agrarian household or village. If the household or village can reestablish self-sufficiency, their adaptive efficiency can improve because they no longer need to produce a surplus to subsidize a local elite or a long-distance trade network.

The Early Postclassic society at Gualjoquito (Schortman and Urban 1987) evidently was egalitarian, with repetitive, humble housing distributed across the landscape. The primary regional center of Gualjoquito had collapsed, but agrarian households in the region continued for a few centuries. The Late Postclassic was a time of regional population decline.

Postclassic sites in the Yojoa and Ulúa–Sula–Chamelecon areas, even though declining in size, experienced an infusion of Mexican artifacts,

probably indicating a partial substitution of Mexican traders for the Maya. Occasional finds of Mixteca–Puebla and Fine Orange Ware pottery, Plumbate ceramics, and Mexican-style metallurgy (Healy 1984:148–49) indicate at least sporadic trade contacts in these two areas, but not the sustained and probably more reliable trade system of the Late Classic.

Naco, in the far northwest, was a medium-sized site of 90 hectares that existed throughout the Postclassic, and was observed to be a community of about two thousand houses, or some 10,000 people, by the Spanish *conquistadores* Francisco de Montejo and Hernan Cortes (or Hernand Cortez) (Healy 1984:149). Naco was known as a trading community, well connected with the circum-Yucatan trade network that reached into central Mexico. The center is marked by some larger constructions, including temples, elite residences, and a ballcourt, surrounded by large numbers of small residential mounds. Toward the end of the Postclassic a distinctive polychrome pottery was limited to the center; this package of civic center versus periphery characteristics probably indicates an elite surrounded by commoners. The linguistic affiliation of Naco is not clear, as Henderson (1977) favors Chontal Maya, but Healy (1984) favors Nahua-speaking Pipil. I am not convinced it was monolingual. Naco can be considered a Mesoamerican enclave in the region, established and maintained beyond the frontier. It is possible that Naco served to facilitate access to Ixtepeque obsidian and Sierra de las Minas jade and greenstones by travel up the Chamelecon River and westward.

In central Honduras the cultural devolution was sufficient that Las Vegas, with its lack of significant public construction, typifies the area. The site during the Postclassic consisted only of small low house-platforms about 10 meters long. In addition to domestic wares, some Plumbate and Las Vegas Polychrome were found (Baudez 1976). The society may have been egalitarian.

Southern Honduras experienced a significant influence from Greater Nicoya, particularly in the form of polychrome pottery (Healy 1984). Also, some tenoned statues in stone were carved, and *metates* took on Greater Nicoya characteristics with their decorated tripod legs. Southern Honduran sites were relatively small, with numerous low habitation mounds.

Although the influence from the Intermediate Area, including Greater Nicoya, into Honduras was not as strong as the earlier Maya influence, it could be considered a countermovement of an opposing frontier fol-

lowing the demise of the Classic Maya. However, interaction probably was more balanced, as Greater Nicoya social complexity probably did not greatly exceed that in most of Honduras.

The Honduran northeast continued its separate trajectory with a slight increase in the size and internal ordering of sites (Healy 1984:152). Only one site had possible fortifications in the form of a ditch. Healy counted some fifty mounds; they probably were house platforms, indicating a population in the few hundreds, a common size for an egalitarian farming community. Ceramics continue the lower Central American pattern of plastic decoration by incised lines and punctations. During the Postclassic period ceramic decoration declined in the quality of its execution. Unexplained is the increase in obsidian compared to the Classic. The elaborately carved *metates* derived their inspiration from the Intermediate Area. There are some indications of contact with Mesoamerica in the form of ladle censers, copper bells, cylinder stamps, copper, and Plumbate pottery (Healy 1984:156), but they are outweighed by the local cultural continuum and Intermediate Area characteristics.

Parts of the north coast of Honduras remained outside the Mesoamerican culture area throughout prehistory, based on the lack of Usulután pottery, Maya pottery, pyramids, ballcourts, and representations of Mesoamerican deities (Healy 1984:159). The closest they came to being a part of Mesoamerica was during the Early to Middle Formative, when there was a significant amount of Olmec contact, perhaps indirectly. However, that did not include a full “package” of Olmec characteristics, and the effects were fleeting. The extreme northeast, east, and southeast of Honduras apparently were beyond the Mesoamerican frontier during all prehistoric periods, but the lack of research in these areas makes such a statement subject to considerable revision.

SUMMARY AND CONCLUSIONS

A frontier is a zone where two cultures are in sustained contact. Its location varies through time as the fortunes of both cultures change, and the frontier’s nature changes as well. A newly established frontier often is characterized by economic interaction and some demographic movement. Later, frontier interaction can involve major political and religious phenomena. Retrenchments of frontiers can occur when the vitality of an expanding larger culture wanes and the smaller culture reestablishes itself.

In the area of Middle America that now is El Salvador and Honduras, the southeastern frontier of Mesoamerica has expanded and contracted into the Intermediate Area a few times in prehistory. The Olmec, during the Formative, had a widespread but relatively thin effect on peoples throughout the area, with only a few places showing a lasting effect. Chalchuapa is an example of a site experiencing a long-lasting Olmec effect, where even after it achieved independence it maintained the trade, manufacturing, artistic styles, and other characteristics of the Olmec. To some degree, these Olmec characteristics may be part of a general cultural development involving the area from western El Salvador across the Isthmus of Tehuantepec to Mexico's Gulf Coast.

Most changes in the location or nature of the frontier evidently occurred for cultural reasons (including economic, political, demographic, and other factors), but in one case a regional natural disaster of major proportions served to marginalize some societies. The eruption of Ilopango volcano, about A.D. 200, devastated central-western El Salvador and served to isolate such sites as Quelepa. Eastern El Salvador turned eastward and northward, and more Intermediate Area artifacts showed up at Quelepa during the Shila phase (A.D. 150–625) than at any time before or after.

The Maya certainly had a strong effect on their neighbors to the southeast during the Classic period, emanating principally from Copan and Quirigua. These two centers, themselves at least bi-ethnic, stimulated economic interaction with nearby settlements, thus stimulating population growth and the emergence of local elites. Emergent elites often emulated the iconography of power in use at Copan and Quirigua, resulting in the geographic spread of specialized artifacts, design motifs, and, to some extent, religion. However, by the Postclassic period the Maya frontier became as evanescent as the Olmec frontier, as local Intermediate Area societies reestablished themselves in many areas.

Understanding culture process in Mesoamerica's southeast is dependent upon understanding the emergence of chiefdoms and states in Mesoamerica and their interactions with less complex Intermediate Area societies. Unfortunately, regional studies sufficient to document the emergence and functioning of élites in the frontier are rare. Diachronic studies of élite versus non-élite housing, burials, symbolism, control, and knowledge must be done to compare to similar phenomena at Mesoamerican sites such as Copan. Elite symbolism can appear on monuments, architecture, ceramics, figurines, or lithics. Control can occur in

the political sense of centralization of power, or it can occur in the economic domain, as trade, occupational specialization, or commodity redistribution come under elite control. Elite versus non-élite lithics have been found at Quirigua, with core-blade technology being performed by specialists under Classic Maya control, and the informal percussion core-flake technology being performed in individual commoner households (Sheets 1983b). The core-flake materials were consistently discriminated against for cache deposits in central Quirigua; evidently only core-blade materials were suitable for “downtown” caches. Specialized or esoteric knowledge – calendars, writing, or numerology, restricted to the upper echelon of society – is an elite indicator.

At least four waves of foreign influence affected the area, beginning with the Olmec in the Formative, followed by the Maya in the Classic, and, in the Postclassic, the Pipil–Nicarao from Mesoamerica and some groups from Greater Nicoya.

Occasionally, prehistoric or historic societies have attempted to mark their frontiers or boundaries with barriers to human movement and communication, but they have been notable for their failure. Hadrian’s wall across England, the Great Wall of China, the Berlin Wall and Iron Curtain, and the Great Wall of Peru are some examples. Cultural boundaries and frontiers ebb and flow with shifts, in political, social, and economic factors among cultures.

Although the general outlines of indigenous development and external influences in the southeastern frontier of Mesoamerica are beginning to be understood, based on stylistic and technical analyses of artifacts and architecture, the reasons, modes, and effects of those phenomena remain largely unknown. The Guatemalan and Honduran obsidian sources and the Sierra de las Minas jade and greenstone source were exploited heavily from the Formative to the Conquest, and many artifacts have been traced from source to site. Sustained trading relationships between complex societies generally result in acculturation in both societies as well as social and genetic interchanges, and they can include political-militaristic factors and religion. So many of these underlying factors, so important to understanding of the region’s prehistory, remain hazy or unknown.

SCHOLARSHIP IN SOUTHEASTERN MESOAMERICA

An overview of research into the ancient societies of the southeasternmost area of Mesoamerica must note two factors. One is the importance of

Copan in two senses: (1) the influence that Copan had on nearby societies during the Classic period, but minimal on more distant societies; and (2) the assertion made here that the amount of research conducted at Copan exceeds the total amount of research done in the entire southeastern zone of Mesoamerica outside of Copan. Any site so well understood is logically turned to first by scholars interested in the area. The site is thoroughly described and interpreted by William Fash (1991). Thus, it is easy for scholars and the general public to accept the “Copan-centric” view that other southeast Mesoamerican societies were trying to the best of their abilities to emulate Copan, and they can be interpreted and judged by the degree of their success. Certainly the most elaborate elite architecture, sculpture, hieroglyphics, ceramics, and lithics were at Copan. However, *this Copan-centric view is anthropologically unacceptable as it denies volition, internal cultural integrity, and largely self-sufficient economies to the other societies in the region.*

The other factor, not unrelated to the first, is the maturation of research in the zone during the past century and a half. Beginning at the middle of the nineteenth century the descriptions of Copan become more reliable and less romanticized. From then to about the 1970s research consistently at Copan and intermittently at other southeastern sites was firmly anchored in the humanistic approach, as summarized by Robert Sharer (1974) and by Paul Healy and Payson Sheets in Lange and Stone, eds. (1984). The humanistic approach focuses on the largest and finest architecture and artifacts of the elite, and from it we have learned much about their lives and accomplishments.

In contrast, the social science research of the past three decades has begun to provide understanding of all social classes and all sizes of sites from the cities to the small villages and isolated rural farmsteads. Regional demography, settlement patterns, political and social organization, and topics such as craft specialization and exchange systems are the result of social science investigations. Fash summarizes regional survey and excavations at Copan, Robert Sharer (1978) describes Chalchuapa from the Formative through the Postclassic, and E. Wyllys Andrews V (1976) traces Quelepa’s shorter occupational sequence. Similar comprehensive coverage of Honduran sites is provided by Claude Baudéz and Pierre Becquelin (1973) and by Ed Schortman and Pat Urban (1987).

Regional comprehensive coverage of all segments of societies began in El Salvador with Black’s survey of the Zapotitan Valley, published in Payson Sheets, ed. (1983), followed shortly by William Fowler and Howard Earnest’s survey of the Cerron Grande area (1985). Both documented

settlement hierarchies, intensive land use, moderate population densities, and quite limited “influence” from Copan as both areas controlled their own political and social dynamics and, largely, their own economic dynamics.

The maturation of archaeology as a field of inquiry is evidenced by the conjoining of humanistic and social science approaches in the 1980s and 1990s, in spite of their separate and occasionally antagonistic developments. The best example in this geographic area is provided by Copan (see Fash 1991), where epigraphers, art historians, and social science-oriented archaeologists have integrated their efforts to understand the dynastic sequence and the specific political and religious events as well as the architectural and artistic accomplishments that took place within each reign.

Another development in archaeological research in the 1990s is the emergence of a truly public archaeology that involves multidisciplinary research with community involvement, a strong conservation ethic, and a public outreach-educational program. An example is the Ceren site in El Salvador, where multidisciplinary research includes archaeology, geophysics, ethnobotany, and volcanology with specialized artifactual studies. Both artifact and architectural conservators are on-site at all times while excavations are being conducted. Local townspeople are trained as guides to take visitors through the on-site museum and the archaeological site to educate visitors and relate interpretations about the physical remains. The educational-outreach program is supported by a nongovernmental organization, the Patronato pro-Patrimonio Cultural. A living museum is being developed, supported by another nongovernmental organization, the Fundación Nacional de Arqueología, where people can visit replicas of the household buildings to see how specific crafts were practiced, and purchase examples and high-quality replicas. The Ministry of Education (CONCULTURA) is the governmental entity involved in the effort. As this is a World Heritage site, the United Nations (UNESCO) are of assistance in developing and supporting a site and regional management master plan. The research and its context are described in Payson Sheets (1992, 1994).

BIBLIOGRAPHY

- Abel-Vidor, Suzanne. 1981. “Ethnohistorical Approaches to the Archaeology of Greater Nicoya.” In *Between Continents/Between Seas: Precolumbian Art of Costa Rica*, ed. Suzanne Abel-Vidor et al., pp. 85–92. Abrams, New York.
- Andrews V, E. Wyllys. 1976. *The Archaeology of Quelepa, El Salvador*. Middle American Research Institute Publication 42, Tulane University, New Orleans.

- Baudez, Claude. 1970. *Central America*. Nagel Publishers, Geneva.
1976. "Arqueologia de la frontera sur de Mesoamerica." 14th Mesa Redonda, Sociedad Mexicana de Antropología 1: 133–48.
- Baudez, Claude, and Pierre Becquelin. 1973. *Archeologie de Los Naranjos, Honduras*. Collection Etudes Mesoamericaines 2. Mission Archeologique et Ethnologique, Mexico.
- Black, Kevin. 1983. "The Zapotitan Valley Archeological Survey." In *Archeology and Volcanism in Central America: The Zapotitan Valley of El Salvador*, ed. Payson Sheets, pp. 62–97. University of Texas Press, Austin.
- Bove, Frederick. 1989. "Dedicated to the Costenos: Introduction and New Insights." In *New Frontiers in the Archaeology of the Pacific Coast of Southern Mesoamerica*, ed. Frederick Bove and Lynette Heller, pp. 1–13. Anthropological Research Paper 39, Arizona State University, Tempe.
- Bullen, Ripley and William Plowden. 1963. "Pre-ceramic Archaic Sites in the Highlands of Honduras." *American Antiquity* 28: 382–85.
- Caldwell, Joseph. 1964. "Interaction Spheres in Prehistory." In *Hopewellian Studies*, ed. J. Caldwell and R. Hall, pp. 133–43. Illinois State Museum Scientific Papers 12. Springfield.
- Cobean, Robert, Michael, Coe, Edward Perry, Karl Turekian, and Dinkar Kharkar. 1971. "Obsidian Trade at San Lorenzo Tenochtitlan, Mexico." *Science* 174: 666–71.
- Coe, Michael and Kent Flannery. 1967. *Early Cultures and Human Ecology in South Coastal Guatemala*. Smithsonian Contributions to Anthropology, vol. 3. Washington, DC.
- Demarest, Arthur. 1986. *The Archaeology of Santa Leticia and the Rise of Maya Civilization*. Middle American Research Institute Publication 52, Tulane University, New Orleans.
1988. "Political Evolution in the Maya Borderlands: The Salvadoran Frontier." In *The Southeast Classic Maya Zone*, ed. Elizabeth Boone and Gordon Willey, pp. 335–83. Dumbarton Oaks, Washington, DC.
- Dillon, Brian D. 1987. "The Highland-Lowland Maya Frontier: Archaeological Evidence from Alta Verapaz, Guatemala." In *The Periphery of the Southeastern Classic Maya Realm*, ed. Gary W. Pahl, pp. 135–43. UCLA Latin American Center Publications, Los Angeles.
- Dixon, Boyd. 1987. "Conflict along the Southeast Mesoamerican Periphery: A Defensive Wall System at the site of Tenampua." In *Interaction on the Southeast Mesoamerican Frontier*, ed. Eugenia Robinson. BAR International Series 327: 142–53.
- Earnest, Howard, and Arthur Demarest. 1987. "The Southern Frontier as a Cultural Boundary: Differential Rates of Change in Central and Western El Salvador." In *Interaction on the Southeast Mesoamerican Frontier*, ed. Eugenia Robinson. BAR International Series 327: 215–226.
- Epstein, Jeremiah. 1957. *Late Ceramic Horizons in Northeast Honduras*. Unpublished Ph.D. dissertation, Department of Anthropology, University of Pennsylvania. University Microfilms, Ann Arbor, MI.
- Fash, William. 1991. *Scribes, Warriors and Kings: The City of Copan and the Ancient Maya*. New York.

- Fowler, William. 1989. *The Cultural Evolution of Ancient Nahua Civilizations: The Pipil-Nicarao of Central America*. University of Oklahoma Press, Norman.
- Fowler, William, and Howard Earnest, Jr. 1985. "Settlement Patterns and Prehistory of the Paraiso Basin of El Salvador." *Journal of Field Archaeology* 12: 19–32.
- Gerstle, Andrea. 1987. "Ethnic Diversity and Interaction at Copán, Honduras." In *Interaction on the Southeast Mesoamerican Frontier*, ed. Eugenia Robinson. BAR International Series 327: 328–56.
- Healy, Paul. 1984. "The Archaeology of Honduras" In *The Archaeology of Lower Central America*, ed. F. Lange and D. Stone, pp. 113–61. University of New Mexico Press, Albuquerque.
- Henderson, John. 1977. "The Valley de Naco: Ethnohistory and Archaeology in Northwestern Honduras." *Ethnohistory* 24: 363–76.
1981. *The World of the Ancient Maya*. Cornell University Press, Ithaca, NY.
1989. "Current Research: Mesoamerica." *American Antiquity* 54: 865.
- Henderson, John, Ilene Sterns, Anthony Wonderley, and Patricia Urban. 1979. "Archaeological Investigations in the Valle de Naco, Northwestern Honduras." *Journal of Field Archaeology* 6: 169–92.
- Joesink-Mandeville, Leroy. 1987. "Yarumela, Honduras: Formative Period Cultural Conservatism and Diffusion." In *Interaction on the Southeast Mesoamerican Frontier*, ed. Eugenia Robinson. BAR International Series 327: 196–214.
- Joyce, Rosemary. 1987. "Intraregional Ceramic Variation and Social Class: Developmental Trajectories of Classic Period Ceramic Complexes from the Ulua Valley." In *Interaction on the Southeast Mesoamerican Frontier*, ed. Eugenia Robinson. BAR International Series 327: 280–303.
- Kelley, Jane. 1988. *Cihuatlan, El Salvador: A Study in Intrasite Variability*. Vanderbilt University Publications in Anthropology, No. 35. Nashville, TN.
- Kennedy, Nedenia. 1980. "Formative Ceramic Chronology from Playa de los Muertos, Honduras." Paper presented at a meeting of the Society for American Archaeology, Philadelphia.
- Kroeber, Alfred. 1948. *Anthropology*. Harcourt Brace, New York.
- Lange, Frederick. 1976. "Theoretical and Descriptive Aspects of Frontier Studies" *Latin American Research Review* 14: 221–27.
1986. "Central America and the Southwest: A Comparison of Mesoamerica's Two Peripheries." In *Research and Reflections in Archaeology and History: Essays in Honor of Doris Stone*, ed. E. Wyllis Andrews V, pp. 159–77. Middle American Research Institute Publication 57, Tulane University, New Orleans.
- Linares, Olga. 1979. "What is Lower Central American Archaeology?" *Annual Review of Anthropology* 8. Annual Reviews, Palo Alto, CA.
- Linares, Olga, Payson Sheets, and Jane Rosenthal. 1975. "Prehistoric Agriculture in Tropical Highlands." *Science* 187: 137–45.
- Longyear, John, III. 1944. *Archaeological Investigations in El Salvador. Memoirs*, 9: 2. Peabody Museum, Harvard University, Cambridge, MA.
1948. "A sub-pottery deposit at Copan, Honduras. *American Antiquity* 13: 248–49.
- Lothrop, Samuel. 1926 *Pottery of Costa Rica and Nicaragua*. Vol. 2. Contributions from the Museum of the American Indian. Heye Foundation, New York.
- Marcus, Joyce. 1989. "Preface." In *New Frontiers in the Archaeology of the Pacific Coast of*

- Southern Mesoamerica*, ed. Frederick Bove and Lynette Heller, pp. xv–xvii. Anthropological Research Paper 39, Arizona State University.
- Renfrew, Colin. 1975. "Trade as action at a Distance." In *Ancient Civilization and Trade*, ed. J. Sabloff and C. Lamberg-Karlovsky, pp. 3–59. University of New Mexico Press, Albuquerque.
- Schortman, Edward. 1986. "Interaction between the Maya and Non-Maya along the Late Classic Southeast Maya Periphery: The View from the Lower Motagua Valley, Guatemala" In *The Southeast Maya Periphery*, ed. Patricia Urban and Edward Schortman, pp. 114–37. University of Texas Press, Austin.
- Schortman, Edward and Patricia Urban. 1987. "Survey within the Gualjoquito Hinterland: An Introduction to the Investigations of the Santa Barbara Archaeological Project." In *Interaction on the Southeast Mesoamerican Frontier*, ed. Eugenia Robinson. BAR International Series 327: 5–27.
- Sharer, Robert. 1974. "The Prehistory of the Southeast Maya Periphery." *Current Anthropology* 15: 165–87.
- Sharer, Robert, ed. 1978. *The Prehistory of Chalchuapa, El Salvador*. University of Pennsylvania Press, Philadelphia.
- Sheets, Payson 1983. "Guatemalan Obsidian: A Preliminary Study of Sources and Quirigua Artifacts." In *Quirigua Reports*, ed. Robert Sharer, pp. 87–97. University Museum Monograph 49, University of Pennsylvania, Philadelphia.
1984. "The Prehistory of El Salvador: An Interpretive Summary." In *The Archaeology of Lower Central America*, ed. F. Lange and D. Stone, pp. 85–112. University of New Mexico Press, Albuquerque.
1992. *The Ceren Site*. Harcourt Brace, Fort Worth, TX.
1994. "Tropical Time Capsule." *Archaeology*. July.
- n.d. "The Pervasive Pejorative in Inter-mediate Area Studies." Manuscript for Dumbarton Oaks publication, ed. Fred Lange.
- Sheets, Payson, (ed.). 1983. *Archaeology and Volcanism in Central America: The Zapotitan Valley of El Salvador*. University of Texas Press, Austin.
- Stone, Doris. 1957. *The Archaeology of Central and Southern Honduras. Papers*, vol. 49, no. 3. Peabody Museum, Harvard University, Cambridge, MA.
1972. *Pre-Columbian Man Finds Central America*. Peabody Museum Press, Cambridge, MA.
- Turner, Frederick. 1932. *The Significance of Sections in American History*. Holt, New York.
- Wallerstein, Immanuel. 1976. *The Modern World System*. Academic Press, New York.
- Weeks, John, Nancy Black, and Stuart Speaker. 1987 "From Prehistory to History in Western Honduras: the Care Lenca in the Colonial Province of Tenchoa." In *Interaction on the Southeast Mesoamerican Frontier*, ed. Eugenia Robinson. BAR International Series 327: 65–94.
- Wiley, Gordon R. 1966. *An Introduction to American Archaeology*, Volume 1: *North and Middle America*. Prentice-Hall, Englewood Cliffs, NJ.
1971. *An Introduction to American Archaeology*, Volume 2: *South America*. Prentice-Hall, Englewood Cliffs, NJ.

THE MAYA HIGHLANDS AND THE ADJACENT PACIFIC COAST

ROBERT J. SHARER

INTRODUCTION

In this chapter we refer to the Maya highlands and Pacific coastal plain collectively as the *southern Maya Area* (see Map 10.1). We follow the chronological framework most commonly used by Mesoamerican scholars, beginning with the *Preclassic* era (c. 2000 B.C. to A.D. 250; for earlier developments, see Zeitland and Zeitland, Chap. 2, this volume), subdivided into the Early Preclassic (c. 2000–1000 B.C.), Middle Preclassic (c. 1000–400 B.C.), and Late Preclassic (c. 400 B.C.–A.D. 100); a transitional Terminal Preclassic (c. A.D. 100–250), the subsequent *Classic* period (c. A.D. 250–800), subdivided into two eras, the Early Classic (c. A.D. 250–600), and Late Classic (c. A.D. 600–800); and ending with the *Postclassic* (c. A.D. 900–1500), subdivided into the Early Postclassic (c. 900–1200) and Late Postclassic (c. 1200–1500).

Archaeological research in the southern Maya Area has long lagged behind that conducted in the Maya lowlands to the north. Over the past two decades, however, research and publications dealing with the southern area have begun to correct this disparity. Nonetheless, spatial and temporal coverage remains inconsistent. Most of the work on the Early and Middle Preclassic has been concentrated along the Pacific Coast (especially in the western sector). Research on the Late Preclassic period has received more attention, and there is a broader coverage, most notably focusing on the regional developments in the southern highlands (especially Kaminaljuyu), the southeast, and along the Pacific coastal plain. For the Classic era most of our knowledge is based on work at Kaminaljuyu and adjacent basins of the southern highlands, and the central region of the Pacific coastal plain. Archaeological research on the Postclassic era has focused on sites and regions associated with the Con-



quest-era highland states, with varying reliance on the rich but often contradictory ethnohistoric sources that illuminate this period. Overall, therefore, inconsistent coverage makes any synthesis unbalanced and provisional at best.

ENVIRONMENT

The Pacific plain is composed of recent (quaternary) sediments extending from the Isthmus of Tehuantepec, across southern Chiapas (Mexico), through Guatemala, and into western El Salvador. It has long provided rich resources for human existence and has been an avenue for both migration and commerce. Some of the earliest traces of permanent settlement in Mesoamerica have been found along the margins of the mangrove swamps, coastal lagoons, and meandering river mouths that lie behind the Pacific beaches. Extending inland from the sea lies the gently rising coastal plain proper, known for its rich alluvial and volcanic soils but long denuded of most of its original forest cover. The plain is transected by a series of relatively short, swiftly flowing rivers that drain the piedmont and upper slopes of the chain of volcanoes that parallels the coast some 50 to 70 kilometers inland. The only major river in this subarea is the Rio Lempa in El Salvador, the traditional southeastern boundary of the Maya Area. The tropical climate of the coastal area has mean annual temperatures in the 25–35 degrees centigrade range, becoming somewhat cooler with the increasing altitude of the piedmont. There is a relatively dry period from January to April, the hottest days being those at the end of the dry season, and heavy rains fall from May to December, produced as warm westerly winds from the Pacific rise and cool against the volcanic highland slopes. As a result the region enjoys one of the highest rainfall rates in the Maya area: an average of more than 3,000 millimeters of rain per year for the Pacific slopes of Chiapas and western Guatemala, and more than 2,000 millimeters for most of the rest of the coastal plain.

The greatest environmental diversity is found in the highlands to the north of the coastal plain. Defined by temperate climates generally above 800-meter elevations, the highlands are fringed by lowland areas that penetrate inland along rivers flowing toward the coasts. Owing to this diversity, there are many subdivisions, but for our purposes two major highland areas will be considered: one to the south, highly populated

and dominated by recent volcanic activity; and the other to the north, less disturbed and characterized by older metamorphic formations.

The southern highlands lie in an east-west band between the belt of volcanic cones that parallels the Pacific coast, and the great rift-valley system to the north. This rift system marks a junction of continental plates, producing frequent earthquakes and volcanic eruptions. A nearly continuous line of recent volcanoes forms the continental divide from the border of Chiapas, Mexico, through Guatemala, and into Central America. The highest is Tajumulco at 4,410 meters. North of the belt of active volcanoes are the rugged older volcanic highlands, capped by thick deposits of lava and ash. In many areas river and stream action has dissected these deposits to form deep, steep-sided canyons, or barrancas. Within this area the fertile volcanic soils of a series of valleys have supported large human populations for thousands of years. The largest of these basins is the Valley of Guatemala, the location of modern Guatemala City. Others include the Valley of Quetzaltenango, in western Guatemala, and the Ahuachapan and Zapotitan basins, both in western El Salvador. Many of the highland basins and volcanic calderas of the region contain lakes, such as Amatitlan in the southern portion of the Valley of Guatemala. The most famous is Lake Atitlan in central Guatemala. Lake Ilopango, near San Salvador, was formed in the caldera left by a violent eruption of about A.D. 250.

Apart from the interior drainage characterizing some of these basins, the principal rivers of the southern highlands flow northward as tributaries of the Río Motagua, which follow the continental rift eastward to the Gulf of Honduras in the Caribbean Sea. In the western portion, a similar drainage pattern forms the Río Grijalva, which flows through the central depression of Chiapas into the Gulf of Mexico.

The volcanic highlands have long provided important resources for their inhabitants. The ancient Maya quarried obsidian at several locations, the most favored being El Chayal on the upland flanks of the Motagua Valley, northeast of the Valley of Guatemala, and Ixtepeque, some 85 kilometers to the southeast. Grinding stones (*manos* and *metates*) for corn and other products were made from basaltic rocks such as andesite, available throughout most of the southern highlands. Clays for pottery, mineral pigments, and a host of other natural resources abound in this area.

The southern highlands are predominantly temperate, with mean annual temperatures usually between 15 and 25 degrees centigrade. On the

sparsely occupied upper slopes of the volcanoes, above the 3,000-meter level, cooler temperatures prevail, with frequent frosts and occasional snow accumulations during the winter. Throughout the region a well-defined dry season extends from January to April, followed by a May-to-December wet season. Rainfall totals are generally less than in the wetter areas of the Pacific Coast, averaging 2,000–3,000 millimeters annually in most areas. Rainfall is much less in areas sheltered from the prevailing easterly trade winds, such as the interior of the Motagua Valley and the central Chiapas depression, where annual rainfall is typically less than 1,000 mm per year.

Today the rich valleys and basins of the southern highlands support the greatest population concentrations in the entire Maya Area. The fertile volcanic soils and nearly ideal climate have lured settlers from many other areas for thousands of years despite frequent earthquakes and volcanic eruptions. Some 1,800 years ago a catastrophic eruption of Ilopango near present-day San Salvador appears to have destroyed all life within 20 to 30 kilometers, and the widespread ash fall rendered a larger zone (within a radius of 100 km from the volcano) uninhabitable for as long as two hundred years. But even small-scale volcanic eruptions endanger life and livelihood – as can be vividly seen in the excavation of houses and fields at Cerén, El Salvador, instantaneously buried under several meters of ash from a nearby volcanic vent about A.D. 600. Earthquakes usually take an even larger toll in lives and property. Historical accounts document a series of major quakes during the past five hundred years. Among the most significant are those that destroyed the Spanish Colonial capital of Antigua in the eighteenth century, one in 1918 that all but destroyed Guatemala City, and the recent rupture of the Motagua fault, which took more than 24,000 lives in 1976.

North of the continental rift lies a vast belt of highlands, with the higher ridges exceeding 3,000 meters. Composed mostly of metamorphic deposits ranging in age from Paleozoic to Cenozoic in the south, as one moves north these give way to limestone formations. To the west are the Chiapas highlands and the Altos Cuchumatanes, and to the east are the Sierra de Chuacús and the Sierra de las Minas that extend almost to the Caribbean. The rich mineral deposits in these ranges have been mined for centuries, most notably the jadeite and serpentine quarried by the ancient Maya, found along the southern flanks of the Sierra de las Minas in the middle Motagua Valley. The limestone formations of northern Chiapas and the Alta Verapaz of Guatemala are noted for spectacular

karst topography typified by “haystack” hills and beautiful underground caverns, with waterfalls that spring from the sides of mountains, and rivers that disappear beneath the porous hills and reappear miles away. Although many of the slopes of the northern highlands are poor for agriculture, richer alluvial soils have accumulated in many of the valleys and basins.

Much of the northern highland area is drained by the tributaries of the Río Usumacinta, which in turn flows northwest into the southern lowlands and on into the Gulf of Mexico. The main tributary of the Usumacinta, called the Río Chixoy (or Negro or Salinas) in the highlands, drains most of the modern Quiché region of Guatemala, the central portion of the northern highlands. The other major tributary, the Río Pasión, originates farther east, in the Alta Verapaz. The eastern flank of the northern highlands is drained by the Río Polochic, which flows through a lush, steep-sided valley into Lake Izabal in the coastal lowlands of the Caribbean coast.

The climate of the northern highlands ranges from annual means below 15 degrees centigrade in the Altos Cuchumatanes, the highest mountains of the region, to the tropical conditions typical of the low-lying margins found to its west, north, and east. The plateaus of the Cuchumatanes support the highest and coldest modern communities in Guatemala, situated above 2,500 meters, while most of the inhabited valleys lie between 750 and 2,000 meters. These areas support a varied semitropical vegetation, whereas the mountain slopes, where rainfall is sufficient, are covered with pine and oak forests.

For the most part, rainfall follows the same pattern as in the southern highlands, but the length of the wet season tends to increase toward the north, with the highest rainfall totals averaging more than 3,000 millimeters per year. The Alta Verapaz is famed for its highland rain forest, the traditional preserve of the rare and prized quetzal bird, of special importance to the ancient Maya ruling elite, who used its long, slender, brilliant-green plumes as symbols of their authority.

PATTERNS OF CULTURAL DEVELOPMENT IN THE SOUTHERN MAYA AREA

The Pacific littoral and lagoons were exploited throughout the pre-Columbian era, for not only is this environment rich in food resources, but the extraction of salt provided a lucrative product for trade. Farther

inland, a series of sites grew to importance as centers of marketing, ceremonial, and political activity. Preclassic centers such as Izapa, Abaj Takalik, and El Baúl, appear to have prospered from the production of local products such as cacao and the control over trade routes that transect this region. Their successors were still thriving more than a thousand years later, although by this time the focus of Maya civilization had shifted to the north in the lowlands. Thereafter, the Pacific plain was clearly peripheral to developments farther north.

The development of the Maya highlands generally parallels that of the Pacific plain. Although traces of early occupation lie beneath deep volcanic and alluvial deposits, the northern highlands seem never to have been as densely occupied as the highlands to the south. The southern highlands share with the Pacific plain the precocious growth of Preclassic Maya civilization. During much of the precolumbian era the major population centers were located in the midst of the largest and richest highland valleys. Kaminaljuyu, in the Valley of Guatemala, dominated the entire southern highlands during most of the Middle and Late Preclassic. Adjacent regions were controlled by other important centers such as Chiapa de Corzo in the central depression of Chiapas to the west, El Portón in the Salama Valley to the north, and Chalchuapa to the southeast. Later, during the Classic era of lowland Maya civilization, cultural influences from the north penetrated the northern highlands, as at Chamá in the Alta Verapaz. A major lowland Maya center of the Classic period, Copán, is located on the eastern margin of the southern highlands. After the Classic period, highland settlements began to shift away from the valley floors until, during the Postclassic, most major centers were in more secure settings, such as hilltops or plateaus surrounded by ravines. Here the Spanish encountered the capitals of the dominant southern Maya highland kingdoms, such as Zaculeu, Utatlan, Iximche, and Mixco Viejo.

THE ORIGINS OF COMPLEX SOCIETIES (EARLY PRECLASSIC)

Early Preclassic occupation along the Pacific Coast is marked by deposits of shell, pottery sherds, and other domestic refuse. The reconstructed subsistence base of this occupation remains in dispute, but a mixture of coastal gathering, fishing, hunting, and collecting the plentiful food resources of estuarine environments, eventually supplemented by agriculture, seems most consistent with the available evidence. It is also likely

that initially this occupation depended on seasonal exploitation of the seacoast and areas farther inland. Expanding populations and more efficient means for exploiting localized food resources probably led to permanent (year-round) village settlements, perhaps even before agriculture became established. This Pacific coastal tradition was related to a similar early occupation found to the north, along the Mexican Gulf Coast, as reflected in shared material culture, especially by similarities in pottery traditions. This related tradition, as revealed in the excavations adjacent to La Venta, included settlements dependent on mixed hunting, gathering, and agricultural subsistence that were in place before 2000 B.C. (see Diehl, Chap. 4, this volume).

The sites of La Victoria and Salinas La Blanca in the western portion of the Pacific coastal plain provide the basic chronology for this period, further refined by more recent work to the west in Chiapas, and to the east, along the coasts of Guatemala and El Salvador. The earliest deposits appear associated with a preceramic occupation (Chantuto phase) that bridges the end of the Archaic and the beginning of the Early Preclassic eras at c. 2000 B.C. Based on very limited dating evidence, there appears to be a hiatus between the Chantuto phase and that of the earliest known pottery in the Pacific coastal region, the Barra tradition (c. 1500–1350 B.C.). Barra pottery includes especially well-made vessels decorated with incised designs, modeled shapes, and bichrome surfaces, indicating these ceramics were based on earlier prototypes yet to be discovered. It seems likely that local use of gourd containers and, perhaps, an earlier pottery tradition from adjacent regions, provided the prototypes for Barra ceramics.

The Barra phase was followed by the Ocos tradition (c. 1300–1150 B.C.), identified by elaborate red-rimmed neckless jars (*tecomates*) and diagnostic shell impression and rocker stamped decorations. Significantly, occupation by Ocos villagers represents a considerable expansion over that of the Barra phase. Ocos sites have been identified along the Pacific Coast from Chiapas to western El Salvador (Fig. 10.1), and related traditions are known from the Gulf Coast as well. It is generally assumed that this Ocos occupation represents the expansion of a fully sedentary village tradition, based on a mixed agricultural and coastal exploitation, although debate on the meaning of the limited inventory of evidence continues.

Excavations at two Ocos sites in Chiapas – San Carlos and Paso de la Amada – have revealed the remains of large wattle-and-daub buildings,

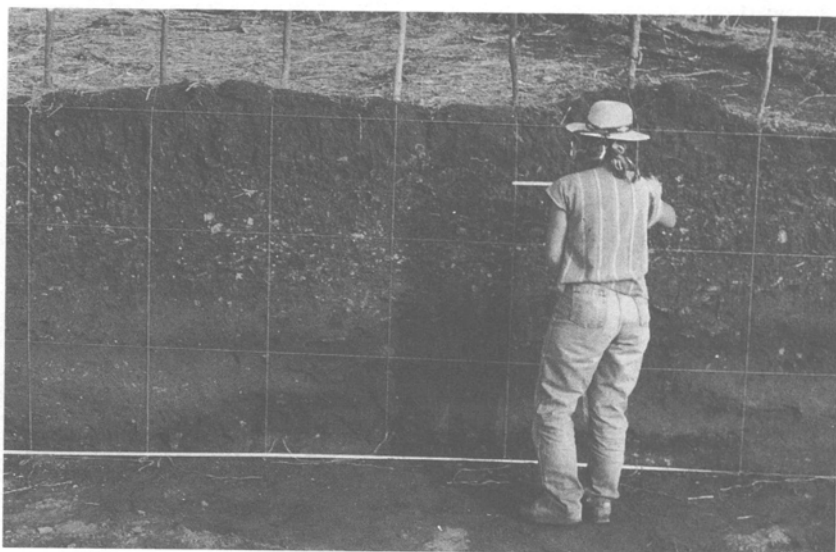


Figure 10.1. Excavation of Early Preclassic occupation levels dating to the Ocos period (c. 1600 B.C.) at the site of El Mesak, on the Pacific Coast of Guatemala.

measuring up to 10 by 20 meters. Presumably these were residences, and the crucial question is whether such imposing structures represent the abodes of an elite segment of society, or communal houses for lineage or similar kin groups. The first scenario would indicate an Early Preclassic emergence of social ranking or even stratification, both hallmarks of social complexity. The latter interpretation would indicate the continuation of an earlier egalitarian village society, albeit one with an expanded population size. The data seems to be too limited to rule out either scenario at present, but future research may well provide the crucial evidence to identify the location and timing of emergent social complexity in the southern Maya area.

THE RISE OF COMPLEX SOCIETIES OF THE SOUTHERN MAYA AREA (MIDDLE PRECLASSIC)

Reserving the possibility for the origins of social complexity during the Early Preclassic, it is clear that by the Middle Preclassic era (c. 1000–400 B.C.) complex societies were evolving across much of Mesoamerica, including the southern Maya Area. The current fashion is to describe this

as the development of a “chiefdom organization” modeled after more recent examples of a particular type of society known from anthropological studies. The difficulty with this approach is documenting the links between the archaeological evidence, always a pale reflection of what once existed, and the living organization. Nonetheless, the Chiefdom model provides a useful template for visualizing some major characteristics of the evolving complex societies in Mesoamerica during the latter half of the Preclassic era. In this kind of organization society is managed by an elite group under one ultimate authority, the chief, whose power derives principally from the custodianship of religion and wealth. We infer that Middle Preclassic chiefs were bestowed a religious power derived from the belief that they provided supernatural security for the populace, through rituals to “ensure” proper conditions for agriculture and other essential activities, while reinforcing the authority of their elite kinsmen. We can perhaps also infer that the chief’s economic power had its base in the management of agricultural and other food-producing activities, and in concomitant rights to receive food tribute. Economic power also derived from the control of trade networks; direct archaeological evidence demonstrates that these networks provided Middle Preclassic societies with a variety of exotic products, including jadeite, serpentine, and magnetite, that were used as symbols by the ruling elite (i.e., the chief and his kinsmen) to reinforce their prestige and authority.

Traditionally, the development of chiefdom organizations has been tied to Olmec civilization in Mesoamerica (Deihl, Chap. 4, this volume). Although in recent years the finding of evidence of equivalent Preclassic complex societies elsewhere in Mesoamerica has overturned the traditional view that the Olmec were the source of all subsequent civilization, it remains obvious that developments on the Gulf Coast were some of the most significant precursors to Maya elite institutions. Monumental sculpture has appeared by the end of the Early Preclassic and is well developed within the Middle Preclassic. Motifs include portraits of rulers with insignia and paraphernalia, such as mirrors and scepters, that are prototypes of objects used by later Maya kings. Olmec monuments include two basic types – upright stones with standing portraits, and rectangular stones with seated portraits – that parallel common Maya forms (“stelae” and “altars”). The iconography of these sculptures also anticipates themes in later Maya art, as in the well-known portrait of the ruler seated in the cave (or jaws) at the entrance to the underworld. Some of these Olmec rulers are identified by glyph-like emblems that

may well be names or titles, and even the custom of defacing or breaking of monuments, presumably after a individual ruler's death in order to negate the residual supernatural power within the stone, anticipates similar treatment accorded Classic Maya stelae.

In the Middle Preclassic the southern Maya Area was tied to the Olmec and other societies by a web of trade networks around which regional civilizations emerged throughout Mesoamerica. The wealth of ideas, as well as goods, that flowed along these routes spurred further developments. Access to new crops and agricultural techniques increased the food supply and allowed populations to increase. Availability of new natural resources, crafts, and markets increased prosperity and created a host of production specialists and middlemen. And as societies became larger and more complex, the ruling élite classes consolidated their control with new economic, political, and religious institutions. These developing Preclassic institutions were the foundations for further growth and elaboration of Mesoamerican civilization during the subsequent Classic era. At a crossroads between Mesoamerica and Central America, and situated within a diverse and lucrative environment, the Preclassic southern Maya were well placed to benefit from the access to the wealth of goods and ideas provided by this trade network.

By the Middle Preclassic, complex societies with many of the attributes of chiefdoms had emerged in the southern Maya Area. The Gulf Coast Olmec appear to have had a close relationship with the southern Maya Area, especially with the expanse of Pacific coastal plain stretching from Chiapas to El Salvador (Fig. 10.2). These contacts were probably due to long-distance trading relationships. Archaeological evidence from Olmec sites indicates that obsidian from known sources in the southern Maya highlands was exported to the Gulf Coast. It is likely that jadeite, serpentine, hematite, feathers, and other highland products were also traded to the Olmec heartland. These south coast trade routes were part of an even larger pan-Mesoamerican economic network. Although the fragile and perishable evidence of cacao cultivation (seeds, pollen, and other plant remains) has not survived, the peoples of the southern Maya Area were quite likely involved in the production and distribution of this prized commodity, since the Pacific coastal plain was a prime growing area for cacao.

But the southern Maya Area was also involved with regions that were closer at hand and were to be even more important to the rise of Classic Maya civilization (Hammond, Chap. 5, this volume). In this instance we



Figure 10.2. Rubbing of one of the four figures on Monument 12, Chalchuapa, El Salvador, portraying a personage adorned with Olmec-style paraphernalia (Middle Preclassic).

are referring to the north-south networks of trade and interaction that tied the Maya Area together, especially the routes between the southern area and the lowlands to the north that crossed the highlands. Although separated by distance and environmental differences, interaction between the two areas was crucial to the development of Maya civilization. In fact, during the Preclassic era both the southern area and the lowlands apparently contributed key ingredients around which later Classic Maya civilization crystallized.

Archaeological research has identified a series of archaeological hallmarks of complex sociopolitical evolution in the southern Maya Area. These began during the Middle Preclassic with a variety of portable and

nonportable sculpture, including examples rendered in the style usually labeled "Olmec"; in the Late Preclassic carved stelae appeared in the same area with obvious Maya stylistic characteristics – including initial examples of Maya writing. These and related diagnostics of Preclassic cultural development are found in the Guatemalan highlands, on the Pacific Coast and piedmont, in western El Salvador, and in western Honduras. From this distribution we can infer that interaction among a series of complex regional Preclassic societies in the southern area was instrumental to the process that led to Classic Maya civilization.

The evidence for the evolution of complex societies comes from a chain of archaeological sites along the south coastal plain. This Preclassic development has been traced by the increasing numbers of sites, the expansion of occupational zones, and the growth in size of individual sites. Much of the archaeological research in these areas has by necessity concentrated on the larger, more visible sites – smaller sites are usually invisible owing to destructive forces or burial by alluvium. Thus we do not have a good picture of the full extent and range of Preclassic occupation, including the hierarchy of sites that can tell us about the degree of ancient social and political complexity.

Investigations in the Soconusco region on the Pacific Coast of Chiapas indicates a Middle Preclassic expansion inland from the Early Preclassic coastal sites. Farther east, in the Escuintla region of Guatemala, a string of five sites has been identified along the piedmont dating to c. 800–600 B.C.; these occupy a single environmental zone paralleling the coast, spaced about 10 kilometers apart. All are at elevations of between 120–125 meters, at an average of 35 kilometers from the sea, within a zone of especially fertile soils and a favorable rainfall belt, as well as being intermediate between the coast and the highlands. By the later Middle Preclassic (c. 600–400 B.C.) the number of sites in this zone more than doubled to twelve, and there are suggestions of a more complex site hierarchy. Site locations show that although two-thirds of occupation continued at elevations above 100 meters, the remaining one-third of settlement had expanded back toward the coast (below 100m). Studies in the Soconusco region show a similar pattern of expansion of occupation over time.

The sites possess large-scale earthen platforms and some are associated with monumental sculptures, the latter often depicting personages using Middle Preclassic carving styles and motifs, some with so-called Olmec stylistic affiliations. These stone monuments are distributed from Chiapas

through southern Guatemala as far east as western El Salvador (See Fig. 10.2), in a pattern that suggests a lowland trade and communication network connecting the Pacific coast with the Gulf Coast via the Isthmus of Tehuantepec. It may also reflect occupation by a closely related ethnic population on the western border of the Maya Area, the homeland of an emerging regional tradition with links to Gulf Coast Olmec populations.

The portraits on these Middle Preclassic southern monuments seem to represent elite leaders, probably local chiefs who derived at least part of their authority from prestigious trading relationships. Although we should not expect to find the same diagnostics of the Classic Maya ruling elite in the Preclassic – at a time when political institutions were developing and changing – we can trace many characteristics that reflect the evolution of social and political complexity back to that time. Thus, Preclassic architectural remains – elaborated residences, tombs, and shrines – provide clues to the development of social stratification. Preclassic artifacts and monuments, with portraits, insignia, and texts, are especially important in tracing the origins of Maya political institutions. In fact, there are good indications that emerging ruling elites at these southern centers adopted specific motifs from the general inventory of Mesoamerican political and religious symbols to reinforce their authority further. At Padre Piedra, in the central depression of Chiapas, there is an Olmec-style monument along with figurines and other artifacts similar to those found at the Olmec sites on the Gulf Coast. Some of the best known of these Olmec-style sculptures are found along or adjacent to the Pacific coastal plain from Chiapas to El Salvador. A series of rock carvings at Pijijiapan, Chiapas, depicts several groups of figures with elaborate headdresses and costumes. Farther east, at Abaj Takalik, Guatemala, a large boulder sculpture depicts an Olmec-style personage. Nearby, excavations have uncovered a series of small monuments carved in apparent Olmec style. Farthest to the southeast, the Las Victorias boulder at Chalchuapa, El Salvador, contains four carved figures; the two larger ones clearly depict important personages with Olmec-style paraphernalia (see Fig. 10.2), although some of their specific attributes, such as the “winged capes,” seem more closely related to the bas-reliefs at the central Mexican highland site of Chalcatzingo (see Grove, Chap. 3, this volume). Excavations at Chalchuapa revealed a large (22m high), conical earthen mound in the El Trapiche group that was built during the Middle Preclassic (c. 600–700 B.C.).

In the highlands a similar pattern of development can be seen, accom-

panied by evidence of external contacts, although there are far fewer indications of direct contact with the Gulf Coast. In this period the major center of Kaminaljuyu began to emerge as a dominant power as it grew out of the smaller-scale Early Preclassic settlements in the Valley of Guatemala. But some of the best evidence for the local evolution of Middle Preclassic ruling elites comes from the Guatemalan highland Salama Valley. This fertile valley, immediately north of the Motagua River, is drained by a tributary of the Río Chixoy and thus possessed good natural connections to both the southern highlands and the lowlands to the north. Research in the valley documented occupation spanning most of the precolumbian era, from the Early Preclassic through the Postclassic. Fourteen sites with Preclassic occupation were identified. The chronological distribution of these sites indicates population growth through the Late Preclassic, with a decline during the Terminal Preclassic.

During the Middle Preclassic period (c. 800–500 B.C. in the local sequence) temple platforms, distinct and elaborated elite residences, and specialized mortuary complexes appear. At Los Mangales evidence for the first clear evidence of elite status in the valley is provided by an elaborate burial of an adult male, possibly a village headman or shaman, in a stone-lined crypt within a specialized mortuary platform. This individual was accompanied by objects of jade and shell, and three trophy heads; at least twelve retainers were buried around the crypt with indications of sacrifice and dismemberment. This elite interment culminated an earlier series of low, apparently residential platforms, one of which contained a single unaccompanied burial placed beneath a small adobe altar.

About 500 B.C. a shift in the pattern of Salama Valley settlement occurred. A previously undifferentiated valley center settlement, El Portón, was transformed by a series of new earthen terrace and platform constructions into the focus of political and religious activity. The latter was directed toward a series of paired stelae and altars. The most prominent of these was Monument 1, a large schist stela, carved with a now eroded central scene and a partially preserved column of glyphs and numerals along its right margin. It was erected around 400 B.C., based on a single associated radiocarbon date. The glyphs appear to be ancestral to later Maya forms, so that El Porton Monument 1 is one of the earliest examples of Maya writing thus far discovered. Monument 1 was paired with a plain flat altar in front of a low adobe-plastered platform. This was the first in a series of constructions and monuments erected at this

location in a pattern seemingly ancestral to a common arrangement of stelae and altars at many Maya sites.

These sculptures, monumental constructions (as at Chalchuapa), tombs with indications of status distinctions (including sacrifices), and the presence of similar, specialized pottery wares, indicate the emergence of complex chiefdom-level societies in the southern Maya Area that maintained contacts within a broad area of southern Mesoamerica during the Middle Preclassic. Based on the limited archaeological sample available, it would appear that the most obvious examples of external contacts, most notably “Olmec style” sculpture and artifacts, are found at the larger sites, indicating that these Olmec traits reflect long-distance contacts used symbolically to mark and reinforce authority of local ruling elites.

LATE PRECLASSIC SOUTHERN MAYA CIVILIZATION

During the Late Preclassic (c. 400 B.C.–A.D. 100) the trends indicating expanding populations and increasing social complexity seen in the Middle Preclassic continued on both the Pacific coastal plain and in the highlands. In this period many southern Maya centers reached a peak of development and prosperity. Although the archaeological sample is still far from thorough and balanced, enough work has been done to reveal increases in numbers of sites, expanded sizes of most sites, and, by inference, increases in populations. Whereas during the Middle Preclassic the largest sites were often dominated by a single monumental platform, during the Late Preclassic many of the larger sites included entire complexes of monumental architecture. Although we can see the beginnings of complex society in the Middle Preclassic, during the Late Preclassic we can see the full-blown expression of this developmental trend, accompanied by the distinctive Maya art style and writing system, both of which appear to have developed in the southern Maya area, although their precise origins are still a matter of debate.

The largest and most powerful southern area site during this period was Kaminaljuyu, which, like many smaller sites, seems to have developed as the capital of a prosperous regional chiefdom, a center for ceremonial, political, and economic activities. The ceremonial role of these centers is reflected in large temple platforms and adjacent plazas, the assembly areas for public gatherings. Their political functions can be seen in carved monuments with portraits of rulers and in the richly

furnished tombs for these élite leaders. The economy was based on the cultivation and distribution of cacao and other crops, along with trade in highland minerals and commodities from beyond the Maya Area. Most of these goods seem to have been borne by human carriers along the routes consolidated in the Middle Preclassic. This trade network appears to have grown and prospered under the control of the élites that ruled each of the regional centers along the network. The highland route westward from Kaminaljuyu followed the central depression of Chiapas to the Gulf Coast. Kaminaljuyu was also a crossroad for north-south routes connecting the Pacific Coast with the northern highlands. The coastal route ran from Central America via the string of Preclassic centers from El Salvador all the way to Tehuantepec, and ultimately to the great centers beyond in Mexico.

Excavations at Kaminaljuyu furnished the first evidence for the growth of Late Preclassic civilization. Kaminaljuyu is in the Valley of Guatemala (elevation c. 1500m), on the divide between the Pacific and Caribbean watersheds. Originally the site covered about 5 square kilometers, and contained more than two hundred earthen mounds, up to 20 meters in height. As at most southern area sites, these are the remnants of adobe-plastered platforms that once supported buildings of wood, plaster, and thatch. The volcanic stones of the southern area were occasionally used for drains, steps, and other architectural elements, but primarily for grinding stones, and monuments. Most of the earthen platforms were arranged in groups, often in north-south alignments, although others apparently stood in isolation. The site was laid out around a modified shallow lagoon or lake that probably served as a reservoir. The surrounding valley contains numerous smaller sites, most being satellites of Kaminaljuyu at one time or another.

About half of the known Kaminaljuyu platforms were Preclassic, including many of the largest structures. With origins of settlement in the Early Preclassic, there is monumental architecture and other signs of sociopolitical stratification by the Middle Preclassic. But Kaminaljuyu reached a peak of development in the Late Preclassic, measured in overall size, the number and size of constructions, a vast assemblage of carved monuments (see Fig. 10.3) including examples with hieroglyphic texts, and the extent of external contacts. Although no single center dominated the entire area, Kaminaljuyu appears to have been the most powerful Late Preclassic center in the southern Maya Area. Its control of one of the most important obsidian quarries in the highlands, El Chayal (20 km



Figure 10.3. Kaminaljuyú Stela 11, a portrait of a Late Preclassic ruler with elaborate headdress and deity mask and carrying weapons (note ax at lower right).

to the northeast), made it the center of a trade network distributing this prized commodity throughout the southern area and beyond into the lowlands. The power and wealth controlled by Kaminaljuyu's Late Preclassic rulers is vividly reflected in two spectacular tombs found within the huge earthen mound of Structure E-III-3. Although the platform was heavily damaged, it undoubtedly once supported the ancestral shrines for the powerful rulers buried beneath.

A similar, smaller-scale Preclassic development has been revealed at the site of Chalchuapa, located in a transitional highland-coastal plain setting to the southeast of Kaminaljuyu. On the frontiers of non-Maya Central America in what is now western El Salvador, Chalchuapa is about 120 kilometers from Kaminaljuyu. The site is at an altitude of 700 meters and covers about 3 square kilometers, within which there are fifty-eight large earthen mounds and nearly a hundred smaller "house platforms." Most of the mounds are arranged in groups around open plaza areas. Chalchuapa appears to have been settled near the end of the Early Preclassic, probably by colonists moving into the highlands from the Pacific Coast. Again there is evidence of sociopolitical stratification and extensive external contacts in the Middle Preclassic, most explicitly seen in the Olmec-style carvings on the already mentioned boulder sculpture and the massive 22 meters-high earthen structure at the northern apex of the site. As at Kaminaljuyu, the Late Preclassic witnessed a peak in development at Chalchuapa. A fragment of a battered carved stela, known as Monument 1, contains traces of an extensive hieroglyphic text, including several recognizable glyphs, bar-and-dot numerals, and Maya calendric symbols.

The site of Abaj Takalik is on the volcanic slopes of the Pacific piedmont in Guatemala, at the other end of the southern area, near the southwestern frontier with Mexico. It covers an area of about a square kilometer containing a series of earthen terraces supporting platforms arranged around open courts or plazas, the settings for an array of carved monuments. As is frequently the case, most of these monuments are not in their original settings but were moved and reset during later periods, so their dating depends on stylistic comparisons. But there are several examples of stelae carved in early Maya style and inscribed with hieroglyphic texts that include Long Count dates, fixing them within the Late Preclassic. Stela 2 has a partially preserved date with at least three possible readings, the latest of which equates to the first century B.C. The much better preserved Stela 5 has two Long Count dates, the latest correspond-



Figure 10.4. Abaj Takalik Stela 5 in situ with its accompanying “altar.” This Late Preclassic stela has a central text with two Long Count dates, framed by standing royal figures (c. A.D. 126).

ing to A.D. 126 (Fig. 10.4). These monuments are examples of the early Maya style, ancestral to the later Classic style of the Maya lowlands. Thus, the ultimate origins of Maya sculptural style must lie even earlier in the Preclassic, represented by the bits and pieces of carved monuments without inscribed dates that can be placed in time only by stylistic analysis.

Recent work in the central portion of the Pacific coastal plain has provided some of our best information about the settlement hierarchy and regional developmental trends during this era. This work has revealed indications of high population densities organized around a series of local ceremonial centers, each surrounded by a hierarchy of smaller dependent sites (consisting of both three and four tiers), which points to the continued growth of a number of independent chiefdoms and even the appearance of incipient state-level systems in this region. By the end of the Preclassic (c. A.D. 250) a large regional center, Balberta, began a period of explosive growth that resulted in its dominating the entire

central coastal region during the subsequent Early Classic. The development of a regional dominant center such as Balberta exemplifies a step beyond the chiefdom or incipient state organizations seen previously – the evolution of the true state-level political organizations associated with the subsequent Classic and Postclassic eras throughout much of the Maya area. This work also illustrates the importance of controlled archaeological research in a region long plagued by looting or accidental discoveries. Thus, the recent controlled excavation of an elite burial from the south coast site of Marinala made by a team of archaeologists from the Universidad del Valle de Guatemala, and dating to the end of the Preclassic era, affords an all too rare opportunity to document the evidence of the high-status leadership that characterized these developments in the southern Maya Area.

The initial development of state-level organizations undoubtedly occurred throughout the southern area – certainly Late Preclassic Kaminaljuyu provides the example of the evolution of the largest regionally dominant center in the southern area – but to be certain of this, much more regional settlement data is needed. As it stands, most of our information comes from site-oriented research at Late Preclassic centers in the southern area. This does show a consistent pattern of imposing constructions and monuments at major sites that were probably the centers of incipient states and very large chiefdoms, surrounded by a hierarchy of dependent sites. The attributes of all these sites, including adobe architectural style and specific characteristics of site planning, elite burials, and the inventory of material culture (artifacts), are evidence of common traditions that may reflect economic or even political alliances tying together the independent polities of the southern Maya area.

One example of interregional unity is provided by a specific pottery tradition known as Usulután ware, distinctively decorated with swirling “resist” lines, usually in cream against an orange background (Fig. 10.5). Usulután pottery, its antecedents distributed throughout the Middle Preclassic period at Chalchuapa and other sites of the southeast region, apparently developed in the southeastern Maya area. By Late Preclassic times it was probably manufactured at several southern centers and was traded and imitated throughout the southern Maya Area. Usulután pottery has been found in Chiapas, in many of the elite tombs of the important Chiapa de Corzo site; in the lowlands to the north, as at El Mirador and Tikal; and in Central America as far away as Costa Rica.

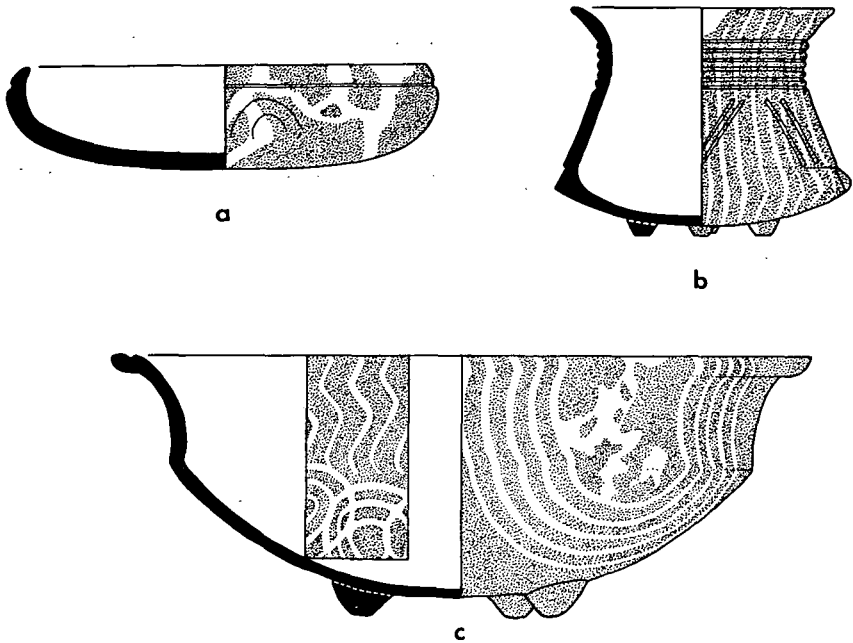


Figure 10.5. Examples of Usulután (resist) pottery from Chalchuapa, El Salvador; pottery of this type was widely traded in the Late Preclassic.

THE SOUTHERN AREA AND THE ORIGINS OF MAYA WRITING AND SCULPTURE

The first stone monuments with Maya-style carving and hieroglyphic inscriptions date to the Late Preclassic at a number of Maya sites, although the great majority of the earliest examples are from southern centers. The questions raised by such monuments concern evolving their origins and functions within complex societies such as we have described in the southern Maya area. It seems likely that plain stone monuments were used as early as the Late Preclassic in the lowlands to mark the *tun* or 360-day cycle, given archaeological evidence from Cuello (Belize) and linguistic evidence (the latter showing a link between the Mayan words for stone and the 360-day cycle in lowland languages). But it is still not clear when monuments with both carved portraits and written texts first appeared in the lowlands. Thus, in the following section we look at the

evidence for the origins of Maya writing and sculpture; and in the section after that, we briefly examine the role of writing and sculpture, along with other factors, in reinforcing political and religious authority within Maya society.

The origins of Maya writing is by no means a resolved question. The ethnic identity of the Preclassic populations in the southern Maya Area is not clear, given the near impossibility of correlating linguistic groups with archaeological remains. Clues are available from the distribution and development of Mesoamerican languages, which suggest Preclassic southern populations spoke early forms of Mayan languages, while others spoke a non-Mayan language such as ancestral Mixe-Zoquean. Both apparently developed writing and calendric systems that shared many characteristics, at about the same time in the Preclassic. The development of these two writing traditions took place within the area extending from the Gulf Coast, across the Isthmus of Tehuantepec, to the Pacific coastal plain of Chiapas and Guatemala. Most of the remains associated with the Mixe-Zoquean tradition are in the western portion of this zone (Gulf Coast and Chiapas), whereas those associated with the Maya tradition tend to be in the eastern portion (Guatemala and El Salvador).

A crucial component shared by both writing systems was the invention of a calendrical system with a fixed zero date, known as the Long Count. The Long Count recorded time elapsed from a fixed point to record specific events, carved on stone stelae as durable memorials to rulers, serving as symbols of political and religious legitimacy. Long Count dates apparently associated with the Mixe-Zoquean tradition used a single vertical column of bar-and-dot numerals. The earliest known examples are a reconstructed date on Stela 2 at Chiapa de Corzo, Chiapas, equivalent to 36 B.C., and a simple bar-and-dot inscription and sculptured elements on Stela C from Tres Zapotes, Veracruz, corresponding to 31 B.C. Two Long Count dates on the recently discovered La Mojarra Stela 1 are equated with A.D. 143 and 156, and the single date on the Tuxtla Statuette equals A.D. 162.

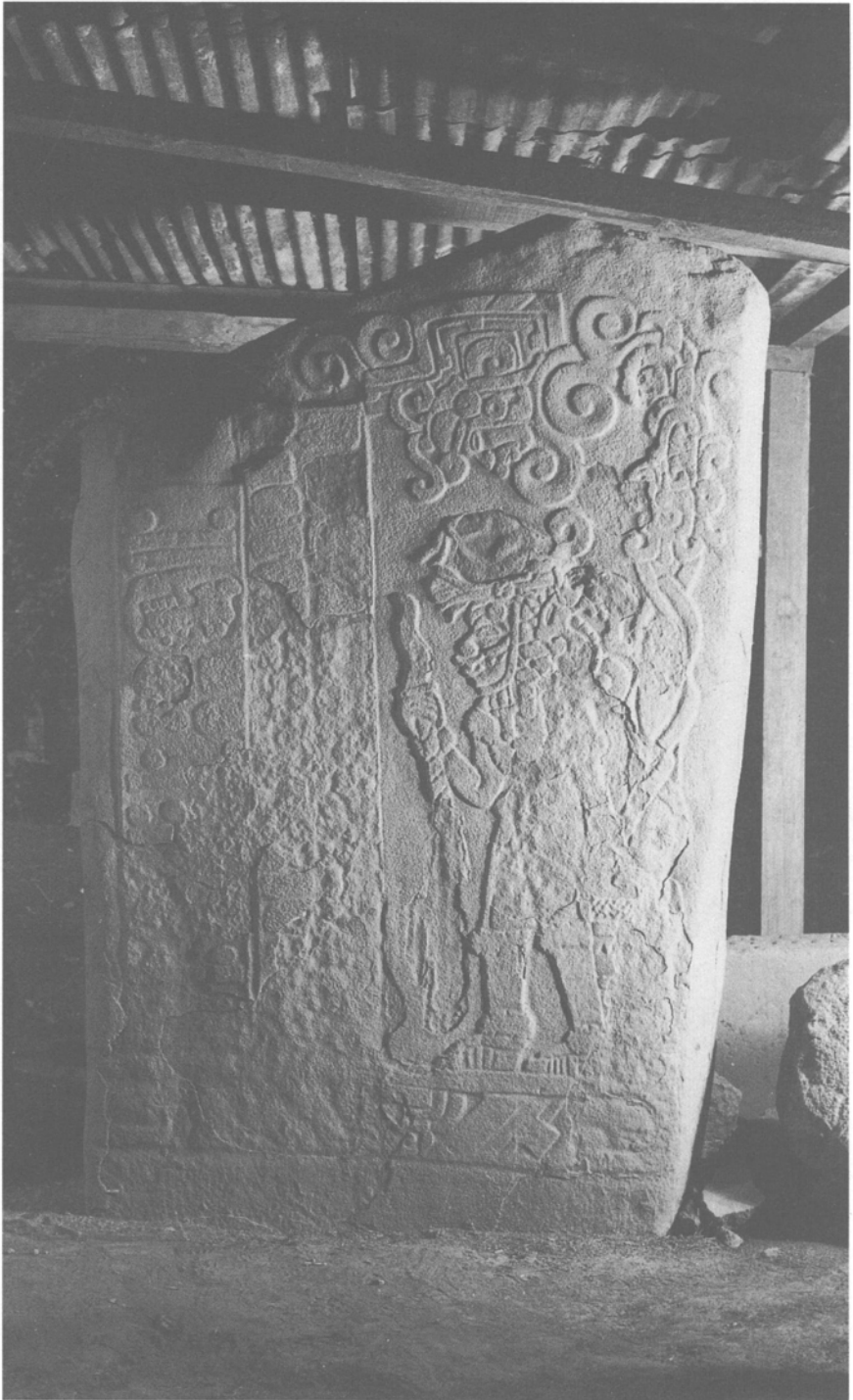
The majority of early calendric and glyphic monument inscriptions have been found in the southern Maya area, but given our incomplete sample of evidence it would be premature to conclude that this area was the *only* vanguard for this development. The recently discovered faintly inscribed glyphs on Stela 2 at El Mirador in the heart of the Maya lowlands may be the best indication yet of what many have suspected:

that comparable developments of writing systems occurred throughout the Maya area, but that less evidence for this has survived in some regions such as the lowlands.

Even so, the corpus of southern monuments of apparent Late Preclassic date still provides the best evidence for the early development of Maya writing and calendrical systems. Just as significant is that these southern monuments were carved in an early version of a distinctive Maya style. The calendric notations consist of simple bar-and-dot symbols carved like the lowland inscriptions of the earliest Classic period but often without the accompanying day-unit glyphs. In addition to the already mentioned examples of early Maya-style monuments with Long Count dates at Abaj Takalik, at El Baúl, on the Pacific coast, Stela 1 has a partially destroyed but readable date equivalent to A.D. 36 and a sculptured personage rendered in early Maya style (Fig. 10.6). Although without calendrical notations, many other Late Preclassic sculptured monuments are known from the southern area. At Kaminaljuyu there are a series of Late Preclassic monuments, the most significant being the magnificently sculptured fragment known as Stela 10, which includes a rather long hieroglyphic text. As mentioned, another sizable text, although badly damaged, was found on the fragmentary Late Preclassic Monument 1 from Chalchuapa.

In the northern highlands at the site of La Lagunita, Guatemala, excavations have revealed the remains of Preclassic construction and a series of broken and reused carved monuments. While one fragmentary carved profile human head may be related to the Middle Preclassic Olmec style, there are at least seven examples dated to the Late Preclassic. East of La Lagunita, the carved monument tradition in the Salama Valley, Guatemala, continued during the Late Preclassic. Like the La Lagunita examples, there are four Salama Valley monuments with elaborately carved human figures, but these also include glyph-like elements (Fig. 10.7). These monuments show stylistic affinities to Kaminaljuyu and other southern centers. Significantly, these northern highland centers of Late Preclassic sculpture are located along important trade routes.

Figure 10.6. El Baúl Stela 1, a Late Preclassic monument with a reconstructable Long Count date (A.D. 36) on the left, and a royal personage holding a spear or scepter on the right.



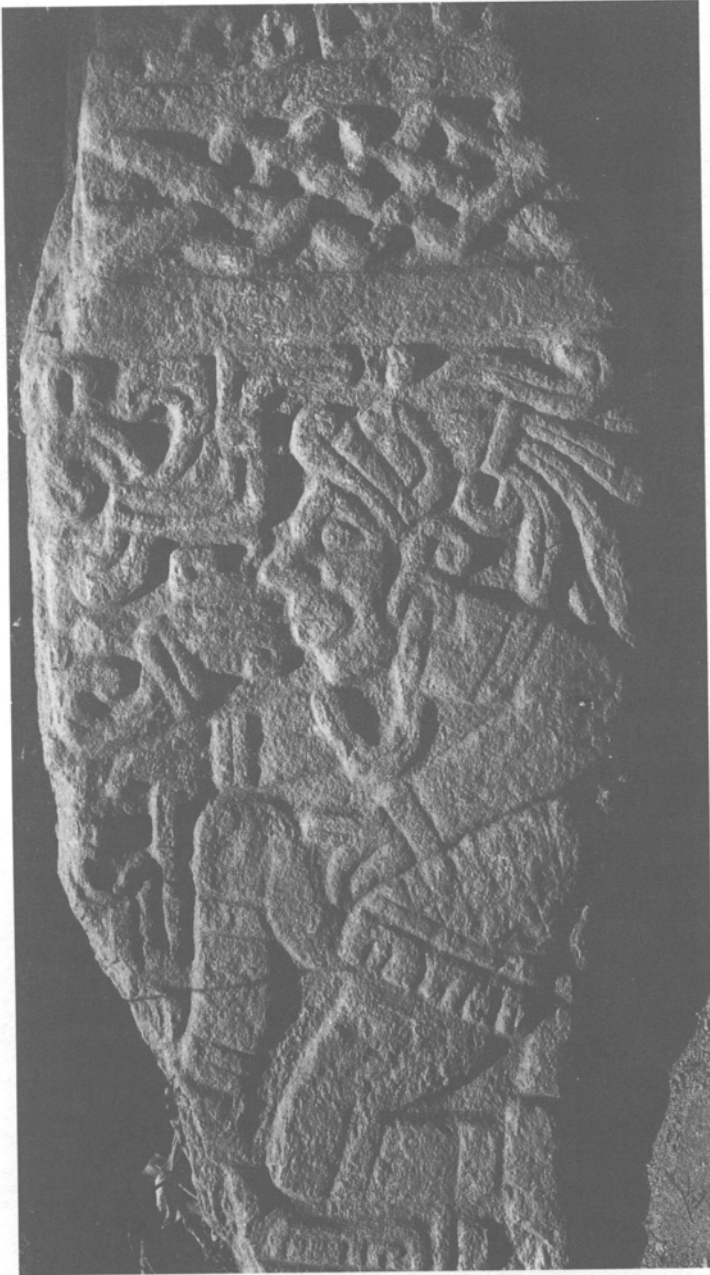


Figure 10.7. Monument 16 from the Salama Valley, Guatemala, stylistically dated to the end of the Late Preclassic showing a kneeling figure and glyph-like elements to the left.

THE SOUTHERN AREA AND THE ORIGINS OF MAYA
CIVILIZATION

As we have seen, the Late Preclassic was a time of rapid expansion in organizational complexity in the southern Maya area, and a similar pattern is apparent in the Maya lowlands as well (see Hammond, Chap. 5, this volume). The factors responsible for the development of increasingly complex organizations were many and still only partially understood. But it appears that the most critical ones were internal interactions between local environmental adaptations and agricultural efficiency, stimulated by external contacts achieved through exchange networks. These processes gave the societies within each region a distinctive character while maintaining a measure of synchronization and similarity across wider areas. Thus, we can see a development marked by a rapid growth in population and stratified organizations associated with state-level societies throughout Mesoamerica at about the same time, each with a mix of shared and distinctive components. A common characteristic in Mesoamerica was a society stratified into two distinct classes: a powerful and wealthy ruling elite, and a far more numerous non-elite of farmers, craftsmen, and so forth. Archaeologically, state-level societies can be recognized by three- and four-tiered site hierarchies capped by a major center with massive ceremonial structures, funerary remains, and artifacts representing a variety of manufacturing and ritual activities.

The traditional term *Maya civilization* is equated with the rise of such state-level organizations, accompanied by traits that are recognizably Maya, including a sophisticated writing system and distinctive styles in both architecture and art. For the most part Maya state-level organizations are best termed “petty,” to describe their smallness of scale. Although some, like Kaminaljuyu, were undoubtedly larger than others, most were never able to expand beyond the local level, and at any given time the southern Maya Area can be characterized as a mosaic of independent petty states of varying sizes, along with less complex organizations in less favored areas. As we have seen, present evidence indicates such organizations and their associated sculptural and writing traditions developed within the southern area, and throughout the Maya Area, during the Late Preclassic era. The best indications of affiliations between Preclassic southern developments and later Classic Maya civilization are found in attributes reflecting elite political and religious institutions. Here we can glimpse how distinctive Maya architecture, ritual, sculpture,

and writing were not only associated with the ruling elite class but provided the vital symbolic underpinnings for the political and religious authority that directed the course of Classic Maya civilization.

Architecturally, in the Late Preclassic southern centers we can see the distinct and elaborate residences, funerary shrines, and tombs of rulers – sometimes truly monumental in size, as with mound E-III-3 at Kaminaljuyu, but otherwise with most if not all the trappings associated with ruling elites, as with the burial at Marinalá on the south coast plain. Not all Late Preclassic monumental structures can be assigned a mortuary function, however, so we remain unsure of the degree to which public works were dedicated to individual rulers. But those that have been excavated show the prestige and exalted status enjoyed by these elite individuals. The E-III-3 tombs were filled with hundreds of pottery offering vessels and other goods, including stingray spines, indicating that autosacrifices were carried out by these Preclassic rulers as in Classic and Postclassic times.

The contents of excavated southern Maya tombs also provide graphic evidence as to the association of captives and sacrifice with the mortuary rites associated with these rulers. The earliest crypt burial at Los Mangales (c. 400 B.C.) in the Salama Valley was surrounded by twelve sacrificed individuals, some of whom were dismembered or beheaded. The elite male in this burial was accompanied by a large (22 cm long) jade scepter – perhaps a symbol of office. A similar Late Preclassic burial surrounded by mutilated sacrifices was excavated at Chalchuapa. The buried rulers in the much more elaborate tombs at Kaminaljuyu included sacrificed companions; a jade mask or headdress was placed on the tall elite male buried in E-III-3 Tomb 2, accompanied by three unadorned individuals (two children and a young adult) who had been placed facedown in the chamber. Farther to the north, two Late Preclassic tombs containing elite males at Los Mangales included, in addition to other grave goods, human skulls (probably trophy heads).

The most direct evidence of antecedents to Classic Maya political and religious organization is furnished by the rich corpus of Preclassic carved monuments, both in bas-relief and in the round styles. An example of the latter style is the so-called Pot-bellied monument. These are obese human figures carved in the round from large boulders, although there are smaller versions, including one found at Tikal in the Maya lowlands. But the function of these distinctive carvings remains unknown, except as symbols that were the objects of public veneration and ritual, presum-

ably controlled by the ruling elite. Examples are known from Kaminaljuyu and many Pacific coast sites, including Abaj Takalik (Fig. 10.8), Bilbao, El Baúl, and Monte Alto. Most scholars accept a Middle Preclassic date for the earliest versions, and a Late to terminal Preclassic position for the majority of examples. The best evidence for this dating is provided by several large pot-bellied sculptures found set into a Late Preclassic terrace at the site of Santa Leticia, El Salvador.

Of particular importance are the bas-relief carvings, both on upright stones (stelae) and flat stones (altars). We have already discussed examples of such monuments and their association with early writing systems, but here we should note that a far larger assemblage of Preclassic stelae and altars exists without accompanying glyphic texts. The sculptural themes on these monuments can be seen as directly reinforcing the authority of the rulers within each of the Late Preclassic southern centers. One of the largest single assemblages of such monuments is from the important Late Preclassic center of Izapa, on the coastal plain of Chiapas, Mexico, generally considered to be part of the Mixe-Zoquean tradition. In the Maya highlands, the corpus of Preclassic sculptured monuments at Kaminaljuyu far outnumbers that from any other site, and some of these show rulers with regalia and objects associated with authority, such as deity masks, elaborate headdresses, weapons, and trophy heads (see Fig. 10.3).

One of the most important developments in further reinforcing elite authority in the southern area lay in combining sculptured images and written texts. Whether or not this is because of sampling inequities, the earliest corpus of monuments that unite text and carved representations – combining the narrative and visual records of events rendered in the early Maya style – is found within the Preclassic southern Maya Area. The earliest known example may well be the stela found at the northern highland site of El Portón (Monument 1, already discussed) at c. 400 B.C., although its central scene is largely destroyed. Among the best Late Preclassic examples in the southern Maya Area are Kaminaljuyu Stela 10 and Chalchuapa Monument 1; both are fragments but have remnants of carved portraits of individuals and extensive inscriptions that include calendrical references. Although little progress has been made in deciphering the archaic forms of glyphs in these Preclassic texts (other than calendrical references), the portraits allow a degree of interpretation. The prevalent themes appear to be either warfare and sacrifice or the succession of political offices. Warfare themes are indicated by weapons or



Figure 10.8. Abaj Takalik Monument 40, an example of a Late Preclassic “Pot-bellied” monument.

trophy heads, as on Kaminaljuyu Stela 10 and a fragment in the same style from the south coastal site of Chocoma, Guatemala. Chalchuapa Monument 1 depicts a single seated personage with an elaborate headdress, presenting what appears to be a trophy head. The single figure on El Baúl Stela 1 stands before a two column hieroglyphic text, holding a spear or scepter (see Fig. 10.6). At Abaj Takalik, Stelae 2 and 5 each depict two standing figures with elaborate headdresses facing each other,

separated by texts opening with one or two Long Count dates, which may commemorate the transfer of power from one ruler to his successor (see Fig. 10.4).

To recapitulate, we have seen that archaeological evidence indicates that the southern Maya Area was the setting for the emergence of state-level societies during the Late Preclassic. Networks of economic, political, and ideological interaction integrated this varied region, and fostered the growth of an increasingly complex social organization. The clustering of similar characteristics at each site in the southern area, as can be seen in site planning, architecture, artifacts (especially ceramics and trade goods), monuments, and other features, reflects the importance of continued interaction between centers. The characteristics that now define Preclassic southern Maya civilization – architecture, sculpture, writing, and calendars – were used by ruling elites to reinforce authority within these initial state systems, and are all prototypes of traits that later reached their greatest expression in the lowlands during the Classic era.

The northern Maya highlands provided critical developmental links in the communication networks between the southern highlands and the lowlands to the north. These valleys and their regional centers signal the importance of interregional interaction within the overall evolution of Maya civilization. Data from the northern Maya highlands reinforces, therefore, the perception of the ancient Maya world as a mosaic of interrelated but diverse regions and traditions, each of which contributed in varying degrees to the origins and growth of Maya civilization. It is in this context of regional diversity that the cultural development of the southern Maya can be seen as a crucial ancestral component of Classic Maya civilization. Rather than postulating a single origin, though, as in a simple donation of traits from one area to another, the evidence suggests that the constellation of characteristics we define as Classic Maya civilization emerged from the evolution of many interrelated regional traditions within the Maya Area, synchronized by an array of communication networks that tied these regions together.

THE TERMINAL PRECLASSIC AND THE DECLINE OF THE SOUTHERN MAYA

The precocious southern Maya reached a peak of development in the terminal Preclassic (c. A.D. 100–250), then seem to have fallen into a sudden decline at the close of this era. This is seen in the archaeological

record by a cessation of the custom of erecting carved stela with hieroglyphic texts, and the abandonment of many sites. The decline was not confined to the south; it was also felt in the lowlands. But the effects of this decline at the terminal Preclassic–Early Classic boundary (c. A.D. 250) were apparently much more drastic in the southern area, resulting in the abandonment of many Preclassic centers along the Pacific Coast and farther inland.

The downfall of the southern Maya was probably due to a combination of natural and economic factors. A major natural catastrophe, the eruption of Ilopango volcano in central El Salvador, was seemingly the trigger. Ash deposits from this eruption were first identified at Chalchuapa, where a major localized decline could be seen following this event. Later research in the nearby Zapotitan Valley has shown that Ilopango caused serious decreases in population and agricultural production over a wide area. We now know this disaster occurred around A.D. 250 and produced massive ashfalls that rendered areas up to 100 kilometers from Ilopango uninhabitable for as long as two hundred years. As a result, a vast zone within the southeastern Maya area was depopulated through death and emigration. Although much of the Pacific coastal agricultural region appears to have escaped heavy damage, ashfalls certainly reduced production at least temporarily.

But it was probably a chain of events following the natural disaster that produced an economic decline. Agricultural production plunged the immediate ashfall zone, causing population loss or complete abandonment in the hardest-hit areas. Since the coastal trade routes could not be maintained without their sustaining population, commerce in the area all but ceased. The loss of trade connections produced a far broader economic disaster, affecting even those southern Maya populations not directly impacted by the volcanic eruption. It is also possible that the decline in trade along the Pacific Coast led to an increase in commerce farther north, such as along the trans-Peten routes, boosting the fortunes of centers able to take advantage of changing trade patterns.

It does seem likely that after the decline of the southern area, opportunities opened up for new powers. In the wake of the disruptions and chaos of the southern Maya Area, new polities arose and new exchange networks emerged, exemplified by the rapid rise of Balberta, in the center of the southern coastal plain of Guatemala. The new order in both the coastal and southern highland regions seems to have abandoned many of the old symbols of political and religious power, perhaps because they

were associated with the failed old order. In their place, new symbols appear in the artifactual, sculptural, and architectural record, some being themes and motifs associated with external areas contacted through trade networks. Traits associated with Oaxaca, central Mexico, the Gulf Coast, and other foreign regions, were used in varying ways by local élites during and after the recovery process as new symbols of power and authority.

At the same time, the period of the terminal Preclassic–Early Classic transition saw the expansion of lowland populations and the elaboration of lowland culture (see Chapter 5, this volume). In part the expansion of Maya lowlands seems to have been spawned by the arrival of new ideas, and even refugee groups, from the southern Maya area. It remains possible that specific political institutions that characterized Classic period civilization in the lowlands, such as individualized rulership associated with carved stelae recording the king's activities in text and image (involving a distinctive art style, hieroglyphic writing, and Long Count calendrical notation), were introduced into the lowlands at this time. But the development of lowland Maya civilization cannot be explained by the simple imposition of a new order from the south, and it seems more likely that these and other characteristics of Classic Maya civilization developed simultaneously in the various regions of the Maya area. It is clear that important trade contacts and even political ties existed between the southern and lowland Maya before the Terminal Preclassic, and these communication networks provided the conduit for interaction necessary for such simultaneous development. Although only further research can hope to resolve this issue, it would seem that it is the fusion of related traditions in the Terminal Preclassic, especially those seen in the southern area and in the lowlands, that gave rise to many distinctive elements in Classic Maya civilization.

THE SOUTHERN MAYA AREA IN THE EARLY CLASSIC

Research for the Classic period (c. A.D. 250–800) in the southern Maya area has been rather meager compared to the amount of archaeological work for this era in the Maya lowlands. Although extensive archaeological surveys have been made in many highland areas, excavations have been less frequent. Those at Kaminaljuyu remain the principal referent for the highland Classic period. Important Classic period occupation has been revealed by excavations at several other centers, most notably Zaculeu, near Huehuetenango, and Chuitinamit–Atitlan, near Lake Atitlan, as

well as Zacualpa, Los Cimientos–Sajcabaja, La Lagunita, and Chitinamit, in the Quiché area to the north. On the Pacific coastal plain, Balberta, Bilbao, and Abaj Takalik are representative of investigated sites with Classic period occupation.

Until recently the impact of Teotihuacan, the dominant central Mexican power during the Early Classic (c. A.D. 250–600), was seen as the most significant external factor on both the coast and in the highlands. It has been often argued that Teotihuacan established colonial enclaves at Kaminaljuyu, and on the coastal plain, to control trade networks throughout the Maya Area. This external impact was seen as the critical factor in the development of state-level organizations in the Maya Area. The evidence for this foreign involvement lay in numerous artifacts executed in Teotihuacan styles found throughout the southern area. In addition, at Kaminaljuyu a portion of the civic and ceremonial center was rebuilt in the style of central Mexico during this interval.

As we have seen, however, there is increasing evidence that state-level societies in the Maya area originated in the Late Preclassic, long before any involvement with Teotihuacan, and owed as much to internal factors as external stimulus. Rather than viewing traits associated with Teotihuacan and other Mesoamerican regions (including Oaxaca and the Gulf Coast) as evidence of Conquest or colonial enclaves, current studies reveal these to be elements combined with local traditions and used by local ruling elites to reinforce their political and religious authority. The major Early Classic center on the Pacific coastal plain, Balberta, enjoyed its explosive growth without significant evidence of Teotihuacan contacts. Rather, Balberta seems to have been the direct heir of the local Preclassic traditions in architecture, pottery, and other forms of material culture, and in the wake of the disruptions seen at the end of the Preclassic, was able to emerge as a regionally dominant center, its position further secured by fortifications.

Some 90 kilometers farther inland, at Kaminaljuyu in the Maya highlands, there has been a long recognized association with central Mexican architecture in one important area of the site. Excavation of several Early Classic “Teotihuacan-style” platforms there revealed nonetheless that they were funerary shrines covering elaborate tombs in keeping with long-standing Maya tradition. The tombs were for Kaminaljuyu rulers, who were buried with a variety of status goods including some objects imported from central Mexico, but far more of these objects were of local origin or from elsewhere in the Maya Area. Although the sample is

less than adequate, the Early Classic in several highland regions, such as the Salama Valley, was marked by less construction activity and lower population levels than seen in either the preceding Late Preclassic or succeeding Late Classic. At most sites in the highlands, and on the Pacific plain as well, Teotihuacan contacts are far less evident than at Kaminaljuyu. But the general pattern throughout the southern area is fairly consistent, where local elites combined foreign elements, from Teotihuacan and other external regions, with local traditions in varying ways to maintain and reinforce their authority.

Farther north, in the Alta Verapaz and Quiché regions of the northern highlands, there is a pattern of renewed growth during the Early Classic. In the western portion of this area, at Nebaj and in the Cotzal valley, at least some of this development appears to have been associated with colonization by elite groups from the Maya lowlands. This may in fact be the precursor of later trends that saw these highland regions dominated by the expansion of elite groups originating from the lowlands.

THE SOUTHERN MAYA AREA IN THE LATE CLASSIC

The available evidence from the Late Classic (c. A.D. 600–800) indicates that this was a period of continued growth in most regions of the southern area. The rich agricultural potential of alluvial soils and plentiful rainfall, and the natural advantage of the plain as an avenue for trade routes, provided the foundation for a series of prosperous polities. Especially important was the capability for high yields of cacao, a prized commodity traded throughout Mesoamerica, which attracted the interest of both Maya and non-Maya powers to this region. During the Late Classic the central coastal plain of Guatemala was the setting for a distinctive development best known from its sculptural tradition, known as the *Cotzumalhuapan style*. Different from Classic Maya sculpture, Cotzumalhuapan carvings were executed on both freestanding stelae and large boulders, with human sacrifice and ball game scenes as the most common themes. The sites of Bilbao, El Baúl, and El Castillo were major political and ceremonial centers associated with the Cotzumalhuapan tradition, and examples of sculpture rendered in this style have been found at many other sites on the Pacific coast. There are indications of contacts, and perhaps outposts, for the Cotzumalhuapan in the adjacent highlands. There is a Cotzumalhuapan-style monument at the recently discovered site of Ramos de Pastores, situated on a defensible ridge above

the Antigua Valley, and many looted examples of such sculpture are known from this highland region. It has been proposed that this development represents an intrusion from Mexico, undoubtedly attracted by the great amount of cacao production in the coastal region, and may be the initial wave of a Nahua-speaking group known as the Pipil that occupied areas of the Pacific plain of Guatemala and El Salvador during the Postclassic period.

The available evidence points to substantial Late Classic developments elsewhere on the coastal plain, again supported by commerce and the rich agricultural resources of this entire area. It would appear that there were a number of non-Cotzumalhuapan states that continued to expand during this era. Some centers of these polities contained impressive architectural assemblages. For example, the Late Classic Texas site, extending for some 5 kilometers along the Río Seco, contains more than two hundred identified structures, the largest being 30 meters high. Sites like this are all the more impressive when one considers that by far the greatest part of archaeological remains on the coastal plain have been destroyed by modern development. This means we may never gain a truly adequate understanding of the dimensions of growth and size attained by the pre-Conquest states that once existed in these coastal regions.

The amount of modern destruction is relatively less in most highland regions, although there are unfortunate exceptions to this, such as the Valley of Guatemala, where only a remnant of Kaminaljuyu and associated archaeological remains have managed to escape destruction wrought by the expansion of Guatemala City. But in the highlands generally, once again incomplete archaeological coverage allows only glimpses of developments in a limited number of regions. According to extensive surveys in the Valley of Guatemala, population levels for the Kaminaljuyu region reached their maximum during the Late Classic. Kaminaljuyu undoubtedly represents the largest highland polity of this period, although even this was not of a size to rival the greatest powers of the Maya lowlands during this era. In the eastern highlands the site of Asunción Mita reached its apogee in the Late Classic. Its architecture and pottery indicate close ties to the neighboring lowland polity of Copán, and Asunción Mita's proximity to the Ixtepeque obsidian source indicates it was involved in trading this important commodity. Farther to the southeast, the ancient center of Chalchuapa enjoyed a prosperous renewal during the Late Classic, associated with a new architectural complex known as

Tazumal. Tazumal and other Late Classic polities in El Salvador, such as San Andres, also manifest commercial ties to Copán, reflected in architecture, ceramics, and even sculpture. The village of Ceren, adjacent to San Andres, was buried by a sudden local volcanic eruption about A.D. 650. The careful excavation of this site provides a unique glimpse into the everyday life of the peoples who lived in this region.

Some portions of the highlands were not densely occupied during the Classic period, principally because of relatively poor agricultural or other resource potentials. But many areas remained a rich and valuable source for a variety of products that were traded locally and sought by outside powers. There are plentiful indications of economic contacts with the lowlands to the north, such as imported polychrome pottery vessels and other goods. Highland products, especially obsidian and jadeite, continued to be extensively traded into the lowlands. Major routes followed several principal river systems, especially those through the northern highlands along the upper Usumacinta–Rio Chixoy system, and to the northeast to the Caribbean by way of the Motagua Valley. A series of centers situated to benefit from, or control, trade along these routes rose to prominence during the Late Classic.

Investigations in two regions in the northern highlands underscore their importance during the Classic period. In the Verapaz region north of the Motagua River, research in the Salama Valley, although oriented mostly to Preclassic developments, revealed renewed Late Classic growth from the decline seen in the Early Classic. The capitals of several small polities in the Verapaz, including both valley sites such as Chama and defensible ridge sites such as Salto in the Sierra de las Minas, reflect the prosperity of local elites who controlled production of jade from sources in the middle Motagua Valley, traded north into the lowlands. The status and wealth accrued from this economy is seen in the elite tombs of the region, often furnished with polychrome vessels and other objects imported from both the lowlands and the adjacent highland regions.

Farther to the west in the Chixoy drainage region, more extensive research has documented a similar pattern of Late Classic growth. The site of Los Encuentros is apparently a typical polity capital, served by many small surrounding population centers. Here, as elsewhere in the highlands, excavations reveal changing conditions at the end of the Late Classic, marked first by the introduction of new pottery types, a mold-made and decorated ware known as Fine Orange, and a distinctive high-temperature-fired ware known as Plumbate (which seems to have been

produced at centers on the Pacific coastal plain). These are accompanied by other elements, including sculptural motifs, associated with non-Maya traditions from the Gulf Coast and other parts of Mexico. Soon thereafter, the site of Los Encuentros, like many other Classic highland sites, was abandoned.

These shifts define the terminal Classic period (c. A.D. 800–900), a time of changes not only in the southern area but also throughout the Maya Area, the most profound being the severe decline in the central lowlands (see Chapter 5, this volume). This era is often characterized by increasing evidence of non-Maya elements in the archaeological record, usually linked to the expansion of Maya groups heavily influenced by Mexican cultural traditions. The most important of these so-called Mexicanized Maya were Chontal Mayan-speaking groups whose homeland was on the Gulf Coast on the western fringes of the Maya Area.

The expansion by Chontal Maya groups up the Usumacinta drainage from the Gulf Coast appears to have led to their control over several southern lowland centers. These same movements were probably also responsible for the first expressions of similar Mexicanized site planning, architecture, and artifacts that are seen in the northern highlands. That is, there may have been a further penetration of Chontal colonists and traders into the highlands by way of the upper Usumacinta (Río Chixoy and its tributaries) that led directly into the northern highlands.

Significantly, the available archaeological record indicates a sudden change in highland society around A.D. 800. Some earlier sites were abruptly abandoned; others were rebuilt and expanded. Both the rebuilt centers and a series of apparently newly founded terminal Classic highland centers were often larger than the older Classic sites, although they continued to be situated in open-valley settings.

THE SOUTHERN MAYA AREA IN THE EARLY POSTCLASSIC

Much of what we know about the final period of indigenous development in the southern Maya Area comes from documentary sources. The rich resources of ethnohistorical information about the Postclassic Maya highlands include the unique chronicle of the Quiché Maya, the *Popol Vuh*, and other native documents. But these accounts do not always agree with the available archaeological evidence. Again, the amount of archaeological investigation in the southern Maya Area has been far from adequate, and further work may resolve many of the apparent discrep-

ancies. For the time being, however, we can only offer a tentative outline of events in the southern area during the final centuries of the pre-Columbian era.

The Postclassic (c. A.D. 900–1500) in the southern Maya Area seems to parallel events in the northern lowlands (see Chapter 5, this volume). The ethnohistorical accounts repeatedly refer to conquests by outsiders, some of whom appear to have been Nahuatl-speaking peoples from central Mexico. We have already mentioned the Nahuatl-speaking Pipil in connection with the Cotzumalhuapan episode on the south coast. Research by William Fowler has defined two waves of Pipil migrations, one in the Early Postclassic, between A.D. 900 and 1000, and another in the Late Postclassic, between A.D. 1200 and 1350, resulting in the colonization of the coastal plain. These migrations profoundly changed the social and cultural fabric of the south coastal plain, and affected the indigenous Maya polities in the highlands to the north.

The Postclassic Maya highlands, in turn, were also affected by migrations from other directions. In this case, the new settlers appear to have been ethnic Maya with a culture of mixed Mexican and Maya origins, and these so-called Mexicanized Maya groups claimed descent from the mythical Mesoamerican city of Tollan. In fact, the *Popol Vuh* relates that three Quiché Maya princes traveled to their former homeland to gain the authority and symbols of their legitimate right to rule in the highlands. This visit to Tollan may refer to a journey to the major Yucatecan city of Chichén Itzá, since the *Popol Vuh* records that the princes traveled to the east, after which “they crossed the sea,” perhaps referring to a route eastward down the Motagua Valley to the Caribbean, then by boat along the coast of the peninsula. The Yucatecan chronicles also mention gifts sent to Chichén Itzá from Guatemala, probably in deference to the dominant position of Chichén Itzá during the Early Postclassic era. More recently an alternative interpretation proposes that the actual destination of the Quiché princes was the southeastern Maya polity of Copán, where new evidence indicates occupation continued well into the Early Postclassic period. By this interpretation the Quiché rulership would have been directly descended from the political institutions of the lowland Classic Maya. In any case, regardless of the specific direction of the contact, it seems clear that the southern Maya Area continued to be affected by the expansion of Mexicanized Maya groups that began in the terminal Classic.

In the Maya highlands the Early Postclassic period was marked by a

dramatic shift in settlement patterns. Open-valley sites were almost invariably abandoned, replaced by centers constructed in easily defended locations, usually on hilltops or promontories surrounded by steep-sided ravines. Ditch-and-wall fortifications supplemented these naturally defensible locations. These new highland strongholds were the capitals of a series of conquest states, each vying for control over the indigenous populations and the wealth inherent in the local natural resources. The documentary sources speak of conquest by warriors who established new ruling lineages and who married into the local population. The recorded names of several of the new highland ruling families reflect their Mexican ties. These Early Postclassic newcomers to the highlands were undoubtedly part of a larger changing order that saw warrior groups of Mexicanized Maya from the Gulf Coast lowlands also establish hegemony over Yucatan from their capital at Chichén Itzá.

In several cases archaeological excavations support this connection. For instance, the remains from Early Postclassic highland sites often include a sculptural motif nearly identical to that associated with the Mexicanized Maya expansion in the coastal lowlands – an openmouthed, feathered-serpent head from which human warrior heads protrude. At Chuitinamit–Atitlan, on the south shore of Lake Atitlan, a serpent frieze that compares directly to a similar motif at Chichén Itzá was excavated. Architectural links include a possible Mexican-style skull rack (*tzompan-tli*) from at least one highland site, at Chalchitan near the headwaters of the Río Chixoy. However, in some cases, as in the excavations at Chitnamit, northeast of Utatlan, no evidence of Mexicanized sculptural or architectural forms has been found.

Assuming that Mexicanized Maya warriors established these fortified early Postclassic centers, their routes into the highlands seem to have been via both the upper Usumacinta/Chixoy and Motagua rivers. The Motagua provided a route from the Caribbean coast to the east. Quirigua, in the lower Motagua Valley, seems to have been occupied during the Early Postclassic by peoples closely linked to the Caribbean coast of Yucatan and Belize. This may reflect Chontal Maya control over the circum-Yucatan coastal trade network, including the Motagua Valley commerce between the highlands and the Caribbean. In this way, the Motagua seems to have provided a secondary avenue for Mexicanized Maya penetration into the Maya highlands. Early Postclassic sites have been identified throughout the upper drainage basins of both the Motagua and the Usumacinta/Chixoy system. The latter gave direct access

from the Chontal homeland in the Gulf Coast lowlands. We have already mentioned the pattern of change in these regions, and how Late Classic centers in the Chixoy Valley, such as Los Encuentros were abandoned. By the Late Postclassic this region was dominated by the center of Cauinal, which appears to have been sustained as a tribute collection center for the new masters of the land.

THE SOUTHERN MAYA AREA IN THE LATE POSTCLASSIC

Available documentary sources often give a greater clarity to the picture in the Late Postclassic, although, as mentioned, these are not always in agreement with archaeological findings. The ethnohistorical sources all record the prominence of a series of highland Maya groups and their capitals, many of which were encountered and described by the Spanish in the early sixteenth century. All located in easily defended positions like their Early Postclassic precursors, the inventory of Late Postclassic highland sites includes several powerful regional capitals and many secondary centers, all of which competed for control over the people, products, and trade routes within their regions. Warfare was the means of settling disputes, and several of these highland groups, notably the Quiché and Cakchiquel Maya, were associated with powerful conquest states that extended their spheres of control at the expense of their neighbors. Both these groups also expanded into the Pacific coastal plain, undoubtedly to gain control over cacao production, other resources, and trade routes.

Research combining archaeological and ethnohistoric data has reconstructed the social and political organization of the most thoroughly documented highland conquest state, that of the Quiché Maya. This reconstruction is based in a segmentary state organization in which elite warrior lineages expanded through conquest to subjugate and control new territories. This is obviously consistent with the idea of the intrusion of foreign Mexicanized Maya from the Gulf Coast dominating the Late Postclassic highlands. An alternative reconstruction based on archaeological research in the Chujuyup Valley would explain the Late Postclassic development of the Quiché state as the product of internal processes, without resort to foreign elite intrusions. Under this scenario, the Mexicanized Maya traits in the archaeological record are seen as products of expanded elite trade connections. Although the current consensus seems to favor the reconstruction based on Mexicanized Maya elite intrusion

and a segmentary state organization as the basis for the domination of the highlands by Late Postclassic conquest states, only further archaeological research can adequately test these two interpretations.

Today the Maya highlands are populated by a series of Maya groups, each speaking a distinct Mayan language. Each is a direct descendant of the polities formed in the Late Postclassic and encountered by the Spanish in the sixteenth century. The major highland centers at the time of the Conquest include archaeological sites identified in the Pokomam area (such as Mixco Viejo and Chinautla Viejo); Atitlan (the major settlement of the Tzutuhil peoples living around the lake of the same name); Zaculeu (in the Mam area); Utatlan (the principal center of the Quiché); and Iximche (capital of the Cakchiquel). Archaeological investigations have been undertaken at Zaculeu, Mixco Viejo, Iximche, and Utatlan, as well as at several secondary centers such as Zacualpa.

Based on ethnohistoric accounts, it is likely that the ancestors of the warrior elite groups that were to create the Quiché and Cakchiquel states entered the highlands from the Gulf coastal lowlands shortly after A.D. 1200. Although these elite warriors came as conquerors, they seem eventually to have lost their native tongues, adopting Mayan languages such as Quiché, Cakchiquel, and the others spoken by the various highland peoples they subjugated. However, throughout their history the new masters carefully maintained their elite status and traditions apart from the indigenous highland peoples under their control.

By about 1350 the Quiché had consolidated their authority over the central region between the headwaters of the Rio Chixoy and the upper Motagua. A new capital was founded, Ismachi, on a narrow plateau between two steep-sided ravines, where an unsuccessful revolt was waged against the Quiché. According to the *Popol Vuh*, the would-be usurpers “were sacrificed before the gods, and this was the punishment for their sins by order of the king. . . . Many also fell into slavery and servitude. . . . The destruction and ruin of the Quiché race and their ruler was what they wished, but they did not succeed.” Sometime later, about 1400, a new Quiché Maya capital was founded. This was named Gumarcaaj (“place of the rotten reeds”) or, as it is now known, Utatlan. Utatlan was on another plateau surrounded by ravines immediately north of Ismachi. From the capital of Utatlan, the Quiché Maya expanded their domain through further conquests in the western highlands and southward to the Pacific Coast.

The Quiché state suffered a severe setback about 1470, when the

Cakchiquel Maya, who had served as subjects and allies, revolted against their former masters and established an independent state in the region south and east of Utatlan. The Cakchiquel founded a new capital, Iximche, also defended by surrounding ravines. From Iximche the Cakchiquel began a new cycle of conquests, subjugating some areas formerly controlled by the Quiché. The Quiché made several attempts to reconquer the Cakchiquel, but without success. The Cakchiquel recorded the results of one major battle in their native history, entitled *The Annals of the Cakchiquels*. According to this account, almost surely embellished by the propaganda of the victors, the attacking army from Utatlan was annihilated, thousands of Quiché warriors were slaughtered, and their leaders captured and sacrificed. But the Cakchiquel were undoubtedly successful and seem to have been still expanding their domain early in the sixteenth century, when their rise to power was arrested by the Spanish conquerors. It is, of course, with the arrival of the Europeans that this review of the precolumbian southern Maya Area closes, for with the shattering conquest by the Spanish, independent cultural development ceased, not only for the Maya but also for all native peoples of the New World.

BIBLIOGRAPHICAL ESSAY

Discussion of the chronological frameworks for the Maya Area, including the Pacific Coast and highlands, can be found in *The Ancient Maya* (5th edition) by Robert J. Sharer (Stanford, CA, 1994) and *The New Archaeology and the Ancient Maya* by Jeremy A. Sabloff (New York, 1990). An earlier but more specialized treatment is in Gareth Lowe's article "Eastern Mesoamerica," in *Chronologies in New World Archaeology*, ed. R. E. Taylor and C. Meighan (New York, 1978). Sabloff presents a useful alternative developmental perspective in his article "Ancient Maya Civilization: An Overview," in *Maya: Treasures of an Ancient Civilization*, ed. C. Gallenkamp and R. E. Johnson (New York, 1985). The basic resource for descriptions of environmental and climatological conditions for the southern Maya Area, and for all of Mesoamerica, can be found in Volume 1 of *The Handbook of Middle American Indians* (Austin, TX, 1964). The classic study of cultural geography for a cross section of the area considered here is *Cultural and Historical Geography of Southwest Guatemala* by F. McBryde (Washington, DC, 1947).

The basic foundation for archaeological studies of the southern Maya

Area is in Volume 2 of *The Handbook of Middle American Indians, Part 1: Archaeology of Southern Mesoamerica*, ed. by Gordon R. Willey (Austin, TX, 1965), especially in two papers by Stephen F. Borhegyi, "Archaeological Synthesis of the Guatemalan Highlands" and "Settlement Patterns of the Guatemalan Highlands," and a paper by Edwin M. Shook, "Archaeological Survey of the Pacific Coast of Guatemala." These and the other summary articles in this work cover research up to 1965; a more recent update of Mesoamerican archaeology emphasizing research since that time is provided by the *Supplement to Handbook of Middle American Indians*, Volume 1, ed. J. A. Sabloff (Austin, TX, 1981). A series of more technical papers emphasizing ceramic data and developmental summaries for all portions of the Maya area, including the southern area, can be found in *Maya Ceramics, Papers from the 1985 Maya Ceramic Conference*, ed. Prudence Rice and Robert Sharer (2 vols., British Archaeological Report, International Series No. 345, Oxford, 1987). A more detailed synopsis of the evolution of Maya society in the southern area, and relationships to developments elsewhere in the Maya Area is in *The Ancient Maya* (5th edition) by Robert J. Sharer (Stanford, CA, 1994).

The preceramic occupation of the Pacific Coast is reported by Barbara Voorhies in *The Chantuto People: An Archaic Period Society of the Chiapas Littoral, Mexico (Papers of the New World Archaeological Foundation, No. 41, Provo, 1976)*. Studies of the origins of settlement of the Pacific Coast by pottery-using peoples begin with *Early Cultures and Human Ecology in South Coastal Guatemala* by Michael D. Coe and Kent V. Flannery (Washington, DC., 1967). A number of important archaeological studies of coastal sites and regions have been published in the twenty-five years since Coe and Flannery's seminal report appeared, including "Ceramic Chronology and Chronometric Dating: Stratigraphy and Seriation at La Blanca, Guatemala" by Michael Love, *Ancient Mesoamerica* 4(1) (1993): 17–30. References to recent summaries of research on the Pacific Coast dealing with both origins and development of complex society can be found in several edited compilations, beginning with *New Frontiers in the Archaeology of the Pacific Coast of Southern Mesoamerica*, ed. F. Bove and L. Heller (Tempe, AZ, 1989). Spanish readers should consult *Investigaciones Arqueológicas en la Costa Sur de Guatemala*, ed. D. Whitley and M. Baudry (Los Angeles, 1989). And an article by a host of scholars who have worked in this area – Michael Blake, John Clark, Barbara Voorhies, George Michaels, Michael Love, Mary Pye, Arthur Demarest, and Barbara Arroyo – "A Revised Chronology for the Late Archaic and Forma-

tive Periods along the Pacific Coast of Southeastern Mesoamerica,” is in *Ancient Mesoamerica* (1999). An invaluable compilation of recent research and overviews for all periods is *The Formation of Complex Society in Southeastern Mesoamerica*, ed. William Fowler (Boca Raton, FL, 1991). Recent findings of related early coastal settlement on the Gulf Coast are reported by William Rust and Robert Sharer in “Olmec Settlement Data from La Venta, Tabasco, Mexico,” *Science* 242 (1988): 102–4.

The chiefdom concept is the subject of a considerable body of literature in archaeology; a recent work dealing with indigenous New World examples is *Chiefdoms in the Americas*, ed. R. D. Drennan and C. A. Uribe (Lanham, MD, 1987). A contribution by Joyce Marcus entitled “Zapotec Chiefdoms and the Nature of Formative Religions,” in *Regional Perspectives on the Olmec*, ed. Robert J. Sharer and David C. Grove (Cambridge, England, 1989), examines a relevant and specific example from the Valley of Oaxaca. This same volume contains a number of papers that examine interregional interaction and the evolution of complex societies in Mesoamerica, including two articles that look at the more specific issue of the role played by the Gulf Coast Olmec in the southern Maya Area: “The Olmec and the Southeastern Periphery” by Robert J. Sharer and “The Olmec and the Rise of Civilization in Eastern Mesoamerica” by Arthur A. Demarest. Regarding the function of early monuments, David Grove provides an important interpretation of Gulf Coast carved stones as dynastic markers in “Olmec Monuments: Mutilation as a Clue to Meaning,” in *The Olmec and Their Neighbors*, ed. E. P. Benson (Washington, DC, 1981).

The early monuments of the southern Maya Area are illustrated and described by Susanna Miles in her article “Sculpture of the Guatemala–Chiapas Highlands and Pacific Slopes and Associated Hieroglyphs,” in Volume 2 of *The Handbook of Middle American Indians, Part 1: Archaeology of Southern Mesoamerica*, ed. Gordon R. Willey (Austin, TX, 1965). A more recent study with special relevance to the monuments of Kamin-aljuyu is *The Origins of Maya Art: Monumental Stone Sculpture of Kamin-aljuyu, Guatemala, and the Southern Pacific Coast*, by Lee Parsons (Washington, DC, 1986). The issue of the origins of writing and monuments among the Maya and Mixe-Zoqueans was first delineated by Gareth Lowe in “The Mixe-Zoque as Competing Neighbors of the Maya,” in *The Origins of Maya Civilization*, ed. R. E. W. Adams (Albuquerque, NM, 1977). Other works dealing with this issue include an article by John Graham, “Maya, Olmecs and Izapans at Abaj Takalik,” in Volume

8 of the *Actes of the 42nd International Congress of Americanists* (Paris, 1979); a more recent article dealing with an early inscription at the same site by John Graham and John Porter, "A Cycle 6 Initial Series? A Maya Boulder Inscription of the First Millennium B.C. from Abaj Takalik," *Mexicon* 11 (1989): 46–49; and the description of a recent discovered monument with what is thought to be the longest text in the Mixe-Zoquean tradition: "La Estela 1 de La Mojarrá, Veracruz, Mexico" (*Research Reports on Ancient Maya Writing*, No. 16, Washington, DC, 1988). *Word and Image in Maya Culture: Explorations in Language, Writing and Representation*, ed. W. F. Hanks and D. S. Rice (Salt Lake City, 1989), is a recent volume with a number of significant contributions devoted to issues of Maya writing and iconography, including an article by Robert Sharer concerning the question of origins of notational systems in the southern area, "Preclassic Origins of Maya Writing: A Highland Perspective."

Selecting from the considerable corpus of reports dealing with important southern area Preclassic sites, we can begin with two major sites in Chiapas, Mexico: *Izapa: An Introduction to the Ruins and Monuments* by G. W. Lowe, T. A. Lee, and E. Martínez (Papers of the New World Archaeological Foundation, No. 31, Provo, 1982), and *Excavations at Chiapa de Corzo, Chiapas, Mexico* by G. W. Lowe, P. Agrinier, J. A. Mason, F. Hicks, and C. E. Rozaire (Papers of the New World Archaeological Foundation, Nos. 8–11, Provo, 1960). For treatments of major sites on the Pacific Coast of Guatemala, one should consult *Bilbao, Guatemala* by Lee A. Parsons (2 vols., Milwaukee Public Museum Publications in Anthropology Nos. 11 and 12, 1967–69); the article entitled "Olmec Diffusion: A Sculptural View from Pacific Guatemala" by John Graham, in *Regional Perspectives on the Olmec*, ed. Robert J. Sharer and David C. Grove (Cambridge, England, 1989); and *New Frontiers in the Archaeology of the Pacific Coast of Southern Mesoamerica*, ed. F. Bove and L. Heller (Tempe, AZ, 1989). The primary source for the Late Preclassic florescence at Kaminaljuyu is *Mound E-III-3, Kaminaljuyu, Guatemala*, by E. M. Shook, E. M., and A. V. Kidder (Carnegie Institution of Washington Publication 596, 1952); reports stemming from later research include "Cultural Evolution and Ecological Succession in the Valley of Guatemala: 1500 B.C.–A.D. 1524," by W. T. Sanders and C. N. Murdy, in *Maya Subsistence: Studies in Memory of Dennis E. Puleston*, ed. K. V. Flannery (New York, 1982). For the southeastern highlands the basic source is *The Prehistory of Chalchuapa, El Salvador*, ed. Robert J.

Sharer (3 vols., University Museum Monograph 36, Philadelphia, 1978), along with *The Archaeology of Santa Leticia and the Rise of Maya Civilization* by Arthur Demarest (Middle American Research Institute, Publication 52, New Orleans, 1986). For the Salama Valley and other sites in the northern highlands, the reader should begin with *Archaeological Investigations in the Northern Maya Highlands, Guatemala: Interaction and the Development of Maya Civilization* by Robert J. Sharer and David W. Sedat (University Museum Monograph 59, Philadelphia, 1987), and may also wish to consult an earlier but useful source, *Archaeological Reconnaissance in Central Guatemala* by A. Ledyard Smith (Carnegie Institution of Washington Publication 608, 1955). Research in the Chixoy Valley was conducted by the French Archaeological Mission to Guatemala, and most of the resulting reports are published in French; the important early carved monuments in this region are described by Alain Ichon in his publication *Les sculptures de la Lagunita, El Quiché, Guatemala* (Paris, 1977).

Among the many works dealing with the definition and detection of state-level organizations in archaeology, several recent studies are especially relevant to such developments in the Maya area, including *The Transition to Statehood in the New World*, ed. G. D. Jones and R. R. Kautz (Cambridge, England, 1981), and an article entitled "On the Nature of the Mesoamerican City" by Joyce Marcus in *Prehistoric Settlement Patterns: Essays in Honor of Gordon R. Willey*, ed. E. Z. Vogt and R. M. Leventhal (Albuquerque, NM, 1983). The role of the southern Maya in the overall evolution of Maya civilization has been considered by Arthur Demarest in "Political Evolution in the Maya Borderlands" in *The Southeast Maya Zone*, ed. E. Boone and G. R. Willey (Washington DC, 1988), and by David Freidel in "Culture Areas and interaction Spheres: Contrasting Approaches to the Emergence of Civilization in the Maya Lowlands," *American Antiquity* 44 (1979): 36–54. In addition to the previously mentioned reports of southern Maya sites, the Late Preclassic peaking of development in this area has been considered by Arthur Demarest and Robert Sharer in "Interregional Patterns in the Late Preclassic of Southeastern Mesoamerica: A Definition of Highland Ceramic Spheres," in *The Southeast Maya Periphery*, ed. P. A. Urban and E. M. Schortman (Austin, TX, 1986), and also in "The Origins and Evolution of Usulután Ceramics" by the same authors, which appeared in *American Antiquity* 47 (1982): 810–22.

Interaction and trade are crucial factors for the development of com-

plex societies, and several studies of this topic, such as *Mesoamerican Communication Routes and Cultural Contacts*, ed. T. A. Lee and C. Navarrete (Papers of the New World Archaeological Foundation, No. 40, Provo, 1978), include case studies drawn from the Maya area. More specifically, the role of communication between the southern Maya Area and the Maya lowlands has been examined by a number of scholars, including Robert Sharer and David Sedat in *Archaeological Investigations in the Northern Maya Highlands, Guatemala: Interaction and the Development of Maya Civilization* (University Museum Monograph 59, Philadelphia, 1987), Charlotte Arnauld in *Archéologie de l'Alta Verapaz, Guatemala: Habitat et Société* (Mexico, 1986), and, with specific reference to the Preclassic lowlands, by Barbara Voorhies in "An Ecological Model of the Early Maya of the Central Lowlands," in *Maya Subsistence: Studies in Memory of Dennis E. Puleston*, ed. K. V. Flannery (New York, 1982).

Changes marking the transition between the Preclassic and Classic eras in the southern area were initially described by Edwin Shook and Tatiana Proskouriakoff in "Settlement Patterns in Mesoamerica and the Sequence in the Guatemalan Highlands," in *Prehistoric Settlement Patterns in the New World*, ed. G. R. Willey (Viking Fund Publications in Anthropology, No. 23, New York, 1956). A recent view of this transition can be found in "A Ceramic Compositional Perspective on the Formative to Classic Transition in Southern Mesoamerica" by Hector Neff, Frederick Bove, Eugenia Robinson, and Barbara Arroyo in *Latin American Antiquity* 5(4) (1994): 333–58. The evidence for a major volcanic disaster and its possible role in changing the fortunes of the southern area have been presented by Robert Sharer in "The Prehistory of the Southeastern Maya Periphery," *Current Anthropology* 15 (1974): 165–87, and more recently in "The Olmec and the Southeastern Periphery," in *Regional Perspectives on the Olmec*, ed. Robert J. Sharer and David C. Grove (Cambridge, England, 1989), and by Payson Sheets in "Maya Recovery from Volcanic Disasters, Ilopango and Ceren," *Archaeology* 32(3) (1979): 32–42, and in "Environmental and Cultural Effects of the Ilopango Eruption in Central America," in *Volcanic Activity and Human Ecology*, ed. P. D. Sheets and D. K. Grayson (New York, 1979).

Studies of the southern Maya Area in the Classic period begin with the major highland site of Kaminaljuyu, and the primary source here remains *Excavations at Kaminaljuyu, Guatemala* by A. V. Kidder, J. D. Jennings, and E. M. Shook (Carnegie Institution of Washington Publication 501, 1946). More recent treatment of the site with a special em-

phasis on the supposed links to Teotihuacan can be found in *Teotihuacan and Kaminaljuyu: A Study in Prehistoric Cultural Contact*, ed. W. T. Sanders and J. W. Michels (University Park, PA, 1977); for a more general overview, see "Cultural Evolution and Ecological Succession in the Valley of Guatemala: 1500 B.C. – A.D. 1524" by W. T. Sanders and C. N. Murdy, in *Maya Subsistence: Studies in Memory of Dennis E. Puleston*, ed. K. V. Flannery (New York, 1982). Papers dealing with Teotihuacan connections to several regions in the southern area, including the Cotzumalhuapa monuments, may be found in a volume edited by Ester Pasztory, *Middle Classic Mesoamerica* (New York, 1978). More recent research on the Pacific coastal plain reported in *New Frontiers in the Archaeology of the Pacific Coast of Southern Mesoamerica*, ed. F. Bove and L. Heller (Anthropological Research Papers no. 29, Tempe, AZ, 1989) has challenged the Teotihuacan links and posits a greater role for indigenous development. The most thorough study of Classic period regional development in the northern highlands is *Archéologie de l'Alta Verapaz, Guatemala: Habitat et Société* (Mexico, 1988), by M. C. Arnauld. Results of other regional studies for this era in the northern highlands include the now classic study by A. L. Smith and A. V. Kidder, *Excavations at Nebaj, Guatemala* (Washington, DC, 1951), the subsequent regional study *Archéologie de la région de Nebaj* (Paris, 1962) by P. Becquelin, and "Maya Highland Prehistory: New Data and Implications" by Richard E. W. Adams (University of California Archaeological Research Facility 16, Berkeley, 1972), *Archéologie de Sauvetage dans la vallée du Río Chixoy 4: Los Encuentros* by Alain Ichon and Marion Hatch (Paris, 1982), *Archéologie de Sauvetage dans la vallée du Río Chixoy 5: les sites classiques de la, vallée moyenne du Chixoy* by Alain Ichon and R. Grignon-Cheesman (Paris, 1983), and *Archaeological Investigations in the Northern Maya Highlands, Guatemala: Interaction and the Development of Maya Civilization* by Robert J. Sharer and David W. Sedat (University Museum Monograph 59, Philadelphia, 1987).

Some of the changes wrought during the terminal Classic period are described in *Mesoamerica After the Decline of Teotihuacan A.D. 700–900*, ed. Richard A. Diehl and J. C. Berlo (Washington, DC, 1989). For an up-to-date treatment of the new political and economic order established in the Maya Area during this interval, see *The New Archaeology and the Ancient Maya* by Jeremy A. Sabloff (New York, 1990), and, for more specific coverage of the southern Maya Area, see John W. Fox, "Lowland to Highland Mexicanization Processes in Southern Mesoamerica," *Amer-*

ican Antiquity 45 (1980):43–54, and *The Ancient Maya* (5th edition) by Robert J. Sharer (Stanford, CA, 1994). Changes in settlement patterns that mark this era as well as the subsequent Postclassic period were initially defined by Edwin Shook and Tatiana Proskouriakoff in “Settlement Patterns in Mesoamerica and the Sequence in the Guatemalan Highlands,” in *Prehistoric Settlement Patterns in the New World*, ed. G. R. Willey (Viking Fund Publications in Anthropology, No. 23, New York, 1956).

The most important synthesis for the Pacific coastal plain in the Postclassic is *The Cultural Evolution of Ancient Nahua Civilizations: The Pipil–Nacarao of Central America* by William R. Fowler (Norman, OK, 1989). Otherwise, our understanding of the Postclassic period in the southern area begins with consideration of the native highland Maya chronicles, the best known of which are the *Popol Vuh* and the *Annals of the Cakchiquels*, that provide both mythical and historical accounts of the most prominent highland Maya groups of this era. The Quiché Maya chronicle is available through several translations, beginning with the rather free-form version by A. Recinos, *Popol Vuh: The Sacred Book of the Ancient Quiché Maya*, English translation by S. G. Morley and D. Goetz (Norman, OK, 1950). Far more literal translations are provided by Munro S. Edmonson with *The Book of Counsel: The Popol Vuh of the Quiché Maya of Guatemala* (Middle American Research Institute Publication 35, New Orleans, 1971), and, more recently, by Dennis Tedlock with *Popol Vuh: The Mayan Book of the Dawn of Life* (New York, 1985). The Cakchiquel Maya chronicle is available in a translation by A. Recinos and D. Goetz, *The Annals of the Cakchiquels* (Norman, OK, 1953).

Descriptions of the southern Maya in the Postclassic are usually based on research aimed at reconciling the native histories with the archaeological record. For this, two works by Robert M. Carmack are essential: *Quichean Civilization* (Berkeley, CA, 1973), and *The Quiché Mayas of Utatlan* (Norman, OK, 1981), along with an article by Robert M. Carmack and John M. Weeks, “The Archaeology and Ethnohistory of Utatlan: A Conjunctive Approach,” *American Antiquity* 46 (1981): 323–41. A volume of collected papers dealing with the Postclassic Quiché, *Archaeology and Ethnohistory of the Central Quiché* (Institute of Mesoamerican Studies, Publication No. 1, Albany, NY, 1977), ed. D. T. Wallace and R. M. Carmack, provides several more specific studies. Other important archaeological studies dealing with Postclassic highland sites include the report of excavations at the Mam Maya capital, *The Ruins of Zaculeu*,

Guatemala (2 vols., Richmond, VA, 1953), and the excavations at several smaller centers within the Quiché realm: *Zacualpa, El Quiche, Guatemala: An Ancient Provincial Center of the Highland Maya*, by Robert Wauchope (Middle American Research Institute Publication 39, New Orleans, 1975); *Chisalin: A Late Postclassic Maya Settlement in Highland Guatemala* by John M. Weeks (British Archaeological Report, International Series, No. 169, Oxford, 1983); *Archéologie de Sauvetage dans la vallée du Río Chixoy 2: Cauinal* by A. Ichon, M. Fauvet-Berthelot, C. Plocieniak, R. Hill II, R. Gonzalez Lauck, and M. Bailey (Guatemala, 1980); and *Organización de un centro Quiché protohistórico: Pueblo Viejo Chichaj* by Alain Incon (Guatemala, 1975). Information about the Cakchiquel Maya capital of Iximche is more difficult to find, especially in English, but the director of the excavations, George F. Guillemin, summarized this work in "Urbanism and Hierarchy at Iximche," in *Social Process in Maya Prehistory*, ed. Norman Hammond (London, 1977). A somewhat dated but still useful report of excavations at another Postclassic highland Maya capital is provided by Samuel K. Lothrop's *Atitlan: An Archaeological Study of the Ancient Remains on the Borders of Lake Atitlan, Guatemala* (Carnegie Institution of Washington Publication 444, 1933).

The alternative views of the sociopolitical organization of the Late Postclassic Quiché have been described in a number of publications. For the most thorough treatments of the segmentary state organizational model as applied to the highland Quiché, the reader should consult two works by John W. Fox: *Quiché Conquest: Centralism and Regionalism in Highland Guatemalan State Development* (Albuquerque, NM, 1978), and *Maya Postclassic State Formation* (Cambridge, England, 1987). For an alternative view of the evolution of the Postclassic Quiché state, see two articles by Kenneth Brown: "Some Comments on Ethnohistory and Archaeology: Have We Attained (Are We Even Approaching) a Truly Conjunctive Approach?" in *Reviews in Anthropology* (Spring 1983): 53–71, and "Postclassic Relationships Between the Highland and Lowland Maya," in *The Lowland Maya Postclassic*, ed. Arlen F. Chase and Diane Z. Chase (Austin, TX, 1985).

THE AZTECS AND THEIR CONTEMPORARIES: THE CENTRAL AND EASTERN MEXICAN HIGHLANDS

THOMAS H. CHARLTON

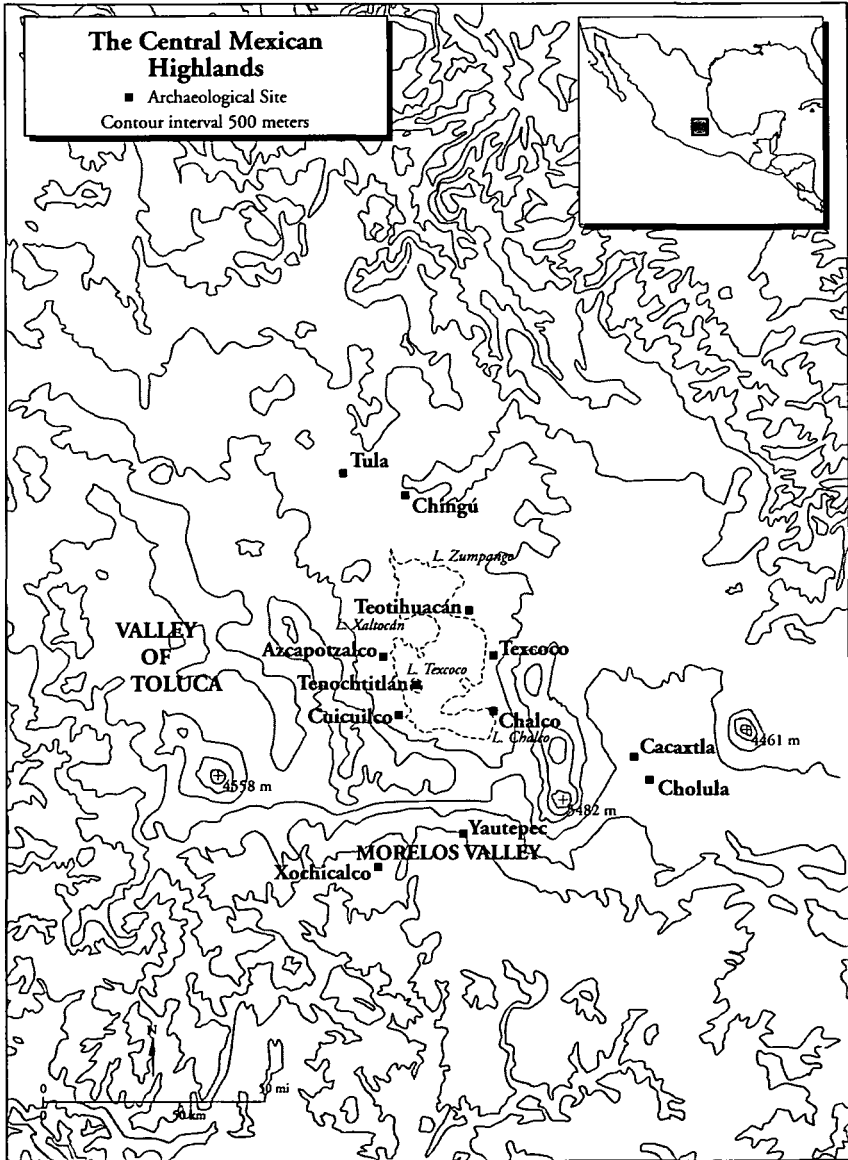
BACKGROUND

In Central Mexico (Map 11.1) the period between the fall of Tula (c. A.D. 1150) and the conquest of Tenochtitlán by the Spaniards (A.D. 1521) is one of complex, dynamic, and rapid cultural evolution. All cultures in the area were at a state level of development; each represented a regional variant of a civilization with many shared common features (cf. Renfrew 1975:17, 1986:2). The major defining characteristics of the period include the breakup of the Tula macroregional state system that had incorporated and controlled much of Central Mexico, and the devolution of the Toltec political and economic structure into small and separate city-state units (see Map 11.3). This devolution was followed by the emergence of the third and final prehistoric macroregional state system, that of the Aztecs.

In many respects the events of the period mirror those of the Early Toltec or Epi-Teotihuacán period (A.D. 650/750–900/950). Characteristic of that time, following the end of Teotihuacán, the first macroregional

Kathryn Birgy, in her capacity as Research Assistant, located many of the references on which this paper is based. Cynthia Otis Charlton aided in the compilation of the bibliography using a computer-based bibliography program. She also prepared the figures. I have benefited from discussions of many of the issues presented here with Elizabeth M. Brumfiel, Mary G. Hodge, Deborah L. Nichols, Jeffrey R. Parsons, and Michael E. Smith.

The 1988–89 research at Otumba was carried out in collaboration with Dr. Deborah L. Nichols of Dartmouth College, through a permit issued by the Consejo de Arqueología of the Instituto Nacional de Antropología, Mexico. The National Science Foundation supported the research through Grant BNS-871-9665 to the University of Iowa with Thomas H. Charlton as Principal Investigator, and Grant No. BNS-871-8140 to Dartmouth College with Deborah L. Nichols as Principal Investigator. The National Endowment for the Humanities also supported the analyses of the data through Research Grant RO-22268-91 to the University of Iowa with Thomas H. Charlton as Principal Investigator. Thomas H. Charlton received two University of Iowa faculty Development Assignments (1989, 1993) in connection with that research. Deborah L. Nichols received additional support from the Claire Garber Goodman Fund, the Dartmouth Class of 1962, and the Dartmouth Faculty Research Committee.



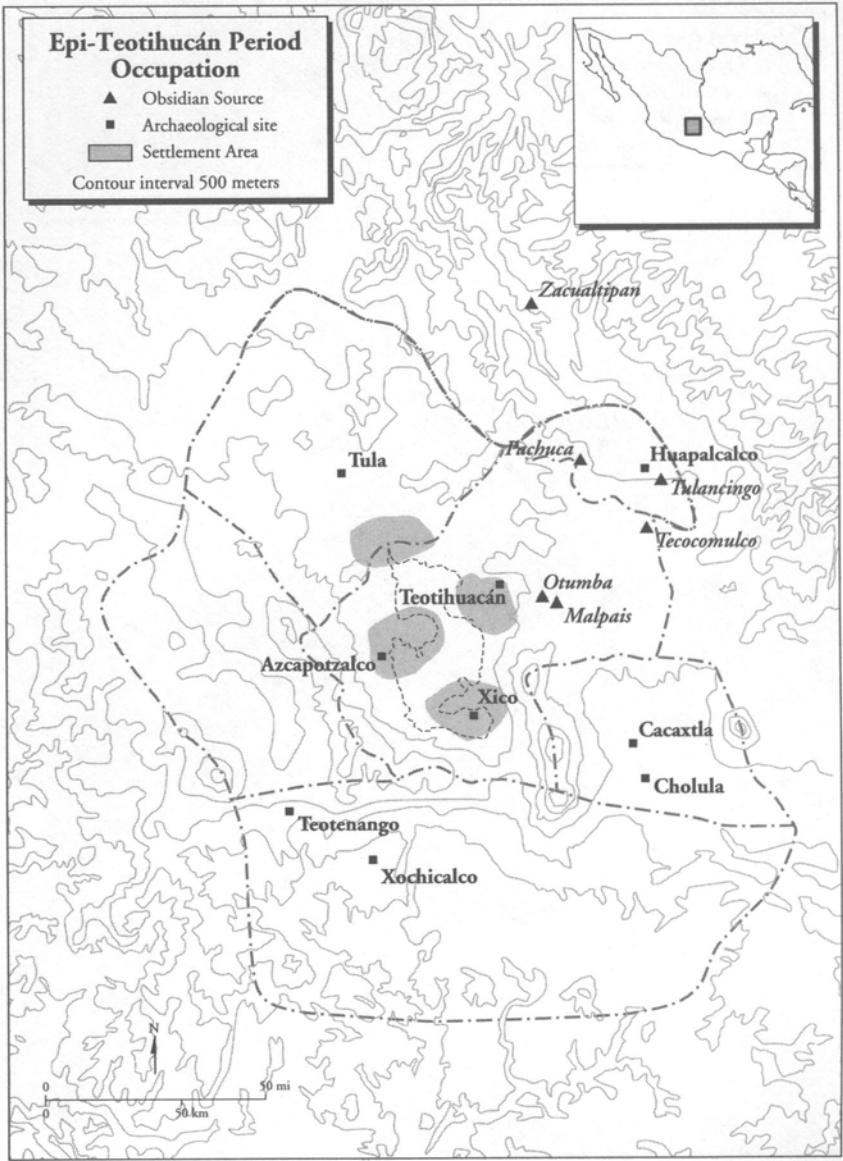
Map II.1

state of Central Mexico, but before the rise of Tula, there were population movements and the establishment of small independent sociopolitical units (Diehl and Berlo 1989:3–4; Marcus 1989) (Map 11.2). The sociopolitical units formed in the epi-Teotihuacán period were probably structurally and functionally equivalent to the city-states encountered by the Spaniards in Central Mexico in A.D. 1519 (Bray 1972).

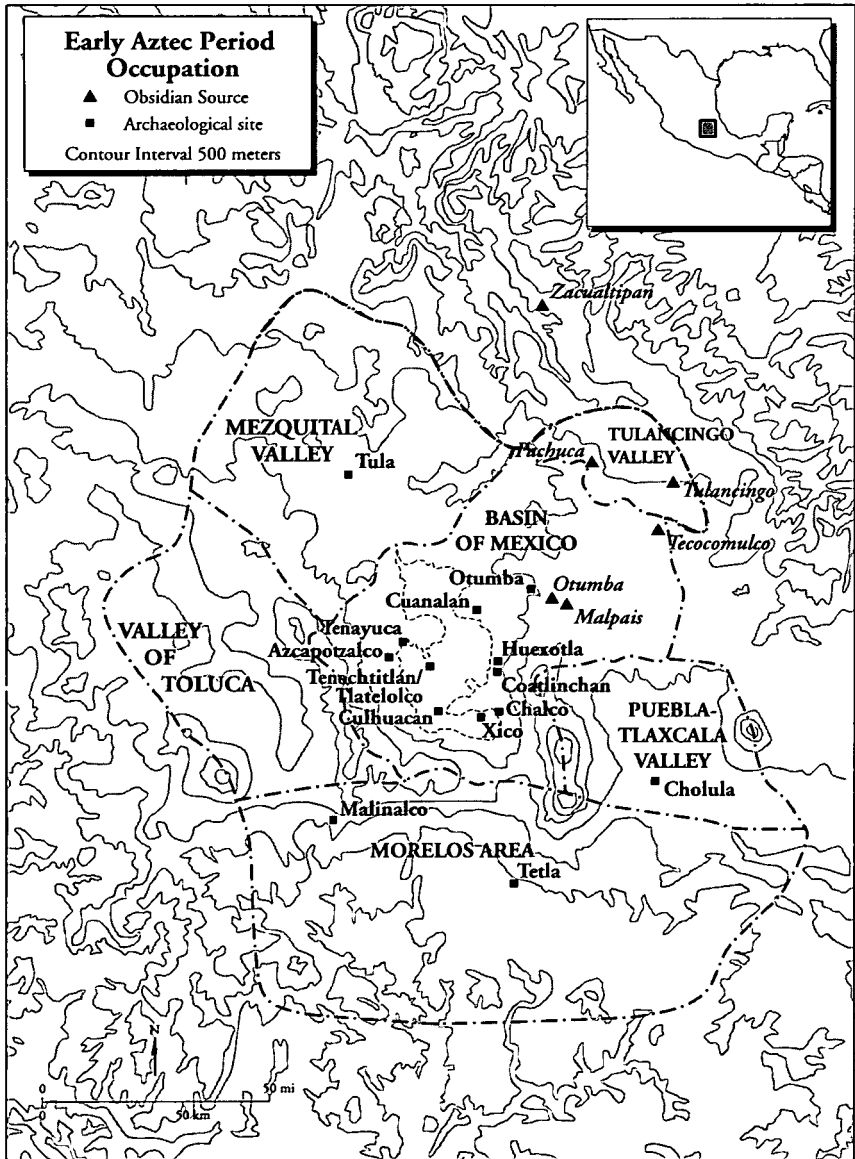
The epi-Teotihuacán period ended with the rise of Tula as the first new major post-Teotihuacán state system in Central Mexico. Tula picked up the mantle of Teotihuacán, integrated much of Central Mexico, and influenced distant areas of Mesoamerica such as Yucatan (Charlton 1973a, 1975, 1978; Parsons, and Santley 1979:129–49; Diehl 1981, 1983, 1993; Healan 1989a; Willey 1991; Marcus 1992a:398–99; Blanton et al. 1993:138–42, 1996:10; Charlton and Nichols 1995).

I should note that according to Parsons, Brumfiel, and Hodge (1993, 1995, 1996), recent radiocarbon dates suggest the possibility of some contemporaneity between ceramic complexes treated here as sequential. The epi-Teotihuacán period-defining Coyotlatelco ceramic complex may have coexisted with the final Teotihuacán period-defining Coyotlatelco ceramic complex (A.D. 650–750) in the southeastern Basin of Mexico at least in part. They also suggest that some later contemporaneity existed between Coyotlatelco, Mazapan (Early Postclassic), and Aztec I/II (Early Aztec period) ceramics (1996:24). Given the truly provocative but still regionally restricted data available, I have not at this time revised the post-Teotihuacán culture sequence. In the future such changes may be warranted.

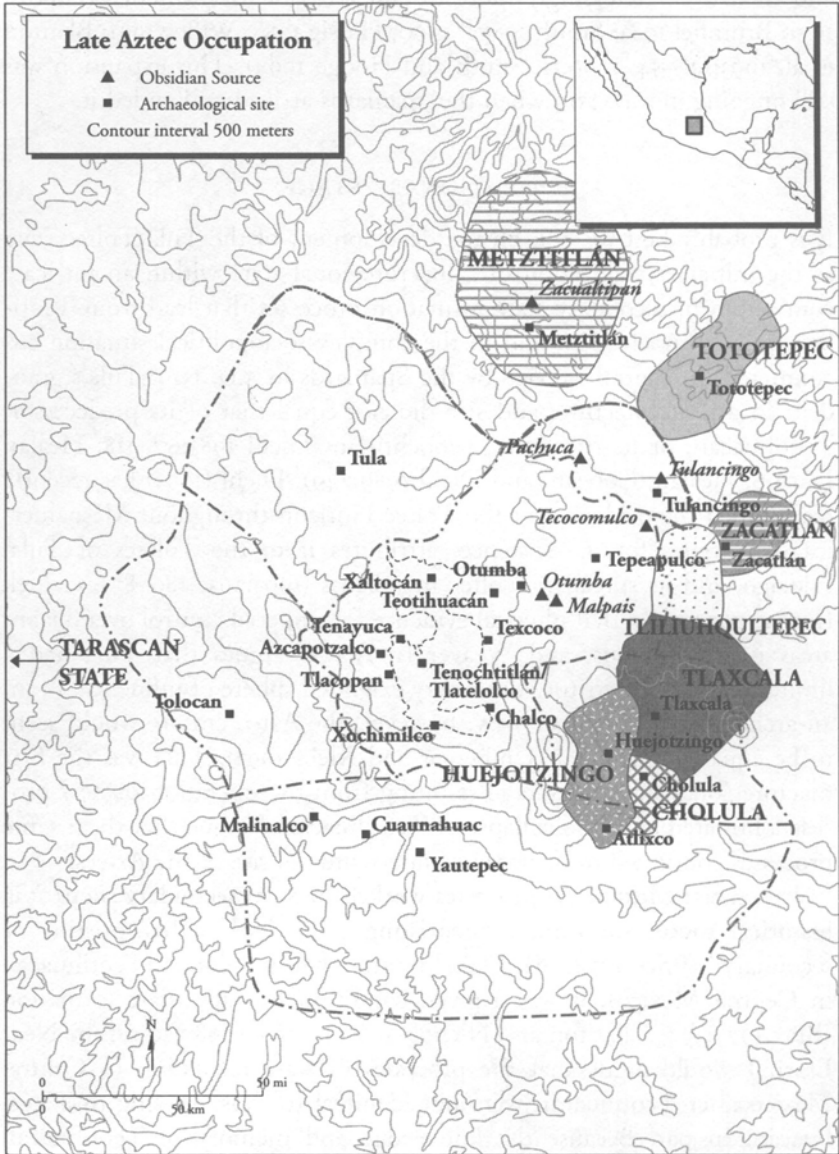
After the fall of Tula (c. A.D. 1150) there was again a power vacuum in Central Mexico with associated population movements and the establishment of new small political centers or city-states. Some of these developments may have predated the end of Tula (Parsons, Brumfiel, and Hodge 1993, 1995, 1996). Beginning around A.D. 1350 these city-states were incorporated into increasingly larger confederacies and tributary empires centered in the Basin of Mexico. These included the domains of the Tepaneca centered at Azcapotzalco and Tenayuca, and those of the Acolhua ruled initially from Huexotla and Coatlinchan and later from Texcoco (Maps 11.3 and 11.4). After a complex series of wars, alliances, and defections at the end of the first quarter of the fifteenth century, the Tenochca (Mexica), centered at Tenochtitlán, and their allies, the Tepaneca of Tlacopan and the Acolhua of Texcoco (Map 11.4), began c. A.D. 1428 to extend political and economic control first over Central Mexico



Map 11.2



Map 11.3



Map 11.4

and then over increasingly more distant areas of Mesoamerica (Gibson 1971; Brumfiel 1983; Smith 1987a, 1990; Hassig 1988; Willey 1991; Blanton et al. 1993:142–54; 1996:11; Smith and Hodge 1994). This expansion was still ongoing in A.D. 1519 when the Spaniards arrived and ended it.

EVOLUTIONARY STAGES

It is probably best to look on the development of the Tula Toltec state as the initial crystallization of a macroregional state within an intricate continuum of secondary state formation processes that lead from Teotihuacán to Tenochtitlán, and to the complex sociopolitical situation encountered in Central Mexico by the Spaniards in A.D. 1519. Tula's grandeur in art, architecture, and size did not equal that of its predecessor, Teotihuacán, or its successor, Tenochtitlán (Diehl 1983:67, 118; Healan 1989a:6; Healan, Cobean, and Diehl 1989:249). Diehl (1993) has recently reexamined the evidence for the Toltec Horizon throughout Mesoamerica. He argues for its existence, attributes it to the Toltecs of Tula, Hidalgo, and its spread to Toltec merchants (1993:263, 286–87). Calnek (1978a:1007) notes that physical evidence for imperial control over distant areas is not obvious, and Weaver (1993:405) argues that Tula had a limited integrated territory but a very extended sphere of influence. From an archaeological point of view, however, the Aztec empire would seem to be equally ephemeral (Umberger and Klein 1993). Tula was the first macroregional state to emerge resulting from the operation of new processes initiated after the collapse of Teotihuacán. I argue that these same processes continued to operate to underwrite the rise of the Aztecs.

In Central Mexico the processes worked to form secondary states “via historical succession from a preexisting state, itself either pristine or secondary” (Price 1978:161). Once the state had developed (Teotihuacán in Central Mexico), it was a given condition for later state formation (Bray 1977:394; Charlton and Nichols 1995; cf. Kohl 1987:30 on the Near East). I would argue that the processes of state formation in Central Mexico after Teotihuacán were not identical to those leading to Teotihuacán, in part because the knowledge and memory of Teotihuacán would have created a cultural context unknown before Teotihuacán, in part because the breakup of Teotihuacán initiated processes previously unknown or of minor importance. These processes, which included warfare and tributary state formation, were initially strongest in areas outside of, but adjacent to, the Basin of Mexico (Map 11.2). It is probable that the militaristic tributary state began to develop in those areas during

the epi-Teotihuacán period. Once in operation these same processes were influential in the rise of two successive macroregional states, Tula and Tenochtitlán.

The epi-Teotihuacán period involved both continuity and discontinuity with Teotihuacán (Charlton 1973a, 1975; Diehl and Berlo 1989:3). Those continuities, in population and settlements, are strongest within the Basin of Mexico, where Teotihuacán remained the largest settlement and where the sites and site locations throughout the Basin suggest out-migration from Teotihuacán (Parsons 1970, 1971:202; Charlton 1973a, 1975; Sanders, Parsons, and Santley 1979:130; Santley 1979; Sanders 1981; Diehl 1989:16) (Map 11.2). The relations between these new political units were probably peaceful although Alden (1979), Blanton (1975), and Blanton et al. (1993:138) have argued that mutual hostility was basic.

Outside of the Basin in immediately adjacent areas new regional centers developed (Map 11.2). These were frequently, but not always, located in such naturally defensible positions as hilltops, and enhanced by walls, ditches, and earthworks (e.g., Xochicalco in Morelos [Hirth 1984, 1989; Hirth and Guillen 1988], Cacaxtla in Tlaxcala [Garcia Cook 1981:269–70; Lombardo de Ruiz et al. 1986], Teotenango in the Valley of Toluca [Piña Chan 1975] and various sites in the Mezquital Valley [Mastache and Cobean 1989]). Along with other sites such as Cholula in Puebla (Marquina 1970; Dumond and Müller 1972) and Huapalcalco in the Tulancingo Valley (Müller 1963) these “developed local styles in ceramics, architecture, iconography, and other cultural elements: styles which suggest the presence of new ethnic groups or radical changes in the older cultural traditions [Jimenez Moreno 1966:59–80; Nagao 1989]” (Mastache and Cobean 1989:55; cf. Hassig 1992:89, 99–109).

The pattern of Teotihuacán-derived city-states within the Basin and the development of militaristic, warring, competitive city-states in many of the surrounding areas provided the matrix within which the new forms of state organization and expansion developed. The political fragmentation and economic decentralization that followed Teotihuacán in Central Mexico was resolved first through the militaristic state of Tula and then, following a second period of political fragmentation after Tula’s demise, by the expansion of the Aztecs (cf. Hassig 1992:110–121; 135–164.).

THE GEOGRAPHICAL AREA

The events to be described in this chapter took place within an area of the Central Mexican highlands corresponding approximately to the Cen-

tral Mexican Symbiotic Region (CMSR) (Map 11.1) as defined by Sanders (1956:115–16, 1971:3–5). The northern subregion falls within the eastern section of the Mesa Central (West 1964a:46). It is bordered on the west and the northwest by a line running up the western edge of the Valley of Toluca and along the northwestern edge of the Mezquital Valley. To the northeast, the border is the edge of the eastern escarpment draining to the Gulf of Mexico, and to the east the Llanos de San Juan, “a group of highland plains of interior drainage . . . [l]ocated entirely within the dry eastern part of the State of Puebla” (Tamayo 1964:113). The southern subregion includes the upper regions of the southern escarpment drained by the headwaters of the Río Balsas.

Sanders has described the northern subregion as a “broad belt of elevated tableland” (1956:115). It falls completely within the Neovolcanic Axis Geological Province (Maldonado-Koerdell 1964:6). Although internally complex it can be subdivided by topography into a number of hydrographic units which were the foci of Late Postclassic cultural development. The largest of these is the Basin of Mexico, an internally complex hydrographic unit (García 1968:14) containing major and minor lake systems and several large expanses of open plains (Tamayo 1964:108–13; Sanders, Parsons, and Santley 1979:81–89). The Basin of Mexico extends through the central and northeastern section of the subregion and is demarcated by the southern escarpment, the Toluca and Mezquital valleys, the Tulancingo Valley (Metztitlán Valley), and the Puebla–Tlaxcala Valley (Tamayo 1964:108–13).

The Valley of Toluca to the west, drained by the headwaters of the Río Lerma, and the Mezquital Valley to the northwest, drained by the Río Tula, a headwater stream of the Río Moctezuma, a tributary of the Río Pánuco (Tamayo 1964:90), form the western and northern borders of the CMSR. Another upper tributary of the Río Pánuco, the Río Metztitlán, drains the Tulancingo Valley, which forms the northeast border of the Basin of Mexico and the CMSR (West 1964a:45).

East and south of the northeastern extension of the Basin of Mexico are the Tlaxcalan uplands and the Puebla–Tlaxcala Valley, west of the extinct volcano La Malinche, and the Llanos de San Juan to the east, gradually merging with the escarpment to the south. The Tlaxcalan uplands and the Puebla–Tlaxcala Valley are drained by the Atoyac River, an upper tributary of the Balsas River (Tamayo 1964: fig. 2).

In this study the southern subregion of the CMSR includes the western part of the state of Puebla and all of Morelos. The southern subregion

stretches from the northern subregion's mountains and plateau surfaces to the mountains bordering the Balsas Depression to the south (West 1964a:37). This is the central section of the southern escarpment of the Mesa Central, drained by the middle and lower courses of the Balsas tributaries (Sanders 1965: 116). "It is a great, sloping, dissected plain decreasing in elevation from north to south and is broken up by low, parallel, north-south ranges of denuded hills with intervening flat alluvial plains and river valleys" (Sanders 1971:5).

The soils throughout the CMSR are volcanic in origin and often alluvially deposited in valleys and basins (West 1964b:371–72). They are variable in quantity and quality. Sanders has suggested that they are generally fertile with soil depth and rainfall being the most relevant factors for crop yields (1971:4–5). Rainfall is highly variable and dependent on local topography. Mean annual precipitation in the southern subregion and in the eastern and northern sections of the northern subregion varied from 500 to 1,000 millimeters while the southern and western portion of the northern subregion might receive between 1,000 and 2,000 millimeters (Vivo Escoto 1964: fig. 10; see also Sanders 1971:3–4).

Mean annual temperatures decrease as elevation increases. In the lower inhabited elevations within the two subregions Vivó Escoto (1964: fig. 7) notes mean annual temperatures of 20 degrees centigrade (south) and 15 degrees centigrade (north) (cf. Sanders 1971:3). The natural vegetation has been significantly modified through cultivation for several millennia. West (1964b:372) describes columnar cacti (*Cereus* group) as the dominant vegetation in the drier areas of the CMSR such as the Mezquital Valley. "Pine-oak and open woods originally covered the more humid central and western portion of the Mesa Central" (West 1964b:372). Although subtropical and subhumid, the CMSR does produce one annual crop.

Sanders (1956, 1971) defines the area formed by the two subregions as a symbiotic zone resulting from the differences in environment owing primarily to variations in elevation. The occupied part of the southern subregion (800–1600m) is appreciably lower than that of the northern subregion (2,000–2,800m) (Sanders 1971:3). This, he argues, allowed the production of different crops that formed the basis for the economic symbiosis existing within the CMSR at contact in 1519 (Sanders 1956:115–16; 1971:3). A further resource of some importance, but of restricted natural occurrence, was obsidian, a volcanically produced glass used for

cutting-edge tools. Five clusters of obsidian sources occur within the CMSR as defined here (Charlton and Spence 1983:8; Cobean 1991:11) (see Map 11.1). West (1964b:372) also notes the importance of the proximity of contrasting environments for trade, cultural exchange, and the development of civilization.

Certainly, in A.D. 1519 the CMSR was densely populated and contained the loci of numerous Late Postclassic centers, many of which were variably integrated under the domination of Tenochtitlán. The areas considered in this chapter are the Basin of Mexico, the Valley of Toluca, the Mezquital Valley around Tula, the Tulancingo Valley, the Puebla–Tlaxcala Valley and adjacent uplands, and the Morelos region. All were important centers of Late Postclassic cultural development.

THE CULTURES IN 1519

In A.D. 1519, when the Spaniards under Hernán (or Hernando) Cortés entered Central Mexico, they encountered an exceptionally complex cultural situation (Díaz del Castillo 1956, 1963). Most of the peoples within the CMSR spoke languages that fell within either the Uto-Aztecan or the Otomanguean groupings (Longacre 1967: fig 15). In the southern subregion (Morelos) and most parts of the northern subregion (the Basin of Mexico and the Tlaxcala–Puebla Valley), Nahuatl was widely spoken. Dialect differences occurred within this region but were not so great as to prevent effective communication (Harvey 1972:298–300). The Otomanguean languages were located in the northern subregion primarily to the west and north of the Basin of Mexico. Harvey's (1972) reconstruction of language distribution using the *Relaciones Geográficas* of 1579–86 indicates that within the Basin of Mexico and Tlaxcala (see also Gibson 1952:6–7 and Gerhard 1972) there were enclaves of speakers of Otomi and Popoloca, both Otomanguean languages. In Morelos enclaves of Otomanguean languages were found in the north (Otomi and Ocuilteca), the west (Matlatzinca), and the south (Mazatec), along with Chontal and Tarascan (unclassified) in the south and west. Small groups of Mixtec and Popoloca speakers (Otomanguean) were also found in adjacent southwest Puebla (Harvey 1972; Smith 1983a:17–23).

To the north of the Basin of Mexico, in the Mezquital Valley, and to the northeast in the Tulancingo Valley, enclaves of Nahuatl speakers were found among Otomi speakers (Gerhard 1972:44, 295, 332, 335; Nicholson 1978:293), occasionally associated with speakers of Pame, an-

other Otomanguean language. A similar, but more complex, situation occurred in the Valley of Toluca to the west, where Nahuatl, Otomi, and two other Otomanguean languages, Matlatzinca, Mazahua, plus some Tarascan, were spoken (Quezada Ramírez 1972; Nicholson 1978: 293). Although the postconquest period witnessed the further expansion of Nahuatl speakers in the CMSR (Harvey 1972:299), Carrasco (1969: 580, fig.1) presents a similar distribution of surviving indigenous languages in the early twentieth century.

The distribution of languages in A.D. 1519 reflects the expansion of both Otomi-and Nahuatl-speaking peoples during the Late Postclassic period, and an extension of political and economic control dominated by Nahuatl speakers of the Basin of Mexico beginning around A.D. 1300 (see Smith 1984 for a synthesis of studies of population movements). In the Valley of Toluca the linguistic mosaic reflected the buffer zone that had been established between the Aztecs and the Tarascans to the west (Gorenstein 1985:9; Hassig 1988:184, 208, 1992:152–55; Pollard 1993:104). This included the settlement of Otomi and Nahuatl speakers in the area (Harvey 1972:302; Quezada Ramírez 1972:50). Similarly, with both Otomi and Nahuatl speakers, the Mezquital Valley formed a frontier with the Chichimec north and the independent Nahuatl-speaking state of Metztlán (Davies 1968:45), while the Tulancingo Valley formed one frontier with the independent Tepehua-speaking state of Tototepec (Davies 1968: map 2; Gerhard 1972:335). Tepehua is related to Totonac, a Macro-Mayan language (Longacre (1967: fig 15) (Map 11.4). Harvey (1972:313) argues that most of the bilingualism and language enclaves of the sixteenth century had their roots in the preconquest period.

In addition to linguistic complexity the CMSR also possessed substantial ethnic diversity. Much of this diversity is reflected in the native historical traditions describing the origins of the various peoples within the polities of the early sixteenth century. Gibson (1964:9–22) and Carrasco (1971a) discuss these traditions for the CMSR. “It is the downfall of Tollan that starts the migration movements which were the basic historical traditions of the people in all political units of central Mexico at the time of the Spanish conquest” (Carrasco 1971a:463). The narratives undoubtedly have a factual basis and probably started as actual histories. In the early sixteenth century, however, two of their functions were to enable ethnic groups to maintain real and separate identities, and for the elites of those groups to enhance their genealogies and to maintain their positions. Thus, they should not be considered as precise and objectively

written histories (Charlton 1981:155; Vansina 1985:196; Gillespie 1989:xxii–vii; Marcus 1992b:46–57, 146–49, 264–72, 306–20, 435–45). Yet careful analyses of the documents (cf. Smith 1992a) do permit some reconstruction of post-Tula history in the CMSR. In many instances these reconstructions are our primary sources of information about the Late Postclassic developments in the various subregions since archaeological research carried out to date is of variable intensity and scope.

Within the CMSR the different linguistic and ethnic groups were located in permanent agricultural communities of varying sizes ranging from occupations of a few households through villages and towns of increasing population sizes and densities to large urban centers such as Cholula and Tenochtitlán–Tlatelolco. These communities varied in social, political, and economic organization and complexity (Sanders, Parsons, and Santley 1979:153–81; Charlton 1986:122). As Bray (1972:164) has pointed out, the basis for political and economic integration was the city-state, a territorially based unit of variable size and complexity. Each city-state, governed by one or more hereditary ruler(s), included rural dependencies, with the center of government and tribute collection situated in a town or city with major temples, marketplace, palace, and occupational specialists (Bray 1972, 1977, Calnek 1978b; Evans 1980a:77–82; Hodge 1984:17–18; Charlton and Nichols 1995). City-states were usually associated with a dominant self-identified ethnic group with its own historical and political identity.

The city-state, however, often encompassed separate ethnic and/or linguistic groups, usually of subordinate status (Bray 1972:162). As the city-state was the next highest integrative mechanism above the *calpultin* (barrios or wards) so the confederation and the tribute empire were higher levels of organization into which the city-states were incorporated (Bray 1972:162; Calnek 1978b:463). Alliances, usually temporary, formed confederacies that did not normally involve the payment of significant amounts of tribute. Military conquests of one city-state or confederacy by another city-state or confederacy involved the payment of tribute on the part of the vanquished (Hassig 1985:103–10).

By A.D. 1519 all of the city-states in the southern subregion, and most of those in the northern subregion, had been brought under the political and economic dominance of the Triple Alliance imperial confederacy headed by Tenochtitlán (Barlow 1949). Independent city-states, alone, in confederacies, or in smaller tributary empires, remained within and adjacent to the CMSR (Barlow 1949: map; Bray 1972; Davies 1968:66–81).

A large block of such states, confederacies, and small tributary empires was located to the east of the Basin of Mexico, running from Huejotzingo and Cholula in the south, through Tlaxcala and Tliluhquitepec to the north (Map 11.4). Zacatlán to the northeast may have been allied to the Triple Alliance although not a tributary, or may have remained a nominal enemy retaining some independence (Davies 1968:79; Gerhard 1972:390; Hassig 1988:205).

Outside the CMSR but immediately adjacent to it were three other independent states (Map 11.4). The Tarascans to the west were formidable enemies and competitors (Gorenstein and Pollard 1983; Gorenstein 1985; Hassig 1988:183–85, 1992:152–55; Pollard 1993:105–8). The other two to the northeast, Metztlán and Tototepec (Davies 1968:21–65), were smaller, like Zacatlán and Tliluhquitepec, and formed much less of a threat to the Triple Alliance.

Although independent, these states, confederacies, and tributary empires were under constant pressure from the Aztecs through a steady, but low-intensity, state of war. In two recent studies Hassig (1988, 1992) has carefully documented Aztec military strategy and tactics used in the expansion of the empire. The encirclement of strong enemies was a tactic adopted as “one phase in an escalating conflict” (Hassig 1988:254). By A.D. 1519 the independent states and confederacies east of the Basin of Mexico (Cholula, Huejotzingo, Tlaxcala, Tliluhquitepec, and Zacatlán) had become entirely encircled by the Aztecs through alliances and conquests. To the northeast Tototepec was also completely encircled, while to the north Metztlán was encircled on all but the north side (Map 11.4). A similar encirclement, but on a much grander scale, may have been initiated against the Tarascans (Hassig 1988:211).

At contact the political integration of the CMSR was based on the dominance of one city-state, Tenochtitlán, in conjunction with two allied city-states, Tlacopan and Texcoco (Gibson 1971; Calnek 1978b:463, 1982:56–60). This integration had been brought about by the Triple Alliance through a judicious use of alliances, force, and intimidation (Hassig 1988). Administrative integration of conquered areas was not a strong suit of the Aztecs. Rather, they used indirect control extensively, usually leaving in place the local dynasties as local administrators in order to reap maximum benefits at minimum costs (Gibson 1971; Calnek 1978b; Hassig 1988:253–67). *Calpixque* (tribute collectors) were assigned to coordinate tribute deliveries from the imperial provinces, but further integration was unusual (Calnek 1982:58–59).

City-states were also the basic economic units in the CMSR in A.D. 1519. Basic foods and craft products were produced within the city-states by the commoners who supported themselves and the nobility, there and elsewhere. Some products, both comestible and noncomestible, were sent out as tribute to Tenochtitlán while other goods, which had entered the market system as tribute or *pochteca* trade items, were consumed by the city-states. There was economic variability among city-states depending upon their history, the nature of their location within the Basin of Mexico or in immediately adjacent areas, their demography, and on their relations with the Aztecs (Gibson 1952; Brumfiel 1976, 1980; Gorenstein 1985; Nichols and Charlton 1988:11–13; Smith and Hirth 1988; Charlton, Nichols, and Otis Charlton 1991; Otis Charlton 1993, 1994; Pollard 1993; Charlton 1994; Hodge and Smith 1994; Minc, Hodge, and Blackman 1994; Nichols 1994; Pollard and Vogel 1994; Rojas 1994; Smith 1994; Smith and Heath-Smith 1994; Charlton and Nichols 1995). Nevertheless, an integrated economic system had developed with local, regional, and centralized dimensions within the CMSR. Urban and rural settlements were linked through a series of interdependent political and economic relationships, both tribute-and market-based (Bray 1972:184; Brumfiel 1976, 1980; Smith 1978:100, 1979, 1980; Evans 1980a, 1980b, 1990, 1993; Evans and Gould 1982; Charlton 1986:124; Nichols and Charlton 1988; Otis Charlton, Charlton, and Nichols 1993; Smith and Hodge 1994).

METHODOLOGICAL CONSIDERATIONS

Of both great benefit and hindrance in dealing with the development of states and empires in the CMSR after the fall of Tula is the availability of native histories. These have been described and catalogued in great detail (Gibson 1975; Gibson and Glass 1975; Nicholson 1975). Such histories have been used as the primary sources for the reconstruction of preconquest cultural developments in numerous works (e.g., Carrasco 1971a; Brundage 1972; Davies 1973, 1980, 1987; Berdan 1982; Brumfiel 1983; Smith 1983a, 1984; Zantwijk 1985). For those subregions where archaeological research has lagged, they still provide the best sequences we have (cf. Smith 1983a, 1984). In all cases reconstructions based on careful consideration of the various sources (e.g., Brumfiel 1983; Smith 1983a, 1984, 1992a, 1994) form one data set, an alternative to the data set derived from archaeological research.

There are difficulties in trying to “integrate” the historical with the

archaeological data. The most common procedure has been to try to correlate the preconquest cultural developments reconstructed from historical documents with archaeological data sets or parts thereof (e.g., Vaillant 1938 Jiménez Moreno 1954–55; Nicholson 1955; Bernal 1962; Noguera 1963, 1966, 1969, 1970; Parsons 1970; Calnek 1973; Charlton 1973a; Durbin 1976; Alden 1979; Evans 1980a; Davies 1982; Sanders, Parsons, and Santley 1979:149–81; Smith 1983a, 1984, 1992a). These attempts are of varying degrees of scope, resolution, and success.

Nicholson (1955, 1971), Plunket (1990), and Charlton (1981) have commented on the difficulties that abound in the correlation of native historical documents with archaeological data in Central Mexico. The documents may have some partial historical validity for migrations and dynastic histories. However, it is not possible to equate those categories and events directly or in a 1:1 correlation with archaeological sites and material culture, usually ceramic complexes. Kubler makes a similar point when he notes that “potsherds and broken stones are classes of effort that reflect political life from vast distances, no more strongly than when we faintly hear the dynastic conflicts of medieval France in Provençal poetry” (1962:57).

I have argued that the problems in correlation are ultimately based on our having two different sets of records of the past and, as a result, *alternative* portrayals of that past. Klejn observed that “the structures of the past are reflected in diverse kinds of sources – written, archaeological, linguistic, ethnographic – in different ways, being as it were projected onto surfaces located on different sides and at various angles” (1977:19). Similarly W. H. Adams suggested (1977: 156) that in using both archaeology and history we have *alternative* portrayals of the past that produce different forms of reality, each a valid portrayal of the past, and each of which must be tested and reconciled. I would suggest that problems in correlation between the historical and archaeological data sets derive from the data available and do not simply result from inadequacies of conceptualization and methodology as proposed by Smith (1983a:544, 1992a:52).

In other words, both history and archaeology may present valid portrayals of the past, but since they start from different aspects of an obviously complex reality we should not be surprised that they do not depict the same reality or that they even present contrasting portrayals of the past (e.g., Charlton 1973b; W. Y. Adams 1974:42). Such a situation is neither unexpected nor uncommon in post contact historical archaeology

in both the United States and Mexico (Charlton 1973b, 1986; South 1974). The *lack* of a congruity between archaeology and historical reconstructions is as important in our comprehension of the past as is the degree of coherence between the two data sets.

In this chapter I present syntheses of historical reconstructions separately from discussions of the available archaeological data for the areas under consideration.

SYNTHESES OF REGIONAL DEVELOPMENTAL SEQUENCES

Background

The end of Tula as a major integrative regional state in the CMSR marks the beginning of the last phase of indigenous cultural evolution in Central Mexico. Tula's demise set the stage for the events that led ultimately to the rise of Tenochtitlán. Documentary data suggest that Tula fell by A.D. 1170 (Brundage 1972:6; Davies 1977: 413; Diehl 1983:160). The archaeological data, including four radiocarbon dates marking an occupation between A.D. 900 and A.D. 1000 at the Canal Locality (Cobean and Mastache 1989:44; Diehl 1981:280–81; Healan 1989b:163–64), neither confirm nor reject these dates. Cobean and Mastache (1989:39) point out that “there is no conclusive evidence yet available, ceramic or otherwise, concerning when and how Tula's Early Postclassic city collapsed” and use a date of A.D. 1150–A.D. 1200 in their chronology. Diehl (1981:281) argues for a collapse by A.D. 1100. For the moment, however, I shall accept the historically derived date of A.D. 1150 for the end of Tula while recognizing that the fall probably occurred within the last fifty years of the twelfth century.

As mentioned, radiocarbon dates from several Basin of Mexico sites (Parsons, Brumfiel, and Hodge 1993, 1995, 1996) suggest that the Early Aztec period ceramic complexes (I and II) used to define the conventional archaeological chronology (A.D. 1150/1200 – A.D. 1350/1430) might have been regionally separate and in part chronologically contemporary with Tula. For present purposes, however, I follow Mastache and Cobean (1989:39) and use the date of A.D. 1150/1200 to mark the end of Tula and the beginning of the Early Aztec period.

The fall of Tula, although useful as a starting point, was a process more than an event. Forming a major part of that process, whether cause or result, are the numerous migrations described by the documents as

beginning in the periods immediately before the fall of Tula and continuing to c. A.D. 1250. In addition, other cultural developments are mentioned in the sources. On the basis of the documentary data that describe migrations, dynastic struggles, intercity warfare, the organization of alliances and confederacies, and imperial expansion (Gibson 1964; Carrasco 1971a; Nicholson 1971, 1975, 1978; Brundage 1972; Davies 1973, 1987; Bray 1977; Calnek 1982; Brumfiel 1983; Smith 1983a, 1984), and following Bray (1977) I propose to divide this era into four periods. The dates are provisional and subject to modification. The associated cultural developments are accurate in outline becoming more accurate in detail the closer they are to A.D. 1521.

The archaeological data for the same period (A.D. 1150/1200–1521) are of uneven quality and quantity. They vary along two dimensions: time and space. Complete sequences are not available for all of the regions, and often when they are available the regional sequences differ in descriptive detail and fineness of definition in the ceramic chronology and clarity as to the region to which they apply (cf. Smith 1992b:27–29; Smith and Doershuk 1991). Until recently this problem had been aggravated by a virtually complete lack of independently derived chronometric dates for the post Teotihuacán sequence (Nichols 1996). The lack of reliable and consistent absolute dates in the archaeological record, common throughout the CMSR for the Late Postclassic, and has prevented the development of calendrically anchored fine-grained archaeological chronologies to parallel those derived from documentary sources (cf. Smith 1983a, 1992a; Smith and Doershuk 1991).

Spatial coverage, of great importance when addressing questions of state formation, is equally variable. Although surface surveys have been carried out in many of the regions considered, they too vary in methodology, descriptive detail, and extensiveness of coverage (Nichols 1995). The lack of well-defined ceramic chronologies, noted above, has hampered the survey work in many areas. This is unfortunate since regional surveys with well defined chronologies, accompanied by problem oriented excavations, provide the kinds of data necessary to address many of the questions of interest in the post Tula period.

The following two part, four period, model is based primarily on the historical data and secondarily on the available archaeological evidence. I shall use it to integrate and clarify the available data, as well as to suggest areas and topics for future investigation.

*Part I: A.D. 1150/1200–1428**Period 1. A.D. 1150/1200–1250: Migrations: Before and After the Collapse of Tula*

HISTORICAL DATA. This period corresponds to the first half of Bray's "period of wandering" (Bray 1977:374–75). The documentary data are in general agreement that there were large-scale and ongoing major migrations of identified ethnic groups throughout the CMSR during this time (Carrasco 1971a; Davies 1977, 1980:72–97; Smith 1983a:16–75, 1984). These migrations involved two major elements. The first was a continuation of the southward movements of northern frontier agriculturalists in the face of climatic deterioration (Armillas 1964, 1969), movements which began before the fall of Tula and which may have been associated with it in some way (Carrasco 1971a:459; Davies 1977:410–14; 1980:72, 162, 317–21; Sanders, Parsons, and Santley 1979:149–50; see also Bronson 1988 on the role of barbarians in the fall of states). The second element consisted of the southward movement and relocation of peoples once incorporated within the Toltec social, political and economic systems, both from Tula and other sites. These out-migrations may have started during the last decades of Tula's power, before the collapse (Davies 1980: 160).

The results of these migrations were threefold. First, there was a major demographic shift in the CMSR that could have left much of the northern parts either completely depopulated or well underpopulated at this time. Second, multi-ethnic communities composed of migrants from several diverse backgrounds as well as remnant local populations developed in the southern two-thirds of the region. Third, the foundations were established for a renewed emphasis on economic and political regionalism within the CMSR.

In looking at the written sources I am focusing on the general outline of developments throughout the CMSR and not on the historical development or fate of any particular ethnic group. These accounts are, of course, suspect because of their geopolitical functions in the sixteenth century. Carrasco (1971a) and Smith (1983a:16–75, 1984) present summaries of the various migrations, which are also examined in detail by Davies (1980). Through these records we witness a period of about a hundred years' duration, beginning slightly before Tula's collapse, during which populations of diverse northern origins relocated themselves within the CMSR among some persisting regional populations. As Da-

vies (1977:346ff., 1980:317–21) has suggested, these population movements undoubtedly were both causes and results of social, political, and economic upheavals in the CMSR, leading to the formation of regionally diverse, relatively unstratified, small-scale sociopolitical units.

ARCHAEOLOGICAL DATA. The archaeological data available for this period in the various subregions fail to reflect clearly this century of turmoil. I suspect that in some instances, such as Tlaxcala (García Cook 1981), Cholula (Müller 1978), southwestern Puebla (García Cook and Merino Carrión 1989), and the Valley of Toluca and associated areas (García Payón 1941, 1979; Durbin 1970, 1976; Gutierrez de Limon 1979; Reinhold 1981), the ceramic chronologies, which form the basis for the regional sequences, are too broadly defined. More detailed analysis of the available stratigraphic information for these regions is needed in order to resolve this question (see also Smith 1983a:497–511 for pertinent comments on the precision of the available regional sequences).

In other areas, including the Mezquital Valley (Mastache and Crespo 1974; Armillas 1975; Peña and Rodríguez 1976; Cobean 1978; Cobean and Mastache 1989), the Tulancingo Valley (Noguera 1970; Charlton 1976, 1977, 1994), and the northern Basin of Mexico (Sanders, Parsons, and Santley 1979:151) (Map 11.3), the apparent depopulation after the fall of Tula may be related to the failure to recognize the relevant ceramic traditions, a point made previously and to be discussed later in this chapter. In the case of the Tulancingo Valley, it should be noted that Müller and Lizardi Ramos (1959) argue for continuous occupation, although they do not present any details of the ceramic chronology.

The chronologically distant archaeological data from the Early Colonial period (A.D. 1521–1620) are of some relevance for this problem. Those data (Charlton 1986, 1995) indicate that Aztec III ceramics continued for about a hundred years after the Conquest, while Aztec IV style ceramics developed during the same period (Charlton 1995). Although data from Tenochtitlan–Mexico City indicate the presence of an intrusive Hispanic tradition as well as modifications in the indigenous tradition, the virtual absence of both Hispanic ceramics and of Hispanic-inspired changes in the local pottery is the rule in most nonurban areas of the Basin (Charlton and Fournier 1993). Major ceramic changes did not occur until after the indigenous rural population declined drastically owing to introduced European diseases and was relocated for administrative purposes in the early seventeenth century.

Although the circumstances are by no means identical, I strongly

suspect that in some areas there may have been similar substantial persistence of regional Late Toltec period ceramic traditions after the fall of Tula. These were ultimately replaced by the acceptance or the development of new regionally distinctive traditions with strong stylistic and technological connections to the ceramics in use in A.D. 1519. Thus, the depopulation of the Mezquital Valley, the Tulancingo Valley, and the northern Basin of Mexico after the end of Tula may be a construct of our failure to recognize these continuities. It is possible that in these regions the major break in ceramic tradition occurred at the end of the migration period, or even later, rather than immediately after the fall of Tula.

Nevertheless it is also possible that the lack of identifiable ceramics may mark a real depopulation of the northern Basin. In this scenario the collapse of Tula marked the end of a long-standing enmity between Tula and Cholula. One result was a population relocation whose center of gravity was Cholula, outside the Basin of Mexico to the southeast (Maps 11.3 and 11.4) (Charlton and Nichols 1995). This would accord well with the technology and styles of Early Aztec ceramics (Aztec I and II) and their distribution in the south and southeastern Basin of Mexico (Noguera 1975; Minc, Hodge, and Blackman 1994).

Even in the central and southern Basin of Mexico, where the ceramic sequence is relatively well defined (Sanders, Parsons, and Santley 1979: 457–74), the traditionally dated Early Aztec Period extends for 200 to 250 years (A.D. 1150 – A.D. 1350/1400), with Aztec I (south), and II (central), being considered regional stylistic variants with some but incomplete chronological distinctiveness (Sanders, Parsons and Santley 1979:466–67; Whalen and Parsons 1982:438; Parsons, Brumfiel, and Hodge 1993, 1995, 1996; Minc, Hodge, and Blackman 1994:140–49). Aztec I is the primary Early Aztec period ceramic complex in the southern Basin of Mexico and eastern Morelos, with strong stylistic and technological links to the Cholula area to the east (Noguera 1975:182; Whalen and Parsons 1982: 438). Aztec II is the primary Early Aztec period ceramic complex in the northern two-thirds of the Basin of Mexico (Whalen and Parsons 1982:438).

Smith (1983a:498, 501–6), working specifically on the problem of defining archaeologically the arrival of the migrants in the CMSR, uses the data cited by Whalen and Parsons (1982) to divide Early Aztec ceramics into early (A) and late (B) facets. He proposes that Early Aztec A starts about A.D. 1100, is marked by Aztec I Black on Orange and other types,

exists alone until A.D. 1200 when Early Aztec B begins, marked by the addition of Aztec II Black-on-Orange pottery. The two coexist on a regional basis until A.D. 1350. Smith uses the cross-dating of ceramic traits from western and eastern Morelos, the Tehuacan Valley, and Culhuacán in the Basin of Mexico, and radiometric dates from Tetla (Norr 1987) in eastern Morelos to support the dates he assigned these phases. The Early Aztec ceramics from Tetla in eastern Morelos have two associated radiocarbon dates, A.D. 1230 \pm 75 and A.D. 1340 \pm 75 (Norr 1987:406–7). The descriptions of the Black-on-Orange ceramics indicate that they are primarily related to Aztec I in the southeastern Basin (Norr 1987:406–8).

Whalen and Parsons (1982) have pointed out that there was some stratigraphic evidence from Chalco (O'Neill 1962) and Culhuacán Séjourné 1970, 1983; Noguera 1975: 181–85) to suggest that Aztec I is earlier than Aztec II in the southern Basin, although both probably coexisted as regional variants in the later part of the early period. This position is sustained with the recent radiocarbon dates from Chalco, Ch-Az-195, Xico, Tenayuca, Xaltocán, and Otumba (Map 11.3) (Parsons, Brumfiel, and Hodge 1993, 1995, 1996; Nichols and Charlton 1996). Those dates suggest that Aztec I may have started around A.D. 900 and Aztec II around A.D. 1200, both coexisting until at least A.D. 1250/1300, and Aztec II persisting until A.D. 1350/1400. Smith's suggestion (1983a:506) that Aztec II may have had as early an inception as that of Aztec I, perhaps at Tenayuca (Noguera 1935), subsequently spreading to the southern Basin as well as to western Morelos, does not seem to be supported at this time.

Smith's interest in the archaeology of the earliest Aztec period has been directed toward the archaeological definition of arrival of the Nahuatl-speaking migrants referred to as part of the Aztlan migrations (Aztecs). His approach (1983a, 1984) consists of independently dating and subsequently aligning the ethnohistoric and archaeological chronologies. Once this has been accomplished, he points out that the migrations into the Basin of Mexico as well as into the surrounding valleys are marked archaeologically by the inception of new regional ceramic styles (1983a: 177). Thus, the ceramic styles in the Basin of Mexico, the Malinalco area south of Toluca, and the Morelos area, beginning around A.D. 1150 according to Smith (1983a, 1984), mark the arrival of the Nahuatl-speaking migrants of the Aztlan migrations (Aztecs), of whom the Mexica were a late component, arriving about A.D. 1248. I suspect that if the

continuous ceramic sequences from the Valley of Toluca and the Puebla–Tlaxcala area were refined, they, too, would reflect these intrusions (García Payón 1941, 1979; Müller 1978; García Cook 1981; García Cook and Merino Carrión 1989; Plunket 1990; Plunket and Uruñuela 1994).

Period 2. A.D. 1250–1350: City-State Consolidation: Limited Warfare

HISTORICAL DATA. This is the second half of Bray’s “period of wandering.” If we accept the dates that Smith (1983a, 1984:174) has put forward for the arrival of the migrating groups, most, including the Aztecs, were in place by the beginning of the period. The possibility remains that some may have been present in restricted areas of the Basin of Mexico by A.D. 1000, creating a more complex ethnic situation with greater time depth than described here (cf. Parsons, Brumfiel, and Hodge 1993, 1995, 1996).

This respite from continuing migrations would have provided the newly formed or emergent city-states a degree of stability in their ethnic and demographic composition and an opportunity to rebuild. Calnek, in a comment referring to the Basin of Mexico but of equal validity for the entire CMSR, states that “the lack of intense warfare must be attributed less to any particular pacifism on the part of the new city-states than to a quite reasonable preoccupation with community building, land reclamation, and population growth until the point that military conquest could be profitable and not merely exciting” (1982:47).

Bray, on the other hand, suggests that by A.D. 1250, the approximate time of arrival of the Mexica Aztecs (see Smith 1983a:65, 1984), the “stronger powers had . . . reduced the weaker states to subjection, and had carved out miniature ‘empires’ in which the conquered cities paid tribute to their overlords but retained a good deal of internal independence” (1977:376). Brumfiel portrays a kind of Hobbesian political landscape in the Basin of Mexico with the power vacuum left by Tula being filled “by a score of small, autonomous, internally unstable and mutually hostile political domains during the 13th and early 14th centuries” (1983:266).

By A.D. 1250 militaristically competitive city-states were present. The time depth of their militaristic nature is unclear, both in the documents and in the archaeological record. In the aftermath of Tula’s collapse, political, social, and economic unity had become reduced to the scale of the small city-state unit. There is no evidence that these city-states were situated in fortified locations similar to Xochicalco, Cacaxtla, and Teotenango, city-states that developed following Teotihuacán’s demise. Al-

though descriptions of conflict have a central role in the documents, defense does not seem to have been a factor in the location of settlements, unless spacing reflects defensive considerations (cf. Alden 1979). Warfare was probably on a small scale, with very limited conflicts and conquests. Its nature was such that labor investment in fortifications was either not effective or, more probably, not cost-effective, when the costs incurred by losing such a conflict, as well as the probable temporal duration of such a loss, were calculated.

During the second century after Tula's collapse the new regional populations were building up small-scale conquest "empires," ephemeral and short-lived (Caso 1966). This occurred in the Basin of Mexico (Sanders, Parsons, and Santley 1979:149–53; Davies 1980), the Morelos area (Smith 1983a:82), and the Puebla – Tlaxcala area (Davies 1980:157–76; García Cook 1981: 273–75). These were inherently unstable situations, dependent on alliances and leaders, both subject to change in unpredictable ways. Brumfiel (1983:268–70) presents a detailed synthesis of such instability in the Basin of Mexico during this period.

The Mexica Aztecs had settled initially at Chapultepec, on the western shore of Lake Texcoco. They were driven from there by conflicts and became subordinate to the Culhua centered at Culhuacán, serving them as mercenaries. After an ill-considered sacrifice of a daughter of one of the rulers of Culhuacán, they were exiled and took refuge on some small islands in the western section of Lake Texcoco, where they founded Tenochtitlán (Maps 11.3 and 11.4) (Brundage 1972:26–34; Davies 1973:1–36; Berdan 1982:3–7; Zantwijk 1985:3–21). They were, in essence, a minor player among many warring ethnic groups within the Basin of Mexico during the late thirteenth and early fourteenth centuries.

Between A.D. 1250 and A.D. 1350, that warfare appears to have escalated gradually to the point where two ethnic groups, the Acolhua – centered initially at Huexotla and Coatlinchan, and subsequently at Texcoco on the eastern side of the central Basin of Mexico – and the Tepaneca – centered at Tenayuca and Azcapotzalco on the western side – began to embark on more extensive, but no less fragile, conquests (Maps 11.3 and 11.4). This escalation is the hallmark of the last part of the Early Aztec period, from A.D. 1350 to A.D. 1430. Its effects on the sociopolitical structure of the late fifteenth century were critical (Offner 1979; Davies 1980:240–47; Brumfiel 1983:270–73; Carrasco 1984; Hassig 1988:125–40).

ARCHAEOLOGICAL DATA. The best available settlement pattern and ceramic data come from the Basin of Mexico surveys (Sanders, Parsons,

and Santley 1979) and from a relatively few excavations in the Basin relevant to this period. These include Tenayuca (Noguera 1935, 1969; Acosta 1964), Culhuacán (Griffin and Espejo 1947, 1950; Séjourné 1970, 1983), Chalco and Xico (O'Neill 1962; Parsons et al. 1982; Hodge 1993), Xaltocán (Brumfiel 1991, 1992), Cuanalán (Sanders 1965; Parsons 1966), and Otumba (Otis Charlton 1990, 1993) Additional data from Morelos (Smith 1983a; Norr 1987) and the Mezquital Valley (Acosta 1956–57; Mastache and Crespo 1974; Cobean and Mastache 1989; Healan and Stoutamire 1989) complement the Basin of Mexico data.

Some problems must be noted regarding chronology. First, Sanders, Parsons, and Santley give two end dates for Aztec I and II ceramics, A.D. 1350 (1979:467) and A.D. 1400 (1979:93). Second, they relate the ceramic complexes to a period of “petty states each vying for regional control” with the end date of A.D. 1350 (1979:467), and the settlement patterns based on the distribution of the ceramic complexes to a period ending c. A.D. 1400, “when large portions of the Basin were brought under the control of Azcapotzalco and Texcoco” (1979:150).

Are Early Aztec ceramics (I and II) associated only with “petty states,” and thus to the end of my period 2 in A.D. 1350, or with “petty states on a grander scale,” to at least A.D. 1400, and possibly to the end of my period 3 in A.D. 1428? Recently available chronometric dates noted earlier shed some light on the terminus of Early Aztec (I/II) ceramics (Nichols 1996; Nichols and Charlton 1996; Parsons, Brumfiel, and Hodge 1996). Aztec I may start as early as A.D. 1000 and persist to A.D. 1250/1350 or later overlapping with Aztec II which begins around A.D. 1200 and ends around A.D. 1400/1450.

Previously, with few chronometric dates available, I noted the coherence that exists between the archaeological settlement patterns and the historically described sociopolitical situation of c. A.D. 1400 and argued that this was supportive of a late terminus for Aztec I/II ceramics. Using these two lines of evidence, I am extending the duration of early Aztec ceramics at least to A.D. 1400 and possibly to A.D. 1450. Before addressing the implications of this revision, I shall discuss the third period of my proposed sequence.

Period 3. A.D. 1350–1428: Initial Expansionist Period: Petty States on a Grand Scale

HISTORICAL DATA. This is equivalent to Bray’s third period, “Consolidation in the Valley of Mexico, 1345–1428” (Bray 1977:376). Two

centuries had passed since the fall of Tula. By the middle of the fourteenth century the Acolhua, centered at Huexotla, Coatlinchan, and Texcoco, on the eastern side of the Basin, and the Tepaneca, centered at Azcapotzalco, Tlacopan, and possibly Tenayuca, on the western side of the Basin, began expansion on a grander scale than previously attempted (Offner 1979; Davies 1980:240–47; Brumfiel 1983:270–73; Carrasco 1984; Hassig 1988:125–40). The expansion of Azcapotzalco and Texcoco affected areas outside of the Basin (Maps 11.3 and 11.4).

Azcapotzalco's expansion included the Mezquital Valley, the Valley of Toluca (Hernandez R. 1966), and the Morelos area (Smith 1983b:505, 536–38; see also Anawalt 1990:293–96; Davies 1980:240–47). Texcoco's expansion included the eastern part of the Mezquital Valley, and initially eastern Morelos (Offner 1979:231; Davies 1980:126–29). To the east, Huejotzingo engaged in a series of conflicts with Tlaxcala and Cholula, remaining an ally of the Acolhua and the Chalco confederacy in the southeastern Basin (Davies 1980:173–76). Although there were excursions, alliances, confederacies, and conquests, Davies (1980:176) is probably correct in arguing that none of the regions was yet able to “burst its bounds” seeking to conquer the others. The major result was the establishment of the conditions that gave rise to the Triple Alliance of Texcoco, Tlacopan, and Tenochtitlán, dominated by Tenochtitlán.

Within the Basin of Mexico, the Acolhua of Texcoco and their allies were defeated by Azcapotzalco in A.D. 1418. From the founding of Tenochtitlán until this time the Mexica Aztecs had acted as allies and subordinates of the Tepaneca, sharing in the benefits of conquests but not directing them. In the next decade a falling out occurred between Tenochtitlán and Azcapotzalco. When Tezozomoc, the long-lived ruler of the Tepaneca, died in A.D. 1427, war broke out. Allied with a Tepaneca tributary, Tlacopan, the defeated Acolhua, and the Acolhua allies Tlaxcala and Huejotzingo, the Mexica Aztecs conquered the Tepaneca a year later (Davies 1980:302–16; Brumfiel 1983:271–74; Hassig 1988:136–47).

Until the fall of Azcapotzalco the hegemony of any city-state, whether large or small, rested on an “unstable complex of payoffs and alliances” (Brumfiel 1983:271). Brumfiel argues convincingly that the growth and decline of Azcapotzalco had destroyed the local noble houses, causing succession crises, precluding the formation of alliances, and reducing or eliminating resistance to the Triple Alliance of Tenochtitlán, Tlacopan, and Texcoco (1983:271–73). Ability became a factor in succession so that

a strict filial system changed to a fraternal system (Rounds 1982:83–84; Hassig 1988:141). Finally, the ruler and nobles acquired direct control over conquered lands and tribute rights (Carrasco 1971b:372; Brumfiel 1983:275–76; Hassig 1988:145–47). These changes, plus the ideology of war for sacrificial victims (Conrad and Demarest 1984:44) have been cited as significant for the period of expansion between A.D. 1430 and A.D. 1519.

ARCHAEOLOGICAL DATA. As previously mentioned, Sanders, Parsons, and Santley (1979:151, map 17) argue that the settlement patterns based on the distribution of Aztec I and II ceramics reflect the political situation around A.D. 1400, when both the Acolhua and the Tepaneca had risen to power, but before the defeat of the former by the latter in A.D. 1418 and the subsequent defeat of the Tepaneca in A.D. 1428 by the Triple Alliance. The presence of two large sites on the west of Lake Texcoco (Tenayuca and Azcapotzalco), and two on the east (Coatlinchan and Huexotla), each pair with a population of between 10,000 and 15,000, reflects the presence of these two polities (Sanders, Parsons, and Santley 1979:151). The smaller centers in the southern Basin, with populations of about 5,000 each, probably “functioned as small regional centers, each of which dominated small tributary regions within the southern Basin” (Sanders, Parsons, and Santley 1979:151). In their interpretation, the distribution of Aztec I and II ceramics reflects the sociopolitical situation not of A.D. 1350, before the rise of the Acolhua and the Tepaneca, but of A.D. 1400, just before the momentous events of the first quarter of the fifteenth century.

Alden’s spatial analysis of some of the same settlement pattern data from the eastern and southern Basin of Mexico also suggests that the distribution of Early Aztec ceramics reflects the sociopolitical situation in the Basin in A.D. 1400 (1979:174–77). The presence of substantial deposits of Aztec II ceramics under the Sagrario in Mexico City suggests that the initial occupation and period of construction by the Aztecs may have been associated with the use of such ceramics (Vega Sosa and Reyes Cortés 1979:82)

I have argued that a starting date of A.D. 1350 for Aztec III ceramics is too early in the light of the settlement pattern information that is consistent with the sociopolitical situation of A.D. 1400. The production and distribution of Aztec III ceramics is consistent with the post–A.D. 1428 sociopolitical situation, which involved much more unity within the Basin (Hodge and Minc 1990; Hodge 1992, 1993a; Hodge et al. 1992,

1993; Minc, Hodge, and Blackman 1994). The recently available chronometric dates support a late persistence of Aztec II and a more recent inception of Aztec III ceramics. Aztec I and II materials outside the Basin would indicate the expansion of Azcapotzalco and Texcoco, while Aztec III ceramics would reflect Triple Alliance expansion before the Spanish Conquest (Smith 1990) (but see Smith 1987b for an alternative view).

Synthesis of the Early Period: A.D. 1150–1428 Although neither the documents nor the archaeology clearly depict the course and causes of events in the CMSR from the fall of Tula to the rise of the Triple Alliance under Tenochtitlán's dominance, some pertinent observations can be made. In some areas of the CMSR, such as Malinalco, Morelos, and the Basin of Mexico, the earliest archaeological evidence reflects the migrations, *once completed*, through the introduction of new ceramic complexes and styles. In other areas there is little evidence, owing to depopulation or failure to recognize the ceramic complexes (Mezquital Valley, northern Basin of Mexico, Tulancingo Valley) or to the lack of specificity in the ceramic complex descriptions (Valley of Toluca and the Puebla–Tlaxcala area).

The Basin of Mexico settlement patterns and ceramic data for the late part of this period confirm the description of small, conflict-prone city-states, succeeded in the central Basin by large, conflict-prone city-states. Similarly the presence of isolated concentrations of Aztec II ceramics in the Mezquital Valley, in Morelos, and in the northeastern Basin of Mexico suggest the political expansion of the Acolhua and Tepaneca. Chalco's links with Cholula to the east are similarly reflected in ceramics, as is the founding of Tenochtitlán by the Aztecs.

Despite the obvious political fragmentation of this period there is good evidence for persisting economic integration, but on a regional basis. This evidence includes the widespread Pachuca obsidian at Otumba, Huexotla (Brumfiel 1976, table XXIX), near Chalco (Parsons et al. 1982:155–57; Brumfiel 1986), and in Tenochtitlán (Reyes C. and García-Bárcena 1979). Otumba obsidian was also widely distributed (Charlton and Spence 1983:69).

In addition, the distribution of Aztec I and II ceramics, as well as the Chalco polychromes, mark areas of interaction during this period. Along with the ceramic vessel linkages that are best known for the Morelos area (Smith 1983a) are spindle whorls indicating the movement of cotton from Morelos to the Basin of Mexico at this time. Norr (1987) has described a

large number of cotton whorls from Tetla in eastern Morelos. Similar whorls occur in the lower deposits excavated by O'Neill (1962:214), suggesting the importing and spinning of cotton there. Cotton whorls are also reported in association with early occupations at Huexotla and Xico (Brumfiel 1987:108). Smith and Hirth (1988) have suggested that the increase in cotton spinning at this time may have been related to the increase in the number of rural elites who would wear such clothing. This, of course, ties directly into the political situation already discussed.

Smith (1983a) and Hassig (1985:73) have suggested that the economic institution involved in the movement of goods at this time was the solar market focused on the small city-states. Local production and distribution within each city-state may have been the rule at this time (Nichols and Charlton 1988). Brumfiel (1976, 1980, 1987) found evidence at Huexotla for part-time nonagricultural specialization in spinning, salt production, ceramic figurines, spindle whorls, and censer decorations. These were distributed to the regional consumers (Brumfiel 1980:467). Such a system with much more complex linkages for raw materials and distribution also existed at Otumba (Charlton 1990a, 1994; Otis Charlton, Charlton, and Nichols 1993). However, if I am correct in restricting Aztec III ceramics to after A.D. 1400, then only some specialized core-blade production *may* have existed during the this early period at Otumba (Hirst, Mendoza, and Charlton 1990).

It is probable that at this time similar market systems were found throughout the CMSR. Goods such as obsidian, salt, and cotton would enter each of these systems horizontally. Local craft and agricultural products circulated within each system. Regional ratios of agricultural to nonagricultural production within each city-state would vary depending on local resources and the agricultural productivity of the land. Thus areas to the north in the Basin of Mexico, with obsidian resources and reduced agricultural potential, would have a heavier emphasis on non-agricultural production than areas in the central and southern Basin.

Within the southern Basin of Mexico agricultural intensification was under way through the construction of *chinampas* as revealed by excavations directed by J. Parsons (Parsons et al. 1982; Parsons et al. 1985) and by Avila López (1991). These developments are important for they, and later constructions, provided a major source of food for a rapidly growing population in the Basin of Mexico and underwrote, in part, the later expansion of the Triple Alliance (cf. Parsons 1976:247–48). They may be related to the increase in population in the southern Basin at this time.

The Early Aztec period involved substantial population increase and relocation in the Basin of Mexico (Sanders, Parsons, and Santley 1979: 149–53; Parsons 1989:200–202). There was an increase in the population of the Basin of Mexico from about 92,000/120,000 to about 250,000 (Parsons 1989: 202). Within the Basin there are major discontinuities between the Late Toltec period and the Early Aztec period in population size, settlement location, and settlement patterns, including the degree of urbanization. Population growth occurred throughout the Basin but was greatest in the southern and central regions. The ruralization of settlement of the Late Toltec period was reversed with the establishment of numerous nucleated centers (Parsons 1989:202).

Part II: A.D. 1428–1519

Period 4. A.D. 1428–1519: Triple Alliance Imperial Expansion – The Final Phase Historically and archaeologically this is the best-known period within the CMSR. It is a period of expansion through conquest (Bray 1977:378).

HISTORICAL DATA. Details of the sequence and process of expansion based on historical sources are summarized in numerous places. Barlow (1949), Berdan et al. (1996); (Davies (1987), Gibson (1971), Hassig (1988:141–235); Matos Moctezuma (1988: 15–57); Rodríguez-Shadow (1990); Townsend (1992:44–106), present reconstructions of the expansion of the Triple Alliance after the defeat of Azcapotzalco. Brumfiel (1983:274) notes that “almost immediately after establishing control over the Valley of Mexico, the Triple Alliance initiated large-scale public works within the valley and expansionary conquests beyond.” They consolidated their hold on the rest of the Basin, including the *chinampa* lands in the south, and then began to expand, establishing during the next ninety years tributary relations within large areas of Central and Southern Mexico (Barlow 1949; Gibson 1971). In the CMSR this resulted in the social, political, economic, and ethnic landscape described earlier in the chapter. By A.D. 1519 Tenochtitlán had become the dominant member of the Triple Alliance, a *primus inter pares* (Calnek 1982:56; Hassig 1988; Clendinnen 1991:15–83).

Although some important administrative reforms accompanied the expansion of the Aztecs and their allies out of the Basin of Mexico (Brumfiel 1983:275–76), these seem to have been directed toward efficiency in tribute collection and not to a structural integration or incor-

poration of the conquered tributary areas into a strongly centralized political structure. As Davies points out, “the *standard* pattern seems to have been administration of subject peoples by the traditional local *señores*” (1987:213), whose appointment was influenced by Tenochtitlán or one of the allies and whose performance in office (i.e., payment of tribute) was supervised by a *calpixqui* (Davies 1987:214; see also Gibson 1971; Hassig 1985, 1988; and Rodríguez-Shadow 1990).

Numerous documentary studies have examined the dynamic interplay between social and political structure on the one hand, and economic institutions on the other, during this period of expansion (e.g., Berdan 1975, 1982, 1985, 1986, 1987a, 1987b, 1988, 1994; Brumfiel 1976, 1980, 1986, 1987; Hassig 1985; Hodge and Minc 1990; Licate 1990; Berdan and Anawalt 1992; Hodge 1992, 1993b; Hodge et al. 1992, 1993; Hodge and Smith 1994; Minc 1995; Berdan et al. 1996). On the basis of both documentary data and archaeological data some have argued that the political structure of the Triple Alliance, with large amounts of goods from state-administered foreign trade and tribute at their disposal, manipulated the production and marketing systems within the Basin to reduce full-time craft production other than at Tenochtitlán, and to increase agricultural production directed to Tenochtitlán (e.g. Brumfiel 1976, 1980, 1986, 1987). Smith (1979, 1980, 1983b) has pointed out the obvious importance of markets in Central Mexico at this time and has suggested ways in which the archaeological data can address economic questions to rectify the biases of the ethnohistoric record. Recent research on craft production at Otumba (Map 11.4) addresses some of these issues (Charlton 1990b, 1994; Charlton, Nichols, and Otis Charlton 1991; Nichols 1994; Otis Charlton, Charlton, and Nichols 1993; Otis Charlton 1994).

ARCHAEOLOGICAL DATA. The quantity of archaeological data available for this period is impressive. Best represented is the Basin of Mexico with intensive survey results and earlier excavations summarized by Sanders, Parsons, and Santley (1979:153–81, maps 18–19; Sanders and Santley 1983:271–79). Recent excavations include *chinampa* studies (Parsons et al. 1982; Parsons et al. 1985), rural households (Charlton 1973b, 1979; Evans 1988, 1993), craft production, irrigation systems, and elite residential areas (Charlton 1990b, Charlton, Nichols, and Otis Charlton 1991; Otis Charlton, Charlton, and Nichols 1993), and regional adaptations in the south of the Basin at Chalco (Hodge 1993a, 1993b) and

Xaltocán (Brumfiel 1991, 1992). The associated ceramic complex is Aztec III.

Between 1978 and 1982 major excavations were directed by Eduardo Matos Moctezuma in Mexico City at the site of the Templo Mayor of Tenochtitlán, revealing in detail the grandeur and richness of the materials found at the center of the empire (Matos Moctezuma 1982, 1984, 1988; Boone 1987; Broda, Carrasco, and Matos Moctezuma 1987) These complement a series of excavations carried out at Tenochtitlán's northern neighbor, Tlatelolco, since the 1940s (González Rul 1988:13; Carballal Staedler, Flores Hernández, and Lechuga García 1990)

Outside of the Basin to the north and the northeast, surveys and excavations in the Mezquital Valley (Mastache and Crespo 1974; Armillas 1975; Peña and Rodríguez 1976), and the Tulancingo Valley (Snow 1969; E. F. Snow and M. E. Noguera 1970; M. E. Snow and E. F. Snow 1970; Charlton 1976, 1977, 1994) have revealed good Aztec III occupations, after little (Mezquital Valley) or no (Tulancingo Valley) Aztec II presence. The major expansion of the empire into these areas is marked by the presence of the Aztec III ceramic complex.

South of the Basin excavated household data and ceramic analyses are available for parts of Morelos although settlement pattern studies are limited in this region (Mason 1980; Smith 1983a, 1983b, 1987a; Hirth and Guillen 1988; Smith et al. 1989). Although Smith (1983a, 1987b) argues for an A.D. 1350 starting date for the introduction of Aztec III ceramics as trade items into this area, well before the beginning of the Triple Alliance, I think that in the Basin a later date of A.D. 1400 would be more appropriate and is supported by the available radiocarbon dates (Nichols and Charlton 1996; Norr 1987; Parsons, Brumfiel and Hodge 1996). In this case the Aztec III materials would still predate the imperial expansion by about a generation.

Smith and Heath-Smith have cogently argued that the archaeological materials from Morelos reflect in several ways the change from trade to tribute after conquest. These include a shift to urban emphasis on cotton spinning, a reduced standard of living in the rural areas, and a reduction in trade items (Smith 1987b: 48–49, 1994:340–41; Smith and Heath-Smith 1994).

In the Valley of Toluca to the west, and at Malinalco to the southwest, conquest by the Mexica Aztecs was relatively late in the fifteenth century (Hassig 1988). The local ceramic traditions persisted with some evidence

of settlements of Aztec populations among the indigenous peoples (García Payón 1936, 1941, 1979; Durbin 1970, 1976; Gutierrez de Limón 1979; Reinhold 1981).

To the east Puebla and Tlaxcala are marked by distinctive ceramic traditions (Marquina 1970; Schmidt 1975; García Cook 1976, 1981; García Cook and Merino Carrión 1987; 1989; Carrión 1989; Plunket 1990; McCafferty 1994; Plunket and Uruñuela 1994; Rojas 1994; Sheehy 1995), possibly reflecting the various independent states in that area (Cholula, Huejotzingo, Tlaxcala, Tliluhquetepec, Cuauhtinchan, and Atlixco). Snow (1966, 1969) comments that in the north-central part of this region the late ceramics indicate a casual trading contact with the Basin of Mexico. Available settlement pattern data indicate that prehispanic populations reached their peak during the last century before the conquest.

Synthesis of the Late Period: A.D. 1428–1519 Until A.D. 1428 there had been a succession of fragile, ephemeral, tributary state systems, both in the Basin of Mexico and in the surrounding areas. After the Triple Alliance victory over the Tepaneca in A.D. 1428 the pattern changed to one of continued expansion, with few setbacks, until A.D. 1519, when the Spaniards arrived and ended it permanently. What brought about the growth of this Mexica Aztec-dominated macrostate system? What were its effects within the heartland and the CMSR?

I believe we must look at a complex of relevant factors rather than any single cause for the growth of the Mexica Aztec state. Within the Basin, agricultural intensification and demographic growth had established the bases for such an expansion by the mid-fourteenth century. Both continued until the time of the Conquest with major population growth throughout the CMSR along with agricultural intensification in *chinampa* construction and terracing (Parsons 1976, 1989; Parsons et al. 1985). Similar population growth and agricultural intensification occurred in areas outside the Basin (e.g., Smith and Price 1994).

The settlement surveys of the Basin (Sanders, Parsons, and Santley 1979:153–81; Sanders 1981:189–94; Sanders and Santley 1983:271–76; Parsons 1989:205–13) clearly demonstrate a massive population increase during the century immediately preceding the Conquest. The Early Aztec period population of c. 250,000 rises to between 800,000 and 1,200,000 during the Late Aztec period. Population, however, only provides a

threshold for major expansion, as a necessary but not sufficient cause for imperial expansion.

In order for expansion to occur, people needed to be organized and motivated to achieve desired ends. Previous tributary states had foundered on competition for power between members of the ruling group, and on uncertain, shifting loyalties among allies and subjugated peoples alike. Tenochtitlán solved the first problem, in part, by A.D. 1428 through a change in leadership selection principle from strictly hereditary to election from within a specific group. Subsequent to the fall of Azcapotzalco the sharing of wealth among the nobles by the ruler changed so as to reduce internal competition and to encourage commonality of interest (Bray 1977; Brumfiel 1983; Calnek 1978a; Davies 1987; Hassig 1988; Rodríguez-Shadow 1990).

The second, problem, that of assuring cooperation and reducing revolts among conquered city-states, may have been solved within the Basin by the very particularistic historical events that by A.D. 1428 had killed so many local leaders that disputes for succession were endemic, causing such leaders to seek support from the Triple Alliance in their claims and thus assuring the latter of dominance (Brumfiel 1983:273, 1989:131). By these measures stability was ensured within the Basin to a great extent. Essentially, using the city-state model, Tenochtitlán had transformed itself as a polity within the Basin to a Basin-wide city-state, with concomitant social, political, and economic changes (Sanders, Parsons, and Santley 1979: 176–81; Sanders and Santley 1983:271–76; Charlton 1986; Charlton and Nichols 1995). The scale of the earlier tributary state had been increased to draw on an enormous sustaining area.

Population growth was reflected in the founding, in previously unoccupied areas, of many new settlements, including city-state capitals, possibly to serve as administrative centers, along with villages and hamlets (Sanders, Parsons, and Santley 1979:156). Although some Early Aztec political centers continued to be important in their respective areas, the Triple Alliance capitals – Texcoco, Tlacopan, and Tenochtitlán–Tlaxtecolco – were all founded in areas with little or no previous occupation, possibly denoting a break with earlier administrative models (Sanders, Parsons, and Santley 1979:155).

Through warfare the Tenochtitlan-centered city-state was extended to incorporate large areas of Mesoamerica within and outside of the CMSR. Hassig (1988) points out that the Aztecs relied heavily on the perception

of their power by the conquered groups, not on their physical presence. Control was indirect, attempts being made to ensure loyalty through careful choice of local rulers left in place. As such, this was an extension of the earlier developments in the Basin.

The expansion, initiated and directed by the elite, was accomplished through warfare. Motivations for participation in and support of this expansion have been attributed to religious fervor, the cult of captive sacrifices, individual social advancement (Conrad and Demarest 1984; González Torres 1985; Demarest and Conrad 1992), and to the dynamics of the structure of the system, with the ruler and the nobility needing to provide more tribute to an increasing nobility in order to maintain their positions (Bray 1977:395; Hassig 1988:265). Factionalism (Brumfiel 1989: 128ff) and ethnicity (a particular type of factionalism) (Brumfiel 1994:101–2), have also been proposed as important variables in the development of the Mexica Aztec state. Yet descriptions of why the participants took certain actions or how the system functioned do not account *in toto* for all the expansion and complexity.

With the flow of agricultural products and luxury goods into the Basin from tribute and long-distance trade, the Basin economic system underwent significant changes after A.D. 1428. Nichols and Charlton (1988) point out that the archaeological data for the Basin suggest there was a core-periphery dichotomy focused on Tenochtitlán. The city-states within a radius of 30–35 kilometers from Tenochtitlán in the central and southern lake system began to intensify agricultural production at the expense of craft production. Nonagricultural production focused on salt.

Within the core, locally produced utilitarian and elite goods were manufactured at Tenochtitlán and entered the market system there. Goods from tribute and the *pochteca* trade also entered the market system at Tenochtitlán and are reflected in an increased volume of regional goods such as obsidian at sites within the core (Charlton and Spence 1983:70–74).

In the periphery outside of this core areas production of noncomestibles such as maguey fibers, obsidian cores and blades, figurines, ground stone tools, and lapidary elite products, became accentuated at those city-states previously in existence, such as Otumba (Nichols and Charlton 1988; Charlton 1990b, 1994; Charlton, Nichols, and Otis Charlton 1991; Otis Charlton, Charlton, and Nichols 1993). In these city-states the solar marketing systems persisted and maintained local symbiotic relations, while regionally specialized products were integrated into market systems,

tribute systems, or long-distance trading systems. In part of the periphery, such as Tepeapulco (Charlton 1977, 1978, 1994), new city-states were established to control local resources and to carry out specialized craft activities.

SUMMARY

The development of the Aztec state and its subsequent expansion beyond the confines of the Basin of Mexico is a classic example of secondary state formation. The processes at work began after the fall of Teotihuacán creating first Tula, and then the Tenochtitlán city-state. State building took place within a context of increasing population, agricultural intensification, factionalism, ethnicity, warfare, and ideological concerns. Many looked to Tula for inspiration and justification. There is no single prime mover operating in isolation but, rather, a group of factors working together but loosely interrelated. The accidental, particularistic, succession problems, and resolutions, that emerged by A.D. 1428 provided a context in which the Mexica Aztecs, and their allies, could capitalize on their military, demographic, and organizational structure to fulfill on a grand scale the model of a militaristic tributary city-state with Toltec antecedents.

BIBLIOGRAPHICAL ESSAY

I have listed in the Bibliography all works referred to in the text. I do not intend here to list all of those again or to provide a comprehensive bibliography for the post-Teotihuacán archaeology and ethnohistory of the Central Mexican Symbiotic Region. Rather, I suggest a selective list of sources, bibliographies, books, and articles, some consulted but not cited in this chapter but, in my judgement, all worthy of attention by those readers interested in pursuing additional research on selected topics and areas.

Susan Fortson Magee's "Mesoamerican Archaeology: A Guide to the Literature and Other Information Sources," *Institute of Latin American Studies, Guides and Bibliographies Series: 12* (Austin, TX, 1981), presents a valuable and usefully annotated introduction to the great variety of source materials on Mesoamerica and is worth consulting even by the experienced scholar. Still the basic regional bibliographic source for Mesoamerican archaeology and ethnohistory – and by extension the post-

Teotihuacán CMSR – is Ignacio Bernal's *Bibliografía de arqueología y etnografía de Mesoamérica y norte de México, 1514–1960* (Mexico D.F., 1962).

Less comprehensive but still useful bibliographies are to be found in (1) the now discontinued bibliographic source *Boletín Bibliográfico de Antropología Americana* (Vol. 1 [1937]–Vol. 41 [1979]); (2) Robert Wauchope's "Ten Years of Middle American Archaeology: Annotated Bibliography and News Summary, 1948–1957," pp. 1–106, Publication 28, Middle American Research Institute (New Orleans, 1961); and (3) the *Bibliografía Antropológica Trabajos Publicados en México 1955–1962* (Mexico D.F., 1962) of the 35th International Congress of Americanists, compiled by Noemí Castillo Tejero and Lorena E. Mirambell Silva and edited by Lauro José Zavala. The recently revised and updated bibliographical essay "Mesoamerica Before 1519" by Miguel León Portilla and Kenneth Mills, *The Cambridge History of Latin America*, vol. XI (Cambridge, 1995), although dealing with all of Mesoamerica includes substantial numbers of references to important recent research on the post-Teotihuacán CMSR.

Three additional bibliographies have more focused geographical and chronological coverage of the post-Teotihuacán CMSR. Linda Manzanilla's "Bibliografía de la Cuenca de México," Instituto de Investigaciones Antropológicas, UNAM (Mexico D.F., 1987), arranged by topic, area, and time period, and Edward B. Sisson and Modeena Stultz's alphabetically organized "Postclassic Central Mexico, A Preliminary Bibliography," University of Mississippi (Oxford, 1982 [multilithed]), include in their coverage some more obscure references on the post-Teotihuacán CMSR sequence. Thomas L. Welch and Rene L. Gutierrez's *The Aztecs: A Bibliography of Books and Periodical Articles*, Organization of American States (Washington DC, 1987), arranged alphabetically but indexed by subject and periodical title, addresses materials related directly to the most recent post-Teotihuacán protagonists in the CMSR.

Basic substantive summaries of current knowledge of the post-Teotihuacán CMSR be found in several texts on Mesoamerican archaeology such as *Prehistoric Mesoamerica* by Richard E. W. Adams (rev. ed., Norman, OK, 1991), and *The Aztecs, Maya, and their Predecessors* by Muriel Porter Weaver (3rd ed., New York, 1993), as well as in *Mexico*, by Michael D. Coe (4th ed., New York, 1994), a work oriented to the non-Maya areas of Mesoamerica. All include summaries of basic environmental, archaeological, and ethnohistoric data from the post-Teotihuacán

CMSR and all provide a general orientation both to the data and to general interpretive frameworks. A substantive and more theoretical text, *Ancient Mesoamerica: A Comparison of Change in Three Regions*, by Richard E. Blanton, Stephen A. Kowalewski, Gary M. Feinman, and Laura M. Finsten (2nd ed., New York, 1993), includes the (Valley) Basin of Mexico as one of the three regions investigated (pp. 106–57), placing it within the context of general processes applicable to cultural evolution throughout Mesoamerica (pp. 201–25). The bibliographical essay (pp. 234–37) includes numerous recent sources.

An earlier but still important theoretical work, *Mesoamerica: The Evolution of a Civilization* (New York, 1968), by William T. Sanders and Barbara J. Price, proposes a cultural ecological approach to cultural evolution in the CMSR in particular and throughout Mesoamerica in general. Michael E. Smith's article "New World Complex Societies: Recent Economic, Social, and Political Studies," *Journal of Archaeological Research* 1 (1993): 5–41, reviews recent archaeological research and theoretical issues as related to the indigenous complex societies of Latin America as a whole, and thus includes resumé of recent studies of the post-Teotihuacán CMSR, both archaeological and ethnohistoric, along with two useful bibliographies.

Other recent theoretical works on cultural development in Mesoamerica as a whole include papers by Gordon R. Willey, "Horizontal Integration and Regional Diversity: An Alternating Process in the Rise of Civilizations," *American Antiquity* 56 (1991): 197–215, and by Richard E. Blanton, Gary M. Feinman, Stephen A. Kowalewski, and Peter N. Peregrine, "A Dual-Processual Theory for the Evolution of Mesoamerican Civilization," *Current Anthropology* 37 (1996): 1–14. These papers examine in some detail the patterns of alternating political centralization and decentralization characteristic of CMSR civilizations, and in the case of Blanton et al. (1996) with reference to corporate or network political and economic strategies.

The *Handbook of Mesoamerican Indians* with Robert Wauchope as general editor (Austin, TX 1964–76) remains an important source of basic information on the CMSR and is still well worth consulting, although almost always in conjunction with more recent research. Detailed environmental descriptions may be found in Vol. 1 (Austin, TX, 1964). Substantive and theoretical topical and areal syntheses of the archaeology, ethnohistory, and ethnology of the central and eastern Mexican highlands, prepared in the 1960s, are to be found in Vols. 8, 10, and

II (Austin, TX) 1969, 1971). Detailed discussions of ethnohistoric documents along with works by various authors may be found in several articles of the "Guide to Ethnohistorical Sources," *Handbook of Mesoamerican Indians*, Vols. 12–15 (Austin, TX, 1972–75).

Volume I of the *Supplement to the Handbook of Mesoamerican Indians* (general editor Victoria Reifler Bricker) edited by Jeremy A. Sabloff, assisted by Patricia A. Andrews (Austin, TX, 1981) contains archaeological syntheses of two subareas in the CMSR: the Basin of Mexico in "Ecological Adaptation in the Basin of Mexico: 23,000 B.C. to the Present" by William T. Sanders, pp. 147–97, and Tlaxcala in "The Historical Importance of Tlaxcala in the Cultural Development of the Central Highlands" by Angel Garcia Cook, pp. 244–76. A third paper, "Tula" by Richard A. Diehl, pp. 277–95, summarizes archaeological knowledge of that city and the extension of its influence in Mesoamerica beyond its setting in the Mezquital Valley. Frederic Hicks's article "Prehispanic Background of Colonial and Economic Organization in Central Mexico" in Vol. 4 of the *Supplement to the Handbook of Middle American Indians* (general editor Victoria Reifler Bricker), edited by Ronald Spores assisted by Patricia A. Andrews (Austin, TX, 1986), pp. 35–54, presents some results of recent documentary research relevant to the preconquest period in the Basin of Mexico and the Valley of Puebla of the CMSR.

For the Basin of Mexico the best general book-length synthesis of settlement pattern survey conducted between 1960 and 1975 is *The Basin of Mexico, Ecological Processes in the Evolution of a Civilization* (New York, 1979) by William T. Sanders, Jeffrey R. Parsons, and Robert S. Santley. Several of the survey projects have been published and these should also be consulted for pertinent details. Of particular importance are two publications from the Teotihuacán Valley Project, *The Natural Environment, Contemporary Occupation, and 16th Century Population of the Valley* (University Park, PA, 1970) by William T. Sanders et al., and *The Toltec Period Occupation of the Valley* (2 vols., University Park, PA, 1986, 1987) edited and compiled by William T. Sanders. Unfortunately, the Teotihuacán Valley Aztec data are still unpublished.

To the south from the Teotihuacán Valley to Amecameca, detailed survey data are available in *Prehistoric Settlement Patterns in the Texcoco Region, Mexico* (Ann Arbor, MI, 1971) by Jeffrey R. Parsons; *Prehispanic Settlement Patterns of the Ixtapalapa Peninsula Region, Mexico* (University Park, PA, 1972) and *Prehispanic Settlement Patterns in the Southern Valley of Mexico, The Chalco-Xochimilco Region* (Ann Arbor, MI, 1982) by Jeffrey

R. Parsons et al. The Cuauhtitlán, Zumpango, and Temascalapa surveys have to date been published only in *The Basin of Mexico* book by Sanders et al. William T. Sanders and Robert S. Santley in their paper "A Tale of Three Cities: Energetics and Urbanization in Pre-Hispanic Central Mexico," in *Prehistoric Settlement Patterns: Essays in Honor of Gordon R. Willey*, edited by Evon Z. Vogt and Richard M. Leventhal (Cambridge, 1983), pp. 243–91, have prepared settlement pattern maps of the CMSR for the Teotihuacán, Tula, and Tenochtitlán periods, integrating available information on settlement patterns from Tlaxcala, Puebla, and Hidalgo. This is a task that still has been too infrequently addressed.

For the epi-Teotihuacán period several edited collections of papers present summaries of recent archaeological and art-historical research and theoretical orientations for much of the CMSR (Xochicalco, the Basin of Mexico, Cacaxtla, and Tula) as well as for other areas in Mesoamerica. Of particular note are *Mesoamerica After the Decline of Teotihuacan A.D. 700–900*, edited by Richard A. Diehl and Janet Catherine Berlo (Washington, DC, 1989), and a recently published *Antología de Cacaxtla* (2 vols., Mexico, D.F., 1995) compiled by Angel García Cook and Beatriz Leonór Merino Carrión and coordinated by Lorena Mirambell Silva, which brings together numerous articles and chapters on Cacaxtla, including Spanish translations of some of the chapters in the volume edited by Diehl and Berlo. Political and economic aspects of Xochicalco are explored by Kenneth G. Hirth in two papers: "Urbanism, Militarism, and Architectural Design: An Analysis of Epiclassic Sociopolitical Structure at Xochicalco" *Ancient Mesoamerica* 6 (1995): 237–50, and "The Investigation of Obsidian Craft Production at Xochicalco, Morelos," *Ancient Mesoamerica* 6 (1995): 251–58.

Tula's role in the post-Teotihuacán pre-Aztec CMSR has been the focus of several recent archaeological summaries including *Proyecto Tula (Primera Parte and Segunda Parte)* (Mexico, D.F., 1974, 1976) by Eduardo Matos Moctezuma; *Tula, the Toltec Capital of Ancient Mexico* (New York, 1983) by Richard A. Diehl; and *Tula of the Toltecs, Excavations and Survey* (Iowa City, 1989), edited by Dan. M. Healan. "The Toltec Horizon in Mesoamerica: New Perspectives on an Old Issue" by Richard A. Diehl, in *Latin American Horizons*, edited by Don S. Rice (Washington, DC, 1993), pp. 263–94, provides an excellent treatment of Tula within and beyond the CMSR.

Regional studies of Tula's influence in the CMSR include the Basin of Mexico and Tlaxcala surveys previously mentioned, Kenneth G.

Hirth's paper "Toltec-Mazapan Influence in Eastern Morelos, México," *Journal of New World Archaeology* 2 (1977): 40–46, and a synthesis of the Morelos sequence, "Balance y Perspectiva de la Arqueología del Estado de Morelos" by Ann Cyphers Guillén and Nicole Spitalier, *Anales de Antropología* 22 (1985): 41–70.

Useful compendia of the available ethnohistoric sources on Tula may be found in Robert Chadwick's paper "Native Pre-Aztec History of Central Mexico" in the *Handbook of Middle American Indians*, Vol. 11, edited by Gordon F. Ekholm and Ignacio Bernal (Austin, TX, 1971), pp. 474–504, and in a comprehensive book by Nigel Davies, *The Toltecs until the Fall of Tula* (Norman, OK, 1977).

For reviews of the place of Aztec studies in a Western intellectual tradition, see *The Aztec Image in Western Thought* by Benjamin Keen (New Brunswick, NJ, 1971), and *A History of Mexican Archaeology* by Ignacio Bernal (New York, 1980). Of numerous available introductions to Aztec studies, *The Aztecs of Central Mexico An Imperial Society* (New York 1982) by Frances R. Berdan, predominantly based on ethnohistorical sources, and Richard F. Townsend's *The Aztecs* (New York, 1992), incorporating data from both ethnohistorical and archaeological research, put forward basic information.

More detailed histories derived from ethnohistorical sources include Nigel Davies's *The Toltec Heritage from the fall of Tula to the Rise of Tenochtitlán* (Norman, OK, 1980), which is complemented by his work *The Aztec Empire, The Toltec Resurgence* (Norman, OK, 1987). Other relevant works include *A Rain of Darts, The Mexica Aztecs* by Burr Cartwright Brundage (Austin, TX, 1972), *The Aztec Image of Self and Society* by Miguel León-Portilla (Salt Lake City, 1992), and *The Aztec Arrangement* by Rudolph van Zantwijk (Norman, OK, 1985).

There are also detailed ethnohistoric studies of specific topics such as art in *Art and Iconography of Late Post-Classic Central Mexico* (Washington, DC, 1982), edited by Elizabeth Hill Boone; human sacrifice in *El Sacrificio Humano entre Los Mexicas* (Mexico, D.F., 1985); ideology and political expansion in *Religion and Empire* (New York, 1984) by Geoffrey W. Conrad and Arthur A. Demarest; law in *Law and Politics in Aztec Texcoco* (New York, 1983) by Jerome A. Offner; political economy in *Land and Politics in the Valley of Mexico* (Albuquerque, 1991), edited by H. R. Harvey, and *Trade, Tribute, and Transportation* by Ross Hassig; ritual in *The Jade Steps* (Salt Lake City, 1985) by Burr Cartwright Brundage, and *Aztecs* (Cambridge, 1991) by Inga Clendinnen; rulership in *The*

Aztec Kings (Tucson, 1989) by Susan D. Gillespie; and warfare in *Aztec Warfare* by Ross Hassig (Norman 1988).

Primary source materials, such as *The Codex Mendoza* (4 vols.; Berkeley, 1992), edited by Francis F. Berdan and Patricia Rieff Anawalt, are increasingly available in facsimile editions with new critical scholarly papers included. Similarly the publication of substantially unpublished research by earlier scholars, such as the *Obras de Robert H. Barlow* (7 vols. projected; 5 vols. published; Mexico, D.F. 1987–94), should be read as research tools for ethnohistorical studies of the Aztecs.

Detailed archaeological studies of Aztec period demography, settlement patterns, political organization and expansion, economic patterns including markets and tribute, ceramics, and agricultural patterns are too numerous to list here.

Of major importance are the data revealed in the Templo Mayor project directed by Eduardo Matos Moctezuma. Basic excavated data are in *El Templo Mayor; Excavaciones y Estudios* (Mexico, D.F., 1982), edited by Eduardo Matos Moctezuma. *The Great Temple of Tenochtitlán* (Berkeley, 1987) by Johanna Broda, David Carrasco, and Eduardo Matos Moctezuma summarizes the project and presents interpretations within the context of empire, an approach that is elaborated by the more numerous and detailed papers in *The Aztec Templo Mayor* (Washington, DC, 1987) edited by Elizabeth Hill Boone.

For a broader, more regional perspective a good place to start would be in two recent publications: *Economies and Politics in the Aztec Realm* (Albany, NY, 1994), edited by Mary G. Hodge and Michael E. Smith, and *Aztec Imperial Strategies* (Washington, DC, 1996) by Frances F. Berdan, Richard E. Blanton, Elizabeth Boone, Mary Hodge, Michael E. Smith, and Emily Umberger. The approach of both volumes is to integrate or place Aztec period archaeological studies within the context of the CMSR (Hodge and Smith) or the CMSR within the context of imperial expansion throughout Mesoamerica (Berdan et al.).

FURTHER READING

- Acosta, Jorge R. 1956–57. Interpretación de Algunos de los Datos Obtenidos en Tula Relativos a la Epoca Tolteca. *Revista Mexicana de Estudios Antropológicos* 14(2):75–110.
1964. Tenayuca, Exploraciones de 1963. *Anales del Instituto Nacional de Antropología e Historia*, 6a 17(45): 117–26.
- Adams, William H. 1977. *Silcott, Washington: Ethnoarchaeology of a Rural American*

- Community*. Reports of Investigations 54. Washington State University, Laboratory of Anthropology, Pullman.
- Adams, William Y. 1974. Sacred and Secular Politics in Ancient Nubia. *World Archaeology* 6(1): 39–51.
- Alden, John R. 1979. A Reconstruction of Toltec Period Political Units in the Valley of Mexico. In *Transformations: Mathematical Approaches to Culture Change*, ed. Colin Renfrew and Kenneth L. Cooke, pp. 169–200. Academic Press, New York.
- Anawalt, Patricia Rieff. 1990. The Emperor's Cloak: Aztec Pomp, Toltec Circumstances. *American Antiquity* 55(2) :291–307.
- Armillas, Pedro 1964. Condiciones Ambientales y Movimiento de Pueblos en la Frontera Septentrional de Mesoamérica. In *Homenaje a Fernando Márquez-Miranda*, pp. 62–68. El Seminario de Estudios Americanistas y El Seminario de Antropología Americana, Universidades de Madrid y Sevilla, Madrid.
1969. The Arid Frontier of Mexican Civilization. *New York Academy of Sciences Transactions* (2nd series), 31:697–704.
1975. Archaeological Survey of the Barbarian Frontier of the Aztec Empire. *American Philosophical Society Year Book 1974*, pp. 561–69, Philadelphia.
- Avila López, Raúl. 1991. Chinampas de Iztapalapa, D.F. *Colección Científica* 225. Instituto Nacional de Antropología e Historia, Mexico, D.F.
- Barlow, Robert H. 1949. The Extent of the Empire of the Culhua Mexica. *Ibero-Americana* No. 28. University of California Press, Berkeley.
- Berdan, Frances F. 1975. *Trade, Tribute, and Market in the Aztec Empire*. Unpublished Ph.D. dissertation, University of Texas, Austin.
1982. *The Aztecs of Central Mexico: An Imperial Society*. Holt, Rinehart and Winston, New York.
1985. Markets in the Economy of Aztec Mexico. In *Markets and Marketing*, ed. Stuart Plattner, pp. 339–97. Monographs in Economic Anthropology 4, University Press of America, New York.
1986. Enterprise and Empire in Aztec and Early Colonial Mexico. In *Economic Aspects of Prehispanic Highland Mexico*, ed. Barry L. Isaac, pp. 281–302. Research in Economic Anthropology, Supplement 2. JAI Press, Greenwich.
- 1987a. The Economics of Aztec Luxury Trade and Tribute. In *The Aztec Temple Mayor*, ed. Elizabeth Hill Boone, pp. 161–83. Dumbarton Oaks Research Library and Collection, Washington, DC.
- 1987b. Cotton in Aztec Mexico: Production, Distribution and Uses. *Mexican Studies* 3: 235–62.
1988. Principles of Regional and Long Distance Trade in the Aztec Empire. In *Smoke and Mist, Mesoamerican Studies in Memory of Thelma D. Sullivan*, ed. J. Kathryn Josserand and Karen Dakin, pp. 639–56. British Archaeological Reports, Oxford, BAR International Series 402 (ii).
1994. Economic Alternatives under Imperial Rule: The Eastern Aztec Empire. In *Economies and Politics in the Aztec Realm*, ed. Mary G. Hodge and Michael E. Smith, pp. 291–312. *Studies on Culture and Society*, Vol. 6. Institute for Mesoamerican Studies, State University of New York, Albany.
- Berdan, Frances F., and Patricia Rieff Anawalt (ed.). 1992. *The Codex Mendoza*. 4 vols. University of California of California Press, Berkeley.

- Berdan, Frances F., Richard E. Blanton, Elizabeth H. Boone, Mary G. Hodge, and Michael E. Smith. 1996. *Aztec Imperial Strategies*. Dumbarton Oaks, Washington, DC.
- Bernal, Ignacio. 1962. Archaeology and Written Sources. *Proceedings, 34th International Congress of Americanists*, pp. 219–25. Vienna.
- Blanton, Richard E. 1975. Texcoco Region Archaeology. *American Antiquity* 40(2) :227–30.
- Blanton, Richard E., Gary M. Feinman, Stephen A. Kowalewski, and Peter N. Peregrine. 1996. A Dual-Processual Theory for the Evolution of Mesoamerican Civilization. *Current Anthropology* 37(1) :1–31.
- Blanton, Richard E., Stephen A. Kowalewski, Gary M. Feinman, and Laura M. Finsten. 1993. *Ancient Mesoamerica: A Comparison of Change in Three Regions*. 2nd ed. Cambridge University Press, Cambridge.
- Boone, Elizabeth Hill (ed.). 1987 *The Aztec Templo Mayor: a Symposium at Dumbarton Oaks, 8th and 9th of October, 1983*. Dumbarton Oaks Research Library and Collection, Washington, DC.
- Bray, Warwick. 1972 The City-State in Central Mexico at the Time of the Spanish Conquest. *Journal of Latin American Studies* 4:161–85.
1977. Civilising the Aztecs. In *The Evolution of Social Systems*, ed. J. Friedman and M. J. Rowlands, pp. 373–98. University of Pittsburgh Press, Pittsburgh.
- Broda, Johanna, David Carrasco, and Eduardo Matos Moctezuma. 1987. *The Great Temple of Tenochtitlán: Center and Periphery in the Aztec World*. University of California Press, Berkeley.
- Bronson, Bennet. 1988. The Role of Barbarians in the Fall of States. In *The Collapse of Ancient States and Civilizations*, ed. Norman Yoffee and George L. Cowgill, pp. 196–218. University of Arizona Press, Tucson.
- Brumfiel, Elizabeth M. S. 1976. *Specialization and Exchange at the Late Postclassic (Aztec) Community of Huexotla, Mexico*. Unpublished Ph.D. dissertation, University of Michigan, Ann Arbor.
1980. Specialization, Market Exchange, and the Aztec State: A View from Huexotla. *Current Anthropology* 21(4) :459–78.
1983. Aztec State Making: Ecology, Structure, and the Origin of the State. *American Anthropologist* 85(2) :261–84.
1986. The Division of Labor at Xico: The Chipped Stone Industry. In *Economic Aspects of Prehispanic Highland and Mexico*, ed. Barry L. Isaac, pp. 245–79. Research in Economic Anthropology, Supplement 2. JAI Press Inc., Greenwich, CT.
1987. Elite and Utilitarian Crafts in the Aztec State. In *Specialization, Exchange, and Complex Societies*, ed. Elizabeth M. Brumfiel and Timothy K. Earle, pp. 102–18. Cambridge University Press, Cambridge.
1989. Factional Competition in Complex Society. In *Domination and Resistance*, ed. Daniel Miller, Michael Rowlands, and Christopher Tilley, pp. 127–39. Unwin Hyman, London.
1994. Ethnic Groups and Political Development in Ancient Mexico. In *Factional Competition and Political Development in the New World*, ed. Elizabeth M. Brumfiel and John W. Fox, pp. 89–103. Cambridge University Press, Cambridge.
- Brumfiel, Elizabeth M. S. (ed.). 1991. Postclassic Xaltocán: Archaeological Research in the

- Northern Valley of Mexico, 1990 Annual Report, Department of Anthropology, Albion College, MI.
1992. Postclassic Xaltocán: Archaeological Research in the Northern Valley of Mexico, 1991 Annual Report, Department of Anthropology, Albion College, MI.
- Brundage, Burr Cartwright. 1972. *A Rain of Darts: The Mexica Aztecs*. University of Texas Press, Austin.
- Calnek, Edward E. 1973. The Historical Validity of the Codex Xolotl. *American Antiquity* 38(4): 423–27.
- 1978a. Review of “The Toltecs” by Nigel Davies. *Science* 201: 1006–7.
- 1978b. The City-State in the Basin of Mexico: Late Prehispanic Period. In *Urbanization in the Americas from Its Beginnings to the Present*, ed. Richard P. Schaedel, Jorge E. Hardoy, and Nora Scott Kinzer, pp. 463–70. Mouton Publishers, The Hague.
1982. Patterns of Empire Formation in the Valley of Mexico, Late Postclassic Period. In *The Inca and Aztec States, 1400–1800: Anthropology and History*, ed. George C. Collier, Renato I. Rosaldo, and John D. Wirth, pp. 43–62. Academic Press, New York.
- Carballal Staedtler, Margarita, María Flores Hernández, and María del Carmen Lechuga García. 1990. Programa de Trabajo SRE Tlatelolco. Subdirección de Salvamento Arqueológico, Instituto Nacional de Antropología e Historia, Tecamachalco, Edo. de México. Manuscript.
- Carrasco, Pedro. 1969. Central Mexican Highlands: Introduction. In *Ethnology, Part 2*, ed. Evon Z. Vogt, pp. 579–601. *Handbook of Middle American Indians*, Vol. 8, Robert Wauchope, general editor. University of Texas Press, Austin.
- 1971a. The Peoples of Central Mexico and Their Historical Tradition. In *Archaeology of Northern Mesoamerica, Part 2*, ed. Gordon F. Ekholm and Ignacio Bernal, pp. 459–73. *Handbook of Middle American Indians*, Vol. 11, Robert Wauchope, general editor. University of Texas Press, Austin.
- 1971b. Social Organization of Ancient Mexico. In *Archaeology of Northern Mesoamerica, Part 1*, ed. Gordon F. Ekholm, and Ignacio Bernal, pp. 349–75. *Handbook of Middle American Indians*, Vol. 10, Robert Wauchope, general editor. University of Texas Press, Austin.
1984. The Extent of the Tepanec Empire. In *The Native Sources and the History of the Valley of Mexico*, ed. J. de Durand-Forest, pp. 73–93. 44th International Congress of Americanists 1982, B.A.R. International Series, 204. B.A.R., Oxford.
- Caso, Alfonso. 1966. La Epoca de los Señoríos Independientes 1232–1427. *Revista Mexicana de Estudios Antropológicos* 20:147–52.
- Charlton, Thomas H. 1973a. Texcoco Region Archaeology and the Codex Xolotl. *American Antiquity* 38(4): 412–23.
- 1973b. *Post-Conquest Developments in the Teotihuacan Valley, Mexico: Part 1. Excavations*. Report 5. Office of the State Archaeologist, Iowa City.
1975. From Teotihuacan to Tenochtitlan: The Early Period Revisited. *American Antiquity* 30(2): 231–35.
1976. Reconocimientos Superficiales de Rutas de Intercambio Prehispánico, Tercera Parte, Informe submitted to the Departamento de Monumentos Prehispánicos, Instituto Nacional de Antropología e Historia, Mexico, D.F. Multilithed.
1977. Final Report of a Surface Survey of Preconquest Trade Networks in Mesoamer-

- ica, Informe and Report submitted to the Departamento de Monumentos Prehispánicos, Instituto Nacional de Antropología e Historia, Mexico, D.F., and to the National Endowment for the Humanities, Washington, DC. Multilithed.
1978. Teotihuacan, Tepeapulco, and Obsidian Exploitation. *Science* 200: 1227–36.
1979. Excavations at TA-40, Tlatel 15. In *The Teotihuacán Valley Final Report: The Aztec Occupation of the Valley*, ed. William T. Sanders. Occasional Papers in Anthropology. Department of Anthropology, Pennsylvania State University, University Park. Manuscript.
1981. Archaeology, Ethnohistory, and Ethnology: Interpretive Interfaces. In *Advances in Archaeological Method and Theory*, vol. 4, ed. Michael B. Schiffer, pp. 129–76. Academic Press, New York.
1986. Socioeconomic Dimensions of Urban – Rural Relations in the Colonial Period Basin of Mexico. In *Handbook of Middle American Indians, Supplement 4, Ethnohistory*, ed. Ronald Spores and Patricia A. Andrews, pp. 122–33. University of Texas Press, Austin.
- 1990a. Economics and Politics: The Case of Aztec Otumba, Paper presented at the 55th Annual Meeting of the Society for American Archaeology, Las Vegas. Manuscript.
- Charlton, Thomas H. (coordinator) 1990b. *Los Procesos del Desarrollo de los Estados Tempranos: el Caso del Estado Azteca de Otumba*. 4 vols. Informe Técnico Final submitted to the Consejo de Arqueología, Instituto Nacional de Antropología e Historia, Mexico, D.F. Department of Anthropology, University of Iowa, Iowa City.
1994. Economic Heterogeneity and State Expansion: The Northeastern Basin of Mexico During the Late Postclassic Period. In *Economies and Politics in the Aztec Realm*, ed. Mary G. Hodge and Michael E. Smith, pp. 221–56. *Studies on Culture and Society*, Vol. 6. Institute for Mesoamerican Studies, State University of New York, Albany.
1996. Early Colonial Period Ceramics: Decorated Red Ware and Orange Ware Types of the Rural Otumba Aztec Ceramic Complex. In *Pattern and Process in Ancient Mesoamerica: Essays in Honor of William T. Sanders*, ed. A. G. Mastache, Jeffrey R. Parsons, Robert S. Santley, and M. C. Serra Pucho. I.N.A.H., Mexico, D.F.
- Charlton, Thomas H., and Patricia Fournier G. 1993. Urban and Rural Dimensions of the Contact Period: Central Mexico, 1521–1620. In *Ethnohistory and Archaeology: Approaches to Postcontact Change in the Americas*, ed. J. Daniel Rogers and Samuel M. Wilson, pp. 210–20. Plenum Press, New York.
- Charlton, Thomas H., and Deborah L. Nichols. 1995. Diachronic Studies of the City-States: Permutations on a Theme: Central Mexico from 1700 B.C. to A.D. 1600. In *The Archaeology of City-States: Cross-Cultural Perspectives*, ed. Deborah L. Nichols and Thomas H. Charlton. Smithsonian Institution Press, Washington, DC. Manuscript.
- Charlton, Thomas H., and Michael W. Spence. 1983. Obsidian Exploitation and Civilization in the Basin of Mexico. In *Mining and Mining Techniques in Ancient Mesoamerica*, ed. Phil C. Weigand and Gretchen Gwynne, pp. 7–86. *Anthropology* 4:7–86.
- Charlton, Thomas H., Deborah L. Nichols, and Cynthia Otis Charlton. 1991. Aztec

- Craft Production and Specialization: Archaeological Evidence from the City-State of Otumba, Mexico. *World Archaeology* 23(1): 98–114.
- Clendinnen, Inga. 1991. *Aztecs: An Interpretation*. Cambridge University Press, New York.
- Cobean, Robert H. 1978. *The Pre-Aztec Ceramics of Tula, Hidalgo, Mexico*. Unpublished Ph.D. dissertation, Harvard University, Cambridge, MA.
- 1991 Principales Yacimientos de Obsidiana en el Altiplano Central. *Arqueología, Segunda Época* 5:9–31.
- Cobean, Robert H., and Alba Guadalupe Mastache. 1989. The Late Classic and Early Postclassic Chronology of the Tula Region. In *Tula of the Toltecs*, ed. Dan M. Healan, pp. 34–46. University of Iowa Press, Iowa City.
- Conrad, Geoffrey W., and Arthur A. Demarest. 1984. *Religion and Empire: The Dynamics of Aztec and Inca Expansionism*. Cambridge University Press, Cambridge.
- Davies, Claude Nigel Byam. 1968. *Los Señoríos Independientes del Imperio Azteca*. Série Historia 19. Instituto Nacional de Antropología e Historia, Mexico, D.F.
- 1973/1980. *The Aztecs: A History*. University of Oklahoma Press, Norman.
1977. *The Toltecs: Until the Fall of Tula*. University of Oklahoma Norman.
1980. *The Toltec Heritage: From the Fall of Tula to the Rise of Tenochtitlán*. University of Oklahoma Press, Norman.
1982. Tula Revisited. *Mexicon* 3:104–8.
1987. *The Aztec Empire: The Toltec Resurgence*. University of Oklahoma Press, Norman.
- Demarest, Arthur A., and Geoffrey W. Conrad (ed.). 1992. *Ideology and Pre-Columbian Civilizations*. School of American Research Press, Santa Fe, NM.
- Díaz del Castillo, Bernal. 1956. *The Discovery and Conquest of Mexico*. Farrar, Straus, & Cudahy, New York. Translated with an Introduction and Notes by A. P. Maudslay. Introduction to the American edition by Irving A. Leonard.
1963. *The Conquest of New Spain*. Penguin Books, London. Introduction and Translation by J. M. Cohen.
- Diehl, Richard A. 1981. Tula. In *Handbook of Middle American Indians. Supplement 1, Archaeology*, ed. Jeremy A. Sabloff and Patricia A. Andrews, pp. 277–95. University of Texas Press, Austin.
1983. *Tula: The Toltec Capital of Ancient Mexico*. Thames & Hudson, New York.
1989. A Shadow of Its Former Self: Teotihuacan during the Coyotlatelco Period. In *Mesoamerica After the Decline of Teotihuacan, A.D. 700–900*, ed. Richard A. Diehl and Janet Catherine Berlo, pp. 9–18. Dumbarton Oaks Research Library and Collection, Washington, DC.
1993. The Toltec Horizon in Mesoamerica: New Perspectives on an Old Issue. In *Latin American Horizons*, ed. Don Stephen Rice, pp. 263–94. Dumbarton Oaks Research Library and Collection, Washington, DC.
- Diehl, Richard A., and Catherine Janet Berlo. 1989. Introduction. In *Mesoamerica After the Decline of Teotihuacan, A.D. 700–900*, ed. Richard A. Diehl and Catherine Janet Berlo, pp. 1–8. Dumbarton Oaks Research Library and Collection, Washington, DC.
- Dumond, Don E., and Florencia Müller. 1972. Classic to Postclassic in Highland Central Mexico. *Science* 175:1208–15.
- Durbin, Thomas E. 1970. *Aztec Patterns of Conquest as Manifested in the Valley of Toluca*,

- State of Mexico, Mexico*. Unpublished Ph.D. dissertation, University of California, Los Angeles.
1976. The Prehistory of the Valley of Toluca, Mexico: New Interpretations. *Katunob* 9:9–23.
- Evans, Susan T. 1980a. *A Settlement System Analysis of the Teotihuacan Region, Mexico*. Unpublished Ph.D. dissertation, Department of Anthropology, Pennsylvania State University, University Park.
- 1980b. Spatial Analysis of Basin of Mexico Settlement: Problems with the Use of the Central Place Model. *American Antiquity* 45(4): 866–75.
1988. *Excavations at Cihuatecpán: An Aztec Village in the Teotihuacan Valley*. Vanderbilt University Publications in Anthropology No. 36. Department of Anthropology, Vanderbilt University, Nashville.
1990. The Productivity of Maguey Terrace Agriculture in Central Mexico During the Aztec Period. *Latin American Antiquity* 1:117–32.
1993. Aztec Household Organization and Village Administration. In *Prehispanic Domestic Units in Western Mesoamerica: Studies of the Household, Compound, and Residence*, ed. Robert S. Santley and Kenneth G. Hirth, pp. 173–89. CRC Press, Boca Raton, FL.
- Evans, Susan T., and Peter Gould. 1982. Settlement Models in Archaeology. *Journal of Anthropological Archaeology* 1(3): 275–304.
- García, Enriqueta. 1968. Clima Actual de Teotihuacán. In *Materiales para la Arqueología de Teotihuacán*, ed. José Luis Lorenzo, pp. 9–28. Série Investigaciones, 17. Instituto Nacional de Antropología e Historia, Mexico, D.F.
- García Cook, Angel. 1976 *El Desarrollo Cultural en el Norte del Valle Poblano: Inferencias*. Série Arqueología I. Departamento de Monumentos Prehispánicos, Instituto Nacional de Antropología e Historia, Mexico, D.F.
1981. The Historical Importance of Tlaxcala in the Cultural Development of the Central Highlands. In *Handbook of Middle American Indians, Supplement 1, Archaeology*, ed. Jeremy A. Sabloff and Patricia A. Andrews, pp. 244–76. University of Texas Press, Austin.
- García Cook, Angel, and B. Leonor Merino Carrión. 1987. Condiciones Existentes en la Región Poblano–Tlaxcala al Surgimiento de Cholula. *Notas Mesoamericanas* 10:153–76.
1989. Proyecto Arqueológico del Suroeste de Puebla. *Notas Mesoamericanas* 11:94–109.
- García Payón, José. 1936. *La Zona Arqueológica de Texcaxic–Calixtlahuaca y los Matlatzincas*. Talleres Gráficos de la Nación, Mexico, D.F.
1941. La Cerámica del Valle de Toluca. *Revista Mexicana de Estudios Antropológicos* 5: 209–38.
1979. *La Zona Arqueológica de Texcaxic–Calixtlahuaca y los Matlatzincas. Etnología y Arqueología, Textos de la Segunda Parte*. Revisados y Anotados (1979) por Wanda Tommasi de Magrelli y Leonardo Manrique Castañada. Biblioteca Enciclopédica del Estado de México, México, D.F.
- Gerhard, Peter. 1972. *A Guide to the Historical Geography of New Spain*. Cambridge Latin American Studies 14, David Joslin, Timothy King, Clifford T. Smith, and John Street, general editors. Cambridge University Press, Cambridge.

- Gibson, Charles. 1952. *Tlaxcala in the Sixteenth Century*. Stanford University Press, Stanford, CA.
1964. *The Aztecs Under Spanish Rule*. Stanford University Press, Stanford, CA.
1971. Structure of the Aztec Empire. In *Archaeology of Northern Mesoamerica, Part 1*, ed. Gordon F. Ekholm and Ignacio Bernal, pp. 376–94. *Handbook of Middle American Indians*, Vol. 10, Robert Wauchope, general editor. University of Texas Press, Austin.
1975. A Survey of Middle American Prose Manuscripts in the Native Historical Tradition. In *Guide to Ethnohistorical Sources, Part 4*, ed. Howard F. Cline, pp. 311–21. *Handbook of Middle American Indians*, Vol. 15, Robert Wauchope, general editor. University of Texas Press, Austin.
- Gibson, Charles, and John B. Glass. 1975. A Census of Middle American Prose Manuscripts in the Native Historical Tradition. In *Guide to Ethnohistorical Sources, Part 4*, ed. Howard F. Cline, pp. 322–400. *Handbook of Middle American Indians*, Vol. 15, Robert Wauchope, general editor. University of Texas Press, Austin.
- Gillespie, Susan D. 1989. *The Aztec Kings: The Construction of Rulership in Mexica History*. University of Arizona Press, Tucson.
- González Rul, Francisco 1988. La Cerámica en Tlatelolco. *Colección Científica 172*. Instituto Nacional de Antropología e Historia, Mexico, D.F.
- González Torres, Yolotl. 1985. *El Sacrificio Humano Entre Los Mexicanos*. Instituto Nacional de Antropología e Historia and Fondo de Cultura Económico, Mexico, D.F.
- Gorenstein, Shirley. 1985. *Acambaro: Frontier Settlement on the Tarascan–Aztec Border*. Vanderbilt University Publications in Anthropology No. 32. Department of Anthropology, Nashville.
- Gorenstein, Shirley, and Helen Perlstein Pollard. 1983. *The Tarascan Civilization: A Late Prehispanic Cultural System*. Vanderbilt University Publications in Anthropology No. 28. Department of Anthropology, Nashville.
- Griffin, James B., and Antonieta Espejo. 1947. La Alfarería Correspondiente al Último Período de Ocupación Nahuatl del Valle de México: I. *Memorias de la Academia Mexicana de la Historia* 6:131–47.
1950. La Alfarería Correspondiente al Último Período de Ocupación Nahuatl del Valle de México: II. *Memorias de la Academia Mexicana de la Historia* 6:118–67.
- Gutiérrez de Limón, Sylvia. 1979. *Arqueología del Valle de Ixtlahuaca, Estado de México*. Biblioteca Enciclopédica del Estado de México, Mexico, D.F.
- Harvey, Herbert R. 1972. The Relaciones Geográficas, 1579–1596: Native Languages. In *Guide to Ethnohistorical Sources, Part 1*, ed. Howard F. Cline, pp. 279–323. *Handbook of Middle American Indians*, Vol. 12, Robert Wauchope, general editor. University of Texas Press, Austin.
- Hassig, Ross. 1985. *Trade, Tribute, and Transportation*. University of Oklahoma Press, Norman.
1988. *Aztec Warfare: Imperial Expansion and Political Control*. University of Oklahoma Press, Norman.
1992. *War and Society in Ancient Mesoamerica*. University of California Press, Berkeley.
- Healan, Dan M. 1989a. Tula, Tollan, and the Toltecs in Mesoamerican Prehistory. In *Tula of the Toltecs*, ed. Dan M. Healan, pp. 3–6. University of Iowa Press, Iowa City.

- 1989b. Synthesis of Prehispanic Occupation of the Canal Locality. In *Tula of the Toltecs: Excavations and Survey*, ed. Dan M. Healan, pp. 163–67. University of Iowa Press, Iowa City.
- Healan, Dan M., and James W. Stoutamire. 1989. Surface Survey of the Tula Urban Zone. In *Tula of the Toltecs: Excavations and Survey*, ed. Dan M. Healan, pp. 203–36. University of Iowa Press, Iowa City.
- Healan, Dan M., Robert H. Cobean, and Richard A. Diehl. 1989. Synthesis and Conclusions. In *Tula of the Toltecs: Excavations and Survey*, ed. Dan M. Healan, pp. 239–51. University of Iowa Press, Iowa City.
- Hernández R., Rosaura. 1966. Los Pueblos Prehispánicos del Valle de Toluca. *Estudios de Cultura Nahuatl* 6:219–26.
- Hirst, K. Kris, Marcela Mendoza, and Thomas H. Charlton. 1990. La Cerámica del Muestreo de 196, Otumba. In *Los Procesos del Desarrollo de los Estados Tempranos: El Caso del Estado Azteca de Otumba*, Vol. 1, ed. Thomas H. Charlton and Deborah L. Nichols, pp. 45–59. Informe Técnico Final Submitted to the Consejo de Arqueología, Instituto Nacional de Antropología e Historia, Mexico, D.F. Department of Anthropology, University of Iowa, Iowa City.
- Hirth, Kenneth G. 1984. Xochicalco: Urban Growth and State Formation in Central Mexico. *Science* 255:579–86.
1989. Militarism and Social Organization at Xochicalco, Morelos. In *Mesoamerica after the Decline of Teotihuacan, A.D. 700–990*, ed. Richard A. Diehl and Catherine Janer Berlo, pp. 69–81. Dumbarton Oaks Research Library and Collection, Washington, DC.
- Hirth, Kenneth G., and Ann Cyphers Guillén. 1988. *Tiempo y Asentamiento en Xochicalco*. Serie Monografías 1. Universidad Nacional Autónoma de México, Mexico, D.F.
- Hodge, Mary G. 1984. *Aztec City States*. Memoir 18. Museum of Anthropology, University of Michigan, Ann Arbor.
1992. Aztec Market Systems, The Geographical Structure of Aztec Imperial-period Market Systems. *National Geographic Research and Exploration* 8(4): 428–45.
- 1993a. Exploring Aztec Urban Life: An Archaeological Study of Prehispanic Chalco, English Version of Interim Report to Consejo de Arqueología, Instituto Nacional de Antropología e Historia, Mexico, on 1992 Activities, Anthropology Program, University of Houston Clear Lake.
- 1993b. Los Motivos Decorativos de la Cerámica y los Sistemas Regionales de Intercambio en la Sociedad Azteca. In *Entre Lagos y Volcanes. Chalco Amecameca Pasado y Presente*, Vol. 1, ed. Alejandro Tortolero, pp. 74–102. El Colegio Mexiquense, A.C., Zinacantepec, Edo. de Mexico.
- Hodge, Mary G., and Leah D. Minc. 1990. The Spatial Patterning of Aztec Ceramics: Implications for Prehispanic Exchange Systems in the Valley of Mexico. *Journal of Field Archaeology* 17(4): 415–38.
- Hodge, Mary G., and Michael E. Smith (eds). 1994. *Economies and Politics in the Aztec Realm. Studies on Culture and Society*, Vol. 6. Institute for Mesoamerican Studies, State University of New York, Albany.
- Hodge, Mary G., Hector Neff, M. James Blackman, and Leah D. Minc. 1992. A Compositional Perspective on Ceramic Production in the Aztec Empire. In *Chemical Characterization of Ceramic Paste in Archaeology*, ed. Hector Neff, pp. 203–20. Monographs in World Archaeology, No. 7. Prehistory Press, Madison, WI.

1993. Black-on-Orange Ceramic Production in the Aztec Empire's Heartland. *Latin American Antiquity* 4:130–57.
- Jimenez Moreno, Wigberto. 1954–55. Síntesis de la Historia Precolonial del Valle de México. *Revista Mexicana de Estudios Antropológicos* 14:219–36.
1966. Mesoamerica Before the Toltecs. In *Ancient Oaxaca: Discoveries in Mexican Archaeology and History*, ed. John Paddock, pp. 1–82. Stanford University Press, Stanford, CA.
- Klejn, L. S. 1977. A Panorama of Theoretical Archaeology. *Current Anthropology* 18(1):1–42.
- Kohl, Philip L. 1987. State Formation: Useful Concept or Idée Fixe? In *Power Relations and State Formation*, ed. Thomas C. Patterson and Christine W. Gailey, pp. 27–34. American Anthropological Association, Washington, DC.
- Kubler, George. 1962. *The Shape of Time*. Yale University Press, New Haven.
- Licate, Jack A. 1980. The Forms of Aztec Territorial Organization. *Geoscience and Man* 21:27–45.
- Lombardo de Ruíz, Sonia, Diana López de Molina, Daniel Molina Feal, Carolyn Baus de Czitrom, and Oscar J. Polaco. 1986. *Cacaxtla, El Lugar Donde Muere la Lluvia en la Tierra*. Secretaría de Educación Pública, Instituto Nacional de Antropología e Historia, Gobierno del Estado de Tlaxcala, and Instituto Tlaxcalteca de la Cultura, Mexico, D.F.
- Longacre, Robert. 1967. Systematic Comparison and Reconstruction. In *Linguistics*, ed. Norman A. McQuown, pp. 117–60. *Handbook of Middle American Indians*, Vol. 5, Robert Wauchope, general editor. University of Texas Press, Austin.
- Maldonado-Koerdell, Manuel. 1964. Geohistory and Paleogeography of Middle America. In *Natural Environment and Early Cultures*, ed. Robert C. West, pp. 3–32. *Handbook of Middle American Indians*, Vol. 1, Robert Wauchope, general editor. University of Texas Press, Austin.
- Marcus, Joyce. 1989. From Centralized Systems to City-States: Possible Models for the Epiclassic. In *Mesoamerica After the Decline of Teotihuacan* ed. Richard A. Diehl and Janet Catherine Berlo, pp. 201–8. *Dumbarton Oaks Research Library and Collection*, Washington, DC.
- 1992a. *Mesoamerican Writing Systems*. Princeton University Press, Princeton, NJ.
- 1992b. Political Fluctuations in Mesoamerica: Dynamic Cycles of Mesoamerican States. *National Geographic Research and Exploration* 8(4): 392–411.
- Marquina, Ignacio (coordinator). 1970. *Proyecto Cholula*. Serie Investigaciones 19. Instituto Nacional de Antropología e Historia, Mexico, D.F.
- Mason, Roger D. 1980. *Economic and Social Organization of an Aztec Provincial Center: Archaeological Research in Coatlán Viejo, Morelos, Morelos, México*. Unpublished Ph.D. dissertation, Department of Anthropology, University of Texas, Austin.
- Mastache, Alba Guadalupe, and Robert H. Cobean. 1989. The Coyotlatelco Culture and the Origins of the Toltec State. In *Mesoamerica After the Decline of Teotihuacan A.D. 700–900*, ed. Richard A. Diehl and Janet Catherine Berlo, pp. 49–67. *Dumbarton Oaks Research Library and Collection*, Washington, DC.
- Mastache, Alba Guadalupe, and Ana María Crespo O. 1974. La Ocupación Prehispánica en el Area de Tula, Hgo. In *Proyecto Tula (1a Parte)*, ed. Eduardo Matos Mocte-

- zuma, pp. 71–103. Colección Científica, 15. Instituto Nacional de Antropología e Historia, Mexico, D.F.
- Matos Moctezuma, Eduardo. 1982. *El Templo Mayor: Excavaciones y Estudios 1982*. Instituto Nacional de Antropología e Historia, Mexico, D.F.
1984. The Great Temple of Tenochtitlán. *Scientific American* 251:80–89.
1988. *The Great Temple of the Aztecs: Treasures of Tenochtitlán*, trans. Doris Heyden. Thames & Hudson, London.
- McCafferty, Geoffrey G. 1994. The Mixteca–Puebla Stylistic Tradition at Early Postclassical Cholula. In *Mixteca–Puebla: Discoveries and Research in Mesoamerican Art and Archaeology*, ed. H. B. Nicholson, and Eloise Quiñones Keber, pp. 53–77. Labyrinthos, Culver City, CA.
- Merino Carrión, Beatriz Leonor. 1989. *La Cultura Tlaxco*. Colección Científica 174. Instituto Nacional de Antropología e Historia, Mexico, D.F.
- Minc, Leah D. 1995. *Political Economy and Market Economy Under Aztec Rule: A Regional Perspective Based on Decorated Ceramic Production and Distribution Systems in the Valley of Mexico*. Unpublished Ph.D. dissertation, University of Michigan, Ann Arbor.
- Minc, Leah D., Mary G. Hodge, and M. James Blackman. 1994. Stylistic and Spatial Variability in Early Aztec Ceramics: Insights into Pre-Imperial Exchange Systems. In *Economies and Politics in the Aztec Realm*, ed. Mary G. Hodge and Michael E. Smith, pp. 133–73. *Studies on Culture and Society*, Vol. 6. Institute for Mesoamerican Studies, State University of New York, Albany.
- Müller, Florencia Jacobs. 1963. Exploración Arqueológica en Huapalcalco, Hgo. Quinta Temporada, 1959. *Anales del Instituto Nacional de Antropología e Historia*, 6a 15:75–97.
1978. *La Alfarería de Cholula*. Serie Arqueología. SEP–INAH, Mexico, D.F.
- Müller, Florencia Jacobs, and César Lizardi Ramos. 1959. La Pirámide 6 de Huapalcalco, Hidalgo, Mexico. *Proceedings of the 33rd International Congress of Americanists, San José, Costa Rica* 2:146–57.
- Nagao, Debra. 1989. Public Proclamation in the Art of Cacaxtla and Xochicalco. In *Mesoamerica After the Decline of Teotihuacan A.D. 700–900*, ed. Richard A. Diehl and Janet Catherine Berlo, pp. 83–104. *Dumbarton Oaks Library and Research Collection*, Washington, DC.
- Nichols, Deborah L. 1994. The Organization of Provincial Craft Production and the Aztec City-State of Otumba. In *Economies and Politics in the Aztec Realm*, ed. Mary G. Hodge and Michael E. Smith, pp. 175–94. *Studies on Culture and Society*, Vol. 6. Institute for Mesoamerican Studies, State University of New York, Albany.
1995. The Postclassic Occupation at Otumba: A Chronological Assessment. In *Ancient Mesoamerica*, 7:231–44.
1996. An Overview of Regional Settlement Pattern Survey in Mesoamerica: 1960–1975. In *Ancient Mesoamerica*, ed. Mastache et al., Instituto Nacional de Antropología e Historia., Mexico, D.F., pp. 59–96.
- Nichols, Deborah L. (coordinator). 1996. Special Section: A Reconsideration of the Post-Classic Chronology of Central Mexico. In *Ancient Mesoamerica*, ed. Mastache et al., 7:215–331.
- Nichols, Deborah L., and Thomas H. Charlton. 1988. Processes of State Formation: Core

- versus Periphery in the Late Postclassic Basin of Mexico. Paper presented at the 53rd Annual Meeting of the Society for American Archaeology, Phoenix. Manuscript.
- Nicholson, Henry B. 1955. Native Historical Traditions of Nuclear America and the Problem of Their Archaeological Correlation. *American Anthropologist* 57 (3): 594–613.
1971. Prehispanic Mexican Historiography. In *Investigaciones Contemporáneas sobre Historia de Mexico*, pp. 38–81. Memorias de la Tercera Reunión de Historiadores Mexicanos y Norteamericanos. University of Texas Press, Austin.
1975. Middle American Ethnohistory: An Overview. In *Guide to Ethnohistorical Sources, Part 4*, ed. Howard F. Cline, pp. 487–505. *Handbook of Middle American Indians*, Vol. 15, Robert Wauchope, general editor. University of Texas Press, Austin.
1978. Western Mexico: A.D. 900–1250. In *Chronologies in New World Archaeology*, ed. R. E. Taylor and Clement W. Meighan, pp. 285–329. Academic Press, New York.
- Noguera, Eduardo. 1935. La Cerámica de Tenayuca y Las Excavaciones Estratigráficas. In *Tenayuca*, ed. José Reygadas Vértiz, pp. 141–201. Museo Nacional de Arqueología, Historia, y Etnografía, Mexico, D.F.
1963. Correlación de la Arqueología y la Historia en la Porción Norte del Valle de Mexico. *Anales del Instituto Nacional de Antropología e Historia*, 6a 15:39–65.
1966. Transiciones Culturales de los Horizontes Preclásico al Clásico y al Histórico. *Anales de Antropología* 6:157–72.
1969. Excavaciones en Sitios Postclásicos del Valle de Mexico (Culhuacán, Tenayuca, Texcoco, Zapotitlán). *Anales de Antropología* 6:197–231.
1970. Exploraciones Estratigráficas en Xochimilco, Tulancingo, y Cerro de la Estrella. *Anales de Antropología* 7:91–130.
1975. *La Cerámica Arqueológica de Mesoamérica*. 2nd ed. Instituto de Investigaciones Antropológicas, UNAM, Mexico, D.F.
- Norr, Lynette. 1987. The Excavation of a Postclassic House at Tetla. In *Ancient Chalcatzingo*, ed. David C. Grove, pp. 400–408. University of Texas Press, Austin.
- Offner, Jerome A. 1979. A Reassessment of the Extent and Structuring of the Empire of Techotlalatzin, Fourteenth Century Ruler of Texcoco. *Ethnohistory* 26:231–42.
- O'Neill, George C. 1962. *Postclassic Ceramic Stratigraphy at Chalco in the Valley of Mexico*. Unpublished Ph.D. dissertation, Department of Anthropology, Columbia University, New York.
- Otis Charlton, Cynthia. 1990. Operación 11, Campo 169, Montículo 41, Taller de Lapidaria. In *Los Procesos del Desarrollo de los Estados Tempranos: el Caso del Estado Azteca de Otumba*, ed. Thomas H. Charlton and Deborah L. Nichols, pp. 269–76. Informe Técnico Final Submitted to the Consejo de Arqueología, Instituto Nacional de Antropología e Historia, Mexico, D.F. Department of Anthropology, University of Iowa, Iowa City.
1993. Obsidian as Jewelry: Lapidary Production in Aztec Otumba, Mexico. *Ancient Mesoamerica* 4:231–43.
1994. Plebeians and Patricians: Contrasting Patterns of Production and Distribution in the Aztec Figurine and Lapidary Industries. In *Economies and Politics in the Aztec Realm*, ed. Mary G. Hodge and Michael E. Smith, pp. 195–219. *Studies on Culture and Society*, Vol. 6. Institute for Mesoamerican Studies, State University of New York, Albany.

- Otis Charlton, Cynthia, Thomas H. Charlton, and Deborah L. Nichols. 1993. Aztec Household-Based Craft Production: Archaeological Evidence from the City-State of Otumba, Mexico. In *Prehispanic Domestic Units in Western Mesoamerica: Studies of the Household, Compound, and Residence*, ed. Robert S. Santley and Kenneth G. Hirth, pp. 147–71. CRC Press, Boca Raton, FL.
- Parsons, Jeffrey R. 1966. *The Aztec Ceramic Sequence in the Teotihuacán Valley, Mexico*. Unpublished Ph.D. dissertation, Department of Anthropology, University of Michigan, Ann Arbor.
1970. An Archaeological Evaluation of the *Codice Xolotl*. *American Antiquity* 35(4): 431–40.
1971. *Prehistoric Settlement Patterns in the Texcoco Region, Mexico*. Memoir 3. Museum of Anthropology, University of Michigan, Ann Arbor.
1976. The Role of Chinampa Agriculture in the Food Supply of Aztec Tenochtitlán. In *Cultural Change and Continuity: Essays in Honor of James Bennett Griffin*, ed. Charles E. Cleland, pp. 233–57. Academic Press, New York.
1989. Arqueología Regional en la Cuenca de México: Una Estrategia para la Investigación Futura. *Anales de Antropología* 26:157–257.
- Parsons, Jeffrey R., Elizabeth Brumfiel, and Mary Hodge. 1993. *Are Aztec I Ceramics Epiclassic? The Implications of Early Radiocarbon Dates from Three Aztec I Deposits in the Basin of Mexico*. Paper Presented at the 13th International Congress of Anthropological and Ethnological Sciences, Mexico City.
1995. *Are Aztec I Ceramics Epiclassic? The Implications of Early Radiocarbon Dates from Three Aztec I Deposits in the Basin of Mexico*. Paper Presented at the 60th Annual Meeting of the Society for American Archaeology, Minneapolis.
1996. Earlier Dates for Early Aztec in the Basin of Mexico. *Ancient Mesoamerica*, ed. Mastache et al.
- Parsons, Jeffrey R., Elizabeth Brumfiel, Mary H. Parsons, Virginia Popper, and Mary Taft. 1982. Late Prehispanic Chinampa Agriculture on Lake Chalco–Xochimilco, Mexico, Preliminary Report submitted to the Instituto Nacional de Antropología e Historia, Mexico, and to the National Science Foundation, Washington, DC, University of Michigan, Ann Arbor.
- Parsons, Jeffrey R., Mary H. Parsons, Virginia Popper, and Mary Taft. 1985. Chinampa Agriculture and Aztec Urbanization in the Valley of Mexico. In *Prehistoric Intensive Agriculture in the Tropics*, ed. I. S. Farrington, pp. 49–96. BAR International Series, 232. B.A.R., London.
- Peña, Agustín, and María Carmen Rodríguez. 1976. Excavations in Darni, Tula, Hidalgo. In *Proyecto Tula (2a Parte)*, ed. Eduardo Matos Moctezuma, pp. 85–90. Colección Científica, 15. Instituto Nacional de Antropología e Historia, Mexico, D.F.
- Piña Chan, Román. 1975. *Teotenango: El Lugar de la Muralla*. Dirección de Turismo, Gobierno del Estado de Mexico, Toluca.
- Plunket, Patricia. 1990. Arqueología y Etnohistoria en el Valle de Atlixco. *Notas Mesoamericanas* 12:3–18.
- Plunket, Patricia, and Gabriela Uruñuela. 1994. The Impact of the Xochiyaoyotl in Southwestern Puebla. In *Economies and Politics in the Aztec Realm*, ed. Mary G. Hodge and Michael E. Smith, pp. 433–46. *Studies on Culture and Society*, Vol. 6. Institute for Mesoamerican Studies, State University of New York, Albany.

- Pollard, Helen Perlstein. 1993. *Taricuri's Legacy: The Prehispanic Tarascan State*. University of Oklahoma Press, Norman.
- Pollard, Helen Perlstein, and Thomas A. Vogel. 1994. Late Postclassic Imperial Expansion and Economic Exchange Within the Tarascan Domain. In *Economies and Politics in the Aztec Realm*, ed. Mary G. Hodge and Michael E. Smith, pp. 447–70. *Studies on Culture and Society*, Vol. 6. Institute for Mesoamerican Studies, State University of New York, Albany.
- Price, Barbara J. 1978. Secondary State Formation: An Exploratory Model. In *Origins of the State*, ed. Ronald Cohen and Elman R. Service, pp. 161–86. Institute for the Study of Human Issues, Philadelphia.
- Quezada Ramírez, María Noemí. 1972. *Los Matlatzincas, Época Prehispánica y Colonial hasta 1650*. Série Investigaciones 22. Instituto Nacional de Antropología e Historia, Mexico, D.F.
- Reinhold, Manfred. 1981. *Exploraciones Arqueológicas en Valle de Bravo*. Biblioteca Enciclopédica del Estado de Mexico, Mexico, D.F.
- Renfrew, Colin. 1975. Trade as Action at a Distance: Questions of Integration and Communication. In *Ancient Civilizations and Trade*, ed. Jeremy A. Sabloff and C. C. Lamberg-Karlovsky, pp. 3–60. University of New Mexico Press, Albuquerque.
1986. Introduction: Peer Polity Interaction and Sociopolitical Change. In *Peer Polity Interaction and Sociopolitical Change*, ed. C. Renfrew and John F. Cherry, pp. 1–18. Cambridge University Press, Cambridge.
- Reyes Cortés, Manuel, and Joaquín García-Bárcena. 1979. Estratificación en el Area de la Catedral. In *El Recinto Sagrado de México-Tenochtitlán, Excavaciones 1968–1969 y 1975–1976*, ed. Constanza Vega Sosa, pp. 17–28. SEP-INAH, Mexico, D.F.
- Rodríguez-Shadow, María. 1990. *El Estado Azteca*. Universidad Autónoma del estado de Mexico, Toluca, Estado de México.
- Rojas, José Luis de. 1994. After the Conquest: Cuauhtinchan and the Mexica Province of Tepeacac. In *Economies and Politics in the Aztec Realm*, ed. Mary G. Hodge and Michael E. Smith, pp. 405–31. *Studies on Culture and Society*, Vol. 6. Institute for Mesoamerican Studies, State University of New York, Albany.
- Rounds, J. 1982. Dynastic Succession and the Centralization of Power in Tenochtitlan. In *The Inca and Aztec States 1400–1800: Anthropology and History*, ed. George A. Collier, Renato I. Rosaldo, and John D. Wirth, pp. 63–89. Academic Press, New York.
- Sanders, William T. 1956. The Central Mexican Symbiotic Region: A Study in Prehistoric Settlement Patterns. In *Prehistoric Settlement Patterns in the New World*, ed. Gordon R. Willey, pp. 115–27. Viking Fund Publications in Anthropology, 23. Wenner-Gren Foundation for Anthropological Research, New York.
1965. *The Cultural Ecology of the Teotihuacan Valley*. Department of Sociology and Anthropology, Pennsylvania State University, University Park. Multilithed.
1971. Settlement Patterns in Central Mexico. In *Archaeology of Northern Mesoamerica, Part 1*, ed. Gordon F. Ekholm and Ignacio Bernal, pp. 3–44. *Handbook of Middle American Indians*, Vol. 10, Robert Wauchope, general editor. University of Texas Press, Austin.
1981. Ecological Adaptation in the Basin of Mexico: 23,000 B.C. to the Present. In

- Handbook of Middle American Indians. Supplement 1, Archaeology*, ed. Jeremy A. Sabloff and Patricia A. Andrews, pp. 147–97. University of Texas Press, Austin.
- Sanders, William T., and Robert S. Santley. 1983. A Tale of Three Cities: Energetics and Urbanization in Pre-Hispanic Central Mexico. In *Prehistoric Settlement Patterns: Essays in Honor of Gordon R. Willey*, ed. Evon Z. Vogt, and Richard M. Leventhal, pp. 243–91. University of New Mexico Press and Peabody Museum of Archaeology and Ethnology, Harvard University, Cambridge, MA.
- Sanders, William T., Jeffrey R. Parsons, and Robert S. Santley. 1979. *The Basin of Mexico: Ecological Processes in the Evolution of a Civilization*. Academic Press, New York.
- Santley, Robert S. 1979. Teotihuacán and Toltec Settlement Patterns in the Basin of Mexico, Paper presented at the Simposio sobre Tula, Instituto Nacional de Antropología e Historia, Centro Regional Hidalgo, Pachuca, Mexico.
- Schmidt, Peter J. 1975. El Postclásico de la Región de Huejotzingo, Puebla. *Comunicaciones Proyecto Puebla-Tlaxcala* 12:41–48.
- Séjourné, Laurette. 1970 *Arqueología del Valle de México, I: Culhuacán*. Instituto Nacional de Antropología e Historia, Mexico, D.F.
1983. *Arqueología del Valle de México de Xochimilco a Amecameca*. Siglo Veintiuno Editores, Mexico, D.F.
- Sheehy, James J. 1995. Informe Técnico sobre la Primera Temporada del Proyecto Acatzingo–Tepeaca en 1994. Department of Anthropology, Pennsylvania State University, University Park.
- Smith, Michael E. 1978. *The Aztec Marketing System in the Valley of Mexico*. Unpublished M.A. thesis, Department of Anthropology, University of Illinois, Urbana.
1979. The Aztec Marketing System and Settlement Pattern in the Valley of Mexico: A Central Place Analysis. *American Antiquity* 44(1): 110–24.
1980. The Role of the Marketing System in Aztec Society and Economy: Reply to Evans. *American Antiquity* 45(4): 876–83.
- 1983a. *Postclassic Culture Change in Western Morelos, Mexico: The Development and Correlation of Archaeological and Ethnohistorical Chronologies*. Unpublished Ph.D. dissertation, University of Illinois, Urbana.
- 1983b. Economic Regions in Postclassic Central Mexico: A Trial Formulation. Paper presented at the 48th Annual Meeting of the Society for American Archaeology, Pittsburgh.
1984. The Aztlan Migrations of the Nahuatl Chronicles: Myth or History? *Ethnohistory* 31:153–56.
- 1987a. The Expansion of the Aztec Empire: A Case Study in the Correlation of Diachronic Archaeological and Ethnohistoric Data. *American Antiquity* 52(1): 37–54.
- 1987b. Archaeology and the Aztec Economy: The Social Scientific Use of Archaeological Data. *Social Science History* 11:237–59.
1990. Long Distance Trade under the Aztec Empire. *Ancient Mesoamerica* 1:153–69.
- 1992a. Rhythms of Change in Postclassic Central Mexico: Archaeology, Ethnohistory, and the Braudelian Model. In *Archaeology, Annales, and Ethnohistory*, ed. A. Bernard Knapp, pp. 51–74. Cambridge University Press, Cambridge.
- 1992b. Braudel's Temporal Rythms and Chronology Theory in Archaeology. In *Ar-*

- chaeology, Annales, and Ethnohistory*, ed. A. Bernard Knapp, pp. 23–34. Cambridge University Press, Cambridge.
1993. New World Complex Societies: Recent Economic, Social, and Political Studies. *Journal of Archaeological Research* 1:5–41.
1994. Economies and Politics in Aztec-Period Morelos: Ethnohistoric Overview. In *Economies and Politics in the Aztec Realm*, ed. Mary G. Hodge and Michael E. Smith, pp. 318–48. *Studies on Culture and Society*, Vol. 6. Institute for Mesoamerican Studies, State University of New York, Albany.
- Smith, Michael E. and John F. Doershuk. 1991. Late Postclassic Chronology in Western Morelos, Mexico. *Latin American Antiquity* 2:291–310.
- Smith, Michael E., and Cynthia Heath-Smith. 1994. Rural Economy in Late Postclassic Morelos: An Archaeological Study. In *Economies and Politics in the Aztec Realm*, ed. Mary G. Hodge and Michael E. Smith, pp. 349–76. *Studies on Culture and Society*, Vol. 6. Institute for Mesoamerican Studies, State University of New York, Albany.
- Smith, Michael E., and Kenneth G. Hirth. 1988. The Development of Prehispanic Cotton-Spinning Technology in Western Morelos, Mexico. *Journal of Field Archaeology* 15(3): 349–58.
- Smith, Michael E., and Mary G. Hodge. 1994. An Introduction to Late Postclassic Economies and Politics. In *Economies and Politics in the Aztec Realm*, ed. Mary G. Hodge and Michael E. Smith, pp. 1–42. *Studies on Culture and Society*, Vol. 6. Institute for Mesoamerican Studies, State University of New York, Albany.
- Smith, Michael E., and T. Jeffrey Price. 1994. Aztec-Period Agricultural Terraces in Morelos, Mexico: Evidence for Household-level Agricultural Intensification. *Journal of Field Archaeology* 21(2): 169–79.
- Smith, Michael E., Patricia Aguirre, Cynthia Heath-Smith, Kathryn Hirst, Scott O'Mack, and Jeffrey Price. 1989. Architectural Patterns at Three Aztec Period Sites in Morelos, Mexico. *Journal of Field Archaeology* 16:185–203.
- Snow, Dean R. 1966. *A Seriation of Archaeological Collections from the Rio Zahuapan Drainage, Tlaxcala, Mexico*. Unpublished Ph.D. dissertation, Department of Anthropology, University of Oregon, Eugene.
1969. Ceramic Sequence and Settlement Location in Pre-Hispanic Tlaxcala. *American Antiquity* 34(2): 131–45.
- Snow, Elizabeth F., and Michael E. Snow. 1970. Report on the Second Season of Archaeological Investigations in the Tulancingo Valley, Hidalgo, Mexico. Submitted to the Instituto Nacional de Antropología e Historia, Mexico, D.F.
- Snow, Michael E., and Elizabeth F. Snow. 1969. Report on the First Season of Archaeological Investigations in the Tulancingo Valley, Hidalgo, Mexico. Submitted to the Instituto Nacional de Antropología e Historia, Mexico, D.F.
- South, Stanley. 1974. *Palmetto Parapets*. Anthropological Studies 1. University of South Carolina Institute of Archaeology and Anthropology, Columbia.
- Tamayo, Jorge L., in collaboration with Robert C. West. 1964. The Hydrography of Middle America. In *Natural Environments and Early Cultures*, ed. Robert C. West, pp. 84–121. *Handbook of Middle American Indians*, Vol. 1, Robert Wauchope, general editor. University of Texas Press, Austin.
- Townsend, Richard F. 1992. *The Aztecs*. Thames & Hudson, New York.
- Umberger, Emily, and Cecelia F. Klein. 1993. Aztec Art and Imperial Expansion. In *Latin*

- American Horizons*, ed. Don Stephen Rice, pp. 295–336. Dumbarton Oaks Research Library and Collection, Washington, DC.
- Vaillant, George C. 1938. A Correlation of Archaeological and Historical Sequences in the Valley of Mexico. *American Anthropologist* 40(4): 535–73.
- Vansina, Jan. 1985. *Oral Tradition as History*. University of Wisconsin Press, Madison.
- Vega Sosa, Constanza, and Manuel Reyes Cortés. 1979. La Cerámica: Clasificación y Cronología, Análisis Petrográfico. In *El Recinto Sagrado de México–Tenochtitlán: Excavaciones 1968–1969 y 1975–1976*, ed. Constanza Vega Sosa, pp. 37–52. SEP-INAH, Mexico, D.F.
- Vivó Escoto, Jorge A. 1964. Weather and Climate of Mexico and Central America. In *Natural Environment and Early Cultures*, ed. Robert C. West, pp. 187–215. *Handbook of Middle American Indians*, Vol. 1, Robert Wauchope, general editor. University of Texas Press, Austin.
- Weaver, Muriel Porter. 1993. *The Aztecs, Maya, and their Predecessors*. 3rd ed. Academic Press, San Diego.
- West, Robert C. 1964a. Surface Configuration and Early Cultures. In *Natural Environment and Early Cultures*, ed. Robert C. West, pp. 33–83. *Handbook of Middle American Indians*, Vol. 1, Robert Wauchope, general editor. University of Texas Press, Austin.
- 1964b. The Natural Regions of Middle America. In *Natural Environment and Early Cultures*, ed. Robert C. West, pp. 363–83. *Handbook of Middle American Indians*, Vol. 1, Robert Wauchope, general editor. University of Texas Press, Austin.
- Whalen, Michael E., and Jeffrey R. Parsons. 1982. Ceramic Markers Used for Period Designations. In *Prehispanic Settlement Patterns in the Southern Valley of Mexico: The Chalco–Xochimilco Region*, ed. Jeffrey R. Parsons, Elizabeth Brumfiel, Mary H. Parsons, and David J. Wilson, pp. 385–459. Memoir, 14. Museum of Anthropology, University of Michigan, Ann Arbor.
- Wiley, Gordon R. 1991. Horizontal Integration and Regional Diversity Through Time and Space. *American Antiquity* 56(2): 197–215.
- Zantwijk, Rudolf van. 1985. *The Aztec Arrangement: The Social History of Pre-Spanish Mexico*. University of Oklahoma Press, Norman.

