13

The Evolution of Complex Societies in Mesoamerica

During the morning we arrived at a broad causeway and continued our march towards Iztapalapa, and when we saw so many cities and villages in the water and other great towns on dry land and that straight and level causeway going towards Mexico, we were amazed and said it was like the enchantments they tell of in the legend of Amadis, on account of the great towers . . . and buildings rising from the water, all built of masonry. And, some of our soldiers asked whether the things we saw were not a dream.

Bernal Diaz del Castillo[1]

In Easter week of 1519, the Spanish conquistador Hernan Cortés landed on the coast of Veracruz, Mexico, and began a military campaign that would end in the crushing defeat of the indigenous Aztec civilization. (Figure 13.1) For tens of thousands of years before Cortés's arrival, the peoples of the Old and New Worlds had had so little contact that they were physically different, spoke entirely different languages, and had no idea that the others even existed. But here is the intriguing thing: When Cortés traveled the road from Veracruz to the Aztec capital near Mexico City, he passed through cities, towns, villages, markets, and irrigated fields, and he saw slavery, poverty, potentates, farmers, soldiers, temples, massive pyramids, roads, boats, pottery, gold jewelry, and textiles; in short, he encountered a world whose almost every aspect he could understand in terms of his own experience as an urban Spaniard of the sixteenth century.

There were, of course, many dissimilarities between the Spanish and Aztec peoples. And the ideological differences between the Aztecs and their European conquerors were also profound. The Spanish, despite their imperialism and murderous ferocity in warfare, viewed the Aztecs' preoccupations with death and human sacrifice with abhorrence, and the Aztecs found many aspects of Roman Catholic Christianity both evil and incomprehensible.

Yet despite profound differences in their respective morals and ideas, the Spanish and the Aztecs were fundamentally alike in cultural respects: They lived in hierarchically

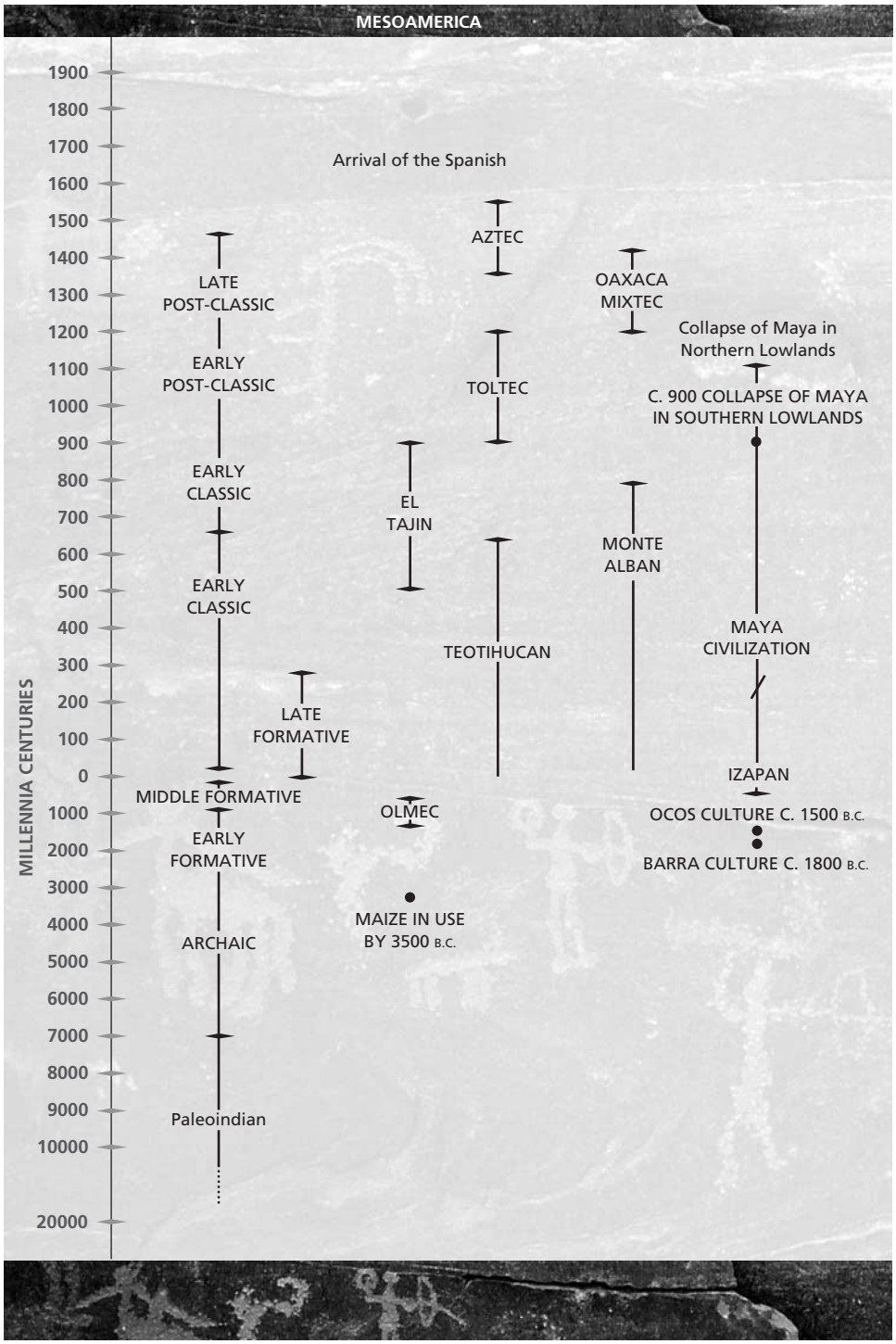
FIGURE 13.1 Cortés haranguing his troops.

organized, class-structured, expansionist empires in which state religions provided much of the context of life, supported by an economy of intensive agriculture and highly specialized and integrated systems of craft production.

Spanish military technology, coupled with diplomacy with non-Aztec groups and the diseases the Spanish introduced, effectively ended the indigenous developments of Mesoamerican civilizations, and it is interesting to speculate about what the Europeans would have found in the Americas if they had come a few centuries later—would there have been a great Pan-American empire to rival that of Spain? Or is it possible that in, say about A.D. 1850, people living on the coast of England (or France or Spain) might have awakened to the sight of Aztec warships in their harbors? The latter scenario is unlikely because New World peoples did not develop two technologies fundamental to the powerful imperialism of Old World societies—iron in the form of tools and weapons and large domesticated animals capable of providing traction and transport (although New World peoples used metals in ornaments and had domesticated some beasts of burden, mainly the llama, in South America).

In any case, scholars have assumed for centuries that the rise of agricultural and complex societies in the New World offered them a "Second Earth," a comparative case, and that by examining these cultural developments in two somewhat different environments and times, the causes of these forms of cultural evolution might be more clearly revealed. Despite contemporary reassessment of that premise,[2] the early Mesoamerican states, in combination and comparison with the Inka of the Andes, Sumerian Mesopotamia, Old Kingdom Egypt, and other early polities, all illustrate that, whatever the factors are that produced these societies, they operated similarly around the world and at different times. Beyond these fundamental similarities of early civilizations, their unique arts and ideologies provide ample material for particularistic studies that need not appeal to cross-cultural and comparative analyses for intellectual justification. In this regard, the early states of Mesoamerica are some of the most fascinating in the world.

In previous chapters we have considered the issue of ethics and history: A central issue here is the political consequences of interpretations of different cultures and their histories. The European conquerors of the New World, for example, pointed to the prevalence of warfare, human sacrifice, and ritual murder as evidence that the New World peoples were barbarians who could only benefit from the imposition of Western "civilization." In this chapter and in chapters 14 and 15 the evidence for these New World practices is reviewed, and to some this may seem to perpetuate the stigmatization of New World peoples. But the fact is that warfare, human sacrifice, and ritual murder, as well as every other kind of gross exploitation of people, were common elements of cultures all over the world, from China to England. The point of discussing the evidence here is not to titillate the morbidly inclined reader; it is to confront the problem of the origins of ideologies and the nature of their transformations—and to emphasize how cultures can make any behavior, no matter how reprehensible in our own view, into a virtue that facilitates the workings of their political systems.


MESOAMERICA
MILLENNIA CENTURIES
1900
1800
1700
1600
1500
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700
600
500
400
300
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10000
20000
Arrival of the Spanish
AZTEC
OAXACA MIXTEC
LATE POST-CLASSIC
Collapse of Maya in Northern Lowlands
EARLY POST-CLASSIC
TOLTEC
C. 900 COLLAPSE OF MAYA IN SOUTHERN LOWLANDS
EARLY CLASSIC
EL TAJIN
MONTE ALBAN
EARLY CLASSIC
TEOTIHUCAN
MAYA CIVILIZATION
LATE FORMATIVE
MIDDLE FORMATIVE
IZAPAN
OLMEC
OCOS CULTURE C. 1500 B.C.
EARLY FORMATIVE
BARRA CULTURE C. 1800 B.C.
MAIZE IN USE BY 3500 B.C.
ARCHAIC
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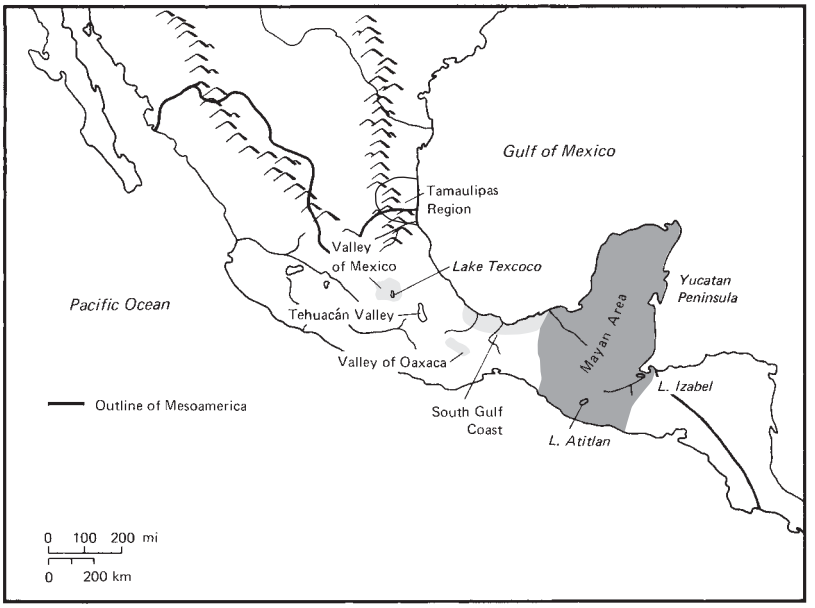

FIGURE 13.2 The geography of Mesoamerica. The darker shading identifies developmental centers of early cultural complexity.

THE ECOLOGICAL SETTING

As in other areas of early civilization, the first complex societies did not appear in just one area of Mexico and then gradually expand to occupy Mesoamerica; instead, there were several developmental centers, including the South Gulf Coast, the Valley of Mexico, the Valley of Oaxaca, and the Maya lowlands and highlands (Figure 13.2). Eventually some of these regions coalesced into larger polities, but only after centuries of competition, cooperation, expansion, and collapse.

In each of these Mesoamerican areas, cultural evolution was much influenced by three general ecological conditions: (1) the millions of years of mountain-building volcanic activity that left Mesoamerica a still-trembling land of towering mountains and circumscribed valleys, and which in many areas compressed extremely different flora, fauna, and climates into proximity, thereby rewarding inter-regional exchange, even though it made transport and communication difficult; (2) the absence of any domesticable animal suitable for providing milk, transport, or draft power; and (3) the relative scarcity of large rivers with extensive alluvial plains in warm latitudes: Unlike Egypt, Mesopotamia, the Indus Valley, North China, and Andean South America, for example, Mesoamerica has few large, navigable rivers in the semi-arid environments where primitive agriculture is highly productive.

All civilizations can be understood to a limited extent purely in thermodynamic terms. From the food that keeps our bodies at proper metabolic temperature to the draft animals, engines, or nuclear reactors that propel our vehicles, the connection between energy and culture is close and causal. And, as in all early civilizations, in ancient Mesoamerica a few plant and animal species were, in effect, the power base of cultural evolution. Not just any domesticated plants and animals would do: There had to be a reliable, voluminous carbohydrate source and nutritionally complementary plants and animals. In Mesoamerica these foods were, principally, maize, beans, and squash, augmented by protein from rabbits, deer, dogs, and, in some places, fish and shellfish.[3] The combination of maize and beans was particularly important because it allowed populations to overcome significant short falls in protein that resulted from the small numbers of available hoofed animals. These rather plain foodstuffs were enlivened in antiquity by the use of cacao (from which chocolate is derived), incendiary peppers, numerous herbs and spices, and several natural hallucinogens.

And like all ancient farmers, they used the magic of fermentation to improve the food products of various high-sugar plants—cactus being the principal source of alcohol in Mesoamerica.

EARLY MESOAMERICAN FARMING (C. 3500–1300 B.C.)

Between 9,000 and 4,000 years ago most of Mesoamerica was inhabited mainly by hunter-foragers who lived in small bands that moved with the seasons to exploit cactus fruits, deer herds, nuts, and the hundreds of other plant and animal species in their range, depending on the season. Since these bands were small in size and never stayed in one place for a sufficient period of time to have much long-term effect on the plant and animal populations on which they subsisted, the hunter-foragers' overall impact on their environment was low. Some groups along the margins of the lake in the Valley of Mexico may have been sedentary villagers, as were some groups along the coasts. They are likely to have had an important role in the domestication of plants and animals and the eventual spread of agriculture. Kirkby suggests that by about 4,000 years ago, maize cob size was large enough that people over large areas of the Mexican highlands could subsist mainly on maize.[4] Grinding corn and making tortillas out of it may not seem to be a great technological leap forward from hunting-foraging, but maize, along with beans, squash, and a variety of other plants, provided the reliable and productive source of food required for people to be able to live in one place permanently.

The recent redating of some of the supposedly earliest domesticated maize in Mesoamerica to about 3500 B.C. raises the possibility, as Gayle Fritz notes,[5] that initial agriculture evolved out of intensified foraging by groups of people who were relatively sedentary, perhaps living all or most of the year in one or a few places, and that they were perhaps even in the process of developing social differences that increased the intensity of their foraging. However maize was domesticated, and by whom, maize appears to have reached sufficient productivity to permit the village-farming way of life soon after about 2000 B.C., and agricultural communities appeared at about this time in many different areas.[6]

From the hot, wet Guatemalan lowlands to the arid Tehuacán Valley, the earliest villages were quite similar in size and contents.[7] Almost all houses (Figure 13.3) were built using the wattle-and-daub method—sticks, branches, and cane were woven in-and-out between vertical wall poles, then covered with a mud plaster, which was dried by the hot sun. Houses, which were seldom larger than 4-by-6 m, featured thatched roofs and tamped clay floors on which fine sand was scattered.

Most of the earliest farming communities were tiny hamlets, villages of 10–12 houses that were home to about 50–60 people, but some communities were larger. Most houses that have been excavated have yielded the same remains, mainly grinding stones, storage pits, pieces of large ceramic storage jars, bones of cottontail rabbits, carbonized maize fragments, and broken pieces of ceramic charcoal braziers.[8] In addition, ovens, middens, and graves are very common. While the proportion of plant and animal foods varied somewhat, all villages probably grew maize, beans, squash, peppers, and some other crops and hunted deer and rabbits. Each village, or each extended family, may have

FIGURE 13.3 Mexico's first agriculturalists lived in wattle-and-daub houses much like these contemporary homes in Morelos, Mexico. The people in this village speak Nahuatl, which is derived from the language of the Aztecs.

had a specialist who did pressure flaking of stone, leatherworking, or a similar craft, and individual villages may have concentrated on specialties like salt production, feather-weaving, shell-working, grinding stone manufacture, and the like.

THE ARCHAEOLOGICAL RECORD OF EARLY COMPLEX MESOAMERICAN SOCIETIES (C. 1300–500 B.C.)

As in Mesopotamia, China, and elsewhere, the background to the origins of complex society in Mesoamerica was a great scatter of relatively simple agricultural villages in which the mechanics of producing a reliable, expandable food supply had been mastered. Many areas of Mesoamerica contributed to the overall rise of the first Mesoamerican states, but four areas appear to have been particularly important: the South Gulf Coast, the Valley of Mexico, the Valley of Oaxaca, and the Maya highlands and lowlands. The Maya are considered separately later in this chapter.

Early Complex Societies on the South Gulf Coast

An early and radical break with the simple village farming tradition of Mesoamerica occurred in the sweltering lowlands of the South Gulf Coast. Here, beginning at about 1300 B.C., people built massive clay pyramids and platforms, lived in small-town groups of hundreds or even thousands, intensively farmed a variety of ecological zones, and produced what is one of the world's most valued examples of stone sculpture.

These people are known to us as the Olmec, a name derived from an ancient American word for rubber—doubtless a reference to the rubber trees that grow in this area—but a name they themselves probably did not use.

Some scholars have considered the possibility that the Olmec culture was the *cultura madre* (mother culture) of all later complex societies in Mesoamerica, and that they were directly responsible for transforming their neighbors by military, political, religious, or economic means into complex societies.[9] Other scholars, however, have argued convincingly that the Olmec represent only one of several largely independent cases of the

evolution of social complexity in Mesoamerica.[10] As we have seen in other areas of the world, civilizations seem not to have developed, in general, because of the behavior of a particular group or the actions of a few particularly gifted individuals: Civilizations all appear to be the products of broad regional and long-term historical processes that manifest themselves differently at different places and times.

FIGURE 13.4 Centers of initial cultural complexity in first millennium B.C. Mesoamerica.

The Olmec heartland is a coastal strip approximately 350 km in length, extending inland about 100 km (Figure 13.4). It was created by the alluviation of several rivers that run to the sea from the highlands. Except for a few areas, the region is thickly forested. Torrential rains fall during the summer, but the area is dry in the winter, which permits swidden, or slash-and-burn, agriculture, as it is sometimes called. Swidden agriculture involves cutting down all the vegetation in a particular area and then waiting for the dry season so that the cut vegetation can be burned. Nutrients are thus returned to the soil—an important contribution since manure and artificial fertilizers were not available (unlike the peasants of Mesopotamia, the Olmec had no manure-producing cattle to graze on and replenish fields). After burning, the land is sown, and the crops germinate and come to maturity in the rainy season. After 1 or 2 years of exploitation, however, the land must be left fallow, sometimes for 20 years or more. If the cycle is accelerated, productivity falls rapidly. Until recent times, in the flat lowlands of the Olmec heartland as much as 70–90 percent of the land was fallow at any one time.[11]

Maize, beans, and squash were agricultural staples in early formative times, supplemented by hunting and fishing and collecting wild plant foods. In coastal areas, mussels and other rich marine resources could also be collected. And while much of Olmec agriculture may have been swidden-based, very productive farming was possible on the river levees. Some river levees near the coast are annually inundated with water-borne silt of such fertility that it was possible to raise two crops a year using swidden techniques. Indeed, the precocity of the Olmec in developing one of the first complex Mesoamerican cultures was probably tied directly to the great agricultural potential and rich floral and faunal resources of these riverine environments. The economic basis of Olmec culture is still relatively poorly known. Although plant remains do not preserve well in the South Gulf Coast, we know that most of the people were maize farmers. They ate some peccary and deer, but fish and domestic dogs provided most of their protein. Human bones found at San Lorenzo with obvious burning and butchering marks suggest cannibalism, undertaken

for either ritual or more secular motives. Obsidian, imported in large volumes from the Mexican highlands to the west, was used for arrowheads, knives, and many other tools.

After many years of research, we finally have substantial data about the early formative cultures of the South Gulf Coast, although we will probably never know with great precision the population densities in the countryside in many periods because the tiny hamlets they apparently lived in are covered by vegetation and easily missed in archaeological surveys.[12]

As a result, we know the Olmec primarily from their larger ceremonial centers, and on this basis they are an impressive culture. People had been living since about 1500 B.C. on the San Lorenzo plateau in southern Veracruz, for example, exploiting its good soil and natural springs. Then, sometime after about 1250 B.C., the inhabitants of this area began moving tons of earth and clay in baskets to level the plateau's upper surface over an area some 600-by-100 m. At first, perhaps, they were simply trying to raise the elevation of their residential areas above the flood levels of the seasonally inundated plains on which they lived. Within a century or two, however, they began to build pyramids and ceremonial platforms adorned with monumental stone sculptures and other impressive monuments.[13]

San Lorenzo actually is a group of sites within about a 5-km area, a complex that reached its peak between about 1150 and 900 B.C., when several thousand people probably lived there; but after about 900 B.C. construction of monuments ceased and population densities appear to have declined.

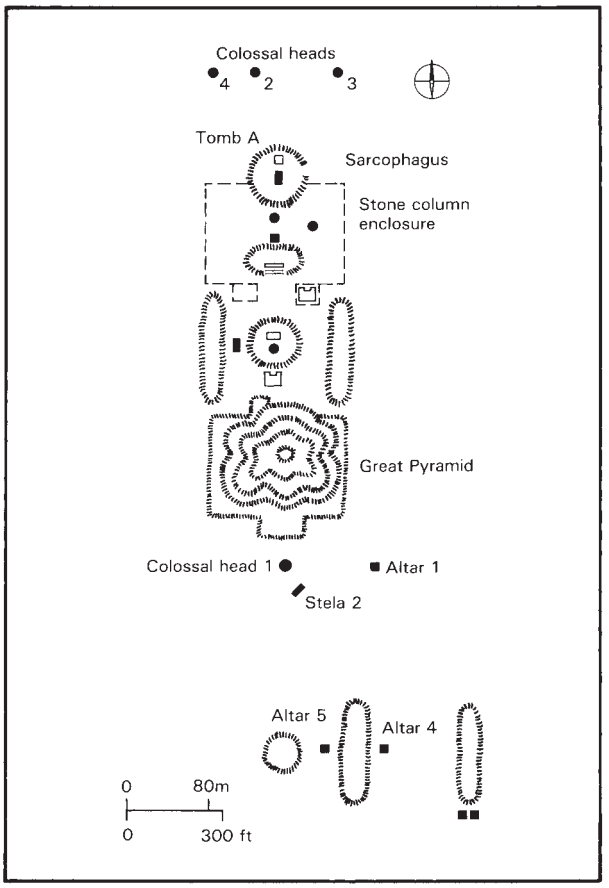

FIGURE 13.5 The Olmec complex at La Venta included a 30-m-high pyramid and several other lower mounds.

San Lorenzo's florescence was followed by that of another Olmec site, La Venta, located on a small island in a coastal swamp near the Tonal River (Figure 13.5). At this location the Olmec constructed a series of mounds, platforms, courts, and pyramids covering more than 5 km^2. Much of this has been destroyed by looters and an oil well/processing installation, but excavations have revealed a large portion of this site's plan. Dominating the area is a pyramid of clay, 128-by-73 m at the base and 33.5 m high. Two long, low mounds extend out to the north from the pyramid, with a circular mound between them. All these mounds are oriented eight degrees west of true north.

A particularly striking remnant of Olmec culture at both San Lorenzo and La Venta are the Olmec "heads" and other monumental sculptures (Figure 13.6). The most impressive art works at La Venta are four "Olmec heads," some of which are over 8 feet tall. They often depict a human with a stern, not to say sneering, facial expression, and usually are shown wearing a "helmet." Presumably these sculptures are of Olmec rulers, but we will probably never know for certain. Since the Olmec

had no metal tools, we assume they worked with grinding and pecking stone implements, and it is difficult to believe that these sculptures were made by anyone other than skilled specialists. Major Olmec sites often also included other monumental stone carvings, such as those of free-standing figures of kneeling men and carved stelae and "altars," all carefully executed from massive basalt blocks. On some of them are engraved fantastic mythical creatures representing hybrids of snakes, jaguars, and humans. The basalt for these carvings was imported from 80 km or more away, probably by being floated down rivers on rafts. Some of the heads weigh more than 20 tons, so scores of people must have been involved in quarrying, transporting, carving, and then erecting the stone blocks in monumental compositions.

FIGURE 13.6 An Olmec stone head sculpture.

The Olmec also decorated their ceremonial complexes with many other kinds of expensive and exotic goods, such as the "pavements" at La Venta. To form these mosaic-like pavements, hundreds of serpentine (a green hard stone) blocks about the size of small construction bricks were laid out in a traditional Olmec design—a jaguar mask—and then carefully buried (Figure 13.7).

FIGURE 13.7 Mosaic jaguar mask pavement at La Venta, Mexico.

Unfortunately, the acidic, damp soils of the Olmec region do not preserve bones well, and we have only meager knowledge of Olmec burial practices. At La Venta a tomb in a large mound near the central pyramid was elaborately constructed of basalt columns, and on its limestone floor two juveniles were laid out in fabric bundles heavily coated with red paint. Buried with the bodies were jade figurines, beads, a shell ornament, a stingray spine, and a few other items, and these burials may reflect inherited wealth and prestige. Other types of evidence relating to social complexity, such as residential architecture and settlement patterns, are not well represented at La Venta. And while there is little residential debris there (except for pottery and a few clay figurines), scholars now believe that the people who built La Venta did live there permanently.[14]

Other Olmec ceremonial centers were built at Laguna de los Cerros and elsewhere, and between about 900 B.C. and 400 B.C. It is possible to have large buildings and other trappings of social complexity on the basis of a very simple economic system, but the Olmec also had an intensive and productive agricultural system. In addition, they traded jade, iron

FIGURE 13.8 These Olmec ceramic "baby" figurines were distributed over a large region of central Mesoamerica.

ore, obsidian, bitumen, magnetite mirrors, shark teeth, stingray spines, perhaps cacao and pottery, and many other goods in complex patterns between the Olmec heartland and highland Mexico and as far south as Guatemala.

As we have seen in other civilizations, a key element in the development of most of them was some formative *idea*, some set of religious or philosophical ideology that people over a large area adopted and expressed in ways that linked them in complex interrelationships. The core ideology of the Olmec is hard to discern and decipher, however. Judging from their art style, the Olmec seem to have believed that at some distant time in the past a woman mated with a jaguar and gave issue to a line of half-human/half-feline monsters, or "were-jaguars." These were portrayed in pottery, stone, and other media in a highly stylized way, usually as fat infants of no discernible sexuality (Figure 13.8). Their snarling mouths, long canine teeth, and cleft heads give them a strikingly bizarre quality that some scholars have explained as an imitation of a birth defect of the neural tubes, or as the deformities one would expect of a mating between a human and a jaguar.[15]

"Olmec" ceramic and sculptural designs have also been found far outside the borders of the South Gulf Coast. Some bas-relief rock carvings at Las Victorias in highland El Salvador strongly resemble those at La Venta, and similar sculptures have been discovered in the highlands of Guerrero and Morelos in western Mexico. At Chalcatzingo, in Morelos, cliff sculptures include a standard Olmec motif of a human (probably male) seated in what may have been meant as the mouth of a cave or a steaming monster (Figure 13.9). Olmec styles of pottery, worked stone, jade, and other artifacts have also been found at several sites in the Valley of Oaxaca, at Tlatilco and Tlapacoya near Mexico City, in Guatemala, and elsewhere in Mesoamerica.

The later Olmec and their immediate successors may have formulated some of the ideology that formed the basis of the Maya (see later), but the evidence is controversial. In 1902 a small jadeite figure of a person with what appears to be the bill of a duck was found at San Andres Tuxtla. On it were engraved some glyphs that appeared to be a date, but without the signs that would allow it to be converted to our calendar, and other glyphs, some of which resembled those of later Maya writing but many others that did not. Scholars disputed the significance of this figure for many years, and in 1986 another find helped clarify its significance. This was the La Mojarra Stela 1, found in southern Veracruz, where writing was found that appeared to be the same script as that of the Tuxtla duck-billed figurine. John Justeson and Terrence Kaufman[16]—whose work is controversial—have argued that these inscriptions are in the Zoquean language, which is only distantly (if at all) related to the language of the later Maya, and consists of separate glyphs for each combination of the 11 consonants and 6 vowels of Zoquean (thus, 66 possible consonant-vowel combinations). What is particularly important, however, is that this Epi-Olmec

script contains logograms that are semantically equivalent to very similar-looking Maya glyphs[17] and that the Olmec were using essentially the same calendar. These Epi-Olmec inscriptions refer to the accession of various rulers, to what seems to be a war between brothers-in-law, and to other dynastic and calendrical matters.

Perhaps the most important recent discovery of early writing, however, comes from San Andrés, not far from La Venta. Pohl and her colleagues[18] report finding a cylinder seal and a greenstone plaque that contain glyphs. These artifacts are from contexts that date to about 650 B.C. and show that some of the features of later Mesoamerican writing systems, as well as the use of the sacred 260-day calendar and the association of glyphs with rulers, were definitely present in Olmec society.

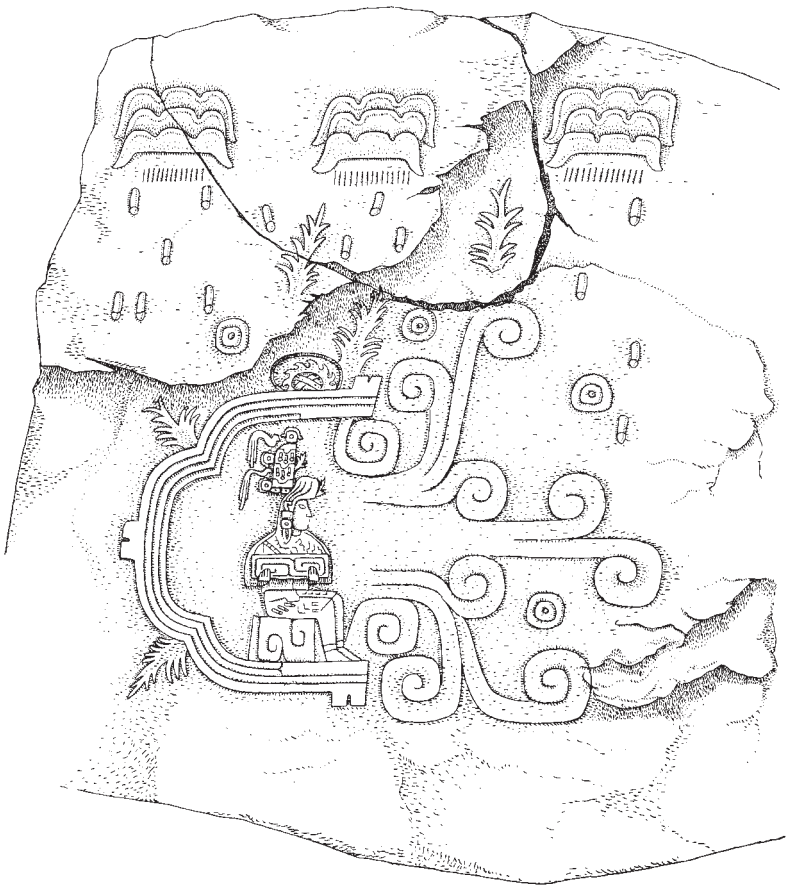

FIGURE 13.9 Relief 1, Chalcatzingo, Morelos. One interpretation of this Olmec motif is that it is a ruler within a cave or a stylized monster's mouth, which gives off steam or smoke, while raindrops fall from above.

Whether or not the Olmec can be credited with the origins of Maya ideology, the Olmec were far different from their hunter-forager ancestors, and if we match them against the checklist of monumental architecture, burials of juveniles with wealth, voluminous craft production and trade, writing, and so on, the Olmec were clearly a complex society. Their relatively low population densities and small population numbers in centers is probably a direct result of the constraints of their agricultural methods, although we may have an inaccurate sense of their agriculture, which may have been more intensive than many scholars think.

La Venta appears to have been intentionally destroyed soon after about 400 B.C., or at least we might infer this from the fact that some of its greatest stone monuments were intentionally defaced. The history of the Olmec appears to have been one in which small centers of power and prestige, such as San Lorenzo and La Venta, alternately became dominant. And while the people of these centers probably shared core cultural elements, ranging from language to theology, it is not certain that they ever formed a united, integrated political unit over the entire Olmec region.

Early Complex Societies in the Valley of Mexico

The Valley of Mexico is a large basin with no external drainage that is rimmed on three sides by high mountain walls cut by only a few passes; even in the north where there are no mountains, the valley is delimited by a series of low hills (see Figure 13.2). The valley has often been considered a "natural" analytical unit, bounded as it is by such impressive natural barriers, but archaeological research has revealed that almost from their arrival here the people of this area interacted with cultures far beyond the valley itself.[19]

Although much of the Valley of Mexico lies beyond the temperature limits of maize agriculture, people were able to successfully pursue maize cultivation for several thousand years. They also benefited from a large lake, which until the last 400 years, covered the low central portion of the valley, providing rich resources in the form of fish, fowl, turtles, algae, and reeds.

There is not a single navigable stream or river in the whole Valley of Mexico today, and agriculture in most places in the valley would have depended on rainfall and small streams.[20] Rainfall is sharply seasonal and varies considerably from north to south. Today, as in the past, the upper slopes of the Valley of Mexico provide many wood products, and in earlier times the slopes supported large deer herds that were an important part of the prehistoric and early historic diet.

Modern urbanization in the Valley of Mexico has probably destroyed many of the earliest villages and towns there. What we do know suggests that by about 1000 B.C. there were small villages and hamlets in several areas of the valley. Only a few larger sites have been found, such as Tlatilco and Cuicuilco.[21] The valley's apparent two-tiered site size hierarchy, with a few large towns like Tlatilco and Cuicuilco and many small villages, suggests a simple, perhaps tribal, organization, and the distribution of settlements does not point to any political or social spacing. Settlements seem to be located principally around the edge of the great lake, although a few small villages have also been found in highland areas where the soil is particularly rich and deep. Differences in settlement size seem to be a result of local variations in agricultural potential.

Nor is there much evidence of complex architecture at these settlements. A few small mounds and platforms may date to before 800 B.C., but none is on the scale of the pyramids, platforms, and other structures found later on the South Gulf Coast and in the Maya areas. No evidence of elaborate residential structures or monumental sculptures has been found.

The cemetery at Tlatilco provides little evidence that the occupants of the Valley of Mexico were living in complex cultures. Burial goods include pottery, shell ornaments, obsidian tools, figurines, bone tools, and jade and serpentine objects. Some women seem to have been buried with more numerous and more expensive objects than other people in the cemetery, perhaps even with sacrificed men and children. But there is no evidence of lavish mortuary cults.

From about 800 B.C. to about 500 B.C., the population density of the Valley of Mexico increased considerably. At least 10 sites were larger than 50 hectares (each inhabited by about 1,000 people), and one, Cuicuilco, probably had a population of about 2,500. All the larger sites are located along the lake margin, while scattered small hamlets have been found in the highlands. The larger settlements along the lake are fairly evenly spaced at 8- to 10-km intervals, and they all used similar styles of pottery, suggesting some degree of social or political integration, but probably at a low level.

Early Complex Societies in Oaxaca[22]

In the Olmec area the basis of cultural evolution was the productivity of the coastal zone and river alluvium, while in the Valley of Mexico it was the lake shore and adjacent areas, but in the Valley of Oaxaca, cultural evolution seems to have been based on the diversity of ecological zones and the presence of some small river valleys (see Figure 13.2). On the valley floor are large, fertile, flat alluvial areas with a water table sufficiently high for irrigation to be easily accomplished. Grading up into the mountains, the piedmont areas are less fertile than the alluvium, but they can be productively farmed by diverting water from the perennial streams that run toward the valley floor. The higher mountains are cooler and wetter than the other zones and are still covered with pine and oak trees. Frost here is not nearly the limiting factor on agriculture that it is in the Valley of Mexico, although it can be a significant determinant of productivity. Since formative times, irrigation by means of canals and wells has been an important aspect of agriculture in Oaxaca.

Some of the most important resources of Oaxaca were the native iron ores, including magnetite, ilmenite, and hematite. Small pieces of these materials were polished and used as mirrors and ornaments, which were then traded widely over Mesoamerica and used as marks of status.

Shortly after 1400 B.C., the most productive areas of the piedmont and the alluvium in the Valley of Oaxaca were occupied by small villages composed of perhaps 50 people living in tiny wattle-and-daub structures. The first significant deviation from this pattern of egalitarian farmers occurred sometime between 1350 B.C. and 1150 B.C., when the inhabitants of at least one site (San José Mogote) at different times built several "public buildings" of earth and adobe construction.[23] Although these structures average only 5.4-by-4.4 m each, they are interpreted as public buildings because the floors were carefully covered with a distinctive white lime plaster and swept clean, in contrast to the average house of this period, the floors of which were usually stamped clay and sand and covered with household debris.

Other evidence suggests that these buildings at San José Mogote may have been intended for special functions: They were repaired and reused over longer periods of time than the obviously residential structures; at least one of them had an "altar" or step against one wall; and they are oriented eight degrees west of true north, about the same as the major monumental constructions at La Venta, in the Olmec heartland, which suggests that the strong Mesoamerican tradition of imputing magic to place and arrangement (see later) was already in force.

Most of the other formative villages in Oaxaca lack such public structures, although one, Tomaltepec, was found to have a large prepared mudbrick platform.[24] In the floor of this structure was a storage pit, considerably larger than any of the others at the site, containing relatively large quantities of obsidian, ornamental seashell, and deer and rabbit bones.[25] Between 1400 and 1000 B.C., overlapping in time with the construction of this platform, a large cemetery was created at Tomaltepec. Eighty burials containing a total of about 100 individuals were found at the cemetery, and most of these burials had almost the same goods, mainly ceramics and a few other small items. In four of the burials, small quantities of obsidian, magnetite, and jade were found, but these differences in grave goods seem fairly small in view of the overall similarity. And, interestingly, no juveniles or infants

were buried here; all the bodies were of adults, suggesting that this society had not yet achieved significant social stratification.

Analysis of trade items in the valley between 1400 B.C. to 1000 B.C. also reinforces this impression of low-level community organization. A few items, such as obsidian, were traded, but in small amounts, and the trade was probably organized through individual households.[26]

But archaeological evidence suggests that major changes were in process in the cultural organization of Oaxacan society between about 1400 B.C. and 1100 B.C. More crafts were apparently performed at San José Mogote than at other settlements in the valley at this time. Debris from working obsidian, jade, magnetite, shell, and other substances has been found here in concentrations proportionately greater than at other sites. There was a major increase in the volume of "exotic" traded materials in Oaxaca at this time also, perhaps in response to increasing social stratification: These materials seem to have been used most frequently to make ornaments that reflect differences in social rank.

As is discussed later in the context of the Maya, a widespread religious practice in Mesoamerica was ritual self-mutilation to produce blood—often in the form of cutting one's tongue or (for men) penis with obsidian blades or stingray spines. This practice is thought to have been a way of materializing the gods and invoking their powers, and the presence of these materials at San José Magote may reflect this practice. The spread of common elements of ideology over Mesoamerica also seems reflected in other ways. There are clear resemblances between Olmec figurines and ones of comparable age from Oaxaca, for example, and some pottery with Olmec motifs reminiscent of the South Gulf Coast has been found in Oaxaca. Certainly, magnetite and obsidian were moved in substantial volumes between Oaxaca and the South Gulf Coast between 1100 B.C. and 850 B.C.

Kent Flannery and Joyce Marcus have challenged[27] the notion that "Olmec" motifs on early Oaxaca pottery support the contention that somehow the South Gulf Coast cultures stimulated cultural developments in Oaxaca. They note that Oaxaca seems to have been more influenced by cultures in the Valley of Mexico than the South Gulf Coast and that Oaxaca society was, in any case, among the earliest in Mesoamerica to develop public architecture and other evidence of increasing cultural complexity.

After about 850 B.C., variation in settlement size in Oaxaca increased; by 550 B.C., San José Mogote, for example, grew to 15 times the size of the next largest community (Figure 13.10). Many settlements excavated have public architecture, and their distribution seems to mirror the growing importance of social and political factors in determining site location.

It seems unlikely that cultural evolution in either Oaxaca or the Valley of Mexico was directly instigated by the Olmec through military imposition, economic exploitation, or slavish imitation.[28] The wide distribution of Olmec styles of ceramics, figurines, and sculpture and the construction in Oaxaca and elsewhere of public buildings with astronomical orientations similar to those of the Olmec buildings seem to reflect interregional trade networks and perhaps the circulation of important people, but the archaeological evidence does not support the idea of unified political and military control of these three regions.[29]

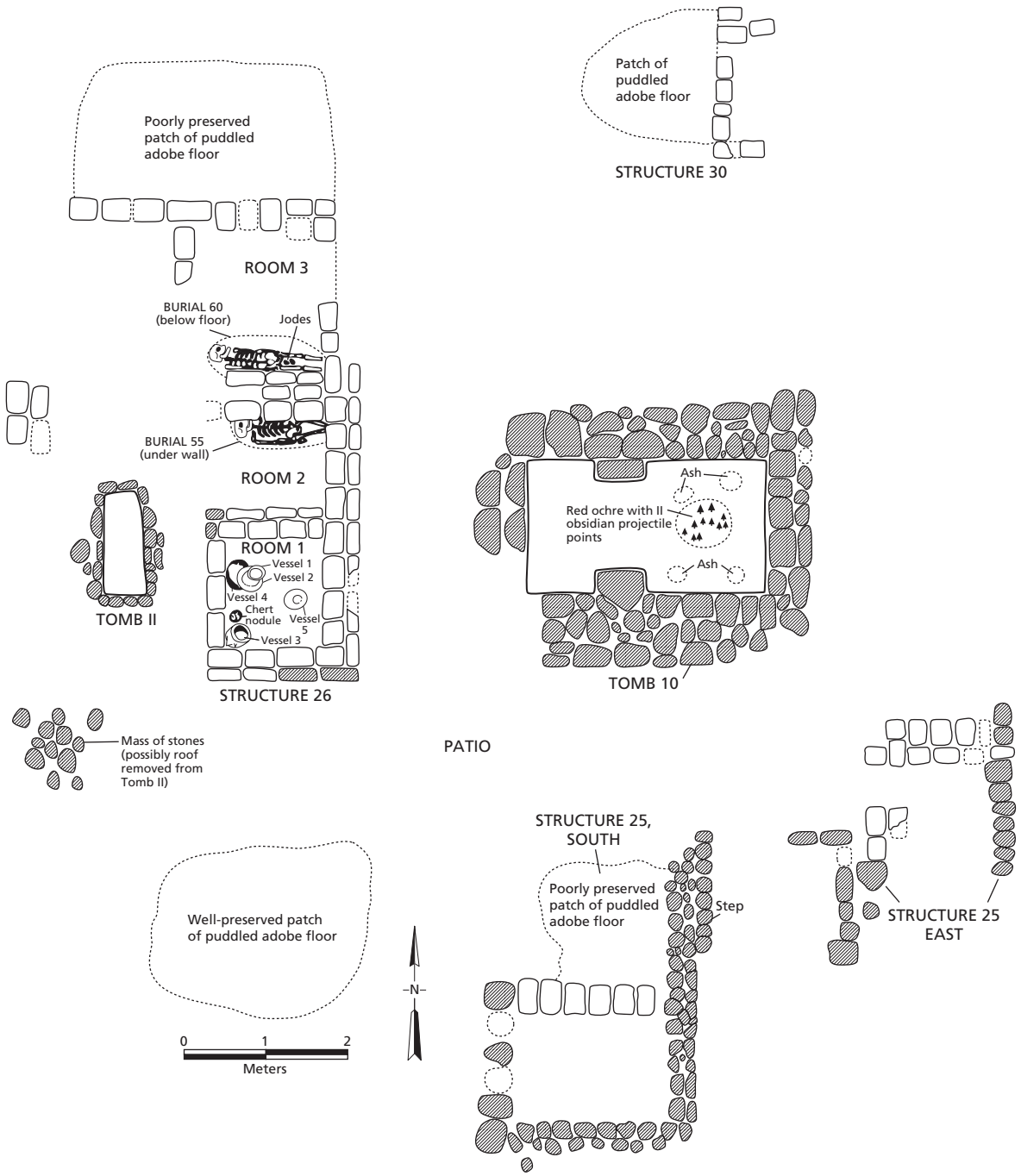

FIGURE 13.10 A plan view of structures at San José Mogote, Oaxaca, Mexico.

THE ARCHAEOLOGICAL RECORD OF MESOAMERICAN STATES IN THE VALLEYS OF MEXICO AND OAXACA

As discussed in chapter 7, applying a static concept such as *state* to complex multi-dimensional cultural changes involves many difficulties, but as an informal descriptive term the notion of *state* implies a society based in part on socioeconomic classes; a centralized, hierarchically arranged bureaucratic structure; and the economic and functional integration of many settlements over a comparatively large area. Cuicuilco, with its early stone monuments, intensified agricultural system, and other developments, may be Mesoamerica's first state in this sense, but it is clear that other areas of Mesoamerica, especially the Valley of Oaxaca, were undergoing roughly contemporaneous and similar processes of state-formation.

Early States in the Valley of Mexico (C. 500 B.C.–A.D. 800)

Thanks to the hard work of William Sanders, Jeffrey Parsons, George Cowgill, Rene Millon, and many others in the Valley of Mexico, we can now reconstruct over 4,000 years of settlement history and other evidence related to the process of state-formation here.[30] Elizabeth Brumfiel, for example, attempted to test the hypothesis that "population pressure" was an important factor in cultural evolution in the Valley of Mexico between 500 B.C. and A.D. 1—the important interval just before the florescence of Teotihuacán.[31] She did this by estimating the agricultural productivity and the potential for intensification of each settlement known for this period. Her argument is complex and mathematical, but one of her conclusions is quite simple: An important factor in the growth of smaller towns and villages was the imposition of tribute by elites in the largest communities. She found little convincing evidence of "population pressure" at the critical period—although, the data are not conclusive.[32]

Several other analyses of these Valley of Mexico settlement patterns have been set in mathematical-locational geographical terms,[33] and the results have stimulated a great deal of discussion about Mesoamerican cultural history and the applicability of these kinds of analytical techniques. The settlement pattern data we have here come from archaeological surveys where the procedure was to collect a sample of pottery from each site and then estimate the site size, periods of occupation, and distinctive architectural features. The limitations of such data have been intensively reviewed by Tolstoy and others, but this information can be quite useful.[34]

For the period between about 500 B.C. and 200 B.C., there is persuasive evidence of changing cultural complexity in the Valley of Mexico. The population of the valley grew substantially in this period, and in most of Mesoamerica as well,[35] and people were now living in larger settlements. Cuicuilco may have had as many as 7,500 people at this time —an unmanageable size without considerable social organization and control. Many other settlements of 80–100 hectares existed, intermediate and small settlements also increased in number, and there are some early signs of irrigation agriculture. Small "temple" platforms of stone and clay, some 3–4 m high, appeared in several areas, and Cuicuilco and other sites had large stone structures. Cuicuilco had the largest early pyramid structure in central Mexico, an anticipation of the great stone pyramids at Teotihuacán (see later).

As we saw in the case of Mesopotamia (chapter 8) and Egypt (chapter 9), early polities that were developing centralized political authority, class-based social organizations, and other elements of social complexity often seemed to begin building massive ceremonial structures very early in this evolutionary process. That so many people around the world chose the pyramid form has nothing to do with instinctive human aesthetics or the mystical power of pyramids and everything to do with the simple engineering reality that people with primitive tools who try to build a monumental structure capable of bearing its own weight can only construct a few basic shapes. Of these, the pyramid is the easiest to build in terms of raising materials to the top of the structure and the amount of materials and labor needed. As discussed in previous chapters, monumental structures are functionally efficient in early complex societies, despite their apparent "waste" of resources and labor, because they legitimize and focus the religious and social hierarchies of which they are an expression, and they may also act to dampen unstable rates of population growth and economic expansion.

Before 200 B.C. the Teotihuacán area of the Valley of Mexico had been relatively unimportant culturally, but it has large areas suitable for irrigated agriculture and possesses large springs capable of supplying irrigation systems. Obsidian is also available nearby, and the area is thought to have supported large stands of maguey cactus, used for its fiber and to make *pulque* (a kind of beer), as well as edible nopal cactus, a plant species that is home to an insect that can be rendered into a red dye highly prized in pre-Hispanic Mexico. Moreover, Teotihuacán stands along a natural trade route to eastern Mesoamerica—an important advantage given the difficult terrain of this region.

Between 150 B.C. and 1 B.C. the population growth rate exceeded that of any other period, and Teotihuacán grew to some 6–8 km^2, reaching about one-third its eventual maximum size.[36] Between about A.D. 1 and A.D. 150 Teotihuacán's growth rate was still high but had slowed; the average population during this period was probably between 60,000 and 80,000, and rose to 100,000 or more by A.D. 300.[37]

During this time work was completed on the massive Pyramids of the Sun and the Moon (Figure 13.11) and on at least 20 other important temple complexes.[38] The Pyramid of the Sun is 198 m long on each side of its base—as large an area as the Great Pyramid of Khufu in Egypt—and rises 64 m (half the height of the Khufu pyramid). The pyramid seems to have been built over an earlier, smaller structure made of sun-dried bricks and is filled with an additional one million cubic meters of earth, stone, and rubble. In volume, this probably equaled two million cubic meters of uncompressed fill, which would have required the excavation, transport, and shaping of the soil in an area 1.4 km^2 to a depth of 1 m—a considerable effort by any standards. The Pyramid of the Moon is somewhat smaller (150 m at the base, 45 m high), but of greater architectural sophistication, with a series of inset trapezoidal platforms. Pottery fragments in the fill of these pyramids indicate that the pyramids were constructed by using material from earlier occupations near the city. Considering the size of these structures, it is little wonder that the later Aztecs believed that the pyramids had been constructed by giants and that some of the gods were buried beneath them.

By about A.D. 100 Teotihuacán had hundreds of workshops, with perhaps as much as 25 percent of its population employed as craft specialists, making products in obsidian, ceramics, precious stones, slate, basalt, seashells, feathers, basketry, leather, and other materials. Craft production was also extensive within households, and may have been taxed

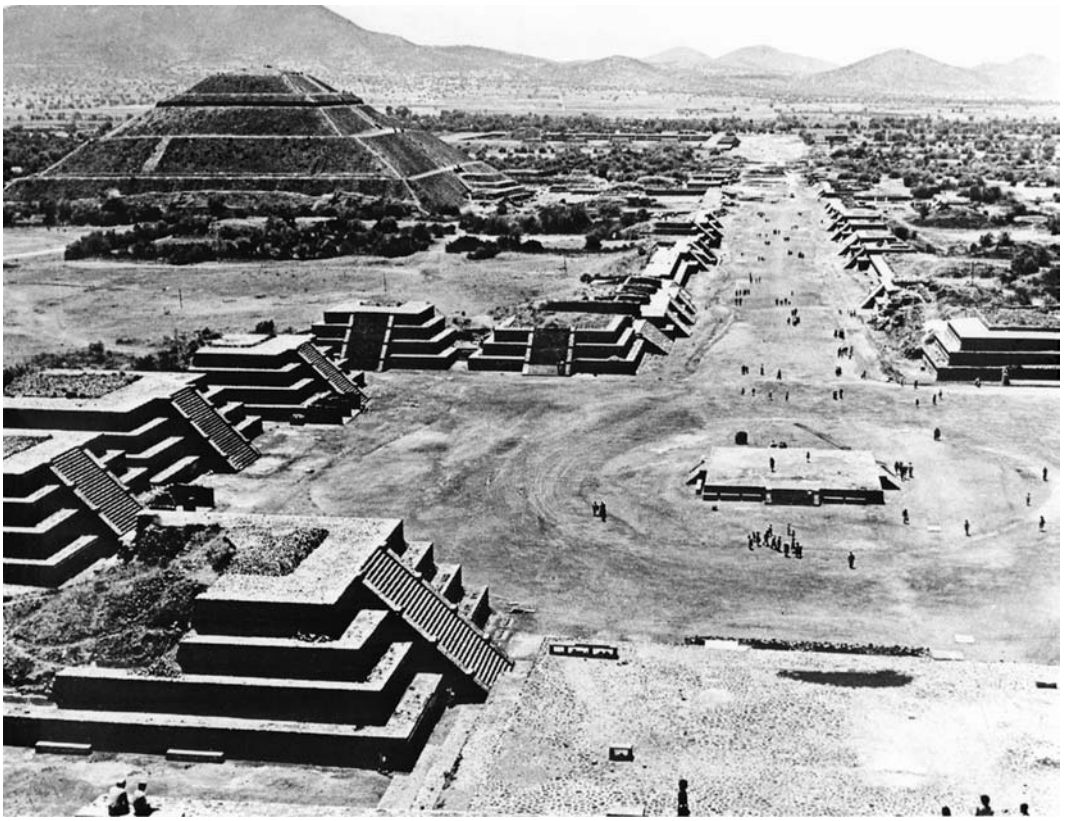

FIGURE 13.11 The Pyramid of the Sun (*upper left*) and the Pyramid of the Moon (from which this photograph was taken) were the ceremonial center of Teotihuacán. At times the city probably had a population of more than 100,000, and there were hundreds of workshops and houses.

by the state.[39] Massive public constructions were underway, considerable variability existed in mortuary complexes and residential architecture, and the settlement patterns in the surrounding areas were heavily influenced by the city.

The rest of the city is perhaps even more significant in terms of its evidence of cultural complexity (Figure 13.12). It was laid out in quadrants, formed by the Street of the Dead intersected by streets running east to west. Some of the quadrants were more densely occupied than others, and very different architectural styles and artifacts were found in various zones of the city. Along the main north-south street were elaborate residences, presumably for societal elites, as well as large and small temple complexes. Many of the more impressive buildings were built on platforms and often faced inward on patios and courtyards. Most buildings were one story high. In some temple complexes the walls were decorated with beautiful murals depicting religious themes, warfare, imaginary animals, and scenes from daily life.

The basic residential unit of Teotihuacán appears to have been large, walled, often windowless compounds made of adobe bricks and chunks of volcanic rock. Many such

compounds measured 60 m or more on a side and internally were divided into many rooms, porticoes, patios, and passageways. In some, open patios let in sun and air and drained the compounds through underground stone troughs. Many walls were decorated with frescoes of jaguars, coyotes, trees, gods, and people in naturalistic settings.

Some residential complexes at Teotihuacán were found to have concentrations of artifacts characteristic of distant areas of Mesoamerica, with at least two enclaves with "foreign" associations.[40] The Oaxaca Barrio, for example, included ceramics, funeral urns, burials, and other elements indistinguishable from the artifacts used in Oaxaca—over 400 km to the south—and very much in contrast to the distinctive artifacts of the Teotihuacán natives. These foreign "barrios" appear to have remained culturally distinct and intact for at least several centuries and may have been trade entrepôts or ethnic "ghettos," but no persuasive explanation for these features has been made.

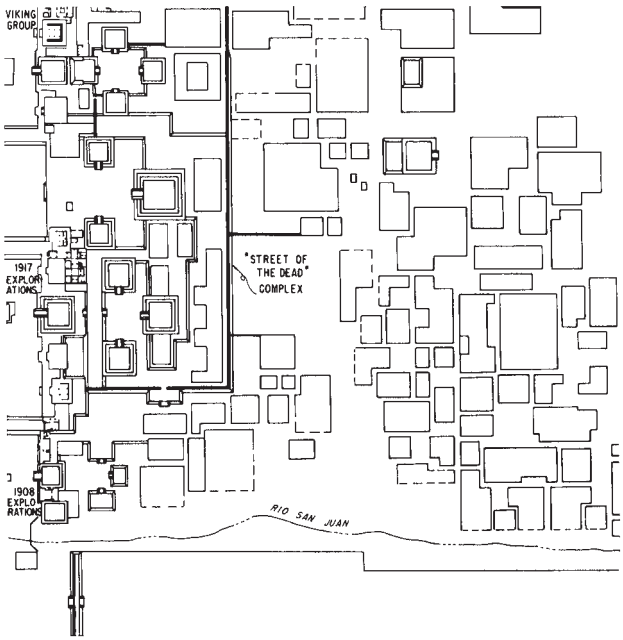

FIGURE 13.12 A plan map of the central area of Teotihuacán, Mexico.

The city's people apparently ate large quantities of nopal and other kinds of cactus, as well as maize, beans, squash, and a variety of other domesticated and nondomesticated plants and animals. Deborah Nichols has shown how extensive was the irrigation system that supported the intensive agriculture that fed Teotihuacán's tens of thousands of people.[41] Even at Teotihuacán's peak, however, there was considerable hunting, as evidenced by the fact that about 80 percent of the animal remains found were deer bones.

By the time Teotihuacán reached its maximum size, it had apparently depopulated much of the rest of the Valley of Mexico: Only one other major settlement appears in the valley at about A.D. 500, and it is but a small fraction of the size of Teotihuacán. In fact, the abandonment of rural sites correlates so closely with Teotihuacán's growth that it appears likely that populations were either drawn or coerced directly into the city.[42] By A.D. 500 Teotihuacán-style ceramic vases were placed in the richly furnished burials of apparently high-status individuals on the Gulf Coast, in Oaxaca, and elsewhere.

Teotihuacán so dominated the Valley of Mexico that some have wondered if its power extended far beyond the valley itself. It seems unlikely that the few hundred thousand people at Teotihuacán were able to extend military control over the millions of people living in the rest of Mesoamerica: Fighting a military campaign in the rough terrain of these distant areas would have been suicidal. More likely, the Teotihuacános were tied to the many other areas through trade networks. The city has no major defensive fortifications, but it does have what appear to be large market areas, and the ecological diversity of Mesoamerica would have put a high premium on large-volume trade in basic agricultural and technological commodities. By circulating these many products, people would have had a much higher standard of living and much greater protection against food shortages.

As we will see later, Teotihuacán was quite different from other Mesoamerican cities of the Classic period. In many respects, Teotihuacán was more comparable to Mesopotamian or Chinese cities.

Sometime before A.D. 600, Teotihuacán's size and influence began to decline. As the city shrank in population, new centers and settlements appeared throughout the Valley of Mexico, particularly on its edges. Significantly, after A.D. 600 Teotihuacán styles in pottery, architecture, and other artifacts disappeared from the rest of Mesoamerica. It is as if a complicated exchange network had been beheaded, and local cultures began developing their own distinct traditions.

Various factors appear to have diminished Teotihuacán's population growth and influence after A.D. 600.[43] Teotihuacán may have been eclipsed by other political systems based on more productive agricultural and economic resources: There is some evidence that at least part of its sphere of influence was encroached on by emerging states in the Maya areas. Even closer to home, political systems centered at Tula, Xochicalco, and elsewhere in the Valley of Mexico may have begun to block Teotihuacán's access to needed raw materials and foodstuffs.

There is some evidence that Teotihuacán was selectively burned down at about A.D. 650, with the targeted destruction of temples and elite residences, along with the smashing of idols.[44] Whether this was an internal revolt or resulted from the actions of populations from other regional centers is not entirely clear. Some 40,000 people or so, however, did reinhabit the city after its destruction, although it never regained its former prominence or influence. Whatever malignant conjunction of wars, fires, droughts, and other factors that destroyed it, Teotihuacán was one of the first great states of the New World.

Early States in the Valley of Oaxaca (C. 500 B.C.–200 B.C.)

The rise of early states in Oaxaca paralleled that in the Valley of Mexico in many ways. Many years of intensive survey, for example, have shown that the settlement patterns changed from one in which small villages predominated to one in which villages proliferated in number but were also complemented by larger towns and villages.[45]

Richard Blanton notes that shortly after about 500 B.C., Oaxaca experienced at least the following transformations: (1) Population density increased at a more rapid rate than in any previous period; (2) agricultural intensification in the form of canal irrigation became important; (3) pottery manufacture became specialized and perhaps was part of the Valley's first market system; and (4) the settlement at Monte Albán, on a high plateau in the center of the Valley, grew to become a major regional center (Figure 13.13).[46] Blanton has argued that the capital at Monte Albán was founded in an unpopulated area between various important settlements as an expression of a new confederation between people who previously may have been linked by rather low-level social and economic ties.[47]

Blanton and his colleagues estimate that Monte Albán grew from an unoccupied, waterless mountaintop to a great religious and political complex of 5,000 people in fewer than 200 years.[48] To accomplish this rate of increase, they suggest, people would have had to move up from settlements in the valley to their new home on the plateau, and agriculture in the valley and piedmont would have had to be intensified to support the town.

By 200 B.C. the population of Monte Albán reached about 17,000—a great city, by ancient standards. Agriculture was intensified around Monte Albán as well, and rural population densities soared. Craft specialization in pottery and other commodities was

sharpened, and the location and products of kilns indicate some degree of regional administrative control, although Blanton concludes that Monte Albán itself remained mainly a ceremonial center with few economic functions.[49]

One of the main plaza buildings at Monte Albán contains a gallery of carved stone reliefs whose main theme seems to be the commemoration of military conquests. Scores of bodies are depicted with open mouths, closed eyes, and blood streaming from them in flowery patterns.[50] These depictions have many parallels in themes around the ancient world, such as in the Egyptian Narmer Palette (chapter 9).

FIGURE 13.13 Overview of Monte Alban, Valley of Oaxaca, Mexico.

In succeeding centuries, population densities and settlement patterns varied considerably, but the investments in monumental architecture, the hierarchical arrangements of towns in terms of the distribution of goods and services, and other markers of cultural complexity persisted and became more elaborate. Thus, by 200 B.C. or shortly thereafter, a state, by almost any definition, appears to have been operating in Oaxaca.

It may be overstating the case to say that by 200 B.C. we have also moved from prehistory to history in Mesoamerica, but the engraved signs and symbols at Oaxaca and elsewhere in Mexico seem to be well on the way to the development of a true writing system.

Although the rough outlines of Oaxacan cultural history have been established, scholars argue about what forces determined this history. Sanders and Nichols stressed the importance of irrigation agriculture and population growth as factors in the valley's florescence.[51] Kowalewski and Feinstein, in a lengthy assessment of the development of economic systems in Oaxaca, conclude that much of this "economic variation was largely determined by the changing functions and degrees of chiefly or state power."[52] They reconstruct a situation in which the power and predilections of elites changed, and with them the permeability of the borders of Oaxacan political systems.[53]

THE MAYA

In Mexico the gods ruled, the priests interpreted and interposed, and the people obeyed. In Spain, the priests ruled, the king interpreted and interposed, and the gods obeyed. A nuance in an ideological difference is a wide chasm.

Richard Condon

At about the same time the civilization of Teotihuacán was developing in the Valley of Mexico, Maya civilization was emerging in southern Mexico, Guatemala, Belize, and Honduras (see Figure 13.2).

Early Maya civilization may have been influenced to some minor degree by Teotihuacán, but it was largely its own creation. The Maya devised a complex writing system, built temples and palaces that are spectacularly beautiful monumental constructions, and are thought to have organized vast areas and many peoples in a series of independent states. The Maya were a civilization with cities although these cities were quite different in layout than our stereotypic notion of a city because Maya cities incorporated much farmland into their boundaries. Maya centers such as Tikal and Dzibilchaltun had thousands, perhaps tens of thousands, of people in permanent residence[54]—although these settlements never attained the population or physical size of Teotihuacán, and they had less diversity in residential architecture and perhaps less occupational specialization than existed in Teotihuacán or Oaxaca at a comparable time.

It is difficult to fault archaeologists who spend most of their time excavating the spectacular Maya ceremonial centers instead of surveying the snake-infested jungles for the rural settlements that supported these centers, but in recent years an increasing amount of research has focused on surveys of nonurban areas, and the general picture is much clearer than previously.[55]

Much of the Maya homeland is hot, semitropical forest, but large areas are highlands created by a string of snow-capped volcanoes that extend from southeastern Chiapas toward lower Central America. In the highlands volcanic ash and millennia of wind and water erosion have created a rich thick layer of soil spread over a convoluted landscape of ravines, ridges, and valleys. Hard seasonal rains make this a fairly productive agricultural zone.

The tropical lowlands at the steamy heart of Maya civilization cover the Petén and the Yucatan Peninsula, a massive limestone shelf lifted out of the seas over millions of years by tectonic movements. The land is rugged toward the southern part of the Petén, but most of the peninsula is flat. There are few rivers or lakes because the porous limestone quickly drains away surface water.

The lowland climate is hot and humid for most of the year, but drought can be a severe problem because the rainfall is seasonal and localized. In early spring a period of drought sets in, and the agricultural cycle slows. Trees are burned to open fields for crops, and the land dries. In May and June the rains begin, and the lowland landscape is transformed into a riot of life as plants green and animals multiply.

Recent research has revealed large irrigation systems in some Maya areas and, during at least some periods, permanent field agriculture with annual cropping, which was probably very important economically in the lowlands. Irrigation, however, was an exception. Labor intensive soil and water management for agriculture by the Maya mainly involved techniques such as slope terracing, water diversion, and wetland reclamation. In much of the Maya area, the fields used for maize, beans, squash, tomato, and pepper cultivation must be fallow for four to eight years after about three years of production. The Maya also converted land that today might be considered "unusable" through innovative techniques such as raised fields and seasonal use of bajos—swamp lands. Raised fields are created in bajos by digging channels and piling the excavated dirt between the channels. This produces a series of artificial areas on which agricultural crops can be grown year-round,

although the raised field technique is only viable where water levels remain relatively stable.[56] Seasonal use of the bajos occurs when they are dry—in other words, not during the rainy season—and it is possible to grow one crop a year under these conditions.[57]

When all the evidence of canals, raised fields, botanical remains from sites, and other data are considered, it is clear that a variety of agricultural techniques, adapted to each local ecology and regime, must be seen as the basis for Maya civilization.[58] Most peasant cultivators use animals, whether wild or domestic, to convert brush and hedgerow vegetation into usable form, and the small Yucatec deer—which was intensively hunted—apparently filled this role in the Maya lowlands, along with domestic dogs, rabbits, and wildfowl. The Maya were sophisticated farmers who blended field cultivation with a form of tropical-forest management in which they were able to use foods from both in a complementary, productive, and highly stable way.[59]

Maya Ideology

In Karl Marx's somewhat self-contradictory and ambivalent view, state religions were seen almost as by-products of state economies. He saw religions as ideologies that evolved as a way of legitimizing state authority and of controlling the masses after the real causes of state-formation—changes in the economic and technological base of the society—had produced the socioeconomic classes and governmental structures of states.

The case of the Maya, however, is one of many in history where one might argue for the primacy of the *idea* of the state. The great agricultural productivity of the Maya area was, of course, the base of Maya civilization and not only provided its energy but also shaped its culture. But little about Maya civilization seems understandable apart from their ideas of the divinity of kings and the nature of the cosmos.

It is a truism, a cliché, that we can really never fully enter into the ideology of another culture, whether that cultural ideology be the "dream time" of the Australian Aborigines, the Marxist-Confucian ethos of modern China, or the spirit world of the ancient Maya. And, unfortunately, much of a culture makes little "sense" unless one can share the cultural perspective from which it derived. This is particularly true of the Maya, whose beautiful monuments and intricate written language derive from a world-view and life-view that is in so many ways fundamentally different from our own. So, we can only *try* to see the world and time through the perspective of other cultures—try to get some sense of the fundamental ideas that bound people together in time and place and community.

For the Maya, the world manifested itself in two complementary dimensions—one in which they lived out their lives, the other (the Otherworld) in which gods, ancestors, and other supernatural beings existed—that were inextricably locked together.[60] The Maya apparently saw their dimension as three layered domains, "the starry arch of heaven, the stony Middleworld of earth made to flower and bear fruit by the blood of kings, and the dark waters of the Underground below."[61] This world-view was highly structured, with 13 levels in the heavens and 9 levels in the underworld, each overseen by a particular god.[62]

The Maya believed that these three regions—heavens, earth, and underworlds—were interrelated, that shamans and rulers, for example, could penetrate the Underground world via ecstatic trances. Above all, in the sky, was a great crocodilian monster who "made the rains when it shed its blood in supernatural counterpoint to the royal sacrifices on the earth below."[63] The human world was envisioned as floating in a primordial sea and was

sometimes represented as the back of a caiman (a crocodile-like animal) or a turtle. These various interrelated worlds and planes of existence, including the earth, were imbued by the gods with a sacredness that was especially concentrated at special points, such as caves and mountains. As Schele and Freidel note:

> The principal pattern of power points had been established by the gods when the cosmos was created. Within this matrix of sacred landscapes, human beings built communities that merged with the god-generated patterns and created a second human-made matrix of power points. These two systems were perceived to be complementary, not separate. . . . [The] world of human beings was connected to the Otherworld along the *wacah chan* ["six sky," or "raised up sky"—a tree-like axis whose base was in the watery underworld and whose top was in the highest heavens of the Otherworld] which ran through the center of existence. This axis was not located in any one earthly place, but could be materialized through ritual at any point in the natural and human-made landscape. Most important, it was materialized in the person of the king, who brought it into existence as he stood enthralled in ecstatic visions atop his pyramid-mountain."[64]

Through proper ritual, the Maya believed that the power points on the earthly plane, whether they be places, people, or objects, could be intensified and become charged with accumulated energy. Kings, for example, rebuilt temples on the same spot time after time, thereby compounding the sacred power within them. These kings or holy rulers—K'uhul Ajaw—may have originally risen from the role of shaman in Maya society.[65]

Blood-letting was a "focus ritual of Maya life."[66] The Maya believed that beings of the Otherworld could be materialized through the ritual shedding of blood. Men are shown in inscriptions using obsidian blades and other implements to pierce their tongues or penises, and women are shown piercing their tongues. Through blood-letting one could, in a sense, give "birth" to a god or ancestor, enabling it to materialize in physical form on the earthly plane of existence. Ritual blood-letting apparently was practiced not just by elites and priests but even by lowly peasant farmers in remote villages.

Like many other cultures, the Maya rationalized and justified the great inequities of wealth, power, and prestige in their society by setting these inequities in a divine context. The king and his relatives *deserved* their wealth and power because the king was the pinnacle of the population and it was through him that contact could be made with the sacred, the Otherworld. Every Maya, from highest to lowest, benefited from the king's intercession with the divine world, and they all shared in the material wealth that the king provided the community through successful performance of his powers.[67]

Like most early states, the Maya appear to have been strongly patriarchal—if the sex of people commemorated in royal inscriptions accurately reflects this society. But Maya royalty included women of high status. As Joyce Marcus notes,[68] an inscribed stela records an occasion in which a royal woman from Calakmul improved the prestige of a particular lineage at El Perú by marrying the local ruler, who was socially beneath her.

To the modern mind, the entire Maya world-view and life-view may seem bizarre and to represent a patent misunderstanding of how the cosmos operates. But by means of their ideology, the Maya in a sense invented a civilization. Schele and Freidel observed, "They invented ideas that harnessed social energy. . . . They invented political symbols that transformed and coordinated such age-old institutions as the extended family, the village, the shaman, and the patriarch into the stuff of civilized life."[69]

Thus Maya civilization was as much an idea as a physical manifestation in towns and villages, farms and monuments. The beginning of Maya ideology and its physical manifestations go back deep into the Mesoamerican past.[70]

For the earliest Maya, as with the many other cultures we have considered in this book, we come back to some basic and difficult questions. Why and how did kings, priests, writing, pyramid-building, and all the other facets of ancient civilization arise out of these unprepossessing communities of farmers? For most Westerners it is difficult to rid one's mind of the assumption that "civilization" is the "natural" outcome of agricultural life and that complex societies will somehow develop out of societal competition, individual strivings, the accumulation of technological advances, and other factors in all environments (except for those in areas such as the Arctic, where there simply are not enough people and not enough food and wealth to be expropriated). But archaeology shows us many examples of cultures that did not automatically progress to "civilizations," even in environments where it would seem technically possible for them to have done so (e.g., aboriginal Australia).

The early agricultural economy of the Maya shows that it had the potential for at least one of the major common denominators of all ancient civilizations: agricultural production of sufficient quantity and diversity that it could be intensified, administered, and expropriated.

The Preclassic Maya (1000 B.C.–A.D. 300)

Earlier views on the development of Maya civilization stressed explanations such as the migration of people from the periphery of the Maya areas into the core areas of the lowlands and highlands, the necessity for a political elite to manage trade, warfare, or population pressures.[71] Research since the 1980s, however, has considerably revised the chronology of the Maya and has shown that these earlier explanations are simply no longer supported by accumulating data. Monumental public architecture and flourishing regional centers are present by at least 600 B.C., with the best known example at Nakbe in the northern Petén.[72] By 400 B.C., there are numerous examples of such centers in both the lowlands and highlands, for example, at el Mirador, Kaminaljuyu, Calakmul, and Cuello.[73]

Because these discoveries have been only recently made, and in many cases are ongoing, scholars are reexamining earlier explanations, and undoubtedly there will be many exciting hypotheses put forward in the next several years. How important, for example, was irrigation agriculture? Some Maya canals are an impressive 1.6 km in length, 30 m in width, and 3 m deep.

Does the significance lie instead in the development of Maya ideology? One element may have been the growing Maya belief that dead ancestors could be conduits for power from the Otherworld and that their relationship to the dead extended beyond just their immediate families. All early states appear to have made a transition wherein people began thinking of themselves as belonging to entities that extended far beyond the immediate family. The first suggestions we have that these changes were underway are found in burial practices: Like ancient Chinese, Mesopotamians, and many others, the early Maya farmers buried their closest relatives under their house floors, perhaps to retain in some remote way the intimacy of family connections to house and home and to lay claim forever to the land of their ancestors. At about 600 B.C., however, some Maya, such as those at K'axob,[74] began burying their dead in the core of large stone and earth platforms—which themselves are an

FIGURE 13.14 A jungle river in Central America.

architectural reflection of important changes occurring in these formerly simple small villages.

As we saw earlier, some of the first great stone Maya buildings, such as pyramids and platforms, appeared in the Maya area by at least 600 B.C. (at Nakbe). For the Maya as for many other ancient civilizations, monumental architecture appears as one of the first signs of the transformation of the society. Between 600 B.C. and 400 B.C. people at Nakbe[75] and other sites built lovely stone and masonry buildings on huge platforms and depicted gods and ancestors on building façades, stelae, masks, and other objects. If the people of Nakbe and other Preclassic Maya communities were already enmeshed in the formal Maya theology that we know from the later Maya, they probably regarded these buildings as important points from which to tap into the power of the cosmos and amplified their sacredness by building and rebuilding these impressive complexes.

The largest Preclassic Maya community was El Mirador, in the jungles (Figure 13.14) of the Guatemalan part of the Petén—an area so remote that even though the site had been sighted from an airplane in the 1930s, its inaccessibility prevented exact location and excavation until the 1970s. El Mirador is remarkable for its early dates, its massive size, and its anticipation of many core elements of later Classic Maya culture—including pyramid complexes, stucco mask representations of Maya gods, and Maya writing. Some of the earliest examples of Maya writing have been found here in the form of an inscribed pot sherd and inscribed symbols on stone sculpture.

Several pyramidal mounds 18–20 m high at El Mirador appear to date to between 600 B.C. and 300 B.C. Between about 150 B.C. and A.D. 50 the people of El Mirador built hundreds of large stone constructions, including buildings, pyramids, plazas, and causeways. The *Tigre* complex, for example, includes a pyramid that rises more than 50 m above the jungle floor, set amidst a temple and other buildings.[76] Most of these buildings were coated with a white plaster and then painted deep red.[77] To modern aesthetics the great stone buildings of the Maya, the Greeks, the Egyptians, and others have an elegant and simple beauty in their natural light stone colors, but ancient peoples undoubtedly had different aesthetic preferences, and they probably also painted their buildings in primary colors for cultic and ideological reasons, and not primarily, if at all, because of aesthetic preferences.

Shortly before about 50 B.C. at Cerros, where the New River, which runs through the eastern part of the Yucatán Peninsula, empties into Chetumal Bay, the Maya established a small community of farmers, fishermen, and traders. At this time Cerros was unremarkable, just one of the hundreds of others like it in the Petén. But within the space of two generations, perhaps 40 or 50 years, the people of Cerros experienced a revolution: "The Coming of Kings." As Linda Schele and David Freidel note, this transition appears to have been so rapid that many individuals probably personally experienced the transition from life in a simple village to one in which they became citizens of a large ceremonial city, living amid great stone temples, plazas, and other monuments and initiated into the full ideology of the Maya world-view and life-view.[78]

We will never know exactly what happened to effect this transformation at Cerros, but the archaeological evidence suggests that this was a conscious reformulation of a

community: They apparently broke their pottery, jade ornaments, and other objects into small bits and scattered them over their simple houses, buried flowers and other talismanic objects in the rubble, and then proceeded to build a new, vastly larger community around and over the remains of their abandoned village. They began by building a temple at the water's edge (edges in the natural world were places of power in the Maya view[79]) and then proceeded to build a large complex of temples, plazas, pyramids, stairways, causeways, and other monuments—all laid out on the axis that connected this world to the other planes of reality (see earlier). Decorating many of these structures were stucco representations of the gods. Artisans made these by applying wet plaster to a wall and modeling the plaster, as well as some appliqué pieces, into extremely complex designs. Few if any of these designs were actual texts, but they can be read and they portray complex Maya religious ideas. On one temple, for example, representations of the Jaguar Sun God on a south-facing wall would, when lighted by the sun, present the sun "rising" on the east side of the wall and "setting" on the west side as the sun made its daily trek across the sky.

Despite all its beauty and magic, Cerros declined and all but disappeared as a community after only a few generations of glory—another example of a fundamental rhythm of Maya political history, in which small communities all over their world were rapidly transformed into great gleaming ceremonial settlements, home to tens of thousands of people, only to fade and die in a relatively short time. Where many of the greatest Old World cities, such as Memphis in Egypt and Warka in Mesopotamia, counted their histories of dominance in millennia, most Mesoamerica centers ruled their particular worlds for only 400–600 years at most.

The Classic Maya (A.D. 300–A.D. 900)

As we have seen in the case of the Harappan (Indus Valley) and 'Ubaid (Mesopotamian) ceramics, the spread of a distinctive, uniform artifact style over large areas often precedes rapid and fundamental cultural change. By about A.D. 1, a distinctively styled pottery was in use over the entire 250,000 km^2 of the Maya lowlands, and pyramids, platforms, and other large public buildings were being constructed at Dzibilchaltun, Uaxactun, and elsewhere. Between A.D. 300 and A.D. 900, Maya civilization reached its climax as hundreds of beautiful pyramids, temples, and other buildings were completed, and painting and sculpture flourished (Figure 13.15).

The first part of this period corresponds to the florescence of Teotihuacán, and the extent to which interactions between the Maya area and Teotihuacán occurred is not entirely clear. It is likely that this relationship included trade and alliances through marriages, while other contacts might have been military or shared/adopted aspects of religion or other ideological features.[80] After A.D. 600, when Teotihuacán rapidly began to lose influence and population, the Maya began a 300-year period of intense development. Hundreds of temple complexes were constructed and beautiful stone sculptures executed—many dated and inscribed.

Stephen Houston has used archaeological evidence and interpretations of Maya writing to estimate that most Maya polities were organized within areas of 70 km diameter or less—with most of the settlements within a day's walk of the major center.[81] These dispersed agricultural hamlets were grouped around small ceremonial centers that included a small temple pyramid and a few other stone constructions. Several districts of small

FIGURE 13.15 Some Classic period Maya sites.

ceremonial centers were congregated around the major ceremonial centers of Tikal, Uaxactun, Palenque, Uxmal, and other sites. By this time much of southern Mesoamerica featured beautiful, gleaming, white limestone pyramids and temples that were surrounded by marvelously executed stone sculptures and decorated with wall paintings.

Most centers also had ball courts made of stucco-faced rock. We know little about how the ball game was played.[82] Apparently the objective of the game, played by two opposing teams, was to try to get a rubber ball through a goal, probably not by throwing or batting it, but by using knees, elbows, or torso. The ball apparently could not be held in the hands when it was in play. As played by the Mesoamericans, this game was not a sport: The ball may have represented the sun, and the court and play were imbued with ritual and cosmological imagery. Losing players were sometimes executed. A relief panel from a ball court at El Tajín, in Veracruz, Mexico, shows the captain of the losing team being stretched out over a sacrificial stone while the victor drives a knife into his chest.[83] Maya representations of this ball game show a ball that, if the proportions are correct, would be larger than a basketball, but the Maya may have simply been exaggerating these representations to focus attention on the ball.

John Fox has argued that these ball courts were imbued with great and complex ideological and social significance and that they were the focus of feasts, competitions, and other rituals that provided "strategic settings for the negotiations of power relations. These

rituals centered on the redistribution of food and wealth and the symbolic renewal of agricultural fertility." He concludes that the ball courts, as places with "supernatural associations, served as [stages] for rituals in which political conflict was mapped onto and resolved through cosmological drama."[84]

TIKAL AND UAXACTÚN[85]

Tikal and Uaxactún, two great Classic Maya communities, provide in their individual elements and the history of their relationship to each other both an illustration of all the essential elements of Maya civilization and also an object lesson regarding the political history of early states in many parts of the world.

Tikal and Uaxactún are located about 40 miles south of El Mirador in the hot lowland jungles of the Petén, and much of their destiny was determined by the fact that they were built only about 12 miles apart: Much of the social interactions of the ancient world were determined by the distance a person could walk in a day or so—distances that linked cultures in conflict and cooperation—and Tikal and Uaxactún were less than a day's walk for both traders and soldiers. In the end, it was the soldiers whose efforts shaped most of the history of these communities.

Tikal originated at about 600 B.C. in the form of a small farming village set on a small hill in the middle of a swamp. Simple peasants these people may have been, but in one of the burials of this period a severed human head was placed next to the corpse of a man—perhaps an anticipation of the ritual decapitation of later Maya court rituals. Over succeeding centuries the people of Tikal built one of the greatest ceremonial centers of the New World. Temple I at Tikal (Figure 13.16), built about A.D. 700, captures much of the architectural brilliance of the Maya. In previous centuries the people of Tikal had covered the original village with a massive complex of temples, plazas, causeways—all the standard elements of Maya ceremonial centers, but realized in particularly beautiful form. Well-preserved tombs at Tikal included the bodies of kings and elites and rich offerings of pottery, food, stingray spines, and other goods. One of the richest tombs, Burial 85, contained a headless and thighless body wrapped in a cinnebar-impregnated bundle along with a marine shell and a stingray spine—common tools in ritual blood-letting. Schele and Friedel suggest that the Maya may have kept some of the bones of dead kings as relics and talismans; they also note that the bodies of kings and elites show that they were larger and more robust than the commoners of this community.[86]

FIGURE 13.16 Temple 1 at Tikal, Guatemala.

Computer simulations have been used to suggest that as many as 77,000 people may have lived in Tikal's immediate environs at its peak,[87] and probably 300,000 or more people lived in the entire 965 square miles that this center dominated.

Uaxactún's florescence generally paralleled that of Tikal, and by about A.D. 320 they were both the centers of large, powerful kingdoms. Then an extraordinary Tikal king named Great-Jaguar-Paw—Maya king names are based on the visual imagery of their name signs, a device used prior to the

phonetic decipherment of Maya signs in recent years—ascended the throne, and on January 16, A.D. 378, he conquered Uaxactún and installed a warrior from Tikal named Smoking-Frog as ruler. As Schele and Freidel note, before the ascension of Great-Jaguar-Paw, Maya warfare had a personal, almost formal quality: The Maya fought not to kill their enemies but to capture them, usually in hand-to-hand combat, so that the captured ruler and nobles could be carried back to the victorious city to be tortured and sacrificed in public rituals. But Great-Jaguar-Paw fought a war not of stylized, formalized combat aimed at taking captives for sacrifice for personal glory. Instead, he fought a war of conquest when he attacked Uaxactún: "This was war on an entirely different scale, played by rules never before heard of and for stakes far higher than reputations or lives of individuals. In this new warfare of death and conquest, the winner would gain the kingdom of the loser".[88] Great-Jaguar-Paw and his warriors not only physically killed the Uaxactún elites, but they also killed this community spiritually, cutting off the people from the guidance and protection of their ancestors and gods.

Tikal and Uaxactún were two of the most prominent Classic Maya communities, but there were many others of interest. Some of the greatest of all known Maya frescoes are at Bonampak, dating to the end of the eighth century A.D. Here, in several rooms of murals, the paintings tell a story of warfare, torturing of prisoners of war, and celebration. The carefully drawn murals, which depict mutilated bodies, marching bands, richly dressed figures, and men with weapons, convey an extraordinarily vivid sense of militarism, royalty, and religion. Mary Ellen Miller has argued that these scenes are in part a depiction of raids to take prisoners. Unfortunately, these murals have been obscured by seepage through the composite limestone, so that they are only clearly visible when they are splashed with water or kerosene.[89]

Themes of military triumph, the torture of captives, and the power of the ruling classes were also commonly depicted in bas-relief sculpture throughout the Classic period—even in the Valley of Oaxaca and the peripheral areas of the Maya sphere of influence. Individuals of presumably higher status were juxtaposed in stone carvings with persons of lower status, and differences of dress, bearing, and position sharpened the contrast. In some cases, representations of prisoners were carved into the facings of stone steps, so that they were trod on by the nobility—a not too subtle visual pun.[90]

MAYA POLITICAL ORGANIZATION

Scholars have advanced several different competing ideas about the political organization of the Maya. Joyce Marcus,[91] for example, has suggested that the various Maya centers constituted a political hierarchy, with some royal families at particular centers being more powerful and prestigious than others, but with these various dynasties linked through marriage alliances and other ties. Stephen Houston, however, challenges this view, suggesting that the "Maya Lowlands may have consisted not only of centralized polities, with control some 30 km in any direction, but of 'buffer zones' in which smaller polities switched allegiance at will while remaining essentially independent. . . . Yet other areas may have been politically 'neutral' centers of pilgrimage."[92]

However, emerging data suggest that Maya polities were far more varied than center-dominated regions surrounded by buffer zones. Edward Schortman and Patricia Urban,[93] for example, examined the relationship of Maya communities on the periphery of the

central Maya lowlands to centers such as Copán and Quirigua and concluded that these relationships varied depending on whether one considers politics, economy, or ideology. They suggest that despite the signs of great military domination by the most powerful communities in the central Maya area, no community could dominate to the extent that there was severe interregional exploitation in all dimensions of these relationships.

These and other views of how the Maya were organized politically raise fundamental questions about the nature of human societies in general. From the perspective of our own world and time we can look back and see the cultures of the world inexorably being linked closer and closer and ever more intensively. The United Nations, the European Union, and other political and commercial organizations now affect the flow of goods and ideas in even the most distant corners of the world. But this long-term evolutionary pattern has been a fitful one, with frequent reversals and great variations through time and space. And it is not clear that increasing complexity in these forms of organization are necessary or even "good." The various foreign conquests of the ancient Greek city-states, for example, are traditionally attributed to the Greeks' apparent inability to forge durable commercial, military, and political ties and unite against their aggressors, but this lack of unity did not seem to cripple these cultures intellectually—quite the opposite, in fact, when we consider their cultural contributions.

Basic geography certainly seems to explain part of the differences in level of political organization that we see in the ancient world. The Maya, like the Greeks, did not have the easy transport and communication channel that the Nile provided the ancient Egyptians, for example. And the Maya did not have the domestic horses and donkeys that allowed Middle Eastern societies to move goods, people, and information across a complex and vast social landscape. As discussed in chapter 7, ancient civilizations are in essence *ideas*: Maya ideology appears to have linked the many different centers that constituted this civilization, but there is little evidence that this ideological unity ever culminated in political or economic integration that extended beyond small regions.

MAYA WRITING

Maya writing is in many ways a more impressive achievement than their pyramids and temples. Fortunately, we have many Classic Maya texts in the form of inscriptions on stone and pottery, written in the same writing system as the "books" that followed 1,000 years later. These books consist of long strips of bark paper covered with a layer of plaster and folded like screens. Only a few of these "books" survive, but three are quite long and informative: the Dresden, Madrid, and Paris codices.

The sixteenth-century Spanish cleric Bishop Landa thought Maya writing (Figure 13.17) at first to be entirely alphabetic. Scholars quickly realized, however, that Maya writing was to be read in double columns, from left to right and from top to bottom, and by the turn of the last century Maya glyphs had been identified for the "zero" and "twenty" signs, the cardinal points of the compass, the basic colors,

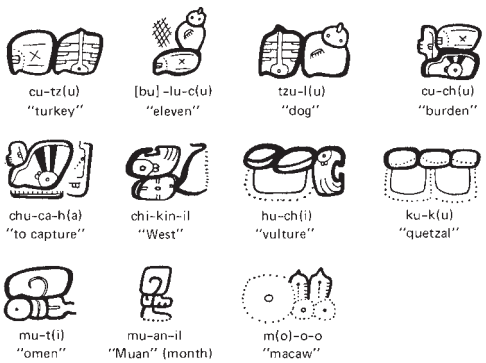

FIGURE 13.17 Some Mayan glyphs and the phonetic values assigned to them by Y. V. Knorosov. Research in the last two decades has shown that ancient Maya writing is a finely nuanced, beautiful orthography that probably records the entire spoken language of these people.

Venus, the months of the year, and the "Long Count," the system of reckoning by which the Maya figured how many years had elapsed since the beginning of their time.

Unlike the case with Egyptian hieroglyphs and Mesopotamian cuneiform, Maya writing had to be deciphered without the aid of "parallel scripts"—that is, the expression of the same text in two different languages, one of which is known.[94] As noted in chapter 8, *phoneticization* is a key step in the evolution of a written language, for once the elemental sounds of the spoken language are represented by abstract characters, the complete language can be written. The Russian linguist Yuri Knorosov was the first to demonstrate that Maya writing was indeed a phonetic system, and since his initial translations, many inscriptions have been almost entirely translated.[95] Building on the work of Tatiana Proskouriakoff, Henrich Berlin, and Yuri Knorosov, a new generation of Mayanists has made great progress: David Stuart, Peter Mathews, Steve Houston, Karl Taube, James Fox, John Juteson, and Michael Coe are just some of the scholars of the past several decades whose combined efforts have shown that ancient Maya writing is a finely nuanced, beautiful orthography that probably records the entire spoken language of these people.[96]

Maya script is somewhat similar to Egyptian hieroglyphs (chapter 9) in that it includes a mixture of signs, some representing whole words or ideas, others expressing syllables, sounds, and determinatives that clarify meanings.

In the Middle East the first writings are almost unrelievedly economic, but in Mesoamerica the surviving documents are primarily calendrical and historical, recording, for example, when a temple was begun, when a king defeated a rival, and what lands were under the control of the state. About the dull details of maize and men, they seemed much less concerned.[97] Recently, however, the inscriptions on hundreds of ceramics have been translated, and they do provide a great deal of economic information. Michael Coe, Steve Houston, and others[98] have shown that these texts recorded such information as the class of vessels a particular pot belonged to, its methods of adornment, the contents (e.g., chocolate or flavored maize gruel[99]), and occasionally the person who made or owned the vessel and its contents. As Houston also notes, the inscribed dates for the birth, accession, death, and other primary events in the lives of elites offer at least a speculative basis for estimating basic anthropological data about life spans. Justifying the fulsomeness of inscriptions on headstones and mortuary monuments, Samuel Johnson said, "In lapidary inscriptions a man is not upon oath," and it may be that there is a fictional element in the life-histories recorded for elite Maya. But the inscriptions fit rather well with some anthropological data that indicate that the Maya rarely lived past 55-65 years.[100]

The Maya were sophisticated mathematicians. They used a base-20 system in which they expressed the quantity 39, for example, as 19 numbers after 20, and the value 60 as three 20s.[101] They discovered the concept of zero and used a place-value notation system that allowed them to express numbers beyond 100,000,000. They had no way to express fractions in mathematical notation, but they computed the length of the solar year to 365.242000 days, compared to our own Gregorian calendar figure of 365.242500 days (the true value is approximately 365.242198 days). The Maya used two calendars. One was the familiar solar calendar in which a year equaled 365 days, but whereas we intercalate an extra day every four years to compensate for the year being actually 365.24 days long, the Maya blithely ignored this and let the seasons creep around the calendar. And in contrast to our system of 12 months of from 28 to 31 days, the Maya had 18 named months of 20 days each, with 5 days, which were considered highly unlucky, added to the end.

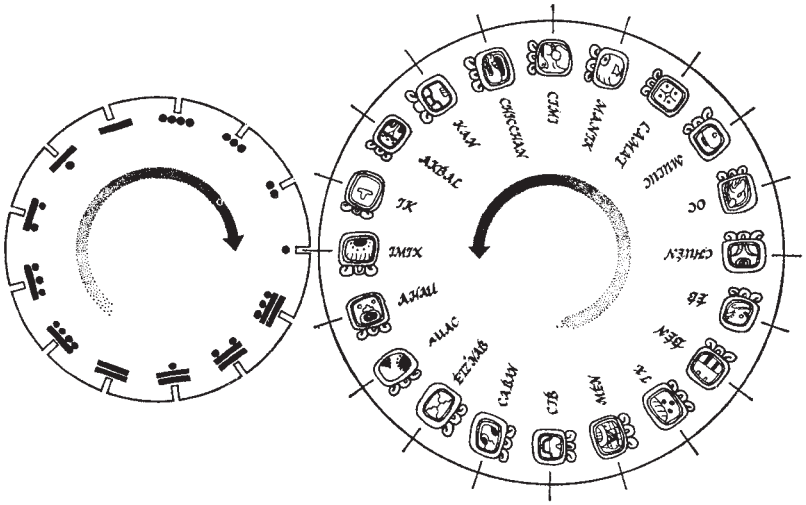

FIGURE 13.18 One of the Maya calendars was calculated from the correlation of the numbers from 1 to 13 and 20 named days.

The second calendar (which appears to have been in use by the Olmec, a millennium or so prior to the Maya) involved a 260-day year, composed by intermeshing the sequence of numbers from 1 to 13 with 20 named days (Figure 13.18). These two calendars ran parallel, and thus every particular day in the 260-day calendar also had a position in the solar calendar. The calendars' permutations are such that each named day would not reappear in the same position for 18,980 days, or 52 of our solar years. Every day on the Maya calendar had its omens, and activities were rigorously scheduled in accordance with their astrological significance.

In some of the later adaptations of the Maya calendar, it appears that people were named after the day on which they were born and could not marry if they shared a numerical coefficient (e.g., Mr. "8 deer" could not marry Ms. "8 flower").[102] The Maya were thoroughly attuned to these calendrical cycles and used them to schedule many aspects of daily life and ritual. The Maya's "zero day," from which they counted time (and which they perhaps believed was the date on which the world was created) was August 13, 3114 B.C. Contrary to some speculations, the Maya apparently did not believe the world will end on December 24, A.D. 2011, but this date does mark the point at which the Long Count will return to the symmetry of its beginning. Pacal, king of Palenque, predicted in one of his inscriptions that the eightieth Calendar Round of his accession will be celebrated on October 15, A.D. 4772—a man who took the long view, indeed.[103]

The End of the Classic Maya (C. A.D. 760–A.D. 1100)

For decades scholars have debated the "collapse" of Maya civilization. It is in part a Western view of the world to see periods of rise and collapse in nations' histories and to search for causes. But the collapse of states, ancient and modern, never seems easily explained, and this is especially true of the Maya.

"Collapse" in the sense of what happened to the Maya has many meanings, since hundreds of thousands of people who spoke Mayan and were the direct genetic descendants of the classic first millennium A.D. Maya were there to greet the first Europeans on their arrival in the sixteenth century. And as Andrews and others have noted, the "collapse" of the Maya may be more apparent than real. A decline in temple construction and in the production of lavish goods does not necessarily mean societal collapse. As we noted in the discussion of changes in Egypt and elsewhere in the ancient world, declines in certain kinds

of "waste" seem to be more indicative of a changing economic basis and administrative structure than the destruction of a culture. Had the Spanish not arrived when they did, the people of the Maya areas might have been reformulated by time and circumstance into a larger, more powerful, nation-state.

But Classic Maya culture did change—it lost many of its most important elements, and many formerly great communities were abandoned. One of the last kings of the Maya, Can-Ek, ruler of Itzá, met Cortés as he and his expedition crossed the Petén in A.D. 1525. But Maya culture was in decline long before that. As Anthony Andrews notes:

> In the eighth and ninth centuries the Maya area was a densely populated mosaic of large and small city-states ruled by regal and ritual dynasties who oversaw the great achievements of what we now call Classic Maya Civilization. These polities were also crossing the threshold of their demographic and ecological limits, which when coupled with managerial shortcomings, warfare, and the breakdown of political structure, led to a spectacular process of societal collapse. Cities throughout the southern lowlands were abandoned—some quickly. . . . Small populations survived in pockets . . . but for the most part they had severed their ties with the Classic past.[104]

Until about A.D. 910, the Maya usually accompanied any new monumental building with a stone stela engraved with the date of its construction, and thus we know that while many buildings were completed during the eighth and ninth centuries A.D., by A.D. 889 only three sites were under construction, and by about A.D. 900, construction seems to have ended for good. On the basis of ceramics and other information, we know that depopulation of the countryside and centers apparently followed quickly.

We know from inscriptions at Palenque, Dos Pilas, and other sites that the ninth century A.D. was a time of intense warfare and conquest, but there were also sporadic attempts to reestablish control and build communities in the ancient traditions. But the last king to erect a *tree-stone*, a traditional royal inscription to celebrate the end of a calendrical cycle, did so on January 20, A.D. 909, and after that the Maya traditions in the southern lowlands contracted and all but disappeared in the next few centuries.

But in the northern lowlands the ninth and tenth centuries A.D. were a time of great expansion. Cities such as Chichén Itzá established empires that transcended in size and power those of the earlier Classic period. Despite these periods of regional florescence and empire, however, Maya writing fell out of use and, with it, perhaps, the central ideology of the Maya world—the complex ideas about the universe and human affairs that melded these people into a culture and inspired them to build their civilization.

Many factors have been suggested as causes of the collapse, and also the development, of Maya civilization, and new interpretations sporadically appear. Not surprisingly, many involve the ecology of the Maya homeland, which seems at first glance to be a major barrier to cultural evolution.

A traditional archaeological approach to explaining the development of something is to imagine a set of problems to which the development is a solution. We might ask, given the Maya environment, under what conditions would it have been advantageous to organize into larger political and social units? Perhaps the answer lies in the necessity of local exchange to meet the threat of drought, disease, or disturbance. Rainfall is quite variable within the Maya area, and many other factors can adversely affect each community's agricultural system. Because the communities were all so similar in the crops they grew and

their techniques for growing them, a major drought, such as happens in this area every 8–10 years, could result in the starvation of many people in hundreds of hamlets. But this could be avoided if many villages established exchange networks that spread the risks. Each year earthquakes, droughts, disease, floods, warfare, or some other combination of calamities might wipe out some sectors of the subsistence system, but if a village belonged to an organization that included many hamlets, it could get help or give help, depending on its fortunes. Population-control regulators were very important, hence the monumental construction projects in this most unlikely of places.

Whatever was at the root of the Maya cultural evolution, the collapse of this culture poses equally interesting questions. We have argued that the evolution of Maya society could probably be tied to the necessity of spreading the "risk" of life in this area by integrating many different settlements under a centralized authority. But by the same token, such an integrated system might eventually have encountered a series of catastrophes and internal problems that were spaced so closely together and in such a sequence that their effects could not be successfully fought off. "Murphy's Law" stipulates that if anything can go wrong, it will. This is especially true for cultural systems spanning millennia. Earthquakes, disease, warfare, drought, crop disease—all have certain periodicities, and unfavorable conjunctions must necessarily arise if the system is sufficiently long-lived.

For the Maya lowlands, accumulating data suggest that drought played a significant role in the demise of much of the Classic Maya world.[105] As we discussed earlier, the lowlands are characterized by seasonal rainfall, with about 90 percent of the rain falling in the interval between June and September.[106] Exacerbating this ecological factor is the rarity of surface water —water dissolves the limestone substrate in the Yucatan, forming caves and underground rivers. Maya settlements, whether large or small, had to build reservoirs to trap rainfall or, occasionally, where possible, dig into the bedrock to reach underground sources of water. Throughout this period, dry conditions were always more prevalent in the northern lowlands compared to the south. If less rainfall fell during the wet seasons for an extended period of time, then reservoirs would not be sufficiently full to support both the water needs of people and the water needed for irrigation and crop growing.

Richardson Gill[107] recently suggested that three major periods of drought occurred during the latter part of the Classic Maya period: 760 to 810 A.D., around 860 A.D., and about 910 A.D. These would have differentially affected Maya settlements, with sites in the southern lowlands being the earliest to suffer the consequences of reduced rainfall. This periodicity of major droughts has recently received independent confirmation from climatic data from sediments off the shore of Venezuela.[108]

While major droughts likely were an important factor, the demise of the Classic Maya should be seen as a period when people began to restructure their society and culture to meet various challenges, such as failure of rulership, increasing populations, and warfare, as well as major droughts.[109] Restructuring often results in archaeological signatures that are different from what came before, and thus appear to be striking changes in the archaeological record. We see these most dramatically in the southern Maya lowlands, where the Classic Maya "disappears." It is now clear, however, that societal adaptations among the Maya were quite variable. Chichén Itzá (see earlier) in the northern lowlands is a good case in point. The great droughts occurred here, but Chichén Itzá grew in power, prestige, and influence. Bruce Dahlin[110] has provided one explanation for this pattern, suggesting that the northern lowlands had access to a much wider diversity of resource zones. Chichén Itzá

capitalized on this access by intensifying trade networks and also through conquests. Chichén Itzá also may have benefited from the endemic warfare between Tikal and Calakmul in the southern and central lowlands. Emphasis on obtaining a diversity of resources, especially those related to subsistence, and providing labor in the form of the military and services related to trade, led to some restructuring of society, particularly in political and economic organization. Chichén Itzá is now viewed by scholars as the last of the Classic Maya capitals—rather than as a phenomenon of the Postclassic period—not reaching its demise until sometime between A.D. 1000–1100, long after the abandonment of Classic Maya centers in the southern lowlands.[111]

Global explanations for societal changes are rarely satisfactory. In the case of the Maya, regional variability in ecology, settlement, population, aptitude of individual rulers, droughts, warfare, and a host of other factors all appear to have contributed in varying degrees to the end of the Classic period. As we have seen, however, this demise did not occur over all the Maya region simultaneously, but took place over some 250 years.

POSTCLASSIC MESOAMERICA (A.D. 900–A.D. 1521)

As Maya political power in the lowlands was beginning to wane, much of highland Puebla, Mexico, and Hildago was apportioned among several competing power centers. One group, the Toltecs, began to dominate the Valley of Mexico after about A.D. 900. According to Aztec legends (the Aztecs claimed descent from the Toltecs), the Toltecs came to central Mexico from northwestern Mexico. The desert plateaus of northwestern Mexico were for many millennia the home of the *Chichimeca*, groups of nomadic hunter-foragers, and it is possible that some of these people migrated south and did, in fact, join with (or displace) local cultures to produce the Toltec culture. One of the major centers of the Toltec polity was at Tula, just north of the Valley of Mexico. Shortly after about A.D. 900, the Toltec built two stone pyramids and a ball court at Tula. On one of the pyramids they placed a temple dedicated to the Serpent god, Quetzalcóatl. On top of the pyramid (which is just over 10 m high) they placed stone statues of warriors (Figure 13.19), which are about 4.6 m high, as supports for a temple, and these figures continue to dominate the site. The base of the pyramid is decorated with reliefs of prowling jaguars and coyotes and eagles eating hearts.[112]

The Toltecs established trade and military outposts in many areas of northern and western Mexico and exported metal, gemstones, and other commodities as far north as Arizona and New Mexico. To the south, the Toltecs interacted with Chichén Itzá.

Eventually, Toltec power weakened. Under the onslaught of the invading Chichimec from the north, the Toltecs broke up into many smaller, competitive groups. Tula itself was almost entirely destroyed by invaders at about A.D. 1156. Succeeding centuries saw the rise of various other cultural traditions in central Mexico, such as the Tarascan state.[113] Chichén Itzá also went into a period of decline, to be replaced by a loose confederation of provinces, called the *League of Mayapán*, and the island of Cozumel, on Yucatan's east coast, which was a major trading center between A.D. 1250 and the arrival of the Spanish in A.D. 1519.[114] But by the time of the arrival of the Spanish, the community at Mayapán had been abandoned and the Maya areas were a welter of small chiefdoms at war with one another.[115]

The Aztec (c. A.D. 1150–1521)

FIGURE 13.19 Toltec warrior statues from Tula, Mexico.

One of the last tribes to invade central Mexico from the north and west was the Aztecs. Aztec histories and legends, as recorded by the Spanish, tell of their arrival in the Valley of Mexico as rag-tag foragers and primitive agriculturalists who at first were forced by the established residents of the valley to live in the swamps around the lake, subsisting on flies, snakes, and vermin. According to legend, rival political groups in the valley enlisted the Aztecs in their campaigns but avoided other contacts with them because of the Aztecs' predilections for human sacrifice and other barbarisms. At war with various groups, the Aztecs were forced to take refuge on islands in the lake where, according to legend, they built their first city, Tenochtitlán (Figure 13.20). In time Tenochtitlán grew to become a massive complex of pyramids, courts, and other buildings (now largely buried beneath the streets of Mexico City).

As allies of the Tepanec kingdom of Atzcapotzalco, the Aztecs conquered many of the surrounding cities, and at about A.D. 1427 they turned on their erstwhile allies and through savage warfare brought most of central Mexico under their control. Military expeditions conquered peoples all the way to the Guatemalan border, and garrison towns were established from the Pacific Coast to the Gulf of Mexico. Considerable investment in monumental construction characterized the capital at Tenochtitlán, but outside the capital, as Mary Hodge points outs, "the Aztec Empire has been described as nearly 'invisible' because it did not invest in roads, administrative buildings, or walls."[116]

Although the Aztecs are usually associated with militarism, they also created an impressive civil and commercial administration. Between about A.D. 1300 and A.D. 1520 they drained large areas of the Valley of Mexico, transforming them into productive agricultural plots. Michael Smith has argued that the Valley of Mexico settlement pattern during Aztec times was a hierarchically arranged marketing system of products with intense local specialization in goods and services.[117] Many commodities, including salt, reeds, fish, stone, cloth, various crops, ceramics, gold, and wood, were exchanged among hundreds of

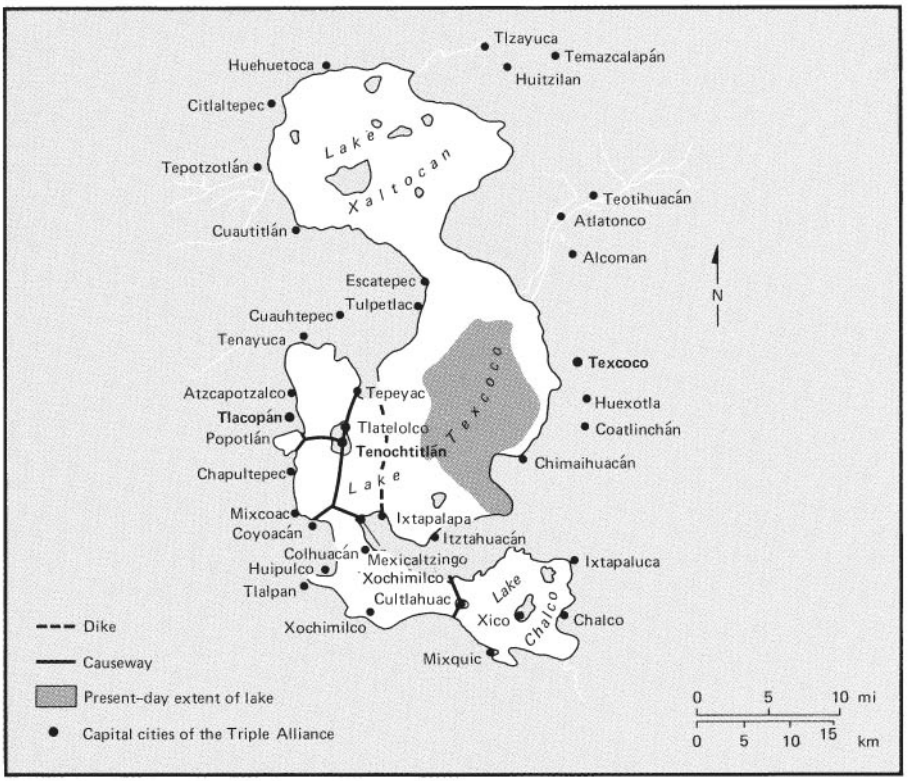

FIGURE 13.20 The most important Aztec cities were built around the lake that used to cover part of the Valley of Mexico. The lake margins were intensively farmed, and boats conveyed great quantities of food and craft products among these cities.

communities (Figure 13.21). In fact, the improbable location of Tenochtitlán—on an island in the middle of the lake—is probably best understood in terms of its central role in these redistributive networks.[118] In A.D. 1519 Tenochtitlán is estimated to have had about 200,000–300,000 inhabitants, five times the population of London at that period, and there were many other large cities within the Aztec domain.[119] Many cities had broad avenues, causeways, temples, pyramids, and other large buildings, often interspersed with gardens, courtyards, and large markets.

It is estimated that between one and two million people lived in the Valley of Mexico in late Aztec times.[120] The lake provided great and reliable quantities of food in the form of fish, waterfowl, and salamanders. In the southern areas of the valley's lake system, maize, beans, squash, tomatoes, and other crops were grown on *chinampas*, long rectangular plots of ground created out of the lake bed by piling up layers of aquatic weeds, mud, human feces, garbage, and other materials. According to ancient documents, the Aztecs initially made the chinampas by braiding grass and reeds into thick mats that could float, and thus they were able to float entire fields from one place to another—an agricultural system unparalleled in the ancient world.[121] The Aztecs and their successors planted trees, including the *ahejote* (a kind of willow), that eventually anchored most plots. Farmers who

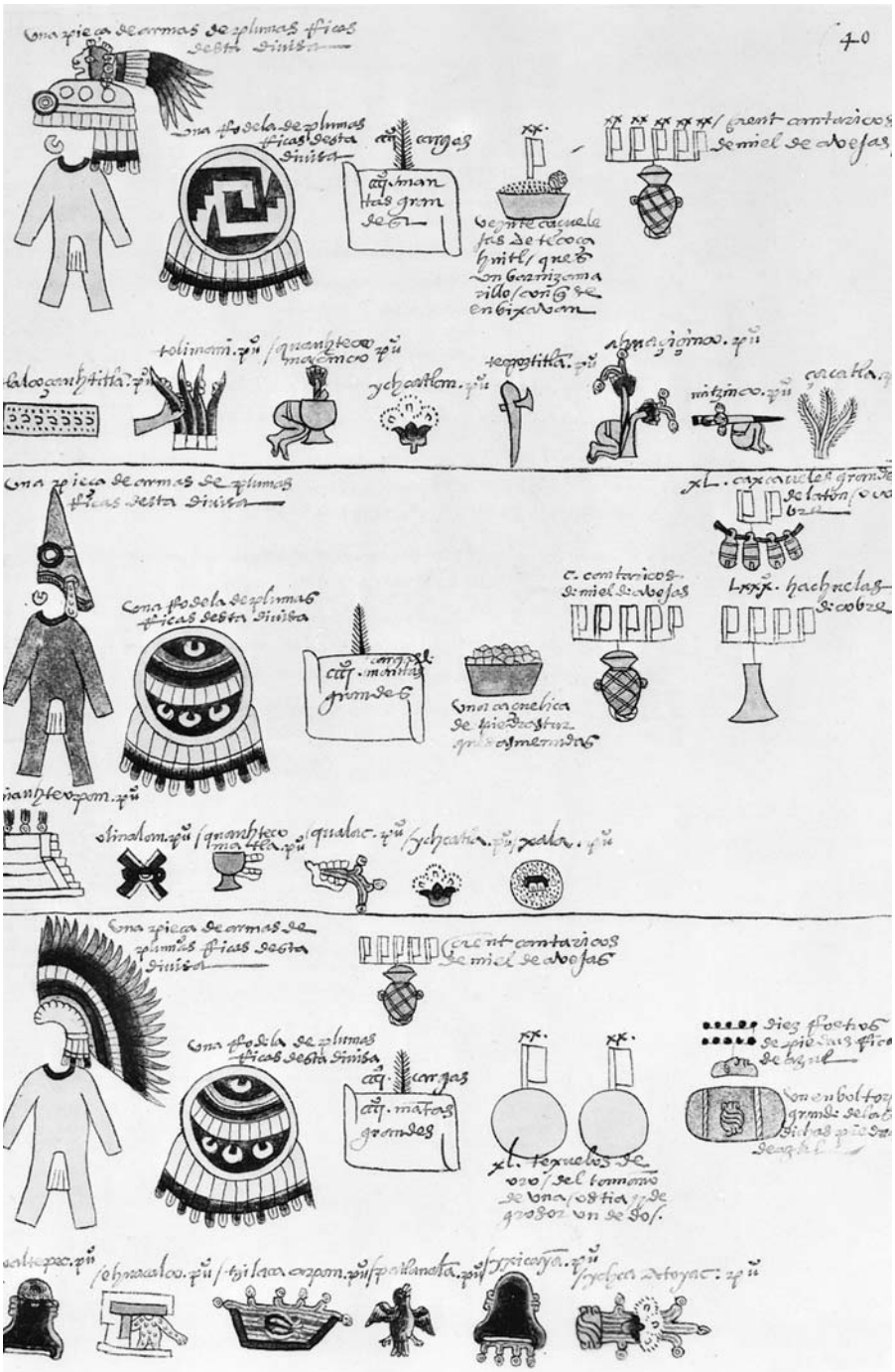

FIGURE 13.21 A Mexican tribute list (from the Codex Mendoza) describing the tribute paid to the government by towns in Guerrero Province. Among the commodities described are uniforms, shields, jade, gourds, sage, and amaranth.

still cultivate chinampas water the plots until they are the consistency of pudding and then use a rake to grid them into squares about an inch on a side. Seeds are placed in each square and covered with organic material to provide a greenhouse effect, and once the seedlings are at the proper size they are transplanted to other fields. As many as four crops per year can be grown on these exceptionally fertile plots of land.

The Aztecs were organized into a highly stratified class system headed by a divine king. Beneath the king were the nobles, the *pillitin*, all of whom belonged to the royal house, while the great mass of the populace were commoners who were organized in large clans, called *calpulli* ("big house"). The *calpulli* were the basic units of Aztec society. Each was composed of several lineages, totaling several hundred people, one of whom was designated the *calpule*, or leader. Members of a *calpulli* usually lived in the same village or ward, fought together as a unit if drafted for war, held and worked land in common, paid taxes as a unit, and worshiped at the shrine maintained by the *calpulli*. The leaders of the *calpulli* were the direct link between the imperial government and the people. There was also a class of professional merchants called *pochteca.*

The *calpulli* differed from one another in social rank. There was some social mobility for individuals—usually by virtue of extraordinary service to the state in warfare, trade, or religion. At the bottom of the social scale were the landless peasants and slaves, who worked the fields, performed other menial tasks, and were sacrificed in enormous numbers to various gods.

The Aztecs believed that the present world was just one in a succession of creations by the gods and that constant effort was required to forestall the extinction of the sun and the utter disappearance of humanity. Human blood was an essential part of the ritual (Figure 13.22) whereby the end of the world was postponed, and each time a human heart was ripped from a sacrificed person, another small step was taken toward prolonging the daily rebirth of the sun.[122] At times long lines of sacrificial victims snaked down the steps of the major pyramid mounds, on the top of which priests spent hour after hour engaged in the bloody process of heart removal. After the heart and blood had been offered to the gods, the body was thrown down the steps of the pyramid and subsequently flayed and then, perhaps, eaten. Other victims slated for sacrifice were pitted in gladiatorial contests, or beheaded, or drowned, or cast into fires. The Spanish conquistadors may have exaggerated the numbers of people sacrificed, but it seems inescapable that the Aztecs annually killed many tens of thousands and perhaps hundreds of thousands of people. This slaughter was accepted by the common people; in fact, it seems to have been widely supported. All war captives knew their fate, and it was an act of honor to accept a sacrificial death. In addition, young men were selected each year to lead a life of luxury in which they were surrounded by complaisant young women and feasted on the best of food, realizing full well that at the end of the year they would be sacrificed. In addition, parents throughout the land turned over infants and children to government officials for use in annual sacrificial rites. One sixteenth-century (apparently) eyewitness account of the ritual execution of a woman who played the role of the goddess Uixtociuatl gives us a sense of what these rites may have been like:

> And after they had slain the captives, only [then] Uixtociuatl ['s impersonator] followed; she came only at the last. They came to the end and finished only with her.
>
> And when this was done, thereupon they laid her down upon the offering stone. They stretched her out upon her back. . . . They laid hold of her; they pulled and stretched out

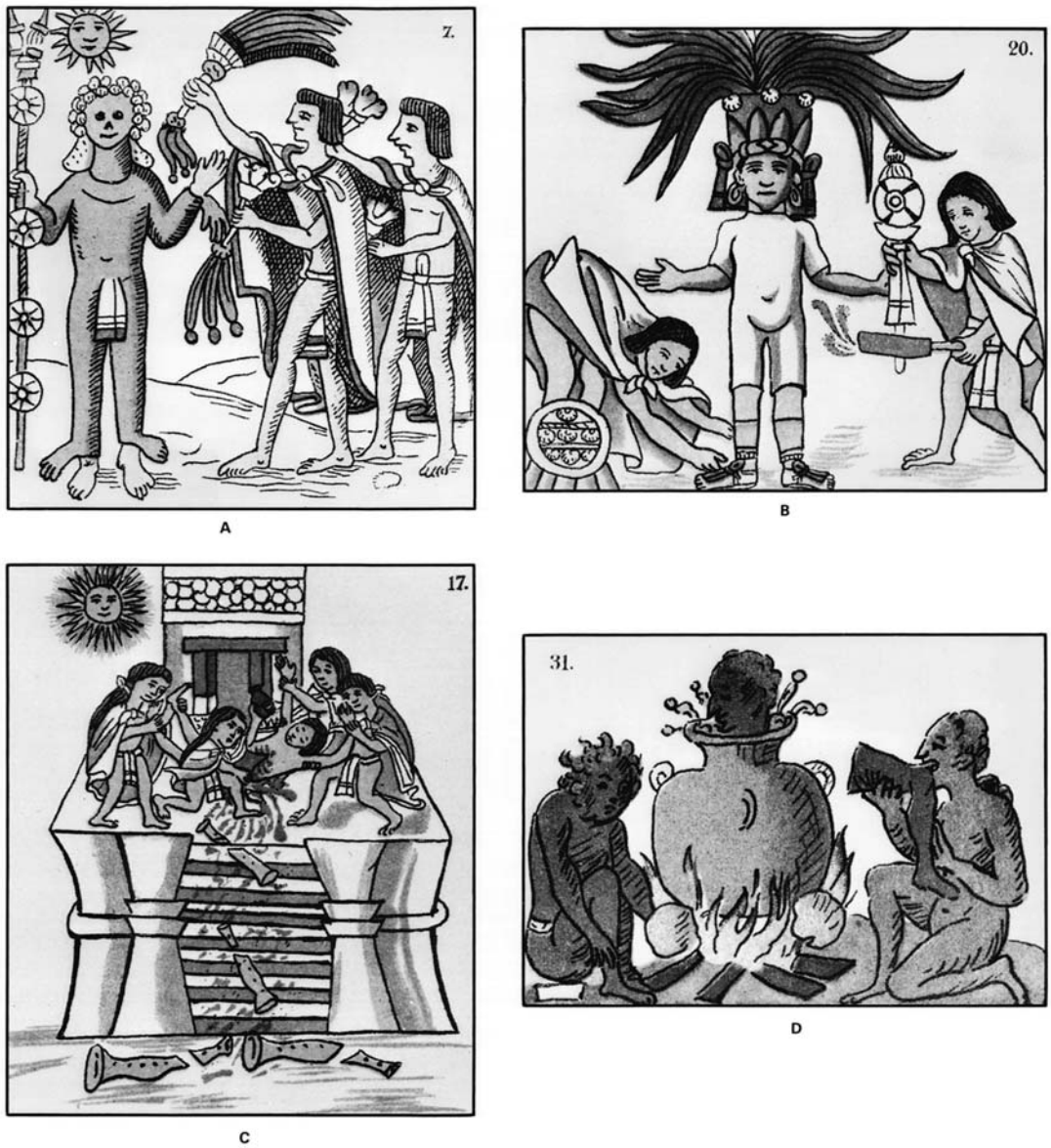

FIGURE 13.22 These early drawings (from the Codex Florentino) describe the sequence of ritual human sacrifice. (**A**) The priest is dressed in the skin of a sacrificed person; another person (**B**) was given a shield, mirror, and other ritual items and played the part of the god Tezcatlipoca; the individual was then sacrificed (**C**) and eaten (**D**).

her arms and legs, bending [up] her breast greatly, bending down her head taut, toward the earth. And they bore down upon her neck with the tightly pressed snout of a sword fish, barbed, spiny, spined on either side.

And the slayer stood there; he stood up. Thereupon he cut open her breast.

> And when he opened her breast, the blood gushed up high; it welled up far as it poured forth, as it boiled up.
>
> And when this was done, then he raised her heart as an offering [to the god] and placed it in the green jar, which was called the green stone jar.
>
> And as this was done, loudly were the trumpets blown. And when it was over, then they lowered the body and the heart of [the likeness of] Uixtociuatl, covered by a precious mantle.[123]

Many of the sacrificial victims, as well as soldiers who died in battle, people struck by lightning, and mothers who died in childbirth, were thought to spend eternity in various paradises, cosseted with the pleasures of this world and the next.

With its emphasis on death, blood, and cosmic cataclysm, it is little wonder that Aztec theology struck the Spanish as somewhat heterodox (Figure 13.23). Even anthropologists, renowned for their cultural relativism, are impressed with the violence of Aztec religion. But human sacrifice is an old and recurrent theme in the evolution of complex cultures: In Mesopotamia, China, North America, and most other places, examples of warfare and slaughter can be found that equaled that of the Aztecs in form, if not in intensity. Also, as noted at the beginning of this chapter, the Europeans probably exaggerated the violence of Mesoamerican life, for the Europeans had a political agenda well-served by depicting the Native Americans as savages.

But human sacrifice and blood-letting *were* important elements in Mesoamerican cultures, and it is an interesting anthropological problem to explain why these acts, so repugnant to the modern mind, became so celebrated by the ancients of Mesoamerica, China, Mesopotamia, and elsewhere. It is not difficult to posit "functional" explanations that are plausible, if largely untestable. Michael Harner, for example, has argued that the key to Aztec sacrifice is the contribution the cannibalism of sacrificial victims made to the Aztec diet.[124] Mesoamerica lacks any large domesticated animals that could have been effectively integrated with Aztec agricultural strategies, and this animal protein and fat deficiency may have been compensated for by cannibalism. But the Mesoamerican diet is generally a rich one, with a nutritionally adequate basis of maize, beans, squash, fish, frogs, birds, deer, dogs, and other animals. This diet was sufficient to have supported long-term population growth and the needs of hundreds of thousands of people who lived around what is now Mexico City. There is little doubt that the Aztecs engaged in cannibalism, since several sixteenth-century Europeans described it as it happened, but we have insufficient evidence with which to evaluate Harner's thesis.

FIGURE 13.23 The supreme Aztec divinity was Tezcatlipoca, whose skull is modeled here in jade and crystal.

Despite their death cults, the Aztecs in everyday life were a colorful and in some ways engaging people. The Spanish remarked on their love of flowers and natural beauty, and their poetry contains many references to the joys of the natural world. The Spanish were amazed to find that Aztecs bathed their entire bodies most days—a level of personal cleanliness

that would have struck even most eighteenth- and nineteenth-century Europeans as bizarre and unhealthy.

Dress for men and women often consisted of a loincloth and a woven cloak, and brightly colored cotton fabrics were used for ornamentation. In the countryside women often went about naked to the waist, but middle- and upper-class urban women wore decorated blouses.[125]

The diet of the Aztecs centered on maize, beans, squash, and tomatoes, although the wealthier people could eat various fruits, nuts, meats, and other exotic foods. The relatively unvaried diet was enlivened with peyote and other natural hallucinogens and by tobacco and *pulque*, a cactus-derived alcoholic drink with impressive powers to revive the weary.

THE SPANISH CONQUEST

> The captain Alonso Lopez de Avila . . . captured during the war . . . a young Indian woman of lovely and gracious appearance. She had promised her husband, fearful lest they should kill him in the war, not to have relations with any other man but him, and so no persuasion was sufficient to prevent her from taking her own life to avoid being defiled by another man; and because of this they had her thrown to the dogs.[126]

The melancholy history of the conquest of Mesoamerica by Spanish adventurers in the early sixteenth century was recorded in detail by the Spanish themselves. Accounts on both sides of this meeting of worlds provide a fascinating look at the clash of cultures.[127]

In A.D. 1519 Corte's left Cuba with a sizable force of ships, men, armaments, and horses and sailed to the coast of Veracruz. With the advantage of diplomacy with non-Aztec groups, horses, cannons, war dogs, and an extraordinary esprit de corps, Cortés and his men were able to march directly into the Aztec capital at Tenochtitlán, where they were at first welcomed by the Aztec king, Moctezuma, who was under the delusion that the Spanish were gods returning to their ancestral homeland. He could hardly have been more wrong. Within a short time, the Spanish had kidnapped and jailed him and were forming alliances with local non-Aztec peoples, who were only too happy to help the Spanish displace the Aztecs. Moctezuma and many of his people were eventually killed in a fierce battle at Tenochtitlán, after which Aztec resistance stiffened; but within a few years the Spanish had captured most of the Aztec heartland. In 1524 they hanged the last Aztec king, and thereafter Spanish domination of Mexico was rapid. When the Spanish first arrived, the population of the heartland of the Aztec empire was probably more than a million; 150 years later it probably held fewer than 70,000 people—the survivors of war, European diseases such as smallpox, slavery, and the other plagues of this epic clash of cultures.

SUMMARY AND CONCLUSIONS

As in all the other cases of early cultural complexity we have considered, it is clear that aspects of economy, ecology, and demography explain much of what happened in the New World. The Olmec, Teotihuacán, Oaxacan, Maya, Aztec, and other Mesoamerican societies appeared where they did and not in Newfoundland or Nebraska because of the exceptional

productivity of the South Gulf Coast, Oaxaca, and other areas of Mesoamerica, given a simple farming technology and the maize-beans-squash complex.

We see in Mesoamerica, too, the stimulus to development provided by irrigation agriculture, environmental circumscription, interregional exchange, and other factors.

Once we get beyond an ecological level of analysis, we encounter a welter of variability in sociopolitical forms, economic histories, settlement patterns, and the other elaborations in these complex societies. In the absence of sufficient written documents, it is difficultto apply Marxian or other sociopolitical models to Mesoamerica. So we are left with a case of cultural evolution that is so striking a parallel to what happened in, for example, Mesopotamia, that we must consider both areas examples of a single developmental pattern.

From a nonscientific point of view, in some ways the most interesting thing about early Mesoamerican societies is the psychological contrast they make with ourselves. We may be sure that the average Olmec town of 500 B.C. had a full range of human personality types and an agricultural existence that we can all imagine. But in their cosmologies, world-views, and life-views, ancient Mesoamericans were profoundly different from the Spanish who first met them. Indeed, their views were probably profoundly different from those of any of the other western European traditions.

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NOTES

1. Bernal Diaz del Castillo, *The Discovery and Conquest of Mexico*, pp. 190–191.
2. Reviewed in Trigger, *Early Civilizations: Ancient Egypt in Context.*
3. Harner, "The Ecological Basis for Aztec Sacrifice."
4. Kirkby, *The Use of Land and Water Resources in the Past and Present Valley of Oaxaca, Mexico.*
5. Fritz, "Are the First American Farmers Getting Younger?"
6. See, for example, Joyce and Henderson, "Beginnings of Village Life in Eastern Mesoamerica."
7. Flannery, "The Early Mesoamerican House," pp. 13–15.
8. Flannery and Winter, "Analyzing Household Activities," p. 36.
9. For example, Diehl and Coe, "Olmec Archaeology." Recently, Blomster et al., "Olmec Pottery Production and Export in Ancient Mexico Determined Through Elemental Analysis," have provided some support for the notion of Olmec priority. Not all Mesoamerican researchers agree, however. See Stoltman et al., "Petrographic Evidence Shows That Pottery Exchange Between the Olmec and Their Neighbors was Two-Way," for a different viewpoint.
10. A good review of this can be found in Flannery and Marcus, "Formative Mexican Chiefdoms and the Myth of the 'Mother Culture.' "
11. Pelzer, *Pioneer Settlement in the Asiatic Tropics.*
12. Sisson, "Settlement Patterns and Land Use in the Northwestern Chontalpa, Tobasco, Mexico: A Progress Report."
13. Coe and Diehl, *The Land of the Olmec: The People of the River.*
14. Rust and Sharer, "New Settlement Data from La Venta."
15. Murdy, "Congenital Deformities and the Olmec Were-Jaguar Motif."
16. Justeson and Kaufman, "A Decipherment of Epi-Olmec Hieroglyphic Writing."
17. Kelley, "The Decipherment of Epi-Olmec Script as Zoquean by Justeson and Kaufman," p. 31.
18. "Olmec Origins of Mesoamerican Writing."
19. Sanders, Parsons, and Santley, *The Basin of Mexico: Ecological Processes in the Evolution of a Civilization.*
20. Nichols, "A Middle Formative Irrigation System Near Santa Clara Coatitlan in the Basin of Mexico."
21. Parsons, "The Development of a Prehistoric Complex Society: A Regional Perspective from the Valley of Mexico," p. 91.
22. This section relies heavily on Kowalewski's review article, "The Evolution of Complexity in the Valley of Oaxaca."
23. Flannery, "Contextual Analysis of Ritual Paraphernalia from Formative Oaxaca," p. 335; Flannery and Marcus, "Evolution of Public Building in Formative Oaxaca," in *Cultural Change and Continuity.*
24. Whalen, "Zoning Within an Early Formative Community in the Valley of Oaxaca."
25. Whalen, *Excavations at Santo Domingo Tomaltepec: Evolution of a Formative Community in the Valley of Oaxaca, Mexico.*
26. Winter, "The Archaeological Household Cluster in the Valley of Oaxaca."
27. Flannery and Marcus, *Early Formative Pottery of the Valley of Oaxaca, Mexico.*
28. Despite some evidence to the contrary (Coe, "The Olmec Style and Its Distribution").
29. Blanton et al., *Ancient Mesoamerica, A Comparison of Change in Three Regions*, pp. 180–183; Flannery, "The Olmec and the Valley of Oaxaca: A Model for Inter-Regional Interaction in Formative Times"; Grennes-Ravits and Coleman, "The Quintessential Role of Olmec in the Central Highlands of Mexico"; Flannery, Marcus, and Kowalewski, "The Preceramic and Formative of the Valley of Oaxaca."
30. See, for example, the works of William Sanders (Sanders, Parsons, and Santley, *The Basin of Mexico: Ecological Processes in the Evolution of a Civilization*), Jeffrey Parsons (Parsons, *Prehistoric Settlement Patterns in the Texcoco Region, Mexico*; idem., "The Development of a Prehistoric Complex Society: A Regional Perspective from the Valley of Mexico"), and Richard Blanton (Blanton, "Prehistoric Adaptation in the Ixtapalapa Region, Mexico"); O'Brien et al., "On Interpretive Competition in the Absence of Appropriate Data."
31. Brumfiel, "Regional Growth in the Eastern Valley of Mexico: A Test of the 'Population Pressure' Hypothesis."
32. Ibid. See Tolstoy, "Advances in the Basin of Mexico, Pt. 1."
33. Alden, "A Reconstruction of the Toltec Period Political Units in the Valley of Mexico."
34. Tolstoy, "Advances in the Basin of Mexico, Pt. 1."
35. Grove, "Ideology and Evolution at the Pre-State Level."
36. Cowgill, "Quantitative Studies of Urbanization at Teotihuacan."
37. Cowgill, "State and Society at Teotihuacan, Mexico," pp. 129–130.
38. Millon, "The Study of Urbanism at Teotihuacan, Mexico," p. 42.
39. Cowgill, "State and Society at Teotihuacan, Mexico," p. 144; see also Manzanilla, "Coporate Groups and Domestic Activities at Teotihuacan."

40. Cowgill, "State and Society at Teotihuacan, Mexico," p. 139.
41. Nichols, "Infrared Aerial Photography and Prehispanic Irrigation at Teotihuacán."
42. Parsons, "The Development of a Prehistoric Complex Society: A Regional Perspective from the Valley of Mexico."
43. Kurtz, "The Economics of Urbanization and State Formation at Teotihuacan"; Blanton, "Advances in the Study of Cultural Evolution in Prehispanic Highland Mesoamerica."
44. Cowgill, "State and Society at Teotihuacan, Mexico," pp. 156–157.
45. Kowalewski, "The Evolution of Complexity in the Valley of Oaxaca," p. 44.
46. Blanton, "Advances in the Study of Cultural Evolution in Prehispanic Highland Mesoamerica," pp. 261–262; Blanton et al., *Ancient Mesoamerica, A Comparison of Change in Three Regions*, p. 67.
47. Blanton, "Cultural Ecology Reconsidered."
48. Blanton et al., *Ancient Mesoamerica, A Comparison of Change in Three Regions.*
49. Ibid. See also Blanton, "Advances in the Study of Cultural Evolution in Prehispanic Highland Mesoamerica," p. 2.
50. Marcus, "The Iconography of Militarism at Monte Albán and Neighboring Sites in the Valley of Oaxaca."
51. Sanders and Nichols, "Ecological Theory and Cultural Evolution in the Valley of Oaxaca."
52. Kowalewski and Feinstein, "The Economic Systems of Ancient Oaxaca: A Regional Perspective," p. 425.
53. See *Current Anthropology* 29(1):52–80 for a discussion of this point.
54. Culbert and Rice, *Precolumbian Population History in the Maya Lowlands.*
55. Flannery, *Maya Subsistence. Studies in Memory of Dennis E. Puleston*; Ashmore, *Lowland Maya Settlement Patterns*; Dunning, "An Examination of Regional Variability in the Prehispanic Maya Agricultural Landscape." In recent years we have seen greatly increased research on the smaller Maya sites. See Robertson and Freidel, *Archaeology at Cerros, Belize, Central America: Volume I: An Interim Report*; Sheets, "Provisioning the Ceren Household: The Vertical Economy, Village Economy, and Household Economy in the Southeastern Maya Periphery"; Chase, "The Invisible Maya: Population History and Archaeology at Santa Rita Corozal"; Johnston, "The 'Invisible' Maya: Minimally Mounded Residential Settlement at Itzán, Petén, Guatemala." See also Clancey and Harrison, eds., *Vision and Revision in Maya Studies.*
56. Fedick, "Ancient Maya Agricultural Terracing in the Upper Belize River Area"; Dunning, "An Examination of Regional Variability in the Prehispanic Maya Agricultural Landscape"; Dunning et al., "The Paleoecology and Ancient Settlement of the Petexbatun Region. Guatemala."
57. Kunen et al., "Bajo Communities: A Case Study from the Central Petén."
58. Fedick, The Managed Mosaic: Ancient Maya Agriculture and Resource Use"; Turner and Harrison, *Pulltrouser Swamp: Ancient Maya Habitat, Agriculture, and Settlement in Northern Belize*; Dunning et al., "Prehispanic Agrosystems and Adaptive Regions in the Maya Lowlands."
59. Coe and Diehl, *The Land of the Olmec.*
60. Ibid., p. 65.
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