Formative Oaxaca and the Zapotec Cosmos

The interactions of ritual and human ecology are traced in this interpretation of a prehistoric settlement in highland Mexico.

One of the most ancient civilizations of pre-Columbian America was that of the Zapotec of southern Mexico. Although less intensively studied than the Aztec or Maya, the Zapotec were among the first Mesoamerican Indians to construct public buildings, carve hieroglyphic inscriptions, and achieve true urban status.

It now seems likely that the cradle of Zapotec civilization was the Valley of Oaxaca, which lies in the southern highlands of Mexico at an elevation of 1,500 m (Fig. 1). Here the Rio Atoyac and its tributary, the Rio Salado, have combined to produce a Y-shaped valley with 700 km² of flat land, surrounded by forested mountains which rise to 3,000 m. The climate is temperate and semiarid, with 500–700 mm of annual rainfall concentrated mainly in the period between May and November. In the words of geographer Anne Kirkby (1974, p. 119), parts of the Valley of Oaxaca are so marginal for agriculture that the number of years in which harvests fail outnumber those in which they succeed. In an average year, it is an area of permanent drought, defined by Thorndwaite (1963) as an area where precipitation throughout the year is less than potential evapotranspiration. Despite this, agriculture is today the principal means of livelihood, and in the past the valley formed one of the earliest centers of agriculture in Mesoamerica, supporting one of the greatest pre-conquest civilizations in Mexico.

A major problem for the archaeologist, therefore, is to explain how such an area could have produced such a civilization. Fortunately, there are three major sources of data on the Zapotec. The first is the archaeological evidence in the Oaxaca region, which goes back more than 10,000 years. The second is a series of documents written by the Spaniards who conquered the Zapotec during the sixteenth century, when the latter numbered in the millions. The third is the estimated 200,000–300,000 Indians in the Valley of Oaxaca, the nearby Sierra, and the Isthmus of Tehuantepec who still speak Zapotec today.

One of the most popular explanatory frameworks for archaeologists of the last two decades has been provided by the study of prehistoric human ecology. In this approach, culture is viewed as an extraorganismic means of adaptation by which prehistoric populations adjusted to their environment—sometimes achieving homeostasis, sometimes becoming extinct, and sometimes increasing in population and socioeconomic complexity to the level of civilization. Ecological frameworks have been offered for the origins of agriculture (MacNeish 1964), the establishment of sedentary life (Flannery 1972a), and the rise of such great pre-Columbian cities as Teotihuacán in the Valley of Mexico (Sanders and Price 1968). Food production and distribution, irrigation and its management, population pressure, trade, and economic symbiosis have all been singled out as causal factors in early civilization.

A growing number of anthropologists, however, maintain that such frameworks explain no more than 50 percent of prehistoric man's behavior. In the past few years, such former advocates as Marshall Sahlins have abandoned ecology for a model which gives more weight to human ideology; archaeologists such as Robert Hall and John Fritz now list “cognitive archaeology” among their interests. Even the powerfully argued ecological framework for Teotihuacán presented by Sanders and Price has been challenged by René Millon (1973, pp. 48–49):

The early Teotihuacanos were confronted by a great potential in the setting they had come to occupy. It is abundantly clear that the potential was brilliantly exploited. At the same time it is beyond question that the realization of this potential cannot be understood mainly in ecological terms. Any attempt to do so does a disservice to the ecological approach, for it claims too much. One has only to look at the great size of Teotihuacán in relation to its valley to realize that the rise of Teotihuacán, the economic center, cannot be understood without reference to the simultaneous rise of Teotihuacán, the sacred center.

Flannery (1972b) has argued that such criticism should be leveled not at ecology but at its recent practitioners. Human ecosystems are characterized by exchanges of matter, energy, and
information among their components, but most "paleoecological" studies deal only with the exchanges of matter and energy. This is particularly distressing because it is the information exchanges which regulate many of the matter-energy transactions. However, prehistoric information exchange is a Pandora's box which most "hard-nosed" archaeologists are unwilling to touch with a ten-foot pole: it involves phenomena such as ritual, religion, cosmology, and iconography for which there are no agreed-upon analytical procedures and which are normally the province of the ethnologist.

In particular, the work of anthropologist Roy Rappaport (1971a) shows that human ritual transmits information "in an atmosphere of unquestioned truth." By dancing at a neighboring village's ritual, visiting tribesmen may communicate not only their demographic strength but also their willingness to assist their neighbors in warfare. Other rituals can be shown to regulate the dispersal of human populations, preserve the balance between farmed and fallowed land, and keep domestic animal herds within an ecologically adaptive "goal range" (Rappaport 1971b). Moreover, since ritual must be performed in order to exist, it should survive in the archaeological record as patterned behavior (Flannery 1976b).

In this paper, we will take our first hesitant steps toward incorporating ritual and other forms of information exchange into the study of prehistoric matter-energy transactions. The Zapotec are an appropriate group for this approach because of their incredible 3,000-year continuity and the excellent sixteenth-century descriptions of their cosmology. As anthropologist Gerardo Reichel-Dolmatoff recently argued (1975), this is a good starting place because "cosmology is primitive man's own way of doing a systems analysis of his world."

Developmental stages of the Zapotec

One can view the prehistory of the Valley of Oaxaca in terms of four general developmental stages. The first of these was a long period of seminomadic hunting and gathering which began in the late Pleistocene and provided the context in which primitive agriculture began. Desiccated plant remains from archaeological deposits in dry caves indicate that pumpkins (Cucurbita pepo) may have been cultivated in Oaxaca as far back as 7800 B.C.; pollen grains from similar deposits suggest that teosinte (Zea mexicana), a close relative of maize, may already have been part of the diet between 7400 and 6700 B.C. (Flannery 1973). However, this was a time of low population density and meager material culture from which one could scarcely have predicted the later rise of the Zapotec.

The second stage was a period of sedentary agricultural village cultures which began around 1500 B.C. and ended around 500 B.C. This period, known as the "Formative," witnessed explosive population growth and an intensification of agriculture, as well as the evolution of many of the attributes of the historic Zapotec. By 1000 B.C., there were more than a dozen villages in the Valley of Oaxaca growing maize, teosinte, pumpkins, chili peppers, and avocados; hunting deer, peccary, and rabbit; and harvesting a variety of wild products like acorns, hackberries, black walnuts, mesquite beans, prickly pear cactus fruit, and agave or century plant. Many of the villages founded during this period—among them Mitla, Huitzo, Zaachila, Cuilapan, and Abasolo—are still inhabited today. In their early stages, almost all these villages were small, covering only 1–2 hectares and occupied by perhaps no more than 10–12 families (Marcus 1976a). A notable exception was San José Mogote, a very large Formative village on the Atoyac River (Flannery 1970). The third developmental stage began around 500 B.C. with the founding of Monte Albán, the city which was to become the focal point of Zapotec civilization for more than 1,000 years. Monte Albán was spectacularly contoured to a mountaintop rising 400 m above the Atoyac at the point where all three arms of the Y-shaped valley come together. Tourists who visit the ruins of Monte Albán each year see only a fraction of the 8-km² complex.

Figure 1. The center of Zapotec civilization was the Valley of Oaxaca, in the highlands of southern Mexico. The map shows the location of archaeological sites mentioned in the text.

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of temples, tombs, palaces, ballcourts, residential terraces, defensive walls, and roads which made up the Zapotec capital (Blanton and Kowalewski 1976). It was during this stage that true urban civilization was achieved in Oaxaca.

With the decline of Monte Albán around A.D. 700, the Zapotec entered into their fourth developmental stage: a period of highly competitive and militaristic “city states” which lasted until the Spanish conquest of the 1520s. The Zapotec royalty spent a great deal of this period expanding eastward into the Tehuantepec region, defending themselves from the incursions of the Aztec, and alternately fighting and arranging royal marriage alliances with their neighbors, the Mixtec (Paddock 1966).

It was during this period of royal power politics that the Spanish arrived in Mexico and proceeded to give us our first written records of the Oaxaca Indians. In these early Spanish documents, the Zapotec emerge as a highly stratified society with a professional ruling class at whose head was a coquitao or “great lord.” The lord resided in a palace (quihuitao) where much of his government business was conducted, and there were also temples staffed by full-time priests (bígana) who directed religious affairs. Church and state were only partially separate, since the priests were recruited from the sons of Zapotec nobility, and the lord himself underwent a year of religious training before taking office. The common people lived in small, endogamous communities, each overseen by a coqui or nobleman appointed by the great lord. Goods and services which supported the aristocracy came from several sources. On a local level, they were collected from each village by a golaba or “lord’s solicitor”; on the periphery of the Zapotec region, they were paid as tribute by a whole series of conquered towns belonging to different ethnic groups. This conquest was accomplished by a military organization composed of professional officers and civilian conscripts who fought with spears, arrows, dart-throwers, and broadswords with obsidian blades. Tribute could be paid in subsistence goods such as maize, deer, and salt; in raw materials such as cotton; in luxury items such as macaw feathers and gold dust; or in human slaves.

Zapotec cosmology
Like many Indian groups of southern Mexico, the Zapotec conceived of themselves as living in a universe with four world quarters and a center, each associated with a particular color and a set of supernatural attributes (Marcus, MS in prep. b). They recognized a supreme being who was without beginning or end, “who created everything but was not himself created,” a being so infinite and incorporeal that no images were ever made of him and no mortal came in direct contact with him. Man did come in contact with a wide variety of natural and supernatural phenomena, all equally “real” to the Zapotec. How one dealt with those phenomena depended on whether or not they possessed something called pê (written pëe by the sixteenth-century Spaniards and pronounced bé by today’s Mitla Zapotec, whose version will hereafter be given in brackets).

Variously translated as “wind,” “breath,” or “spirit,” pê was the vital force that made all living things move, thereby distinguishing them from nonliving matter. So basic is this concept that most sixteenth-century Zapotec nouns for animals (pichina, deer; piguiñà, bird) and man (peni) began with a pi or pe sound. Any creature that moved and was alive deserved respect; thus, the Zapotec hunter apologized to the deer for the necessity of killing him, and offered the heart to the great natural forces to whom the deer belonged. The heart was an especially appropriate object of sacrifice because it often continued to beat after most other organs were still, it was thought to be a major locus for pê.

Deserving of even greater respect were a series of great natural forces that moved and were therefore alive; apart from the wind itself, these included clouds (Zaa), earthquakes (Xoo), and lightning (Cosijo). The Zapotec believed they had descended from the clouds, and referred to themselves as Peni-zaa [Ben-zaa], “Cloud People.” Cosijo was important because, among other things, he had the power to cause thunder and rain. The Zapotec thus prayed and sacrificed to him, addressing him as Pito Cosijo—an expression the sixteenth-century Spanish erroneously interpreted as “the God of Rain.” In fact, Pito is pê + augmentative, and Pito Cosijo might be more properly translated “Great Spirit within the Lightning.”

The Zapotec’s relationship to the cosmos was quite different from that of a farmer in the post-Renaissance West. He sought to remain in harmony with his environment rather than to conquer it; in his dealings with nature he sought only to make it more predictable. Inanimate objects, lacking pê, could be manipulated by Zapotec science and technology. Great natural forces could be approached only through ritual and religion. Like the Pueblo Indians analyzed by anthropologist Richard Ford (1968 Ph.D. diss.), the Zapotec strove to “arrange the world through ritual practices so that it was patterned rather than chaotic”—not so much to prevent natural events as to make them predictable, regular, and annually repetitive. Thus Zapotec ritual is the archaeologist’s clue to the way the ecosystem was “supposed” to behave.

The Zapotec, like so many Mesoamerican Indians, believed that time was cyclic rather than linear, and that important events should recur at predictable intervals. To keep track of the cycle, they had two calendars—one solar, one ritual. The solar year had 18 “months” of 20 days, plus 5 extra days to bring it to 365. The ritual calendar was composed of 20 hieroglyphs or “day signs” which combined with 13 numbers to produce a cycle of 260 days (Marcus, MS in prep. a). As its name—pije or piye—suggests, the ritual calendar had pê; sacred time moved and was alive. Both economic and ceremonial events were keyed to these calendars, and children were named for the day of the ritual calendar on which they were born; thus names like “1 Tiger” or “8 Deer” are common on prehistoric monuments.

Zapotec agriculture
In Zapotec agriculture, one can see the complex interaction of ritual and farming technology. Today, nearly 500 years after the Spanish conquest, the Zapotec still have such reverence for maize that it remains the preferred cultivar on rich alluvium and marginal piedmont alike, even where the economic advantages of another crop can be shown (Kirkby 1973). Indeed, the traditional Zapotec
farmer seeks not to “maximize” his annual crop but engages in what Kirkby (1974) interprets as “satisfying”—growing enough to meet the subsistence and ceremonial needs of his family, but no more. In part, this reflects a widespread peasant belief that, since there is a limited amount of good fortune in the world, one person’s success partially depletes another’s. In the case of the Zapotec, however, it also reflects an ancient cosmology in which wet years and dry years were cyclic; in which man could manipulate only those things which lacked pe; and in which rain was the result of a pact between man and the supernatural. In such a world, the farmer’s task becomes the ritual and technological evening out of the effects of good and bad years, a task which might better be called “harmonizing” than “satisfying.”

The prehistoric Zapotec had correctly noted an association between clouds, thunder, lightning, and rain. Since lightning (Cosijo) could be observed to move, it clearly had pe and was therefore alive; on the other hand, rain was simply a form of niç [nis], “water,” a familiar substance which plants and humans required. Man could manipulate water technologically once it had reached the ground, but he could not bring it down from the sky. That was the prerogative of Cosijo, a powerful supernatural who could only be approached through ritual. Man’s relationship to Cosijo was reciprocal; to ask for more rain, one offered drops of his own blood, drawing them from his tongue, ear lobes, or sexual organs with a fish spine, stingray spine, agave thorn, or obsidian lancet. In addition to this autosacrifice, the Zapotec offered Cosijo quail, turkey, dogs, human infants, or captives taken in war, depending on the severity of their need (Marcus, MS in prep. b).

As early as 1000 B.C., Oaxacan villagers imported large marine fish spines from coastal areas 200 km distant. An analysis of the contexts in which they are recovered archaeologically (Flannery 1976b) suggests that (1) spines often arrived in the valley still attached to the vertebral centra; (2) they were kept in the house until used; (3) the spine was trimmed off, and the centra and other parts discarded, in and around one’s residence; and (4) spines were often taken to public buildings to be used and were eventually discarded there. The fact that the bloodletting ritual was public underscores its latent function in transmitting information—in this case, perhaps the performer’s level of need or his role in some life-crisis situation.

The Zapotec recognized several classes of fields, both irrigable (quêela huizos) and nonirrigable (quêela pi-chijta). On land where the water table lies only 3 m below the surface, they still draw water from shallow wells to irrigate vegetables by hand.
We have found prehistoric wells of this type in archaeological deposits dating to 1000 B.C., and by 600 B.C. there were specialized jars that may have served for such irrigation (Flannery 1970). Pot-irrigation is a labor-intensive farming technique, and one in which children can play an important role. More than half the watering in pot-irrigation villages like Abasolo today is done by boys between 8 and 18 years old. Once pot-irrigation had begun, therefore, there may have been increased selective advantage for families with large numbers of children; this in turn may have been one factor contributing to the explosive growth of population during the Early and Middle Formative periods (1500–300 B.C.).

Still another form of irrigation is to draw water from streams by means of brush diversion dams and carry it to the fields in small gravity-flow canals. Such canal systems can be securely demonstrated by 400 B.C. (Blanton and Kowalewski 1976), and village rain-runoff canals which may have served as their prototypes go back as far as 1000 B.C. (Winter 1976). Perhaps the most spectacular example of Zapotec hydraulic expertise is the prehistoric site of Hiervo el Agua, which lies in the mountains to the east of the Valley of Oaxaca (Fig. 2). Here excavations by James Neely (1967) revealed 0.5 km² of artificially terraced hillside, served by a complex series of canals which led from a group of permanent springs. The quantity of calcium carbonate in the water is so great that the canals have literally turned to stone from travertine deposition, thereby “fossilizing” an irrigation system used between 400 B.C. and A.D. 1300.

Zapotec manipulation of surface and subsurface water further increases the difference between prime and marginal fields, but “water is actually applied to less than 20 percent of the cultivated land” (Kirby, 1974, p. 121). The way today’s Zapotec balance intensively used and marginal lands depends on certain predictions based on their perception of rainfall. The Zapotec believe they can detect cycles of greater rainfall at intervals of 3, 4, 5, or 7 years. This pattern is not borne out by local climatic records, and Kirkby feels it is partly a function of the way the Zapotec perceive and remember rainy years; it also reflects a cosmology in which natural events are cyclic.

Perhaps the most important predictor used by the Zapotec is the pattern of observed rainfall in the months immediately preceding the true rainy season, and in this they are supported by local meteorological records. According to Kirkby, if spring rainfall is greater than 80 mm, there is an 80 percent chance that growing-season precipitation will be above 600 mm; if spring rainfall is between 20–40 mm, there is a 50 percent chance that the crops will receive less than 420 mm. “By June reliability has increased so that if June rainfall is more than 150 millimeters . . . then rainfall throughout the growing season has an 85 percent chance of being above average” (Kirby, 1974, p. 123).

When May–June rainfall indicates a wet year, the Zapotec response is not what a Western agronomist might expect, but it is consistent with their “harmonizing” ethic. Predicting that yields will be higher than average, the Indian actually reduces his maize planting in the continuously cultivated main agricultural zone of the valley; in the much larger and only sporadically cultivated marginal zones, he will gamble on his prediction of a rainy year and increase his planting. In addition to reducing the differences in yield between wet and dry years, it also enables the farmers to maintain a natural balance in their crop rotation systems. The fish and stingray spines imported for bloodletting were obtained (probably in reciprocal exchange for highland products) from coastal villages whose rainfall regime was different.

Figure 3. Simplified model for the matter-energy transactions (solid arrows) and information transactions (dashed arrows) connected with prehistoric Zapotec agriculture. The farmer interprets his observations of spring rainfall in the light of a cyclic view of natural events and makes predictions about the adequacy of the year’s precipitation. If he predicts inadequacy, the farmer offers his own blood to Cosijic at a public building or shrine, asking that lightning split the clouds (Zaa) to produce more rain; he also increases the cultivation of irrigated land (queela huizoa) served by wells and canals. Predictions of adequate rainfall lead to both less autosacrifice and less irrigation, as well as to a gamble on dry-farmed land (queela pichiija). A farmer with plenty of maize may be called upon to share with a relative whose deficit leads him to repeated public autosacrifice. The fish and stingray spines imported for bloodletting were obtained (probably in reciprocal exchange for highland products) from coastal villages whose rainfall regime was different.
dry years, this strategy has a latent adaptive function detected by Kirkby: long-cultivated, underfallowed alluvium is allowed to rest during years when some yield can be expected from the long-fallowed, underused piedmont.

As Kirkby points out, even today's Zapotec farmers "seek to modify the causal system through the power of prayer." Such prayer was relied on still more heavily at the time of the Spanish conquest; indeed, it is unlikely that Zapotec farmers would have gambled on their rainfall predictions if they were not convinced of the efficacy of their ritual. We can therefore present, in Figure 3, a model for matter and information exchanges which is consistent with Zapotec cosmology and with the context and distribution of archaeological features and artifacts at San José Mogote and neighboring sites.

**Evolution of village ceremonialism**

During the Early and Middle Formative periods (1500–300 B.C.), the occupants of the Valley of Oaxaca began to display many of the patterns of settlement, social inequality, and ceremonialism which characterized the historic Zapotec. By 1300 B.C. there were at least a dozen communities in the valley, most of them hamlets of less than 2 hectares in size and occupied by at most 8–10 families. The basic unit of residence was the nuclear family, usually manifested archaeologically by the remains of a 3 × 5-m house of pine posts, cane walls daubed with clay, and a thatched roof. Houses were usually accompanied by a cluster of features outside, such as dooryards, lean-tos, subterranean storage pits, earth ovens, garbage middens, areas of craft activity, and sometimes burials (Winter 1976). Each household within a hamlet was separated from its nearest neighbor by 30–40 m of open space, and each hamlet was in turn separated from other hamlets by approximately 5 km (Flannery 1976a). In this milieu of small, egalitarian communities, one village stood out as atypical: San José Mogote, a 3-ha village of perhaps 20–30 families, located near the Atoyac River some 15 km north of Oaxaca City. San José Mogote is unique in that some 300 m² of the village was set aside for the construction of public buildings, the small building, which was composed of wooden posts, clay daub, and lime plaster. The circular storage pit in the center was filled with powdered lime of the type used for stucco.

**Figure 4. Structure 6, a public building used by the village of San José Mogote at about 1350 B.C. Workmen are shown constructing a protective stone wall around the fragile remains of the village.**

**Figure 5. Simplified model for the circulation of ritual paraphernalia in a Formative Oaxacan village. Conch-shell trumpets imported from the coast were used at public buildings, after a brief trip to a shell-worker's house to be carved. Costume components imported from other environmental zones were found in houses or nearby storage pits. Also stored in the home were locally made costume parts (e.g., pottery masks) and musical instruments (antler drumstick, scapula rasp), while turtle-shell drums were another item imported from the lowlands. Eventually, all these costumes and musical instruments were taken to the public building to be used in dances and other rituals.**
earliest known so far from Mesoamerica (Flannery and Marcus 1976).

Typical of the early public buildings at San José Mogote was Structure 6, radiocarbon-dated to ca. 1350 B.C. (Fig. 4). Structure 6 was 4.4 × 5.4 m in size, rectangular, and oriented 8° west of true north, an alignment that characterized all public buildings in Oaxaca prior to 500 B.C. Its walls had a core of pine posts and its floor was built up over a bed of crushed bedrock, clay, and sand. Both walls and floor were daubed with clay and then stuccoed repeatedly with white lime plaster. Powdered lime of the type used for stucco was stored in a plaster-lined pit in the center of the floor, and against the south wall of the room was a low bench or altar of puddled adobe which had also been plastered white.

By 900 B.C. San José Mogote had grown to more than 20 ha in size with an estimated population of 80–120 households, making it one of the largest settlements in highland Mexico at that time (Marcus 1976a). Perhaps 10 percent of the village was given over to public buildings, which ranged from massive platforms of adobe brick to boulder-faced pyramidal terraces with small flights of steps. The village was divided into several residential wards, separated by gullies or arroyos which were not occupied, and within these wards there are indications of emerging differences in social rank. Certain wattle-and-daub houses—perhaps those of ward or community leaders—were set on platforms of puddled adobe. Certain adults were buried with beads and ear spoons of jade, while others were not. Nevertheless, archaeological data suggest that there was a continuum of status from higher to lower, without a sharp division into socioeconomic classes like those of the historic Zapotec.

A contextual analysis of ritual paraphernalia (such as the fish spines already mentioned) suggests the existence of rites on the level of the individual, the household, the community, and the sodality or “fraternal order” (Flannery 1976b). Conch-shell trumpets were rare and are found mainly near public buildings; exceptions were conchs that broke while being carved in the houses of shell-workers. Musical instruments such as turtle-shell drums, antler drumsticks, and deer-scapula rasps, also used at public buildings, are found in household storage pits as well. Presumably some were played by “dance sodalities,” whose existence is suggested by pottery masks, figurines of masked dancers, and costume components which include armadillo shell, crocodile mandible, and macaw wing bones from which the plumes had been trimmed (Fig. 5). The interregional circulation of much of this ritual paraphernalia probably contributed to the establishment of trade networks and eventual economic symbiosis between regions (Sanders and Price 1968).

Spines used for bloodletting eventually came to reflect the emerging social hierarchy: true stingray spines occurred near public buildings, while an “imitation” stingray spine (whittled from a deer bone splinter) was excavated from an ordinary household. But Mesoamerica’s finest example is a jade stingray spine from a tomb at La Venta, a Middle Formative site on Mexico’s Gulf coast (Drucker 1956). We might guess that, while ordinary villagers used imitations, villagers of higher status used real stingray spines and paramount chiefs used jade versions. This is consistent with the later Mesoamerican notion that the autosacrifice of the elite was important for the whole community, and “the higher the social position of the individual...the more arduously he performed the fasts, penances, and tortures” (Valliant 1941, p. 206).

Death and the ancestors

Descent was a major organizing principle in Zapotec society, and the ancestors continued to take part in village activities after death. One’s ancestors, if properly treated, could
intercede on one’s behalf with the supernatural beings they had gone to join. Offerings of food, chocolate, and pulque (a fermented drink) were placed with burials, and sixteenth-century Zapotec nobles were constantly in trouble with Spanish priests because they continued to make sacrifices to their deceased kin. A colonial document from Ocelotepec, in the rugged sierra south of the Valley of Oaxaca (N. Espíndola 1580), tells of a renowned coqui named Pe tela who ruled shortly before the Spanish subdued the area. After his death the Zapotec nobility “commemorated him as a god . . . and sacrificed to him as a god.” The Spanish administrator Bartolomé de Piza searched for Petela’s remains, which he discovered “buried dry and embalmed, laid in such a manner that all the bones were in place; [de Piza] burned them publicly.” When a plague hit Ocelotepec six months later, killing more than 1,200 persons, “the nobles went back to making sacrifices to Petela over the ashes of the bones which de Piza had burned, for he [Petela] was an interceder with [the deity] whom they wanted to call off the plague.”

The archaeological record provides some clues to the evolution of this relationship between man and the ancestors. During the period 1150-650 B.C., a series of free-standing motifs of apparent iconographic significance were incised on the pottery of the Valley of Oaxaca. Upon closer analysis, most of these motifs turn out to be stylized representations of two supernatural beings which anthropologist Michael Coe (1965) has identified for this time period: the “fire-serpent” or “sky-dragon,” and the “were-jaguar”—a part-human, part-animal being. Coe has argued that the were-jaguar is supernaturally associated with rain, and there are iconographic grounds for suspecting that the fire-serpent may be an early depiction of lightning.

Recently, Nanette Pyne (1976) ana-
descended. It is therefore possible that early Oaxacan villages included at least two major descent groups, with the fire-serpent or were-jaguar as mythical ancestor or patron, and with some tendency to cluster by residential ward.

Several patterns of burial were evident in Formative Oaxaca. Children, young women, and certain adults were simply buried near the house or in a convenient storage pit which had fallen into disuse (Flannery 1970). Many adults, however, were buried in cemeteries in one of a series of standard burial positions. In the most common position the body was fully extended, face down, aligned to one of the cardinal points, with the arms folded over the chest and anywhere from one to more than a dozen jade beads in the mouth. At Tomaltepec, Michael Whalen (1976) found a cemetery of more than 50 such burials, and a smaller cemetery accompanied the west ward at San José Mogote.

House 16/17 at San José Mogote provided one possible clue to the continued involvement of the ancestors after death. This house, occupied by a part-time flint knapper, lay beside a drainage canal and a large cistern hollowed out of bedrock. Nearby was the extended burial of a middle-aged woman, laid to rest face down with her arms folded and an unusual quantity of jade. To the north of the house was a lean-to or storage shed with a remarkable cache beneath its floor: four ceramic figurines, clearly arranged in the form of a scene, had been placed in a shallow excavation and covered over again. Three figures, standing with their arms folded, wore identical pendants; a fourth, probably originally seated yoga-fashion, lay across their legs (Fig. 7). While the meaning of the scene is unknown, the crossed-arms position of the standing figures corresponds precisely to the most common adult burial position of the period, which sometimes included similar pendants. It is therefore possible that the three standing figures represent deceased kin of someone in House 16/17. (At the very least, they suggest that one use for Formative figurines was in the creation of small ritual scenes.)

A model for the rituals connected with descent in the Formative Oaxacan village is proposed in Figure 8: the deceased, his affinity to a mythico-religious apical ancestor reinforced by the symbols on his burial vessel, might reappear in a small ritual scene in the house of his descendants. During the period 200 B.C. to A.D. 700, this pattern apparently gave way to a veneration of royal ancestors like that demonstrated by the sixteenth-century Zapotec. The small, handmade figurines of the Formative vanished from the archaeological record. Royal tombs were supplied with large anthropomorphic funerary urns (Caso and Bernal 1952). Many of the personages depicted on these urns bear calendric names (e.g., “13 Serpent”), as do a series of carved funerary bearers which are sometimes found in pairs, one bearing a male figure, the other a female (Caso and Bernal 1952, p. 64), and figures depicted in important tomb murals (Caso 1938, Pl. III)—all of which suggests that we are dealing with an ancient deification of royal ancestors, whose names were taken from the pije, or ritual calendar.

The 260-day ritual calendar

By 600 B.C., San José Mogote was on its way to a peak size of 40 ha and an estimated population of 100–200 households, when a major reorganization of public architecture took place. A 15-m-high natural hill in the center of the village was selected as the site for a complex of stone masonry buildings oriented to the cardinal points. Two of these buildings, Structures 14 and 19, averaged 2 m in height and more than 20 m on a side; their lower walls were of huge limestone blocks weighing up to 2 metric tons. In the angle between two exterior walls of Structure 14 sat an altar composed of two immense, tightly fitted blocks of the same limestone, whose source lies several kilometers away on the opposite side of the Atoyac River (Flannery and Marcus 1976).

The most remarkable feature in this stone masonry acropolis was a carved stone that was found serving as the threshold for a corridor between Structures 14 and 19. The carving depicts a naked human more than a meter in height, his eyes closed, his arms and legs out to the side as if he were sprawled on the ground; on his chest appears a scroll-like pattern which may represent flowing blood (Fig. 9). Many of these attributes—the nudity, the closed eyes, the awkward posture, and the flowery “blood scrolls”—were conventions used by later Mesoamerican peoples to depict slain or sacrificed captives. Most important, the figure has between its feet a day glyph accompanied by a dot indicating the number one: “One Earthquake” is the reading which most closely matches later Zapotec glyphs. Since this was a day in the ritual calendar, the inscription could represent either a date or (more likely) a name selected from the date of birth—presumably the name of the unfortunate individual shown on the stone. It is also the oldest yet discovered evidence for the “living” 260-day sacred calendar which the Zapotec were still using at the time of the Spanish conquest. Later monuments in the valley expand our knowledge of the pije and its meshing with the 365-day calendar to produce a cycle of 52 years (Marcus 1976b and in press).

In our opinion, two of the most common mistakes being made by students of prehistoric human ecology are the attribution of Western economic motives to pre-Columbian subsistence behavior and the dismissal of pre-Columbian ritual as a form of intellectual activity unrelated...
References


