# CHIEFDOMS: POWER, ECONOMY, AND IDEOLOGY

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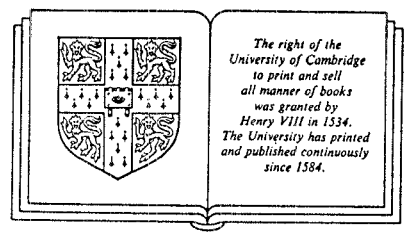
*A SCHOOL OF AMERICAN RESEARCH BOOK*

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# Demography, surplus, and inequality: early political formations in highland Mesoamerica

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The development of permanent positions of leadership and institutionalized forms of inequality are central questions in the social sciences. In twentieth-century anthropology, these related issues traditionally have been framed as the evolution of "chiefdoms" (Service 1962) or "ranked societies" (Fried 1967). For the most part, however, the major research focus has been neither diachronic nor processual, instead concentrating on temporally shallow anthropological or ethnohistoric observations, single reconstructed slices of archaeological time, and, most frequently, cross-cultural compendia of synchronic ethnographic cases. Such studies have provided valuable parameters (and a diversity of classification schemes; see Carneiro 1981; Feinman and Neitzel 1984: 41) for those internally diverse societies which are intermediate in scale and organizational complexity between foraging bands and bureaucratic states. Yet concerning development and change, they can only inspire hypotheses which ultimately must be tested with diachronic data.

In a synchronic cross-societal review of nonstate sedentary societies in the Americas, I suggested (Feinman and Neitzel 1984: 78) that more "long-term processual analyses are necessary" since atemporal studies "can only demonstrate correlations and cannot reveal the

historical or causal processes responsible for societal variation." More recently, Drennan and Uribe (1987b: vii–viii) argue in a similar vein.

> To a great extent, ethnography has already made what contribution it can to the study of truly long-term change with the kind of cross-cultural comparisons that produced the evolutionary scheme of which chiefdom is a part.

This chapter endeavors to examine the emergence of specialized leaders or "chiefs" from a diachronic perspective. Yet unlike the case-specific contributions to *Chiefdoms in the Americas* (Drennan and Uribe 1987a), the focus here is not on a geographic area where nonstate sedentary formations were either especially long-lived or persisted until European contact. Rather, this study is concentrated on the Mexican highlands, an area where nonstate sedentary formations often endured for little more than a millennium prior to developments into more hierarchical urban polities. To understand the variability and change in nonstate sedentary societies, we must consider both those areas where chiefs soon were able to mobilize the resources, connections, and power to establish greater civic-ceremonial complexity (states), as well as regions where chiefly formations were apparently much more resilient.

## INTERPRETIVE BACKGROUND

For purposes of this discussion, a "chiefdom" is defined narrowly following Wright (1984: 82), who sees them as a sociopolitical formation in which social control activities are "externally specialized vis-à-vis other activities, but not internally specialized in terms of different aspects of the control process." Thus, chiefly formations should be associated with a supra-household decision-making structure or relatively permanent positions of leadership, but not with the marked internal differentiation of such structures. The most important feature of Wright's working definition (see also Blanton et al. 1981) is that it refers solely to a sociopolitical form and not to a type or class of societies which (by definition) all share the same specified set of societal attributes. This distinction is significant since it recognizes that societies with structurally similar political forms are not *necessarily* equivalent in economic organization, kinship, demographic parameters, or other aspects (see Claessen 1981; Feinman and Neitzel 1984). Furthermore, by defining "chiefdom" in this way, any implication that sequences of societal change are *uniformly* progressive or linear is avoided.





In Mesoamerica, the earliest archaeological evidence for social differentiation, monumental architecture, and civic-ceremonial centers is found along the coastal plains of the Gulf (Coe and Diehl 1980) and the Pacific (Blake 1987; Clark et al. 1987). Perhaps for this reason, evolutionary studies concerning the *beginnings* of sociopolitical complexity have been somewhat underemphasized in the Mexican highlands in relation to those focused on later state and urban development. Nevertheless, three basic theoretical positions have been advanced to account for the emergence of complexity in the highlands.

Most enduring is the stance which attributes change to direct and sustained contact with the "Olmec" of the Gulf Coast. Although early proponents suggested Gulf Coast trading enclaves (Coe 1965a; Tolstoy and Paradis 1971), militaristic forays (Coe 1965b), and even an empire (Caso 1965) in the highlands, this view has lost significant favor in the wake of two decades of solid archaeological fieldwork on early communities in both the highlands and the lowlands (e.g. Coe and Diehl 1980; Flannery and Marcus 1983a; Grove 1987a). These investigations indicate that sedentary villages with distinct local traditions date rather equivalently to the middle and late second millennium B.C. in many major highland and lowland regions, and that the local traditions were maintained even as the symbols of the "Olmec interaction sphere" (Flannery 1968) were incorporated into regional artifactual assemblages. Thus, an Early Formative (1500–900 B.C.) Gulf Coast presence in the highlands remains archaeologically unsubstantiated, and Drennan's (1984a, 1984b) recent analysis of the high costs of long-distance movement for prehispanic Mesoamerica would seem to cast additional doubt on models which envision major lowland excursions into the highlands for strict economic or military purposes.

A second class of models associates the genesis of highland political development to a suite of local environmental and demographic factors (Sanders 1984a, 1984b). Influenced by Carneiro (1961; see also 1970), Sanders and Price (1968: 128–34) postulated that population density, environmental circumscription, and environmental diversity were essential aspects of this evolutionary process. A decade later, Sanders and Webster (1978: 253, 285–6) reiterated these arguments while also suggesting that environmental risk was a key factor in these

political changes. Although the theoretical direction of these arguments is clear (see also Sanders 1972), specific, comparative evolutionary expectations for this process in Mesoamerica's highland regions are rarely presented. Nevertheless, in the circumscribed valleys of Mexico's highlands, a maintained emphasis seems to be on the presumed role of population density in the emergence of political complexity.

The third theoretical stance stems from Kent V. Flannery's (1968) influential model of interregional interaction between the Olmec and the Valley of Oaxaca in Formative times. From this perspective, highland social differentiation is initiated locally with increasing sedentism and a greater reliance on agricultural resources, but is then reinforced and elaborated in part through exchanges of symbolically important goods and information with the more developed lowlands (Drennan 1976a, 1983a). The limited access to and control of exotic and ritually charged goods allows emergent leaders to attract and influence potential supporters. As Hirth (1987a: 16) has asserted, elite exchange networks can provide at least three important functions:

> (1) They broaden elite control over resource production, (2) they provide emergency provisioning in times of resource shortfall, and (3) they provide the jural-political framework within which leaders mediate disputes and maintain peace between their respective groups.

Nevertheless, as Earle (1982, 1987a: 296) has implied, the mere availability of preciosities or exotic valuables in an exchange sphere does not in itself promote sociopolitical differentiation.

In a sense, the second and third theoretical positions closely correspond to two hypothetical sequences of development that were recently characterized more generally and heuristically in a discussion of regional demography in chiefdoms (Drennan 1987). Drennan's first alternative views demography as the engine which drives sociopolitical change. Thus, the advent of decision-making complexity might be expected to correspond to a particular demographic parameter.

> The second sequence begins with the emergence of patterns of economic inequality in a small autonomous village. Such patterns of differing wealth would tend to concentrate population in that village as those of greater wealth take advantage of the opportunities their wealth provides to make others dependent upon them. Such concentration of dependents would be encouraged by the wealthy since it provides enhanced opportunities for still further acquisition of wealth. This process would eventually involve the incorporation of existing small neighboring villages into the system or the founding of additional small villages by people from the emergent center so as to increase the resource base for wealth accumulation. (DRENNAN 1987: 313–14)





The remainder of this chapter examines data from the Formative period in highland Mesoamerica (Table 10.1) in relation to the latter two theoretical positions outlined above. In the next section, the results from decades of multiscale, multidisciplinary analyses in the Valley of Oaxaca (Fig. 10.1) are reviewed. Here, the focus is on a program of Formative village excavations by Kent V. Flannery and his colleagues on the Valley of Oaxaca Human Ecology Project (Flannery et al. 1967; Winter 1972; Pires-Ferreira 1975; Drennan 1976b; Flannery 1976a; Flannery and Marcus 1976a, 1976b; Whalen 1981; Flannery, Marcus, and Kowalewski 1981; Flannery and Marcus 1983a; Parry 1987), as well as on the systematic settlement survey of the 2,150 $km^2$ region (Blanton et al. 1982; Feinman et al. 1985; Kowalewski et al. 1989). Anne Kirkby's (1973) analysis of *The use of land and water resources in the past and present Valley of Oaxaca, Mexico* also provides a particularly important basis for examining and modeling demographic and human-environmental factors over the long-term in this region.

Subsequently, the Formative era sociopolitical change in ancient Oaxaca is compared to a series of other highland Mexican valleys where regional archaeological programs also have been conducted (Fig. 10.2). In 1972, prior to the availability of systematic archaeological settlement pattern survey data for any region in Mesoamerica outside the Basin of Mexico, William T. Sanders (1972) completed a comparative demographic analysis of many of these same (as well as other) Mesoamerican regions. Now, with the publication of more systematic observations, it is time for a second examination.

Admittedly, the discussion to follow has a strongly regional-scale focus. In part that is because the differential distributions of nonresidential architectural features, especially when conjoined with disparities in settlement size, provide a particularly good foundation for identifying variation and change in sociopolitical complexity. Furthermore, archaeological data at the regional scale are necessary to evaluate prehistoric demographic shifts. While site-specific observations are considered very important to this study and are used whenever possible, such data are placed in a broader spatial perspective. As Drennan and Uribe (1987c: 60) state:

Table 10.1. *Highland Mesoamerican chronologies*

| | MAJOR PERIOD | VALLEY OF OAXACA | EJUTLA VALLEY | BASIN OF MEXICO | E. MORELOS | CUICATLAN CANADA | TAMAZULAPAN |
|---|---|---|---|---|---|---|---|
| 200 B.C. | Terminal Formative | Monte Albán II | Monte Albán II | First Intermediate Phase 4 | Terminal Formative | Lomas | Ramos |
| 200 | Late Formative | M.A. Late I | M.A. Late I | First Intermediate Phase 3 | Late Formative | Perdido | Late Cruz |
| 400 | | M.A. Early I | M.A. Early I | First Intermediate Phase 2 | Cantera | | Middle Cruz |
| 600 | Middle Formative | Rosario | Rosario | First Intermediate Phase 1 | Barranca | | Early Cruz |
| 800 | | Guadalupe | | | | | |
| 1000 | Early Formative | San José | Early Formative | Early Horizon | Amate | | |
| 1200 | | Tierras Largas | | | | | |
| 1400 | | Espiridión | | | | | |
| 1500 | | | | | | | |

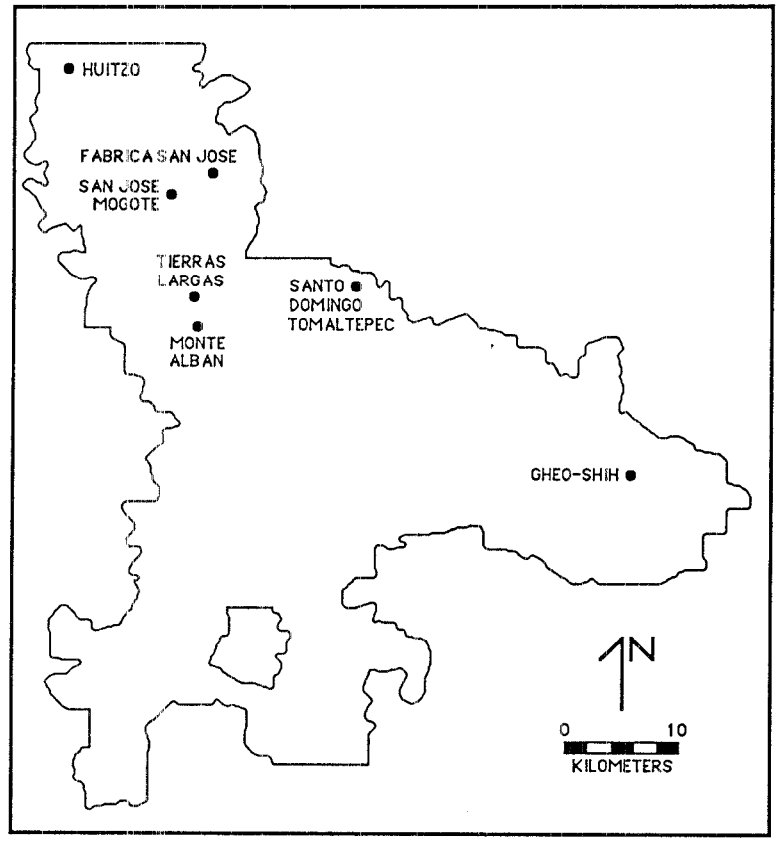



Fig. 10.1 The Valley of Oaxaca

Regional settlement pattern information is especially significant in the study of chiefdoms (or other complex societies) because it is the broadest and most direct approach available to archaeologists for reconstructing patterns of organization at the regional level, and it is the very existence of this regional level of organization that so strongly differentiates chiefdoms from simpler societies.

In sum, the analytical framework adopted here concurs with Earle (1984: 2), who stated: ". . . most important for studying cultural evolution archaeologically has been a reliance on the settlement patterns."

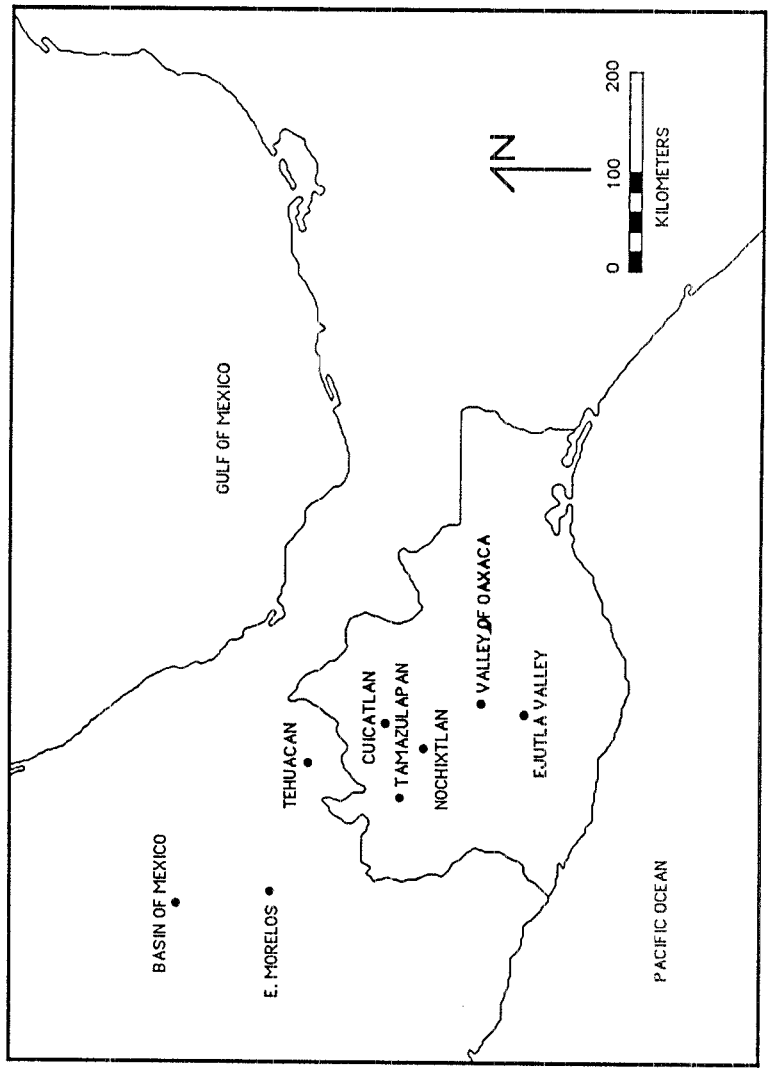



Fig. 10.2 Highland Mesoamerican regions



## POLITICAL DIFFERENTIATION IN THE FORMATIVE VALLEY OF OAXACA

In the decades since Flannery established a long pre-Monte Albán (pre-500 B.C.) occupational sequence for the Valley of Oaxaca, numerous books, monographs, and articles have been written concerning the formation and diversification of early village settlements in the region. Hence, this section serves partially as a directed synthesis, specifically focusing the archaeological findings in relation to the two hypothetical trajectories and the factors discussed above. Since the emphasis is on chiefly formation, the discussion is grouped into three parts: the first looks at the region's earliest sedentary communities (ca. 1500–1150 B.C.); the next focuses on the emergence of political differentiation (ca. 1150–600 B.C.); while the third examines the elaboration of those differences, prior to the establishment of the hilltop center of Monte Albán (ca. 600–500 B.C.).

This investigation of early Oaxaca also relies heavily on a diachronic analysis of human–land relations in the region. These discussions compare Kirkby's (1973) observations of land quality and productivity, which were supplemented by the field-by-field observations of archaeological crews who also noted the spatial distribution of land and water resources, with site location and site size information mapped and recorded by the settlement pattern project. Following Kirkby (1973: 124–6), Kowalewski (1980, 1982), and Feinman and Nicholas (1987a: Fig. 4.2), this modeling takes into account (but does not adopt the premise that changes in demography can be explained simply by) the increasing productivity of the maize plant through time. Using formulas, derived from ethnographic studies, that have been employed for settlement pattern research across the Mesoamerican highlands (e.g. Parsons 1971), population estimates are extrapolated from the number and size of recorded settlements. For descriptive purposes, the means of more cautiously derived demographic ranges are utilized in several analyses. While these estimation procedures are not exact, I concur in principle with Sanders' (1972: 101) observation that "this is the only type of archaeological research that can provide reliable data on population history."

The spatial associations of population and agricultural productivity follow the basic research methodology outlined by Kowalewski (1980, 1982). For example, the 4 by 4 km grid system employed here is a

spatial expansion of the analytical structure that he first used (see also Nicholas et al. 1986; Feinman and Nicholas 1987a). The size of the grid corresponds to the amount of land that would be within easy walking distance of sites located in each square. Use of this grid facilitates spatial analyses and cross-phase comparisons. Human-resource relationships also are considered both at the scale of the entire Valley of Oaxaca, and at an intermediate scale that represents the potential "support-zone" or population within a day's round trip (18 km radius) from major regional centers (see Feinman and Nicholas 1987a: 39–44). In ancient Oaxaca where transport was entirely by foot, trips of more than a day would be markedly more costly in time and caloric efficiency (e.g. Lightfoot 1979; Drennan 1984b).

In estimating past patterns of productivity, I assume that the region's earliest farmers had the knowledge and the tools to implement the basic pre-Hispanic water control techniques used in the Valley of Oaxaca (Kowalewski 1982: 150). The irrigation and drainage techniques utilized in the region pre-Hispanically were relatively simple (Kirkby 1973; Lees 1973; Flannery 1983), and many of the methods used today were employed by the San José phase (1150–850 B.C.) (Flannery et al. 1967; Drennan and Flannery 1983). Because we do not know the specific cropping practices and rotations employed pre-Hispanically on each field, I have followed Kirkby (1973: 124–6) and Kowalewski (1982: 149–50) in adopting agricultural productivity estimates based entirely on maize. Estimates of prehistoric maize intake are based on Kowalewski's (1982) exhaustive review of ethnographic sources in which he found that consumption ranged between 160–290 kg per person per annum.

Before discussing change in Formative Oaxaca, it is important to clarify concepts and hypothetical human–land relationships that have been referred to previously (for more thorough methodological discussions see Feinman and Nicholas 1987a; Nicholas 1989). These conceptualizations, which are presented both to facilitate cross-phase comparisons and to permit the evaluation of the previously presented models, begin with a specified region's *absolute environmental potential*. That is, given sufficient labor and a specific variety of maize, how many people could be sustained in a region during an average rainfall year. This absolute time-specific ceiling can be distinguished from a second ideal relationship, *maximum production*, which incorporates into the modeling the estimated archaeological population for the





region. Maximum production refers to the amount of maize possibly produced (people sustained) in the region if the estimated population was deployed across the region in the most productive arrangement. In a previous paper (Feinman and Nicholas 1987a), I argued that the observed archaeological settlement pattern in the Valley of Oaxaca never matched this most productive arrangement in any phase, and the goodness-of-fit between the actual and the ideal basically weakened through time.

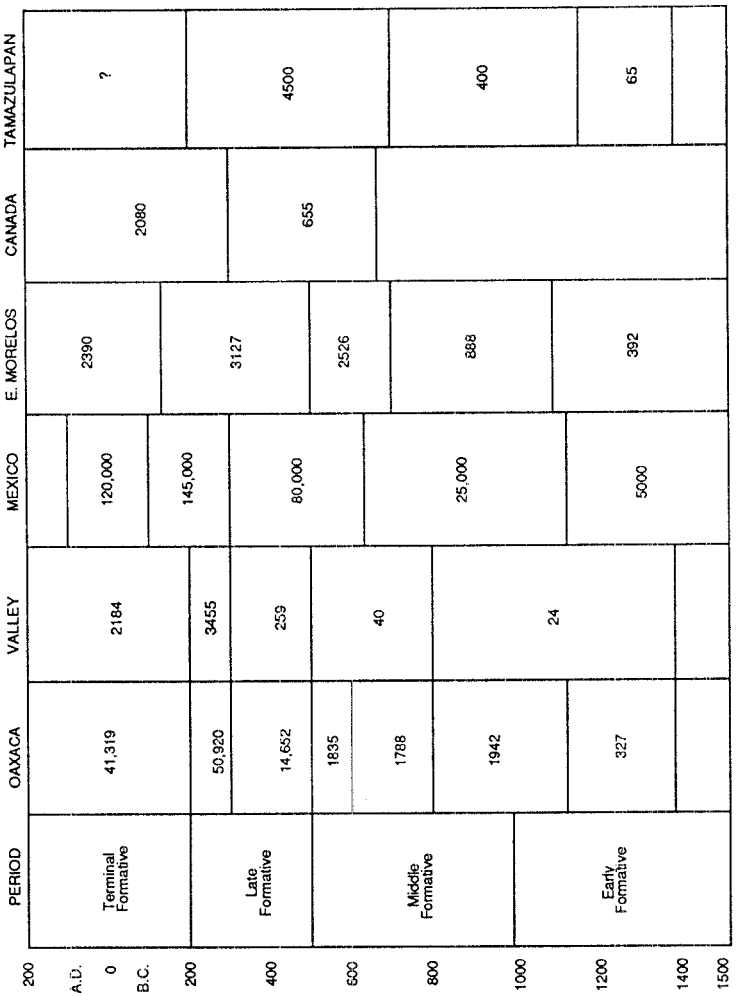
*Potential production*, a more realistic indicator of the amount of maize that could have been produced at a particular time, incorporates both the observed archaeological population and its distribution. Thus, potential production is the amount of expected output, assuming that the estimated population farmed only the adjacent terrain (starting with the best land) within the same 4 by 4 km square where each site was situated. Thus, for any spatially defined population (the region, a single arbitrary grid), a *maximum surplus* could be estimated by subtracting that population's required maize consumption from its potential production. Following Johnson's (in press) analysis, I also derived for each phase a rough average indicator of how much maize an individual Oaxacan farmer could have produced above his own maize consumption requirements (see also Feinman and Nicholas 1987b). Here it is necessary to rely on Kirkby's (1973) empirical findings that an Oaxacan farmer, using a *coa* or digging stick, can cultivate only two hectares.

## *The emergence of sedentary communities*

The earliest pottery in the Valley of Oaxaca pertains to the Espiridión complex (1500 B.C.), identified in association with a single house at San José Mogote (Flannery, Marcus, and Kowalewski 1981: 65; Marcus 1983: 42–3). In the subsequent Tierras Largas phase, twenty-six communities have been identified with the total regional population estimated at between 188 and 463 people (Table 10.2). While several sites, including San José Mogote, Tierras Largas, and Santo Domingo Tomaltepec (Fig. 10.1), have been partially excavated, most are known only through settlement pattern survey.

In general, the Tierras Largas phase settlements were small, usually less than one hectare. Only San José Mogote measured more than two hectares. The majority of the region's Tierras Largas phase population

Table 10.2. *Estimated populations by phase for highland Mesoamerican regions*






(roughly fifty percent) was situated in the northern or Etla arm of the valley, with other settlements distributed in the valley's southern arm. For the most part, the Tierras Largas phase occupations were situated near very good, but not necessarily the valley's best or the largest, patches of farm land (Feinman et al. 1985; Nicholas et al. 1986).

At present, San José Mogote is also the only *known* Tierras Largas phase village with nonresidential architectural features. These features include an open danceground as well as a sequence of eight one-room, lime-plastered public buildings (Flannery and Marcus 1976a; Drennan 1983a). While the rituals conducted in these small (4 by 5 m) structures were perhaps more exclusionary than those enacted in the open, these structures, made of the same basic materials used in house construction and built on a level with those residential features, hardly imply a marked degree of status differentiation or decision-making specialization. Nevertheless, San José Mogote, perhaps the area's oldest village, already may have become somewhat different from other communities. The degree of this differential is hard to determine since many of the other Tierras Largas phase communities include Formative period mounded buildings. Yet, without excavations, it is impossible to ascertain whether (or how many of) these mounds overlay Tierras Largas phase public structures like those known at San José Mogote.

The relative autonomy of Tierras Largas phase households is suggested by Winter and Pires-Ferreira's (1976) study of obsidian distributions by source (all exotic to the valley) from a series of excavated household units at the site of Tierras Largas. They argued that the marked household-to-household variability in the obsidian assemblages (by the number and specific sources represented as well as the relative quantity from each source) implied that each household had its own extraregional reciprocal trading relationships. The openness of regional boundaries and household networks of communication also is suggested by the strong similarities between local red-on-buff utilitarian ceramic traditions across Mesoamerica's southern highlands (and beyond) at this time (MacNeish, Peterson, and Flannery 1970; Spores 1972; Zeitlin 1979; Flannery, Marcus, and Kowalewski 1981: 67–8; Winter 1984; see Drennan and Nowack 1984: 152–3 for a parallel argument). Thus, in highland Mesoamerica, as in many other parts of the indigenous New World, the early phases of sedentary

occupation by relatively egalitarian communities are marked by the sharing of basically utilitarian artifact styles over broad regions.

During the Tierras Largas phase, there is no indication of exchange in the rare, highly crafted, or symbolically sanctified items (Drennan 1976a) associated with the later "Olmec horizon" and subsequent San José phase (1150–850 B.C.). Nevertheless, some community inequities in access to exotic goods already may have emerged. Although the excavated samples reported for Tierras Largas phase sites are small and not necessarily equivalent, nine households at Tierras Largas (Winter 1972), situated in the center of the valley just south of San José Mogote, can be compared with two household units from Santo Domingo Tomaltepec in the sparsely inhabited eastern or Tlacolula arm (Whalen 1981). Only a single piece of marine shell was recovered in the latter sample as compared with eleven in the former. Likewise, obsidian made up just over one percent of the total chipped stone at Tomaltepec (Whalen 1981: 30), whereas it comprised between seven to fourteen percent at Tierras Largas (Winter 1972: 172). Whatever actual inequities may have existed, they were probably ephemeral and certainly did not translate into major "public" architecture or other features that we might expect with greater political differentiation.

As I have argued previously (Feinman et al. 1985; Nicholas et al. 1986; Feinman and Nicholas 1987a; see also Nicholas 1989), the estimated valley population was far below the region's absolute agricultural potential. Even in the most heavily settled Etla arm, the estimated population density was lower than one person per $km^2$ (Table 10.3). It is difficult to see population pressure as a serious causal mechanism at this time. Since most habitations were situated near supplemental sources of water, the great majority could have sustained themselves even in years of low precipitation.

While preliminary demographic-resource modeling indicates that the population within 18 km of San José Mogote could have supported a few households of non-agriculturalists/decision-making specialists even in a dry year, the sparsity of the regional population (labor) and the relatively low productivity of maize suggest that even in an average rainfall year the surplus-producing capacity of the valley populace was not that significant (Table 10.4).

These relationships also can be examined in a second way, in terms of a single farmer or household. Beginning with Kirkby's (1973) estimated productivity of Early Formative maize, a farmer working an



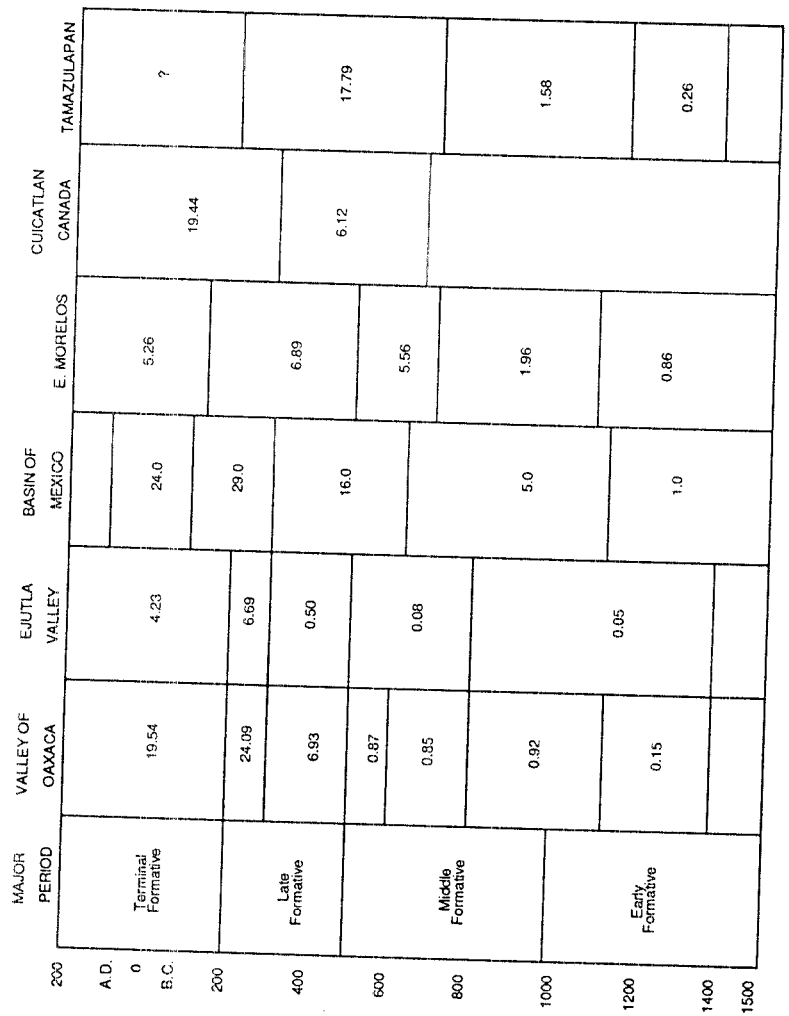



Table 10.3. *Population densities (per $km^2$) in highland Mesoamerica*

Table 10.4. *Potential production in an average rainfall year above that required by producing households*

| Phase | Within 18 km of San José Mogote | Beyond 18 km of San José Mogote | Total amount |
|---|---|---|---|
| Tierras Largas | 18.1* | 6.4 | 24.5 |
| San José | 116.3 | 18.4 | 134.7 |
| Guadalupe | 195.9 | 24.1 | 220.0 |
| Rosario | 235.9 | 103.5 | 339.4 |

*in metric tons

average plot of valley land in an average precipitation year would require just under a hectare of land for his maize consumption. Consequently, assuming that roughly half the members of each household farm, little extractable surplus would remain. Of course, these figures are estimates, and most Tierras Largas phase settlements were located near better than average farmland that could support more than one person per hectare. But nevertheless, the apparent absence of large-scale mound construction is not surprising.

### *The emergence of political differentiation*

The most dramatic change in the Valley of Oaxaca during the San José and Guadalupe phases (1150–600 B.C.) was the rapid expansion and elaboration of San José Mogote (Flannery, Marcus, and Kowalewski 1981; Flannery and Marcus 1983b). As the site grew to more than 70 ha, the public architecture also increased significantly in scale and diversity (Flannery and Marcus 1976a). At the site, the earliest carved stone monuments in the Valley of Oaxaca were incorporated into public construction dating to the end of the San José phase (Flannery and Marcus 1983b: 54). Increasing status differentials also were evidenced in both burial populations and residential architecture (Flannery and Marcus 1983b: 55; Marcus in press).

The specific relationships that existed between San José Mogote and other valley sites remain uncertain. The remainder of the regional population lived in thirty-eight communities that generally were smaller than three hectares. A number of these settlements had their own public buildings, as well as intra-community status differentials in





residence and burials (e.g. Whalen 1981). Based on Stephen Plog's (1976) analysis of ceramic design elements, even Huitzo, a site at the northern edge of the Etla arm with its own public building, had less interaction and shared fewer designs with San José Mogote than expected by their proximity. Thus, it seems unlikely that San José Mogote had direct administrative control over the entire region. Nevertheless, a degree of political as well as status differential is evident at San José Mogote, where civic-ceremonial structures were raised above the rest of the community on planned and purposefully oriented (8° west of north) stone and adobe platforms.

San José Mogote also had a significant centripetal influence on regional demography (Flannery 1982). Between the Tierras Largas and San José phases, the population of the valley as a whole grew at an estimated rate of 0.59 percent per annum (Table 10.5), while the growth in the Etla arm was more rapid (Feinman et al. 1985: table 2). In both the San José and Guadalupe phases, more than seventy-five percent of the regional population resided in that northern arm. Many of the small communities that were established near to San José Mogote lacked public architecture, and the inhabitants of these communities may have been tied to certain high status individuals at the larger settlement.

During the San José phase, the changes in the valley's political organization were accompanied by significant shifts in interregional exchange and ritual activities (Flannery 1968; Drennan 1976a, 1983). Long-distance networks of communication and exchange were established through which a series of ritual and exotic objects as well as shared symbols were transmitted.

> The symbols concerned, which involve figurines and designs on ceramics, have generally been classified as Olmec, although it is now clear that the sharing of symbols in this Formative period interaction was more mutual than has often been pictured. The ritual objects and materials exchanged over long distances included magnetite mirrors, marine shell, fish and stingray spines, shark teeth, and lowland turtle shell. (DRENNAN 1983: 49)

As Flannery and Marcus (1976b; Flannery 1976b) and others (Drennan 1976a; Grove 1981a, 1987c) have illustrated, many of these objects were linked to high-status and widespread Mesoamerican rituals associated with blood-letting, agricultural production, and leadership. Thus, as Flannery (1968; see also Drennan 1976a) argued two decades ago, the access to these symbolically charged, exotic goods

Table 10.5. *Rates of population change in highland Mesoamerica*

| MAJOR PERIOD | VALLEY OF OAXACA | EJUTLA VALLEY | BASIN OF MEXICO | E. MORELOS | CUICATLAN CAÑADA | TAMAZULAPAN |
|---|---|---|---|---|---|---|
| Terminal Formative | +0.32% | +0.59% | +0.17% | +0.26% | +0.06% | +0.04% |
| | −0.08% | −0.18% | −0.09% | −0.08% | +0.27% | |
| Late Formative | +0.83% | +1.73% | +0.22% | +0.08% | | +0.69% |
| | +1.39% | +0.75% | +0.27% | +0.35% | | |
| Middle Formative | +0.02% | +0.11% | | | | +0.52% |
| | −0.03% | | +0.39% | +0.20% | | |
| Early Formative | +0.59% | | | | | |

200 A.D. 0 B.C. 200 400 600 800 1000 1200 1400 1500



may have helped to sanctify the hereditary rights of certain individuals to lead, while the ritual use of these items may also have strengthened the ties between communities, their land, and agrarian production (Kowalewski et al. 1989).

Significantly in the Valley of Oaxaca, access to interregional exchange spheres may have been narrowed by the San José phase. At San José Mogote, the relative uniformity of the obsidian samples from a series of San José phase household units in a single residential ward has led Parry (1987: 22) to suggest that access to this exotic good may have been centrally coordinated, pooled, and redistributed. Likewise, Valley of Oaxaca magnetite, traded as far as San Lorenzo Tenochtitlán on the Gulf Coast (Pires-Ferreira 1975; Flannery 1982), appears to have been worked only in a high-status residential area at San José Mogote (Flannery and Marcus 1983b: 55). The concentration of nonutilitarian craft specialists at specific sites almost certainly enabled particular households and communities to participate more actively in interregional exchange than others. The diversity of exotic goods at San José Mogote far surpasses what is known at other valley sites. Unequal household access to external communications and exchange is indicated by the differential distributions of greenstones, shell, mica, and other rare exotic items in burial and residential contexts (Flannery, Marcus, and Kowalewski 1981: 71–3).

In addition, while the design elements associated with the most elaborately decorated wares were shared with distant areas, utilitarian pottery styles were somewhat more locally distinctive than they were earlier. In other areas of the New World as well, similar changes in the artifactual record are correlated temporally with episodes of increasing social differentiation and political development. Thus, while higher-status households still may have had broad communication links, other families may have had only more parochial networks.

By the San José phase, extraregional (communication and trade) relations may have become more restricted and less open. These shifts in the interregional flow of goods and information may have had important local implications on sociopolitical relations (see Root 1983: 203–4). As Brunton (1975: 556) has theorized for the Trobriands: ". . . where conditions are such that men can act to limit strategic exchange items and pre-empt others from gaining access to them, then the stage is set for the development of rank and chieftainship." Likewise, Helms (1979: 37) argued for Panamanian chiefs that "it must be emphasized

that Panamanian participation in such far-flung exchange activities is viewed not simply as an adjunct to chiefly activities, interests, and affairs in Panama but as vital to the sociopolitical dynamics of Panamanian chiefdoms."

This raises the issue of what conditions may have allowed certain households in Oaxaca, particularly those near San José Mogote, to begin to manipulate or control extraregional contacts. While some theorists might clamor for population pressure or environmental circumscription, it is difficult to support such notions with an estimated regional population below 2,000. Even in the Etla arm, there were fewer than five people per $km^2$, and the regional density was dramatically less (Table 10.3). As my colleagues and I have illustrated elsewhere (Nicholas et al. 1986), during these phases, plenty of top-quality valley farm land remained uninhabited, and the estimated regional population remained only a tiny fraction of the valley's absolute environmental potential (Feinman and Nicholas 1987a).

My inclination is to turn the population pressure argument on its head. The greatest difference in the population–resource equation between the San José phase and the earlier Tierras Largas phase was the more than sixfold increase in the amount of surplus maize that could have been produced within 18 km of San José Mogote (see also Feinman and Nicholas 1987a: Fig. 4.11). While this rise in potential productivity (which was clustered even closer to the site) was in part a function of the expected greater yields of the maize plant, the larger factor was the concentration of potential farmers, whose labor could have been realized or tapped for surplus (Table 10.4). In fact, the grid square that contained San José Mogote (with the greatest population) was the regional center for potential surplus production (Feinman and Nicholas 1987a: 39).

The question then returns systemically to the potential politico-ritual (Harrison 1987) as well as economic (Brunton 1975) gains that may have led households to agglomerate and tie themselves to certain individuals who had greater access to specific desired and/or symbolically laden goods (see Hayden 1978; Paynter and Cole 1980). For example, based on survey collections and selected excavations, there is little question that the highly decorated San José and Guadalupe phase serving bowls, which may have been used for feasting and/or ritual events, were both more diverse and abundant at sites in the Etla arm. Clearly, Oaxacan households were drawn centripetally to (or reproduced themselves more rapidly in) the vicinity of the region's first sedentary village that contained some of the area's earliest (and most elaborate) civic-ceremonial features.





While households may have derived economic, defensive, and politico-religious "benefits" through nucleation, the participation "costs" for the average household may not have been that high (Drennan, this volume). Intraregional variation in access to goods, domestic architecture, and burial furniture was more continuous than dichotomous (or class-like) in nature (Flannery, Marcus, and Kowalewski 1981: 71). Certain households gained greater access to venison, shell, magnetite, jade, mica, and nonlocal pottery, yet such exotic and sumptuary items were not *restricted* to an elite few. Public buildings were no longer simply the wattle-and-daub structures of prior times, yet the newly adopted stone masonry and adobe construction techniques (adopted by 900 B.C.) also would not have required excessively large labor commitments. While some civic-ceremonial and craft specialists at San José Mogote may have been supported through the agricultural work of others, the former segment of population does not appear to have been large. Finally, there is no evidence for the kinds of large central storage facilities, granaries, or other architectural features that one might expect if onerous labor/tribute demands were the rule.

## *The elaboration of political differentiation*

During the Rosario phase (600–500 B.C.), San José Mogote decreased in spatial extent and hence estimated population. Yet, the site remained the most populous and architecturally elaborate community in the valley. It also continued as a "magnet" for valley settlements, despite a weak regional trend toward greater demographic dispersion. While more minor centers became the foci for smaller population clusters in the southern and eastern arms of the valley, the great majority of the regional population remained in Etla.

After 700 B.C. at San José Mogote, both public architecture and elite residential construction became more elaborate and monumental – for example, by incorporating huge blocks of limestone that weighed more than a ton (Flannery and Marcus 1983c: 75–7). In addition, Monument 3, the region's earliest *danzante*, was positioned in association with public buildings at the site. According to Marcus (1976a), this carved stone, which predated the display of several hundred such

*danzantes* at later Monte Albán, depicted a slain or sacrificed captive. The differential control of force also is indicated by the inclusion of an adult skeleton, thought to be a sacrificial victim (Flannery and Marcus 1983b: 58–60), under the wall of a high-status residence built on an artificially enhanced mound that previously was the site of a public structure.

Thus, demographic decentralization (see Kowalewski et al. 1989), which occurred with the loss of population at San José Mogote itself, apparently coincided with the expansion in the status, influence, and power of specific households at the site (and perhaps increasing participation "costs" for some commoner households). The highly decorated *gris* serving vessels, still much more abundant at San José Mogote than anywhere else (Kowalewski et al. 1989), now were more evenly distributed across the different arms of the valley. Perhaps the feasts and rituals held most frequently at San José Mogote now also were serving to help integrate a larger segment of the valley population.

Nevertheless, proximity to San José Mogote still had economic advantages as cultural artifacts other than pottery were more abundant on the surfaces of Rosario phase sites in Etla than elsewhere (Kowalewski et al. 1989). A similar pattern was found in the relative proportions of obsidian to the total chipped stone assemblage at three excavated Rosario phase communities. At Fábrica San José, a relatively small community 5 km east of San José Mogote, Drennan (1976b: Table 5) found that obsidian comprised more than twenty-five percent of the total chipped stone associated with household units. At Tierras Largas, a slightly smaller village near the southern edge of the demographic cluster surrounding San José Mogote, Winter (1972: 172) found that the obsidian composed a slightly smaller proportion (twenty percent) of the total in household units. Based on a very small proportion of these units, Winter and Pires-Ferreira (1976) suggest that the obsidian at Tierras Largas may have been pooled during the Middle Formative period as it had been earlier at San José Mogote. Interestingly, at Santo Domingo Tomaltepec, a somewhat larger and more elaborate Rosario phase community (than either Fábrica San José or Tierras Largas) located in the Tlacolula arm, Whalen (1981: 74) estimates that obsidian comprised only 0.05% of the total chipped stone found in household units. Thus, in terms of this particular exotic, the disparity in access between households positioned proximate and distant from the regional head town was far greater than it was even during the Tierras Largas phase.





Based on a careful analysis of the chipped stone artifacts from a series of excavated Guadalupe and Rosario phase house floors at three Oaxacan settlements (San José Mogote, Fábrica San José, and Huitzo), William Parry (1987: 23–5) argues that, while the quantity of obsidian was variable from house to house, the differences were not due to status differentials. He bases this interpretation on the percentage of obsidian in the chipped stone counts for each structure. Yet, Parry (1987: 108–10) acknowledges that the total quantity of household chipped stone was not independent of status. High-status residences at San José Mogote had considerably more chipped stone than found in the other examined structures, perhaps because these households at San José Mogote were more involved in craft activities. Interestingly, according to a more straightforward measure (quantity of obsidian per structure), the three high-status houses average more than sixteen pieces of obsidian, while the seven low-status houses contain an average of only ten pieces. It would be unwise to overemphasize these differences, given the vagueries of the archaeological record. Yet, Parry (1987: 125–31) also noted that obsidian "lancets," large blades with fine parallel pressure retouch, which were presumably used for ritual bloodletting, were found only at the site of San José Mogote in high-status and civic-ceremonial contexts. Thus at this time in Oaxaca, the use and distribution of obsidian, perhaps one of the more abundant and utilitarian of exotic goods (since some obsidian was used for domestic tasks), may have been associated to a degree with higher status.

Several implications may be drawn from these patterns. First, they add suggestively to the previously discussed issue of why households chose to cluster in Etla when the rest of the region remained much more sparsely settled. Second, they indicate that households in Etla, most probably at San José Mogote where the greatest volume and variety of exotic goods have been found, controlled, or at least dominated, interregional interactions during the Rosario phase.

While the area within an 18 km radius of San José Mogote remained the principal zone of possible surplus production, much greater potential for maize production above subsistence now existed in other areas of the valley (Table 10.4). The correspondence of this trend with aforementioned ceramic evidence for more Rosario phase

valley-wide integration is at least suggestive. While again the greater productivity of the maize plant contributed to the overall 1000-year trend in potential production (a farmer cultivating two hectares of prime valley land in a year with average rainfall now could sustain roughly four people as opposed to three in the Tierras Largas phase), the much more significant variable is the greater number of potential farmers (Table 10.4; Feinman and Nicholas 1987a).

As in earlier phases, there is little evidence for true "pressure" on resources (Feinman and Nicholas 1987a: Table 4.2). Large tracts of good quality farmland remained underutilized or uninhabited in the Valley of Oaxaca (Nicholas et al. 1986). In fact, even in those rare years when the entire Rosario phase "support zone" (for San José Mogote) experienced a dry rainfall year, a small maize surplus still could have been produced. In addition, despite significant organizational shifts, the regional population density remained little changed from the San José through Rosario phases (Table 10.3). Thus, for the pre-Monte Albán era of chiefdom formation and consolidation, there seems little question that the data from the Valley of Oaxaca more closely coincide with Drennan's (1987: 313–14) second evolutionary trajectory.

## THE MESOAMERICAN HIGHLANDS: A COMPARATIVE VIEW

In the preceding discussion (see also Drennan 1987: 316–17), political development in the Early and Middle Formative period Valley of Oaxaca was interpreted as related to a series of factors. These included civic-ceremonial differentiation, changing patterns of interregional exchange (as well as local access to exotic goods), and population growth and aggregation which translated into the spatially concentrated capabilities to produce much larger quantities of maize above household subsistence needs. Nevertheless, to evaluate more completely the alternative local demographic-environmental position, comparative research is necessary (see also Kirch 1984).

William T. Sanders (1984a: 277), an advocate of both such a broadly comparative approach and the overriding importance of local factors in social change, has argued that: "Mesoamerica, instead of providing us with a single laboratory case of cultural evolution, can actually provide hundreds of such cases." While I do not concur that





the control of exotic communications and goods can be so easily and necessarily relegated to "negligible" importance, I do agree that the developmental sequences for Mesoamerican regions may be compared and contrasted productively as long as it is recognized that these regional sequences are not *entirely* independent of each other.

In selecting a comparative sample from the Formative period in the Mesoamerican highlands, I have restricted the analysis to regions where a systematic areal survey (with population estimates) is completed. In prehistoric contexts, it is difficult if not impossible to gauge ancient *regional* population parameters in the absence of such studies. Since the examination of these parameters is a primary goal, this criterion for sample restriction seemed reasonable, while also providing a greater degree of comparability.

Five highland regions in addition to the Valley of Oaxaca (Fig. 10.2; Table 10.1) are examined: the Basin of Mexico (Sanders 1965; Parsons 1971; Blanton 1972; Sanders, Parsons, and Santley 1979; Parsons et al. 1982), the Río Amatzinac Valley in eastern Morelos (Hirth 1980, 1987b), the Cuicatlán Cañada (Redmond 1983), the Tamazulapan Valley in the Mixteca Alta (Byland 1980), and Ejutla (Feinman 1985; Feinman and Nicholas 1988), a small valley immediately south of the Valley of Oaxaca. More cursory consideration is given to the Tehuacán Valley (MacNeish et al. 1972; Drennan 1979; Drennan and Nowack 1984) and the Nochixtlán Valley (Spores 1972), where demographic patterns can only be partially and preliminarily reconstructed.

Although significant Formative era excavations have been conducted in most of these seven regions (e.g. Vaillant 1930, 1931, 1935; MacNeish et al. 1972; Spencer 1982; Grove 1987a), relatively few large horizontal exposures of domestic units have been published, and a land use study comparable to Kirkby's (1972) has not been completed. As a consequence, this discussion focuses on comparative settlement patterns and demography.

While seemingly straightforward, consideration must be given to the different procedures employed for estimating past populations in the five survey regions. In eastern Morelos, Tamazulapan, and Ejutla, the procedures employed by the original investigators corresponded with those used for the Valley of Oaxaca. Hence, it was easy to derive the midpoints of presented ranges and achieve roughly comparable figures. Redmond (1983) does not provide a best fit demographic estimate or population range for all Cuicatec sites; however, she does present the

areal size of each settlement. When no other relevant information was available, these data were used to estimate the pre-Hispanic population in a manner directly comparable to that employed elsewhere. In other cases, Redmond also lists observed house mounds and terraces, features which she uses to construct a second set of population estimates considerably different (often much higher) than those she bases on site area. Where such information was presented, I incorporated it with site-size information, deriving estimates that generally were in the middle of Redmond's (1983: 96) figures.

More troublesome was the Basin of Mexico, where the initial survey technique (Parsons 1971; Blanton 1972) set the standard for all the other discussed regions. Unfortunately, these conventions were not maintained in the regional summary volume (Sanders, Parsons, and Santley 1979), where the authors decided *not* to express population estimates as initial minimum–maximum ranges. In lieu, data are presented only as the maximum estimates (sometimes plus twenty percent). The comparability problem is complicated by the absence of more detailed reports (such as Parsons 1971; Blanton 1972; Parsons et al. 1982) for much of the surveyed region. Lacking such published studies, information strictly comparable to that presented originally by Parsons (1971) and Blanton (1972) or that used in the other highland regions simply cannot be calculated. A further complication in the Basin of Mexico is that roughly half of the area, including southern portions of the basin known to be key to Early and Middle Formative period occupation, has not been surveyed because of more recent urbanization. Nevertheless, many of the phase-by-phase population estimates presented for the entire basin (Sanders, Parsons, and Santley 1979) combine both areas that have and have not been studied. Lacking the raw site descriptions for all of the areas that have been surveyed, there is little choice but to accept these summary figures as presented. Thus, while I recognize that there is a possible methodological bias which may artificially inflate the demographic figures for the basin above those for other regions, I use them for three reasons:

(1) I am more comfortable following the estimates of the original investigators than manipulating numbers for an area about which I am less familiar;
(2) inflating population estimates for the basin may make some sense since the regional survey was conducted under much more urban conditions than were encountered in other regions (hence a greater percentage of ancient sites may have been covered or destroyed); and
(3) the estimated population densities for the basin are not that much higher than those for the other regions (Table 10.3).





Settlement pattern comparison indicates that the three largest regions (Río Amatzinac, the Basin of Mexico, and the Valley of Oaxaca) were in certain ways similar early in the Formative. As in the Valley of Oaxaca, the first phase in eastern Morelos (Amate), when sedentary villages were situated across the landscape, coincided with differences in intraregional size and nonresidential architecture. Like Tierras Largas-phase San José Mogote, Amate-phase Chalcatzingo was twice the size of any contemporary community (Hirth 1987b: 351), and contained the only monumental architecture in the region thought to pertain to this phase (Grove 1981a; Prindiville and Grove 1987). Both San José Mogote and Chalcatzingo also were situated proximate to the majority of the rest of the regional populace. Significant size differences also were noted between Basin of Mexico communities of this era (Tolstoy 1975; Tolstoy et al. 1977; Sanders, Parsons, and Santley 1979: 94–6). While, at present, nondomestic architecture has not been found at these Early Horizon Basin settlements, the areal difference might be a consequence of the research/excavation tactics that have been employed in the basin (Grove 1981a: 383).

At this time, no such intraregional settlement size distinctions are evident in any of the other five regions. Whatever social meaning might be attached to these areal differences, it seems to have had more to do with the total size of the regional population than with population density or demographic pressure on resources (Tables 10.2, 10.3). The population density of Tamazulapan was basically on par with that in the basin, the Valley of Oaxaca, and eastern Morelos. However, the three latter regions were all greater in areal scale and had considerably larger (although still very small) populations. Perhaps these larger valleys, with more sizeable and stable mating communities (despite similar population densities), had a demographic advantage over the inhabitants of adjacent smaller valleys (like Tamazulapan). Either such mating imbalances (see Wobst 1974, 1975, 1976) or simply the larger number of interacting communities and households (Johnson

1978, 1982, 1983) may have contributed to the beginnings of social or ritual differentiation in these larger, more populous regions (see Friedman and Rowlands 1978; Blanton et al. 1981; Kowalewski et al. 1989).

While the intraregional distinctions were minimal at the outset of the Early Formative era, they rapidly became more marked in the Río Amatzinac Valley as they had in the Valley of Oaxaca. By the end of the Early Formative, Chalcatzingo (like San José Mogote) was clearly a community unlike any other in its respective region in terms of size (twice the extent of the next largest settlement), public construction, and participation in long-distance exchange networks ("Olmec interaction sphere") (Grove 1981, 1987; Flannery 1982). As noted by Flannery (1982), Chalcatzingo also had a "centripetal pull" on other regional settlements (see Hirth 1987b: 353).

Based on the material from the Tlatilco graves (Porter 1953) and other findings, households in the Basin of Mexico also participated in the long-distance exchange sphere at this time. In addition, as in the other two regions, population growth was reasonably rapid (Table 10.5). However, unlike in the Río Amatzinac and Oaxaca Valleys, no single basin community was markedly larger than all others, and there is no evidence for mounded architecture (Sanders, Parsons, and Santley 1979: 96–7; Parsons et al. 1982: 365–7). While several basin communities are estimated to have contained roughly 1,000 people, none of these, to date, has provided clear indications for politico-ritual differentiation. Although as Parsons and others (Parsons et al. 1982: 365) have speculated, something on that order may have existed at Cuicuilco.

Regardless, the three areas that had settlement size and architectural (for Oaxaca and the Río Amatzinac) distinctions early in the Early Formative then also had greater intraregional differences along those same dimensions by the *end* of the period. Interestingly, of the eight areas considered, these also are the only three in which certain households clearly participated in the pan-regional interaction sphere and had access to a range of rare exotic goods (see also Drennan 1983a: 49–50; Drennan and Nowack 1984: 152). Thus, participation in that exchange sphere appears to have been greater where pre-existing/indigenous differences (in community size) already were present (Flannery 1968; Drennan 1976a; Drennan and Nowack 1984: 153). Significantly, as suggested for Oaxaca above, the emergence of a greater degree of politico-ritual differentiation by the end of the Early Formative is cross-regionally tied both to the differential participation of households in that exchange sphere, as well as to the agglomeration of population around those communities that were more actively involved in exchange and had distinctive civic-ceremonial construction. In such instances, an emerging chief has both increased spatial access to potential surplus production, as well as a means to realize that surplus through exotic goods used either ritually and/or in local exchanges. Here, it is worth noting the agricultural intensification (terracing) evident at Barranca phase Chalcatzingo (Grove 1987b: 420).





> The best opportunities for chiefs and other high-status challengers to obtain material rewards for their supporters and to evidence personal resourcefulness and ability lay not in controlling subsistence and utilitarian resources . . . but in establishing access to "scarce" nonutilitarian resources, including gold, pearls, and textiles. The means to acquire these scarce items centered . . . on chiefly participation in various regional and "long distance" exchange systems . . .
>
> (HELMS 1979: 34)

Again, a strong case cannot be made for a strict demographic-resource interpretation. By the end of the Early Formative era, Tamazulapan and possibly Tehuacán (MacNeish et al. 1972: 386–90) had population densities (Table 10.3) on par with the Río Amatzinac, the Valley of Oaxaca, and the basin, and yet there is less evidence for differentiation in the former regions. In Tamazulapan, Byland (1980: 130) estimates that the largest community had only seventy inhabitants and lacked public architecture.

Considering all eight regions, the largest and the densest population (Table 10.2) was in the basin, but political differences may have been less developed there than in the valleys of the Río Amatzinac or Oaxaca. Furthermore, there would seem to be little support for some simple or constant demographic threshold for organizational change in these data. The population (5,000) estimated for the Early Horizon in the Basin of Mexico is significantly higher than those estimated in the Valley of Oaxaca or the Río Amatzinac Valley for the later San José or Barranca phases (or for that matter the Rosario and Cantera phases) respectively. Yet, the degree of political differentiation was evidently greater in the latter two regions. Only later in First Intermediate phase 2 (650–300 B.C.), when the population of the Basin of Mexico is estimated to have reached 80,000, do we find a series of the largest

settlements in the region with *definite* civic-ceremonial architecture (Sanders, Parsons, and Santley 1979: 97).

During the Middle Formative era, the greatest similarities again can be drawn between the Río Amatzinac and Oaxaca, with Chalcatzingo becoming more architecturally elaborate (and remaining larger than) any of the other communities in the former valley. As in the Rosario phase Valley of Oaxaca, small secondary population clusters were established away from the major center, but at the same time the majority of the regional inhabitants remained nucleated in and around that "central place." At Chalcatzingo in the Cantera phase, long-distance exchanges of goods, information, and perhaps elite mates (Grove 1987a) remained partially focused on the lowland Gulf Coast, while in the Valley of Oaxaca, Middle Formative period preciosity exchanges became more focused on other highland regions (Pires-Ferreira 1975).

During the Middle Formative period, changing patterns of highland exchange may have contributed to the eventual emergence of political differentiation in several of the smaller valleys. In Tamazulapan and Cuicatlán during the Late Cruz and Perdido phases respectively (Table 10.1), "central places," large communities with distinctive mounded architecture, emerged. In both regions, smaller communities clustered around them. In Cuicatlán, Redmond (1983: 75–7) has shown that these "special" communities had greater access to exotic goods, including obsidian and marine shell. In both areas, these shifts coincided with the development of more distinctive local utilitarian ceramic traditions, while certain highly decorated bowls showed closer stylistic ties to outside the region (Byland 1980: 140; Redmond 1983: 63–81). These ceramic shifts parallel what was noted at an earlier date in the Valley of Oaxaca, and all may relate to the increasing participation of a few select households in extralocal exchanges while regional boundaries became less permeable for the majority of the populace.

In the Tehuacán Valley, Drennan and Nowack (1984: 154) postulate a similar shift in boundary relations at a slightly later date during the Late Santa Maria phase. Again, it is timed with the emergence of a "central place" (Quachilco), at which exotic goods were more abundant than usual (Drennan 1978: 78) and around which other settlements clustered (MacNeish et al. 1972: 397–8). Even in the Ejutla Valley, where larger communities with public architecture did not develop until later (in Monte Albán Late I), the rise of these early





"central places" was marked by population nucleation around them (Feinman 1985; Feinman and Nicholas 1988).

While in these cases, some population growth always coincides with the early stages of political differentiation, the most significant intervening factors do not seem to be pressure on resources or even agricultural risk. In addition, even in instances where the estimated rate of demographic change is rapid, "central places" do not necessarily emerge (Table 10.5). For example, the Early Cruz–Late Cruz phase transition in the Tamazulapan Valley was an episode of relatively rapid demographic growth (0.52 percent), yet a civic-ceremonial hierarchy apparently did not develop until somewhat later.

At higher elevations (the Basin of Mexico, Tamazulapan), where early maize farming may have been the most risky, human populations achieved greater demographic densities during the Early Formative without the emergence of "central places." If risk were the key variable in political change, one might expect the opposite, political changes occurring at lower population densities in those environments where farmers faced greater uncertainty (cf. Sanders 1984a). Likewise, while boundary conditions and the relative freedom of movement clearly influence the political process, I see little support for a strict or simple application of Carneiro's (1970) circumscription hypothesis at this stage of political development. In this sample, political differentiation occurs first in some of the larger valleys (e.g. Oaxaca) and at very low population densities (cf. Sanders and Webster 1978: 297–8).

Although the major focus of this discussion is on political development, several observations concerning long-term demographic change are appropriate. Increasing population was an overall (although not a simple linear) trend in each studied region. Yet, the population sizes, densities, and even rates of change in highland Mesoamerica varied through time and across space (Tables 10.2, 10.3, 10.5). In terms of the effective social-demographic units of ancient highland Mesoamerican society (e.g. the area as a whole, individual highland valleys, specific sites), there is simply no empirical basis (see also Feinman et al. 1985) for modeling population growth as a constant or a given (cf. Logan and Sanders 1976: 33; Sanders and Webster 1978: 297). Here, I am not suggesting that population was necessarily "regulated," but that the size and density of human groups are interrelated with social, economic, environmental, and political factors (and hence by definition at times influenced by them) (e.g. Cowgill 1975).

Nevertheless, in this comparative analysis, certain cross-regional patterns were observed. Often those settlements that either were slightly larger than average, or had special architecture, or had historical precedence at a time when intraregional community differences were minimal, subsequently became the regional "central places." In every area, the development of these nodal places coincided with population concentration around (as well as in) the emergent centers. Furthermore, the emergence of such settlement differences often co-occurred with apparent shifts in extraregional exchange relations and boundary activities, whereby certain households located in the regional centers controlled a larger portion of these formerly more open external contacts. The latter relationship is not totally surprising, since in a study of longer temporal trends in pre-Hispanic Oaxaca (Kowalewski et al. 1983), a strong negative relationship was noted between centralization and boundary permeability.

## SUMMARY THOUGHTS AND CONCLUSIONS

The thrust of this analysis is not to eliminate the variables, land and population, from a consideration of sociopolitical change during the Formative era in highland Mexico. Nor is the aim to polarize further the often polemical debate in evolutionary studies between ideological and economic factors. Land, production, population, and labor were important factors in the developmental processes discussed above, but so apparently were changes in the nature of interregional relations and information flows. What this empirical investigation has endeavored to discourage is the notion that the whys, wheres, whens, and hows of sociopolitical change in highland Mexico can be retrodicted simply through the narrow consideration of physical environments, that are artificially presumed to be isolated, and demographic processes, that are assumed to be constant.

Here, consideration has been given both to intraregional processes which fostered population nucleation, and hence the spatial inequities in the amount of surplus that could have been produced, as well as to interregional relationships that led certain households and settlements to control a disproportionate share of exotic goods and presumably information. In examining the latter, the key is not the total volume of





goods and information that was passed between regions but rather the pathways taken and the nature of the things exchanged (Brumfiel and Earle 1987: 4). Nodal households actively participating in interregional exchange would derive an advantage if the total volume of exchange decreased. Hence, it is not surprising that during the Middle Formative period in the Valley of Oaxaca, Parry (1987: 134) noted that the percentage of total chipped stone comprised by obsidian declined from fifteen to ten percent. At the same time, obsidian (particularly certain ritually important items) was distributed more differentially.

It should be clear that my arguments do not hinge on the strict *economic* significance of the rare and symbolically laden goods that were pan-regionally exchanged during the Mesoamerican Formative. Rather, it has been argued that these items (and the information conveyed with them) helped to socially distinguish certain individuals, households, corporate groups, and communities. Yet, greater access to these preciosities (as well as the rituals and the civic-ceremonial activities that they contributed to and the individuals that they marked) apparently was attractive, and the demographic nucleation that occurred around certain nodal communities clearly had important economic implications in terms of labor and agricultural production.

The specific factors which first served to differentiate communities like San José Mogote and Chalcatzingo from neighboring settlements remain somewhat unclear. Yet, through this comparative analysis, the processes surrounding the magnification of those initial differences have become more evident. Thus, even in a specific diachronic case, the factors and mechanisms which promote the beginnings of social inequality and leader–follower relations may not be the same as the conditions which embellish and extend those differences. Clearly then, the examination and comparison of long temporal durations and particular diachronic sequences is essential if we are to understand and account for societal variation and change. Some neo-evolutionists might eschew such a claim as "too-historical," and so by necessity, unscientific and non-evolutionary (e.g. Carneiro 1987). Yet, one need look no further than the paleontological writings of Stephen J. Gould (1986) to see that science and a consideration of history are so far from antithetical that both are indeed essential for an adequate understanding of evolutionary change.

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