THE BASIN OF MEXICO

Ecological Processes in the Evolution of a Civilization

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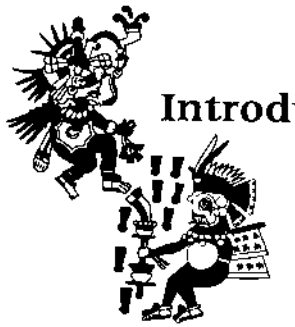

1

Introduction

This book is about a long-term archaeological project in the Basin of Mexico: a settlement pattern survey that began in 1960 and ended in 1975. We will try to explain why we started the project, how we did the fieldwork, what we thought we were trying to do at various stages of the research, what we now think has been accomplished during the years since 1960, and what we feel most needs to be done in the future. This book is not intended to be either a justification or an apology for what we have done. Obviously, we believe the work was quite worthwhile. It will be equally apparent to the reader that we now think some of the work was not carried out as effectively as it might have been: Some important things were left undone or underdone; some unnecessary energy was expended; and at some points we muddled about, conceptually and physically, in situations where more incisive thinking and action would have been desirable. An important aspect of this book, for Sanders and Parsons, is the opportunity it provides to reflect back over nearly half a lifetime of intensive involvement with the prehistory of a small piece of the world that has loomed rather large in the personal and professional experience of both. With the advantage of hindsight we hope to be able to convey something of this experience to the reader.

In the evolution of the civilization of a major culture area there have always been a number of small regions that have played unusually significant roles in the development of the larger unit—such a region is the Basin of Mexico. At the time of the Spanish Conquest it had the densest population, the largest and most highly differentiated urban centers, and the most com-

research, oriented at common objectives, could be planned and undertaken by individual investigators. The Basin of Mexico settlement pattern survey, which Sanders began in June, 1960, was the first such project to be undertaken within this new framework. The project had actually been conceived by Sanders prior to 1960, when, on the basis of ethnohistoric studies and available archaeological data, he had defined the Central Mexican Symbiotic Region (Sanders 1956). This area included the Basin of Mexico, together with adjacent areas of southern Hidalgo, western Tlaxcala–Puebla, and Morelos. This region, containing a diversity of natural environments, was seen as the nuclear region in which could evolve a complex Mesoamerican civilization founded on high productivity, dense population, and intensive specialization and exchange. With the Central Mexican Symbiotic Region defined as the postulated locus for the formation and development of a Mesoamerican civilization, it became necessary for Sanders to design an archaeological strategy for describing and explaining cultural evolution in this area. The reader in the late 1970s should recall that 20 years before most of Central Mexico was very nearly an archaeological blank, with only a few unusual sites being known in any detail.

The basic assumptions that underlay the planning of the project were few and broadly conceived. Civilization was seen as a socioeconomic system, characterized (*a*) by centralization of political authority, and (*b*) by considerable internal differentiation, based on economic specialization and differential access to economic and political power. A major research problem, then, was to design archaeological methods that would measure centralization and differentiation. It was evident at the outset that the problem of describing a prehispanic civilization and explaining cultural change through time levels was very much a regional problem, in which a large area and many sites would have to be systematically examined and analyzed. In 1960, Sanders felt that the only way that he could begin to realize his overall objectives would be to carry out an extensive regional settlement pattern survey, of the type earlier pioneered by the Viru Valley Project in Peru (Willey 1953). The original plan was to survey the entire Central Mexican Symbiotic Region. As it turned out, this plan proved to be too vast an undertaking for any single project, and we have confined our efforts to the Basin of Mexico alone.

A second major assumption was that a materialist paradigm was the most useful framework in which to explain why centralized and internally differentiated societies emerged in the region. The perspective Sanders favored at the outset of the project was Steward's (1955) cultural core model, in which civilization develops in an area as an adaptive response to the environmental circumstances of the region. This meant that data on resource exploitation would be required, and, again, it was felt that systematic regional settlement pattern survey was a necessary first step in developing hypotheses about such exploitation.

Even the most ambitious projects have to begin somewhere, and, in 1960, Sanders faced the problem of where to actually start his regional

surveys. The Teotihuacan Valley was selected as the starting point for a variety of reasons. Most importantly, René Millon was planning an intensive survey of the large Teotihuacan site, one of Mesoamerica's principal prehispanic urban centers. It was felt that a combination of urban and rural data would provide insights into the structure of prehispanic society that would not be apparent were either project to be carried out in isolation.

Second, unlike some other parts of the Basin of Mexico, the Teotihuacan Valley was still, in 1960, an essentially rural area with many surviving traditional patterns of resource exploitation and settlement that could provide interpretative analogues for prehispanic times. The same rural condition also suggested that site preservation would be better than in regions closer to Mexico City—an important consideration in the pioneer phase of the project. With its arid climate and large functioning irrigation system, the Teotihuacan Valley also seemed an ideal area in which to test the hypothesis, so new and challenging to archaeologists in 1960, that the evolution of a state in central Mexico was closely related to the development of hydraulic agriculture. Finally, because of his studies of contemporary agriculture and settlement in the Teotihuacan Valley in 1955, Sanders had a close familiarity with the area that enabled him to design his investigation there more effectively.

In 1960, Sanders initiated the Teotihuacan Valley project with a set of four specific objectives that he hoped to achieve, largely by means of systematic settlement pattern surveys:

1. To trace the development of agriculture, with a special focus on irrigation and terracing
2. To define and trace the development of different settlement types
3. To construct, as precisely as possible, a population profile
4. To explore the relationship between such phenomena as settlement patterns, agricultural techniques, and demography so as to illuminate the general process of cultural evolution in the Teotihuacan Valley, the Basin of Mexico, and the Central Mexican Symbiotic Region

The decision to begin our work in the Teotihuacan Valley was a logical and reasonable outcome of events during and just prior to 1960. However, one unforeseen consequence of this decision has proved to be rather unfortunate in terms of our general objectives within the Basin of Mexico: Mexico City, in the southwestern basin, continued to expand at a rapid pace throughout the 1960s and 1970s. By the time the Teotihuacan Valley project was completed, several key areas on the fringes of the modern metropolis, where good settlement data could have been collected prior to about 1965, had been destroyed. This is most particularly unfortunate in the case of the Cuicuilco area, in the far southwestern Basin, and we have long lamented the physical obliteration of this key site (apart from a few large ceremonial structures).

As will be detailed in subsequent chapters, during the 15 years after 1960, settlement pattern survey in the Basin of Mexico proceeded intensively

under the direction of several individuals. By the mid 1970s most of the entire area had been systematically examined. The only large blank was the area obscured by the modern metropolis of Mexico City in the southwestern Basin. During this passage of years we did a lot of fieldwork, but we paused occasionally to think and write about our data (Blanton 1972a, 1972b, 1976; Parsons 1968, 1971, 1972, 1974, 1976a, 1976b; Sanders 1965, 1968, 1970a, 1970b, 1975, 1976a, 1976b, 1976c). Other people have also used portions of our field data for a variety of purposes (e.g., Alden 1978; Brumfiel 1976; Earl 1976; Kottak 1978). Several investigators have undertaken comparable research in other parts of Mesoamerica (e.g., Blanton *et al.* 1978; Hirth 1974; Kowalewski 1976) and in Peru (Blanton and Kowalewski n.d.; Browman 1970; Parsons 1976c; Parsons and Hastings 1977). All of this work took place during an era in which there were some rather important advances in archaeological method and theory.

A good way to end this general introductory chapter might be to consider, in a general way, how our own research was affected by the general intellectual milieu in which we, as professional academic archaeologists, worked between 1960 and 1975. Near the end of this book we will attempt the converse of this, and consider how our own work has contributed to certain aspects of general anthropological theory.

In 1960 regional archaeology was still very much in its infancy. The classic Viru Valley monograph (Willey 1953) was virtually the only investigation whose objectives were comparable to our own. However, because of the unique environment and survey techniques employed there, the Viru Valley survey could serve only as a general kind of model for our own work. Similarly, the innovative surveys of Bullard (1960) and Adams (1961) in the Maya area were carried out in different ways and for somewhat different purposes than our own proposed research. Just as significantly, there had been little explicit thinking about how an archaeologist might approach a region in order to define and describe cultural systems on the ground at different periods of time. It was obvious to everyone, of course, that if you could locate and describe all sites within a designated region, you would be well on your way toward achieving this goal. The problems, of course, involved the proper designation of a region so that a series of "cultural systems" would fall within it, as well as the more practical matters of actually locating and describing sites and finding funds to support such work.

The Viru Valley Project, with its primary reliance on aerial photography to locate sites, produced a settlement sample heavily biased toward locations with preserved architecture visible on the photographs. Architectural preservation was very poor in our survey area, and, in any event, we wanted to avoid the bias inherent in their methodology. Vescelius' (1960) pioneering paper on sampling techniques based on probability statistics appeared at the beginning of our project. We were not aware of it then, and, in any event, it was most applicable to the single site, already located. The whole sampling revolution, initiated by Binford's 1964 article, was still years away, and we were not involved in the making of that revolution.

As will be spelled out in the next chapter, we opted for 100% survey coverage, and this continued, with very few exceptions, to be the procedure followed for the entire period of our surveys. In 1960, as we began our work, we couldn't think of any reasonable alternative. We felt rather strongly that in order to be able to adequately describe a cultural system on the ground, we needed a map that would show us the complete configuration of human settlement at any one period of time.

During the later 1960s and into the 1970s, however, the archaeological literature was full of papers, symposia, and books about archaeological sampling. And, through it all, season by season, we kept on grinding out 100% surveys. Some of us had mixed emotions, and Parsons (1972) once even came close to apologizing for the absence of any kind of sampling strategy in our research. Sometimes it seemed that our work was less rigorous, less scientific, unnecessarily costly, and perhaps even less useful because we had no sophisticated sampling design. And yet, the data were exciting, and new ideas were generated during and after each fieldseason. New problems clearly defined themselves as the years went by, and the questions we were asking kept getting better. The National Science Foundation kept on supporting our work. Other people asked to use our data. Clearly we were getting good and useful information. And, when we periodically reexamined our principal objectives, a complete survey always seemed the best way to proceed.

From the perspective of the late 1970s we believe, more firmly than ever, that our original decision to do 100% surveys was one of the best decisions we made. In the next chapter we will go to some length to explain why we feel this way. We now realize that many things can be done with a complete settlement map that we hadn't even thought of doing when we started out. Some of these things would be difficult, or even impossible, to do in any reasonable way with a fractional sample, however systematically designed or statistically valid. We are sure that the only serious arguments that would be raised against our position would involve the greater economic costs of complete survey. We will try to address this matter as well in the next chapter.

Another aspect of the foregoing discussion about sampling is that throughout much of our fieldwork we had not adequately conceptualized some of the problems we were grappling with. This probably accounts for some of the agonizing some of us did along the way about some of our procedures and methods. Our objectives, spelled out in most of our grant proposals, were pretty broad statements, wholly worthwhile, but with limited explicit reasoning about how archaeological remains were going to get translated into agricultural systems, population, patterns of specialization and exchange, political differentiation, social variability, hostility, the interrelationships between all these, and other matters. It can be reasonably argued that our models were deficient, and that our reasoning was very largely inductive—more so, perhaps, than it needed to be most of the time. In many ways we knew what we wanted, but we often had failed to fully think through

what our hypotheses were and what we might expect to find in the way of artifact configurations if one or another alternative proposition held.

On the other hand, it should also be kept in mind that we had to cope with another major difficulty, especially in the earlier years of the project, and that was the fact that our survey area was all but an archaeological blank except for isolated data on architecture, ceramics, and art. We knew almost nothing, until our own surveys had progressed for a while, even about such basic factors as settlement distribution and relative population. What we had to do, in other words, was to define many of our problems ourselves. Before the problems are properly defined, how can an archaeologist help but do a lot of inductive thinking? Perhaps one of our major contributions in the chapters that follow will be to give the reader some idea of how we would now proceed if we had to do it all over again.

From the outset we were also aware that our research enjoyed some enormous advantages. Because we started out working in a near-vacuum of information, every bit of data we collected made a significant contribution. And, the data were abundant and easily obtained—remains of human settlement almost literally jumped out of the ground at us. Mounds and surface pottery were visible almost everywhere; all we had to do was put them into a map and sort them out in time. There are probably few other areas in the world so conducive to rapid, productive surface survey as the Basin of Mexico was. And yet, at the beginning of our project there was no established methodology for recording settlement data in the way we wanted to. We had to create such a methodology largely from scratch, and, as will be detailed in the next chapter, we spent some time in experimentation with a variety of techniques, some of which did not work out so well. Because we had to innovate and improvise, the earlier stages of our survey were less efficiently done than the later. The watershed years were our 1963 and 1964 fieldseasons. During these months our basic survey methodology was laboriously hammered out, and it has been modified only very slightly since. It has been quite pleasant to find out from a number of people who worked with us at different times that our basic methodology has been transplanted to other areas where it has proven useful and productive (e.g., Blanton *et al.* 1978; Hirth 1974; Parsons and Hastings 1977; Whalen 1977).

Another great advantage to our research was the ease with which a meaningful survey area could be defined on the basis of natural topography. Although this may seem like a fairly small matter, it is actually of considerable consequence. If we wanted to define cultural systems on the ground, how much ground would we need to cover in order to be reasonably confident that we had included all the components of a complex society? Carried to its logical extreme, one might have to include the whole of Mesoamerica in such a survey. However, with the Basin of Mexico measuring some 7000 km^2 in surface area, we had a well-defined natural region that was small enough to deal with on a practical basis, but which, at the same time, was large enough to provide at least the heartland zone for several major cultural systems. High

mountains on three sides and an arid northern frontier provide significant obstacles to human settlement that still affect modern occupation. We know of few other areas in the world where cultural and natural borders coincide so well. Regional surveys in most other parts of the world (e.g., Adams and Nissen 1972; Parsons and Hastings 1977; Puleston 1973) have had to draw rather arbitrary borders around their study areas. This may have a significant, though largely unpredictable, effect on impressions about settlement patterns, particularly in more complex kinds of societies where the location of a single important settlement can have a rather profound impact upon many others. For us, the Basin of Mexico was a made-to-order survey area, and we did not even have to think very much about where to draw our survey limits: In most cases we just stopped at the bases of the steep, forested slopes of the surrounding mountain ranges.

Throughout the entire course of our work one of our major sources of stimulation and edification was the presence of several other archaeologists and ethnohistorians working contemporaneously in the Basin of Mexico. Some of the details of these complementary investigations will be discussed in later chapters. For the moment it suffices to note that we benefitted immensely from these contacts. From René Millon's intensive survey of the Teotihuacan center (e.g., Millon *et al.* 1973) we annually received new ideas for making sense of our own growing corpus of rural settlement data as affected by the presence of the great city. James Bennyhoff, and later Evelyn Rattray and Darlena Blucher, all of Millon's project, provided an increasingly refined ceramic chronology for Teotihuacan which helped us considerably in phasing our own sites. Paul Tolstoy, working with Formative ceramic chronology and economy in the southern basin (e.g., Tolstoy 1975; Tolstoy and Fish 1975; and Paradis 1970), gave us new insights into our unexcavated Formative sites throughout the Basin. Thomas Charlton's work with colonial archaeology (e.g., Charlton 1969, 1972a, 1972b) made us realize that some of our Aztec sites probably had significant post-Conquest occupations. Pedro Armillas' pioneering work in the chinampa area (e.g., Armillas 1971) provided a much-needed baseline for our own survey of that region. Angel Palerm's ethnohistoric researches into prehispanic and colonial hydraulic engineering (e.g., Palerm 1973; Rojas *et al.* 1974) greatly clarified our thinking about the physical remains of dams, dikes, and causeways we encountered in various places. Charles Gibson's monumental synthesis of historical documentation (Gibson 1964) became a veritable bible for us as we searched for historic analogues of prehistoric patterns. Edward Calnek's archival-based reconstructions of Aztec Tenochtitlan (Calnek 1972, 1973, 1976) gave us the first good view of this key center, almost wholly invisible to archaeologists under the huge mass of colonial and modern Mexico City.

By the early 1970s a substantial quantity of information about prehispanic life in the Basin of Mexico had been collected. Much of it bore directly upon the topics Wolf had in 1960 proposed as significant research objectives (see the preceding discussion). Other data were relevant to significant mat-

ters that nobody had even thought of in 1960. It was clear to everyone concerned that during a little more than a decade there had been a quantum jump in our knowledge about prehistoric society in the Basin of Mexico. Feeling that it was time to take stock of what had been learned and where future research efforts might best be directed, a second conference on the Basin of Mexico was held in April 1972, under the auspices of the School for American Research in Santa Fe, New Mexico. Eric Wolf again acted as conference chairman. Some of the substantive results of this meeting were subsequently published in book form (Wolf 1976).

Everyone at the 1972 meeting was impressed with how much had been learned since 1960. In contrast to the earlier meeting, when most discussions had revolved around what we would like to know, the 1972 meeting consisted of four exhausting days in which substantive information flowed out in an almost endless stream. It could easily have gone on far longer. Perhaps the most telling sign of how far we had progressed since 1960 was the fact that a significant portion of the 1972 conference was spent in arguments about how data were to be interpreted or how data bore upon general theoretical problems. Although many different arguments arose on a variety of occasions, most of them revolved around two basic questions: (1) Was population pressure the principal driving force behind cultural evolutionary change in the Basin of Mexico between 1000 B.C. and A.D. 1520? (2) Is the materialist paradigm, especially when phrased in terms of the hydraulic hypothesis, adequate to explain the development of the Teotihuacan urban system? In both arguments, regional settlement pattern data figured prominently, on all sides of these principal issues.

The 1972 conference failed to resolve these matters. Later on in this book, we will address these, and other related questions, again. They are actually specific variants of more general questions being asked by many social scientists interested in cultural evolutionary change.

8

The Village and Institutional Evolution in the Basin of Mexico

SOCIOECONOMIC TYPOLOGY

In Chapter 1 we stated that one of the objectives of the Basin of Mexico surveys was to describe the socioeconomic evolution of the prehispanic culture of the area. In Chapter 5 we presented a detailed summary of the history of settlement systems. In this summary we intentionally avoided the use of higher level interpretive and analytical sociological terminology and adhered for the most part to a descriptive typology. In this chapter, we will attempt to characterize the prehispanic societies that were responsible for the archaeological remains in terms of social or economic typologies. The major question is: What kind of typology? In the field of social science, typologies have been defined for entire socioeconimic systems, and for relatively small scale analytical units.

Among the broad types of social systems defined by cultural evolutionists are Service's band, tribe, chiefdom, and state; Fried's egalitarian, ranked, and stratified societies, and the state; all of which have been used by one of the authors of this study (Sanders and Price 1968; Sanders and Marino 1970; Sanders and Webster 1978) as models for prehistoric societies. These schemes have been widely used in recent years in the archaeological profession generally. The major problem with large taxonomic categories of this type is not, as many researchers have said, that they tend to divert the user from considerations of process, but rather that they assume too close a functional relationship among the various aspects or categories of human

behavior. For example, in Service's definition of chiefdom as a general type, the economic behavior of redistribution is included as part of the definition, yet the chiefdom is essentially a political type that may be associated with a variety of economic behavioral patterns. It would seem more useful, therefore, to use somewhat more restricted taxonomic categories than whole socioeconomic systems, and this is the approach that will be followed generally here.

As Flannery has pointed out, in a brillant essay "The Cultural Evolution of Civilizations" (1972), the fundamental changes in the socioeconomic sphere of culture can be subsumed under two processes, centralization and segregation. Socioeconomic systems have evolved from small, decentralized, homogeneous societies to large, centralized, heterogeneous ones. One could, and this would be a useful procedure for many purposes, simply measure these two processes quantitatively, a particularly attractive approach for archaeologists. On the other hand, there is substantial evidence that qualitative changes—that is, changes in structure—are functionally related to quantitative changes, so that both approaches are useful. To be even more useful, however, the two processes should be dissected into more specific processes and used as analytical tools, in both qualitative and quantitative terms. For example, the process of segregation includes such subprocesses as economic specialization, stratification, exchange, and urbanization. Centralization primarily includes the process of politicization but may include others, such as militarization, as well.

Economic specialization is one of those variables that can easily be quantified, at least in the ethnographic context. Chapple and Coon (1948) defined a series of levels of evolutionary complexity in economic specialization that has never been extensively used by either ethnographers or archaeologists, but which has considerable merit. Much of the polemic, for example, about this process could have been avoided if the quantitative approach suggested by these writers had been used. The range is from societies characterized by no specialization, other than age and sex, to various grades of part-time specialization (and these levels could be quantified in terms of how much time is spent by what percentage of the population, in what kinds of specialized tasks) to full-time specialization. The process, as in many cases of cultural evolution, is an additive one rather than one of replacement; that is, as societies evolve, specialization by age and sex continue as well as part-time specialization, even when full-time specialization is highly developed. Structurally, the shift would be from village part-time specialization, in which occupational groups are not socially differentiated and where production is organized on the basis of the household, to the highly organized craft guilds associated with urban residence and full-time craft specialization.

Exchange, like economic specialization, is an easily measured variable. Chapple and Coon suggest calculating the percentage of consumption goods in a sample of households that were obtained from outside the household as

a measure of the process. Obviously variations in this percentage are in direct relationship to the quantitative value of economic specialization. One could also break down these calculations more finely in terms of distance from which goods were procured.

For example, in highland Oaxaca today (see Cook and Diskin 1976) there is a stratified exchange system that operates on four territorial levels. Some exchange occurs between households but within the same community. Exchange also occurs between households from a group of communities that focus on a central market (redistributive place) that meets once a week and can be referred to as a local market system. A group of such local market systems, however, with market days staggered through the 7-day week, form a regional market system. Professional middlemen move goods in a weekly circuit from one local market town to another, so some goods are purchased that originate outside of the local market system. Finally, via middlemen, goods from other areas of Mexico, and from outside the country, find their way into the regional market area. Berg (1976) tabulated types of goods in terms of their origin in the stratified market system. Even more useful would be data on consumption rates of each item and the energetic costs of its production. By this method we could quantify exchange in energetic terms.

Structurally, exchange systems have been analyzed in terms of three basic kinds of distribution: reciprocation, redistribution, and marketing. Reciprocation involves paired interaction between two producer—consumers and the exchanges are generally balanced, that is, the energetic costs of the objects exchanged are equivalent, and the exchange is directly between the two individuals. Ideologically, the exchange is often conceived as a gift, although reciprocation is, of course, expected. Such exchanges are often described by anthropologists as essentially social in function. They serve to strengthen already existing kin ties, or establish new ties with nonkin. Economic specialization, where present in this type of exchange, is part-time, and even then usually involves a minimal investment of time and labor on the part of the producer in the production process.

Redistributive economies are more clearly economic in nature and generally involve community level part-time specialization; that is, most of the families in the given village spend a considerable part of their work input in the production of one or a few particular goods for exchange. They are usually agriculturally self-sufficient, or nearly so. The major purpose of exchange is to even out imbalances in resource distribution produced by the heterogeneity of the natural environment. Let us suppose, for example, that village A is located in an area where there are good ceramic clays, village B is near a basalt outcrop, and village C near an obsidian deposit. All three villages need ground stone and chipped stone tools, and pottery to maintain their lifestyles. Each village then specializes in a particular product, produces a surplus of these products, and exchanges them.

In many cases the energetic cost of production of the various goods is roughly equivalent and hence no profit is involved in the transaction. The

economic system, therefore, does not involve, strictly speaking, a market economy. In order to make the exchange, the common arrangement is for each producer to carry his product to some central point. This central point may be a person or a place. In Service's classic chiefdom it is a person, the chief, who receives the surpluses, often ideologically received as gifts to an elder kinsmen, and he then redistributes them to the villages that lack the particular product. This is done periodically in a series of public festivals in which large numbers of the villagers gather at the central community. A more effective system, which probably develops when the volume of such exchanges reaches a particular point, involves a central place, where the particular producers can make their exchanges directly. In contemporary Mesoamerica, these are frequently referred to as markets or market places. In lieu of the absence of a profit aspect, it is best to consider these as redistributive places. Since specific transactions are dyadic and reciprocal, one could also refer to these as reciprocation places, except that usually reciprocation involves a considerable overlay of ceremonial behavior; whereas the exchange in this case is more comparable, in its impersonal character, to marketing.

Finally, market economies, involving the concept of profit, and including as institutional elements professional merchants or middlemen, full-time craft specialization (often organized into guilds), and permanent wholesaling and retailing establishments, are characteristic, and form another kind of economic system. Such systems may include market places, in which the exchanges occur, that are identical in physical appearance to the redistributive or reciprocation places just noted. In terms of evolutionary process, the progression is clearly from reciprocation to redistribution to marketing, but the process is essentially an additive one, rather than one of replacement. This means that in highly evolved economic systems all of these three elements may be contained, as in the case of contemporary Oaxaca, and this combination was undoubtedly true in prehispanic Mexico at the time of the Spanish Conquest.

Stratification is a complex process that involves the tendency for status positions to become hierarchical, or assume different values of worthwhileness and accessibility to those things that society has determined valuable. It is in fact the product of several other processes, but there is a value in treating it as an independent process as well. In terms of variation in the structural characteristics of stratification, writers like Service and Fried have used broad definitional categories such as egalitarian, ranked and stratified societies, but considerable controversy has developed over the use of these terms. It is not our intention to summarize all of this debate; rather what we propose here is that the stratification process is best viewed as an expansion of the application of the hierarchical principle of status differentiation. What this means is that all societies have some degree of stratification, even hunting and gathering bands. In societies that Service calls bands and tribes, and Fried refers to as egalitarian, however, inequities of access involve

women primarily. As the social system evolves, inequities increase to include access to highly prized, but nonutilitarian, technology and nontechnological items such as titles; finally to include goods that are basic to the energetics of the ecological system, in most preindustrial societies meaning primarily access to agricultural land.

Since the process of stratification is usually accompanied by other processes, such as economic specialization, "more economic" patterns of distribution of goods, and politicization of social interaction, it is also marked by an increasing tendency of whole groups of people to share the same rank and form well-defined classes. It is essentially to the latter condition that Fried and Service would apply the term *stratified society*, and contrast it to earlier kinds of stratification, where there is more of a continuum of differentiation of rank. In highly evolved examples of stratified societies, the classes may be characterized by endogamy, and concepts of ritual purity, to form relatively rigid structures normally referred to as castes.

In either case, whether the society is characterized by classes, which permit some vertical mobility, or castes, where vertical mobility is virtually nil, all preindustrial societies, because of the limits of productivity and transportation technology, have at the base of the pyramid a large and socioeconomically deprived class of food producers, who are terminologically referred to as peasants. A *peasant*, using Wolf's definition (1966), is a food producer with access to a small amount of agricultural land. This access may be direct, in cases where he owns the land, or it may be indirect, in which case he is a tenant on land belonging to someone else. In either case a lien is attached to his production, referred to as tax in the first case, or rent in the second. Because of his limited technology and access to land, his production is small and devoted primarily to providing him with a bare caloric minimum and a small surplus, for replacement of technology (what Wolf calls the replacement fund), for ceremonial obligations in cases where he is a participant in a corporate community organization (the ceremonial fund), and for payment of the rent or tax. It is the presence of this class that is the critical element in what evolutionists have referred to as stratified societies.

The process of politicization refers to the evolution of formal status positions and institutions involved in the legitimate exercise of power. Basically, the process is one of expansion of the role of such institutions in social control and integration, at the expense of familial and sodality type institutions. Social control in the latter case tends to operate primarily in the form of public opinion or censure, and is therefore highly decentralized. Structurally and functionally, as political systems get more complex the process involves an elaboration of status positions, and more explicit definition of the roles of these positions. Intermediate levels in the process tend to be characterized by general purpose status positions with only vaguely defined delimitation of roles. The climax of this process lies in the bureaucratic structures of industrial societies, where status positions are not only highly specific in terms of duties and obligations, and the definition of power

very explicit, but specialized training is required in order to prepare people for occupying such positions. As part of this process, a well-defined chain of command and specialized functions become increasingly characteristic of political institutions.

Another way of measuring politicization would be in terms of expanded functions. Leaders in "egalitarian" societies do little more than arbitrate disputes, or assume short-term leadership roles over samll groups, in the exploitation of resources or defense of territory. In higher level political systems, arbitration becomes adjudication; and the political institution may be increasingly involved in managing economic production and distribution. Expansion of these activities, of course, augments and amplifies the amount of power available to the high status positions. The process that Flannery refers to as centralization involves primarily this type of expansion of function.

The process of militarization is comparable to politicization and stratification in the fact that it is found at all stages of sociocultural evolution. What is involved essentially in the evolution of militarization is a process of increasing significance of warfare in terms of its impact on socioeconomic systems. All groups wage war, but in the case of simpler societies the major function of warfare is as a spacing mechanism, to reduce competition over resources, and as a mechanism of achieving access to the one resource that is unequally distributed, women. Much of this kind of warfare is of the quick raid type, and the result is little change in the sociocultural structure and size of the societies that are involved. At the other end of the evolutionary continuum, warfare is characterized by having an increasing effect on the mechanisms and processes of politicization and social stratification. The results of warfare in this case involve substantial changes in the nature, structure, and size of competing societies.

We have intentionally left urbanism for last because of the complexity of the process, and the fact that it is difficult to discuss it without reference to the other processes. Basically, it is the process whereby population and certain activities, such as production and distribution of goods and political administration, become increasingly concentrated or nucleated at one locality. Highly urbanized communities are therefore characterized by large populations, high population densities, and extreme socioeconomic heterogeneity, characteristics that are functionally interrelated. All of these features can, of course, be quantitatively measured both in the ethnographic and archaeological context. The urban community is perhaps the best example in human society of a cybernetic system, that is, one in which changes in any of the variables will automatically and significantly change the others.

The broad schemes of social taxonomy, of the Service and Fried type, involve assumptions as to the functional interrelationships among these various processes. Service's band society, for example, is essentially a society where the processes of politicization are developed only to the level of informal leadership involved with arbitration, and occasionally in the organization of small groups for resource exploitation and defense. Stratification and economic specialization are based entirely on age and sex, and warfare functions only as a spacing mechanism and to procure women. Exchange is quantitatively insignificant and involves primarily a pattern of balanced reciprocation. At the other end of the scale, what he would call the state includes well-defined social classes or castes, with differential access to the basic means of production; formal bureaucratic political organization, often involving ownership or tax rights over agricultural land; full-time craft specialization; market economies, etc. The problem, as we pointed out, is that these processes are broadly correlated, but not in such a precise way as the social typology would suggest.

ARCHAEOLOGY AND SOCIOECONOMIC RECONSTRUCTION

The reconstruction of the institutions of a prehistoric population is a formidable task when such reconstructions are based entirely on survey data. Basically, the problem is to what degree are settlement pattern and artifact distributions correlated with socioeconomic behavior. Posing it another way: What kinds of technology are most intimately related to what kinds of social organization? As was apparent from our previous discussion, all human societies are organized on the basis of a few fundamental principles, such as rank, kinship, age, sex, and coresidence. All these principles have technological reference. Gross differences in rank are usually reflected in the quality and quantity of dress, housing, or burial furniture; sex and age may be reflected in either the first or last category; and territorial divisions, along with some types of kin-based groups, are usually expressed in the physical plans of houses and communities. Furthermore, we believe that the degree of significance of an organized group within a society is closely correlated with the degree to which physical discreteness is expressed. For example, if lineages are definable in a given society but have very limited or minor functions, the possibility of mutual residence of its members is probably much less than a case where lineages are highly organized and well-integrated corporate groups possessing a variety of functions.

The functions of these defined social groups—economic, political, or social—can be ascertained by a statistical analysis of artifact distribution, and specific architectural features of structures—particularly when the analysis of artifacts includes a wide range of techniques now available to archaeologists, such as the analysis of wear patterns and trace element analysis to locate the sources of raw material.

In our opinion, given ideal conditions, the archaeologist can reconstruct the social and economic behavior of a prehistoric people almost to the degree of specificity that an ethnographer can study contemporary populations. By ideal, we mean perfect site preservation and complete excavation of all sites.

very explicit, but specialized training is required in order to prepare people for occupying such positions. As part of this process, a well-defined chain of command and specialized functions become increasingly characteristic of political institutions.

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In our opinion, given ideal conditions, the archaeologist can reconstruct the social and economic behavior of a prehistoric people almost to the degree of specificity that an ethnographer can study contemporary populations. By ideal, we mean perfect site preservation and complete excavation of all sites.

Obviously, neither condition is feasible and the problem is essentially one of sampling. Large-scale settlement survey of the type conducted in the Basin of Mexico is obviously one research strategy that is feasible in terms of time and money, but surveys cannot resolve all of the problems of institutional reconstruction that the archaeologist poses. To do this, excavation is needed. Over the years, large-scale excavations have been conducted at major sites like Teotihuacan and Tula and at a number of smaller centers, and ethnohistoric data on Tenochtitlan are abundant. Only a fraction of this research has involved the excavation of residences and an even smaller fraction has been oriented toward the reconstruction of institutions. Virtually all of this latter research is unpublished. Ideally, we would like to include in this volume a chapter on the results of excavations in the major centers, where the evolutionary stage of the social system is best indicated, to complement and expand the survey data, but the status of these projects makes this unfeasible. We can, however, summarize some of the preliminary results of survey, ethnohistoric research, and excavations at major centers, such as Teotihuacan, Tula, and Tenochtitlan—sites that span the final 1800 years of the cultural evolution of the Basin.

What these data demonstrate is that the general process of centralization and segregation, including all the component processes, were highly evolved at Middle Horizon Teotihuacan and in these later centers. Societies that resided in these centers and their sustaining areas were all characterized by highly evolved patterns of economic specialization, including full-time specialists, organized on a suprafamilial level (in the case of Tenochtitlan in barrio guilds); exchange systems had evolved in the point where all three kinds of exchanges were present; society was highly and complexly stratified, with a well-defined peasantry; political institutions were elaborated and involved a variety of functions; and urbanization was highly developed. In broad typological terms, all were centers of states and all were cities.

There were also differences that reflect points along the evolutionary process, with Teotihuacan representing the beginning, Tenochtitlan the end of the process, and Tula, in most cases, occupying an intermediate position. In the case of Teotihuacan, and in this case it contrasts with both Tula and Tenochtitlan, many of the peasants (approximately 40% of all of those residing in the Basin of Mexico in Middle Horizon times) resided physically at the city and made up two-thirds of the population of the city. The presence of this large class would tend to blur somewhat the socioeconomic distinction between urban and rural, and the relatively low percentage of the non-food-producing population at this city, compared to the later centers, suggests an appreciably lower index of urbanization.

The maximal size of organized craft groups at Teotihuacan was less than at Tenochtitlan, and the plans of the compounds would suggest a more kinlike structure. The barrio organization of crafts at Tenochtitlan would indicate a more guild-like organization as does Sahagun's description of some of the craft groups. In this connection it is of interest that production

for export at Teotihuacan, at least of obsidian, was organized by the state. The presence of much larger craft groups at Tenochtitlan presumably meant that such production could be accomplished without the direct involvement of the state. Where Tula lies in terms of this difference is not known, but there are large continuous areas of obsidian workshops not specifically associated with public buildings that suggest a barrio-like organization of this craft.

Recent studies would suggest that Teotihuacan and Tula were not the capitals of very extensive territorial domains, at least not comparable to that of the Aztec Empire. Assuming that the Ciudadela was the palace at Teotihuacan, the residential portions of this structure were much less monumental than the palace of Moctezuma, and what evidence we have suggests lesser internal differentiation of functions of the residential structures. These characteristics would correlate with the lesser political importance of Teotihuacan and suggest that the state was much less highly developed in terms of structure. If the unexcavated structures south of Temple B at Tula are the remains of the royal palace, it too represents a much less monumental structure than that of the Aztec ruler. In connection with the process of politicization, the evidence suggests the presence of a professional warrior class in all three centers, and yet it is only at Tenochtitlan that this class seems to have been a significant element in social stratification. Finally, using architecture as a guide, Teotihuacan society seems less sharply stratified than the Aztec, that is, the quality of housing is on the average higher in the early period and a higher percentage of the population resided in living structures of high quality.

Data on all of the noted processes are noticeably poorer for the Early Horizon—First Intermediate One—Three phases, primarily because none of the centers have been extensively excavated. The only major center during this long period, other than Teotihuacan, which could be classified as a large center, is Cuicuilco, and the data on this site are very scanty. Data from the First Intermediate Three and Four phases at Teotihuacan would suggest that urbanization and its corollary process, economic specialization, was not very highly evolved. Politicization, however, as measured by monumentality of temples, was a vigorous process, at least at Cuicuilco and Teotihuacan. It is not quite clear to what degree Teotihuacan at this time was a highly stratified society. Virtually all of the population of the Basin resided at the center, which would indicate that the differentiation into well-defined socioeconomic classes was not characteristic, certainly the differentiation was not to the degree that one would suggest the presence of a peasantry class. Scattered data from smaller centers do not suggest full-time craft specialization, well-defined socioeconomic classes, marketing economies, and professionalization of warfare, but the data are admittedly scanty. There is some evidence of community level, part-time economic specialization and substantial evidence of hierarchical differentiation of statuses, primarily in the form of burial furniture, and in the differentiation between centers and

small settlements during the First Intermediate Phases Two and Three. Keeping in mind the admittedly poor quality of the data, the evidence would suggest that societies during the period of time from Early Horizon to the First Intermediate Four phase would generally fit into the broad range of types Service calls tribes and chiefdoms, and Fried calls egalitarian and ranked societies.

Although the results of major excavations at the major centers are generally unavailable to us, we do have a rather large body of partially analyzed excavated data from several small sites that we excavated in conjunction with our project. Such small sites are as much a product of overall regional organization as are larger centers. In this chapter we will supplement and amplify the data on social evolution by discussing two small sites which we excavated in considerable detail. In so doing, we want to provide more complete descriptions of settlement systems than has been possible from surface remains alone. In particular, we want to more adequately reconstruct population, intracommunity social structure, and function in order to more precisely measure critical changes in segregation and sociopolitical centralization. Our fairly complete regional perspective should now permit us to understand the roles of individual excavated sites much more fully than during earlier stages of our project when such a regional perspective was much more limited. Conversely, the mass of excavated data available to us from these two sites can make the totality of our regional surface material much more comprehensible. Ideally, of course, we should have such excavations for several representative site types from each time period and each major stage of evolutionary development. One day, in a revised edition of this book, this may actually be possible. For the present, however, we must make do with what we have: two major excavations of two communities, spaced about 1000 years apart, and representing two quite different stages of evolutionary development.

One site is Loma Torremote (QF-50), excavated by Rosa Reyna and Robert Santley in 1974–1975, and dating principally from the First Intermediate Phase Two A. The entire occupation of the site runs from Early Horizon Phase Two to First Intermediate Phase Two B, but the excavated houses date primarily to First Intermediate One–Two A times. The second site is the Middle Horizon component of Maquixco Bajo (TC8), excavated by the Teotihuacan Valley Project in 1961–1962. Once again, there are several occupational components: First Intermediate Phase Four through the Middle Horizon, with Second Intermediate Phase Two and Late Horizon components as well. However, the excavated houses discussed here date from the Middle Horizon exclusively. We have selected these two sites for discussion here for two main reasons. First, the excavations in both cases were large, lateral exposures, especially designed for the purpose of reconstructing house plans and artifact distributions for a single phase. Second, the two sites represent occupations at two very different developmental stages in the Basin of Mexico: the First Intermediate Two A, in the mid-first millenium

B.C., when political organization was fragmented and when there were no major centers; and the Middle Horizon, a millennium later, when Teotihuacan was the capital of a large, highly centralized state organization. Loma Torremote was the central community of a small settlement cluster on the piedmont and alluvial plain west of Lake Xaltocan–Zumpango. Maquixco Bajo was a large, nucleated Middle Horizon community, less than 2 km west of the western border of Teotihuacan. The results are compared to less accessible or at least less complete data from a number of other dependent sites for a series of phases during the long period of occupation of the Basin.

LOMA TORREMOTE: A FIRST INTERMEDIATE PHASE TWO VILLAGE

Loma Torremote is located approximately 4 km west of the modern town of Cuautitlan in the State of Mexico. In 1974 the site was found to be in imminent danger of destruction, and from August 1974 until February 1975, an intensive surface survey, 22 stratigraphic excavations, and one large lateral excavation of three adjacent household units were carried out by I.N.A.H. in conjunction with personnel from the Pennsylvania State University (see Figure 8.1). The results of this study, plus information gathered by Harold McBride (1974) in 1968, are the basis for the following reconstruction.

Natural Setting

The site of Loma Torremote is situated on the tip of a long, low ridge which parallels the headwaters of the Rio Cuautitlan. It is centrally placed in terms of the large expanse of piedmont land which bounds the western part of the Cuautitlan Region. A large, deep soil, riverine floodplain occurs to either side of the Rio Cuautitlan, and directly to the south of the site there are a series of substantial, well-drained alluvial fans. A linear strip of humid, river bottom land flanking the Rio Cuautitlan provides an additional, readily accessible resource zone. Average precipitation is about 700 mm per year: an amount sufficient for a subsistence system based on rainfall agriculture. Palynological evidence suggests that much of the area around the site was originally in broadleaf forest (predominantly oak). Absolute elevation is about 2275 m above sea level.

The Archaeological Remains

Although the site was occupied from Late Early Horizon onward, the most substantial settlement dates to the early part of the First Intermediate Phase Two A (Atlamica subphase), and it is to this occupation that comment is directed. The First Intermediate Two A community covered an estimated 30 ha. Excavation and a grid of modern roadway cuts (laid out by a housing

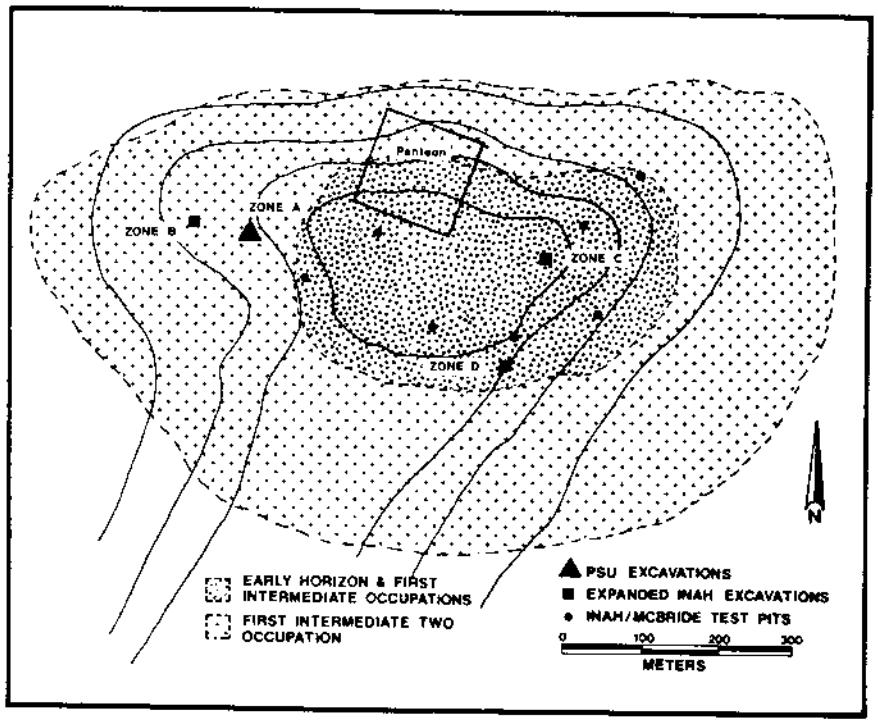

Figure 8.1. The Loma Torremote site.

contractor and providing 12 km of profiles) indicate that within the settlement zone two residential levels occurred: (*a*) the individual house compound; and (*b*) clusters of these compounds (Santley 1975, 1976a, 1976b, 1977, n.d.). Localized distributions of surface pottery suggest the possibility that some kind of barrio grouping might have existed as well, but this level does not seem to be represented by any clustering tendency in residences. A fourth level of analysis, of course, is the site as a whole.

The house compound was the fundamental unit of settlement at Loma Torremote. Each compound contained a wattle and daub, *tepetate* floored residence; one or more compacted earth, patio activity areas adjoining the dwelling; and a small garden, all enclosed by an adobe wall (see Figures 8.2, 8.3, 8.4, 8.5, 8.6, 8.7, and 8.8). Truncated conical storage pits—filled with trash after falling into disuse—abound in the patio and within certain sections of larger residences. Abundant refuse is present in the patio and sometimes within the house, but is rarely found in the garden area. Hearths also tend to be a patio phenomenon, although in one instance a small roofed-over kitchen was appended to the main structure. Burials, of all ages and sexes, generally occur in the patio but are occasionally found under

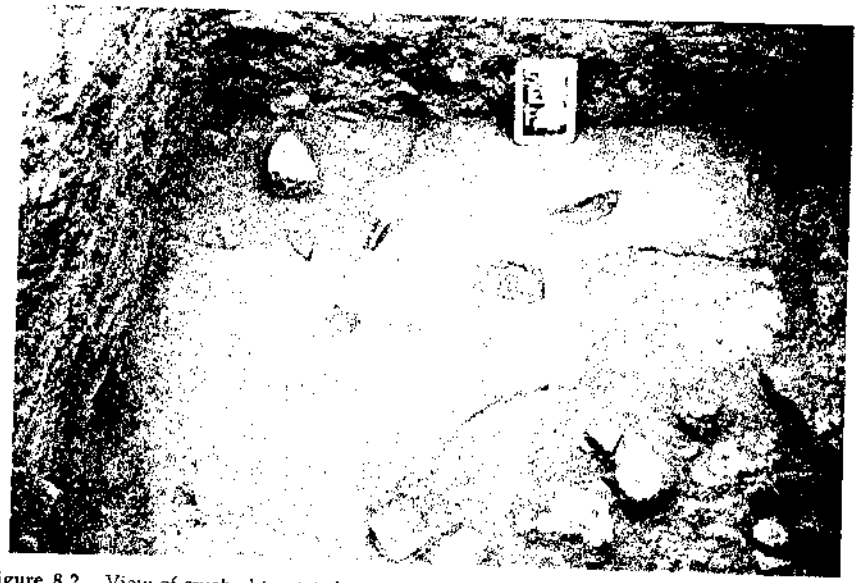

Figure 8.2. View of crushed *tepetate* house floor, post hole, and two bell-shaped storage pits. Depressions in upper right-hand part of photograph are rodent burrows, Loma Terremote.

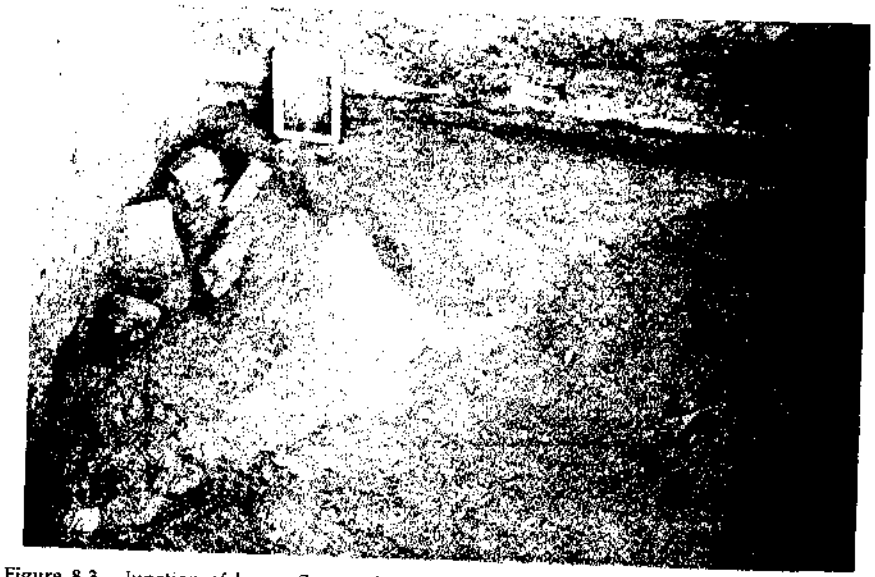

Figure 8.3. Junction of house floor and patio. Note the difference in soil texture and shade between the floor and patio, Loma Terremote.

Figure 8.4. Profile showing superimposed crushed *tepetate* house floors. Post hole is associated with uppermost floor, Loma Terremote.

Figure 8.5. View of bell-shaped storage pit. Note high density of refuse within pit, Loma Terremote.

Figure 8.6. Junction of two adobe compound walls, Loma Torremote.

Figure 8.7. Adobe compound wall, showing offset orientation of individual bricks, Loma Torremote.

Figure 8.8. Mass of cut *tepetate* slabs noted in bulldozed roadway profile, Loma Torremote.

house floors. All three excavated compounds were continuously and contemporaneously occupied for nearly 100 years (ca. 650–550 B.C.). Residences were frequently rebuilt in the same location, many of which assumed the same configuration after subsequent rebuildings.

Individual house compounds were grouped into a settlement unit that we are calling the house compound cluster. Each cluster consisted of from three, to as many as six, spatially adjacent house compounds which shared common walls. No differences were evident in the quality of house construction between member compounds in the same cluster or between clusters. No distinctive exterior wall associates with the cluster; each is defined by the outermost compound walls of the member households. In the excavated cluster each compound has a surface area of about 300–450 m^2, the residence itself covering about 30–40 m^2 of roofed-over space. Compound A-1, however, appears to have been larger (ca. 550–600 m^2 in size), and it contained a series of more substantial dwellings. For these structures, roofed-over space is usually greater than 100 m^2 and may be as high as 135 m^2. Attached to these buildings are one or more annex-like constructions. Annexes typically have different wall orientations, contain all subfloor burials associated with the larger residences, and exhibit little evidence of purely domestic use.

Whereas surface occupation is distributed over an area approximately 30 ha in extent, the area physically occupied by residential structures is somewhat less, circa 24–25 ha. In the southwestern part of the site, the roadway cuts have bisected a 2.5 ha area where occupational debris is abundant on the

surface and in the roadway profiles, yet where features such as house floors, bell-shaped pits, adobe walls, and burials are absent. We interpret this area as a village midden where household refuse was periodically dumped in antiquity, but where there was little or no permanent residential architecture to speak of. There is also an area 1–2 ha in size near the modern cemetery which may have functioned as the village plaza. The remaining 0.5–1.5 ha of surface occupation we attribute to the scattering effects of plow agriculture and/or to erosion.

Our data indicate that residential compounds at Loma Torremote were tightly packed. In and around the Zone A excavations, the density of contemporaneous households is from 16 to 19 per hectare. In the central part of the site (near Zones C and D) the density of compounds appears to be greater, perhaps as high as 30 households per hectare. The total size of the First Intermediate Two A community, therefore, approached 400–475 households. This qualifies Loma Torremote as a large nucleated village.

Social Structure

Any reconstruction of the kind of social grouping(s) associated with the house compound or house compound cluster is predicated on deriving reliable estimates of the number of individuals occupying the residential units in question. As we observed in Chapter 3, the burial data suggest that each compound contained a social group numbering five individuals on the average. The excavated First Intermediate Two A structures at Loma Torremote, however, were rebuilt at least five to seven times, and residence size tended to increase (and sometimes decrease) with each successive building level (see Table 8.1 and Figures 8.9, 8.10, 8.11, 8.12, 8.13, and 8.14). This we propose is the result of short-term changes in population size within each household unit.

Fluctuations in population size can be determined if variations in

TABLE 8.1
Estimates of the Number of Occupants in Each Excavated Compound and in the Residential Cluster[a]

Building level	Compound A-1	Compound A-2	Compound A-3	Residential cluster
IV B	3	2	4	6–9
IV A	4	2	6	6–12
III B	6	3	—	14–22
III A	6	8	4	28–39
II B	6	8	6	29–40
II A	5	7	???	20–27
I	5???	—	—	5
Mean	5	5	5	15–22

[a] After Santley 1977.

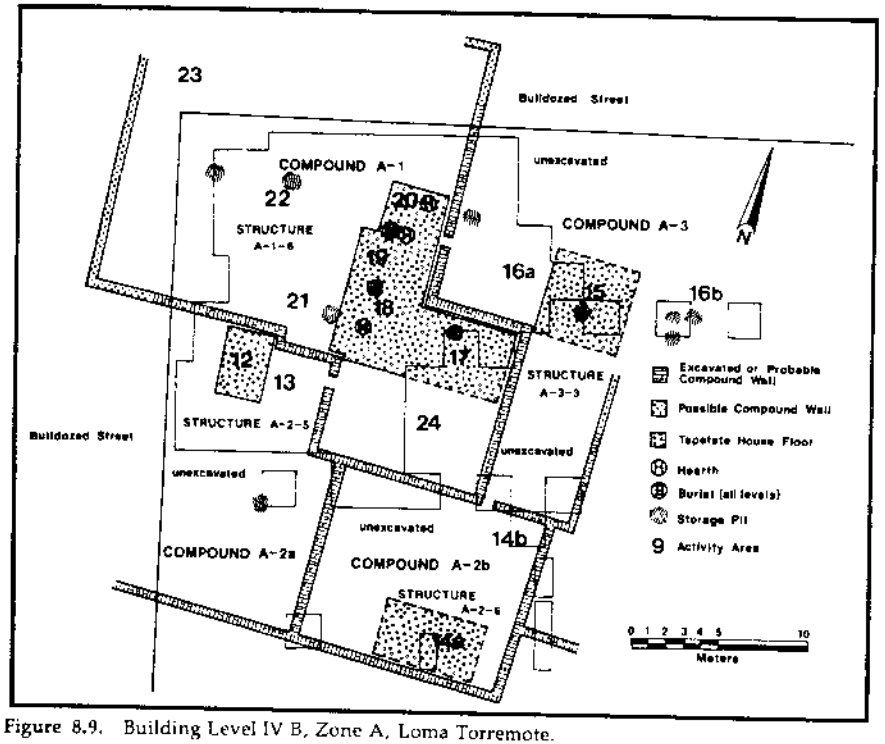

Figure 8.9. Building Level IV B, Zone A, Loma Torremote.

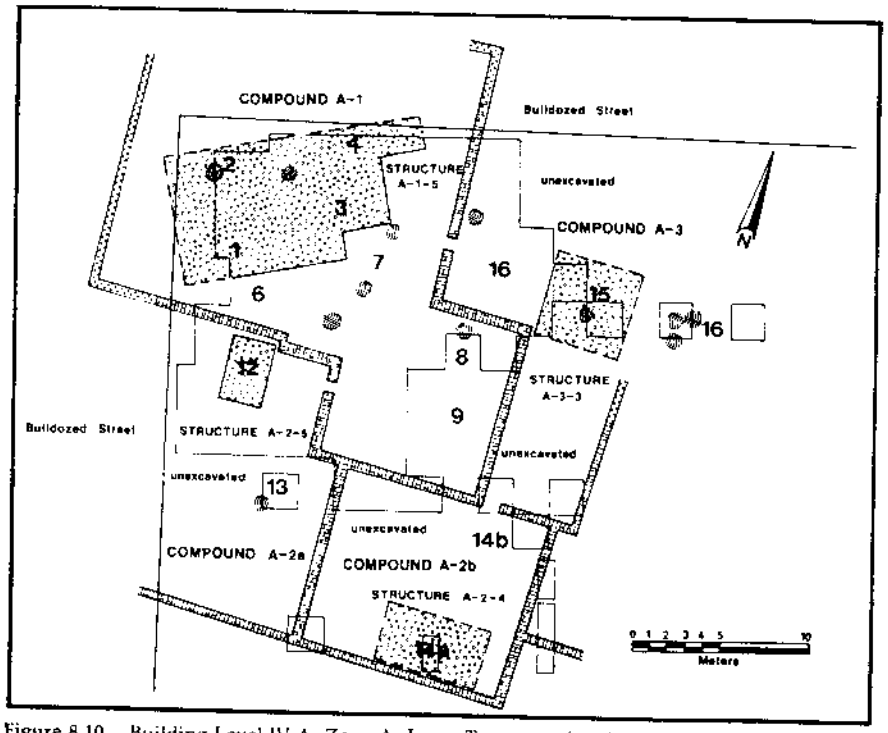

Figure 8.10. Building Level IV A, Zone A, Loma Torremote (see key in Figure 8.9).

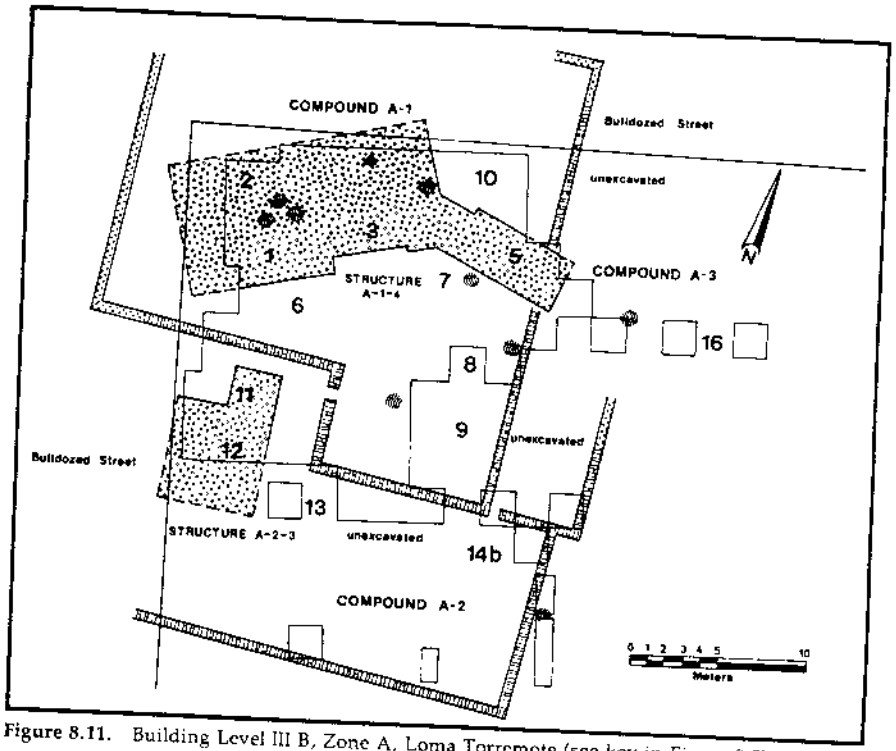

Figure 8.11. Building Level III B, Zone A, Loma Torremote (see key in Figure 8.9).

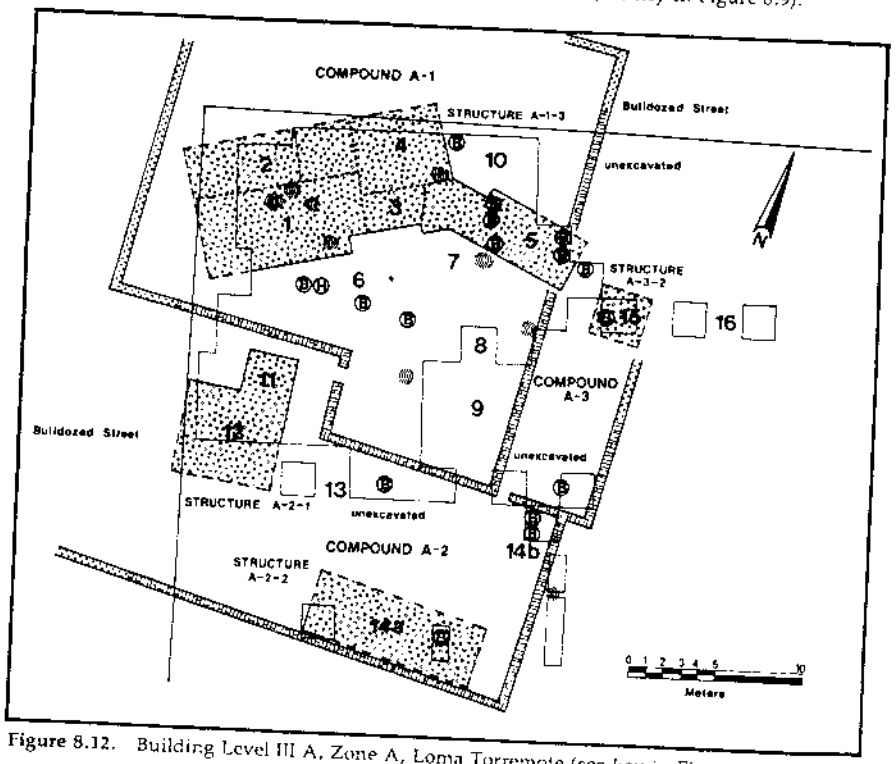

Figure 8.12. Building Level III A, Zone A, Loma Torremote (see key in Figure 8.9)

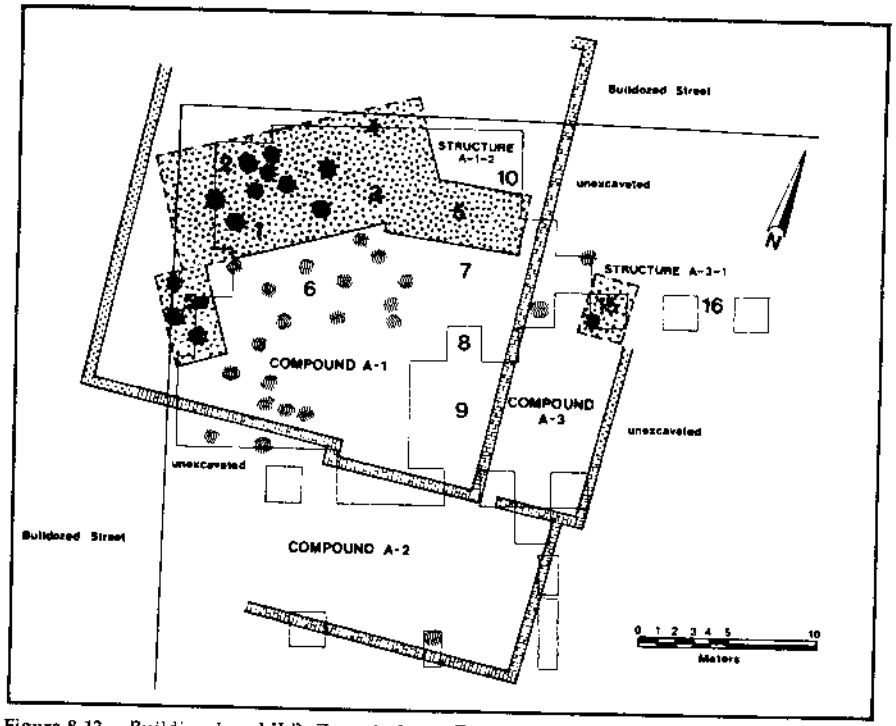

Figure 8.13. Building Level II B, Zone A, Loma Torremote (see key in Figure 8.9).

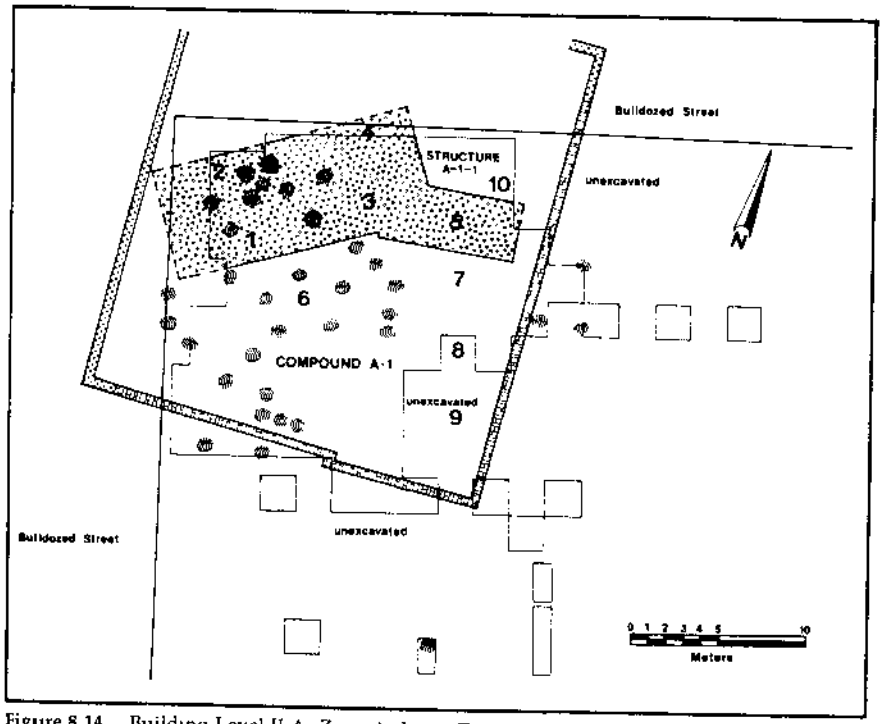

Figure 8.14. Building Level II A, Zone A, Loma Torremote (see key in Figure 8.9).

roofed-over space can be shown to covary with population. At Loma Torremote, increases in the rate of artifact consumption, our measure of the number of implement-consuming individuals, vary directly with increases in house size, so roofed-over space appears to be an excellent indicator of population size. Therefore, while the earliest compounds (Level IV B) were inhabited by no more than three individuals, a population of 7–8 occupants is suggested by Level III. Compound cluster size changes accordingly: from 8–12 individuals to a maximum of 28–32 individuals by Level II A. To judge from our estimate of 400–475 contemporaneous compounds, the population of the site as a whole at its maximum growth ranged from a minimum of 2000 to a high of 2850 individuals (see Figure 8.15).

The demographic estimates, the small size of most structures, and the low density of artifacts imply that each of the earliest compounds was inhabited by a single nuclear family. In two of the three excavated compounds the evidence from later building levels indicated occupation by a larger familial grouping: presumably one organized on a more extended basis. In the third case (i.e., Compound A-3) the nuclear family seems to have remained together as the characteristic social group, although only for two successive building levels. In Compound A-2 (and possibly in Compound A-1 as well) the component nuclear families making up the extended unit appear to have split during their later history. In fact, offspring from these households may have been responsible for the founding of two compounds to the west of Zone A by Level II. This process fits both the ethnographic and the ethnohistoric record where extended families, once they begin to develop, are rather short-lived phenomena (see Table 8.2).

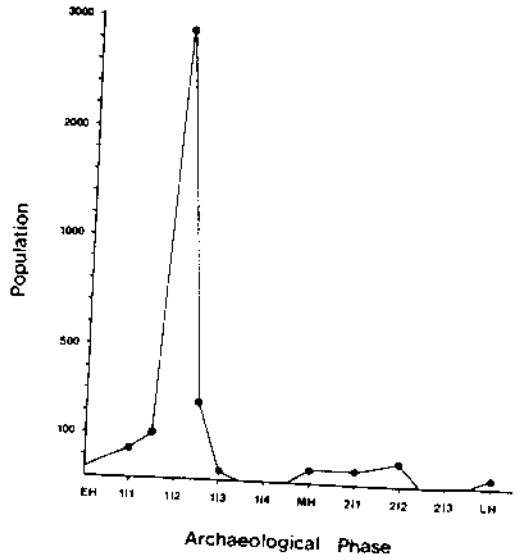

Figure 8.15. Population history of the Loma Torremote site.

TABLE 8.2
Kind of Family Grouping Occupying Three Atlamica Phase House Compounds[a]

Building level	Compound A-1	Compound A-2	Compound A-3
IV B	Nuclear	Nuclear	Nuclear
IV A	Nuclear	Nuclear	Nuclear
III B	Nuclear–extended	Nuclear	—
III A	Extended	Extended	Nuclear
II B	Extended	Extended–fraternal joint	Nuclear
I	Nuclear ???	—	—

[a] After Santley 1977.

With regard to the next residential level, we have data on the history of four house compound clusters (see Figures 8.16 and 8.17). In three out of the four cases, the house compound cluster was founded as a full-blown unit (Santley 1976b:17–18). House size gradually increased through time, and a few additional compounds were later added to the cluster. The population estimates (i.e., 6–9 persons) indicate that the earliest clusters were occupied by a single extended family. Growth thereafter is quite explosive, with an estimated 29–40 persons residing in the cluster by Level II B. Although this latter figure is within the demographic range for the extended family in several West African societies (e.g., the Nupe), the fact that house location and configuration remained relatively constant for a period of nearly 100 years strongly implies the formation of a residential group which could reckon descent for four or more generations (Santley 1976a:7).

The key variable affecting our assessment of the kind of social grouping occupying the excavated residential cluster is the successive appearance of four ceremonial shrines in Compound A-1. That the house annex was a shrine is indicated by the covariant occurrence of a great number of ritual objects, plus all subfloor burials. In societies dominated by lineage organizations, ritual shrines, when found, occur frequently in association with the residence of the lineage head. Although individual families may have their own ceremonial area, that associated with the lineage head is usually more impressive. Further, ritual at the shrines is often devoted to the welfare of the entire suprafamilial group, and it is of interest here that the vast majority of all ceramic figurines found in the house annex have exaggerated sexual features, perhaps for emphasizing fertility and growth. Therefore, because of residential continuity and growth over nearly a century and because of the presence of a ceremonial shrine in a particular household, we propose that the ancestry of the residential group could be traced for at least four and possibly five or more generations, and hence, that our later compound cluster was occupied by a lineage of minimal size.

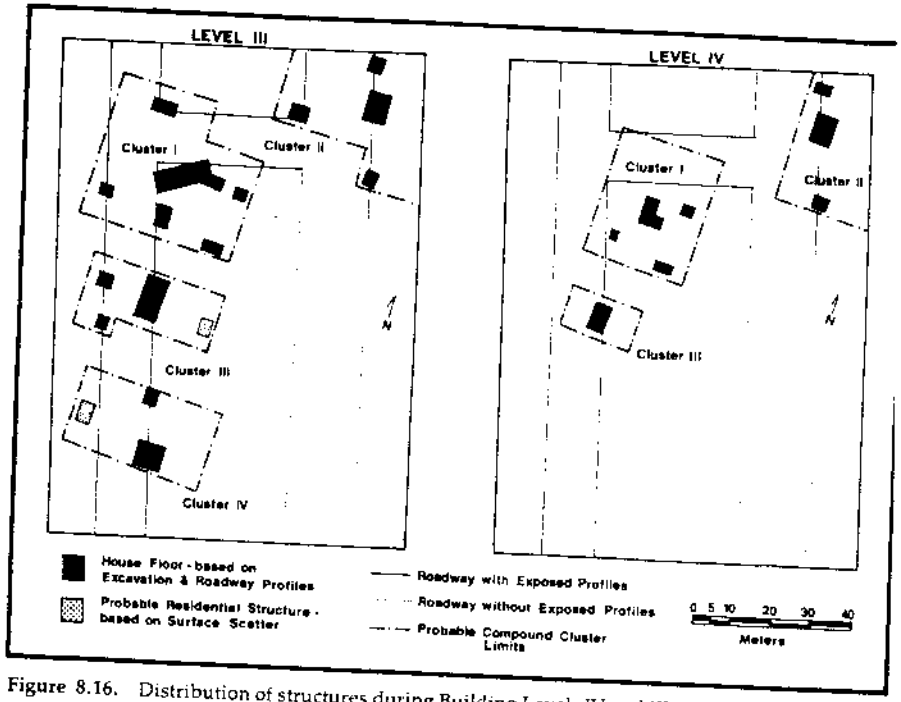

Figure 8.16. Distribution of structures during Building Levels IV and III in the vicinity of Zone A, Loma Torremote.

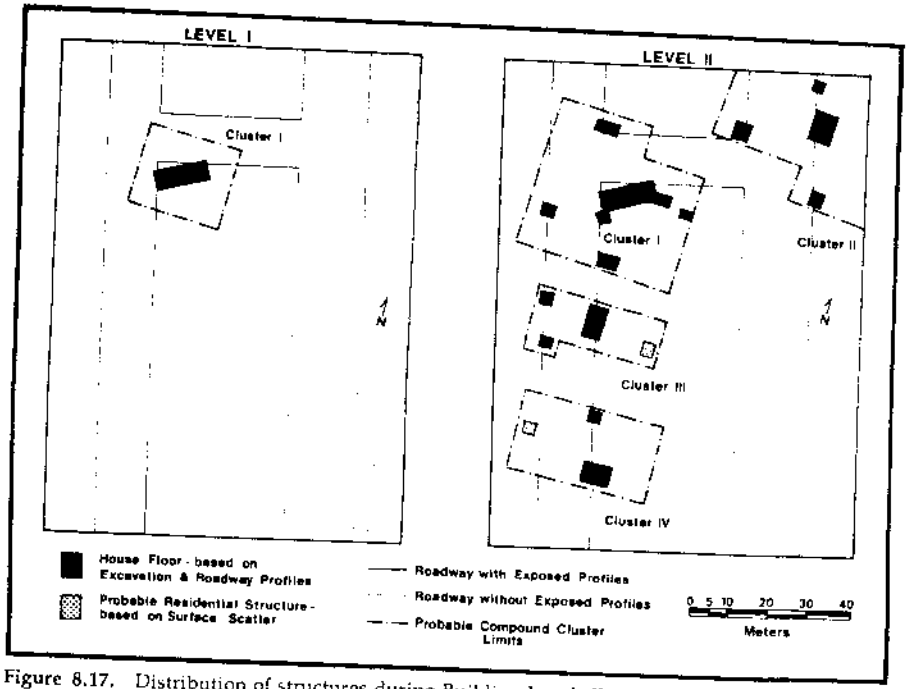

Figure 8.17. Distribution of structures during Building Levels II and I in the vicinity of Zone A, Loma Torremote.

Whether or not there were residential groupings above the level of the house compound cluster is still a moot point. A number of ceramic wares (e.g., whiteware and buffware) exhibit localized biases in our surface samples. It is conceivable that these distributions reflect the presence of some supracluster kinship grouping, one which both manufactured and consumed particular wares to a greater extent than its neighbors. Alternatively, it may be suggested that this kind of variation is related to part-time specialization in pottery manufacture, to differential consumption of certain wares along status lines, to sampling biases, or to one or more of these. Another line of evidence comes from the surface survey. In the Cuautitlan region there is a tendency for First Intermediate settlements to fission, followed during the next phase by reaggregation back at the parent community (Santley n.d.). The size of these fissioned segments is quite variable, but most seem to contain from 50 to 150 persons. Since, in several cases, the budded grouping comprised 100 or more persons, we can conclude that kinship linkage to the parent community occurred above the level of the residential cluster. From this, it might be suggested that some kind of segmentary lineage organization provided the mechanism through which incorporation back into the mother settlement was achieved. On purely circumstantial grounds, therefore, it can be argued that the next level in the kinship hierarchy involved a larger lineage grouping which connected the level of the house compound cluster with that of the social system (i.e., site) as a whole. But because this level does not appear to be correlated with any differences in residential patterning, its demonstration must await further testing.

Rank Differences

Our next consideration involves the manner of social relations between households in the same residential cluster. In other words, can rank differences be detected within the cluster, or is the basis of compound articulation essentially egalitarian in nature? The data from our earliest compounds (Level IV) indicate that the status position of each household was comparable. This pattern is reflected in a number of areas: (*a*) by the similar frequencies of chipped and ground stone tools in each compound; (*b*) by the relatively narrow range in pottery vessel consumption per person per year; (*c*) by the fact that all compounds were engaged in a similar intensity of ritual–ceremonial activity, as measured by the quantity of ceremonial artifacts; (*d*) by the inability of any compound to store unusually large grain surpluses; and (*e*) by the relatively small size of all residences in comparison with later building levels. The only observable difference is the larger size of structure A-1-6, the result, perhaps, of occupancy either by the extended family head (suggesting gerontocratic status) or by a slightly larger nuclear family group.

Beginning in Level III B and extending through Level II A, the social group occupying the house compound cluster increased greatly in size and became internally differentiated. Although in these later compounds there is still little variation in manner of burial treatment and mode of house construction, a number of other criteria do serve to distinguish Compound A-1 from neighboring households. First, the structures associated with this household are consistently larger in size, and per capita roofed-over space is twice that noted throughout the rest of the cluster. The ceremonial shrine, the house annex, is a characteristic feature in Compound A-1. In Compound A-2 this construction seems to be absent, as is likely for Compound A-3 as well. The shrine therefore associates with a particular household, specifically, the one residing in the larger dwelling. Third, at least twice as many ceramic vessels are available for use by the occupants of Compound A-1, and the intensity of ritual activity is two to three times that noted in adjacent compounds. Obsidian is more common vis-à-vis chert, as are artifacts made from exotic materials (i.e., greenstone, shell, and golden-green obsidian), and evidence of fluted core preparation is wholly confined to this household. Also, by Level II times approximately 2.2 times as much grain than was annually needed could have been stored in subterranean pits located in Compound A-1, whereas annual needs were just barely met in neighboring compounds. Finally, when Compound A-1 expanded in size (from an estimated 469 m^2 in Level IV to more than 600 m^2 by Level II), it was able to do so at the expense of adjacent households, thereby forcing these residences to relocate. All of these differences appear on a progressive basis. They are manifested to a greater degree than rises in population levels, so that variations in the number of occupants do not seem to be a likely explanation. Gerontocratic status can also be rejected because here we would expect variation to occur only within a single building level and the overall pattern should be more cyclical in nature, corresponding to the growth and decay of individual extended families. In contrast, if these patterns are related to emerging ranked distinctions, then they should appear to a greater extent over several generations and remain in evidence regardless of fluctuations in population size. This seems to be exactly what the trajectory for Compound A-1 suggests.

In sum, it appears that differences were not well-developed in the earliest First Intermediate Two A compounds. By Level III, differentials in prestige have become increasingly apparent in Compound A-1, while neighboring households continued to resemble the earlier compounds. It is suspected that these positions of higher prestige were ranked, since the aforementioned variation cannot be attributed to changes in population size and/or to momentary positions of gerontocratic status in certain households. Moreover, the fact that the ranked household is always found in the same compound strongly implies that the higher status position of this family was maintained by some hereditary rule of succession. The extent of this status differentiation, however, does not seem to have been very extreme, at least to judge from the overall uniformity in type of interment and in mode of house construction.

At Loma Torremote the ranked compound performed a number of partially specialized activities, which shed some light on the dynamics of

household economic interaction during the First Intermediate Phase Two. One major function of the high status household was obsidian procurement and blade manufacture. Obsidian appears to have been obtained in some way from the source deposits in the Teotihuacan Valley. Before being distributed throughout the residential cluster, some obsidian nodules were preformed into finely prepared fluted cores. The fact that no fluted cores or small trimming flakes were found in neighboring compounds indicates that the blades, themselves, were distributed rather than cores. Irregularly shaped obsidian nuclei and primary flakes, however, do occur in low status compounds, implying that the raw material for more crudely prepared implements (possibly obsidian of lower quality) was available for immediate use throughout the cluster. It is also possible that some of the blades manufactured in Compound A-1 were passed up the ranked hierarchy in exchange of other commodities from residential clusters of similar rank within the village. In the high status compound we also find a great amount of obsidian in comparison with other chipped stone, while neighboring compounds appear to have been consuming a greater proportion of chert. This suggests that obsidian was a relatively highly valued commodity and that it was differentially distributed according to either the relative status position or buying power of each individual compound. Another possibility is that the ranked compound carried out some partly specialized, implement-consuming activity.

In societies dominated by lineage organizations individuals of greater rank frequently occupy positions of high religious standing (Fried 1967:137). The ritual function of the lineage head is intimately related to his position as the closest living relative of some deceased common ancestor. This position entitles him to be a major figure in performing a series of religious ceremonies on behalf of the lineage, many of which relate to group welfare, the agricultural cycle, and fertility. Among societies where ancestor worship dominates much of the religious hierarchy, the lineage head commonly also has a small altar or ancestral shrine built near his residence. Such also seems to be the case for the compound of the lineage chief at Loma Torremote.

Another function of the ranked compound is the storage of agricultural surpluses. Storage pits were 2.2 times as numerous in Compound A-1 than in adjacent compounds, even after correcting for the variable size of the domestic units. These surpluses are viewed not as individual gain but as a necessary prerequisite for insurance against crop failures. It may be that the ranked compound had access to a greater amount of humid land along the Rio Cuautitlan so that surpluses could be expected to occur more commonly in association with the high status household for that reason. On the other hand, surpluses from the entire cluster may have been stored in a central repository simply to facilitate redistribution to needy compounds during lean years. We suspect that some of this surplus passed into the ranked compound in exchange for obsidian products. It is also likely that another

amount left the compound of the lineage head in exchange for commodities procured nonlocally. Last, we believe that a small part was siphoned off for exclusive use by the high status compound (perhaps for services rendered) and thus may have represented accumulated wealth.

To recapitulate, the ranked household seems to be involved in the performance of group ritual and in the specialized production of fluted obsidian cores and obsidian blades. It also seems probable that this same household was engaged in the procurement of raw obsidian and that it served as a central place for the storage of agricultural produce. It would appear, therefore, that high status households operated primarily as agents of local redistribution: a function that is wholly consistent with our evaluation of the house compound cluster as the local segment of a ramage-like lineage grouping (see the following discussion).

The Social System

The ethnographic record points out that ranked social systems may take one of two general forms :(*a*) a series of large unilineal descent groups, often called sibs; and (*b*) the conical clan or ramage. In unilineal descent groups members of each sib can trace their ancestry back to a different common ancestor. One sib or lineage is typically ranked above all the others, while for the remainder there is no overall system for ranking individuals or lineages. Chiefly functions include leadership in war and dispute arbitration. On the other hand, in ramage systems, all descent groups are ranked in terms of their degree of geneological distance from some deceased, semimythical common ancestor, the chief, of course, being the most closely related living descendent (Service 1962). Descent in the ramage is reckoned bilaterally and includes the principle of primogeniture, so every member of a particular ramage occupies a unique position of rank that is determined by calculation of the degree of closeness (or distance) to the chief (Service 1962). The function of the chiefly personage is not restricted to dispute arbitration or war leadership, as in many unilineal systems, but he is also redistributor of goods from one kinship grouping or localized segment of the chiefdom to another.

The kind of ranked structure manifest at Loma Torremote is closely akin to the ramified organization discussed above (see Figure 8.18). Ranked compounds were involved in low-level redistribution of both agricultural and obsidian products. Evidence of status differentiation was also present on the most local level, the minimal lineage. Such a pattern is not expected in unilineal systems where the relative status of most households should be very similar and where there should be little if any evidence of redistribution. Further, the ranked compound exhibited remarkable continuity both in residence location and residence configuration, suggesting that the higher status position of this household was maintained by some rule of hereditary

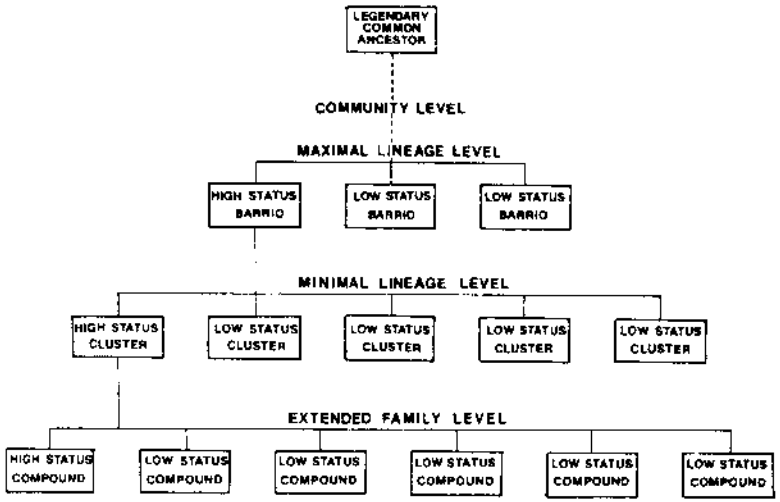

Figure 8.18. Postulated levels of social organization at Loma Torremote.

succession (e.g., primogeniture). Moreover, ramage-like social systems appear to have had a very widespread distribution in Mesoamerica at the time of the Conquest. The Aztec *calpulli* bears a close resemblance to the ramage (Sanders and Price 1968: 155–156), as does the structural organization of Mixtec society (Spores 1967: 10–13) and of the Cuicatec *cacicazgos* (Hunt 1972). In the Valley of Guatemala a ramage-like chiefdom seems to be present at Kaminaljuyu from First Intermediate Phase Two times onward (Michels 1976).

One major difference between the ramage organization in Polynesia and First Intermediate Two society at Loma Torremote was the relatively minor role that sumptuary rules played in sanctifying, legitimizing, and separating the chief and other high status personages from the remainder of the population. Interestingly, evidence for displays of material wealth associated with individuals of high rank (i.e., lavish interments) are particularly characteristic of the Early Horizon in the Basin. Extraordinary amounts of burial furniture (e.g., pottery, figurines, ground and chipped stone objects) do not continue to accompany grave lots during the First Intermediate period when ranked society was supposedly a Basin-wide phenomenon. This suggests that the degree of isomorphism between the First Intermediate Two–Three polities in the Basin of Mexico and the Polynesian ramage is not that exact. In fact, differential control of particular plots of highly productive land may have led to certain fundamental differences. Nevertheless, the association of ranked distinctions, a stipulated principle of geneological succession, and limited low-level redistribution would seem to indicate that Loma Torremote can be considered as an example of the general chiefdom type.

Economic Structure

Analysis of the excavated animal and plant remains indicates that subsistence was derived primarily from agricultural produce. The data also demonstrate a moderately heavy reliance on hunting and gathering. The kinds of utilized species point out that each of these sources of energy production can be divided further into a number of more specific food procurement systems. Cultivated plants at Loma Torremote included the following species: maize, chili pepper (*Capsicum Annuum*), beans (*Phaseolus* spp.), *tomate* (*Physalis* spp.), *chia* (*Salvia* spp.), and *amaranth* (Reyna Robles and Gonzales 1976; Santley n.d.). Of these by far the most common is maize. The species of maize cultivated is pre-Chapalote, and ear size is quite small (ca. 4–5 cm in length), so the variety planted must either have had multiple ears or have been closer spaced than modern varieties in order to attain a yield value worthy of cultivation. A larger type (similar in morphology to the small-eared variety) also occurs, but only in very small amounts.

We infer that agricultural subsistence at Loma Torremote contained three components: the garden plot, humid land agriculture along the adjacent bottom lands flanking the Rio Cuautitlan, and temporal cultivation on the nearby lower piedmont. Gardens were apparently located both within individual compounds and between residential clusters. Intracompound gardens were extremely small (70 m^2 or less), but separating compound clusters larger areas were available for cultivation. Our estimate, however, is that no more than *approximately* 10–15 ha of the site area could have been potentially utilized as garden space—only enough to have provided about 3% of the village maize requirement (Santley n.d.). Analogy with contemporary land use patterns suggests that much of this area was probably planted in vegetables, not maize.

An area of high natural humidity parallels the Rio Cuautitlan and comprises one category of agricultural land. Such zones are extremely favorable for agricultural exploitation because periodic floodings maintain a friable soil texture and restore nutrient levels, and because the high level of subsurface moisture precludes complete dependence on rainfall. Crop security, in consequence, is high, as are yield levels. It is presumed that much of this area was intensively cultivated, probably in maize and *amaranth*. On the basis of analogy with twentieth-century peasant villages in Mesoamerica, we would suggest a sustaining area for subsistence crops of no more than a 5-km radius from the village. Within this radius at Loma Torremote were all three categories of agricultural land. Humid lands were quite circumscribed in distribution within the suggested radius, however. At best, we estimate that some 200–250 ha were readily available for cultivation, of which approximately 100 ha were probably lying fallow or under standing water. This would have been sufficient to contribute about 17% of the total annual subsistence requirement.

That a substantial amount of the lower piedmont was cultivated is

strongly suggested by the fact that produce from the gardens and naturally humid lands could not sustain the energy needs of the resident population at Loma Torremote. Because of its slightly higher precipitation (vis-à-vis the alluvial plain), its reduced frost problem, and its forest vegetation (principally oak), the lower piedmont is ideally suited for cultivation using extensive techniques. In the central highlands today this system of land use is known as *tlacolol*. A land use factor of 5 to 6 is common, and simple digging sticks would be the only tool required. Under conditions of greater demographic pressure such as occurs over much of the Central Plateau today, plows or hoes are used for preparing the soil and the ratio of cultivated to fallow land reduces to 1:2, 1:1, 2:1. This system is frequently referred to as *temporal* or *barbecho* cultivation. Either system could have been used at Loma Torremote, dependent on the population pressure. The large size of the village would suggest a shorter fallowing system. Maize and *amaranth* again appear to have been the major cultigens, perhaps interspersed with beans and squash. The most serious problem for agricultural land use is the amount of effective moisture, which varies considerably from year to year. As a result, since agriculture here is rainfall dependent, yield levels fluctuate widely—from complete failure to values comparable to those from intensively cultivated plots. Because of the relatively small amount of humid lands available to Loma Torremote, we estimate that perhaps as much as 40% of the community's caloric needs were obtained from parcels of land cultivated in this manner.

To date, there is no evidence suggesting the widespread application of more intensive forms of land use at Loma Torremote during the First Intermediate Phase Two. First Intermediate Two A settlements consistently prefer piedmont locales, and it is not until Phase Three times that hydraulic agriculture was probably introduced as a major subsistence alternative. Data pertaining to agricultural terracing are similarly wanting. If either of these techniques were employed as a part of the subsistence economy, then it would seem that they only accounted for an extremely small fraction of all agricultural production.

Game animals are a year-round source of energy production. Three categories of game appear to have been exploited on a regular basis: white-tailed deer (*Odocoileus virginianus*); cottontail rabbit (*Sylvilagus* spp.); and various species of waterfowl. Species of secondary import that were occasionally consumed include dog (possibly domesticated), mud turtle, jaguar–puma, and mule deer (McBride 1974: 221–222). In the Mesoamerican highlands generally, deer appear to have been the single most predominant source of meat during the First Intermediate period, surpassing 90% of the game food value in many cases (Flannery 1967: 171; Tolstoy and Paradis 1970: 350; Starbuck 1975: 76; White n.d.). White-tailed deer occur in almost every habitat in Mesoamerica but are most abundant in pine–oak woodland situations (Flannery 1968: 73). Deer are also exceptionally prolific breeders, commonly being able to withstand a 30–40% cropping rate (Leopold 1959: 513). Ethnographic analogies suggest that hunting was performed by individual males using the spearthrower and tracking technique (MacNeish n.d.). At Loma Torremote, although deer are amply represented in excavated contexts, our conclusion is that they could not have contributed any more than 5% of total energy needs on a continuing basis (Santley 1977; and see Appendix D).

Great numbers of rabbit and bird also occur in our excavated samples. Rabbits seem to have been caught using small traps or snares (Flannery 1968: 73–74). Waterfowl, on the other hand, seem to have been procured either by netting or with the bow and arrow. Whereas rabbits are a nearly inexhaustable perennial source of meat, waterfowl are mainly available during the winter months when literally tens of thousands of migratory ducks travel southward along the central flyway. Despite their common archaeological occurrence, the food value of individual birds and rabbits is extremely low, so it is very doubtful that these genera ever provided a significant portion of the diet.

Wild plants are a third food source. The species recovered at Loma Torremote illustrate the full range of gathered resources. Included in our samples are *nopal* (*Opuntia* spp.), *tejocote* (*Crataegus mexicana*), fox-tail grass (*Setaria* spp.), wild rice (*Oryziopsis* spp.), *Potamogeton*, *girasol* (*Helianthus* spp.), *verdolaga* (*Portulaca* spp.), and possibly various members of the Chenopodiaceae (Reyna Robles and Gonzalez 1976). The species exploited come from a variety of environmental zones—the lakeshore, humid locales near perennial streams, the alluvial plain, and the piedmont—so it seems that gathering activities ranged very far afield. Also represented are weedy plants, presumably collected on fallow agricultural land. Regrettably, particular gathered species cannot be ranked at present in terms of their relative dietary contribution. Taken as a whole, however, an estimate of 30% does not seem unreasonable, in lieu of data from elsewhere in the Central Plateau (MacNeish 1967).

Craft Specialization

Data from Loma Torremote also permit a reconstruction of household activity patterns. The activities discussed here are primarily technological in nature, that is, they are represented by variations in the distributional patterning of different kinds of artifacts and features. There must be a broad spectrum of pattern activity which has no artifact analogues, at least none that were preserved in excavated contexts. These we make no attempt to address. Our reconstruction considers only that segment of patterned human behavior for which there is material evidence.

All of our data clearly indicate that most of the village's technology was produced at the site. On the level of the individual household each appears to have manufactured its own pottery, chipped its own crude obsidian, chert, and basalt tools; produced, prepared, stored, and of course consumed its own food; built, swept, and repaired its own dwellings, and engaged in

some woodworking, scraping, and ritual activities. Both female-related and male-oriented tasks are represented in each household. The patio, an irregular compacted-earth area outside the house, was the main focus of domestic activity. Within the house the number, kind, and spatial segregation of activities varies directly with residence size. Structures of 30 m^2 or less exhibited little evidence of activity patterning. By the time the residence approaches 40 m^2, spatially distinct activity loci begin to appear. These are well-marked by the time the dwelling reaches 70 m^2. Above 100 m^2 ritual loci become well-defined. Our largest structures (130–135 m^2 in size) contain at least five areas of behavioral import: (1) an obsidian workshop, (2) a probable sleeping room, (3) a zone where grinding implements and utilitarian pottery are extremely common, (4) a locus where decorated service wares are unusually abundant, and finally (5) a ritual–ceremonial shrine—the house annex (Santley 1976a:3).

Within the excavated residential cluster a number of activities have more localized distributions. Obsidian blade manufacture, as we have seen, only occurs in Compound A-1. This household, we believe, had fluted core preparation as a part-time specialty. In fact, given the very low rate of implement usage, enough blades could have been produced in a day or two to accommodate the total domestic needs of the residential cluster. For the entire site (an estimated 400–475 households) perhaps no more than one man-month of labor would be needed to satisfy the total community's requirements.

There is also some evidence to suggest that pottery manufacture had become a part-time specialization. As we have noted, ceramic manufacture was a domestic endeavor: Data pertaining to pottery making occur in each of our excavated Atlamica phase households. A number of ceramic wares, however, do distribute nonrandomly in our surface samples. We have already mentioned that this kind of variation might reflect the presence of supracluster kinship groupings. Decorated pottery wares tend to have variable percentage spatial distributions, yet they are wholly complementary in terms of vessel function. It is conceivable, therefore, that particular lineage segments each produced their own series of decorated wares for immediate local consumption. A similar interpretation of ceramic variability—this time using decorative motifs—has also been proposed by Longacre (1970:28) for the Carter Ranch site in east–central Arizona.

The procurement and distribution of house foundation building material is our third example of part-time craft specialization at Loma Torremote. House foundations at the site consist of cut *tepetate* slabs, and the kind of *tepetate* selected for foundation material appears to have been quarried at source deposits some distance away from the community (Santley 1976:19). Near the Zone A excavations a deep modern sewer trench had cut through a mass of shaped *tepetate* blocks at least 2 m in depth. The disjunctive way the blocks associate with one another, plus the depth of feature, suggest that the deposit was a stockpile of building material rather than the remains of a

destroyed structure or wall foundation. The sheer quantity of material exposed by the trench indicates an activity that required considerable labor input. As no other features of this type were recognized in the bulldozed profiles, the associated household may have been totally responsible for quarrying, shaping, and redistributing this material on a site-wide basis.

It should be emphasized that we do not believe that craft specialization at Loma Torremote was tied in with a market economy. The exchange system that we envision is based on low-level redistribution, so that rather than exchange *quid pro quo*, commodities are passed up the ranked hierarchy for allocation by lineage chiefs to needy households. Whether redistribution occurred above the minimal lineage level is not clear. It is possible that unprocessed obsidian was redistributed from some higher level in the segmentary system to the lineage chief, but it is also possible that each lineage chief procured obsidian for his followers.

Religious Organization

Another significant result of the Loma Torremote Project concerns the data it has produced on First Intermediate phase religious activity. A factor analytic study of "ritual–elite" objects found during the excavations indicates several different categories of ceremonial behavior (Santley 1977). These include ritual food consumption (polychrome and other decorated vessel forms), magico-religious petitioning connected with fertility and growth (ceramic figurines and squinch pots), bloodletting (golden-green obsidian microblades), and general ceremonial activity (ceramic drums, censers, masks, and crescents). With the exception of bloodletting, all of these activities occurred in each household unit, although their intensity in Compound A-1 was considerably greater. Bloodletting, on the other hand, was only found in association with the house annex.

Variations in the kind, amount, and context of ritual objects suggest that the residential cluster organized its ceremonial activity on several conceptual levels. The most basic level is that of the individual household. The northern section of structures A-2-1 and A-2-3 (Area 11) appears to have functioned as these households' ceremonial locus, since figurines and censer fragments were more common here than in any other excavated part of Compound A-2 and evidence of most other kinds of activity was characteristically lacking. The same may be said for the patio (Area 6) in Compound A-1, although the number of ritual objects that occurred at this locus suggests a more intense kind of religious involvement. This higher occurrence of ceremonial artifacts (especially figurines) we believe reflects both individual family ritual and in some instances joint participation by the entire residential cluster. Some of the religious activities carried out in this patio area therefore constitute a second level in ritual organization, one that was devoted to the welfare of the local lineage group.

A third level is represented by the ancestral shrine. Inside this structure

more than 200 figurines and censer fragments have been found, along with several complete ceramic masks, most of the shell found during the excavations, and five subfloor burials. As already mentioned, there is reason to believe that the shrine served in suprafamilial ritual. Second, and perhaps more importantly, we believe that the occurrence of the shrine in association with the ranked household aided in legitimizing this compound's high status position vis-à-vis the remainder of the cluster. In many ethnographically known chiefdoms, specialized ceremonial structures are erected as memorials to particular personages and descent lines. Worship of particular individuals or lineage segments tends to reinforce status distinctions, because those persons who are most closely related to a particular descent line are frequently accorded the privilege of playing the major role in worship, and because those of high ritual standing are also the same persons responsible for overseeing dispute arbitration and redistribution. At the same time, the local lineage patriarch is related to an even more distant series of common ancestors whose genealogical ties form the basis for integrating the entire social system. In this way the system of descent group ranking receives ideological justification.

Summary

In this section we have presented a reconstruction of a society at Loma Torremote—a First Intermediate Phase Two site in the Basin of Mexico. Our reconstruction has principally considered two levels of domestic organization, the individual household and the residential group. Each excavated household appears to have been founded by a small nuclear family, and in two cases it seems that these family groups evolved gradually into social units organized on a more extended basis. Concomitant with this development was the transformation of the residential cluster into a lineage grouping of minimal size. Within the lineage segment one household is ranked above the others, its higher position being maintained by some hereditary rule of succession. Lineage heads have a number of redistributive functions: obsidian procurement, the manufacture and distribution of obsidian blades, and the storage and allotment of agricultural surpluses. It also seems likely that ranked individuals also functioned as ritual specialists. The simultaneous appearance of ranked distinctions, a prescribed mode of descent, and low-level redistributive exchange suggest that First Intermediate society at Loma Torremote structurally resembled the Polynesian ramage. However, the degree of congruence does not seem to be exact, due to the relatively insignificant role played by sumptuary rules in isolating chiefly personages.

Household economics was based on subsistence agriculture. Included here are three components: gardening, humedad agriculture, and temporal cultivation. In addition, moderate dietary inputs are provided by hunting and gathering. Hunting appears to have focused on white-tailed deer procurement, whereas gathering had as its objective the collection of a wide

variety of resources. Craft specialization at Loma Torremote appears to have been incipient. What evidence we do find is closely tied in with exchange along redistributive lines. Several levels of ritual–ceremonial activity have also been suggested. These seem to reflect the basic levels of domestic organization.

Comparisons with Other First Intermediate Sites

Certain parallels may also be drawn with excavated First Intermediate sites elsewhere in the Basin. It should be strongly emphasized at this juncture that the quality of this comparative material is often quite variable. To a large extent this is because relatively few research projects have had as their objective the delineation of household residential patterns and by extrapolation the sociocultural, political, and economic underpinnings responsible for archaeological patterning. A large number of projects have focused on the excavation of civic–ceremonial–elite architecture. Equal effort has also been devoted to chronological considerations. Both of these are of course very legitimate undertakings, but unfortunately they do not lend themselves to yielding much data of the type pertinent to the central theme of this chapter. Nevertheless, a number of general comparisons may be made.

Regarding residential groups, we have data from Coapexco (Tolstoy and Fish 1973, 1975) and from Cuanalan (Sanders *et al.* 1975; Fletcher 1962). At Coapexco (an Early Horizon Phase One village) and at Cuanalan (a First Intermediate Phase Two B village) residential structures are small—about 15–25 m^2 of roofed-over space per dwelling—so that each was probably occupied by a single nuclear family (see Figures 8.19 and 8.20). Associated with each of the excavated structures is the full range of the debris of the processing of domestic technology, suggesting that, as at Loma Torremote, most of the household's material needs were produced locally, if not by the individual household itself. In both cases the residence is located next to or surrounded by an irregular area of compacted earth, the patio, where most domestic activities were carried out. At Cuanalan, excavations and accidental profiles suggest that houses were closely located, but no definite indications of household clusters of the Torremote type were present. Household clustering is also not evident at Coapexco.

To come by data concerning social structure is a much more difficult matter. Perhaps the best evidence, at least for the Early Horizon and First Intermediate period, is from Tlatilco, a site long famous for its spectacular, lavish burials. In the literature this site is frequently referred to as a cemetery, but the association of interments with abundant domestic refuse and tronco-conical pits—features which at Loma Torremote invariably occurred near domestic structures—indicates that Tlatilco definitely had a substantial residential occupation. The fact that earthen platforms, some with frontal steps, and fragments of adobe plaster could be discerned in the profiles of recent brick-making pits provides added support for this point of view

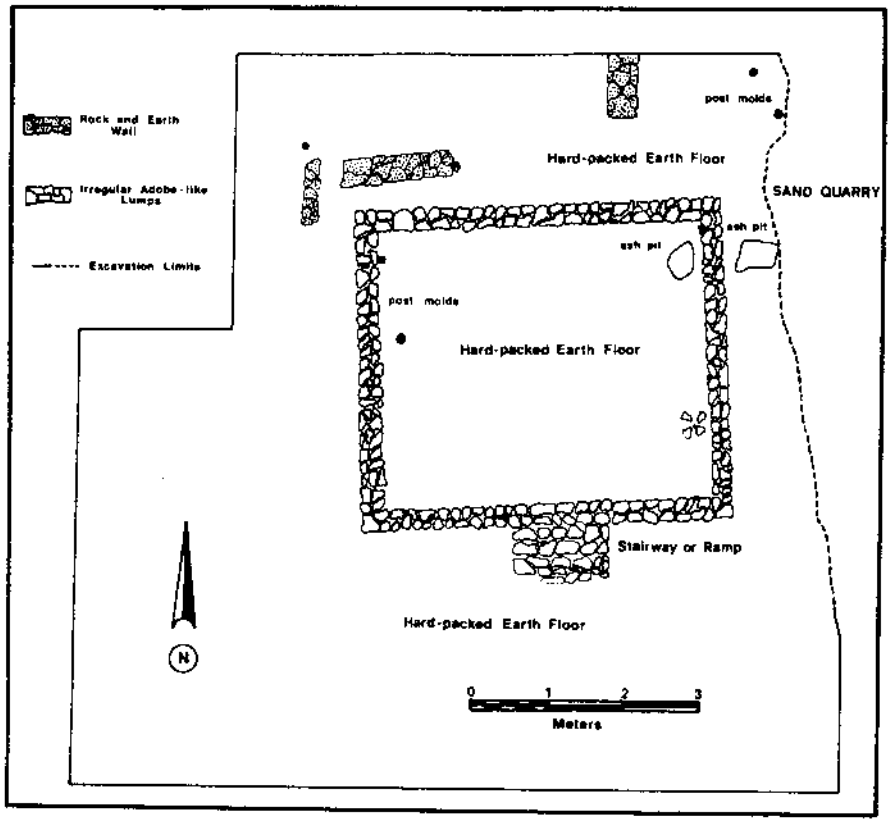

Figure 8.19. Domestic structure at Cuanalan.

(Porter 1953:34). The burial sample (more than 500 altogether) is marked by extraordinary diversity in the kind and amount of burial furniture. Some are accompanied by only a few ceramic vessels, while others contain literally scores of offerings, including pottery, jade ornaments, figurines, and stone implements (Piña Chan 1958). Some of the more lavish interments involve women as the central figures along with sacrificed men and children (Piña Chan 1955:69). Also occurrent are infant burials, again with extensive offerings. All of this points to a social system with significant variations in ascribed rank and prestige. The degree of status differentiation exhibited by the Tlatilco "cemetery," at least in terms of numbers of associated grave goods, stands in obvious contrast with the relatively impoverished burial sample found at Loma Torremote. However, ranked distinctions at Loma Torremote are expressed by other lines of evidence, not sumptuary displays of funerary wealth. Both sets of data, therefore, are consistent with the

Figure 8.20. Oblique view of Cuanalan excavation.

variations in rank and status noted by Sahlins (1958:11–12) for Polynesian Chiefdoms.

Another body of information comes from George Vaillant's excavations at Zacatenco, Ticoman, and El Arbolillo (Vaillant 1930, 1931, 1935). Although no residential structures were excavated, the burial sample is substantial (134 individuals), and all three sites have been surveyed by members of the Basin of Mexico Project. The burials, though not as extravagant as at Tlatilco, still manifest low-level gradations in status. Most interments contained several pieces of burial furniture; a few had no associated grave goods. The major distinction is in the mode of interment, especially at El Arbolillo and to a lesser extent at Ticoman. At El Arbolillo eight individuals, both males and females, were interred in slab-covered tombs, all within an excavation area of 30 m^2 (Vaillant 1935:175). Also in the same area was an infant equipped with jade earplugs and a number of pottery vessels. Most other burials were rather modest affairs. Since both adult males and females as well as children occurred at this burial locus, the implication is that statuses were again based on the principle of ascription. On the other hand, there is no evidence of emergent prestige differences at Zacatenco, a contemporary community a few kilometers to the southeast. In fact, the absence of slab tombs coupled with the poverty of all interments suggest that status positions at Zacatenco

were essentially egalitarian in character. Mortuary treatment at Ticoman resembles the El Arbolillo pattern, although the tendency for slab-covered tombs to cluster is not very marked.

The variations in social rank noted at Tlatilco, El Arbolillo, and Zacatenco also correlate with settlement type. Tlatilco is a large nucleated community, with a population numbering some 1500 individuals. El Arbolillo is a much smaller site, circa 10 ha in size, though total population was still moderately large (ca. 700–900 persons). We classify Zacatenco as a hamlet. The impression is one of increased site ranking, not only in population but also in social status, as community size becomes larger. It may thus very well be that small settlements such as Zacatenco occupied a relatively low social position *as a whole* with respect to the rank of larger sites like El Arbolillo. The status position of El Arbolillo, in turn, would be subordinate to still larger sites like Tlatilco.

Data pertaining to prehistoric economic patterns and exchange networks for the Early Horizon and First Intermediate are likewise not abundant. Perhaps the best evidence is provided by the kinds of tools found in excavated contexts. As we have already mentioned, this body of information implies that most households tended to produce most of their own technological needs (e.g., pottery, figurines, chipped stone implements, grinding tools, etc.). Nowhere is the kind of localized lineage economic intradependence indicated that we have suggested for Loma Torremote. However, at El Arbolillo, Zacatenco, and Ticoman, the total amount of obsidian is very low, an artifact most probably of Vaillant's sampling methods. The fact that not one piece of obsidian debitage (flakes) was recovered from Ticoman casts further suspicion on the adequacy of Vaillant's samples.

There are also some data suggesting part-time economic specialization by entire villages. For the most part this is a direct result of the fact that many raw materials have very localized distributions in the Basin. Ecatepec, a substantial community throughout the First Intermediate period, thus appears to have been a principal locus of salt extraction and processing (Santley n.d.). Likewise, at Coapexco the density of ground stone tools is so aberrantly high that Tolstoy (personal communication) suspects that this site had as a part-time specialty the manufacture of manos and metates, probably for exchange to Puebla and Morelos. Other sites like Tlapacoya (Zohapilco) may have derived some income from the exploitation and subsequent exchange of lacustrine faunal products (Niederberger 1976). To this we might add the Altica type site, a settlement that may have functioned as a processing station for obsidian nodules during the First Intermediate One A (Tolstoy, personal communication). The way in which other sites located near exploitable raw materials follow this pattern is regrettably unknown at present. It does seem likely, nonetheless, that the sites we have mentioned were tied in with a system of symbiotic exchange, along either reciprocal or redistributive lines.

Not being situated near any localized deposits of needed raw materials, Loma Torremote does not exhibit any craft specialties on the village level.

Concerning interregional exchange within the confines of the Basin, we have excellent data on obsidian consumption for several sites: Tlapacoya (Niederberger 1976); Zacatenco, Ticoman, and El Arbolillo (Vaillant 1930, 1931, 1935); San Jose Cuautitlan (McBride 1974); Teotihuacan (Spence n.d.); and Loma Torremote (Santley n.d.). Taken as a whole, these studies show an increasing preference for the high quality, golden-green obsidian from the Pachuca source throughout the overall Early Horizon–First Intermediate period. There is some disagreement, however, regarding the time period of peak popularity. For example, at Loma Torremote obsidian from the Pachuca source remains low (ca. 5% of the sample) during the Early Horizon and First Intermediate Phase One, but it rises abruptly during the Atlamica B subphase (600–550 B.C.), accounting for nearly one-third of the obsidian sample. At Tlapacoya (Zohapilco) a similar peak is in evidence during the First Intermediate Two A and B times (Niederberger 1976:277). If El Arbolillo and Ticoman are assumed to represent a continuous occupation by a single population (a not unreasonable assumption since the two sites are situated within several kilometers of one another), the maximum popularity (ca. 18%) occurs during the First Intermediate Phase One B (Vaillant 1935:242). At San Jose Cuautitlan, a Phase Two–Three site, the golden-green variety is not represented (McBride 1974:225–226). Obviously part of this variation is the result of differences in sample comparability. A substantial part, however, may be due to internal variability in the trading network itself. Whether this variation is because of changes in the mode of exchange (from reciprocity to low-level redistribution and finally to an incipient market economy), because of shifts in individual trading partners, and/or because of alterations in political alliances, is an unanswered question at present.

Basin-Wide Implications of the Loma Torremote Excavation

In Chapter 5 we argued for the existence of a number of small, autonomous First Intermediate Two polities within the Basin of Mexico, each defined by a settlement cluster more or less apparent on our general map. The Loma Torremote site occurs within the smallest of these settlement clusters, at the far-northern periphery of the intensively occupied part of the Basin. The largest settlement clusters are in the southern Basin, and these include several nucleated communities of more than 100 ha (compared to about 30 ha for Loma Torremote), at least two of which have temple platforms of 5 m or more in elevation (while there is no indication of any ceremonial architecture anywhere near this size at Loma Torremote). We think it is fairly reasonable to assume that the degree of social differentiation, economic specialization, and redistributional complexity which we have outlined for Loma Torremote

represents no more than a simplified version of the more complex developments some 35–50 km to the south and southeast.

In specific terms, we expect that future investigations of First Intermediate sites in the southern Basin will show evidence at two or three communities of powerful lineage heads acting as paramount chiefs of polities that may have incorporated upward of 10,000 people. These same paramounts should be much more intensively involved than their Loma Torremote counterparts in the underwriting of specialized production, and the acquisition and redistribution of key materials, such as obsidian and obsidian tools. Although it is not now very clear to us how such a relationship might actually have been structured, it would not be surprising to find that the paramount rulers of one major southern center were attempting to gain a greater degree of control over access to the major obsidian resources near Otumba and Pachuca, as well as a greater control over the production and redistribution of obsidian tools and objects. The significance of such control may have been great enough to have provided the principal impetus for large-scale habitation of the arid Teotihuacan Valley during First Intermediate Three times. Our data would indicate that such an impulse would have come from the south.

MAQUIXCO BAJO: A MIDDLE HORIZON VILLAGE

TC8 is located on the gently sloping north piedmont of the lower Teotihuacan Valley at the base and on the lower flank of a small hill known locally as the Cerro de Calaveras. It is situated 1.5 km north of the edge of the alluvial plain and 5 km west of the Sun Pyramid. The site was discovered during our very earliest surveys in 1960. In 1961 and 1962 major excavations were carried out in three adjacent house compounds, and in a slightly detached ceremonial complex, by personnel of the Teotihuacan Valley Project. The site is small and compact, with a formal plan. It may be described as a rectangle measuring approximately 200 m north–south and 400 m east–west, the long dimension being at right angles to the slope of Cerro Calaveras. The upper one-third of the rectangle lies on a small, flat plateau-like surface, the lower end on gently sloping terrain. The lower, east edge of the village is defined by a shallow canalized barranca. The total surface area of the village is approximately 8 ha. The lower 6 ha is densely occupied by approximately 16 large stone and earth houses arranged in three east–west tiers; the houses are separated by small plazas forming a grid system of alternating houses and plazas. Some of the plazas were paved with stucco and lime plaster, others with earth and gravel. The upper 3 ha is occupied by a plaza with public buildings (including a pyramid temple), open areas, and four or five houses approximately oriented to the noted tiers of houses at the lower portion of the site (see Figure 8.21).

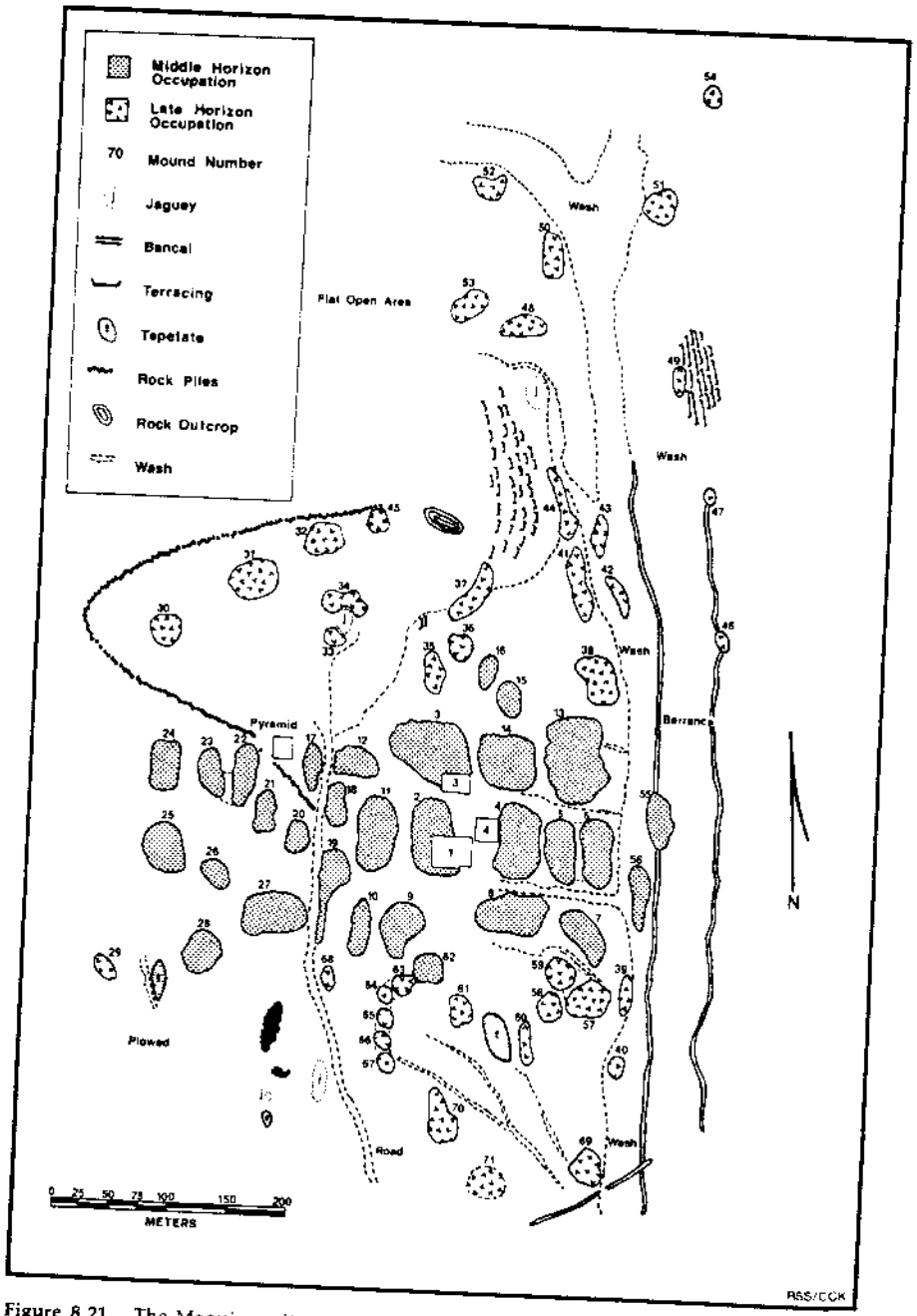

Figure 8.21. The Maquixco site.

Territorial and Kin-Based Groups

TC8 was clearly a corporate community. It is physically compact and separated from the nearest contemporary settlements by distances of 2 km in either direction. TC8 has a religious precinct consisting of one small plaza,[1] that measures approximately 30 by 40 m in area, with a pyramid temple on the north side and three probable civic buildings on the south, west, and northeast sides. The pyramid was partially excavated. It was in poor condition with extensive surface pitting, but some data on its form and dimensions were obtained. It consisted of a single platform, in typical Teotihuacan style, with a talud and tablero facade (possibly without an upper molding) and a balustraded stairway, facing the plaza on the south side. Evidence of lime plaster floor surfaces and portions of temple walls were found on the badly pitted summit. The original height of the platform (above *tepetate*) was 1.3 m, and the basal dimensions were 10.4 by 14.6 m. Trenching along the base of the platform retaining wall did not reveal any ceremonial middens or offerings so that our identification as a temple is based on architectural analogy with Teotihuacan itself.

The temple complex suggests that the community constituted a religious or ritualistic group. Its physical discreteness argues for a sense of social identity as well. There is evidence, to be presented later, that it had political functions also. We estimate the population of the village at approximately 140–150 families or 500–600 people. The estimate is based on the plans of three excavated houses, seriation of surface samples from the others for chronological control, and the comparative size of the unexcavated mounds to those excavated. The village was founded in the final centuries of the first millennium B.C. (First Intermediate Three phase) at which time it consisted of perhaps a dozen widely dispersed small houses scattered over the slope. The population steadily increased through the succeeding periods to reach a peak in Late Middle Horizon times. The artifact sample from the three excavated houses indicates that all three were occupied in the Tlamimilolpa subphase, so that the final form of the village (although probably involving smaller and more numerous housing units) was at least approximated by Late Tlamimilolpa times.

The floor plans (showing well-defined apartment units) and abundant domestic refuse of the 20 large structures argue convincingly for their residential function. Each large house must represent a significant social subdivision of the larger settlement. The size and density (6000 per square kilometer) of the residential occupation, the presence of a distinctive religious precinct, and the well-defined physical limits of the site argue for a corporate character comparable, in some ways, to peasant village communities in many parts of the world. However, its close physical proximity (less than 2 km) to the

[1] In the project, open squares between complete buildings are called plazas, central open areas within buildings are referred to as courts, secondary open areas within buildings as patios, and unroofed sunken areas within rooms as light wells.

huge Middle Horizon city of Teotihuacan and the near-identical character of residential and ceremonial architecture at both sites suggest an urban–rural linkage that may have been in some ways different from the urban linkages of historically known agrarian states.

Excavations were conducted in three of the residential mounds, numbers 1–2, 3, and 4 (see Figures 8.22, 8.23, 8.24, 8.25, and 8.26). Prior to excavation mounds 1–2 were considered as separate houses. Excavation revealed that they were parts of a single house with a court occupying the depressed area between them. The debris of rock and sherds that included mounds 1 and 2 and the intervening depressed area covered approximately 1500 m^2. Of this area 900 m^2 was excavated. The excavation reveals a large house with a central court, surrounded by a series of platforms, faced with retaining walls (in part with a Teotihuacan style talud and tablero) on varying levels. On the summit of the platforms was a complex series of rooms, alleys, patios, and porches. Specialized features within the rooms included light wells, masonry floor pits, post molds, and benches. The platforms were ascended by balustraded stairways and a small platform was located near the center of the court. The plan bears a striking resemblance to housing complexes in the city, particularly to Yayahuala (Sejourne 1959).

The rooms, patios, and porches occur in apartment-like subdivisions. The number of rooms per apartment in the excavated portions of the house varied between 1 and 3, plus, in some cases, porches and patios. Each of the apartments was probably the residence of a nuclear family. We will summarize the argument in favor of this position shortly. The house contained between 10–15 such units. On this basis, the residential group probably numbered 40–60 persons.

Mound 3 is of comparable size to the mounds 1–2 complex. The excavation involved only 400 m^2 of floor space that included primarily the central court. Enough of the house was excavated, however, to indicate that its overall characteristics were similar. Within the court was a small central platform, in this case with definite evidence of a partial Teotihuacan talud and tablero retaining wall (including only a lower molding and the sloping talud).

Mound 4 was completely excavated. It was a much smaller structure, measuring only 22 by 23 m, or a total floor space of 529 m^2. The plan was much more compact and regular than the others but included similar features. It included a central court with a central platform and a set of eight rooms and six porches (two apparently serving as reception halls at the entrances).

The 16 residential mounds in the village varied in size between mounds 1–2 and 4. If the assumption that the apartments were residences for nuclear families is correct, then the house population varied in size between 4 and 15 families or 16–60 persons. The fact that particular families resided together, the variation in the number of the families, and the presence of a communal structure such as the central court and its central platform all point to the

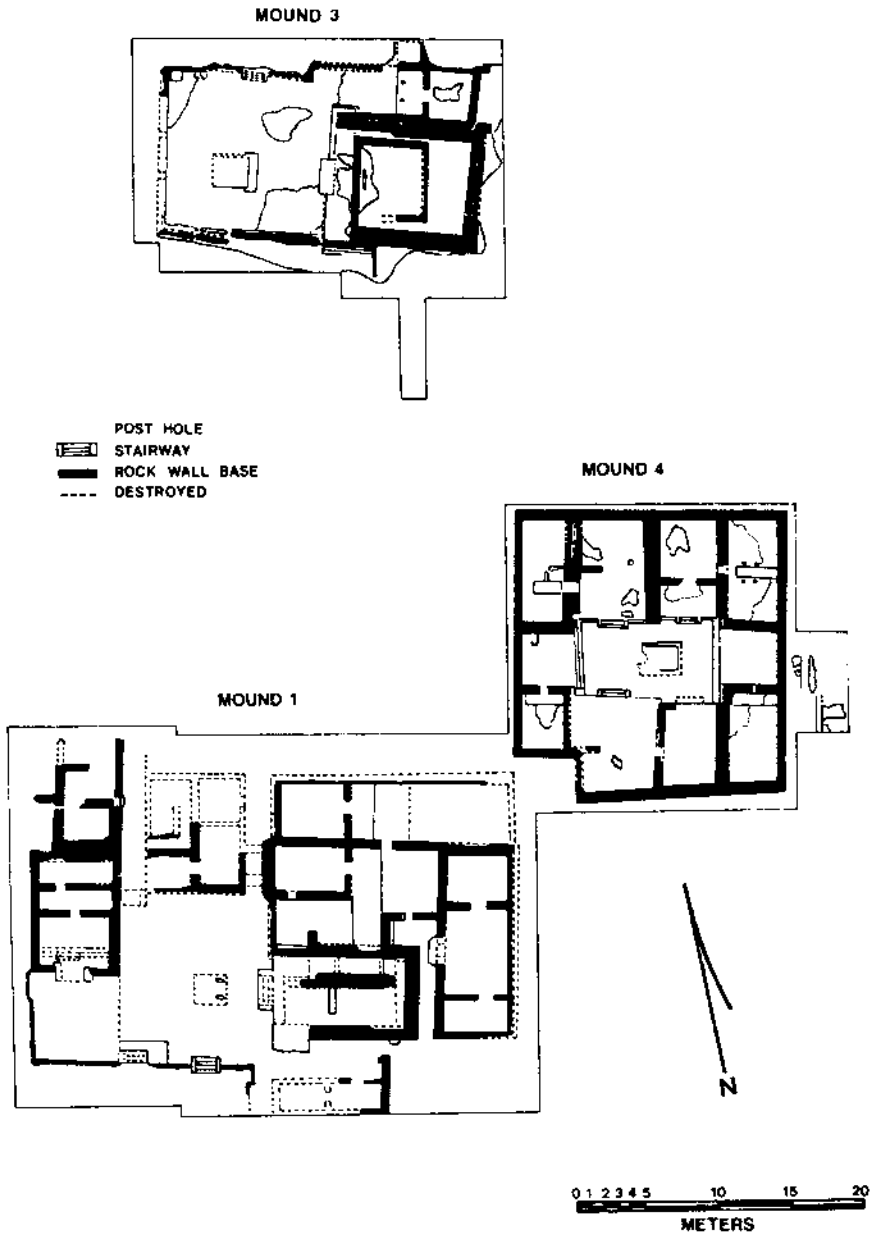

Figure 8.22. The Maquixco apartment compound excavations.

Figure 8.23. Maquixco excavation; mound 4, apartment compound. In the center is a central courtyard with its shrine overlain by a Late Horizon wall.

Figure 8.24. Maquixco excavation; mound 3 (background), mound 4 (foreground).

Figure 8.25. Maquixco excavation; mound 4, apartment compound, showing central courtyard shrine with superimposed Late Horizon wall.

Figure 8.26. Maquixco excavation; one of the apartments of mound 4. Note lightwell in the center of the floor of one room.

existence of a corporate group of some kind. In most nonindustrial societies such rural groups are usually based on kinship; the variability and range in size suggest a lineage or true descent group (Murdock 1949). The only unusual aspect of the TC8 lineages is their residence in a single communal house, although this is certainly not unique in the ethnographic record. Spence's skeletal analysis (1974) of a burial population from one comparable compound unit in Middle Horizon Teotihuacan suggests that the adult males in this population were more closely related to each other than were adult females, and that a mode of patrilocal residence may have prevailed. This observation dovetails with our own inferences at TC8, based on architectural configurations alone.

The argument that each of the apartments was occupied by a nuclear family is based on the following considerations. Nuclear families are probably universal in human society. Even in socieites with extended or polygamous families, the nuclear family is usually identifiable as a recognizable subdivison with its own structure, membership, and functions. Very common functions are residence and food consumption. In many societies, where extended families are present, one of the functions of that group is food production, and one of the principal concerns of extended-family heads is the adequate and equitable provisioning of all individuals within the group. In such situations, however, food is usually apportioned to and consumed by the constituent nuclear families. In two apartments at TC8 one of the rooms was clearly identifiable as a kitchen. This is based on the unusual number of complete or restorable pottery vessels and fragments of manos and metates found on the floor. In several other apartments, kitchens have been tentatively identified. Hearths generally were lacking; apparently portable pottery stoves were used instead. Their small size (one to three rooms) and range in area of roofed over space (24–66 m^2) suggest a small residential group comparable in size to a nuclear family. (Using Narrol's formula for egalitarian societies this calculates at a range of 2.4–6.6 persons per apartment.)

In summary, we are identifying at least three levels of social organization at TC8: the village, represented by the entire site; lineage, represented by the house; and the nuclear family, represented by the apartment. The presence of secondary courts or patios and their associated apartments within the larger houses might indicate the presence of extended families (i.e., a level between the lineage and the nuclear family) as well, but a complete excavation of one of the larger houses would be needed to verify this. Only one definite case of a discrete patio complex within a house (in mounds 1–2) was found and the patio lacks a central platform. The patio may simply have been needed to provide air and light, or additional work space.

Rank

The Aztec *calpulli* was a social group comparable in size and probably in many of its functions to TC8. The former was a physical and social commu-

nity with economic, social, political, religious, educational, and military functions. Many rural communities in Late Horizon times consisted of a single *calpulli*. The population as a whole of such rural communities was clearly inferior in rank to the ruling and merchant class that resided in the towns and to at least some of the craftsmen. Within the rural *calpulli*, however, there seems to have been considerable variation in rank. A formal headman position existed that involved a number of duties and rights. The headman was entitled to services in the construction and maintenance of his house and daily services for his household, including firewood and water. His household was supported by agricultural surpluses produced by communal labor. In return, his duties involved arbitrating disputes, custodianship of the land maps, and representation of the *calpulli* to the higher organization levels. The picture very briefly summarized above for the Late Horizon is easily adaptable to the situation at TC8 during the Late Xolalpan phase. The style and materials of house construction at TC8 are carbon copies of those in the city. There are, however, significant differences that reflect variations in rank of the Aztec type.

Although the overall plan and number of apartments of mounds 1–2 is very similar to Yayahuala at Teotihuacan, the total floor space is less than half the size of that covered by the urban building; rooms and courts are much smaller in size, there are fewer rooms per apartment, construction is inferior, and the plan generally is much more irregular. At Yayahuala nearly every apartment has a patio, the central court is much more spacious, and its central platform is almost as large as the village temple. Even the individual rooms at TC8 are highly irregular. The few Xolalpan phase burials excavated (very few were, since the objective of the excavation was to reveal as much of the floor plan as possible, and vertical trenching was sacrificed to horizontal excavation) were either without offerings or accompanied by one or two vessels. Nothing comparable to the richly stocked urban tombs was found. In mounds 1–2 and 4, one room had a mural painting placed on the wall of the porch of an apartment, and this apparently in simple geometric design. Mural painting in some urban residences is of course one of the great Mesoamerican artistic traditions.

On the other hand, there are residential districts within urban Teotihuacan (e.g., the Tlamimilolpa area, excavated by Linne in the 1930s [Linne 1942]) where residential architecture is much more comparable to that of TC8 than to Yayahuala. In several respects, with its cramped living quarters and poorly defined spatial units, the Tlamimilolpa residential architecture could certainly be regarded as a manifestation of a status level inferior to that of TC8. This complicates any simple urban–rural–suburban rank dichotomy, since the main center apparently contained substantial numbers of people of several widely different status levels. Our data do indicate clearly, however, that the highest-ranking groups resided exclusively in urban Teotihuacan.

With respect to differences in portable household equipment, a comparison with the city is more difficult since a report of the total sample of refuse from an urban house has not been published. In ceramics, along with the array of utility pottery for cooking, serving, and storage of food, such artifacts as figurines, braseros, tripod vases (even including fresco painting) were all present in the peasant household inventory, indicating that rank differences between rural and urban were not reflected in such areas of technology, at least qualitatively; possibly there were quantitative differences. Bodily ornaments were found only rarely, perhaps reflecting significant rank differences in dress. Generally speaking, the archaeological data indicate definite differences in rank between villagers and city folk particularly in the area of housing and dress, thus reflecting the same general type of social stratification present in Aztec times. Also comparable to the Aztec situation was evidence of internal stratification at TC8.

The smallest of the three excavated houses, mound 4, was noticeably superior in quality to the houses in mounds 1–2 and 3. The masonry was of better construction, particularly the plaster finish, the rooms more spacious, the plan much more regular, and such specialized features as courtyard drains, porches, and light wells were generally more common. The central courtyard, particularly, was much more ornate, with six balustraded stairways, a complete talud–tablero facade, and a much more elaborate central platform. Furthermore, there seem to have been two formal entrances with reception rooms associated with two possible porter's rooms. In the debris, we found roof ornaments of baked clay in the form of a row of crouching felines, and one of the apartments had a mural painting. The overall plan furthermore does not suggest division into a series of discrete apartments, but rather the house of a single nuclear, or probably extended family.

Other peculiarities in the house are the lack of evidence of kitchens and the generally lower artifact density relative to the other two houses. In our analysis of the faunal remains, White (n.d.) cites evidence of both butchering and consumption activities in mounds 1–2 and 3, but only consumption in 4. What all of this seems to suggest is that food processing and perhaps technological activities were conducted for the residents of mound 4 by occupants of other compounds. This pattern is described for the Late Horizon period by a number of Spanish sources in which nobles had the right to tribute and tax in the form of processed food (tortillas, for example) and goods, along with housekeeping maintenance (cleaning, provisioning with water, firewood, etc.).

When we first evaluated the TC8 data, we suggested that the mound 4 house was that of the village headman, and compared the position of head of the household to that of the Calpuleque or Calpulli headman of the Aztec. The Aztec *calpulli*, however, was a social unit approximately the size of the entire village of Maquixco. Considering the fact that the house was not located in a central position, and that the temple complex, the probable social center of the community, was located at the upper edge of the village, it is more likely that the village headman's house was one of the mounds as-

sociated with the temple plaza complex. The head of the mound 4 residence may have been the head of some internal territorial level below the level of the village. In this connection it should be pointed out that mounds 4, 1–2, and 3 and an additional mound, 14, are grouped around a large unpaved plaza, possibly forming some internal intermediate level territorial group of the type suggested.

To summarize, the settlement pattern at Maquixco includes at least three territorial levels, the apartment, the house compound, and the site. These probably correspond to the nuclear family, the lineage, and the village, in terms of sociopolitical organization. There is a strong possibility of an extended family level between the nuclear family and the lineage and some intermediate group between the lineage and the village. Adding to this picture are obvious differences in ranking of the population of the village as a whole as compared to the city of Teotihuacan and strong suggestions of internal ranking within the village. The structure of the village can easily be accommodated to a ramage model, and was similar to the Aztec *calpulli*.

All of the larger Middle Horizon rural communities in the Basin of Mexico are physically compact, formally planned settlements. This is in striking contrast to the Late Horizon pattern with its great variability of settlement pattern. The latter has a strong ecological bias and variations of settlement types show an extraordinarily close relationship to land form and agricultural systems. In contrast, Teotihuacan settlements seem as nonecological in character as the sixteenth-century Hispanic Colonial pattern. There is an extraordinary resemblance to the communities established as the product of the Congregation policy, in which dispersed populations were collected and settled into large planned nucleated settlements to facilitate administration, particularly for tax collecting and proselytization. The implication here is that of a much greater penetration of urban institutions into rural life or perhaps suggests that the dichotomy between rural and urban is less well-defined in Middle Horizon times.

In his 1966b paper, Sanders discussed the evidence of warfare from the village data. We quote the passage here in full.

> *Warfare.* A surprising result of the excavation in view of the usual picture painted of Classic Mesoamerican society, was the clear indication of a significant militaristic aspect to village life. Obsidian projectile points were common and functioned probably as lance points. Considering the large population of the Valley, it is very doubtful that hunting was of any significance; the rarity of bone other than human and dog in the midden supports this argument. Human bone was common, and scattered through the kitchen refuse. Isolated mandibles were particularly common and several pieces of worked skull fragments were found. In several cases more direct evidence of cannibalism was revealed, i.e., human bone in cooking pots. Warfare with its attendant ritual practices seem to parallel very closely those reported by the Spaniards of the Aztec.

Certain modifications are required on the basis of further examination of the data. First, hunting was probably of somewhat more importance in the

diet than we had originally assumed since deer bones make up a substantial part of the TC8 skeletal remains. Our earlier assumption that hunting was of no significance was based on the belief that surveys of the other portions of the Basin of Mexico would reveal Middle Horizon populations comparable in density and size to the Late Horizon. Our surveys (see the preceding chapter) indicate that it was not more than one-quarter the size of the Late Horizon population, which meant that large numbers of deer were still present in the Basin. This conclusion is also supported by the faunal evidence from Teotihuacan itself. On the other hand, the total contribution of wild animals to the diet must have been still a minor one considering the large size of the population (Santley, on page 486, estimates that no more than 0.2–0.5% of the annual caloric intake could have come from deer, 0.6 from all game sources). This still leaves unexplained the unusual number of bifacially flaked points. When Sanders originally suggested their use for warfare, this conclusion presented some difficulties, since the balance of our data argued that Maquixco was a peasant community, and it was surprising to find military equipment in the houses of people of this social type. Furthermore, data from the Late Horizon suggest that the state was the distributor of military equipment (from royal arsenals). Upon reexamination, it appears that many of the bifacial implements actually were used as cutting tools or knives, which means that the number of points would have been well within the range of the modest hunting activity of a Middle Horizon village. We also further suspect that many of the deer were taken in the agricultural fields of the village.

The value of infant remains as evidence of warfare can now be reinterpreted. Recent examination of burials from house compounds at Teotihuacan, for example, show that foetuses and very young children were treated ritually in a different manner from individuals who died later on in life (Serrano and Lagunas 1975). They were often interred in altars. The placing of the infants' bones in a pot on the patio floor of Apartment 2, therefore, may involve some kind of burial ritual rather than cannibalism. In this context it is interesting to note that the Aztecs considered children who died before the age of 4 years as incomplete human beings who went to the paradise of the thirteenth heaven to be nourished from the tree of life until they achieved full humanity. As we noted in the description of religion at Loma Torremote, this differential treatment goes back to the First Intermediate Two phase. The jaws and skull fragments found in the TC8 middens may also reflect some pattern of specialized treatment of the dead within the village itself rather than evidence of trophy taking and ritual cannibalism as we originally suggested. Many societies in the ethnographic present, for example, keep bones of dead kinsmen as mementos.

We do not mean to imply, however, that there was not a military component to Middle Horizon society as a whole. Recently discovered mural paintings, showing warriors, from the city itself, and sculptural scenes of Teotihuacan warriors in other Mesoamerican sites suggest a strong militaristic component to the total society. What we are now deemphasizing is the evidence for this pattern within the peasant village.

Economic Structure

Unfortunately, the Maquixco excavations were conducted prior to the development of flotation techniques for retrieval of botanical remains from exposed sites and no macrosamples were obtained during the excavations. With respect to animal bone the techniques of excavation were not conductive to collection of small fragments but we did obtain a total of 347 fragments of animal bone. Of these 187 were identified, of which 60% were deer or dog bones, the latter presumably domesticated. The fact that the dog bone was found scattered through the midden, plus evidence of butchering marks on the bones, indicates this animal was used for food during the Middle Horizon in a way similar to the Conquest-period Aztec. Turkey bones were also present in small quantities, presumably representing a domestic species, and the balance of the bones consisted primarily of small mammals, birds, reptiles, and a few fish bones. Of the unidentified bones, there were numerous large bones present, presumably representing dog or deer. Recent excavations at Teotihuacan itself shows roughly the same range and proportions of animal bone (Starbuck 1975).

Flotation samples taken recently from the site of Teotihuacan indicate that maize was the staple crop, and that some wild plants were collected as supplements to the diet (McClung de Tapia 1977). The small amount of agricultural plant pollen that we found in our pollen core at the Atlatongo Springs southwest of Teotihuacan indicates that maize was a significant factor in the diet of the Middle Horizon population.

On the basis of the regional settlement pattern during the Middle Horizon in the Teotihuacan Valley, direct archaeological evidence, and analogies derived from ethnographic data, we can make a series of suggestions about the agricultural system at Maquixco. The twentieth-century population of the Valley consists primarily of peasant villagers whose livelihood is based on a combination of subsistence agriculture, the sale of agriculture surpluses, and some local craft specialization. Documentary sources for the Late Horizon suggest a similar situation. One major difference between the two periods is in land tenure. Lands used by rural communities in Aztec times were apparently owned in common by the calpulli and divided for use by families. Although some rental of land did occur and holdings of the various corporate groups somewhat dispersed as a consequence, generally the lands held by a community were situated within a short distance of the residential area. As a result, detailed mapping of Aztec corporate villages would make it possible to roughly define land holdings. Twentieth-century villagers have three types of land: private, which is held by individuals who are free to rent and sell it; ejido land, owned by the federal government, assigned to village use and therefore inalienable; and village communal pasture, with freedom of access to all villagers. Even though much of the land is privately owned, there is still a strong tendency for most of the land used by the contemporary village to lie within a maximum radius of 5 km of the community. In the case

of small villages like TC8, it is usually only 1–2 km. With these considerations, the distribution of rural sites in an agricultural society should provide clues as to patterns of land use and tenure.

Although individual Middle Horizon rural communities in the lower Teotihuacan Valley like TC8 were similar in size, population, and density to present-day plain and plainside villages, their number and distribution differed strikingly from both Late Horizon and twentieth-century patterns. Unlike the later patterns, the bulk of the population that farmed the lower and middle sectors of the Valley apparently resided at Teotihuacan and there was a marked attrition of population as one proceeded down valley from the city. TC8 is the last really substantial (in size) settlement below the city. A string of hamlets, or small but physically compact settlements (in one case consisting perhaps of only two or three communal houses), is located on the north piedmont below TC8 but the total population was far below the capacity of the plain to support. There were no settlements on the south piedmont. The same generalization applies to the Middle Valley. The only settlements, in that area, of demographic consequence were pseudopod-like extensions of the city itself. Rural settlements of the size and zonal densities comparable to those of the Late Horizon and twentieth century are found only in areas peripheral to the main valley. The implication here is that the use of most of the alluvial plain, and portions of the adjacent piedmonts, were controlled directly by the urban population, perhaps by major institutions like the temple, or the state, and that a substantial portion of the population in the city were full or part-time farmers.

TC8 is one of the few relatively large rural settlements in the main valley. Tending to corroborate our assertion that access to the alluvial plain was controlled by the urban population is the location of the village. Present-day settlements that own land in the plain are located on the edge of, or within it. TC8 is located well back from its edge; present-day villagers in such settings are primarily piedmont cultivators. In terms of the spacing of TC8 with respect to other Teotihuacan piedmont villages, and assuming that the plain was not available, the village could have had access to 600–700 ha of piedmont, or an average of 4–5 ha per family.

The evidence of an agricultural base for the community is primarily indirect. Excavations in three houses revealed no evidence of craft specialization. The size and location of the settlement, particularly with respect to the city, plus the negative evidence of other economic specialties, argue for an agriculturally based settlement. Obsidian scrapers were unusually abundant in the excavation (approximately 300, of which the majority were of the Tlamimilolpa–Xolalpan phase). The large population of the Basin of Mexico as a whole, and scanty evidence of hunting in the midden, would indicate that the scrapers were not used primarily for fleshing hides.

The form of these tools, and particularly the long handle, is quite similar to modern iron tools used to rasp the interior walls of the cultivated maguey plant so as to facilitate sap flow during the period of *aguamiel* and *pulque*

production. The obsidian scrapers, whose steeply angled faces are heavily worn and battered, could well have functioned for such a purpose. If so, maguey cultivation and the production of *aguamiel* and *pulque* must have been important activities at TC8. Maguey is a very hardy plant, which does quite well on thinner, drier piedmont soils where it has been an important cultigen in modern times. On sloping terrain it is now characteristically closely planted in linear strips, parallel to the contours, so as to form a complex of terraces which facilitate the cultivation of maize, barley, wheat, and beans. Such maguey terrace cultivation can be quite intensive and productive when integrated with networks of floodwater irrigation canals. Framentary traces of long-abandoned canals, stone terrace faces, and three possible spring-fed reservoirs occur in the general TC8 area, although all are of problematical date. If these hydraulic features were contemporary with the TC8 Middle Horizon occupation, they would indicate a rather intensive system of piedmont cultivation.

We suggest that TC8 represents a community of peasant farmers, capable of a substantial surplus production (perhaps especially of maguey products), whose major function was to expand and consolidate the productivity of the broad piedmont down-valley from Teotihuacan. TC8's close physical proximity to Teotihuacan, the stylistic similarities between architecture and artifacts of both sites, and the apparent absence of any significant artisan activity at TC8 (see following discussion) all suggest a close, economic relationship between the two. Our reconstruction, therefore, is that of a relatively prosperous rural settlement that supplied itself with staple foods and produced a surplus of agricultural produce, primarily the products of maguey, as taxes to the Teotihuacan state and for exchange in the urban market.

In a prior section we stressed the fact that the degree to which a type of social group is physically expressed is generally correlated with the significance of its functions, particularly economic. If so, the lineages previously defined were probably units of land tenure and agricultural production, and generally functioned as cooperative labor groups. Lineages in many societies do have such functions, and the extraordinarily tightly knit settlement pattern of this group at TC8 suggests vital economic functions.

Craft Specialization and Trade

There is some slight evidence of manufacturing activities on the site but as a whole most of the technology seems to have been produced and obtained outside of the community. This conclusion is based on the excavation of the three houses, plus surface samples from all of the structures of the site. The obsidian sample from Maquixco is still in the process of being analyzed, but some basic patterns can be ascertained at present. The total assemblage of artifacts includes 39 cylindrical cores, 9121 rectangular blades struck from these cores, 255 bifacially flaked scrapers, 4 bifacially flaked drills, 8 large

bifacially flaked knives, 92 bifacially flaked points, 174 irregular cores, and 869 irregular utilized flakes. Of interest is the distribution of these artifacts in the three houses and the areas within the houses. The data are summarized in Table 8.3.

The absences of obsidian workshops indicate that the bifacially flaked tools and the cylindrical cores were not produced at the site. The cores were probably obtained at Teotihuacan and the blades manufactured in the village, to judge from the ratio of rectangular blades to cylindrical cores (250:1). The same conclusion applies to the bifacial tools; there was no recorded workshop detritus from this activity. These conclusions coincide with data from Teotihuacan, where a number of households in the city specialized in the production of cylindrical obsidian cores, points, and scrapers, and the villagers apparently obtained these items from the city market (see Spence 1967, n.d.). On the other hand, the presence of irregular cores and utilized flakes suggests that these general purpose cutting tools were manufactured by the individual households at Maquixco. The unusual concentration of irregular cores in the courtyard of mounds 1 and 2 furthermore would suggest some internal specialization within the village.

Bifacial knives, points, scrapers, and rectangular blades are found evenly dispersed throughout the living quarters and open space of each courtyard indicating use as household implements. In the case of mound 3, however, two artifacts were found in unusual quantities, bifacially flaked scrapers and irregular flakes, which suggests that the household was involved in some specialized activity. We believe that this is connected with the pulping of maguey leaves and the processing of the fiber. No evidence of pottery manufacture was found, and only one figurine mold was collected. The Late Xolalpan figurines were all apparently mold made and the collection includes several hundred heads. In two seasons of excavation, only one stone celt was found (from a surface collection) indicating that woodworking was rarely done in the village. Combined with this scanty evidence of craft activities is the extraordinary similarity of the entire array of artifacts from pots to stone tools with those in the city. Thus, all of the data support our contention as to the significance of the urban market in peasant life as a source of this technology.

One technological activity that was probably conducted by the villagers was house building. The noticeably poorer quality of the construction and extraordinary irregularity of room and court dimensions argue for construction by nonprofessionals. The plaster surfaces, however, talud and tablero facades, and balustraded stairways look like professional work. We suspect that the lineage was a cooperative work group that built most of the house and that urban masons were contracted for the more professional construction. This supposition is also supported by the distribution of two distinctive Teotihuacan artifacts. Both are objects of the size that can be held in the hand; one is shaped out of light porous volcanic rock (called *tezontle* locally), in the form of a terraced pyramid; the other is similar in appearance to a clothing iron (but with a rectangular base) and made of a dense heavy,

TABLE 8.3
Distribution of Obsidian in Mounds 1–2, 3, and 4 at Maquixco (TC8)[a]

	Mound 1–2			Mound 3			Mound 4			
	Courtyard (200 m²)	Midden (200 m²)	Apartments (500 m²)	Courtyard (150 m²)	Midden (100 m²)	Apartments (150 m²)	Courtyard (60 m²)	Midden (100 m²)	Apartments (360 m²)	Totals
Drills	—	—	2	—	2	—	—	—	—	4
Knives	—	—	1	4	2	—	—	1	—	8
Scrapers	14	4	53	123	24	2	3	7	25	255
Points	1	3	36	14	21	11	—	2	4	92
Irregular cores	50	0	82	4	0	0	3	9	26	174
Irregular flakes	64	48	49	425	112	60	13	31	67	869
Cylindrical cores	4	3	11	6	3	2	—	1	7	37
Blades	1405	241	2401	2219	883	675	161	296	841	9122

[a]The table does not include artifacts whose spatial provenience was uncertain.

basaltic stone. Both are referred to as plastering tools in the literature. Teotihuacan style buildings are faced with two layers of finishing material, an inner, thicker, layer of earth, gravel, and lime that we are referring to as stucco and a thin, outer layer of slaked lime that we refer to as plaster. We believe that the first type of artifact was used for applying the stucco; the second for plaster. Stuccoing tools are abundant in the Maquixco middens, plastering tools extremely rare, agreeing with the pattern of construction work we have suggested.

Religion

One of the most significant results of the excavation was substantiation and amplification of the evidence from the city as to the importance of religion in the integration of Teotihuacan society. The enormous number and size of religious buildings at the city is mute testimony as to the significance of the public or state ritual. What the TC8 excavation reveals is an extraordinary emphasis on household ritual as well. Every house, to judge from our three excavations, had a central court with a small altar-like central platform. No concentrations of ritual objects were actually found on and near the platforms (nor were they found in the temple excavation) but Linne reports finding a stone Huehueteotl (the Middle Horizon equivalent of the Aztec god of the hearth, in this case carved in the form of an incense burner) and pottery censer (the large chimneyed composite type) fragments on and near the central platform of the Xolalpan court at the city. Spanish eyewitness accounts of Aztec religion emphasize the fact that temples were swept and cleaned daily (it was one of the duties of the novices) in Tenochtitlan so the lack of ceremonial midden is not really surprising. At TC8 an offering, consisting of two pots (one inverted over the other), containing a green stone bead and sea shells, was found under the courtyard floor at the northeast corner of the central platform in mound 3. A second offering under the floor near the same platform may have included a human sacrificial victim or more probably a burial. The central court and its platform at TC8 were probably the scene of lineage ritual.

Each of the two large houses (mounds 1–2 and 3) furthermore possessed a distinctive architectural complex, which opened directly into the court in front of the altar, that probably had ritual functions. Each consists of a bench room or a porch room unit and an alley that ran alongside the unit and connected with a back room. In neither case was kitchen refuse found on the floors. In the case of mound 1–2 the noted frescoed wall was in this complex. The back room in both houses lacked a formal floor. These complexes were clearly not residential in function, and probably had some function related to the lineage as a whole. In part, they may have functioned as rooms to store religious paraphernalia or dressing and rehearsal rooms for courtyard ceremonies that involved the use of the platform. In the large apartment compounds at Teotihuacan itself, there is a direct functional equivalent. Delimit-

ing the central courtyard are a series of large rooms that are placed on high platforms that were apparently not residential in function; Millon refers to them as temples (see Millon 1967).

Great quantities of complete and fragmentary objects were found in the refuse middens of the houses that are thought to have had religious functions. The list includes several thousand figurine fragments; sherds of the typical Teotihuacan composite incense burners; candeleros, usually considered as censers; and numerous sherds of pottery tripod vases that, at Teotihuacan, are associated with burials or ritual offerings (particularly the fresco painted type). A Huehueteotl, carved from *tepetate*, was found in the mound 3 excavation in a rubbish deposit outside of the house. Excavations in another Middle Horizon village, TC46, on the north slope of Cerro Gordo, resulted in the find of a basalt Huehueteotl in the house midden, so that this type of sculpture was apparently involved in household ritual. The Aztec Huehueteotl was a hearth god so that his association with household ritual is not surprising.

The frequent occurrence of religious objects in the house refuse and the fact that figurines are never found intact strongly suggest that they were used once for a specific ritual or ritual season and then discarded. Since the evidence is conclusive that they were obtained in the city, they represent a substantial economic investment and are a good prehistoric example of what Wolf (1966) refers to as the peasant "Ceremonial Fund" in contemporary peasant society. None of the objects were actually found *in situ* in a functional sense, so we can only guess how they were used. Some type of family altar complex, comparable to the twentieth-century Catholic altar, may have been present, involving the candeleros and figurines, since they are abundant and occur all through the room complexes. They were particularly abundant in the patio that served apartments 1–3 and this is our strongest argument for some extended family organization within the compound. The Huehueteotls are rare, and this fact, plus the evidence from Xolalpan, suggests that they were probably used in courtyard ritual involving the entire lineage. We suspect that this was true of the braseros for the same reasons. The frescoed tripod vases were more abundant, but were found in quantity only in the courtyards so that they too were probably used in lineage rather than family ritual.

In striking contrast to the abundant evidence of household ritual, the village temple seems rather unimpressive. Its presence does argue for a well-integrated corporate community but its small size and that of the associated structures would imply that the public aspects of ritual may have involved considerable participation in urban rather than an elaboration of community ritual, at least in those settlements conveniently located with respect to the city. Religious architecture is much more elaborate in the more distant Middle Horizon communities north of Cerro Gordo.

Very little can be said presently about the symbols of religion. The figurines almost certainly represent gods with compartmentalized functions,

as in the case of Aztec gods. The Late Xolalpan mold-made heads and bodies can be sorted into approximately 10 male and female deities based on variations in dress. Tlaloc is represented but is found only infrequently and is not included in the tally of 10 deities. Presumably a patron god of the city, perhaps he was more involved in the state religious ritual and functioned rarely in peasant household ritual. The types have not yet been compared with figurines from the city so it is uncertain whether a greater variety of gods were represented there. The gods represented at TC8 were definitely worshipped in the city as well and the household ritual we have described apparently applies to the urban population. This is not to argue, of course, that the peasant who resided at TC8 completely understood all of the conceptual levels of what was obviously a highly sophisticated religious system at the city.

As in the city, shell, in this case brought primarily from the Pacific Coast, apparently had ritualistic use. Great quantities, particularly *Spondylus*, were found in the midden. Artifacts manufactured from shell are rare, and shell fragments generally show no signs of working, so that it was clearly not brought as raw material for artifacts. Although its occurrence in the midden suggests that shellfish may have been eaten, it would seem very unlikely that human porters would carry the shell also, all the way from the Pacific Coast. Furthermore, it must be remembered that the refuse in the houses includes cast-off ceremonial as well as kitchen artifacts. There is abundant evidence of the ritual use and significance of shell at the city and apparently it had the same use in household ritual in the village as well.

Village and City

The Aztec *calpulli*, the socioeconomic equivalent of our TC8 village, was part of a larger territorial unit, the regional state. The population of the rural *calpulli* in Aztec society was obligated to pay tribute to the ruler in agricultural crops, usually produced by communal labor; in corvée labor for the construction of public buildings in the towns, or on public works like dams, dikes, or canals; and in military service. Legal disputes were resolved by especially appointed officials residing in the town so that the legal functions that are characteristic of the rural community in many societies were appropriated by the state. The *calpulli* chief acted as a go-between between village and town. Presumably villagers were also spectators in the elaborate religious ceremonial and made periodic offerings in the temples of the towns. Aside from this formal interaction with the state and temple, Aztec peasants exchanged their surplus for craft products in the urban market.

The above brief summary of the interrelationships between the rural and urban community in Aztec times could easily be applied to the Middle Horizon situation. We have direct or indirect archaeological evidence as to the subordinate status of the villagers, formal political organization, subsistence base, market economy, and close cultural integration with the city. If

anything, the impression of the Middle Horizon is one of a greater control and penetration of rural life by the urban ruling class. In part, this undoubtedly reflects the fact that TC8 is located within the shadow of a major city.

Comparison with Other Middle Horizon Villages

Survey and excavation data from the north flank of Cerro Gordo, outside of the Teotihuacan Valley proper, tend to support our argument as to the closer relationship between urban and rural in Middle Horizon times. Approximately 8 km north of the city, on the north slope of Cerro Gordo, a test zone of 8 km^2 was intensively surveyed. During the Tzacualli phase, approximately 30 hamlets were scattered along the barrancas and interfluves. These hamlets varied in size from less than 1 ha up to 1 ha in size and exhibit no planning. No definite ceremonial structure of this phase was located. Probably at the end of the Miccaotli or beginning of the Tlamimilolpa phase, a program of nucleation of the population into large communities was initiated. By the end of the Tlamimilolpa phase, most of the hamlets had disappeared and the population was concentrated into four large nucleated villages and a town. These communities varied in size from 5 to 25 ha. We estimate the density as comparable to that at TC8, which would yield a minimal population per village of between 300–1500 inhabitants. Actually three of these, totalling 42 ha, were almost coterminous. All of these sites exhibit formal planning, but only the town has a substantial ceremonial–civic center. The population climax of the area was achieved in the Late Xolalpan phase. During the Metepec phase there was a rapid reduction of population and a resettlement of the remnants at TC73, a large planned town, with an impressive center, that is a miniature copy of the Main Street complex at Teotihuacan itself.

Excavations at one of the villages, TC46, although very small in scale, suggest similarities to and differences from the TC8 site. Portions of two houses were excavated and each had a central court comparable to TC8. The overall plan, however, seems much less formal with nonconjoined apartments loosely arranged around the courtyard. Virtually no lime plasters seem to have been used in the excavated portions of the houses, although the floors were well constructed, from layers of clay and volcanic gravel, and had well-smoothed mud-plastered surfaces. A test pit at TC49, however, did reveal remains of a lime-plastered residence. Apparently the urban type of house was typical at TC8, whereas only some houses were so constructed at the Cerro Gordo north slope area. Scattered information from the settlement survey suggests that the TC46 pattern was typical of many Middle Horizon villages, particularly those in Zone 2. Data from soil profiles of other Middle Horizon villages and recent excavations, however, reveal that some Middle Horizon village residences were constructed with only hard tamped earth floors and courtyards.

In summary, including houses from the city, at least four levels of housing may be defined for Teotihuacan settlements in terms of the construction material, plan, and skill of excavation. Within the city, furthermore, distinctions in housing in terms of spaciousness of rooms and courtyards, architectural elaborations, floor plans, and quality and subject matter of mural paintings suggest a number of social class levels. The data would point to a much greater elaboration of status levels than during First Intermediate Two times.

With respect to portable artifacts, the evidence from villages like TC46 is that the total range of stone and ceramic artifacts was comparable to TC8, but there seems to be definite differences in the quantity of certain types such as thin orange, frescoed vases, and orange ware cooking pots. What the data apparently show is a gradation of integration of rural communities into the life style of the city, with TC8 falling into a kind of suburban category, and sites like TC46 more definitely rural and peasant.

Basin-Wide Implications of the Maquixco Excavations

Middle Horizon sites comparable to Maquixco, with nucleated populations of several hundred people, overall site planning, and substantial residential and ceremonial architecture are found primarily in Zone Two of our Middle Horizon land use model. They occur very predominantly around the peripheries of the Teotihuacan Valley, in the Temascalapa region, along the edges of the Cuautitlan alluvial plain (with probable extensions southward into the Azcapotzalco area), some 20–30 km west and southwest of Teotihuacan. Among these settlements, the Maquixco community is perhaps unique in the configuration of residential apartments that so closely resemble the compound units at Teotihuacan, and the close physical proximity to the city. These features combine to make Maquixco appear more like a physically detached urban segment than a truly rural community. Future investigations may show that the other large nucleated villages in the Teotihuacan Valley and the Temascalapa region are of similar character, with a strong tendency toward cultural simplification at greater physical distances from the urban capital (e.g., the TC46 data). Similarly, the nucleated villages to the west of Lake Xaltocan–Zumpango may represent physically detached segments of the small Middle Horizon centers in that area, with center–suburb linkages somewhat comparable to those we have suggested for Teotihuacan and Maquixco. Clearly, a very different model must be developed for the much more fragmented Middle Horizon occupation in Zone Three. The small site size, dispersed occupation, and near absence of any architectural remains in these more distant areas are strongly suggestive of significant differences in residential patterns, economic roles, and societal composition relative to the urban–suburban core of the Middle Horizon settlement system.

THE TRIBAL AND THE PEASANT VILLAGE: A COMPARISON

Cultural anthropologists analyze social groups in terms of two major characteristics, structure and function. A comparison of the tribal and peasant villages shows very close parallels in territorial organization and, derivatively, social structure. In each case the nuclear family is isolatable as a social group and the range in size is very comparable between the two sites. In the case of the First Intermediate Two village, the family resided in a separate house, within a walled compound, that included a patio and garden plot. The Middle Horizon family resided in an apartment within a large multifamily compound.

Above the level of the family, at Loma Torremote, was a house compound cluster in which three to six compounds shared adjacent walls, forming a compact territorial unit. The comparable unit at Maquixco would be the apartment house. This unit at Maquixco was probably larger in size than the cluster at Loma Torremote. We estimate that there were 10–12 nuclear families residing in mounds 1–2, but on the other hand, this was one of the largest apartment houses on the site. Most of the mounds were only one-half to three-quarters the size of mounds 1–2, suggesting smaller resident populations. In all probability, the population mode per apartment house at Maquixco was close to that of the compound cluster at Loma Torremote. In either case, the resident group was within the range of a large extended family, or a small localized lineage, in terms of ethnographic parallels. In both cases there was a religious shrine that served the group of families; in the case of Loma Torremote, located in one of the house compounds; in the case of Maquixco, located in the central courtyard. One obvious difference between the two sites is the more formal plan of the lineage residence in the later site.

In the case of the Middle Horizon village, we suggested the possibility of an extended family group, intermediate in size between the nuclear family and the lineage; and of a maximal lineage, formed by a set of apartment compounds, with a formal chief as leader. There is evidence from the First Intermediate Two village that nuclear families did occasionally grow into extended families, but the group was coresidential, that is, it resided within the same physical house. No definite evidence of the maximal lineage was noted except that there were areas of light occupation over the site that might represent unsettled, probably cultivated zones between sets of house compound clusters. Above all of these levels was the community. The First Intermediate village was considerably larger in population, lacked any indication of central planning, and it is not known whether it had a central ceremonial ground or building complex. The very low density of surface remains in and around the contemporary cemetery on the site suggests a central, nonresidential area. In contrast, the Middle Horizon village is

smaller, more compact, has an organized grid arrangement, and a definite ceremonial complex, including a temple and associated structures.

Added to these parallels is clear evidence of hierarchical statuses within the social structure. In our discussion of the Middle Horizon village, we suggested a parallel to the structure of the Aztec calpulli for the village as a whole. The *calpulli* has often been considered as having a ramage type structure, with the two characteristics of segmentary lineage and ranking, a model that could easily fit both of our sample villages. In terms of population size, Maquixco is near the lower end of the range of size for the Aztec *calpulli*, and Loma Torremote is at the upper range. It is in the area of function that we see significant differences between the two villages, differences that reflect overall changes in the institutions of the Basin of Mexico between the First Intermediate and the Middle Horizon periods. The major differences lie in the economic characteristics of the settlements, but involve the political organization as well.

The evidence from Loma Torremote would suggest a relatively self-sufficient community with internal patterns of part-time specialization and redistribution, possibly reciprocation. The redistribution in some cases, most clearly in the case of obsidian, apparently flowed from lineage heads through the various members of the lineage. How raw materials were obtained that were not locally available is not clear. During the period of the earliest house approximately 5% of the obsidian came from the Pachuca mines, the balance from Otumba; by the final period it had shifted to 35% from the Pachuca, and 65% from the Otumba source. Considering the lack of evidence of settlements near either of the quarries, or of large processing centers anywhere in the Basin, it would seem probable that the villagers had direct access to the raw materials. One question would be whether each lineage of the village procured its own obsidian or whether a particular lineage controlled the distribution of the raw materials among the various lineages of the village. Our surface samples do not indicate any such concentration of materials and suggest that each lineage obtained its raw material separately.

The pattern at Maquixco with respect to obsidian is quite different. The bifacially flaked tools, along with the cylindrical cores, were not processed locally and apparently were obtained at a central place. Considering the data from Teotihuacan, they were probably obtained from professional craftsmen at the site, presumably through the central place that Millon refers to as a market. Whether the locality was a redistribution place or a market place is not clear, but the fact that housing, and portable technology generally, at the city, is superior to that in the village, suggests a negative balance in the exchange, and hence a profit element in the transactions. Although the data are by no means conclusive, and our samples less completely analyzed, what we have does suggest that the pattern described for obsidian applies to other crafts as well. The contrast, then, is between a relatively self-sufficient, tribal