

ARCHAEOLOGICAL APPROACHES TO
Market Exchange in Ancient Societies

EDITED BY

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Ancient market systems are regional in scope. Whether they take the form of isolated solar market systems or complex interlocking systems (C. Smith 1974, 1976a), market systems integrate regions economically. Ethnographers and historians have found that large regional peasant market systems—the kind Carol Smith described as complex interlocking marketing systems—are typically composed of two hierarchical levels with distinct spatial expressions. The smaller level, which I call the local system, usually consists of a weekly market that serves a town and its hinterland. In China, G. William Skinner (1964) has called this the “standard marketing community,” and in many parts of Mesoamerica the local system consists of a central town (*municipio* or *cabecera*) and its rural dependents (*sujetos*). These local systems then form parts of a larger regional market system based in a major urban center. For example, in Mexico the Valley of Oaxaca regional market system in the twentieth century comprised a number of smaller local systems that corresponded to *municipios* (Cook and Diskin, eds. 1976; Malinowski and de la Fuente 1982).

The distinction between local and regional systems in a complex market system is important for understanding peasant economies and social organization, but archaeologists have had trouble distinguishing these levels in ancient societies. Regional survey projects employing systematic surface collections of artifacts often cover areas of sufficient size to model the different levels of market systems, but the typological composition of surface collections may not provide the chronological and spatial resolution to address this issue. By applying chemical provenance methods to survey

collections, however, archaeologists have made headway in distinguishing local and regional systems in the Aztec-period Basin of Mexico (Garraty 2007; Minc 2006).

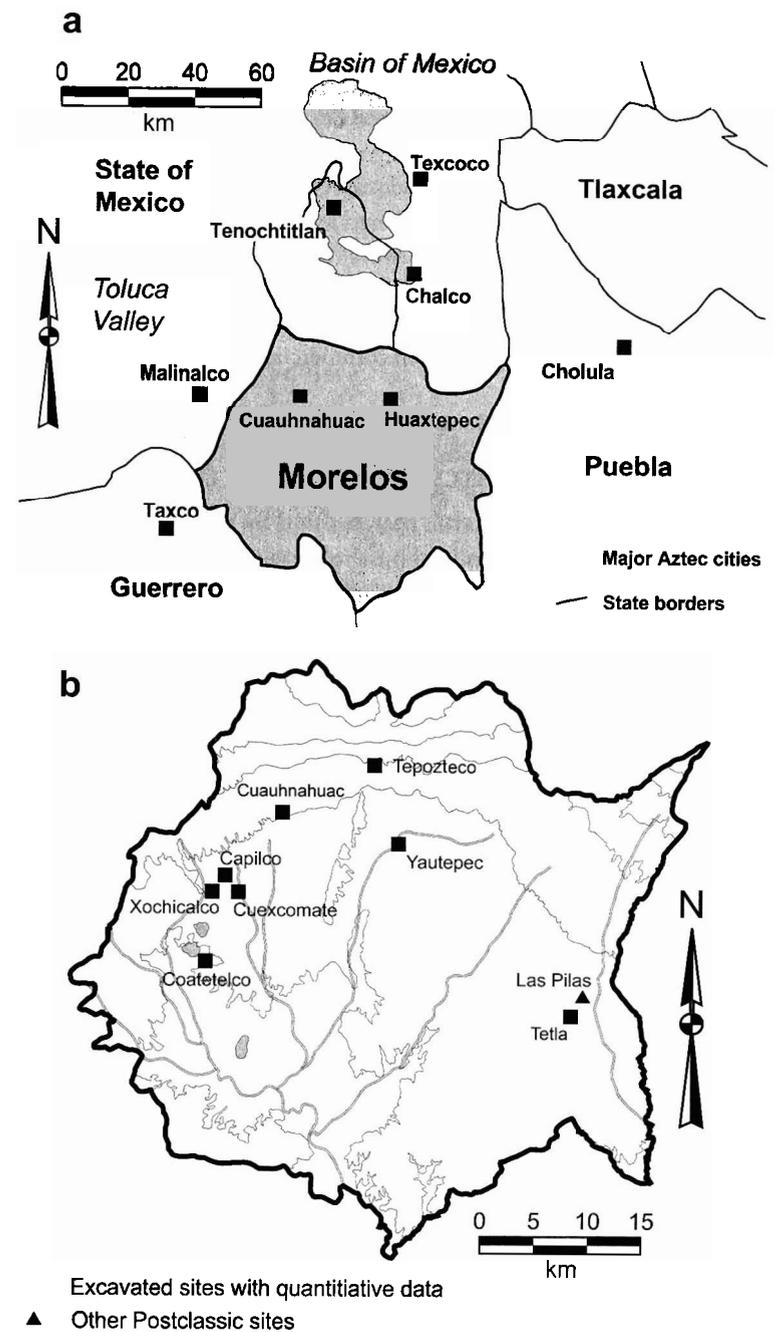
Excavation data typically have greater chronological and contextual control than surface collections, but in most areas too few sites have been excavated to reconstruct regional exchange systems from excavated data. In the Mexican state of Morelos, however, a number of Aztec-period sites (Middle and Late Postclassic periods) have been excavated by U.S. and Mexican archaeologists. I have analyzed the ceramic collections from nine of these sites (M. E. Smith 2010) and used these data to reconstruct the local and regional levels of market systems and their changes through time within the Aztec period (ca. AD 1100–1520). The full ceramic data and an abbreviated version of the spatial analysis are presented elsewhere (M. E. Smith 2010).

Ethnohistoric sources describe the importance of markets, merchants, and commercial exchange in Postclassic Morelos, and the documentary information is strengthened by a number of archaeological studies of ceramic and obsidian exchange (see the next section). These data, however, provide little information on the spatial extent or organization of the market systems. In this chapter I employ several kinds of ceramic data to generate a series of schematic maps of the likely spatial extent of regional market systems. My argument is based on analogy with ethnographic work on peasant market systems in which local and regional systems have different material culture expressions.

This chapter builds on recent conceptual and methodological advances in the archaeological analysis of past economies (e.g., Earle 2002; Feinman and Nicholas, eds. 2004; Hirth 1996, 1998; M. E. Smith 2004; see also Garraty, Chapter 1). The fine-grained analysis of ceramic distributions, coupled with relatively detailed ceramic chronologies in Postclassic Morelos (Hare and Smith 1996; M. E. Smith 2010; M. E. Smith and Doershuk 1991), permit the analysis of changing spatial and economic dynamics of market systems within the Aztec period.

POSTCLASSIC ECONOMY AND SOCIETY IN MORELOS

The modern Mexican state of Morelos is located in the Central Mexican highlands, separated from the Basin of Mexico to the north by the Ajusco mountain range (Figure 8.1a).¹ The elevation of Morelos is 1,000 meters lower than the Basin of Mexico, and the environmental differences between the two regions provided a major stimulus to exchange throughout the prehispanic past (Sanders 1956). Like the Basin of Mexico, Morelos was settled by Nahuatl speakers claiming an origin in Aztlan. These peoples arrived in the Early Aztec period (ca. AD 1100–1300), a time of population growth and the founding of cities and dynasties. City-states (*altepetl* in Nahuatl) spread across the landscape of Morelos, the Basin of Mexico, and other parts of Central Mexico. Early Aztec polities engaged in an active program of exchange in both the Basin of Mexico (Minc 2006; Minc, Hodge, and Blackman 1994) and Morelos and also warred with one another.



8.1. (a) The location of Morelos within Central Mexico, (b) the locations of sites discussed in this chapter.

The succeeding Late Aztec period (ca. AD 1300–1520) was a time of continuing population growth, economic exchange, and warfare throughout Central Mexico. The first half of the period (Late Postclassic A, ca. AD 1300–1430) saw the rise and fall of several small imperial polities centered at Azcapotzalco and Texcoco in the Basin of Mexico, Cuauhnahuac in Morelos, and perhaps Calixtlahuaca in the Toluca Valley. During the Late Postclassic B period (ca. AD 1430–1520), the Triple Alliance or Mexica empire came to power and conquered most of Central Mexico and much of northern Mesoamerica. The city-states of Morelos were incorporated into the empire as the tributary provinces of Cuauhnahuac and Huaxtepec. This political trajectory, which led from city-states through small empires to a single powerful empire, provided the backdrop for the development of commercial exchange and market systems in Postclassic Morelos.

MARKETS IN THE POSTCLASSIC ECONOMY OF MORELOS

Populations grew rapidly in Postclassic Morelos, and by the Late Postclassic period most of the state was settled by farming households, with an overall regional population density on the order of 150 persons per square km. Land was owned by nobles, and commoners were granted access to agricultural plots through a variety of mechanisms, including membership in a *calpolli* (local administrative unit) and relations of servitude to a noble or the king. River valleys were extensively irrigated, with maize and cotton as the major crops, and hillslopes were covered with terrace walls. Given the high regional population levels, the intensity of agricultural production, and the dynamic political landscape of small city-states, it is hardly surprising to find that commercial exchange and marketplaces were prominent institutions in Aztec-period Morelos.

There are several types of ethnohistoric documentation for market systems in Morelos. First, local administrative documents mention marketplaces in at least twelve communities, including major capitals such as Cuauhnahuac and Yautepec, city-state capitals such as Tlayacapan and Xantetelco, and smaller subject towns like Ocorepec and Tianguistenco (M. E. Smith 1994:table 12.5). Second, the documents mention that merchants engaged in long-distance trade and operated in a number of Morelos marketplaces, including both the regional merchants discussed by Frances Berdan (1988) and the better-known *pochteca* (high-status, long-distance merchants). Third, a variety of general statements about the prevalence of trade in Morelos are consistent with the operation of market systems, although they do not provide direct evidence for them. Fray Diego Durán (1967 [1567–1581], vol. 2:23), for example, stated that people from all over (“toda la tierra”) traded with Morelos cities to obtain cotton.

Archaeological fieldwork provides additional evidence for commercial exchange at Postclassic sites in Morelos. First, the extent of exchange—as measured by the quantities of imported ceramics, obsidian, and other goods—was fairly high (discussed later). Second, high-value imported goods at Yautepec and Cuexcomate were widely

distributed among households, both elite and commoner (Earle and Smith 2010), a pattern indicative of commercial exchange in household provisioning (Hirth 1998; M. E. Smith 1999). Third, the household patterning of obsidian imported from different geological sources conforms to the expectations of commercial exchange (M. E. Smith et al. 2007).

The ethnohistoric and archaeological evidence reviewed in the previous section provides the starting point for the present analysis. Given that processes of development of markets and market systems were important in Aztec-period Morelos, what can we say about their spatial and hierarchical organization?

Archaeological Sites Discussed Here

The archaeological data used in this chapter consist of counts of ceramic types from excavated deposits at nine Aztec-period sites in Morelos (Figure 8.1b). I studied many of these collections in 1980, and the sites and ceramic data are described in a recent monograph (M. E. Smith 2010). Data from sites excavated since 1980—Cuexcomate, Capilco, and Yautepec—are described in part in the same publication (M. E. Smith 2010), with more recent information available in published and unpublished reports (including this chapter). The sites are described in order from west to east.

Coatetelco. Coatetelco was excavated in the 1970s by Raúl Arana (1984), who reconstructed the public architecture of a small urban epicenter. The ceramic data are from test pits Arana excavated outside of the epicenter; I analyzed these collections in 1980 (M. E. Smith 1983, 2010).

Xochicalco. Xochicalco is an urban center of the Epiclassic period with a long history of fieldwork and analysis. The collections used here come from Postclassic levels of stratigraphic test pits excavated in the 1970s by Kenneth Hirth (2000; Hirth and Cyphers Guillén 1988). This material is discussed in detail in my dissertation (M. E. Smith 1983) and summarized in later publications (M. E. Smith 2000, 2010). Its context probably represents small hamlets or isolated households that settled on the lower slopes of the Xochicalco hill a century or more after the Epiclassic urban center was abandoned ca. AD 900.

Cuexcomate and Capilco. Cuexcomate and Capilco are rural Aztec sites first located by Hirth (2000). I excavated houses and other structures at these sites in 1986 (M. E. Smith 1992), and the ceramics and other artifacts are described in a recent monograph (M. E. Smith in press-a). Capilco was a small village of commoners that grew from a few initial houses in the Early Aztec period to a maximum of about twenty houses in Late Postclassic B times. Cuexcomate was a larger site with a resident noble household and temple. It was founded in the Late Postclassic A period and grew larger

in the Late Postclassic B period. The ceramic data used here are presented in another recent monograph (M. E. Smith 2010).

Cuauhnahuac (Teopanzolco and the Palacio de Cortés site). Cuauhnahuac was the largest city and most powerful capital in Morelos throughout the Postclassic period. After the Spanish conquest, its name was changed to Cuernavaca. Two of the major Aztec-period archaeological sites excavated in Cuernavaca are Teopanzolco and the Palacio de Cortés site. Teopanzolco is an archaeological zone located in a residential neighborhood of Cuernavaca. It consists of a large public plaza with a twin-temple pyramid and other public architecture dating to the Early Aztec period. Teopanzolco has been excavated during a number of projects between 1920 and today (M. E. Smith 2008). The collections studied here are from test pits excavated in the 1970s by Jorge Angulo Villaseñor (1976); they include fill from Structure 2 and several non-structure contexts within the epicenter. The Palacio de Cortés site is located under the Museo Cuauhnahuac in downtown Cuernavaca; it was the site of the palace of the *tlatoani* (king) of Cuauhnahuac at the time of the Spanish conquest. The collections used here were excavated by Angulo Villaseñor (1978) in the 1970s. They include an Early Aztec deposit for which the social context is unclear, overlaid by deposits from the royal palace dating to the Late Aztec B period. I studied collections from these two sites in 1980 (M. E. Smith 2010). The most likely scenario for the relationship between the two sites is that the urban epicenter of Cuauhnahuac was moved from Teopanzolco to the Palacio de Cortés site sometime early in the Late Aztec period.

Tepoztlan (Tepozteco). Tepoztlan was a large Postclassic city-state. The collections used here are from excavations at the Temple of Tepozteco (located on cliffs above the modern and Postclassic town centers) by Angulo Villaseñor in the 1970s (M. E. Smith 2010). Information about the temple can be found in several publications (Ceballos Novelo 1928; Selser 1993 [1939]).

Yautepec. Yautepec was a major political capital whose king ruled several city-states in the Río Yautepec valley. I excavated houses at Yautepec in 1993 (M. E. Smith in press-b; M. E. Smith, Heath-Smith, and Montiel 1999), and the ceramic data used here are reported in my recent monograph (M. E. Smith 2010). They are from a sample of ceramics from residential middens.

Tetla. Tetla is an Early Aztec site excavated by David Grove (1987) in the 1970s. The site consists of a single excavated residential compound, with a surrounding area of Postclassic ceramics on the surface. This was probably a small village in the Postclassic period. The ceramics used here are from the residential compound described by Lynette Norr (1987a, 1987b); my data are from a partial reanalysis of those data combined with use of Norr's publications.

Table 8.1. Frequency of Imported Ceramics at Sites Discussed in This Chapter.

| Site | Guinda | Morelos Imports | Basin of Mexico | Western Imports | Other Areas | Total, non-Guinda |
|-----------------------------------|-------------|-----------------|-----------------|-----------------|-------------|-------------------|
| Middle Postclassic (MPC) | | | | | | |
| Xochicalco | 5.32 | 0.75 | 0.29 | 1.20 | 0.00 | 2.24 |
| Capilco | 5.95 | 3.26 | 2.61 | 0.12 | 0.00 | 5.99 |
| Teopanzolco | 7.20 | 0.14 | 1.30 | 0.20 | 0.00 | 1.64 |
| Palacio de Cortés | 5.90 | 0.00 | 0.29 | 0.00 | 0.00 | 0.29 |
| Yautepec | 5.05 | 1.06 | 1.52 | 0.19 | 0.02 | 2.79 |
| Tepozteco | 0.56 | 0.06 | 0.31 | 0.06 | 0.12 | 0.56 |
| Tetla | 12.74 | 0.00 | 0.64 | 0.64 | 0.00 | 1.27 |
| Mean | 6.10 | 0.75 | 0.99 | 0.35 | 0.02 | 2.11 |
| Late Postclassic A (LPC-A) | | | | | | |
| Coatetelco | 4.86 | 1.48 | 2.36 | 0.81 | 0.00 | 4.65 |
| Xochicalco | 2.40 | 0.55 | 0.92 | 0.23 | 0.00 | 1.71 |
| Capilco | 2.51 | 0.85 | 3.00 | 0.27 | 0.04 | 4.16 |
| Cuexcomate | 6.13 | 0.46 | 4.76 | 0.06 | 0.02 | 5.31 |
| Yautepec | 3.17 | 0.50 | 1.83 | 0.04 | 0.03 | 2.40 |
| Mean | 3.81 | 0.77 | 2.57 | 0.28 | 0.02 | 3.64 |
| Late Postclassic B (LPC-B) | | | | | | |
| Coatetelco | 1.82 | 0.55 | 0.91 | 0.91 | 0.00 | 2.36 |
| Xochicalco | 0.75 | 0.25 | 0.25 | 0.13 | 0.00 | 0.63 |
| Capilco | 1.84 | 0.14 | 2.57 | 0.17 | 0.01 | 2.88 |
| Cuexcomate | 4.80 | 0.11 | 4.37 | 0.04 | 0.00 | 4.52 |
| Palacio de Cortés | 9.76 | 0.00 | 5.08 | 0.00 | 0.00 | 5.08 |
| Yautepec | 2.85 | 0.31 | 1.47 | 0.06 | 0.01 | 1.84 |
| Mean | 3.64 | 0.22 | 2.44 | 0.22 | 0.00 | 2.88 |

Note: Data are expressed as percentages of all sherds.

Source: Smith (in press-b).

Ceramic Imports

As noted previously, the quantity of imported ceramics and obsidian is high at Postclassic sites in Morelos. Table 8.1 shows the combined frequencies of imported ceramics (expressed as percentages of all sherds) at the nine sites listed in the previous section (for documentation, see M. E. Smith 2010). *Guinda* (polished red ware) ceramics are problematic because they were manufactured in both the Basin of Mexico and at least one place in Morelos (Minc in press), but the types cannot be distinguished without chemical analysis. As a rough approximation, based on Leah

Minc's (in press) chemical analysis of *guindas* from Yautepec, I would guess that half of the *guinda* sherds at most Morelos sites were produced somewhere in Morelos and the other half were imported from the Basin of Mexico. The most abundant basin of Mexico imports are the various types of Aztec black-on-orange, Xochimilco polychrome, and Texcoco fabric-marked salt vessels. Western imports are types from Guerrero, Malinalco, and the Toluca Valley. Other areas of origin for imported ceramics include eastern Morelos and the Puebla-Tlaxcala area.

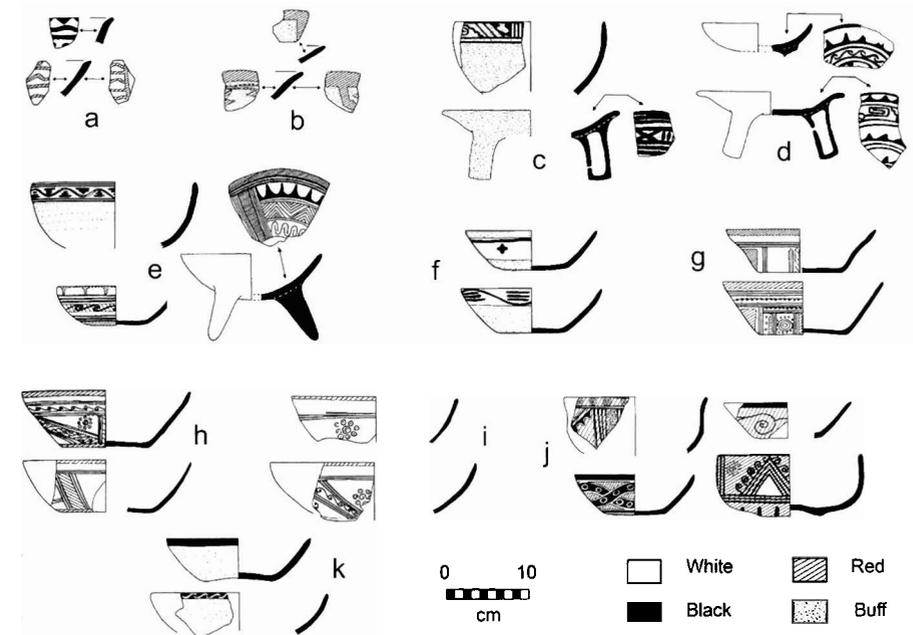
The places of origin for the presumed imported sherds at Morelos sites—including locations both outside and within the state—were initially identified on the basis of type frequencies (M. E. Smith 1983). Evidence accumulated since 1983 on the spatial distributions of ceramic types supports the hypothesized places of origin for most types (M. E. Smith 2010:chapter 3, in press-b:chapter C2). A series of chemical analyses (instrumental neutron activation analysis) of selected ceramic types from Yautepec also supports the type distribution data (M. E. Smith, Fauman-Fichman, and Neff in press). For example, the types Aztec II, Aztec III, and Aztec III/IV black-on-orange are traditionally assumed to originate in the Basin of Mexico based on their distributions. In our analysis, nine out of ten sherds of Aztec II black-on-orange from Yautepec match compositional groups from the Basin of Mexico, as do twenty out of twenty-two sherds of Aztec III black-on-orange and ten out of ten sherds of Aztec III/IV black-on-orange.

For ceramics produced within Morelos, most of the sherds tested by chemical analysis fit into their hypothesized place of origin. For example, eight out of ten sherds of Tlahuica polychrome Type B7 and Type B8, hypothesized as local Yautepec pottery, fit with the local Yautepec compositional group; all five tested sherds of Type B4, a type from western Morelos, are in the western Morelos compositional group. The analysis did produce some complexities. For example, all five analyzed sherds of the type Tepozteco black-on-white—hypothesized to originate in Tepoztlan—were grouped with the Yautepec ceramics, perhaps because there were no reference samples from Tepoztlan. In this study I classify this type as a Morelos import, however.

My reconstruction of marketing areas in the next section is based on the occurrences of eleven ceramic categories at the nine sites listed previously. These categories are listed in Table 8.2; the frequencies of each category at each site are contained in tables published elsewhere (M. E. Smith 2010). Figure 8.2 illustrates these categories. Most are individual ceramic types, although several of the categories (Teopanzolco types, Type C polychromes, and *guinda*) consist of groups of related types.² Before exploring the spatial distributions of these types, I briefly examine the comparative basis for inferring market areas from material culture distributions.

CERAMIC DISTRIBUTIONS AND MARKET AREAS

As noted, a key distinction in the analysis of complex interlocking marketing systems is the hierarchical relationship between the local and regional systems. Local systems



8.2. Examples of decorated ceramic types used in the analysis. See Table 8.2 for the key to the types. Drawings are from M. E. Smith (2010, in press-a).

are typically organized around a single central place (i.e., a single market center), whereas regional systems are nodal systems that include a number of levels of hierarchically organized communities. In the modern peasant market system in the Valley of Oaxaca, Martin Diskin (1976:236) noted that local systems typically consist of a market town and its surrounding villages, whereas the regional system consists of the totality of local systems and corresponds to the entire valley. A similar hierarchy is found in the market systems of highland western Guatemala (McBryde 1947; Reina and Hill 1978; C. Smith 1975).

With reference to material culture, one feature of local systems in a regional framework is that they have often been found to be the primary spatial “unit of culture” in peasant societies. This was first pointed out by Skinner (1964) in regard to Ch’ing China. In Skinner’s standard marketing community or the equivalent Mesoamerican *municipio*, a central place held a weekly market assembly, with a number of surrounding villages and hamlets dependent upon this marketplace. Skinner (1964:32) argued that the standard marketing community is “the effective social field of the peasant” in China; as a result, it represents the primary “culture-bearing unit” (Skinner 1964:39) in that it tends to be internally homogeneous and externally variable in many identifiable domains of culture.

Table 8.2. Ceramic Types Used in the Cluster Analyses.

| Type | MPC | LPC-A | LPC-B |
|----------------------------------|-----|-------|-------|
| A Wavy-line red-on-cream | x | | |
| B Red-on-buff | x | | |
| C Morelos-Puebla black-on-orange | x | | |
| D Tepozteco bichrome | x | | |
| E Teopanzolco types | x | x | |
| F Type C polychromes | x | x | x |
| G B4 polychrome | x | x | x |
| H B7 polychrome | x | x | x |
| I B8 polychrome | | | x |
| J <i>Guinda</i> | x | x | x |
| K Black-rim orange | x | x | x |

Similar patterns of cultural homogeneity at the level of the local system have been observed ethnographically in other peasant societies. A number of mechanisms can contribute to the establishment and maintenance of this cultural homogeneity. For example, administrative ties can isolate local systems from one another, or variations in religious observances between local systems might lead to differentiation in some aspects of material culture. But market systems provide some of the strongest means for shaping spatial variation in the material realm.

Most of the goods and services used by peasants are obtained at the local marketplace or market town. The central church or temple serves the population of the local system, which in many cases tends to be endogamous. Also, voluntary associations and other formal and informal organizations generally fit within the boundaries of the local system (O. Lewis 1951; McBryde 1947:88ff; Skinner 1964; C. Smith 1974). In China, the cultural homogeneity of the standard marketing community was expressed in such realms as the standardization of weights and measures, linguistic micro-dialects, and stylistic details of textile design elements (Skinner 1964:39–40). As Manning Nash (1967:93) reported for Mesoamerica, “[W]hole communities [i.e., *municipios* or local systems] have cultural traditions which vary from each other in endless small ways.”

The larger regional systems that incorporate one or more local systems do not exhibit the same degree of cultural uniformity (Skinner 1964). For example, Diskin (1976:242–243) pointed out that Oaxaca has a higher degree of “cultural similarity” within local systems than is found within the valley-wide regional system. Nevertheless, the Valley of Oaxaca as a whole is culturally distinct from surrounding areas of Mexico. There are thus two levels of cultural similarity in Oaxaca. Both are manifest in some domains of material culture, and both are structured and maintained by the operation of the Valley of Oaxaca market system. Although specific information is scattered, the ethnographic sources reviewed previously suggest that over time, regional systems expand and contract in response to both local and exogenous forces. Local systems, on the other hand, seem to have more stability through time.

On the basis of the aforementioned observations, I argue that local areas within Postclassic Morelos that share closely similar assemblages of ceramic types can be interpreted as local market systems. Regional market systems can be identified where there is a degree of similarity and exchange among adjacent local systems. I assume that the largest city within a given regional system served as the major central place that integrated the system. This argument is similar to that used by Mary Hodge and Leah Minc in their analyses of Basin of Mexico market systems using ceramic data (Hodge et al. 1992; Hodge and Minc 1990; Minc 2006; Minc, Hodge, and Blackman 1994).

RECONSTRUCTION OF MARKET AREAS IN POSTCLASSIC MORELOS

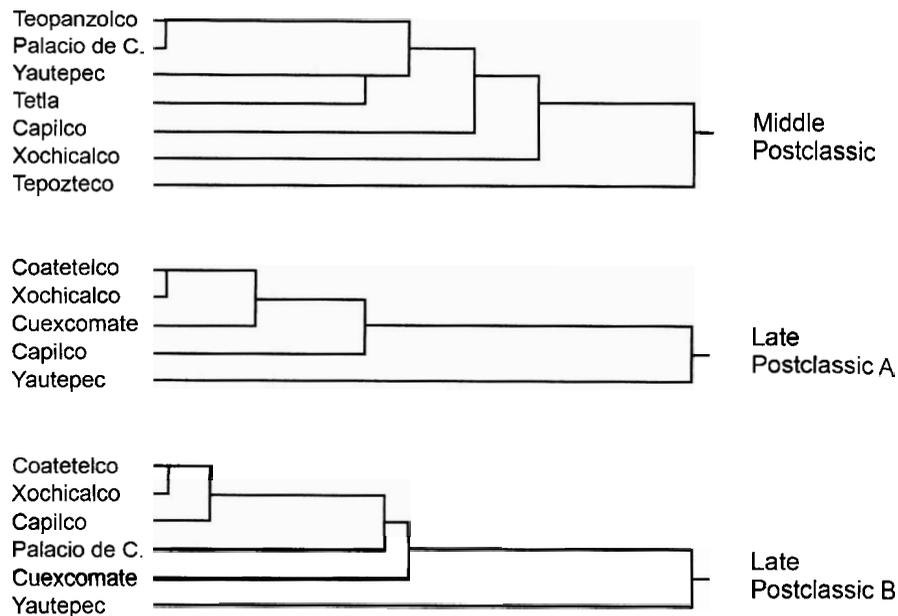
Methods and Assumptions

The excavated ceramic collections from the nine sites described previously are well phased and have large sherd frequencies; they reveal regional patterns for future testing with survey data, other excavations, or both. I employ a simple graphical method to express the strength and direction of commercial relationships among sites. For each time period I construct a regional market model based primarily on similarities among ceramic collections and the presence of imported types. These data and the model are portrayed in three parallel schematic figures (Figures 8.4–8.6), one each for the Middle Postclassic, Late Postclassic A, and Late Postclassic B periods. In this section I explain the nature and derivation of the four sections of each of these figures.

Sites. The top left portion of each figure shows the sites that have quantified collections for that time period. Other sites are also included, where relevant.

Cluster Analysis. I employ hierarchical cluster analysis to analyze the nature of ceramic similarities among quantified collections. Similarities and differences in the overall type inventories of deposits and sites can arise from a variety of factors, ranging from ethnicity to social class to variations in religious rituals, as well as sample error. To focus on market exchange, I limit consideration to the decorated ceramic types presumed to originate in Morelos (Table 8.2). As discussed previously, these ceramics were widely exchanged within and between local regions, almost certainly through the market system. Consumers must have deliberately chosen vessels of diverse decoration, from different origins, and this practice provides the means to examine commercial relationships through ceramic type compositions.

The three cluster analysis dendrograms are shown in Figure 8.3. They were produced with SPSS statistical software using the average-linkage technique, with similarities calculated based on simple Euclidean distance between standardized values (Z scores) for key ceramic variables (expressed as percentages of all local decorated sherds). The ceramic variables used for each period are listed in Table 8.2. In Figures

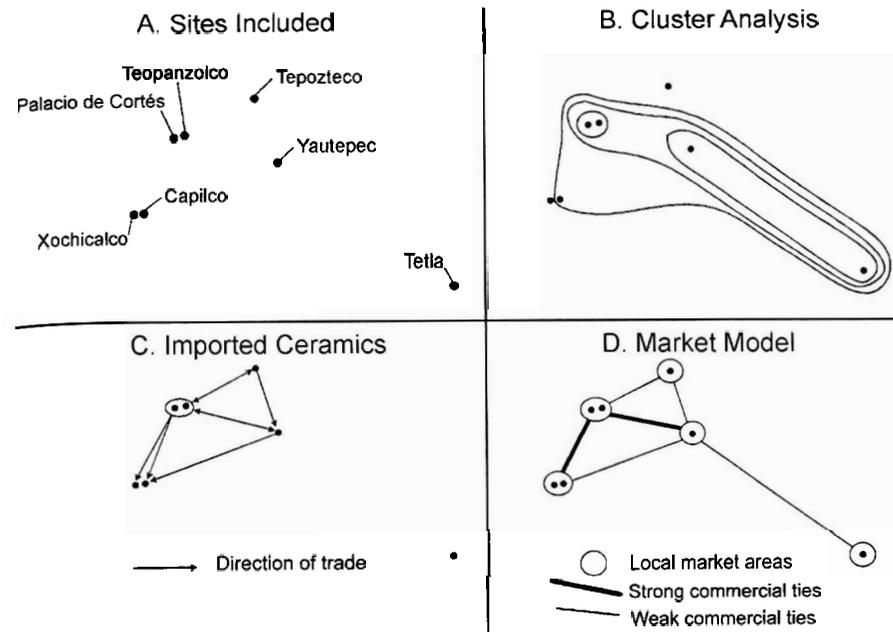


8.3. Cluster analysis dendrograms of ceramic similarity among sites.

8.4–8.6, the results of the cluster analyses are drawn on the maps, with ellipses linking similar collections.

Imported Ceramics. The presence of imported sherds is indicated in Figures 8.4–8.6 by lines connecting the sites or regions, with arrows indicating the direction of movement. In these figures I only consider the presence and absence of imported sherds, not their quantity. This allows the inclusion of a larger number of excavated contexts, including those too small or specialized for quantitative analysis. For example, Teopanzolco is represented in the cluster analysis by a single large collection from Structure 2, whereas information from other contexts yielding ceramics is used for the diagram of imported ceramic patterns.

Market Model. In Figures 8.4–8.6, I present a hypothetical spatial market model for each period based on the similarity patterns and imports described previously, plus other considerations. The latter category includes information from ethnohistoric and other sources (for example, the *Relación Geográfica* from Tepoztlan mentions intensive trade between Tepoztlan and Yau-tepec in the Late Postclassic B [LPC-B] period, but there are no quantified ceramic collections from the former site [Acuña 1984–1988, vol. 6:195]). These models include three components. (1) Local market areas, denoted by circles or ellipses, are drawn to include areas with highly similar ceramic assem-



8.4. Schematic market model for the Middle Postclassic period (AD 1100–1300).

blages. (2) Strong commercial ties, indicated by thick connecting lines, connect sites with numerous imports and strong ceramic similarities. (3) Weak commercial ties, denoted by thin lines, are drawn to connect sites with fewer imports and less similarity among collections. The distinction between strong and weak commercial ties is a subjective judgment based on my assessment of the cluster analysis, imported sherds, and any other relevant data.

Middle Postclassic Market Areas

Of the three periods under consideration here, the Middle Postclassic (MPC) period appears to have the highest degree of economic integration throughout Morelos (Figure 8.4). As a caveat, it should be noted that two factors contributing to this situation are the larger number of sites and the larger number of local decorated ceramic types in MPC relative to LPC times. Nevertheless, the differences between the MPC and LPC cluster analyses are striking. Not surprisingly, the closest similarity (in the cluster analysis) is between the two Teopanzolco-phase sites in Cuernavaca, that is, Teopanzolco, and the Palacio de Cortés site. The next closest similarity links Yau-tepec with Tetla, a connection that cuts across an ethnic divide that runs north-south through Morelos (M. E. Smith 2010:chapter 16). These two clusters then join together, and Capilco and Xochicalco are added next, leaving Tepozteco as the most

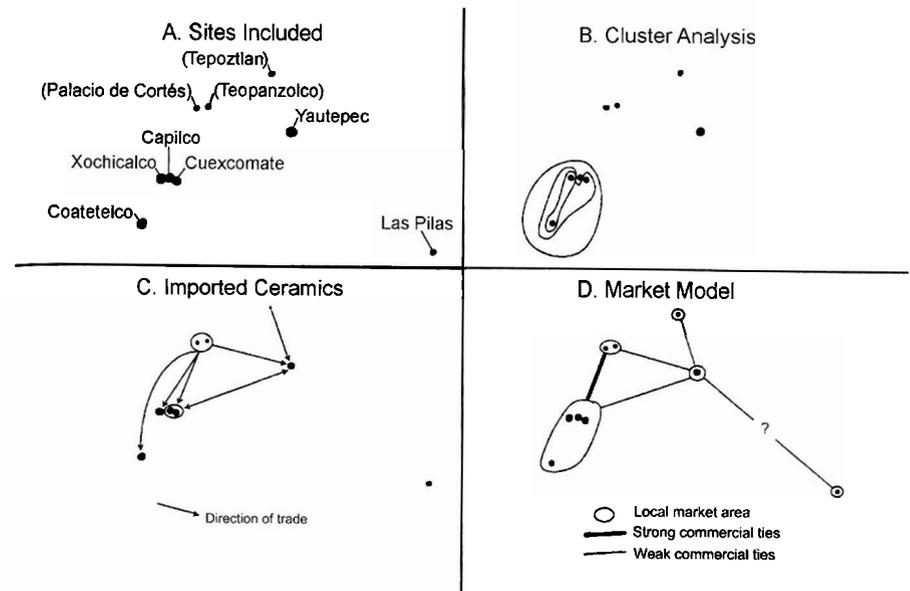
distinctive ceramic collection (Figure 8.4). This pattern contrasts greatly with the two LPC cluster analyses, in which all of the highly similar sites are in one region (western Morelos) and Yauhtepec, a more distant site, is the most divergent. The divergence of the Middle Postclassic Tepozteco ceramics may result in part from the special nature of the deposits—possible priests' residences on the cliffs next to the Temple of Tepozteco. Tepozteco (and Tepoztlan) was not cut off from MPC exchange networks, however. Tepozteco bichrome is common at Yauhtepec, and Teopanzolco polychromes (as well as exotic imports such as Fine Orange from the Gulf Coast) are found in the Tepozteco collections.

One of the most notable features of ceramic exchange in the MPC period is the wide extension of polychromes of the Teopanzolco ceramic complex (Figure 8.2e). These ceramics, particularly Types A1, B1, F, and G, are common at every MPC deposit except Tetla. The MPC city of Cuauhnhuac, centered on the Teopanzolco ceremonial precinct with its large twin-stair pyramid, was probably the largest settlement in Morelos at this time, and the presence of numerous imports shows that it was well connected to exterior areas (see the next section). It was likely the predominant market center in Morelos and served as a regional center for the economy of the entire area of the state. The combination of Cuauhnhuac's economic and symbolic prominence led to the widespread distribution of its ceramics in central and western Morelos. The Teopanzolco ceramic complex remained a local phenomenon, predominant only in the immediate vicinity of Cuauhnhuac. The contemporaneous Temazcalli complex covered western Morelos, suggesting that Cuernavaca and the Xochicalco area were probably not part of the same local system or the same polity at this time.

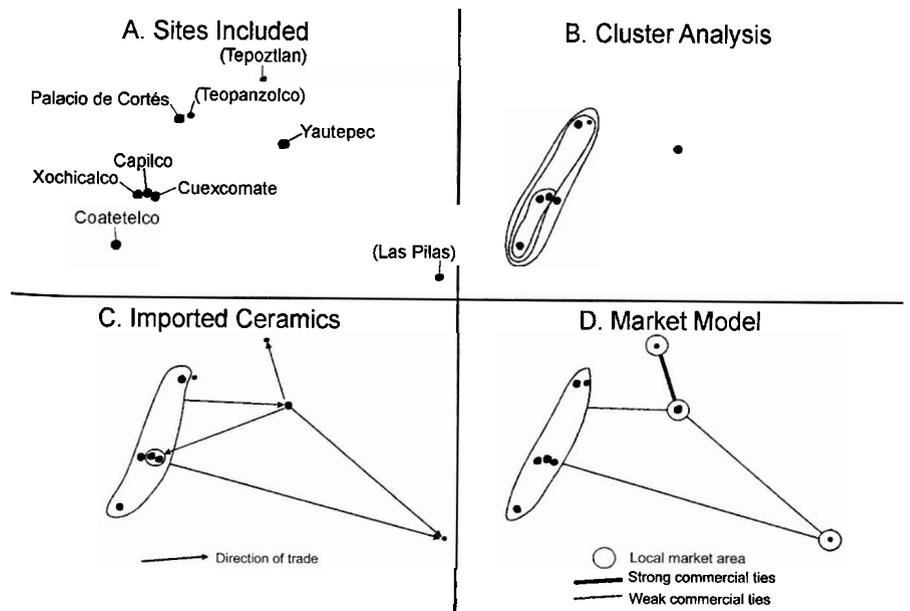
These data indicate that the regional economy of MPC Morelos had a number of separate local market systems, linked together through commercial exchanges into a single larger regional economy. Each of the local systems shown in Figure 8.4—Teopanzolco/Palacio de Cortés sites, Tepozteco, Yauhtepec, Xochicalco/Capilco, and Tetla—had its own distinctive ceramic complex, but all were in commercial contact with one another. The least secure link is between Yauhtepec and Tetla. Although there are no definite direct imports among these sites, the common presence of ceramic Types C1, C2, C3, and B5 at Yauhtepec, Tetla, and Las Pilas (a site near Tetla with Middle Postclassic burials) implies close ties among these areas.

Late Postclassic A Market Areas

In both Late Postclassic periods (LPC-A and LPC-B), the sites in western Morelos form a tight grouping in the cluster analysis (Figures 8.5 and 8.6), and Yauhtepec is highly divergent from the other sites. For the LPC-A period it is difficult to assess the role of Cuauhnhuac because the Teopanzolco complex continues into the first part of that period, after which it was replaced by the Tecpan complex. Ceramics from the Teopanzolco complex are common imports in the LPC-A period in both western Morelos and Yauhtepec, indicating continuing commercial ties and the continued



8.5. Schematic market model for the Late Postclassic A period (AD 1300–1430).



8.6. Schematic market model for the Late Postclassic B period (AD 1430–1520+).

economic prominence of Cuauhnhuac. Tepozteco bichrome ceramics also continue into the LPC-A period at Yautepec, suggesting that either the Tepozteco phase also extends into the LPC-A period or that this type continues as part of the subsequent LPC ceramic complex(es) of the Tepoztlan area.

The pattern of linkages within the western Morelos cluster indicates that all four sites were part of the same local system; Coatetelco, the most distant of the four sites, joins Xochicalco in the tightest cluster. Of the four sites, Capilco is the most divergent, perhaps because it was a smaller settlement than the others. The presence of Type B4 polychromes at Yautepec and Type B7 at Cuexcomate documents continued exchange between these two areas in LPC-A times, but the great dissimilarity of Yautepec from the western sites in the cluster analysis points to an increasing division between western Morelos and the Yautepec area that continued into the LPC-B period. The nature of commercial ties between southeastern Morelos and the other areas is not clear. No LPC ceramic complexes have been defined in the Tetla/Las Pilas area, although it is almost certain that many Las Pilas burials date to LPC times (M. E. Smith 2010: chapter 15). Type C polychromes continue to be common at Yautepec in LPC times, and they may have continued to form a link between Yautepec and the east.

In sum, the LPC-A period witnessed a weakening of interregional integration compared with the earlier MPC period. The strongest ties, in both similarity and imports, were between the Cuernavaca and Xochicalco areas.

Late Postclassic B Market Areas

Ethnohistoric sources show that the LPC-B period in Morelos witnessed processes of political expansion. Polities centered on the major cities (Cuauhnhuac, Yautepec, Tepoztlan, and several others) conquered nearby city-states to form larger, more complex polities that I have called conquest states (M. E. Smith 1994). The ceramic data correspond with these political dynamics and suggest that these conquest states became separate regional market systems. In the Late Postclassic B period the Cuauhnhuac ceramic complex expanded from its original home in the Xochicalco area to encompass the entire region of western Morelos, including Cuauhnhuac and other sites in the Cuernavaca area. The great similarity of ceramics throughout this area, which corresponds closely to the territory of the Cuauhnhuac conquest state, suggests that it constituted a single regional market system (Figure 8.6). The tightest cluster is composed of Coatetelco, Xochicalco, and Capilco, but this cluster is joined next by the Palacio de Cortés site in Cuernavaca and then by Cuexcomate. Again, Yautepec has the most divergent ceramics among the sites with quantified collections.

Ceramic trade between Yautepec and western Morelos/Cuernavaca declined in this period, although it did not stop completely (see next section). Exchange between these two areas and southeast Morelos is inferred by the presence of B4 and B7 polychromes in the Las Pilas burials (although these might also date to the LPC-A period).

Although there is little ceramic evidence for trade between Yautepec and Tepoztlan, strong commercial ties are attested in the ethnohistoric evidence (Acuña 1984–1988, vol. 6:195). Additional excavations in Tepoztlan would help illuminate the situation.

As noted previously, the ceramic evidence implies that the entire area of western Morelos and Cuernavaca constituted a single regional market system in the LPC-B period. The correspondence between the distribution of the Cuauhnhuac complex and the territory of the Cuauhnhuac polity points to a role for the market system in integrating the twenty or so city-states that were part of this conquest state. The archaeological data provide support for the ethnohistorically documented military expansion of Cuauhnhuac into western Morelos and northeast Guerrero in the early fifteenth century (M. E. Smith 1986). The replacement of the Teopanzolco complex in the Cuernavaca area by the Cuauhnhuac complex is a surprising development: the ceramic types and styles from a conquered periphery replaced the ceramics of the political center. This change probably occurred in part because Cuauhnhuac/Teopanzolco was conquered by the Tepanec empire in the early fifteenth century, leading to the destruction and abandonment of the city centered around the monumental architecture of Teopanzolco (Santamarina 2006; M. E. Smith in press-a:chapter 2, 2010:chapter 2).

Change through Time

The spatial configuration of regional market systems in Morelos changed considerably during the Postclassic period. Perhaps the most notable transformation was a decline in the overall economic integration of Morelos. In the MPC period there were many ceramic complexes, marking a number of local market systems. Exchange among these systems was prevalent, and I suggest that the entire area of the state of Morelos can be considered a single regional marketing system integrated by Cuauhnhuac. By the LPC-B period there were fewer complexes, with weaker commercial ties among them. This can be illustrated with the example of exchange between Yautepec and western Morelos/Cuernavaca. Ceramics from each of these areas were never abundant in the other area, but the quantitative data suggest a decline of trade through time (Table 8.3). Teopanzolco imports at Yautepec declined between the MPC and LPC-A periods, whereas B4 polychromes stayed at the same low level in both the LPC-A and LPC-B periods. Similarly, Type B7 polychromes from Yautepec at the western sites declined between the two LPC periods.

In the LPC-B period, regional market systems were smaller and appear to correspond to the boundaries of the large conquest states. The entire state may have comprised a larger regional system that integrated the various smaller regional systems, but this is difficult to establish. The joint development of a regional system with a conquest state is clearest for Cuauhnhuac. The zone of interaction as marked by ceramics expanded from a small local system in MPC times to a regional system in LPC-B times. This change in the regional configuration of ceramic complexes reflected the

Table 8.3. Ceramic Exchange between Yauhtepec and Western Morelos.

| Site | MPC | LPC-A | LPC-B |
|------------------------------------------|------|-------|-------|
| 1. Teopanzolco polychromes | | | |
| Yauhtepec | 0.86 | 0.40 | — |
| 2. Western polychrome (Type B4) | | | |
| Yauhtepec | — | 0.04 | 0.04 |
| 3. Yauhtepec polychrome (Type B7) | | | |
| Capilco | — | 0.11 | 0.01 |
| Cuexcomate | — | 0.14 | 0.02 |

Note: Data are expressed as percentage of total sherds.

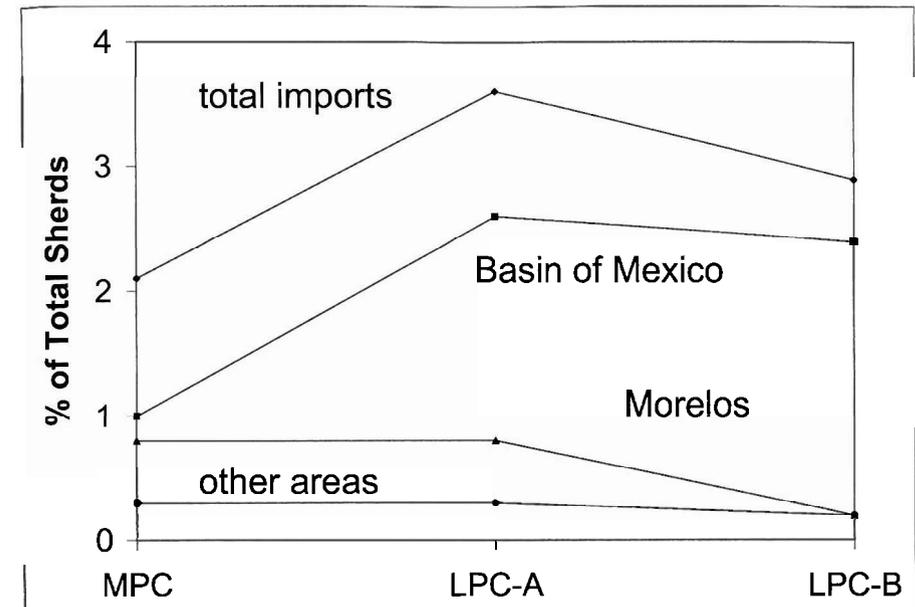
increasing political power and extent of the Cuauhnahuac polity in western Morelos. In a similar fashion the growing isolation between Yauhtepec and Cuauhnahuac, as revealed by the ceramic data, was almost certainly related to the growth of these two polities from local city-states into the heads of larger, competing conquest states (Hare 2004; M. E. Smith 1994).

PATTERNS OF ECONOMIC CHANGE

The economic interpretations discussed previously point to the operation of a number of large-scale economic trends in Postclassic Morelos. The transition from the Middle Postclassic to the Late Postclassic A period was marked by two complementary trends. First, economic integration between regions within Morelos declined, whereas exchange with exterior areas increased (Figure 8.7). This probably reflects processes of political centralization and competition among the city-states of Morelos, as documented in Colonial chronicles. Competing polities exchanged ceramics and other goods at all time periods, but as competition increased, consumers and merchants may have turned increasingly to imports from distant areas—particularly the Basin of Mexico—for their decorated ceramics. I have argued elsewhere (M. E. Smith 2001, 2003a) that Morelos became drawn into the expanding Mesoamerican world system at this time (LPC-A), and this process would help explain the overall growth of long-distance exchange indicated by the ceramic data.

The transition from the LPC-A to LPC-B periods was marked by further reductions of intra-Morelos ceramic exchange, coupled with declining exotic imports at most sites (Figure 8.7). Processes of political centralization and consolidation accelerated at this time. Within Morelos, the Cuauhnahuac polity expanded to cover most of western Morelos, a development probably related to the consolidation of local market areas, as shown in Figure 8.6. Formerly separate local systems merged into a larger system that probably corresponded to a small regional market system.

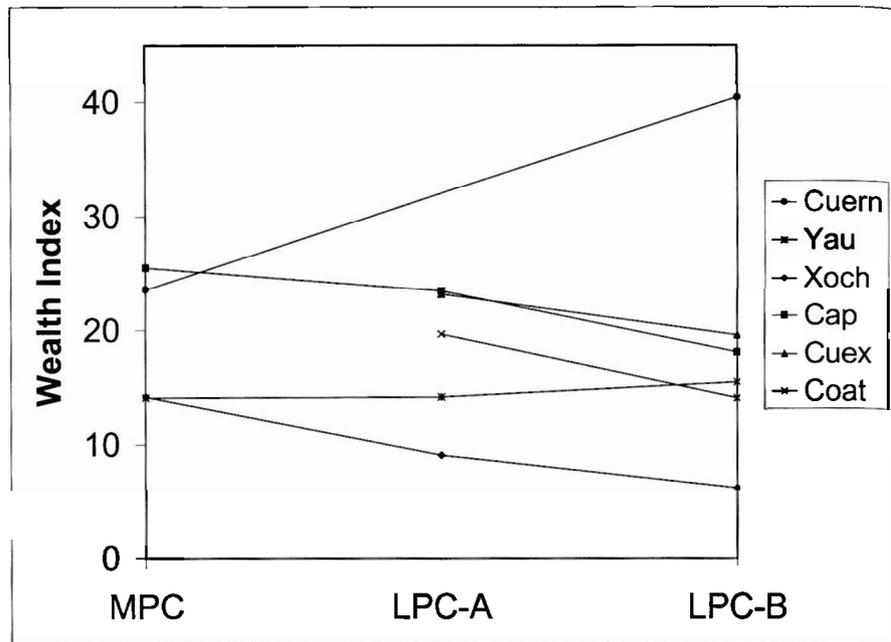
The Aztec empire conquered Morelos, which may be one reason for the decline in imports from LPC-A to LPC-B times. The economic effects of Aztec imperial-



8.7. Changing frequencies of ceramic imports at Postclassic sites. Data are the means for the nine sites discussed in this chapter.

ism were diverse and included two contradictory processes (Berdan et al. 1996). On the one hand, the Mexica encouraged commercial exchange throughout the empire and carried out a series of actions to promote markets and merchants. On the other hand, the imposition of tribute in provincial areas had a negative effect on provincial well-being and may have contributed to lowered standards of living and a subsequent lowered demand for imports. Although imperial tribute was only a modest drain on provincial resources (M. E. Smith 1994), the Aztec policy of supporting local dynasties must have contributed in an indirect fashion to increased exploitation of provincial peoples at the hands of their traditional lords. These city-state kings probably increased their own tribute demands, secure in the knowledge that their position was bolstered by their cooperation with the empire.

One way to monitor economic well-being uses a wealth index constructed from quantities of valuable goods (M. E. Smith 1987). I calculate such an index using the frequency of local decorated ceramics plus two times the frequency of imported ceramics.³ The results are shown in Figure 8.8. These data show two contrasting patterns. First, most sites experienced a steady decline in per capita wealth through time. Second, the two major capitals, Cuernavaca and Yauhtepec, show increases. The increase in wealth at the Palacio de Cortés site was quite dramatic, reflecting very high frequencies of decorated and imported ceramics during the LPC-B period when this was the location of the royal palace of Cuauhnahuac.



8.8. Changing values of a wealth index for six Postclassic sites with ceramic collections from more than one period.

The ceramic data discussed here suggest that economic change in Postclassic Morelos was predominantly a local and a regional phenomenon. Processes of political growth and market system dynamics within Morelos created the patterns of archaeological ceramics presented in this chapter. This is not to deny a role for processes from outside Morelos. The effects of the Mesoamerican world system were felt in this area, and conquest by the Aztec empire certainly had an impact on local economic and political conditions. Nevertheless, one cannot argue that developments in the Basin of Mexico or elsewhere determined the fate of societies in Morelos. The dynamics of local and regional market systems and their political contexts were of primary importance.

CONCLUSION

In this chapter I employed quantitative ceramic data to monitor the spatial configurations of local and regional systems among the three chronological phases of the Aztec period. The broadest trend is a general decline in regional economic integration through time. Local market systems persisted in most areas, and in western Morelos they increased in size, whereas the ties among separate local systems declined. The most dramatic example of the latter trend is the growing isolation of the Yautepec local system from local systems in western Morelos.

It is no coincidence that these changes occurred at the same time the regional polities of Cuauhnahuac and Yautepec—conquest states or small empires—were growing in size and power. The most likely explanation is that administrative dynamics exerted strong influence on the spatial configuration of market system development in this area. The documentary record chronicles a situation of competition among Cuauhnahuac, Yautepec, and other large polities (including Tepoztlan) in the Late Postclassic period, while at the same time each was consolidating its control over subject city-states (M. E. Smith 1994). The declining ceramic exchange between western Morelos and Yautepec through time thus points to state dynamics and top-down processes as important elements in structuring regional market relationships.

This analysis demonstrates that excavations across a region can provide ceramic data sufficiently fine-grained to model the extent and operation of hierarchical market systems. Although I have used documentary data to establish the existence of a hierarchical regional marketing system in Morelos, such sources are silent concerning the spatial configuration of market systems or the processes of change through time for exchange and marketing. My case study and the other chapters in this volume show that archaeological methods of economic analysis are now reaching the point where ancient economies can be reconstructed and analyzed in a detailed and rigorous fashion.

Acknowledgments. I thank Barbara Stark and Chris Garraty for inviting me to prepare this contribution and for their helpful editing. The discussion of regional market systems is adapted from chapter 16 of *Tlahuica Ceramics: The Aztec-Period Ceramics of Morelos, Mexico* (M. E. Smith 2010). Archaeological fieldwork at Yautepec, Cuexcomate, and Capilco was supported by the National Science Foundation, Loyola University of Chicago, and the University at Albany (State University of New York). I thank Jorge Angulo Villaseñor, Raúl Arana, David C. Grove, and Kenneth G. Hirth for permission to study the Postclassic ceramics from their excavations. Cynthia Heath-Smith helped improve the prose and worked on some of the chapter's graphics and tables.

NOTES

1. My discussion of economic and social organization in Postclassic Morelos is based on discussions by myself (1994, 2003a) and Druzo Maldonado Jiménez (1990), which contain more details and documentation.

2. This note has brief descriptions of the ceramic types listed in Table 8.2 and illustrated in Figure 8.2; the letters refer to labels in the table and figure (more complete descriptions can be found in M. E. Smith 2010). A: Wavy-line red-on-cream is a rare decorated type most likely from northeastern Guerrero/southwestern Morelos that occurs mainly in tripod bowls and tripod grater bowls. B: Red-on-buff is a rare residual category that contains a number of fragmentary sherds from bowls. C: Morelos-Puebla black-on-orange is a ceramic type originating in Tepoztlan and eastern Morelos whose forms (simple bowls and tripod plates) and

decorations are identical to Aztec I black-on-orange but with local Morelos paste. D: Tepozteco bichrome is similar to Morelos-Puebla black-on-orange in form, paste, and designs, but the designs are painted in black on a background of white paint or slip. E: The category Teopanzolco types contains a variety of polychrome types associated with Teopanzolco and the Cuernavaca area; this is one of the most widely traded ceramic categories in Postclassic Morelos. The types only occur in simple bowl forms (conical and hemispherical). F: "Type C polychromes" is another composite category of bowls with several individual types of simple decoration; they most likely originate in eastern Morelos, the Yau-tepec Valley, or both. G: B4 polychrome is the most common Tlahuica polychrome type in Postclassic Morelos; its area of origin lies in the Cuauhnahuac polity of western Morelos. H: B7 polychrome is the most common polychrome type at Yau-tepec. I: B8 polychrome, which looks like a "sloppy" version of Type B7 (sloppy in form and decoration), also originated at Yau-tepec. J: *guinda* is a complex set of polished red ware ceramics, some of which were produced in Morelos and others of which were imported from the Basin of Mexico; it is the single most common decorated type at Postclassic sites in Morelos. K: Black-rim orange is a rare type found at most Postclassic sites in Morelos.

3. The frequency of imported ceramics is doubled in the wealth index because such pottery was presumably more costly relative to local wares.

SECTION THREE

Comparative Contributions