Aztec Teotihuacan: Political Processes at a Postclassic and Early Colonial City-State in the Basin of Mexico

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ARTICLES

AZTEC TEOTIHUACAN: POLITICAL PROCESSES AT A POSTCLASSIC AND EARLY COLONIAL CITY-STATE IN THE BASIN OF MEXICO

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Teotihuacan, located in the northeastern Basin of Mexico, is best known for its Preclassic and Classic period occupations (ca. 150 B.C.–A.D. 700) but was also an important city-state during the Aztec and Early Colonial periods, circa A.D. 1200–1650. Much has been written about political relations among Aztec city-states in the basin. However, the internal political structures of most city-states remain largely unknown because colonial chroniclers focused mostly on Tenochtitlan–Mexico City and collected little information on the 40 to 50 smaller city-states in the basin. This article addresses the internal political organization of Aztec Teotihuacan and how it changed over time based on analyses of pottery data from the surface collections of the Teotihuacan Mapping Project. A seriation of sherd assemblages using correspondence analysis provides a chronological framework for diachronic analyses. Changes through time pertaining to interresidential status differences and the spatial distributions of elite residences suggest a gradual process of political decentralization. Additionally, pottery and obsidian data, in conjunction with settlement pattern changes, reveal a relocation of the city-state center in the late 1300s or early 1400s, possibly indicating an episode of political upheaval or reorganization.

Teotihuacan, en el noroeste de la cuenca de México, es bien conocida para los períodos preclásico y clásico (ca. 150 a.C.–700 d.C.), pero también fue una importante ciudad-estado durante el período Azteca y hasta principios del colonial (ca. 1200–1650 d.C.). Mucho se ha escrito sobre las relaciones entre las ciudades-estados aztecas; sin embargo, la estructura política interna de Teotihuacan es mayormente desconocida porque los cronistas coloniales se focalizaron en Tenochtitlan, y recopilaron poca información de las 40 a 50 más pequeñas ciudades-estados de la cuenca. Aquí se examina la estructura política interna de la Teotihuacan azteca y sus cambios en el tiempo, sobre la base de los análisis de cerámicas de las colecciones de superficie del Teotihuacan Mapping Project. Una seriación de los conjuntos cerámicos empleando análisis de correspondencia brinda un marco cronológico para su análisis diacrónico. Los cambios a través del tiempo en relación con las diferencias de status interresidenciales y la distribución espacial de las residencias de la elite sugieren un proceso gradual de descentralización política. Además, los datos de cerámica y obsidiana, conjuntamente con los cambios en los patrones de asentamiento, revelan una reubicación del centro de la ciudad-estado hacia fines del 1300 o comienzos del 1400 d.C., indicando un posible episodio de agitación o reorganización política.

Although Teotihuacan is more commonly associated with its Preclassic through Classic period occupation (ca. 150 B.C.–A.D. 700), it was also a thriving settlement during the Middle and Late Postclassic and Early Colonial periods, from about A.D. 1200 to 1650 (Figure 1). Aztec Teotihuacan, located in the northeastern Basin of Mexico, was one of 40 to 50 small city-states or *altepetl* (in Nahuatl) in the basin at the time of Spanish contact in A.D. 1519 (Hodge 1984, 1991, 1994, 1997).[1] *Altepetl* literally means "water hill," which underscores each city-state's jural claims to land and water, the basic human necessities of community sustenance (Smith and Hodge 1994:11). City-states were the most conspicuous political and settlement units in Aztec central Mexico (e.g., Bray 1972; Hodge 1984, 1997; Licate 1980; Smith 2000, 2003a). An altepetl, by definition, included its own hereditary lord or *tlatoani* ("he who speaks" in Nahuatl), a central marketplace, a temple dedicated to the primary altepetl deity, and other civic-ceremonial institutions (e.g., Gibson 1964; Hicks 1986; Katz 1966; Offner 1983:168–175; Smith 2000). According to the indigenous chronicler Chimalpahin (Schroeder 1991a:119, 1991b), the indigenous populations

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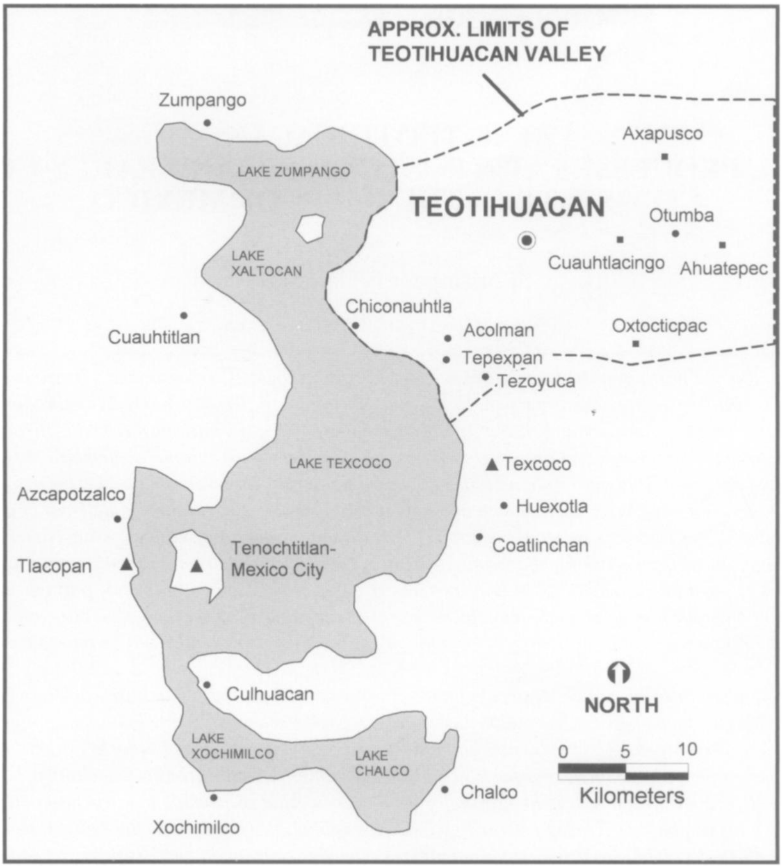

Figure 1. The Basin of Mexico, including approximate locations of Aztec city-states mentioned in the text. Dots indicate approximate locations of city-state centers, including Teotihuacan (large circled dot); triangles indicate the imperial capitals (Triple Alliance); squares indicate imperial tribute-collection (*calpixqui*) centers. The 16th-century lake boundaries are approximated.

viewed Aztec central Mexico as a series of *altepetl* dotting the landscape.

To date, most studies of Aztec city-states have concentrated on political and economic relations among city-states and, specifically, on the complex webs of relations between specific city-states and the Aztec imperial capitals of Tenochtitlan and Texcoco (e.g., Brumfiel 1986, 1991; Carrasco 1999; Hodge 1996). The *internal* organizations of most Aztec city-states in the basin have been less frequently studied. As Hodge observes, "It is evident from both texts and archaeological surveys that political relations between city-states were hierarchically organized in Late Aztec times (Blanton 1976; Sanders et al. 1979). Whether well developed hierarchies also characterized the internal settlement patterns and administrative systems of city-states remains to be demonstrated" (1994:53). A related problem is that the overwhelming majority of colonial chroniclers of indigenous Aztec peoples focused their attention primarily on Tenochtitlan–Mexico City rather than on the many smaller city-states elsewhere in central Mexico. However, the internal organization of Tenochtitlan, with its massive population and complex urban design (see Calnek 1976), was unlike that of other Aztec city-states, which were not simply microcosms of Tenochtitlan (Hodge 1997:211, 1998:208; Nichols 2004:273).

It is consequently up to archaeologists and ethnohistorians to redress this imbalance in the colonial documentary record by investigating the archaeological and archival records of city-states (Hodge 1994, 1997, 1998). In this article, I investigate political processes at Aztec Teotihuacan from an archaeological perspective. By political processes I mean the continual changes and realignments of power within a polity and the ongoing "pushes" and "pulls" toward political centralization or decentralization (Blanton 1998; Marcus 1993, 1998). I analyze Aztec pottery from the surface collections of the Teotihuacan Mapping Project (TMP [Millon 1973; Millon et al. 1973]) to investigate political processes at Aztec Teotihuacan from circa A.D. 1200 to 1650 and interpret these processes in light of broader political changes in the basin.

I begin my study by constructing a chronological framework for the analysis. I use correspondence analysis (CA), a multivariate data-reduction and ordination technique, to seriate the TMP ceramic collections and define four phases or "time clusters" of occupation. I then apply several indexes of "eliteness" (developed in Garraty 2000) to the sherd assemblages assigned to each time cluster in order to infer interresidential status and wealth differences. To facilitate interpretation, I develop "rank-score curves," based on the same logic as rank-size curves (e.g., Johnson 1977), as a heuristic tool for exploring sociopolitical differences in the survey area. Finally, changes in spatial distributions of proposed elite residences highlight organizational changes.

These analyses bring to light several important political processes at Aztec Teotihuacan. One major conclusion is an evident relocation of the city-state's central settlement during the Late Aztec period, which might indicate a major political and organizational shift. Interestingly, the colonial documentary record of Aztec Teotihuacan (e.g., Alva Ixtlilxochitl 1975–1977 [1600–1640]; Casteñada 1926 [1580]; see also Gamio 1922; Munch G. 1976) makes no mention of this relocation. In addition, analyses of interresidential differences in status and wealth reveal a gradual process of political decentralization from Early Aztec through Early Colonial times. I outline several possible explanations for these processes based on the shifting power relations in the basin in the Early Aztec, Late Aztec, and early colonial periods.

Aztec Teotihuacan, A.D. 1200–1650

Historical Setting

Teotihuacan, loosely translated from Nahuatl as "Place Where the Gods Emerged," is best known for its Preclassic and Classic period occupation and monumental architecture. Aztec peoples venerated the ancient inhabitants who constructed the monuments, which were probably as mysterious to Aztec peoples as they are today (see Umberger 1987). Aztec administrators apparently constructed a wall around the ancient ruins (Casteñada 1926 [1580]), probably to restrict access to high religious officials and elites. Sanders's (1965:83–85, 2000) survey in the Teotihuacan area indicates no evidence for a large-scale Postclassic ceremonial complex, although the monumental ruins were probably used for ceremonial purposes (Casteñada 1926 [1580]:68). As shown in Figure 2, Aztec sherds are scattered throughout the TMP survey area at varying densities but are scant in the direct vicinity of the monumental ruins, suggesting sparse or no domestic Aztec occupation in the area.

At the time of Spanish conquest, Aztec Teotihuacan encompassed approximately 100 km^2 (Hodge 1984) and covered the entire middle region (the lower piedmont) of the Teotihuacan Valley (Sanders and Evans 2001:952). Sanders (1965:74–75, 1970:414–416) estimates a population of 12,000 to 14,000 for the entire city-state, with 4,000 to 5,000 in the polity's town center (*cabecera*) of San Juan Teotihuacan (see Munch G. 1976). Teotihuacan was one of the six city-states in the Teotihuacan Valley in 1519, which also included Acolman, Tepexpan, Chiconauhtla, Tezoyuca, and Otumba (Figure 1). Also in the western piedmont area were the imperial tribute-collection (*calpixqui*) centers of Axapusco, Ahuantepec, Oxtotipac, and Cuauhtlacingo, administered directly by Texcoco (Alva Ixtlilxochitl 1975–1977 [1600–1640], 2:89).

According to legend, Chichimec immigrants from an unknown area north of the basin founded Aztec Teotihuacan and many other city-states in central Mexico in the early 1200s (Casteñada 1926 [1580]:67). Political relations among these early city-states were generally volatile, owing to widespread warfare and alliance building. Brumfiel (1983:268–269) likens these polities to "chiefdoms" because, much like historic Polynesian chiefdoms, they were generally unstable and ephemeral. They continually disintegrated and reintegrated, and regicide, political usurpation, and factional disputes were prevalent. By the mid-1300s,

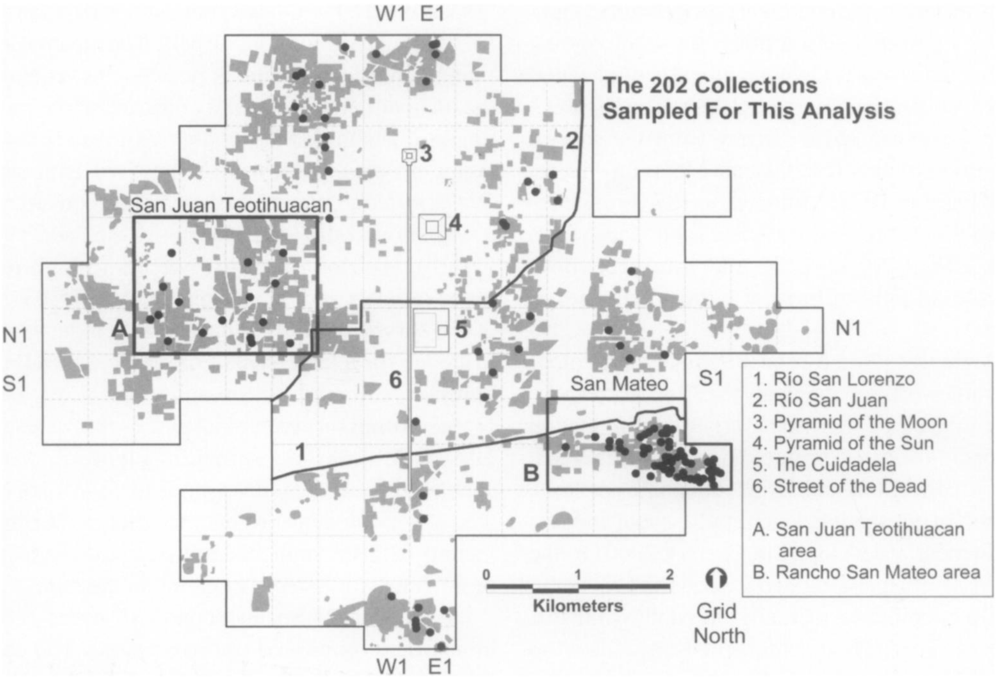

Figure 2. Map of the 202 Teotihuacan Mapping Project (TMP) sherd collections used for this analysis and major features of the TMP survey area (500 × 500 m grid is shown). Each black dot is a sampled collection midpoint. Map features are coded by numbers and letters listed on the lower right. The gray patches in the background are collection areas with 15 or more total Aztec period sherds, based on in-field counts (from field forms), which provide a rough indication of major concentrations of Aztec settlement. This figure is based on a MapInfo file created by Ian Robertson, with the assistance of George Cowgill, using a map published in Millon et al. 1973.

regional suprapolitical confederations of loosely aggregated city-states developed, probably as a result of the rampant conflict among individual polities (Hodge 1997). The two largest confederations were the Acolhua confederation in the eastern basin, headed by Huexotla and Coatlinchan, and later by Texcoco, and the Tepanec confederation in the western basin, headed by Azcatpotzalco. Teotihuacan was incorporated into the Acolhua confederacy as a political subordinate of Huexotla by the early to mid-1300s (Gamio 1922, 1:378; Guzmán 1938).

In 1409, Teotihuacan became an "official" altepetl when the tlatoani of Huexotla divided his territory between his two sons, ceding Teotihuacan to his son Huetzin, who became the city-state's first tlatoani (Alva Ixtlilxochitl 1975–1977 [1600–1640], 2:89–90). One of the defining criteria of Aztec altepetl was a tlatoani who could trace his bloodline back to a Toltec-Culhua lineage, and Huetzin was the first ruler of Teotihuacan who could formally establish that link. Huetzin's rule was disrupted in A.D. 1418, however, when the Tepanecs defeated the Acolhua confederation and appropriated its lands and subject commoners (see Hassig 1988 for a detailed account). The Tepanec leader, Tezozomoc, unseated Huetzin and replaced him with Totomochtzin, a loyal servant of the Tepanec regime.

Tepanec control of the basin was short-lived. In 1427, three powerful city-states, Texcoco, Tenochtitlan, and Tlacopan—the Aztec Triple Alliance—formed a military coalition that overthrew the Tepanec regime and assumed paramount control of the basin. By A.D. 1430, as a result of the calamitous war with the Tepanecs, Triple Alliance leaders had a relatively "clean slate" on which to impose their will on subject polities and institute a model of leadership that ensured their supremacy in the basin's political hierarchy (Brumfiel 1983:271; Hodge 1996). Between A.D. 1430 and 1434, Texcoco reclaimed control of the eastern basin, while Tenochtitlan seized the dominant position in the southern and western basin.

The Spanish conquest ushered in another wave of social and political changes in the basin, as the Aztec populace, decimated by disease (McCaa 1995; Whitmore 1992), gradually adapted to Spanish political and economic institutions. Losses of traditional farmlands triggered famines among indigenous peoples, further exacerbating the number of deaths. Some estimates suggest an indigenous population loss of one-half to two-thirds by 1570 and up to 90 percent by 1620 (Gibson 1964:138). Concurrently, Spanish immigrants, attracted by work opportunities in mining and sugarcane production, settled in central Mexico in droves after the 1520s. Spanish rulers co-opted Tenochtitlan , subsequently renamed Mexico City, as the new capital of their colonial dominion in New Spain. Despite these changes, preconquest Aztec political and, to some extent, legal canons persisted in rural areas of the basin for about a century after the conquest (Gibson 1964; Lockhart 1992:28–44), when the Spanish instituted a resettlement program for indigenous peoples (*congregaciones*). Traditional city-state territories and administrative structures remained largely intact until about A.D. 1650.

Aztec Sherd Collections from the Teotihuacan Mapping Project

The principal objective of the Teotihuacan Mapping Project (TMP) was to define and map the Preclassic through Classic period city (Millon 1973; Millon et al. 1973). The TMP surveyors also collected thousands of surface artifacts pertaining to earlier and later occupations, however, including the Middle and Late Postclassic and Early Colonial periods. Millon and his associates arbitrarily divided the survey area into a grid containing 147 500-m-x-500-m mapping squares (a few are smaller), each designated with north–south and east–west coordinates (Figure 2). Within each square any distinct concentration of artifacts or architectural remains was designated as a site and assigned a unique number.

The TMP survey covered 35.2 km^2 and included the Late Aztec period and colonial cabecera of San Juan Teotihuacan and surrounding settlements. The area encompassed by the survey was almost certainly part of Aztec Teotihuacan's dominion in 1519 (Evans et al. 2000:252; Sanders and Evans 2001:953). If Hodge (1984) is correct that Aztec Teotihuacan encompassed circa 100 km^2, then the 35.2 km^2 TMP survey area covered roughly one-third of the polity's territory. Although I am unable to infer archaeological patterns from the *entire* city-state territory, the survey area at least covers a sizable portion of it. Moreover, because Aztec populations were generally denser in the vicinity of city-states' central settlements—by a factor of three or four to one, according to Sanders and Evans (2001:933)—the TMP survey area probably included more than one-third of the city-state's population, likely as much as 8,000 to 11,000 of the total population of 12,000 to 14,000 (depending on how one defines the central settlement limits).

To explore Postclassic and early colonial changes at Aztec Teotihuacan, I analyzed and coded 20,430 Aztec sherds (out of ca. 100,000 in the entire TMP survey) from 202 TMP collections.[2] The high frequency of plainwares (e.g., cooking and storage wares) in all collections suggests that they probably represent domestic deposits.[3] It is thus reasonable to assume that each collection area probably corresponds to one or a few nearby (possibly kin-related) domestic units (Garraty 2000; Spence 1985), and differences in the composition of artifact inventories among collections likely reflect disparities among domestic units or small groups of domestic units. I analyze differences in sherd compositions to interpret interresidential disparities in wealth and status in the TMP survey area and explore how those differences shifted over time.[4]

The Aztec Teotihuacan Chronology

Developing a Seriation Sequence

Archaeologists long ago distinguished a four-phase sequence (Aztec I–IV) for Aztec pottery based on decorative variations in Black-on-orange vessels (e.g., Franco C. and Peterson 1957; Gamio and Boas 1921; Griffin and Espejo 1947, 1950). Aztec I Black-on-orange is the earliest, possibly beginning as early as A.D. 900 (Brumfiel 2005), but mostly occurs in the southern basin and was not present in the 202 TMP collections. Aztec II Black-on-orange pottery is usually assigned to the Early Aztec period (ca. A.D. 1200–1350 [Sanders et al. 1979]) and indicates the earliest Aztec-period occupations at Teotihuacan and elsewhere in the northeastern basin. Aztec III Black-on-orange pottery,

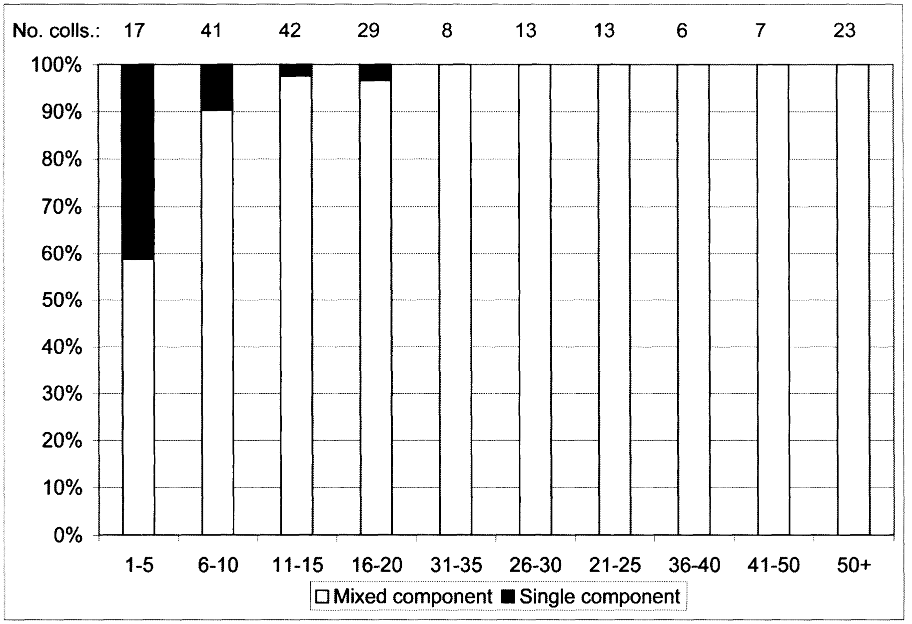

Figure 3. Percentages of single-component collections (i.e., with only Aztec II, III, or IV types) and mixed-component collections (i.e., with some mix of types) per collection size range at five-sherd intervals. The number of collections per size range is listed at the top of the figure. Note that nearly all of the single-component collections are those with 10 or fewer sherds.

typically assigned to the Late Aztec period (ca. A.D. 1350–1520), first appeared around A.D. 1350 and continued into the Early Colonial period in most areas (Charlton 1968, 1972a, 1972b, 1996, 2000; Charlton et al. 2005:59, 62). Aztec IV Black-on-orange was likely introduced after the Spanish conquest (Charlton 1968; Parsons 1966).

Perhaps the biggest challenge to seriation regards the temporal overlap of these decorative types. For example, Aztec III and IV Black-on-orange types were used simultaneously for a century or so after the Spanish conquest. Thus, the presence of Aztec III Black-on-orange in a given collection could indicate a Late Aztec or Early Colonial occupation (or both). Aztec II and III types also overlapped for some unknown period of time (Charlton 2000:524; Charlton et al. 2000:257; Nichols and Charlton 1996:239). Adding to this confusion, the extent of overlap for Aztec II and III decorative styles may vary spatially in the Basin (García Chávez 2004).

Radiocarbon dates have not fully clarified the temporal overlap among the types (Brumfiel 2005; Hare and Smith 1996; Nichols and Charlton 1996; Smith and Doershuk 1991). Calibrated radiocarbon dates for contexts associated with Aztec II types typically range from circa A.D. 1200 to 1400 (Nichols and Charlton 1996; Parsons et al. 1996). Proposed date ranges for Aztec III types are more divergent. For example, Evans and Freter (1996) claim that Aztec III types began in the early 1200s based on obsidian hydration dates (but see Cowgill 1996 and Nichols and Charlton 1996:241–242 for a discussion of problems with obsidian hydration dating). Brumfiel (2005), conversely, has argued that Aztec III could have begun as late as A.D. 1430 with the emergence of Aztec imperial rule. Perhaps the most sizable assemblage of radiocarbon dates in the region, however, comes from Smith's excavations in Morelos, directly south of the basin (Hare and Smith 1996; Smith and Doershuk 1991). Smith and colleagues' dates suggest that Aztec III pottery types began in the early to mid-1300s in Morelos. It stands to reason that the Aztec III types would have begun at least by this time in the Basin. Aztec III types thus likely started around A.D. 1350 in most areas of central Mexico and may have coexisted with Aztec II types through the mid to late 1300s.

As shown in Figure 3, virtually all of the TMP collections with phase-assignable sherd counts greater than 10 include some mix of Aztec II, III,

Table 1. Decorated Type Categories Used for Correspondence Analysis.

Decorated Category	Combined Subtypes	Source
Black/Orange II PDM	PDM subtypes A–C (all variants)	Hodge and Minc 1991
Black/Orange III PDM	PDM subtypes D–E (all variants)	Hodge and Minc 1991
Black/Orange IV PDM	PDM subtypes F–I, K, M, N (all variants)	Hodge and Minc 1991
Black/Orange II Bowls	Bowl subtypes A–C, G1 (all variants)	Hodge and Minc 1991
Black/Orange III Bowls	Bowl subtypes D–F, G2, H (all variants)	Hodge and Minc 1991
Black/Orange Basin II	Basin subtypes A–C	Hodge and Minc 1991
Black/Orange Basin III	Basin subtypes D–E	Hodge and Minc 1991
Black/Orange Jars	No subtypes	Parsons 1966
Black/Orange Slab Supports[a]	All types	Parsons 1966
Early Aztec Black/Red Bowls	Subtypes A, B, D, E, I (all variants)	Minc 1994 (Appendix III)
Black/Red Comb-Motif Bowls	Subtypes C (all variants)	Minc 1994 (Appendix III)
Black/Red *Copas* (Goblets)	All subtypes	Minc 1994 (Appendix III)
Black-and-Red/Tan Bowls	No subtypes	Minc 1994 (Appendix III)
Black-and-White/Red A Bowls	All subtypes	Minc 1994 (Appendix III)
Black-and-White/Red B Bowls	All subtypes	Minc 1994 (Appendix III)
Black-and-White/Red C Bowls	All subtypes	Minc 1994 (Appendix III)
Black-and-White/Red D Bowls	All subtypes	Minc 1994 (Appendix III)
Black-and-White/Red E Bowls	All subtypes	Minc 1994 (Appendix III)
Black-and-White/Red G Bowls	No subtypes	Minc 1994 (Appendix III)

Note: PDM = interior-decorated plates, dishes, and molcajetes (dishes with scored interior bases used for grinding chili peppers). Black-on-orange decorative patterns are roughly comparable on all three forms (Hodge and Minc 1991).
[a]Decorated slab-shaped supports occur on the bases of many Aztec III and all Aztec IV dishes and molcajetes (Parsons 1966).

and IV types. Consequently, the temporal overlap of these types presents a challenge for seriating the collection units. Given the uncertain periods of overlap, we are better off seriating the collections based on the percentages of Aztec II, III, and IV decorated types in the collections, rather than simply making period assignments based on the presence or absence of phase-assignable types.

To seriate the collections in this manner, I employed correspondence analysis (CA), a multivariate ordination technique for data reduction and display (e.g., Baxter 1994:100–139; Davis 1986:579–589).[5] The input data for the CA procedure included decorated types with counts of at least 25 sherds in the entire data set (listed in Table 1). I also eliminated the chronologically ambiguous plainwares and ritual wares (e.g., censer fragments) and lumped many decorated type categories to facilitate interpretation. For example, dozens of Black-on-orange decorative variants and subvariants were merged into broader "Aztec II," "Aztec III," and "Aztec IV" categories. This strategy helped bolster sample sizes, as I was unable to identify the specific variant for many sherds but could at least determine if it was painted in Aztec II, III, or IV style (based, e.g., on painted line thickness).

Ideally, one should only include the larger collections in this analysis. However, the elimination of plainwares and ritual wares greatly reduced the sherd counts per collection, and, therefore, a high minimum threshold would have effectively eliminated many cases from consideration. As a compromise, I included collections with 10 or more total sherds after removing plainwares and low-frequency types. The 10-sherd minimum is hardly ideal, as small collection sizes increase the possibility of sampling error. I chose 10 as the minimum threshold to retain a relatively large number of cases for analysis. Of the 202 collections, I included 155 cases (77 percent) based on the 10-sherd minimum. Increasing the minimum sample size to 15 would have dropped the number of cases to 109 (54 percent).

Figure 4 shows separate plots of the first two CA dimensions for the case and variable data. The U-shaped curve for the variable data (right side of Figure 4) reveals an interpretable temporal sequence, with the earliest types (Aztec II) on one end and the latest types (Aztec IV) on the other. The case data (left side) also exhibit a U-shaped curve but with heavy "clouding" in the middle. Unfortunately, the first two dimensions only account for about 30 percent of the variability in the data (cumulative inertia). This rather low iner-

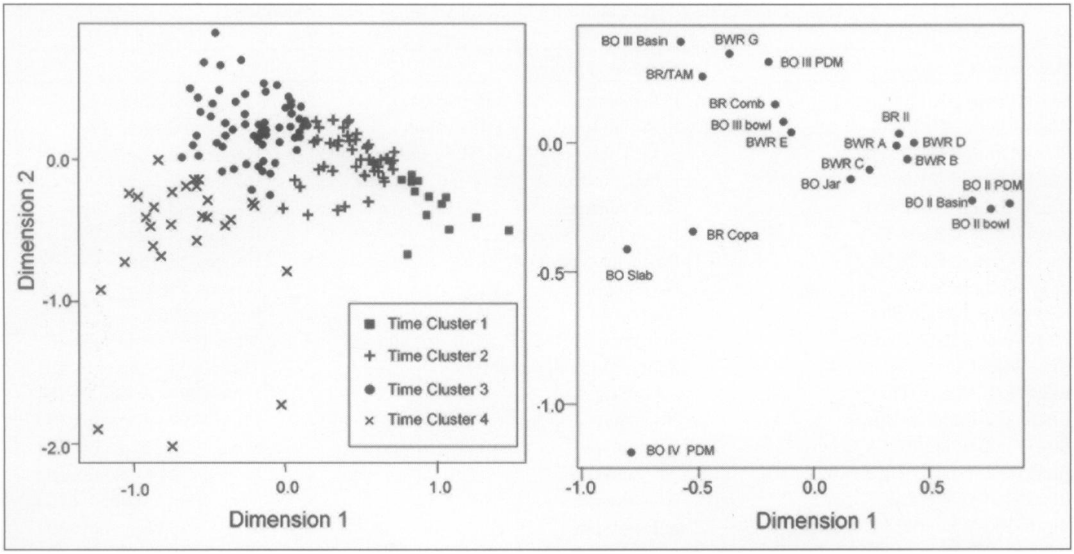

Figure 4. Correspondence analysis (CA) plot of case data (left) and variable data (right). The case data are the collections included in the CA analysis. Time cluster assignments are shown as symbols in the case plot. The variable data are the decorated type categories used for the analysis with abbreviated labels (see Table 1). BO = Black-on-orange, BR = Black-on-red, BWR = Black-and-white-on-red.

tia probably reflects the many bases for interassemblage variability beyond temporal distinctions, including status and wealth. Although this low inertia value is not ideal, it is acceptable given the strong, interpretable chronological patterning evident in the resulting CA plots.

In order to interpret the CA results and use them for diachronic analyses, I employed a *k*-means nonhierarchical cluster analysis, using the loadings from the first two CA dimensions as input data, to organize the collections into discrete temporal groups or "time clusters." The four-cluster solution provided the most readily interpretable clusters (listed in Table 2). Because the collections are mixed-component surface assemblages, these clusters should not be viewed as discrete time units; many likely represent continuous or multiperiod occupations. Nonetheless, the results should at least highlight the most intensive phase of occupation for a given collection, that is, the phase during which the heaviest deposition of sherds occurred.

In order to include collections with fewer than 10 sherds in the analysis (47 collections), I made period designations based on direct inspection of sherd counts (see Garraty and Stark 2002 for a similar approach). Most collections (37) could be safely assigned to one of the four time clusters based on the ratios of Aztec II, III, and IV decorated types. However, 10 collections remained unassigned because they had no clear prevalence of one of these decorated type categories or had very small sherd counts (fewer than five sherds). Altogether, I include 192 collections for further analyses and set aside 10 small and chronologically ambiguous collections.

The Four-Part Chronological Sequence

Time Cluster 1 (19 collections) can be securely characterized as Early Aztec (Middle Postclassic) based on the high percentages of Aztec II Black-on-orange types. Calibrated radiocarbon dates place the emergence of Aztec II types in the 1200s (Hodge 1998:205; Parsons et al. 1996). Although no absolute dates are available to assign date ranges for the four time clusters, my "best guess" is that Time Cluster 1 includes the period ranging from circa A.D. 1200 until circa 1300 or 1350, before the peak usage of Aztec III types.

Time Cluster 2 (59 collections) contains roughly equal percentages of Aztec II and III Black-on-orange types and high percentages of Black-and-white-on-red types, which peaked during the Early Aztec period. This cluster may indicate a transitional Aztec II–III occupation or, perhaps, collection loci that were occupied continuously from the Early to Late Aztec period. Minc (1994:574–579)

Table 2. Percent and Standard Deviation Values of Type Categories (see Table 1) Assigned to the Four Time Clusters.

Decorated Category	Time Cluster 1 % (S.D.)	Time Cluster 2 % (S.D.)	Time Cluster 3 % (S.D.)	Time Cluster 4 % (S.D.)
Black/Orange II PDM	39.6 (13.6)	19.3 (8.7)	5.8 (6.1)	3.2 (4.8)
Black/Orange III PDM	16.3 (8.5)	24.1 (9.1)	42.1 (16.7)	28.5 (15.7)
Black/Orange IV PDM	.6 (1.8)	1.5 (2.7)	2.4 (4.0)	15.8 (1.2)
Black/Orange II Bowls	15.1 (11.9)	7.8 (6.6)	1.9 (3.0)	1.8 (3.9)
Black/Orange III Bowls	2.3 (4.6)	4.2 (5.3)	5.1 (5.6)	6.2 (9.1)
Black/Orange Basin II	2.1 (4.0)	1.5 (3.7)	.3 (.8)	.3 (1.0)
Black/Orange Basin III	.0	.4 (1.6)	1.1 (3.3)	.5 (1.8)
Black/Orange Jars	2.0 (4.0)	1.1 (2.3)	1.8 (4.2)	1.0 (2.6)
Black/Orange Slab Supports	1.3 (2.4)	1.9 (3.6)	5.8 (6.1)	16.0 (13.0)
Early Aztec Black/Red Bowls	3.6 (3.5)	5.5 (6.0)	2.3 (3.4)	2.1 (3.3)
Black/Red Comb-Motif Bowls	5.8 (8.0)	13.5 (9.1)	20.6 (1.9)	15.8 (11.4)
Black/Red *Copas* (Goblets)	.0	.6 (1.6)	.9 (2.2)	2.1 (4.5)
Black-and-Red/Tan Bowls	.0	<.1	.5 (1.5)	.9 (2.4)
Black-and-White/Red A Bowls	4.9 (5.9)	7.7 (6.3)	3.6 (4.9)	1.8 (3.8)
Black-and-White/Red B Bowls	4.6 (5.2)	6.0 (5.8)	2.3 (3.6)	1.4 (3.9)
Black-and-White/Red C Bowls	.7 (1.9)	.9 (1.8)	.8 (2.1)	.5 (1.7)
Black-and-White/Red D Bowls	1.2 (2.2)	2.9 (5.4)	1.5 (3.0)	.5 (1.6)
Black-and-White/Red E Bowls	.0	.8 (2.2)	.7 (2.0)	.9 (3.1)
Black-and-White/Red G Bowls	.0	.2 (1.0)	.5 (1.7)	.6 (2.4)
Number of Collections[a]	14	49	61	31

Note: The time cluster assignments are based on a k-means cluster analysis of the correspondence analysis case loadings (two dimensions). The column totals add up to 100 percent. The cases assigned to time clusters through direct inspection are not included in this tabulation.
[a]These results do not include the collections assigned to the four time clusters through direct inspection.

proposes a transitional Aztec II/III phase in her analyses of collections from the eastern and southeastern Basin of Mexico surveys. Perhaps Time Cluster 2 is comparable to her transitional phase. I suspect that these collections best reflect the latter Early Aztec (Middle Postclassic) period and the early Late Aztec (Late Postclassic) period, from circa A.D. 1300/1350 to 1400.

Time Cluster 3 (73 collections) is dominated by Aztec III Black-on-orange types and probably dates to the Late Aztec (Late Postclassic) period. Charlton (2000:526) argues that the distribution of Aztec III ceramics in the basin is largely consistent with the political context of Triple Alliance rule. If so, the Aztec III–dominated Time Cluster 3 probably encompasses the period of, and immediately prior to, Aztec imperial rule, from approximately A.D. 1400 to 1520. Time Cluster 4 (41 collections) contains the highest percentage of Aztec IV Black-on-orange types and probably encompasses the Early Colonial period (ca. A.D. 1520–1650). Although some of those loci probably were occupied in both the Late Aztec and Early Colonial periods, for the purpose of this analysis I assume that these collections best represent postconquest developments.

One potential problem is that, because all collections were assigned to one of the four defined time clusters, any collection areas that were occupied continuously or reoccupied in different periods can only be grouped in a single cluster (see Kohler and Blinman 1987 for a discussion of this problem). The limited sample of Aztec collections from the TMP and the high frequency of multicomponent collections prohibit a direct, definitive means of reconstructing a precise record of occupation for any one period. For example, a collection area with some Early Aztec occupation but with heavier Late Aztec occupation would more likely be placed in Time Cluster 3 or 4 and not counted with the Early Aztec–related Time Clusters 1 and 2. For this reason, the results presented below should best be viewed as very general temporal trends and as hypotheses for future analyses using more refined data.

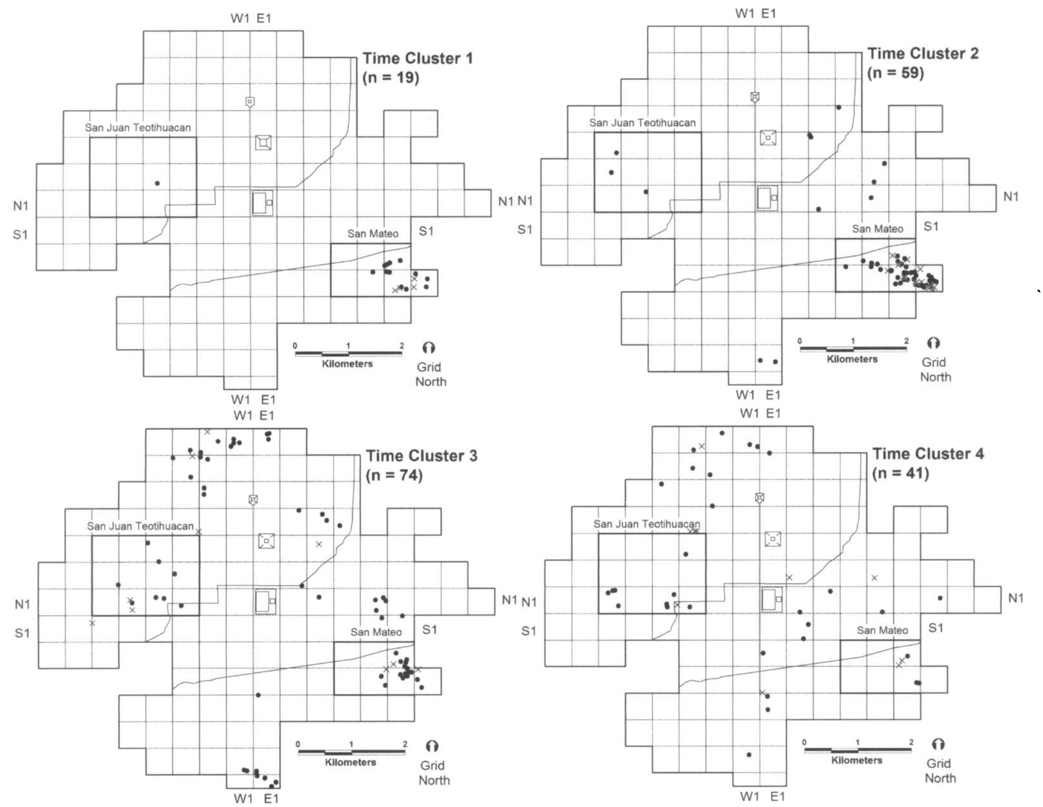

Figure 5. Map of collection units assigned to Time Clusters 1–4 (a–d), including those assigned to time clusters based on the correspondence analysis (dots) and by direct inspection ("X" symbols).

Settlement Pattern Changes at Aztec Teotihuacan

Figure 5 shows the spatial distribution of collections assigned to the four time clusters in the survey area. The Time Cluster 1 and 2 (Figure 5a–b) collections are heavily concentrated in the San Mateo area in the southeastern portion of the survey area (TMP Squares S2–3, E5–7). Nearly all (93 percent; 13 of 14) of the Time Cluster 1 collections and most (80 percent; 47 of 59) of the Time Cluster 2 collections are located there. This is not to say that Early Aztec period inhabitants infrequently settled outside of San Mateo. Residences and landholdings likely existed in other parts of the survey area but probably in lower densities. San Mateo was likely the densest and most intensive settlement locus during the time spans associated with Time Clusters 1 and 2 in the 1200s and 1300s.

The concentration of Early Aztec collections in San Mateo does not suggest a continuation of the previous Mazapan (Toltec) period settlement pattern (ca. A.D. 950–1200). Mazapan occupation near San Mateo was very scant, based on the distribution of collections with 15 or more Mazapan sherds (Figure 6). The principal Mazapan settlement in the Teotihuacan area probably was Las Palmas, located slightly east of the Pyramid of the Sun, where George Vaillant and Sigvald Linné excavated in the 1930s (Elson and Mowbray 2005). Early Aztec period settlement in the San Mateo region may indicate an intrusive occupation at Teotihuacan rather than a continuation of the preexisting Mazapan occupation. The apparent differences between Mazapan and Early Aztec settlement patterns tentatively support Smith's (1984) claim that Nahua-speaking peoples migrated to central Mexico around A.D. 1200, founded new settlements

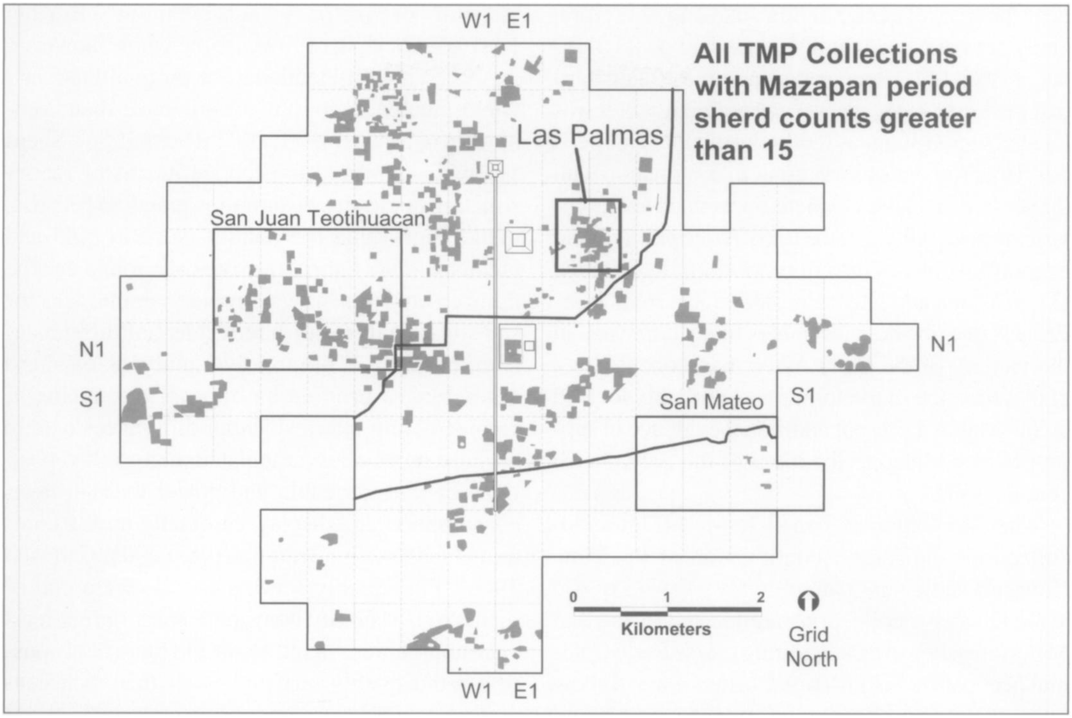

Figure 6. Map of collections in the Teotihuacan Mapping Project survey area with 15 or more Mazapan (Toltec) period sherds based on in-field counts (from field forms). Also shown is the Mazapan center of Las Palmas.

(including Teotihuacan), and established a new regional pottery tradition (Aztec Black-on-orange). I cannot further elucidate on this shift in settlement pattern because the temporal relationship between Mazapan and Aztec II pottery types remains poorly understood (Charlton 2000:520).

A process of settlement expansion generally characterizes the later periods of occupation, along with a gradual decrease in settlement in the San Mateo area. Compared with Time Cluster 1, more Time Cluster 2 collections occur outside of the San Mateo area in the eastern, western, and southern portions of the TMP survey area. This expansion could reflect population growth in the area during the 1300s (Sanders et al. 1979:209–210), which would have necessitated settlement in previously unoccupied or lightly occupied areas. Despite the slight increase in settlement dispersion, San Mateo likely continued as the center at this time.

The Time Cluster 3 collections (Figure 5c) are more broadly distributed in the survey area than the Time Clusters 1 and 2 collections, indicating continued settlement expansion. Settlement appears to have expanded to the north-central and northwest parts of the survey area (Squares N5–7, E1–W3) as well as to the western and southern parts (S6–7, W1–E1). Only about one-fifth (15 of 73) of the Time Cluster 3 collections occur in the San Mateo area. Notable also is the increased settlement in the vicinity of modern San Juan Teotihuacan, which probably began to function as the city-state's central settlement at this time.

In addition to these changes, a second line of evidence suggests the possible relocation of the city-state center from San Mateo to San Juan in the Late Aztec period (Time Cluster 3). Spence (1985), in his study of obsidian production at Aztec Teotihuacan, identifies Early Aztec obsidian production loci in the San Mateo area, whereas the Late Aztec production loci were situated in the western part of the TMP survey area, nearer to San Juan Teotihuacan (see maps in Garraty 2000:336; Spence 1985:78). The location of the Early Aztec production loci in San Mateo, rather than San Juan, suggested to Spence that early obsidian producers at Aztec Teotihuacan chose not to situate themselves near the market center at San Juan and, therefore, "may not have been totally dependent on the market" (1985:114). Spence thus assumes (plausibly) that the Early Aztec market and political center was located at San Juan, as it was during the later periods. However, his observations, in conjunction with the settlement pattern evidence presented here, suggest the possibility that the Early Aztec political and economic center of the polity was initially founded at San Mateo and later relocated to San Juan. If so, Early Aztec obsidian producers likely *did* reside in the vicinity of the Early Aztec market center, but at that time the marketplace was probably located at San Mateo. I present additional evidence in support of San Mateo as the locus of the Early Aztec center below.

The distribution of Time Cluster 4 (Figure 5d) collections indicates a continuation of the Time Cluster 3 settlement pattern. Only a few (3 of 41) Time Cluster 4 collections are located in the San Mateo area, however, suggesting sparse Early Colonial occupation.[6] Both Time Clusters 3 and 4 show a concentration of occupation in the north and northwestern portions of the survey area around Squares N5–7, W1–3 and E1, known locally as San Antonio (see Figure 5c–d). George Cowgill's ceramic density maps of the TMP survey area (published in Spence 1985:78) also reveal a very dense occupation in the San Antonio area. It is tempting to speculate whether a distinct community existed there in the Late Aztec and early colonial periods, possibly a subaltepetl district or ward (*calpolli* in Nahuatl).

Evaluating Political Processes at Aztec Teotihuacan

Measuring Aztec Eliteness

In this section I evaluate sociopolitical changes at Aztec Teotihuacan by analyzing interresidential differences for each time cluster using three indexes of "eliteness" based on inspections of sherd remains (Garraty 2000). I use the term *elite* here to refer to well-to-do families or households with social or political clout in their communities. Social distributions of status, political power, and wealth did not always exactly covary in ancient states (e.g., Cowgill 1992). Upward social mobility was possible for commoners in Aztec society through commercial or military achievement (Berdan 1982:45–66; Hicks 1999). On the whole, however, the Aztec nobility tended to be more affluent and wield greater sociopolitical influence than commoners (Carrasco 1971, 1982; Hicks 1986). Sherd assemblages offer an effective means of reconstructing domestic consumption practices because, unlike high-value preciosities (such as gold and precious stones), sherds are typically found in large numbers and thus provide robust sample sizes for statistical analyses of interresidential differences (Smith 1987). Comparative analyses of sherd assemblages provide an appropriate means of reconstructing interresidential differences chiefly because Aztec elites articulated their exalted positions of status, wealth, and power through overt consumption and display, especially during communal feasts (e.g., Brumfiel 1987, 2005; Carrasco 1966). Fine-quality serving vessels were one of many high-visibility items on display during feast occasions; elites, therefore, would more likely possess better-quality serving vessels than their generally less wealthy commoner clients.

I employ three indexes of Aztec "eliteness," modified slightly from Garraty (2000). The first is the *decorated sherd density index* (Index 1), which is simply the density of decorated sherds (decorated count per m^2 of surface area) for each collection unit.[7] Netting (1982) has observed a cross-cultural tendency for larger family sizes in wealthy households, which suggests larger pottery inventories. Among the Aztecs, wealthy elite households would likely have had larger pottery inventories because they typically held larger and more frequent feasts than commoners; hosted dozens of visiting diplomats, community leaders, and clients (Zorita 1994 [1566–1570]:110); had larger families because of a higher frequency of polygamy; and employed more live-in servants and slaves than commoners (Evans 1991). In sum, elite residences would have required larger ceramic inventories to accommodate more residents and guests (Hayden and Cannon 1984; Hirth 1993:137–138; Netting 1982). They should therefore evidence very large sherd accumulations and, consequently, denser surface deposits of decorated sherds. I use sherd density rather than raw counts for this index to avoid the possibility of conflating elite residence with large-sized collection areas.[8]

Various factors other than social status also con-tribute to high sherd densities, including differing lengths of occupation, numbers of residences contributing to the accumulation of debris, and various natural and cultural formation processes. I hope to avert this problem to some degree by (1) making interpretations based on all three index results (see below) and (2) calculating densities only for decorated types pertaining to the period under study. As explained elsewhere (Garraty 2000:332), this index best indicates elite residences in cases where sherd densities are *exceptionally* high and occur as distant outliers in the upper tail of the distribution. Elite residences may generate sherd debris several times greater than nonelite residences, which may be evident despite the many conflating factors that might affect sherd accumulations. For instance, one would not infer that a collection with 1.5 sherds per m^2 of surface area is "more elite" than a collection with 1.3 sherds per m^2. However, if the two densest collections have, say, 8.5 and 7.5 sherds per m^2 and the third densest has 3.5 sherds per m^2, than the two former collections could conceivably be interpreted as elite residences.

A second index, the *decorated type percentage index* (Index 2), is calculated as two times the percentage of low-frequency decorated bowls (e.g., Aztec polychromes), plus two times the percentage of polychrome Black-and-white-on-red bowls, plus 1.5 times the percentage of Black-on-red, plus the percentage of Black-on-orange serving wares, with all percentages calculated relative to the sherd totals per collection. The rationale for this index is simply that Aztec elites presumably would have accumulated more high-quality decorated pottery than nonelites.

The third index, which I refer to as *Smith's index* (Index 3), is a modified version of a residential wealth index created by Smith (1992:301) to study Aztec-period excavation collections in Morelos. It is the sum of the percentages of total decorated and undecorated serving bowls and ritual censers, with all percentages calculated relative to the sherd totals per collection. For this index, I assume that elites would more likely possess larger inventories of both serving and ritual wares than commoners to accommodate communal gatherings. (For a more detailed discussion of the assumptions and rationales for, and potential problems with, these indexes, see Garraty 2000:325–333.)

Table 3 shows that the three indexes are generally positively correlated with one another (Pearson's r) for all time clusters. Overall, the results are hardly ideal: some correlation coefficients are rather low, and a slight negative correlation is evident for Indexes 1 and 3 in Time Cluster 4. Even so, the predominance of positive coefficient values is encouraging; perfect correlations are hardly possible in any case, given the many conflating factors (e.g., differing collection intensities, sampling vagaries) that play into the index calculations. The overall positive correlation coefficients suggest that the three indexes "converge" in showing parallel trends in the data and, therefore, probably jointly point to interresidential social differentiation (Garraty 2000:327, 331–332).

The three index scores were calculated for each collection and summed to obtain a *composite index score* for each collection, which helps avoid the confusion and unwieldiness of simultaneously evaluating three separate sets of index results. I therefore standardized the individual index scores as z-scores (to place them on an identical scale) and summed them for each collection.[9] I then converted the standardized scores to proportions (between 0 and 1) to clarify the results, with 1 representing the highest-ranking site. To convert the scores to proportions, the absolute values of the lowest-ranking scores (for each time cluster group) were added to each individual score to change the scores into positive integers (the lowest score would have a value of 0). These scores were then divided by the highest value so that the highest score has a value of 1 and the lowest score has a value of 0. This procedure generates a readily interpretable means of evaluating the relative distances among composite scores for each time cluster. It also facilitates comparison of the results for the four time clusters by placing the scores on identical scales.

Evaluating Sociopolitical Differences: "Rank-Score" Distribution Plots

Archaeologists have long used rank-size distribution plots as a visually accessible heuristic tool for evaluating regional settlement hierarchies (e.g., Falconer and Savage 1995; Johnson 1977). The x-axis on a rank-size distribution plot is a listing of settlement rank (from 1 to x, with x being the total number of settlements in the system); the largest settlement is the highest-ranking case. The y-axis

Table 3. Linear Correlation Coefficient Matrix (Pearson's r) for Three "Eliteness" Indexes, Listed for Each Time Cluster.

	Time Cluster 1			Time Cluster 2	
	Index 1	Index 2		Index 1	Index 2
Index 2	.361		Index 2	.399	
Index 3	.230	.403	Index 3	.340	.841

	Time Cluster 3			Time Cluster 4	
	Index 1	Index 2		Index 1	Index 2
Index 2	.308		Index 2	.119	
Index 3	.047	.039	Index 3	–0.068	.169

shows the observed size value (settlement or population size) from which the rank was derived. The x- and y-axes of rank-size plots are converted to a log-10 scale (for explanation, see Falconer and Savage 1995:38–41). In a "primate" system, the largest and highest-ranking settlement is more than twice as large as the second highest-ranking settlement; the resulting plot thus shows a sharp drop in observed size values between the first and second highest-ranking settlements, yielding a concave distribution curve. A primate pattern indicates strong centralization of political and economic functions in the highest-ranking settlement. In "convex" or "log-normal" systems, more large- and intermediate-sized settlements occur, and the largest settlement is less than twice as large as the second-largest settlement, resulting in a convex curve. This gradual gradation in settlement sizes implies a decentralized political-economic system.

I apply this same logic and method of visually displaying data to evaluate scalar differences in the composite index scores. These "rank-score" distribution plots (as opposed to rank-size plots) provide a simple visual means for interpreting relative distances among the index scores within each time cluster. Like settlement sizes, rank values (1 to *x*, with 1 being the highest-scoring collection) derive from interval values (the index scores). Therefore, rank-score plots, like rank-size plots, can be used to compare the descending ranks assigned to all cases against their observed index scores. Also like rank-size plots, the resulting distribution curves can be interpreted in terms of centralized versus decentralized sociopolitical organization. In this case, the results are interpreted as a centralization/decentralization of sociopolitical power and wealth at the residential level rather than the settlement level. As shown in Figure 7, "primate" pattern suggests a more centralized sociopolitical arrangement, with political status and wealth concentrated in a single elite household, presumably a paramount lineage. A "convex" pattern suggests a decentralized sociopolitical organization, with more equitable wealth and a power-sharing arrangement among those in the top ranks of the political-economic hierarchy.[10]

Figure 8 (a–d) shows the four rank-score plots pertaining to each time cluster group. Looking at the upper left portions of the curves (i.e., pertaining to the highest-raking collections), the results tentatively show a gradual progression from a slightly primate pattern in Time Cluster 1 (Figure 8a) to a *very* convex pattern in Time Cluster 4 (Figure 8d). Time Cluster 2 shows a relatively "normal" curve (not a "log-normal" curve, as both axes are not log transformed [Figure 8b]), whereas the Time Cluster 3 curve appears slightly convex (Figure 8c). Importantly, the highest-ranking collection in Time Cluster 3 is TMP site 7:N1W4, which I have previously interpreted as the possible location of the *tlatoani's* palace (Garraty 2000:335). The most conspicuous change in rank-score curves pertains to Time Cluster 4, which is far more convex than the curves for the earlier time clusters. Overall, the rank-score plots suggest a gradual modulation from a relatively centralized polity in the earlier periods of occupation to a more decentralized arrangement after the Spanish conquest.

Spatial Distributions of Elite Residences in the TMP Survey Area

To investigate the spatial distribution of the proposed elite residences in the TMP survey area, I mapped the collections in the upper 25 percent (or upper quarter) of the range of composite index scores for each time cluster group. The *upper quarter* of a score range is not the same as the *upper quartile*. The upper quartile refers specifically to

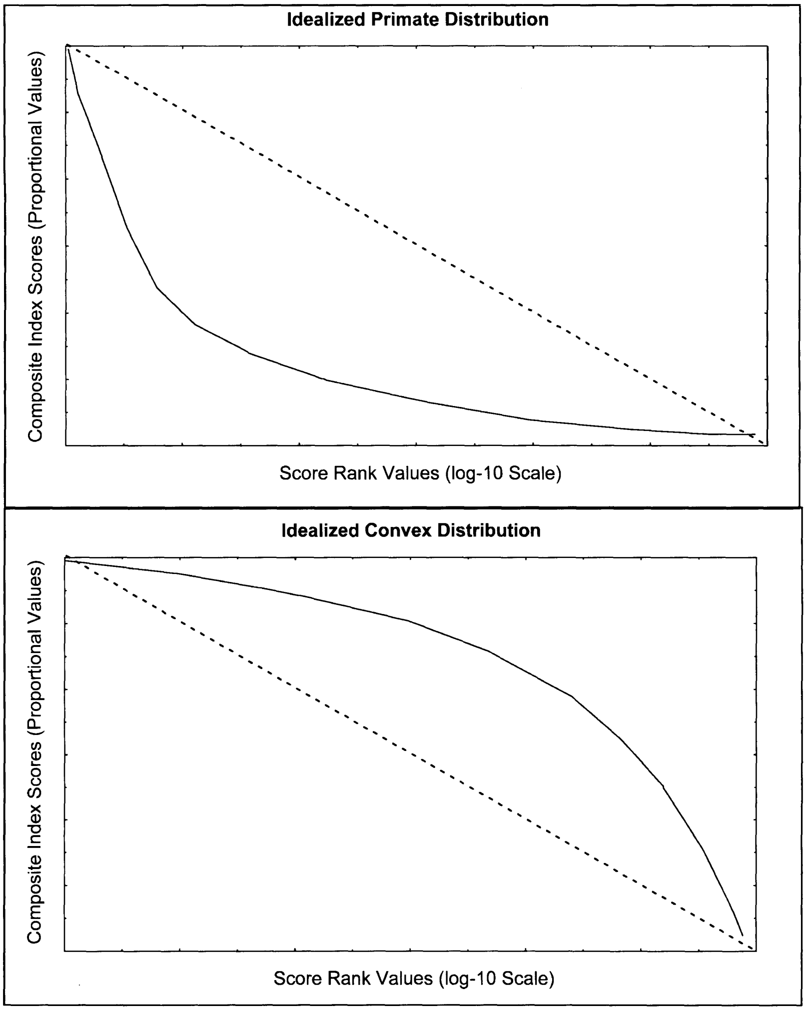

Figure 7. Idealized rank-score distribution curves, including "primate" (top) and convex (bottom) distributions.

the 25 percent of highest-scoring collections; thus, in a set of 20 collections, the upper quartile would refer to the five collections with the highest scores. I am concerned here instead with collections in the upper quarter of the *score range* for each time cluster, that is, those with scores of 75 percent or greater after the composite index scores were converted to proportional values. Note that, in this latter case, even a set of cases with hundreds of collections might have only one or two cases in the upper quarter of the score range.

One collection from Time Cluster 1—site L17:S3E7, located in San Mateo—falls in the upper quarter of the score range (Figure 9a). This is not surprising because nearly all Time Cluster 1 collections are located in the San Mateo area (Figure 5a). Time Cluster 2 includes three collections (L5:S3E7, 46:S3E6, 2:S3E5) that fall in the upper quarter of the score range (Figure 9b), all located in the San Mateo area. Together, Figure 9a–b, along with Spence's Early Aztec obsidian production loci (see above), underscores the political and economic centrality of San Mateo in the Early Aztec period.

Two Time Cluster 3 collections (7:N1W4, 45:S3E6) exhibit scores in the upper quarter of the range, including site 7:N1W4 (Figure 9c), the highest-ranking collection. That site contains a huge quantity of sherds (with over 1,200 sherds, it has over twice as many as any other collection). As mentioned above, such exceptionally high sherd frequencies might suggest practices associated with prominent leaders who required a large inventory

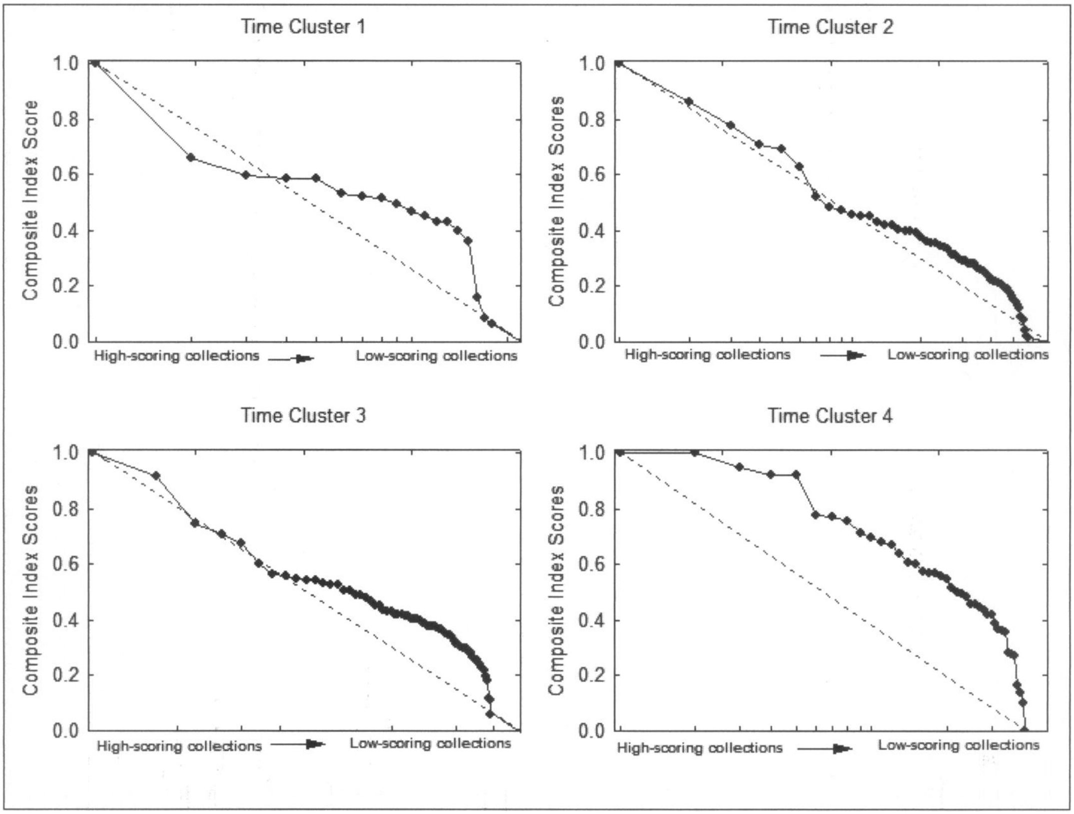

Figure 8. Observed rank-score distribution curves for collections from each of the four time clusters (a–d). The rank values depicted on the x-axis have been converted to a log-10 scale.

of pottery vessels to accommodate large communal feast gatherings, larger domestic units (e.g., because of polygamy and live-in servants), visiting dignitaries, corvée laborers, and lower-level leaders. Notably, this site is located in San Juan Teotihuacan, complementing the evidence presented above for a relocation of the city-state center from San Mateo to San Juan in the Late Aztec period.

In addition to being the probable seat of government, San Juan also apparently became the principal seat of commerce in the polity by the late 1300s or early 1400s. The Late Aztec obsidian production loci identified by Spence (1985) are all located in the western portion of the TMP survey area within a few kilometers of San Juan. The obsidian producers probably manufactured obsidian items for sale in the *altepetl* marketplace, presumably located at San Juan. Together, the evidence for a very important family at 7:N1W4 in the San Juan vicinity, in conjunction with Spence's findings of nearby Late Aztec obsidian production loci, supports the argument for a relocation of the city-state center from San Mateo to San Juan. I suspect that additional elite residences would be evident in the San Juan vicinity had the TMP surveyors been able to make more surface collections in areas of the modern town covered by modern roads and buildings (see Garraty 2000:334; Sanders and Evans 2001:1077).

Figure 9c indicates another Time Cluster 3 collection (45:S3E6) in the upper quarter of the score range. Site 45:S3E6 is located in the San Mateo region, which may evidence the continuing importance of that area in the Late Aztec period. Perhaps some Early Aztec elites with estates in the San Mateo area retained their landholdings and continued to prosper in the Late Aztec period. Garraty and Stark (2002:22) suggest a similar situation in Late Postclassic south-central Veracruz, where probable elite landholdings occurred in an area that had previously housed the region's primary center in the Middle Postclassic period. Some elites in the San Mateo area probably managed to retain their wealth

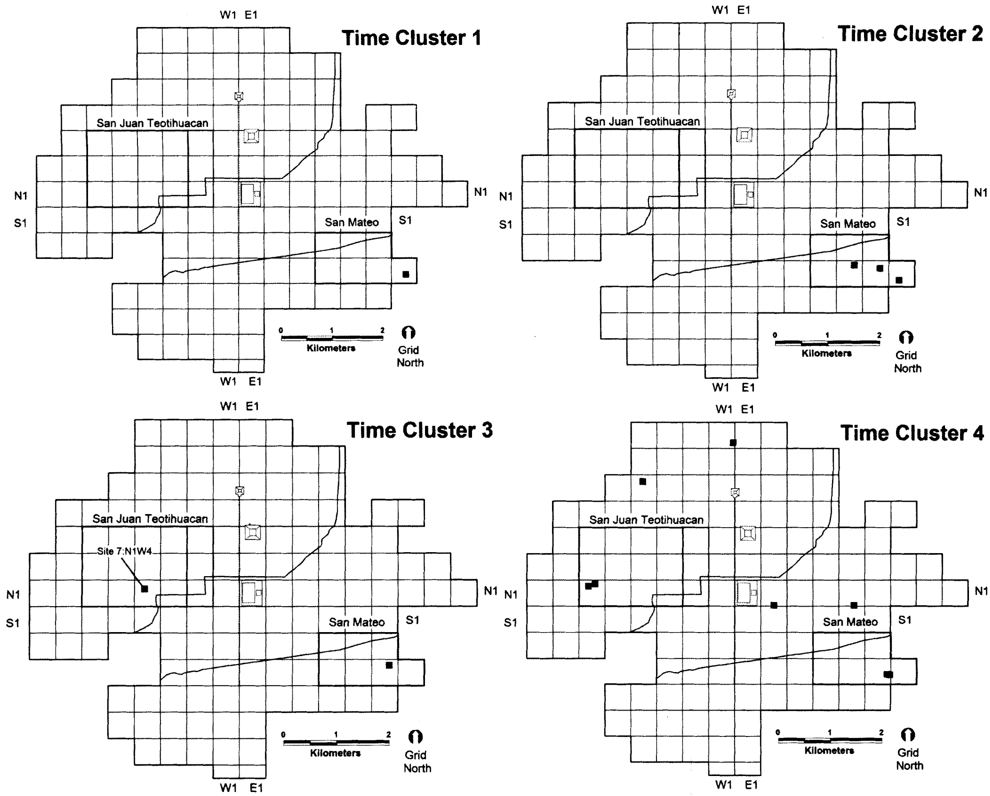

Figure 9. Map of the Teotihuacan Mapping Project survey area showing collections in the upper quarter of the composite index score range for each of the four time clusters (a–d).

and estates. If so, the transfer of political and economic functions from San Mateo to San Juan may not have entailed a complete dismantling of previous elite landholdings in the San Mateo area.

Eight collections have index scores in the upper 25 percent of the score range for Time Cluster 4 (Figure 9d). Notably, the two highest-scoring collections are located in the San Juan area (11:N1W6, 4:N1W6). San Juan retained its position as the area's primary economic and administrative center in the Early Colonial period, as colonial documents attest (Casteñada 1926 [1580]). Notable also in Figure 9d is the greater spatial dispersion of collections in the upper quarter of the index score range. In addition to two collection units at San Juan, five others are scattered in different parts of the TMP survey area (L12:N7W1, 15:N5W4, 38:S1E2, 59:S3E6, 19:N1E5, 33:S3E6). This evidence supports the rank-score evidence for a more decentralized polity after the Spanish conquest. Munch G. (1976) mentions high-status residences and city-state officials in settlements other than San Juan during the Early Colonial period. Some of these scattered loci also could have been secondary palaces of Teotihuacan's colonial ruler (Sanders and Price 2003:77–81).

Discussion: Political Processes at Aztec Teotihuacan

Political Reorganization

The preceding lines of evidence shed light on political processes at Aztec Teotihuacan. Most salient is the possible relocation of the political center from San Mateo to San Juan Teotihuacan. Both sherd and obsidian evidence from the TMP survey area suggests that San Mateo had ceased as the polity's seat of government and commerce by the late 1300s or early 1400s. San Juan subsequently emerged as the new center and remained so in colonial and historic times. This possible relocation of the city-state's central settlement suggests a major episode of political reorganization at Aztec Teotihuacan not mentioned in colonial documents. This brings up the question of why such an episode might have occurred. Fortunately, colonial documents are rife with historical information that presents viable answers to this question. I present below several alternative scenarios, which hopefully will be subject to future testing.

One possibility is that the founding of the new center at San Juan coincided with the appointment of Teotihuacan's first *tlatoani*, Huetzin, in A.D. 1409. Huetzin may have reorganized Aztec Teotihuacan's political structure and, in the process, founded a new center at San Juan. If so, he may have wanted to divorce Aztec Teotihuacan from the previous regime at San Mateo to communicate to his new subjects a wholesale shift in the polity's governing authority. Garraty and Ohnersorgen (2007) propose a similar explanation for the founding of a new, Aztec-affiliated center in Late Postclassic Veracruz in an area far removed from the previous Middle Postclassic seat of government and commerce. In both cases, a relocation of the polity center—with its attendant construction of new roads, temples, palaces, government facilities, and other civic-ceremonial buildings—would have made a powerful statement regarding the political and economic power of the new *tlatoani's* regime.

A second possibility is that Totomochtzin—the *tlatoani* appointed by the Tepanec leader, Tezozomoc, to replace the deposed Huetzin in A.D. 1418—founded the new center at San Juan, possibly for the same reasons. It would certainly have been in the best interests of Totomochtzin as a leader affiliated with what many Aztec Teotihuacanos likely considered an enemy regime (the Tepanecs) to employ heavy-handed tactics to communicate the new *tlatoani's* political potency. It also would have strategically symbolized the break between the new Tepanec-affiliated regime and the previous Acolhua regime. Totomochtzin likely would have drafted corvée laborers from the local population to construct the new center, which could indirectly have served to stifle dissent or rebellion. Paynter (1989:384) has suggested that labor-drafting efforts for state-sponsored constructions in archaic states frequently served to police a potentially resistant population and, at the same time, manifest the authority of the powerful leader (or leaders) who commissioned the labor.

Another possibility is that the new center was founded when Nezahualcoyotl reorganized the Acolhua domain in the early 1430s. Documentary evidence indicates that Nezahualcoyotl acted with expediency and heavy-handedness in restructuring his domain, which he allegedly created with a single decree (Hodge 1984:26, 1996). For example, the indigenous colonial chronicler Alva Ixtlilxochitl (1975–1977 [1600–1640], 2:89–90) states that Nezahualcoyotl appropriated Teotihuacan's previous landholdings in the eastern Teotihuacan Valley and reassigned them to elites in other city-states. Another way that Nezahualcoyotl could have conveyed Texcoco's supremacy was to underwrite and construct a new center for his subject lord Quetzalmamalitzin, perhaps bestowed to him as a dowry for his daughter's hand in marriage. The new center could also have been a means of rewarding Quetzalmamalitzin as a loyal ally and ensuring his compliance (see Hodge 1984:130; Rounds 1979).

A final possibility regards the extensive system of springs in the vicinity of San Juan Teotihuacan. Control over the water supply may have become an important source of prestige and revenue for Teotihuacan's elites, especially as the population increased and settlement expanded into previously unsettled (or lightly settled) areas in the 1300s and 1400s (see Sanders et al. 1979:184–187). The city-state's rulers could have seized an opportunity for increased revenue by managing access to the springs. Gamio (1922, cited in Sanders et al. 2001:912–915) mentions a 16th-century document that describes how the ruling lineage of Aztec Teotihuacan controlled access to the springs and rented waters to Acolman and other nearby communities. Perhaps Teotihuacan's preconquest leaders also garnered revenues by managing water distribution and, consequently, opted to establish a center in the vicinity of the springs in San Juan.

If so, an equally valid question regards why the early center at San Mateo was located *away* from the springs, as control over the springs would presumably have presented a political-economic advantage for Early Aztec as well as Late Aztec rulers. One possibility involves San Mateo's location along the Río San Lorenzo. Cowgill (2000) mentions the possibility that the Río San Lorenzo may have been canalized in ancient times, largely because the course of the river today appears unnaturally straight and nonmeandering. This is plausible, for the ancient Teotihuacanos clearly altered the course of the Río San Juan to conform to the orientation of the Classic period city (e.g., Millon 1981), providing a precedent for river canalization. If the Río San Lorenzo had been canalized in Early Aztec times, then the San Mateo elites also could have managed water distribution.

Centralization and Decentralization

The rank-score distribution plots illustrated in Figure 8 suggest a pattern of gradual decentralization at Teotihuacan from Early Aztec to early colonial times. I explore possible explanations for these changes based on broader changes in the political-economic milieu of the basin over this span.

In pre-Hispanic times, decentralization could have stemmed from competition among elites at Teotihuacan. Evans (2001:92) characterizes interelite relations during the Early Aztec period in terms of the "multiple bases for alliance (or hostility)" and the "individualization of political relations". Elites, she argues, individually pursued their own partnerships and rivalries according to their own perceived needs and self-interests, even perhaps when it placed them in opposition to elites in the same city-state. Brumfiel (1983, 1987) also emphasizes elite competition to acquire tributary commoner subjects, which also probably played out at the intrapolity level. This competition likely caused internal rifts among city-state elites, especially in smaller city-states such as Teotihuacan, where local elites vied for political favor with elites in the more powerful centers of Huexotla, Texcoco, and Azcapotzalco. This ongoing process of interelite alliance and competition could have been responsible for the segmentation and decentralization of power and wealth in the Early Aztec period.

In the Late Aztec period, decentralization might indicate efforts on the part of Triple Alliance rulers to undercut the "patrimonial domains"—that is, the deeply entrenched bases of wealth and landed estates controlled by long-standing elite lineages (Eisenstadt 1963)—in city-states such as Teotihuacan that predated the empire. Imperial rulers employed various means of ensuring that lower-level elites remained unable to garner sufficient power or resources to challenge their rule (see Hodge 1984:142–150, 1996). For example, Texcoco established several imperial tax-collecting (*calpixqui*) centers in the eastern Teotihuacan Valley (Axapusco, Ahuantepec, Oxtotipac, and Cuauhtlatzingo). Texcoco was thus able to skim the flow of tribute that had traditionally accrued to traditional leaders of preexisting *altepetl*, including Teotihuacan, by reducing their numbers of tribute-paying commoner clients (Evans 2001; Hicks 1992). These tribute flows were subsequently redirected to Texcoco via the *calpixqui* centers. Texcoco's leaders also established marketplaces at these centers, thereby diverting market tax revenues that otherwise would have accrued to Teotihuacan's ruling elite (Blanton 1996; Hicks 1987, 1992).

The *very* convex rank-size curve for Time Cluster 4 implies a considerable change in the political climate of the Basin after the Spanish conquest, possibly indicating a leveling of power and wealth among elites (see Berdan 1982:180; Gibson 1964:155–158). The increased spatial dispersion of high-scoring elite collections in the TMP survey area for Time Cluster 4 (shown in Figure 9d) also points to this leveling process, which probably resulted from indigenous impoverishment after the conquest that affected both commoners and elites. Table 4 lists the ratios of undecorated plainwares to decorated wares for collection units assigned to the pre-Hispanic (Time Clusters 1–3, combined) and the Early Colonial (Time Cluster 4) periods. Decorated wares can be considered widely used but nonessential household items, whereas plainwares are better considered domestic necessities required for basic tasks such as cooking and storage (see Smith 2003b:122). The decline in the number of decorated wares relative to plainwares points to impoverishment. In times of destitution, domestic units would likely allocate more of their income to the procurement of necessities, such as plainware pottery, before they purchased desirable but superfluous goods, such as decorated serving wares. As is evident in Table 4, this process equally affected wealth levels for elites and commoners; in both cases, the ratio of plainwares to decorated wares is roughly twice what it was in pre-Hispanic times.

Elite impoverishment largely stemmed from the reallocation of tribute from indigenous elites to the Spanish viceroys (see Hassig 1985:225–228, 254–256). It also partially developed because of the decimation of the indigenous population by rampant epidemics, which would have wiped out most of the elites' traditional bases for tribute wealth (and many elites themselves). Indigenous impov-

Table 4. Plainware–Decorated Ratios for Proposed Elite and Nonelite Loci at Aztec Teotihuacan.

	Ratio of Plainwares to Decorated Wares		
Period	All Loci	Elite Loci	Nonelite Loci
Time Clusters 1–3 (Pre-Hispanic)	1.30	0.90	1.37
Time Cluster 4 (Early Colonial)	2.44	2.04	2.64

Notes: The listed values are the sums of undecorated plainware sherd counts divided by the sums of decorated sherd counts per analytical unit. See text for details about period assignments and designations of elite loci. Pre-Hispanic periods: elite loci = 6 collections, nonelite loci = 146 collections. Colonial period: elite loci = 8 collections, nonelite loci = 33 collections.

erishment also restricted commercial spending among commoners, which cut into the revenues from marketplace taxation traditionally accorded to the elites (Blanton 1996; Hicks 1987). Elite prosperity and wealth were thus heavily tied to commoners' ability to generate income and redirect some portion of it to elites through tribute and marketplace purchases. However, after the Spanish conquest the smaller and heavily impoverished commoner population likely could no longer sustain the same levels of tribute and tax levies from elites. Probably only the indigenous elites in the larger centers who were able to curry favor with Spanish officials were able to sustain preconquest levels of wealth and prosperity after the conquest (Lewis 1976:133–135).

To conclude, few studies have focused specifically on the organizational aspects and "life histories" of Aztec city-states. This case study sheds new light on political processes at Aztec Teotihuacan. It also adds to our comparative literature on city-states and provides additional grounds for making sense of the remarkable variability in Aztec city-state organization and structure (Hodge 1984, 1997; Smith 2000, 2003a; Smith and Hodge 1994) and, more generally, in early state organization (Marcus and Feinman 1998). I consider the interpretations presented in this article to be hypotheses for future research rather than conclusive results, however. They can be further tested with additional lines of evidence, excavations, or new methodological insights. Excavation, in particular, could provide architectural, botanical, and other material remains to help illuminate the proposed areas of elite residence, as well as provide stratigraphic deposits to assess the proposed chronological sequence.

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Notes

1. My use of the term "city-state" in this paper requires clarification. The suitability of the term to characterize Aztec *altepetl* has been a matter of contention. Some scholars embrace the term (e.g., Bray 1972; Charlton and Nichols 1997; Hodge 1984, 1997; Smith 2000, 2003a). Smith (2000, 2003a), for example, defintes *altepetl* as city-states based on Hansen's (2000) criteria for defining city-states and "city-state cultures." He thus sees a good deal of cross-cultural commonality in "city-state cultures," including Aztec *altepetl*, from different times and places in the ancient world. Other scholars, such as Marcus and Feinman (1988), prefer more region-specific, indigeneous settlement terms such as *altepetl*, *nome* (Egypt), *ayllu* (Andean region), and so on. They reserve the concept of "city-state" specifically for the early democratic republics of ancient Greece. It is beyond the scope of this paper to evaluate this conceptual debate. Suffice it to say that I use the terms city-state and *altepetl* more or less synonymously in this paper and leave it to the reader to evaluate the appropriateness of the term city-state in this context.

2. The 20,430 sherds do not include the many ceramic handle parts and undecorated supports that I eliminated from this analysis. Had I included those items, then the total sherd count from the 202 collections would be on the order of ca. 25,000 sherds, or about one-quarter of the entire Aztec-period TMP collection.

3. The analysis was conducted in two stages. During the first phase, I analyzed all collections with very large Aztec sherd counts (over 200 sherds) based on the sherd frequencies recorded on field forms. I used a stratified sampling program to analyze an additional two–four randomly selected collections (with a minimum of 30 total Aztec sherds) from selected TMP survey blocks in the vicinity of the large collections and in several other blocks to obtain better spatial coverage. In the second phase of analysis I judgmentally targeted a large number of collections from TMP Squares S2–3, E4–7, in the vicinity of the modern Rancho San Mateo (Figure 2), which I had previously determined to include many collections with robust concentrations of Early Aztec decorated types compared with collections in other parts of the survey. This second phase of analysis was necessary because Early Aztec ceramics were generally underrepresented in the first phase of the analysis.

4. The TMP survey area included a mix of different collection contexts, ranging from open, plowed fields to built-up, urban residential areas. Ground visibility and access to surface remains thus varied considerably in different portions of the survey area. For example, it was harder to obtain collections from the vicinity of the modern town of San Juan (Evans et al. 2000:251; Sanders and Evans 2001:1077). It is therefore pertinent to ask whether the materials obtained from rural contexts are indeed comparable to those obtained from the built-up town contexts. These differences in collection context may affect the *sizes* of the collections; however, I see no reason why these different collection contexts would adversely affect proportional representations of different artifact categories (e.g., percentages of decorated types). The seriation and elite index analyses presented below rely on pottery type percentages and densities rather than raw counts and, therefore, are unlikely to have been biased by the context of the collection units, except to the extent that some elite contexts may not be observable in the built-up areas of modern San Juan (Garraty 2000:343).

5. Before settling on CA, I experimented with other multivariate ordination methods (principal components analysis [PCA], multidimensional scaling) and clustering methods, including nonhierarchical (k-means) and hierarchical cluster analyses (Ward's Method) in conjunction with discriminant analysis. However, CA revealed the most readily interpretable patterns in the data and generated the typical U-shaped curve interpretable as a chronological sequence. CA also allows analysts to plot both the variable data (R-mode) and case data (Q-mode) in the same two-dimensional space

(as does PCA [Baxter 1994]) and, therefore, "interpret the relative contribution of each variable to the dimensional representation" (Duff 1996:90).

6. In all, the distribution of the Time Clusters 3 and 4 collections suggests a dispersed settlement pattern during the latter years of Aztec occupation at Teotihuacan. I should qualify this assessment, however, by noting that it could be partly a product of increased sampling of collections from the San Mateo vicinity. In other words, I did not analyze a concentrated group of collections in areas with heavy Late Aztec or early colonial settlement comparable to the cluster of Early Aztec settlement at San Mateo, which may artificially bolster the appearance of a more clustered settlement in Early Aztec vis-à-vis the Late Aztec period. Even so, the settlement changes over time, as depicted in Figure 4, are striking.

7. I use only decorated sherds to calculate this index because TMP surveyors may not have collected plainware as consistently as decorated sherds (Garraty 2000:327). Also, the colors on most Aztec decorated wares might have made them more conspicuous on the ground surface. Decorated counts therefore probably better reflect variable ceramic deposition rates among collection loci than plainware counts (assuming relatively constant surface visibility).

8. Hirth (1993:138), in his study of interresidential differences at Xochicalco, observes that ceramic frequencies are valid indicators of elite residence but not densities, which he explains as "a product of a direct correlation between household population and the quantity of ceramics involved in its maintenance and the normally larger space-per-person ratios found in large residences". This is a valid point. However, Hirth had the advantage of using excavation collections and, therefore, could control for the size of the residential units. I am unable to do so with the TMP surface collections; I am also unable to control for the number of residences contributing to a collection unit. Therefore, density calculations make more sense than frequencies in this case: they help "equalize" comparisons among collections units that might accommodate several contributing residences with those that accommodate only a single residence, assuming multiple-residence units would cover a larger area. Had I relied on raw counts, the larger-sized collections with two or more contributing residences might wrongly be interpreted as elite loci. Note also that the density calculations are based solely on the area of the collection unit and do not take into account obstructions to surface visibility (e.g., high grass or weeds) or other hindrances that prevented surface observation in portions of the survey area (e.g., structures). Hence, the density calculations should be viewed as estimates rather than true densities.

9. One possible problem with this means of combining the index scores is that the composite score can be, in effect, "defined" by just one of the three indexes. For example, if a given collection scores very high on one index (e.g., with a score several standard deviations above the mean) but only "moderately" high on the other two (e.g., around the mean), then the composite score will still be very high and interpreted as an elite collection. However, I do not see this as a serious problem because any one of the three indexes could potentially indicate the presence of an "elite" noble residence.

10. There is one important difference between rank-score and rank-size displays. First, unlike rank-size plots, log conversion of the y-axis does not facilitate interpretation of the rank-score distributions: doing so would only serve to "squeeze" all of the cases in the upper right portion of the display and inhibit interpretability. However, I *do* convert the x-axis, which shows the score rankings, to a log-10 scale; otherwise, the composite index scores from all four time cluster groups would indicate a primate pattern. The log transformation (or other quantitative transformations) is not a necessary condition for creating this form of visually displaying and assessing patterns and differences among ranked units.

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