CHAPTER SEVEN

Conclusions

By C. Roger Nance, Jan de Leeuw, and Phil C. Weigand

+++It remains to evaluate the ceramic sequence proposed herein through cross-site comparisons, which will involve comparing similar types of known age to their Etzatlán counterparts. A second topic of this chapter has to do with the presence of colonial Spanish pottery in the sequence and the fact that most of the sites studied here were occupied at the time of the conquest. What does our ceramic data set have to contribute, if anything, to an understanding of the Spanish conquest and its aftermath at Etzatlán? Finally, by way of summary and conclusion, we revisit the ceramic sequence and the statistical technique that produced it, correspondence analysis.

Beyond Etzatlán: Regional Ceramic Comparisons

Phil Weigand (personal communication 2004) obtained from two sites three radiocarbon assays that date Huistla Polychrome ceramics to the late fifteenth century. Two dates were processed by Beta Analytic and one by the University of Arizona. One of these sites is just south of the present-day community of Etzatlán, the Santa Clara Arroyo segment of the Etzatlán site (chapter 1); the other, Guachimontones de Teuchitlán, is 30 km to the east (Weigand 2007:111). These dates are certainly consistent with the finding that Huistla Polychrome is the latest indigenous pottery in our sequence. One ceramic assemblage probably

contemporary with Huistla Polychrome and associated types at Etzatlán is the Mylpa complex defined by Isabel Kelly (1945) for the Autlán-Tuxcacuesco area of Jalisco. There, the dominant decorated type is Autlán Polychrome, much of it from molcajetes with tripod feet. Sites of the Mylpa complex, Kelly (1945:5) believed, are the remains of settlements visited and described by Spanish observers in 1525.

Turning to the early portion of the sequence, we can begin with two Etzatlán types: White on Red, Complex (17) and Incised Polychrome (15). The relative chronological positions of these types, both in terms of median CAvalues (chapter 5) and one of the alternative analyses, CA23 (chapter 6), can be observed in figure 6-3. Incised Polychrome is clearly the earlier of the two. Much the same situation occurs in the stratified site of Amapa in Nayarit. Grosscup (1964) describes the ceramic sequence for Amapa in his dissertation and later published the work in Meighan, ed. 1976. Incised Polychrome is quite similar to Cerritos Polychrome, as is White on Red, Complex to Santiago White on Red. Based on stratigraphic distributions, Grosscup assigned Cerritos Polychrome to the Cerritos phase, which he estimated to date between AD 900 and 1100. Santiago White on Red is later, occurring in deposits of both the Ixcuintla and Santiago phases. Combined, these phases have estimated dates of AD 1100 to 1550. If Grosscup is correct, this evidence suggests that the Etzatlán sequence, at a minimum, began sometime before AD 1100.

How much earlier, however, is unclear. The Etzatlán type White on Red, Broad Strip Outlined (18) is another Amapa parallel and resembles Iago Polychrome, which in the Amapa sequence dates to the Cerritos phase. Another Cerritos phase type, Cerritos Engraved, is almost identical in its complex design motif to the Etzatlán type Fine Engraved Arcaded (40). Figure 6-10 shows these types, along with type 15, Incised Polychrome, clustered along with others at the early end of the sequence, and figure 6-3 provides much the same picture. It appears, then, given the close similarities between these three types (15, 18, and 40) and their Amapa counterparts, that the early portion of the Etzatlán sequence under investigation consists mainly of pottery contemporary with the Cerritos phase.

However, an even earlier occupation is probably represented in the Etzatlán pottery. Some design motifs on the sherds of the Etzatlán

type Red on Cream, Complex (24) are characteristic of Amapa Red on Orange, which is affiliated with the Amapa phase, estimated to date between AD 500 and 750. The Etzatlán type Polychrome, White Dots (26), with its aligned white dots on black stripes, has affinities to Gavilán Polychrome. This Amapa type is diagnostic of the Gavilán phase with bracketing dates estimated at AD 250–500, and in the relative sequence for Etzatlán, Polychrome, White Dots tends to be quite early (see figs. 6-3, 6-10).

This one type by itself may not seem like compelling evidence for Classic period occupation at Etzatlán, but several shaft tombs, described by Long (1966) and Weigand (1993), have been excavated or dug by looters at Las Cuevas (Long 1966; Weigand 1993), at other sites in the Laguna de Magdalena basin (Long 1966), and elsewhere in the vicinity (Corona Nuñez 1955). Tombs such as these are believed to date no later than AD 500 in north-central Jalisco. On this point, see Galván Villegas 1991:255–57, which reports shaft tombs from the vicinity of Guadalajara, and Beekman 1996:68–75. The early position of shaft burials and the elaborate hollow ceramic figurines that accompany them were observed by Gifford (1950) in his survey of the Ixtlán del Río area not far west of Etzatlán and by Mountjoy (1970) in a program of test excavations at sites near San Blas on the coast of Nayarit. Contemporary with the hollow figurines of Gifford's (1950:199, fig. 15b, e) Early Period is a form of polychrome pottery with the characteristic aligned white dots of the aforementioned Etzatlán early polychrome. More recently, Cabrero García and López Cruz (2007:241–43, table 1) have reported three shaft tombs from the site of El Piñon in northern Jalisco, which they radiocarbon-dated between AD 80 and 500. Beekman (2006:247) discusses radiocarbon dates from shell and bone collagen samples collected and submitted by Long from looted tombs at Las Cuevas.

Another site that produced useful data for our purposes is Tizapán El Alto. This large site is on the south shore of Lake Chapala and near the eastern border of Jalisco. Meighan and Foote (1968) excavated a small portion of a mound there that was 300 m long and contained midden to a depth of 2.4 m. At Tizapán El Alto, engraved polychrome occurs deep in the deposits, but white on red sherds become plentiful only above the depth of 1.2 m (Meighan and Foote 1968:table 7). As depicted in the publication, however, this Cojumatlán White on Red

pottery has painted designs dissimilar to both those of Santiago White on Red and the Etzatlán type, White on Red, Complex.

Schöndube (1994:110–12) conducted a large-scale survey and test-excavation program in southeastern Jalisco. He identified engraved polychrome sherds in his material that he saw as similar to and contemporaneous with early Tizapán El Alto counterparts discussed previously. Schöndube's (incised) Cojumatlán Polychrome, as illustrated, appears quite similar to the Incised Polychrome type from Etzatlán. Incised polychrome sherds also occur occasionally in components of the Amacueca phase, estimated to date between AD 1100 and 1532. (Ramírez Urrea 2005:323, 309). Sites of this phase are located in the Sayula basin, south of Lake Chapala, Jalisco.

Another pertinent finding from Tizapán El Alto has to do with comal sherds. Very few sherds from comales were found there, and those identified had upturned rims. By contrast, the large quantities of comal sherds from the four Etzatlán sites are from griddles that were essentially flat across their diameters. This evidence suggests that occupation at Tizapán El Alto ended before the adoption of the true comal and possibly before the manifestation of this vessel form at Etzatlán. Comal use appears to have been rare also at Amapa (Meighan 1976:140) as well as at the site of Cojumatlán (Lister 1949:46). The latter is not far from Tizapán El Alto on the shore of Lake Chapala, and occupation of the two nearby sites was in part synchronous (cf. Meighan and Foot 1968).

Meighan and Foote obtained four radiocarbon dates for Tizapán El Alto, three of which were internally consistent. All three of these dates were corrected through tree-ring calibration (Taylor and Berger 1968). From these, Meighan and Foote (1968:36–37, 120) estimated that the entire occupation of the site dated between AD 1000 and 1250 and that the later of their ceramic phases, when white on red pottery was in use, dated between AD 1100 and 1250.

All of this information suggests the following for the Etzatlán pottery under investigation: it represents occupations beginning at least by ca. AD 900 and possibly as early as AD 250. After AD 900, Incised Polychrome became an important decorated type. White on Red, Complex (type 17) pottery became popular in the vicinity after AD 1100, and the widespread use of comales did not begin until sometime after AD 1250. Following that development, Huistla Polychrome made its appearance.

At Las Cuevas and Anona, occupation may well have continued unbroken into the historic era, given the relatively early appearance of historic Majolica pottery (type 41) at these sites. Majolica and evidence for the continuation of indigenous types into historic times will be discussed in a later section of this chapter. Santiaguito, as indicated in chapter 4, shows the same range of major types and also yielded Majolica sherds, so Postclassic to historic occupation is indicated for that site as well. An even earlier Classic period occupation at Santiaguito is suggested by a few sherds of the type Polychrome, White Dots (seven sherds, .24 percent of the classified collection).

Finally, Glassow (1967) described much the same pottery through a comparable typology at Huistla, another site Long and Glassow excavated and located on the southwestern edge of Etzatlán (see fig 1-4). Huistla Polychrome (including bowls and molcajetes), red and buff pottery with banded and complex designs, incised polychrome, white on red sherds, and comales are all represented. We would ascribe the same time range to this material as well.

The Prehistoric/Historic Interface at Etzatlán

Abrupt Culture Change

Throughout the Etzatlán ceramic sequence, we have relatively little evidence that culture change was transitional, that early forms gradually gave way to later types through time. This process can be seen most clearly when type distributions are compared on a site-by-site basis. Table 7-1 deals with fourteen early pottery types and seventeen late types that were not included in the original three-site CA. As defined here, early types have median CAvalues of less than .5, and late types have median CAvalues greater than .5; Majolica-type sherds were excluded from the table. As can be seen, only 4.5 percent of sherds from the early site of Tiana were classified into late categories. There seems to have been no autochthonous development of these later types or the cultures they represent within the Etzatlán region, and since the Majolica type has median and mean CAvalues just below .5 (see table 5-23), the migration of new population(s) into the Etzatlán basin sometime around the onset of Spanish influence seems a reasonable possibility.

Majolica Pottery and Historic Occupation at Etzatlán

In our ceramic analyses, the type historic Glazed Majolica (41) apparently is not the latest in the sequence, nor does it show a typical late distribution, with a pronounced negative skewness value, which would be expected if Majolica sherds had been scattered over the site following termination of the indigenous occupation. In fact, Majolica sherds show a more or less normal distribution (fig. 7-1), and some indigenous types are clearly later in terms of (original three-site) CAvalue. Differences here are statistically significant (tables 7-2 and 7-3). The position of Majolica sherds compared with those of other late types is depicted in figure 6-10, which shows type distributions on the CA grid for the CA40 analysis. It also can be seen in figure 6-11, which includes late types plotted in terms of both original CA medians as well as CA40

Table 7-1: Indigenous types not in original CA by time and site

Age	**Anona**	**Las Cuevas**	**Tiana**	**Total**
Early	172 45.5%	817 46.3%	490 95.5%	1479 55.7%
Late	206 54.5%	949 53.7%	23 4.5%	1178 44.3%
Total	**378**	**1766**	**513**	**2657**

Table chi-square = 409.201
Probability level = ***

Table 7-2: Huistla Polychrome (7) and Glazed Majolica (41) by type and CAvalue

CAvalue	**Type 7**	**Type 41**	**Total**
> .804	51 59.3%	9 19.6%	60 45.5%
< .804	35 40.7%	37 80.4%	72 54.5%
Total	**86**	**46**	**132**

Table chi-square = 19.08706
Probability level = ***

Table 7-3: Huistla Polychrome (21) and Glazed Majolica (41) by type and CAvalue

CAvalue	Type 21	Type 41	Total
> .621	154 62.9%	19 41.3%	173
< .621	91 37.1%	27 58.7%	379
Total	**245**	**46**	**291**

Table chi-square = 7.4627
Probability level = **

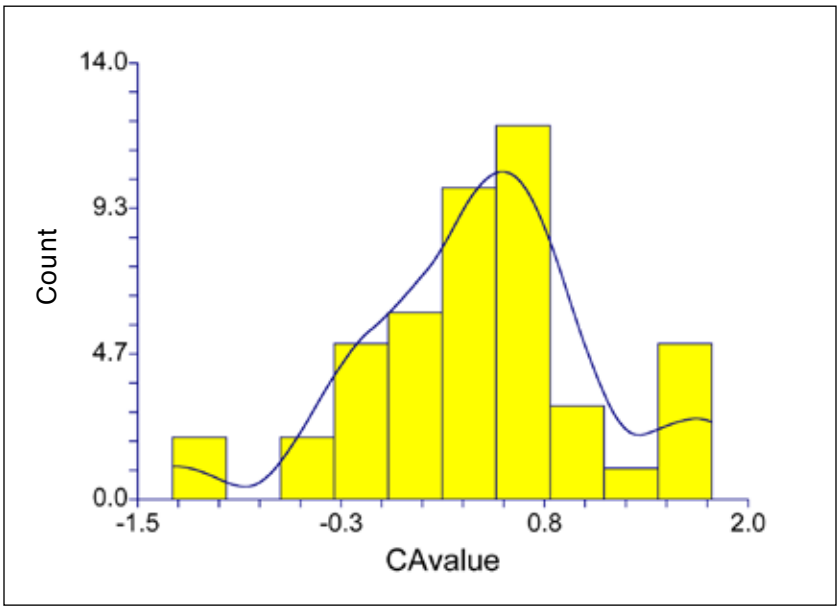

Figure 7-1. Historic Majolica ware by CAvalue.

x-axis values. Most types represented here have later chronological positions than does Glazed Majolica (type 41), including all five of the Huistla Polychrome types included in the CA40 analysis.

Before discussing the implications of these findings, we should consider the Majolica sherd distributions in more detail. With only forty-six Majolica sherds in the seventy-four lots studied, sampling error might seem a reasonable way to account for the type's early position. However, these sherds derive from twenty different lots from two sites—two from Anona and eighteen from Las Cuevas—so the relatively early peak does

not seem to result from a chance broken pot or two. The near-normal distribution also suggests that this chronological placement within the sequence is accurate.

Figure 5-21 summarizes the distribution of all classified potsherds from the three sites of Anona, Tiana, and Las Cuevas in terms of original CAvalue. The highest bar is just to the right of the 0.5 hatch mark. We can focus on the two sites with Majolica pottery, Anona and Las Cuevas (figs. 7-2 and 7-3). For both sites, the highest peak is in the same position, just above the 0.5 mark. Since the Majolica type has a mean of .47 and a median of .45, and assuming that potsherd frequencies can serve as a rough index for occupational intensity at these sites, our data suggest that the greatest amount of activity at these specific localities occurred after the beginning of the historic—not during the prehistoric—era at both Anona and Las Cuevas. Moreover, our data indicate that Huistla Polychrome types (7, 8, 19, 20, 21 in the CA40 analysis) all continued into historic times (after the Majolica peak) at Etzatlán, during which represented ceramic forms continued to evolve. For example, grater bowl type 7 is significantly later than type 8 (see table 5-3). As a matter of fact, these data do not clearly show that Huistla Polychrome was present in the vicinity of Etzatlán prior to the conquest. The box plots in figure 7-4 indicate that Huistla Polychrome types tend to extend into earlier lots than the Majolica, suggesting a prehistoric arrival for the former. But, as discussed previously, Majolica is earlier in the CA40 two-dimensional plot and tends to be significantly earlier in the sequence when compared with these types in chi-square tables, as in tables 7-2 and 7-3.

Other evidence that indigenous pottery was at least in part contemporary with Majolica comes from the Santiaguito statistical outlier discussed in chapter 4.

Also, and more subjectively, several of these types can be interpreted as representing a deteriorated form of the indigenous production system that developed under the pressures of acculturation. This interpretation is suggested by the Huistla Polychrome type Red and Black on Buff, Complex (Unique) (type 20), where instead of the carefully painted parallel black and red stripes found on the earlier type 21, designs are more free-form and executed in a casual or sloppy manner. Sherds of the Huistla Polychrome grater bowl type Red and Black on Buff, Complex (type 7), are marked by an additional black zigzag motif

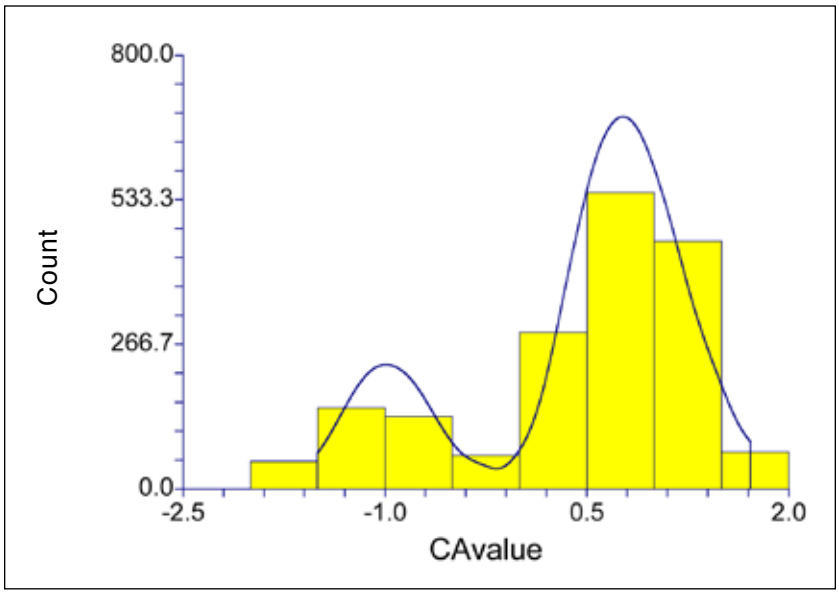

Figure 7-2. Distribution by CAvalue, all potsherds from Anona.

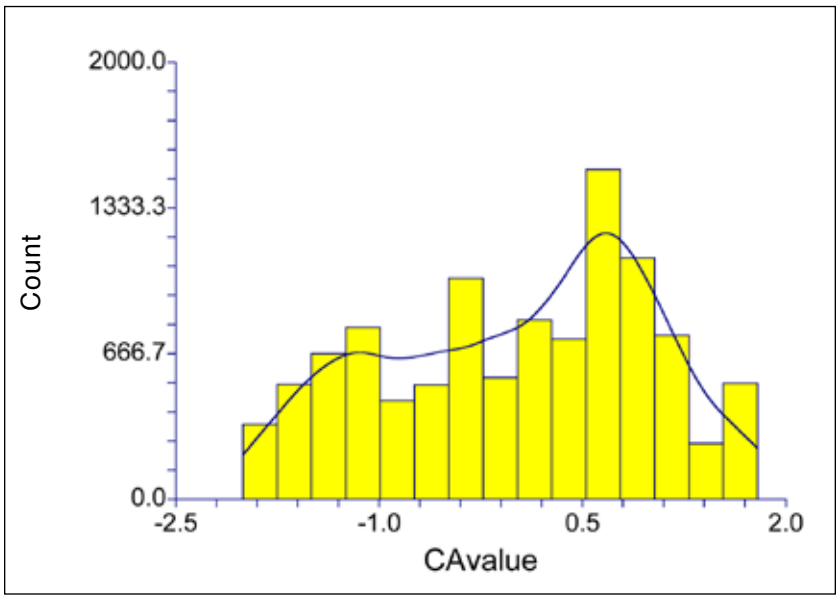

Figure 7-3. Distribution by CAvalue, all potsherds from Las Cuevas.

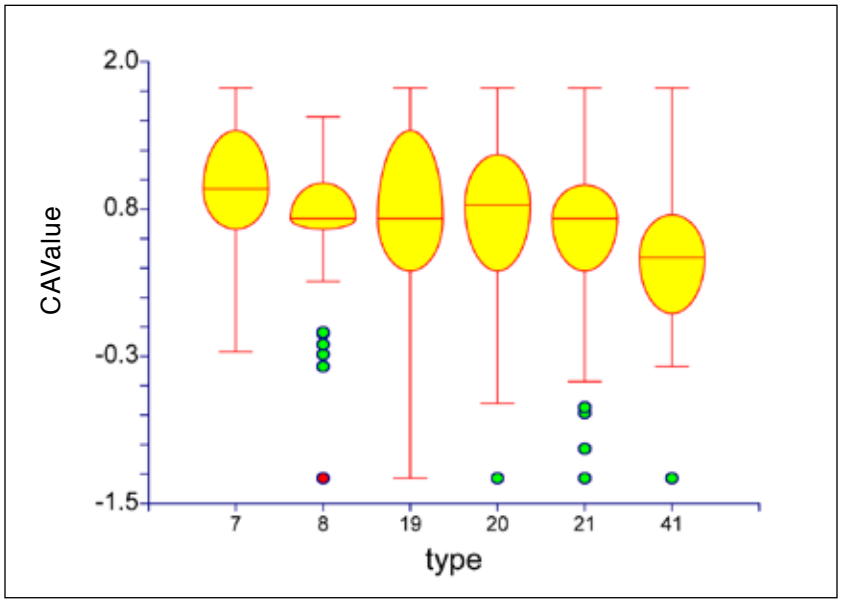

Figure 7-4. Huistla Polychrome and Glazed Majolica (41) types, CAvalues by type.

encircling the rim instead of the regular black and red parallel stripes of the earlier form (type 8). This motif does not seem to represent a normal development from the very simple and conservative design depicted uniformly on the earlier type. In these cases, one is reminded of the early historic type Ocmulgee Fields Incised, defined for Georgia in the southern United States, with its poorly executed incised and punctated decorations (Fairbanks 1956:48–49, plate 25).

Before turning to the ethnohistorical literature, we would like to point out the limitations of our archaeological data, as they pertain to the prehistoric/historic transition. First, we have no independent evidence that indigenous ceramics in fact persisted into the historic era, beyond the trends we have described. Second, it is difficult to say exactly what the increased quantity of "historic period" sherds along the CAvalue scale actually means. For example, it could simply mean more intense use of pottery by the early historic populace, compared with that of their late prehistoric progenitors. Alternatively, it could

indicate that the historic occupation represented by the Huistla Polychrome tradition persisted longer than its prehistoric counterpart. Finally, it could represent a population increase at the sites during the early historic period. A third general problem is that while this study deals with many potsherds, they came from relatively small areas of only two sites among the many in the Etzatlán vicinity. What happened locally might not be representative of regional trends. As a matter of fact, more compact settlements in early historic times, as suggested by higher densities of potsherds, do not necessarily indicate larger or more populous communities, which is especially true in this case, since we are unable to discuss the relative sizes of either of these two settlements as site boundaries expanded or contracted through time.

Zooarchaeology

Another source of information is the study of faunal remains from these same Etzatlan sites. Porcasi (2012) identified the bones of European-derived domesticated animals in her study collections, most of which came from excavation units that produced pottery we studied and most aligned chronologically through the CA for animal bones, as described in chapter 4.

Four identified bones from Anona were of cattle (*Bos taurus*) and one was of sheep (*Ovis aries*), together constituting 2.4 percent of the NISP (number of identified specimens) site sample (Porcasi 2012:table 4). The site of Santiaguito likewise produced twelve cattle bones and one sheep bone, 4 percent of the NISP site total (Porcasi 2012:table 7). As described previously, ceramics from Santiaguito were not included in the basic three-site analysis we have described. Nevertheless, we did classify much of the pottery excavated from the site, and this allowed us to include some lots from it in the CA for animal bones (chapter 4). As mentioned in chapter 4, the presence of historic occupation at Santiaguito is indicated not only by these domesticated animal remains but also by the recovery of Majolica type (41) sherds. Finally, Porcasi (2012:table 10) identified twenty-eight cattle bones from Las Cuevas, 2.7 percent of the site NISP total. By contrast, the site of Tiana yielded no bones of these domesticated species, no Majolica sherds, and very few potsherds of other late types at Etzatlán. These faunal data support the idea of historic-era occupation at the three sites in question. The

same is true of the distribution of bones, which fell into lots included in the CA for animal bones, bones to which Porcasi could assign relative chronological positions. Bones of non-native taxa tend to be relatively late in the CA for animal bone sequence compared to others (Porcasi 2012:table 13).

Ethnohistory

With all of this evidence in mind, we can search the ethnohistorical literature for information that might help explain these archaeological findings. The *Suma de visitas de pueblos por orden alfabético* (Paso y Troncoso 1905) is an anonymous summation of demographic and economic statistics probably compiled in 1546 or 1547 (Kubler 1942:618) for about nine hundred sixteenth-century towns in Mexico, including Nueva Galicia. In the *Suma*, Etzatlán (Yçatlan) is briefly described in two different entries. In one, Etzatlán and its satellite towns of Atitlán or Las Cuevas (Atitique), Tezontepeque (Teçontepeque), and one other (Atinque) are included (Paso y Troncoso 1905:135). These towns are described as having good land and abundant resources. Fishing is mentioned for the three satellite towns, including the island town of Atitlán. The populace for Etzatlán was differentiated into those who pay taxes (712 persons), those who do the work of the church (100 married men), and the 350 people who do not pay taxes. The overall Etzatlán population, according to this first *Suma* entry, was 1,262. Taxpayers (*tributarios)* were responsible for providing four blankets (mantas) and 2.5 pesos worth of gold dust every two months. In addition, each year they were taxed 320 fanegas of corn (possibly 500–512 bushels). The second entry is relatively brief and more general, describing the population of Etzatlán (both the town and surrounding settlements) as 1,310 (married) men and 376 bachelors. It mentions the lake with its quantity of fish and two islands (Paso y Troncoso 1905:126). We have, then, evidence for a continuing indigenous occupation of Etzatlán at least through one generation following the conquest.

In the earlier Cerezo/Coría account (chapter 1), we find a population estimate for Etzatlán of 600 men or, by extrapolation, 1,200 adults. Taking both accounts at face value, they in themselves suggest a somewhat stable population at Etzatlán between 1525 and 1546. For Atitlan or Las Cuevas, these estimates are 1,000 (in 1525) versus 650 (in 1546) and for Tezontepeque, 240 (1525) versus 238 (1546). Weigand (chapter

1) points out the difficulties in assessing the validity of such estimates, and the continuity suggested by these two early accounts may mask demographic volatility during decades following the conquest. Tello (1968:129) describes Tarascan mercenaries, brought to the province of Etzatlán by Nuño de Guzman in 1530, harassing, maltreating, and killing residents and burning towns over a lack of provisions (also, see chapter 1 on the Antonio de Mendoza occupation of Etzatlán in 1542).

Our archaeological findings suggest at least the possibility of a population increase in historic times at Anona and Las Cuevas, an idea these early written sources fail to support. However, we can say that for the Laguna de Magdalena basin, such a population rise at some communities in the early historic period is not beyond the realm of possibility. Kubler (1942) published population estimates for 156 sixteenth-century encomiendas in Mexico. For most, estimates were taken at three intervals, 1546–1547 (from the *Suma*), 1569–1571, and 1595–1597. Most of these communities, especially in the Archbishopric of Mexico and in Michoacán, showed population increases from 1546–1547 to 1569–1571 and then a marked decline from 1569–1571 to 1595–1597 (Kubler 1942:table I and fig. 2). Such may have occurred in Etzatlán and/or some surrounding communities as well.

Finally, we are left with the decline of Etzatlán and subsidiary towns, which seems to mark "the end of occupation" in our archaeological sequence. In the *Pintura del nuevo reino de Galicia*, dating to around 1542, and the *Ortelius* map of 1579 (see figs. 1-1, 1-2), the convento of Etzatlán, adjacent lake, and island towns are all featured in exaggerated scale. These maps indicate the importance of Etzatlán in colonial West Mexico prior to 1580. The situation, however, was soon to change. Cook and Borah (1971–1979:table 1, region IX, pt. A), employing tributary lists, estimate the 1568 Indian population of Etzatlán at 2,291, while a second estimate, based on a 1646 list for the same community, indicates a decline to around 626. In his 1621 *Descripción de la Nueva Galicia*, Domingo Lazaro de Arregui (Chevalier 1946:70) writes many town sketches but makes only a single mention of the pueblo of Etzatlán (Izatlan). The accompanying map includes "YZatlan," but neither the large convento nor the lake with its islands and satellite towns are depicted. Evidence of widespread and devastating disease epidemics with concomitant population loss is ample in the *Relaciones geográficas del siglo XVI: Nueva Galicia*, dating between 1579 and 1585 (Acuña

1988). Forced labor and the high tax load described previously must have taken their tolls as well. (See chapter 1 on the decline of Etzatlán.)

Contrasting Perspectives

Two co-authors of this work, Weigand (in chapter 1) and Nance (in this chapter), have included different narratives involving ethnohistorical accounts and the archaeology of Etzatlán. Weigand sees a large Postclassic population persisting to historic contact but then declining rapidly following the conquest. He bases this on his own archaeological surveys in Etzatlán and the vicinity as well as the ethnohistorical account of Tello and other sources. Nance sees more occupational activity in early historic times, compared with the Late Postclassic, when considering ceramic data from Las Cuevas and Anona. This view of changing settlement patterns around Etzatlán is admittedly very limited, as indicated previously, but it does at least point to the existence of early historic communities in the vicinity. Coupled with the ethnohistorical sources mentioned, the picture is one of substantial, mainly indigenous towns continuing a generation or more following the conquest.

Nance and Weigand agree that major population decline occurred following the conquest in West Mexico. The issue raised by the ceramic research reported here is how and where indigenous survivors redistributed themselves (or were redistributed by the Spanish) during early decades of the historic era. It seems likely that the matter can be explored effectively through future archaeological research. Certainly, excavation of early colonial structures should clarify whether or not they contain historic forms of Huistla Polychrome. Weigand spent decades examining approximately 41 km of trenches through the current town of Etzatlán that were dug during public works projects. Extending the typology developed here to the many thousands of collected potsherds from these trenches should provide more definitive information about the relative sizes of the late prehistoric and earliest colonial communities in Etzatlán.

The Ceramic Sequence at Etzatlán: A Final Comment

What, in summation, can be said of the ceramic sequence we have developed for Etzatlán? The proposed sequence has mainly to do with the Postclassic and historic eras. One clear finding involves the striking parallels we identified between Amapa and Etzatlán during the Cerritos

phase, defined for Amapa and dating between AD 900 and 1100. The site of Amapa is 16 km from the Pacific coast in central Nayarit and about 165 km northwest of Etzatlán as the crow flies. As we have indicated, the typological similarities are so detailed that they suggest close cultural ties between Etzatlán and communities in that direction during this period.

After the Cerritos phase, we identified only one clear tie with Amapa, White on Red, Complex (type 17), and its Amapa counterpart, Santiago White on Red. Otherwise, ceramic affinities in that direction become less distinct. At Etzatlán, comales become an important utility form, and the dominant form of decoration involves red-painted designs on cream or buff backgrounds. In the CAs for Las Cuevas, Anona, and, to some extent, Santiaguito, we find a cluster of types postdating those of the Cerritos phase as well as predating another grouping of types, including those labeled Huistla Polychrome, at the late end of the sequence. These types include Red on Cream, Thin Parallel Lines (22); Red on Cream, Broad Parallel Lines (23); Grater Bowls, Red on Cream (11) and Comales (2); Gray/Buff Slipped and Polished (5); and White on Red, Complex (17). It seems likely that this cluster of types, in whole or part, will emerge as a ceramic phase at Etzatlán, as archaeology there continues to evolve. These types, as distributed, appear to represent a manifestation of the Aztatlán ceramic complex, defined loosely by Bell (1971:699–700) for West Mexico.

Finally, we should consider the cluster of types at the end of the sequence. As noted previously, it is difficult to determine from our data when Huistla Polychrome entered the sequence, whether before or around the same time as Glazed Majolica pottery (type 41); that is, before or synchronously with historic contact. What these data do indicate, however, is that indigenous pottery types continued to evolve after the beginning of Spanish influence. We have mentioned possible effects of acculturation in Etzatlán pottery, specifically calling attention to two Huistla Polychrome types (7 and 20), but this impact might extend to other types as well, for example, to the two Black Crude Engraved types (45 and 46). However, one can see through both the Amapa and Etzatlán sequences a general shift from well-executed incising and engraving on early types to much cruder design renditions later in the sequence. It is hard to say at this point if we are looking here at a general cultural trend or the sudden impact of European influence.

Correspondence Analysis at Etzatlán: An Archaeological Perspective

Based on this study, we can regard CA as an effective technique for constructing site-specific ceramic sequences in West Mexico, at least for sites resembling those encountered by Long and Glassow. Such determinations through traditional means have never been easy, especially for large sites with earthen mounds and platforms surrounded by relatively flat habitation areas. Deposits in intermound areas can be loaded with cultural debris but also can be relatively shallow and tend to be mixed. Archaeologists in the past have excavated deep pits through platforms or mounds in order to capture local sequences stratigraphically, but such projects are expensive and time-consuming. Also, one might be left with a large well-stratified sample, but one not entirely representative of the site as a whole.

The work of Long and Glassow and our study of ceramics from their excavations suggest that such intermound deposits are mixed, but only to a point, and that detailed ceramic sequences can be derived from them through use of the computer and CA. We should add, however, that there is no need to depend on samples from scattered test pits. If one were to excavate more intensively, the strategy would be to select samples from undisturbed contexts covering the full range of pottery at the site (cf. McCafferty 2001:14). Through CA, these samples might also generate information having to do with cultural dynamics other than or in addition to chronology (see Nance et al. 2003).

If this study contains a cautionary note, it is that archaeology is not pure science by any means and that CA, a logically closed system, can only work with the data fed into it via the computer. In other words, ceramic types have their limitations as constructs, the classification of large groups of potsherds is not an entirely consistent enterprise, and archaeologists might have a very limited understanding of the data they are intending to analyze, especially at a study's outset. These problems may be reflected in the distributional "static" of types through the site sequence (e.g., type outliers discussed in chapter 4), and such effects are hard to isolate from those of site mixing or random fluctuation. They also are behind the difficulties we had in selecting types to include in the various CAs as the study developed. Selecting types on the basis of their covariation (correlation coefficients) among samples from Las Cuevas, based on type percentages by sample, cannot be deemed

a good procedure, statistically speaking. Lumping types together to increase sample size and then adding types discovered to vary in their stratigraphic positions at Tiana added subjective qualities to the selection process. When we simplified the selection process and generated additional CAs based strictly on type frequencies, essentially the same sequence of types materialized (chapter 6). Interestingly enough, the original three-site CA seems to remain the best at summarizing type distributions along the x-axis time line. This is not to claim, however, that we discovered the optimal combination of types to be employed in CAs of our data sets. Love (2002) confronted this same problem when selecting variables for sequencing ceramics through statistical seriation. His research involved pottery from a Middle Preclassic site near the Pacific coast of Guatemala.

Our research suggests that CA potentially could attain broad-ranging applicability in West Mexican archaeology and that it should perform well in a variety of circumstances. Essentially the same type progressions were produced from the many and large samples of Las Cuevas as well as the relatively few but still large samples of Tiana and Anona. The more eroded collection from Santiaguito, with many samples eliminated, produced a close approximation of the sequence. The CA for animal bones, which involves both large and small potsherd samples from all four sites, also manifested the same progression of types.

Finally, we can point to one benefit of our approach in which we have emphasized the seriation of pottery types over the ordering of samples with the aim of constructing ceramic phases. The distribution of individual types actually does support the hypothesis that we have been dealing with chronology—that the seriation is in fact along a time line. At Etzatlán, most early types have distributions skewed positively, that is, tailed to the right, while most late types have distributions skewed negatively, that is, tailed to the left. These distributions occur for many types not included in any of the CAs. Altogether, they are representative of the truncated battleship curves Ford (1952) found for types at the beginnings and ends of his seriated ceramic sequences, with data derived from stratified sites in the Lower Mississippi Valley.