Reinventing Mesoamerica’s First Pottery

The widely held belief that Mesoamerica’s first pottery originated in the central highlands of Mexico about 2300 b.c. springs from an uncritical acceptance of a few uncorroborated radiocarbon dates run in the 1960s. When these anomalous dates are removed from serious consideration, the picture that emerges of the oldest pottery in Mesoamerica is much more complicated than previously thought. At least three pottery complexes are known to have been present in Mexico by 1600 b.c., and possibly earlier, none of which can convincingly be related to local antecedents or to each other. Published data are currently available for two of these: the Purron pottery of the central highlands of Mexico and the Barra pottery from the coastal region of Chiapas, Mexico, known as the Soconusco. The striking differences between the plain Purron pottery of the highlands and the decorated Barra pottery of the coastal lowlands have given rise to two competing explanations concerning the origins of ceramic technology in Mesoamerica. These explanations represent, respectively, the notion of independent invention of the ceramic arts and the notion of direct borrowing. As we will discuss, neither explanation adequately accounts for the distribution of early pottery in Mesoamerica or in adjoining regions.

The best evidence for diffusion of ceramic technology is the overall distribution of the earliest pottery in North, South, and Central America, shown in Fig. 17.1 and Table 17.1. The earliest pottery is found in northern South America, and the earliest recorded pottery becomes increasingly younger as one moves northward from this region toward Mexico. The other expectation of diffusion is not met, however, because each adjacent early ceramic assemblage is stylistically different from its closest neighboring complex. The chronological progression of ceramic technology shown in Fig. 17.1, coupled with the stylistic disparity of neighboring assemblages, suggests that the standard, dichotomous possibilities of diffusion and independent invention of the ceramic arts should be reconsidered, because neither explains the extant data.

The reliable evidence for early pottery in Mesoamerica, we think, suggests a third process that involved what David Kelley (personal communication to Clark, 1992) calls “dependent invention.” This variant of stimulus diffusion involves the acceptance of ideas and technical knowledge by a borrowing group and the technology’s rapid application and modification in ways foreign to its use by the donor group. In archaeological time, the rapid transformation of technology is essentially instantaneous, thus making its
specific source difficult to trace. Our ambiguous title refers to this process of dependent invention or rapid “reinvention” as well as to the current need to reconsider the “Tehuacan myth” of independent ceramic origins in the highlands of Mexico. In the following discussion we briefly consider the question of early ceramic dates and then pursue the implications of our analysis of the various early Mesoamerican ceramic complexes. We focus principally on the origins of Barra pottery from the Pacific coast of Chiapas and argue that the reinvention of ceramic technology must be seen in its social and political context.

A Reconsideration of Early Ceramic Dates

When one considers critically the absolute dates available for the earliest pottery in Mesoamerica, the number of primary contenders can be reduced to three. Contrary to popular misconception, the early “Pox” pottery from Puerto Marquez, Guerrero, can be dismissed or subsumed under the better-known Early Ajalpan pottery from Tehuacan Valley and the Tierras Largas pottery from the Valley of Oaxaca. Pottery from all three assemblages is technically, stylistically, and formally similar (Brush 1965; Coe 1964; Flannery and Marcus 1994:59; MacNeish et al. 1970; Marcus 1983).

Pocked pottery from layer 33 of Brush’s single test pit at Puerto Marquez was dated to 2440 ± 140 b.c. An aceramic date of 2940 ± 130 b.c. was obtained from layer 38 (Brush 1965:149), thus suggesting stratigraphic consistency for the date of the earliest ceramics in level 33. However, a third date from layer 35, left out of the Science article but mentioned in the thesis, dates the late preceramic horizon to 2250 ±
135 b.c. (cited in Johnson and MacNeish 1972:Table 9; MacNeish et al. 1970:22; Voorhies 1976:6). The inconsistency of these two dates from upper levels, the arbitrary selection of the early date over the later date, and the fact that the single date for the potted pottery came from the lowermost ceramic level and from shell (i.e., material in probable contact with the underlying aceramic levels) all suggest that we should not accept the early date for “Pox” pottery at face value. There is no reason to assign a date earlier than 2000 b.c. for this pottery (the lower one-sigma range for the date from level 35), and it would be considerably later if an Archaic shell from a previous occupation was dated. Marcus (personal communication, 1994) suggests a date of 1300 b.c. for the Puerto Marquez pottery based upon its similarities to Tierras Largas pottery.

The Purron phase dates from 2300 to 1500 b.c. and is the phase that witnessed the origins of pottery (MacNeish et al. 1970:21). Uncritical reading of the Tehuacan data has fostered the widespread and unwarranted view that Purron pottery dates to 2300 b.c. (see Hoopes 1992 for an excellent comparative summary). The Purron phase is the most poorly dated phase of the Tehuacan sequence, and determination of its beginning and ending dates involved considerable conjecture, including, among other things, the proposed date for the “Pox” pottery (Johnson and MacNeish 1972:24–25; MacNeish et al. 1970:22). Only 127 sherds were found in the two components (K and K1) from Purron Cave that provided the basis for defining this ceramic complex. Two radiocarbon dates from component K provided a mean date of 1925 ± 131 b.c. for 67 sherds, and four pooled radiocarbon dates for the overlying component K1 provided a mean date of 1531 ± 91 b.c. for another 60 sherds (MacNeish et al. 1970:21). This suggests an uncalibrated range for Purron pottery of 1900 to 1400 b.c. (see Flannery 1983:28; Marcus 1983:42).

The recent identification at San José Mogote, Hacienda Blanca, and Tierras Largas, Oaxaca, of Espri-

Table 17.1. Radiocarbon Dates for Early Ceramic Assemblages in North, South, and Central America

<table>
<thead>
<tr>
<th>No.</th>
<th>Region/Phase</th>
<th>No. Dates</th>
<th>Oldest Date (Years b.p.)</th>
<th>Average Years b.p.</th>
<th>Calibrated Age B.C.†</th>
<th>Intercept Mean b.c.</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Brazil/Taperinha</td>
<td>6</td>
<td>6980 ± 80</td>
<td>6826 ± 35</td>
<td>5693–5626</td>
<td>5671</td>
<td>Roosevelt et al. 1991</td>
</tr>
<tr>
<td>2</td>
<td>Colombia/San Jacinto</td>
<td>1</td>
<td>5700 ± 430</td>
<td>5700 ± 430</td>
<td>5055–4043</td>
<td>4530</td>
<td>Oyuela 1987</td>
</tr>
<tr>
<td>3</td>
<td>Colombia/Puerto Hormiga</td>
<td>6</td>
<td>5300 ± 80</td>
<td>5025 ± 38</td>
<td>3931–3775</td>
<td>3794</td>
<td>Reichel-Dolmatoff 1985</td>
</tr>
<tr>
<td>4</td>
<td>Ecuador/Valdivia</td>
<td>28</td>
<td>5275 ± 175</td>
<td>4516 ± 22</td>
<td>3335–3104</td>
<td>3200</td>
<td>Damp 1984</td>
</tr>
<tr>
<td>5</td>
<td>Peru/Pandanche</td>
<td>2</td>
<td>4018 ± 80</td>
<td>3955 ± 77</td>
<td>2563–2335</td>
<td>2460</td>
<td>Kaulicke 1981; Hoopes 1987</td>
</tr>
<tr>
<td>6</td>
<td>Venezuela/La Gruta</td>
<td>4</td>
<td>4090 ± 106</td>
<td>3864 ± 45</td>
<td>2452–2206</td>
<td>2320</td>
<td>Rouse and Allaire 1978</td>
</tr>
<tr>
<td>7</td>
<td>Panama/Monagrillo</td>
<td>14</td>
<td>4800 ± 100</td>
<td>3750 ± 24</td>
<td>2191–2050</td>
<td>2140</td>
<td>Cooke 1984</td>
</tr>
<tr>
<td>8</td>
<td>Costa Rica/Tronadora</td>
<td>4</td>
<td>3730 ± 100</td>
<td>3560 ± 52</td>
<td>1946–1779</td>
<td>1890</td>
<td>Hoopes 1987</td>
</tr>
<tr>
<td>9</td>
<td>Mexico/Barra</td>
<td>9</td>
<td>3570 ± 110</td>
<td>3398 ± 36</td>
<td>1738–1637</td>
<td>1682</td>
<td>Blake et al. n.d.</td>
</tr>
<tr>
<td>10</td>
<td>Mexico/Purron</td>
<td>4</td>
<td>3725 ± 180</td>
<td>3483 ± 90</td>
<td>1900–1680</td>
<td>1805</td>
<td>Johnson and MacNeish 1972</td>
</tr>
<tr>
<td>11</td>
<td>Mexico/Chajil</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>c.1600–1400</td>
<td>1600?</td>
<td>Castañeda Z. 1992</td>
</tr>
<tr>
<td>12</td>
<td>Southeast U.S./Savannah River</td>
<td>9</td>
<td>4465 ± 95</td>
<td>4272 ± 37</td>
<td>2911–2880</td>
<td>2888</td>
<td>Sassaman 1993</td>
</tr>
<tr>
<td>13</td>
<td>Southeast U.S./Orange</td>
<td>3</td>
<td>4210 ± 60</td>
<td>3937 ± 35</td>
<td>2466–2364</td>
<td>2459</td>
<td>Russo 1992</td>
</tr>
</tbody>
</table>

Note: Numbers in first column refer to Fig. 17.1.
* Represents number of dates associated with earliest ceramic phase.
†Calibrated using Calib program version 3.0 using bicald dataset at one-sigma confidence interval (Stuiver and Pearson 1993).
dition pottery (Marcus 1983; Ramírez 1993), a local variant of Purrón Plain, corroborates the early date for Purrón pottery. Although no dates are available for the 262 sherds identified at San José Mogote with this Oaxaca assemblage, Espiridión sherds are antecedent to Tierras Largas ceramics that are securely dated to 1400 to 1150 b.c. (Drennan 1983:364; Flannery et al. 1981; Flannery and Marcus 1994; Ramírez U. 1993). This suggests an ending date for the Espiridión Purrón pottery of 1400 b.c., a conclusion that fits well with the dates from component K1 of Purrón Cave. The beginning date for the Purrón ceramic complex is placed at 1900 b.c., but considering the small size of the extant collections and the one-sigma ranges of the available dates, an upper limit of 1650 b.c. (the rounded average of all six dates) seems more reasonable. As Lowe (1971:219) argued: "It would seem much more to the point to emphasize that these Purrón vessel forms are the same as those of the Early Ajalpan phase which follows. If we move these few pieces of Purrón pottery toward the late end of this tremendously long phase (they can hardly span all 800 years of it!), then there seems little need to project any meaningful gap between them and the beginnings of the Early Ajalpan subphase."

Until more data are forthcoming, we will consider the Purrón and Espiridión pottery as variants of the same early complex of simple highland pottery that dates from 1650 to 1400 b.c. The technological and stylistic continuity of these early assemblages with those that follow in each region (Early Ajalpan and Tierras Largas) supports this view of highland ceramics (see Flannery and Marcus 1994). All this is to suggest that these early highland ceramics are not as ancient as commonly thought.

One implication of the revision proposed here is that highland Purrón and Espiridión pottery was contemporaneous with the sophisticated Barra pottery of the Pacific coast of Chiapas, Mexico (see Ceja 1985; Lowe 1975). Considering our research focus, this implication can easily be interpreted as self-serving revisionism, but we think any dispersive view of the extant data would arrive at a similar conclusion. Purrón ceramics may be slightly earlier than Barra ceramics, but not significantly so, and both complexes were clearly contemporaneous for several centuries. Our recent work on the Chiapas coast has resulted in a revision of the Early Formative phase sequences there. Based upon 11 uncalibrated radiocarbon dates, we now place the Barra phase at 1550 to 1400 b.c. (overall mean date of 1448 ± 36 b.c.). It is important to note that 20 radiocarbon dates for the following Locona phase (1400 to 1250 b.c.) leave little room to negotiate the terminal date of the Barra phase, although the beginning date is an open question. Given the dating of Late Archaic deposits, a beginning date before 1800 b.c. for the Barra phase is highly unlikely (see Blake et al. n.d. for a summary of the chronology).

The third candidate for early pottery comes from northern Veracruz. Few data are yet available for the Chajil complex and phase (Castañeda Z. 1992), but the initial radiocarbon dates for the following phase suggest contemporaneity of the Chajil complex with the Purrón and Barra complexes; stylistically, however, the thin, carefully painted Chajil pottery (predominantly deep bowls and necked jars) is unlike anything else in Mesoamerica (Castañeda Z. 1992; cf. Ekholm 1944; MacNeish 1954, 1958; Merino and García Cook 1987).

In summary, at least three early pottery sequences have been documented for Mesoamerica. The highland Purrón-Espiridión complex and the lowland Chajil complex appear to have been coeval with the lowland Barra complex. It appears unlikely that any of the three complexes derived from or was significantly related to the other two. We suggest that all three pottery complexes result from different lines of "dependent invention." The patent differences among these early ceramic complexes may derive from (1) differences in the reasons for the initial adoption of pottery vessels in each region, (2) different perishable container prototypes, and perhaps (3) significant differences in the social and political settings. In the following discussion we explore these possibilities by focusing on the Barra complex from the Soconusco.

**The Barra Complex**

Analysis of Barra pottery recovered in our recent excavations in the Mazañtán region of coastal Chiapas, Mexico, generally confirms Lowe’s (1975) and Ceja’s (1985) earlier evaluations of this early ceramic complex. Other than a small proportion of relatively coarse, buff vessels (these are extremely elaborate but are slipped only on the red rim-band and sometimes on a basal band), all Barra vessels are finely slipped and highly burnished. Besides the small grooved red vessels described by Lowe (1967, 1975), we found tall orange fluted vessels, a variety of bichrome neckless jars, or tecomates, and numerous burnished brown bowls (Fig. 17.2). Bichrome vessels include red-on-buff, red-
on-white, black-on-orange, black-on-red, and black-on-white. Black paint is confined to thin line designs and appears somewhat fugitive; other colors and hues are from highly burnished slips. We have also recovered numerous trichrome sherds (black, red, and white or buff; black, red, and orange), but these easily erode into bichromes because of the poor preservation of the fugitive black. Brown, red, orange, and white monochromes predominate, with gray and black monochromes being rare. Bichrome and trichrome decorations comprise less than 10 percent of the Barra assemblage. Small tecomates and simple, flat-bottomed, incurved bowls are the most common vessel forms. Open shallow bowls, dishes, and plates are not known for the Barra complex.

Cross-cutting all of these vessel forms are a variety of surface decorations. Deep, multiple, parallel-line incising, fluting, grooving, gadrooning, lobing, squashlike segmentation, zoned cross-hatching, and zoned punctuation in a variety of geometric designs occur. Indeed, an unmodified surface on a Barra sherd is unusual. Stick-punctate, zoned designs are present, but rocker stamping is absent. All the Barra vessels were thin-walled, with coarse sand temper, and were fired at high temperatures. Fire clouding is infrequent.

The Origins of Pottery in the Soconusco

Both Coe (1960) and Lowe (1975) favored a southern origin for the spread of ceramic technology into the Soconusco. Many of the shared decorative modes that Coe (1960) documented between Ocós pottery from coastal Guatemala and Chorrera pottery from Ecuador are striking and could indicate a significant relationship. But Coe's hypothesis is adversely affected by the discovery of the earlier and more sophisticated Barra pottery in the Soconusco. In his study of the first sample of Barra sherds, Lowe (1967) noted some modal similarities between Barra pottery and pottery from Ecuador, Colombia, and Central America and argued for some kind of long-range diffusion or contact. But these similarities are much less convincing than those described by Coe for Ocós and Chorrera pottery. In comparing early ceramics from Costa Rica and the Intermediate Area, Mesoamerica, and South America, Hoopes (1987:3) notes that “even the most general patterns [of tecomates] display at best distinct stylistic ‘spheres’ rather than a modal ‘fall-off’ from a center of precocious development.”

Lowe (1971:217, 221) has suggested four possibilities for the spread of ceramic technology to Mesoamerica. Ceramics could have been (1) introduced by immigrant people, (2) traded in as objects, (3) made locally by itinerant craftpersons, or (4) a result of diffusion of ideas about how to make and use pottery vessels. Lowe compared the Soconusco case with the Mexican highland case and suggested that the differences in the earliest assemblages may be due to different local traditions of perishable containers, different subsistence systems, and different needs for ceramic vessels. In both cases, technology could have been spread by a variety of means, with the spread of ideas being the most important.

The idea of ceramic technology diffusing to Mesoamerica from Central or South America has met mixed reviews among Americanists and continues to be a topic of some debate (see Marcus 1983). Many would see this pottery tradition as evolving indigenously, in either the highlands or the lowlands. Unfortunately, debate about ceramic origins has shifted attention from what may be equally important issues concerned
with social process and technological change and innovation. If pottery was brought in from elsewhere, why was it brought in and how?

In considering these questions, Lowe linked the “origins” question to larger issues of adaptation and social context. When the spread of ceramic technology is viewed as an option rather than as something that just happened, it seems clear that the adoption of this new technology was probably linked to the use and function of the ceramic vessels in question. If true, this link could explain the differences noted within Mesoamerica in the occurrence of the first ceramics in the highlands and lowlands and the character of each ceramic assemblage.

With the recent recovery of larger and more varied collections of Barra pottery in the Soconsuco, and with the realignment of ceramic types and complexes, it is clear that some of Lowe’s and Coe’s arguments should be revised. The striking similarities between some Ocós and some Chorrera pottery (in both form and decoration) are now problematical. The shared modes (such as striped iridescent painting on bowl interiors, fingernail gouging of vessel exteriors, and rocker stamping) are characteristic of Locona pottery and are slightly earlier (1400 to 1250 B.C.) than previously thought; recent research in Ecuador has shown that the Chorrera complex is younger than once thought (Burger 1992; Lippi 1993). The contemporaneity of the Barra and Machalilla complexes also appears to be in doubt. Barra is older and Machalilla is younger than once thought. The widening chronological gap makes it unlikely that there was a significant relationship between the two, and in any case, Barra ceramics now appear to be older than their supposed predecessors to the south.

Explanations of early Soconsuco ceramics have been polarized between the possibility of local development and that of site unit intrusion. In fact, neither model adequately explains the data in hand. Independent development within the Soconsuco has been dismissed for lack of credible local antecedents. On the other hand, possibilities of a site unit intrusion, trade of finished vessels, or stimulus diffusion of the ceramic arts seem minor given the limited similarities between Barra pottery and contemporaneous pottery to the south or north.

The Functions of Ceramic Vessels as a Clue to Origin

The fact that Barra ceramics do not appear to be obviously derived from earlier ceramics to the south or to result from local, in situ development suggests that we may be making inappropriate assumptions about the processes of invention, innovation, and reinvention of ceramic technology. If we place these processes in their likely sociopolitical context, we may be able to arrive at a more plausible model that can account for more of the data. In addressing the question of the spread of ceramic technology we assume that potential donors and borrowers each exercised a choice in the matter. Groups adopting this technology had the option of accepting it or rejecting it, or of selecting parts of the total package.

Lowe (1971:213) speculated that people “made pottery only when it was economically or socially essential to their survival in increasingly competitive situations.” This is to acknowledge that sufficient incentive was required on the part of the borrowing group. Lowe found incentive in the guise of population pressure. In his view, the spread of ceramic technology occurred only when ecological circumstances forced growing populations to accept it because of their increasing need to harvest and process more resources, such as corn and beans, more efficiently (see Brown 1989 for a critique of such adaptationist arguments). We think it equally plausible that the spread of ceramic technology was due to perceived opportunities for personal benefit and was not just a welcome escape valve from reproductive mismanagement.

The logical implication of Lowe’s argument is that pots were adopted as tools for processing food; pottery vessels allowed more efficient use of caloric resources. Thus, pottery technology should have been adopted at about the same time as, or slightly after, the first use of the foods in question or the first evidence for changes in the processing techniques for traditional foods. On the other hand, the hypothesis that ceramics were adopted for personal political advantage has no necessary a priori implications for the timing, content, or context of adoption. Clark and Blake (1994) argue that the first pottery vessels in the Soconsuco were used in competitive displays of ritual drinking among aggrandizers rather than as food-processing implements. We can evaluate the relative merits of these two hypotheses by considering the functions of the earliest vessels.

Clues to vessel function are evident in use-wear and breakage patterns, residues, and vessel form. In his initial study of Ocós pottery, Coe (1961:115) was unable to find clear evidence that vessels had been used for cooking. Analysis of tecomates from following phases, however, suggested that such vessels may have been used to steam food. The neckless jar form would be
ideal for this function. Coe and Flannery (1967:81) noted that the bases of some vessels were charred inside and outside, indicating that some boiling was done with very little water, probably indicating the vessels' use to steam food. Considering the formal similarities between Ocos tecomates and later tecomates, Coe and Flannery (1967:81) conjectured that earlier tecomates may have been used in the manner documented for the later vessels.

Lowe did not discuss the uses of Barra vessels but did allude to their possible use to store water or cook. With his focus on manioc as a possible staple for the early coastal groups of the Soconusco, he was interested in the absence of ceramic griddles, the one ceramic form that would have supported his argument. Following Coe (1961), Lowe suggested that manioc, if available, may have been eaten as dough balls or tamales. This possibility now seems unlikely because the basal fragments of Barra vessels we have recovered lack traces of thermal alteration from having been used in a fire.

The overall impression of Barra pottery is that of fancy vessels with a limited range of forms. Treatment of vessel exteriors is exhaustive and labor intensive, with no true plain ware being present. The range of vessel forms appears quite limited; the Barra complex lacks plates, dishes, shallow open bowls, or vessels that could be construed as utilitarian. All the vessels shown in Fig. 17.2 are tecomates or deep, round-sided bowls with restricted openings. They are clearly patterned after the gourd form, as noted by Lowe (1971). Storage and serving of liquids appear, on formal grounds, to be their most appropriate usages.

Other clues to vessel functions are changes in assemblage composition through time. The Barra assemblage appears formally more restricted than the following Locona assemblage. The Locona complex includes a wide variety of forms and treatments not present previously (see Clark and Blake 1994:Fig. 2.6). Tecomates and deep bowls continued to be important, but one sees for the first time vessels that approach “utilitarian” forms. The most obvious change from the Barra phase was the addition of plates, dishes, and wide, open bowls. The differences between these two assemblages are strong evidence that the restricted inventory of Barra vessels represents a similarly restricted set of uses and functions. It is worth mentioning here that the restricted Barra inventory is not a result of sampling problems favoring special contexts but considers all Barra deposits recovered from a range of contexts.

The quantity of fire-cracked rock in Barra and Locona deposits suggests that Late Archaic period cook-

ing techniques (roasting in pits?) continued into the Early Formative. It is highly significant that the frequency of fire-cracked rocks declined steadily throughout the Early Formative as the relative proportion of utilitarian tecomates increased, as shown in Fig. 17.3. These data suggest an inverse relationship between the different food preparation techniques and, thus, a probable replacement process of one by the other. This possibility is corroborated by a similar increase in formal grinding implements through time (Clark 1994). More importantly, these data suggest that the introduction of ceramic vessels during the Barra phase did not immediately affect the previous food-preparation techniques carried over from the Late Archaic period and that the transition to Early Formative food preparation techniques (boiling in pots) occurred over a period of several centuries. In short, modification of pottery technology to utilitarian ends appears to have occurred gradually, and well after the adoption of fancy pottery for other purposes.

Our expectation for Lowe's hypothesis is basically a utilitarian view of pots as tools to process food, probably by boiling; this expectation is not supported by the nature of the Barra vessels or use-wear traces, as Lowe himself has shown. As is apparent in Fig. 17.2, Barra vessels are functionally limited and stylistically appear not to have been appropriate for general food preparation. Lowe’s expectations are better met by the early highland pottery, as we will discuss later.

As a basis for an alternative hypothesis, we point to the following: (1) The limited form inventory suggests that Barra ceramic vessels were used in a restricted (or

![Fig. 17.3. Comparison of fire-cracked rock with the ratio of plain tecomates to bowls from the Mazatán region of coastal Chiapas, Mexico.](image-url)
specialized) way. (2) The vessel forms are functionally best suited for uses involving liquids with restricted access and minimum transport. (3) The technical quality and stylistic elaboration of these vessels further suggest an important and highly visible function within the society. (4) The labor and skill investment points to a function of these early vessels as "primitive valuables" or luxury goods. All of the foregoing lead to the strong inference that ceramic technology was not adopted in the Soconusco for pedestrian reasons of food preparation. The limited data for changes in cooking techniques in subsequent phases bolster this inference. Clark and Blake (1994) have suggested that these first ceramic vessels were special containers used to serve especially important liquids on special occasions, such as ritual drinking. In particular, they argue for chocolate, atole (a drink of ground corn and chocolate), or corn beer. There is no direct evidence to support these speculations at present, but we plan to evaluate the idea through residue analysis of some of the pottery.

Old Wine in New Bottles: A Model for Barra Ceramic Vessels

Two related questions about early pottery in lowland Mesoamerica not previously addressed are (1) what impact did the adoption of ceramic technology have on the borrowing society? and (2) how was it able to have such impact? For Lowe (and implied in Coe and Flannery's work), the significance was increased adaptive fitness; but this appears to be a clear case of the theoretical perspective overpowering the data. Our objection to this utilitarian explanation is brought out well in Lowe's own puzzlement: "One can well ask what these lagoon fishermen, peneplain farmers, and piedmont pioneers were doing with such excellent pottery" (Lowe 1971:223). Lowe leaves this question unanswered. We think they were "showing off" in contests for prestige.

Our explanation of early pottery has been informed by a model of social action and agency described elsewhere (Clark and Blake 1994). We assume that knowledge of ceramic arts was brought into the Soconusco region by local individuals and groups for their own purposes, which may have had little to do with how the donors of this technology were using it. We further conjecture that adoption of pottery involved a process of replacement of perishable containers with non-perishable containers. Since the range of containers and container functions need not have been the same between donors and borrowers, it would be naive to maintain that ceramic vessels in the two societies had to have been used in the same ways. All this is a prelude to the suggestion that ceramic technology, vessel styles, and decorative modes need not have spread as a coherent package; they could have been adopted singly or in various combinations. Considering each of these features as potentially separate provides a basis for understanding Barra pottery.

We need to consider probable historical antecedents to the adoption of ceramics. Archaeological data for the Soconusco indicate that groups of hunter-fishers-gatherers had inhabited this coastal zone for at least 2,000 years prior to the first known use of ceramics (Clark 1994; Voorhies 1976). Undoubtedly, these Archaic foragers and collectors knew how to get along in this tropical and subtropical coastal environment. Minimally, this adaptation would have included a viable container technology and food preparation techniques. The spread of ceramic technology to the Soconusco, therefore, should probably be viewed as a process of replacement of some types of perishable containers with ceramic vessels. Attributes of the first ceramic vessels suggest they served a specialized function.

Lowe (1971) demonstrated that Barra vessels mimic gourd forms. All the surface modifications noted for Barra pots (painting, slipping, fine burnishing, incising, and carving) are techniques still used today to decorate gourds—simple techniques with great antiquity (see Lathrap 1977). We suppose that many of the decorative techniques employed to embellish Barra vessels were already known and being used to decorate gourds before they were applied to the new medium of fired clay.

If ceramic technology was brought in fully developed, how do we explain the differences in pottery styles between the borrower and donor areas? These differences may be explicable by technological transfer within the social milieu of competitive displays among aggrandizers. If perishable gourd vessels were already functioning in a competitive sphere of public/ritual display, the containers most likely imitated by ceramic forms would already have been stylistically elaborate and socially bounded. That is, vessel style would have been socially meaningful and semantically complex within special social contexts. Reproducing these vessels in a new and more expensive medium (fired clay) would have enhanced their value but not tampered with meaningful social conventions (see Clark and Blake 1994 for discussion). Such an adaptation of im-
ported ceramic technology to local conventions would be a clear case of dependent invention.

The idea of technological transfer in a milieu of competing aggrandizers can account for those aspects of early Mesoamerican ceramic technology that investigators have found most puzzling. It would explain (1) the timing of the adoption, (2) the possible replacement of gourd containers, (3) vessels as gourd skeuomorphs, (4) vessel decorative modes, (5) general workmanship, (6) the specialized function of these first vessels, and (7) the subsequent development of ceramics during following phases as pottery became more utilitarian.

The data on hand suggest that Barra ceramic vessels served a special function and were not for cooking. (Indeed, the first pottery vessels in the Soconusco may have functioned as luxury goods.) If Barra vessels were homologues of Late Archaic gourd drinking vessels, this would imply the presence of decorated perishable containers in pre-Barra times. It would follow that the principal value of the first pots probably lay in the novelty of the new clay medium. Only after the Barra phase, when knowledge of the ceramic arts became more pervasive, were ceramics adapted to more utilitarian functions.

A Note on Early Highland Pottery

Comparison of the highland Purrun-Espiridión ceramic complex to the early Barra pottery highlights the remarkable differences between them. Lowe’s utilitarian expectations for the adoption of ceramic technology appear better met in the plain highland pottery. As is evident in Table 17.2, the two early ceramic complexes show a complementary organization in both time and space. At first, the differences are striking, but subsequent development in each complex tended toward unity. We see a greater range of vessel forms in each ceramic complex through time. The plain pottery of the highlands became more decorated (and in ways that directly paralleled coeval developments in coastal ceramics), and the early coastal ceramics started to include more plain pots. It is as if each early assemblage was incomplete and a full assemblage was created from their union.

We think it likely that these notable differences between highland and lowland pottery are clear evidence that the earliest ceramics in each region were used in different ways and adopted for different reasons. We attribute the elaboration of Barra pottery to the context of an evolving rank society and intense competition among aggrandizers for renown (see Clark and Blake 1994). Such behavior would probably have been inappropriate among the small groups occupying the highland valleys at this time. Indeed, one could argue that the highland peoples deliberately avoided producing decorated and marked pottery to maintain their egalitarianism. We do not think the absence of decoration (of any kind) on the earliest highland pottery can be attributed to lack of technical knowledge because the pottery is extremely thin and technologically complex. Social and political factors involved in the “reinvention” process were probably more important. (All of this presumes that additional samples of highland pottery and associated artifacts will demonstrate that the technology was brought in from the outside rather than discovered and developed locally.)

Concluding Remarks

Questions of the origins of Mesoamerican ceramic technology will not be resolved until more extensive, well-dated samples are available from numerous regions. We have attempted to show here that the acceptable data currently available suggest a complex process for the spread of ceramic technology to Mesoamerica and within Mesoamerica. We discussed briefly two different models for the adoption of ceramic technology in Mesoamerica, one proposed for the highland pottery and another for the lowland complexes. These data are sufficient to demonstrate a wide diversity in the forms and decorations of the earliest ceramic vessels and the contemporaneity of the different complexes. All this suggests that a model of stimulus diffusion is needed to account for the coeval development of stylistically distinct ceramic assemblages. We think a model of “dependent invention” or rapid “reinvention” best accounts for the timing and content of, and the formal and stylistic diversity among, the earliest ceramic assemblages. It is important to realize that such a process would have been in effect for many centuries as additional regions within Mesoamerica adopted the technology. In some cases we can demonstrate a borrowing en toto from region to region in Mesoamerica; in other cases, the source of the technology is not presently apparent (e.g., Swasey) and may never be determined because the technology was so quickly converted to local stylistic norms.

This model for the development of ceramic technology raises the question of phytomorphism and skeuo-
<table>
<thead>
<tr>
<th>Attribute</th>
<th>Purron</th>
<th>Espiridión</th>
<th>Barra</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. sites</td>
<td>1 (Purron Cave, components K, K₁)</td>
<td>3 (San José Mogote, Hacienda Blanca, Tierras Largas)</td>
<td>38 (6 excavated)</td>
</tr>
<tr>
<td>No. ¹⁴C dates</td>
<td>6</td>
<td>0</td>
<td>11*</td>
</tr>
<tr>
<td>Probable years b.c.</td>
<td>1650–1400</td>
<td>1500–1400 (?)</td>
<td>1550–1400</td>
</tr>
<tr>
<td>Probable max. years b.c.</td>
<td>1900–1400</td>
<td>1600–1400 (?)</td>
<td>1800–1400</td>
</tr>
<tr>
<td>No. sherds</td>
<td>127</td>
<td>&gt;262</td>
<td>&gt;2,500</td>
</tr>
<tr>
<td>Manufacture technique</td>
<td>？</td>
<td>Poss. press molded and clay rings</td>
<td>Clay rings</td>
</tr>
<tr>
<td>Firing</td>
<td>Poor</td>
<td>Irregular</td>
<td>Excellent, oxidized, hard-fired ware</td>
</tr>
<tr>
<td>Paste color</td>
<td>Light</td>
<td>Light</td>
<td>Light</td>
</tr>
<tr>
<td>Temper</td>
<td>Coarse-grained</td>
<td>Coarse</td>
<td>Sand</td>
</tr>
<tr>
<td>Sherd thickness</td>
<td>3–15 mm</td>
<td>3–15 mm</td>
<td>8–15 mm</td>
</tr>
<tr>
<td>Predominant forms</td>
<td>Tecomates, jars, bowls</td>
<td>Bowls, jars</td>
<td>Flat-bottomed tecomates, deep bowls, composite tecomates</td>
</tr>
<tr>
<td>Copied natural forms</td>
<td>Bottle and vine gourds</td>
<td>Bottle gourds</td>
<td>Vine and tree gourds, squash, pumpkins</td>
</tr>
<tr>
<td>Paints</td>
<td>None</td>
<td>None</td>
<td>Fugitive black</td>
</tr>
<tr>
<td>Slips</td>
<td>None</td>
<td>None</td>
<td>Orange, white, red, brown, red-rim modeled vessels, bichromes, trichromes</td>
</tr>
<tr>
<td>Plastic decoration</td>
<td>None</td>
<td>None</td>
<td>Multiple, deep-growing; fluting, gadoorning, lobing, squashlike segmentation, zoned cross-hatching, zoned punctation, geometric designs</td>
</tr>
<tr>
<td>Surface treatment</td>
<td>Coarse or smoothed</td>
<td>Coarse or burnished</td>
<td>Modeled or highly burnished</td>
</tr>
<tr>
<td>Major changes in the following phase</td>
<td>Early Ajalpan: red slip, red-rim vessels, deep sloping flat-bottomed bowls</td>
<td>Tierras Largas: red slip, red-rim vessels, red-on-buff designs (chevrons and parallel bands), flat-bottomed outleaned-wall bowls, zoned dentate rocker stamping</td>
<td>Locona: plain red-rim tecomates, vessel feet, flat-bottomed plates, dishes and shallow bowls, pink and red striped designs (chevrons and parallel bands), specular red vessels predominate, zoned shell-edge and shell-back rocker stamping, negative-resist designs, censers, effigy pots</td>
</tr>
<tr>
<td>Trade wares in the following phase</td>
<td>Possible Barra sherds</td>
<td>Possible Locona and Ocós sherds</td>
<td></td>
</tr>
<tr>
<td>Probable sociopolitical context</td>
<td>Egalitarian</td>
<td>Egalitarian</td>
<td>Egalitarian</td>
</tr>
</tbody>
</table>

*Includes nine recent dates (Table 17.1) as well as two dates reported by Ceja (1985:34).
morphism noted by all investigators for the earliest Mesoamerican pottery (see Lowe 1971; Marcus 1983). We think the forms of the earliest vessels are more indicative of a replacement process in each region than of a process of development of ceramic technology. The earliest ceramic vessels copied the forms of some of the perishable vessels already in use among those who adopted and modified the new technology. This copying may not always have been the case, but it should be considered a possibility. The notion of dependent invention suggests that the technical knowledge of a craft and specific applications of it in donor and borrowing regions should be considered as potentially separate or separable. This separability creates problems archaeologically because the connection between donors and borrowers cannot always be traced, and some technologies appear to come from nowhere and to be unrelated to surrounding developments. This certainly appears to be true of the Barra ceramic assemblage.

Our primary thesis here is that ceramic technology was adopted by various groups in Mesoamerica at different times and for different reasons. Some of these reasons can be reconstructed by examining each assemblage. Each case should be seen in its wider socio-political context and on its own merits. In modern society we have become so accustomed to seeing technological development from a utilitarian and evolutionary point of view that we often lose sight of other functions of technology and objects. In the case of pottery, the literature shows a general expectation that the earliest pottery vessels were most esteemed as tools associated with boiling technology. The Barra case demonstrates that pottery vessels were also esteemed as special goods, perhaps as a form of primitive valuables. We suspect that many other cases of adoption of ceramic technology around the world can be shown to conform to this pattern.

Acknowledgments

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Ceja, Jorge Fausto

Clark, John E.


Clark, John E., and Michael Blake

Coe, Michael D.