

Paipai Pottery Past and Present: Evolution of an Indigenous Ceramic Tradition

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Abstract

Tizon Brown Ware ceramics were being produced by around AD 1000 in the southern California/northern Baja California region. Tizon Brown Ware vessels are predominantly undecorated, made with the paddle-and-anvil technique, and fired in an uncontrolled, oxidizing environment. Such ceramics are Late Prehistoric period diagnostics. While archaeologists have distinguished different variants of Tizon Brown pottery, a precise taxonomy of and chronology for these variants remain elusive. Paipai potters of Santa Catarina, Baja California, have carried on and transformed a localized variant of the Tizon Brown ceramic tradition. This ethnoarchaeological situation presents an unusual opportunity to explore details of ceramic production, use, distribution, and adaptation. Archaeological studies at Mission Santa Catalina reveal strong ceramic continuities from precontact times into the colonial period. A geochemical study of diagnostic sherds from the mission site suggests that most of the ceramics used by mission neophytes were made from locally available clay. The modern Paipai ceramic tradition reflects continuity with prehistoric technology and style, yet its economic function and distribution have changed as hunter-gatherers have been transformed into citizens of a more complex modern world.

Introduction

“It is wonderful to see . . . how these Indians manage to manufacture their well-finished earthen pots,” wrote José de Cañizares, a Spanish soldier with the 1769 Portolá expedition to Alta California. Cañizares was traveling through Paipai territory near what would later become the mission site of San Vicente (Thickens and Mollins 1952:344).

Today the Paipai community of Santa Catarina, Baja California, has the unique distinction of being home to the longest continuous pottery tradition of the Californias (Figure 1). Ceramics were important

prehistorically and continue to play a significant role in the local economy. From beginnings possibly a thousand years ago, until the past century, locally made ceramic vessels were essential for cooking, storage, and ceremonies. Contemporary potters have transformed traditional ceramics into art objects prized by collectors and museums in both the United States and Mexico (Wilken 1987). Ceramic production and consumption in the mountains of northern Baja California are dynamic processes. In the present paper we concentrate on two historic periods, the first being that from 1797 to 1840, when Dominican fathers operated Mission Santa Catalina, and the second being modern times, roughly 1960 to the present, when ethnographers have worked closely with the Santa Catarina Paipai community.¹

The historic ceramic assemblage from Mission Santa Catalina, collected as part of the Proyecto Arqueológico Santa Catarina from 2005 to 2007, is described. A geochemical provenance study by Panich on diagnostic sherds from the Mission site suggests that most of the ceramics used by mission neophytes, both common and exotic vessel forms, were made from locally available clay. It appears that the historic Native peoples of Santa Catalina drew on precontact ceramic production technologies while at the same time expanding their repertoire of vessel forms to include new offerings of both colonial and indigenous inspiration.

We conclude our study with an ethnographic examination of pottery production in Santa Catarina over the

past half century, noting how the demand for indigenous ceramics has encouraged growth in this indigenous industry. The Paipai have reinterpreted their ceramic tradition as they have changed from hunter-gatherers into colonial subjects and finally into active participants in a globalized cash economy. The dynamic ceramic history and prehistory of Santa Catarina demonstrate that technological traditions can accommodate dramatic changes in the cultural significance of pottery even as the underlying technology remains constant.

Regional Ceramic Context

The area around Santa Catarina is near the southernmost extent of an archaeological ceramic series called Tizon Brown Ware, which was produced by the ancestors of the modern Yuman speaking groups of this region. Scholars have traditionally placed the introduction of pottery into the Lower Colorado River Valley and the surrounding areas at about AD 600, which marked the beginning of the Patayan culture period

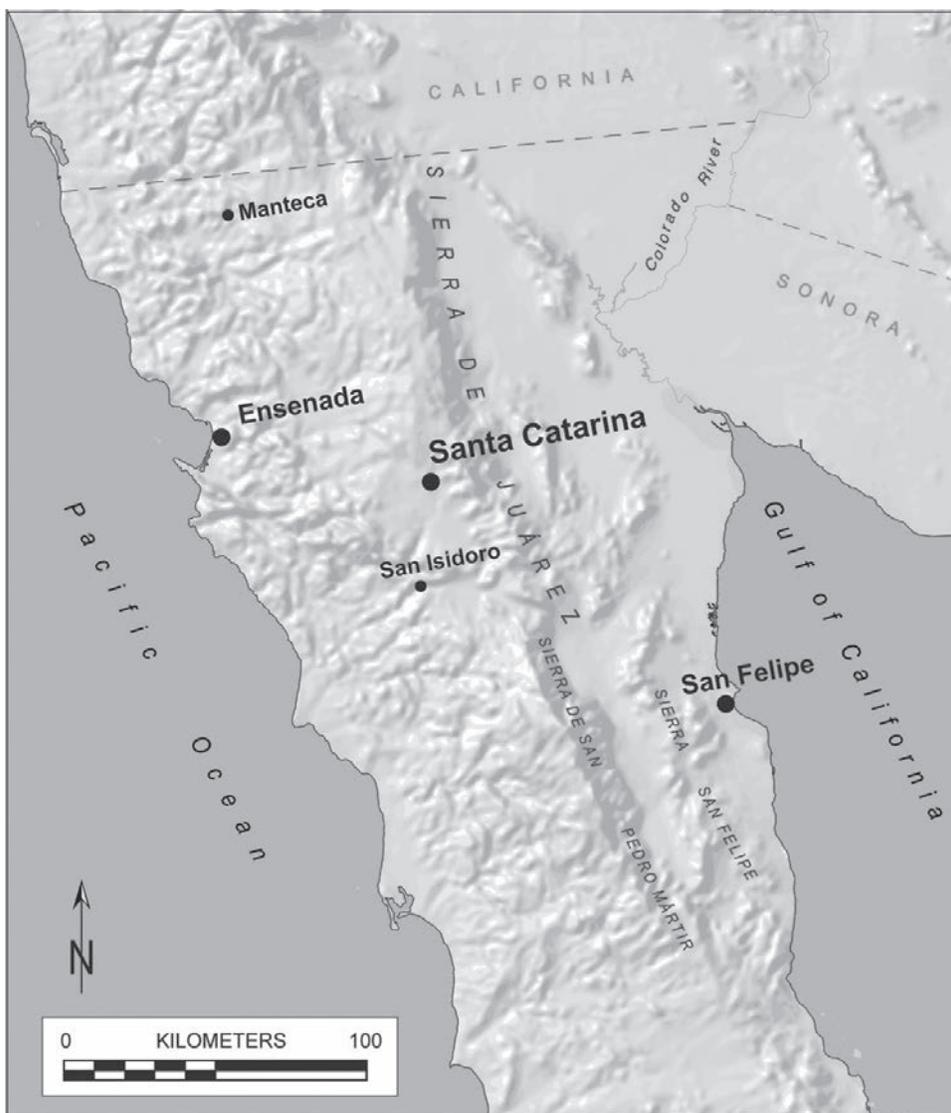


Figure 1. Location of the Paipai community of Santa Catarina and other locations in Baja California.

(Rogers 1945; Waters 1982). In addition to the Lower Colorado River Valley, some of the first distinctly Patayan sites are located in the Gila River Valley and around ancient Lake Cahuilla, which was forming in the Salton Trough during this time. Patayan diagnostics are brown or buff ceramic wares, cremation of the dead, and small projectile points. By AD 1000 pottery had spread throughout the area, especially into the Peninsular Ranges of southern California and northern Baja California (Hildebrand and Hagstrum 1995:91). While the exact origins of the Patayan people and their pottery tradition are still being debated, most archaeologists believe that ceramic technology in northern Baja California and southern Alta California likely spread westward from the Hohokam culture area in Arizona (Schroeder 1979; Waters 1982; Shaul and Andresen 1989; Shaul and Hill 1998; Shackley 2004; Beck and Neff 2007).

Tizon Brown Ware and Lower Colorado Buff Ware are the two main ceramic wares from the Patayan culture area, and they are usually distinguished by differences in clay raw materials. Tizon Brown Ware vessels are typically manufactured from residual clays found in local mountain ranges, while Lower Colorado Buff Wares are made from alluvial clays found in the lowland regions closer to the Colorado River (Hildebrand et al. 2002:121). The distribution of Tizon Brown Ware stretches from the upland regions of northwestern Arizona through southern California and into northern Baja California. Generally speaking, Tizon Brown Ware consists of undecorated vessels that are thinned with the paddle-and-anvil technique and fired in an uncontrolled, oxidizing environment (Dobyns and Euler 1958; May 1978; Van Camp 1979). Nearly all published archaeological examples are undecorated, but some sherds do show evidence of painting, incising, or punctation. The indigenous people of the region developed a wide array of ceramic forms, including storage jars, cooking pots, and serving bowls, many of which have restricted geographic ranges and serve as temporal markers (Rogers 1936, 1945).

Archaeologists have distinguished various subtypes of Tizon Brown Ware, but in general a precise taxonomy remains elusive (Dobyns and Euler 1958; Euler 1959; Koerper and Flint 1978; Koerper et al. 1978; May 1978, 2001; Van Camp 1979; Lyneis 1988).

Among the various Tizon Brown Ware types that have been proposed are historic variants from the rancho and mission periods (Evans 1969; May 1973, 1978). May (1978), for example, identified a Mission Series of Tizon Brown Ware comprised of types found at Mission San Buenaventura in Alta California and Mission Santo Tomás in Baja California. Many of the Mission Series ceramics show evidence of European-derived morphological innovations such as spouts, slipping, flat bottoms, and lug handles, leading May (1978:9) to suggest that mission neophytes produced pottery specifically to augment the supplies of imported colonial ceramics at the region's missions. While there is ample evidence that Indian neophytes produced pottery at mission sites throughout the Californias, including areas without precontact ceramic traditions, indigenous ceramics produced during the colonial period varied widely (May 1973, 1978; Tuohy and Strawn 1989; Peelo 2011). Some mission pottery represents a significant departure from prehistoric ceramic technologies and may reflect pottery production mandated by colonial authorities. Yet, in other cases the pottery produced by mission neophytes appears to have been intended primarily for their own domestic use. The classification of mission period indigenous ceramics is further complicated in areas such as the Sierra Juárez of northern Baja California where local peoples produced ceramics before the arrival of Spanish missionaries and where Spanish colonial control was not as strong as in other areas of the Californias.

Relatively little archaeological research has been conducted on the native ceramics found in the mountains of northern Baja California, but ceramic analysis conducted in the 1950s indicates that Tizon Brown

Ware from the Santa Catarina area cannot be readily distinguished from that of other areas in northern Baja California and southern California on the basis of color, thickness, temper, or paste (Hicks 1959; McKusick and Gilman 1959; Meighan 1959). A previous comparison of indigenous pottery from the site of Mission Santa Catalina with a sample of prehistoric ceramics from the same area suggests little basis for creating new ceramic subtypes for either prehistoric or mission period ceramics from the region around Santa Catarina (McKusick and Gilman 1959). Based on the research conducted as part of this project, we are similarly hesitant to assign the predominantly brown ware sherds of the mission period ceramic assemblage to any particular type or subtype without more detailed study. Future work would ideally include a combination of petrographic analysis of paste and temper with a geochemical analysis that would include archaeological and ethnographic ceramics of known provenance.

Indeed, combined geochemical and petrographic studies in southern California and the Lower Colorado River region have been successful in determining the provenance of undecorated native ceramics (Koerper et al. 1978; Hildebrand et al. 2002; Beck and Neff 2007). Hildebrand et al. (2002), for example, used optical petrography and neutron activation analysis to demonstrate a distinct east to west distribution of indigenous ceramic types in southern California. Their study included two sites located in the Peninsular Ranges of southern San Diego County, and their analysis demonstrated that roughly 80 percent of the ceramic artifacts from both sites were from residual mountain clays, while the remaining 20 percent or so were from the Salton Trough and/or the Lower Colorado River region (Hildebrand et al. 2002:133–134). In sum, the majority (about 80 percent) of the ceramics appear to have been local to the mountains, although a significant amount of pottery from the lowland region was also being used in these upland sites.

The Mission Santa Catalina Ceramic Assemblage

The indigenous ceramic assemblage from Mission Santa Catalina includes 12,972 objects, with a combined weight of 47.2 kg, collected during systematic surface collection and excavation between 2005 and 2007. The surface collection was conducted across the entirety of the primary site area (roughly 100 m x 100 m), including the mission quadrangle as well as areas directly adjacent to it. Excavations took place primarily in two middens representing neophyte habitation areas. These are located along the southeast and northeastern walls of the mission compound. Additional excavations tested deposits within the mission itself. The overwhelming majority of the ceramic artifacts collected from the site (n=11,737) are nondiagnostic body sherds. The bulk of the present analysis is accordingly limited to a sample of diagnostic rim and decorated sherds that have recordable attributes.²

Ceramic Forms

Some generalizations can be made about the vessels used by the region's inhabitants on the eve of European colonization. As other researchers have noted, jars (often included in the same general category as cooking pots or ollas) and bowls were the most common vessel forms made by the Kumeyaay and their neighbors to the south (Rogers 1936; Drucker 1937, 1941; Treganza 1942; Van Camp 1979). Although such vessels were mainly utilitarian, they varied widely through time and across the region. Other forms common in prehistory include parching trays, scoops, pipes, and effigies, many of which have strong correlations with certain areas of the broader Patayan region. The historic indigenous ceramics from Mission Santa Catalina correspond well with those from late precontact contexts, yet innovation was certainly taking place. Some forms and elements introduced by the Spanish missionaries and soldiers are present in the mission assemblage as are

decorative motifs that perhaps indicate the presence of or contact with other Native peoples from across the region.

Jars and Bowls

Jars and bowls make up the vast majority of native ceramic assemblages, including that from Mission Santa Catalina. Among the Kumeyaay and neighboring groups, large and medium jars were used for the storage of dry foodstuffs as well as other perishable items. Small jars may have been used to store water or food during hunting or gathering trips, and water ollas typically have a small orifice. Ollas were also used for cooking, with the cooking pot resembling a smaller version of storage vessel. Most jars and ollas have recurved rims, a globular body, and a rounded base (Rogers 1936:18–19; Drucker 1941:108, 177; Van Camp 1979:54–55). Bowls served a number of purposes, with large deep vessels used for cooking and shallower ones used for serving. Two main bowl forms exist, those with recurved rims and those with direct rims (Van Camp 1979:56). For the assemblage from Mission Santa Catalina, bowls were the most prevalent form, a pattern consistent with prehistoric ceramic assemblages from the broader region (Rogers 1936; May 2001) (Table 1).

Introduced Ceramic Forms

Only nine rim sherds from unique vessels could be assigned to the plate category. Two other sherds represent fragments of two distinct plate foot rings. Although ceramic parching trays would have been used in the region, the vessels categorized as plates here are shallower (e.g., Treganza 1942:Figure 10E). Interestingly, all of the plates cluster with the local or secondary groups in the XRF study discussed below, but none of the plate fragments were found inside the mission walls. Five possible loop handle fragments (excluding scoop handles, to be discussed below) were found during archaeological work at the mission site, including two phallic handles. Handles are not a common attribute of indigenous vessels in this area and, like the plates, may represent an element introduced by the Spanish (Treganza 1942:159). Although these artifacts indicate that new forms and elements were being employed by Native potters at Mission Santa Catalina, they were apparently not widely adopted.

Effigy Scoop Handles

An interesting ceramic artifact excavated at the Mission Santa Catalina site is a scoop handle bearing the classic coffee bean eye motif. A second similar

Table 1. Ceramic Forms from Mission Santa Catalina and Lake Cahuilla.

Form	Mission Santa Catalina ^a		Lake Cahuilla
	Count	Percentage	May (2001:51) %
Bowl	108	56.3	62.3
Jar/Olla	60	31.3	32.9
Plate	12	6.3	0.3
Scoop	7	3.6	2.3
Pipe	2	1.0	0.6
Disk	2	1.0	0.6
Bead	1	0.5	<0.3

^a Data from Santa Catalina represent minimum numbers of vessels for each category and do not include sherds of unknown vessel form that were included in the EDXRF study.

artifact was noted in the collection of a Paipai family in Santa Catarina (Figure 2). Known as “quail heads” among the Mohave, these zoomorphic or anthropomorphic effigy handles are characterized by a curving, parrot’s beak-like nose and incised, ovoid eyes that are similar in size and shape to coffee beans (Kroeber and Harner 1955:9; Van Camp 1979:56). The effigy handles from Santa Catalina fit most closely with the Type II Effigy Scoops defined by Hedges (1973:22). The eyes are placed on the rim with the incisions parallel to it, and a large nose divides them. Owing to the small amount of vessel body remaining attached, it is unclear whether the handle’s face is oriented toward the interior of the scoop, as in Hedges’s Type II, or to the exterior. If the latter, this would place them in a separate, undefined category (see also Panich 2009:199–202).

Three main concentrations of scoops with coffee bean eye effigy handles can be noted; these are the Lower Colorado River, the western margins of the Salton Sea, and eastern San Diego County and adjacent areas of Baja California (Hedges 1973:8). Although a few scoops analyzed by Hedges (1973) were made from residual mountain (brown ware) clays, the vast majority of the scoops were

constructed from alluvial (buff ware) clays. This information linking effigy scoops and the coffee bean eye motif to the Lower Colorado River area corresponds well to that provided by other scholars. It is thought that the motif itself may have originated with the Hohokam (Gifford 1933:330; Drucker 1937:22; 1941:108; Rogers 1945:188; Haury 1976; Koerper and Hedges 1996). The scoop fragment from Mission Santa Catalina is, at least for now, the farthest south that the coffee bean eye element has been archaeologically documented within the Californias (Ken Hedges, personal communication 2006). Significantly, the scoop handle from the mission site is of Tizon Brown Ware and clusters with the local group in our EDXRF provenance analysis. As such, it suggests an interesting connection to the peoples some distance away, either those living on the Colorado River or perhaps in the northern Peninsular Ranges, and it offers tantalizing evidence that the historic mission neophyte potters incorporated new ceramic elements with both native and colonial antecedents.

Other Ceramic Forms

Our excavations at Mission Santa Catalina also yielded a variety of ceramic artifacts attesting to



Figure 2. Effigy scoop handles. Note “coffee bean” eyes on either side of generalized nose or beak. Left: Example from Mission Santa Catalina. Right: Example in private collection in Santa Catarina.

daily practices beyond cooking and storage. Three potsherds had been ground into a circle and perforated. The diameters of these disks range between 4 cm and 5 cm. Similar artifacts found in southern California and northern Baja California have been referred to as spindle whorls. Although weaving is not known to have been practiced in the region prior to European colonization, these artifacts could still have been used for twining yucca or agave fibers for non-textile applications. These objects have been alternatively identified as jar lids, ornaments, or gaming pieces (Treganza 1942:159; Van Camp 1979:60; May 2001:51). Meigs (1939:43), for example, indicated that the Kiliwa used modified potsherds to play a spinning top game called *j(us)ká pój*, or “olla broken.” The pottery disk used as a spinning top was also noted by other researchers (Drucker 1937:24; 1941:130; Soto 1961:34). One Paipai informant similarly suggested that the pottery disks recovered from the site were used for a spinning top game similar to the one enjoyed by the Kiliwa (Panich 2009:206).

Other ceramic artifacts included one fragment of a spherical ceramic bead and three sherds that appear to be from miniature bowls. Little is known about the use of miniature vessels. Van Camp (1979:56) suggested that they may have played a role in the *Keruk* ceremony or simply may have been toys. Two small, triangular-shaped objects were recovered that are likely fragments from the handles of bow pipes, which are often found in Kumeyaay assemblages (Rogers 1936:19, 50; Van Camp 1979:60). Hohenthal (2001:169) suggested that these were common as far south as Paipai territory. Ethnographic information from the region is in general agreement that tobacco was smoked casually as well as for ritual and medicinal purposes (Lightfoot et al. 2009:348). The presence of ceramic smoking pipes at the mission is yet another indication that precontact pottery technologies and associated daily practices continued into historic times.

Discussion of Ceramic Forms

The ceramic forms present in the assemblage from Mission Santa Catalina include most of the vessel forms and other ceramic objects noted in prehistoric assemblages for the region as well as in early ethnographic works (Rogers 1936; Meigs 1939; Treganza 1942; Van Camp 1979; Hohenthal 2001). Indeed, the percentages of identifiable vessels collected from the mission site are nearly identical to those reported by May (2001:51) for an assemblage of rim and diagnostic sherds from a collection comprised of samples from 134 sites along the ancient shores of Lake Cahuilla, an area that was on the border between Kumeyaay and Cahuilla groups (Table 1). With the notable exception of plates, the ceramic assemblage from Mission Santa Catalina varies little from that of groups living in the same general region during precontact times. This may not be surprising given that few colonial ceramics (of European, Mexican, or Asian manufacture) were found at the site, but the diversity of forms from Santa Catalina suggests strong continuities in ceramic manufacture and use.

The XRF provenance data show that very little difference exists between the local group and the secondary group in terms of proportions of vessel forms or other ceramic artifacts. For both geochemical groups, bowls are the most prevalent, followed by jars or ollas, as well as plates. No plates were noted among the non-local ceramics, a trend that makes sense given the fact that plates or flat vessels were not common in precontact times. While the total number of non-local sherds is small, there is a weak preference for jars/ollas over bowls in that category that may be related to their possible use as storage vessels during seasonal movements. Other ceramic forms are also distributed relatively evenly between the two main groups, and it appears that clay from the two local sources was not preferred for the manufacture of any one particular type of ceramic object.

Decorations and Modifications

Painting, Incising, Impressing

Today, Paipai potters rarely employ decorations such as painting and incising on their wares, and this pattern seems to have strong antecedents in precontact and early historic times. Only three sherds from Mission Santa Catalina collected as part of the current project show evidence of painting, specifically, red paint on the exterior of the vessel. Pottery displaying red paint is most common along the Colorado River, but it is also occasionally found in the mountains of northern Baja California and southern California (Rogers 1936; Treganza 1942:159; Van Camp 1979:61). McKusick and Gilman (1959:55) collected five rim sherds decorated with red paint from Mission Santa Catalina and the nearby habitation site that they excavated.

We collected nine incised sherds of two main categories, bowls with incised or notched rims and vessels with body incisions. Treganza (1942:158–159) noted notched rims in both desert and mountain sites, and Rogers (1936:42) and Van Camp (1979:66, Figure 12a) also noted the presence of notched rims among Kumeyaay assemblages. While uncommon, vessels with incisions, fingernail incisions, and punctate designs all occur in the general area (Van Camp 1979:63). In their excavations at Mission Santa Catalina and the Cerrito Blanco site, McKusick and

Gilman (1959:55) found only two incised sherds and one punctate sherd.

Another interesting decorative motif appears to be the result of either basketry or maize cob impressions. Five sherds from a single plate were collected that bear a distinctive impression, which appears to be either that of a maize cob that was rolled across the surface of the vessel while the clay was still wet or that from basketry perhaps used as a mold (Figure 3). Basketry impressions are not uncommon in northern Baja California and southern California (Rogers 1936:8), and this may be the most plausible explanation. Yet, the fact that the impressions extend all the way to the rim suggests that the marks were an intentional design element rather than an incidental effect of the production process. If future work shows these sherds to be unequivocally cob-marked, they would represent an intriguing example of a new vessel form, the plate, decorated with a design produced by a newly introduced food crop, maize.

Rim Lip Finishes

The rim sherds collected from Mission Santa Catalina can be characterized by four rim lip styles: coiled, rounded, beveled, and extruded (Figure 4). These same finishes have been noted elsewhere under different names (e.g., Van Camp 1979:58), but for the sake of consistency, we follow those put forth by McKusick and Gilman (1959:Figure 3) in their study of ceramics

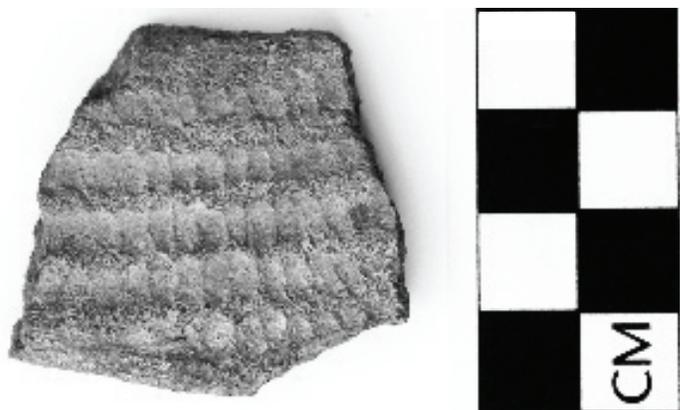


Figure 3. Maize cob or basketry impressed sherd from Mission Santa Catalina.

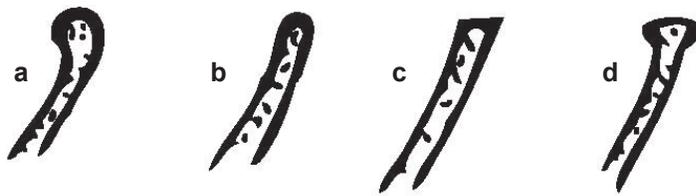


Figure 4. Rim lip finishes. (a): coiled; (b): rounded; (c): beveled; (d): extruded. After McKusick and Gilman (1959).

from Mission Santa Catalina and the nearby Cerrito Blanco site.

It is difficult to parse the patterning that exists among the rim lips, and as McKusick and Gilman (1959:52) noted, a single vessel may bear more than one kind of rim lip finish. Nonetheless, one trend may be worth noting, and that is the variable distribution of rims with beveled lips, which would have required the use of a blade or a thin cord to slice away excess clay. In both studies beveled lips were most common in areas from within the mission quadrangle. The precontact Cerrito Blanco site, moreover, has a significantly lower percentage of beveled rim lips than any of the mission contexts. This may suggest that beveled lips were preferred by the Spaniards and/or higher ranking neophytes who may have lived within the mission.

Early Historic Ceramics

The indigenous ceramic assemblage from historic Mission Santa Catalina suggests strong continuities of practice from precontact times into the colonial period. Although some new forms appear and other forms may have been elaborated, for example, with the addition of handles or the increased prevalence of beveled rims, the vast majority of ceramics correspond to the precontact ceramics of the region. Some evidence also exists for the incorporation of native forms, such as efigy scoops, that were not common in the area around Santa Catalina prior to mission times. A few exotic wares were noted in the analysis of design motifs and in the EDXRF provenance study, but the great majority of analyzed ceramics are of clays either from the mission site or from a source only 5 km distant.

The mission period was the beginning of a new chapter in the ceramic tradition of the Sierra Juárez. The ceramic assemblage from the historic Mission Santa Catalina resembles that of precontact sites in the broader border region (May 2001). This strong ceramic technological continuity was also coupled with experimentation and amalgamation. Mission neophytes certainly faced many constraints, strict social controls and a rigid labor schedule to name just two, but the ceramic artifacts from the site suggest at least one area of material culture and social life where Native people had ample opportunity to continue important yet dynamic traditions. The mission was home to diverse peoples from throughout the region, and the ceramic evidence suggests that these families and individuals maintained ties to their relatives in the hinterlands at the same time that they forged new bonds with other indigenous people living at Santa Catalina. The Native people of Mission Santa Catalina brought with them their own personal, familial, and regional approaches to ceramic production that stretched back many centuries. This diversity, combined with a local supply of high quality raw clay material, allowed mission neophytes and their descendants to create a ceramic tradition with deep roots in the prehistoric past while simultaneously adapting to new social settings.

EDXRF Source Analysis

Methods and Sampling Strategy

Chemical source analysis was conducted on a sample of pottery sherds from the Santa Catalina Mission site using a Niton XLt-793W portable energy dispersive

X-ray fluorescence (EDXRF) spectrometer. Chemical data are provided in parts per million (ppm) for a total of 17 elements, although only eleven elements were consistently detectable by the instrument in this study. These eleven elements are: Sb, Sn, Ag, Sr, Rb, Pb, Zn, Cu, Co, Fe, and Mn. Unfortunately, this list does not cover the full suite of elements usually used for ceramic provenance analysis (Hildebrand et al. 2002; Morgenstein and Redmount 2005:1616). The use of the portable XRF unit, moreover, will limit the direct quantitative comparability of the raw data from this study with other geochemical provenance analyses conducted with desktop instruments. These limitations notwithstanding, the portable EDXRF instrument proved ideal for non-destructive geochemical analysis in Mexico. It should also be very valuable in international contexts where ceramic or geological materials might not otherwise be analyzed owing to the restrictions of special export permits.

The archaeological ceramic sample analyzed as part of the EDXRF study included 239 artifacts. The 1,213 total rim sherds collected from the site were initially sorted by size. Those that met the minimum requirements for analysis with the portable XRF unit (roughly 1 x 2 cm) were included in the preliminary sample. In order to limit the sample to unique vessels, these rim sherds were then further examined on the basis of vessel form, orifice diameter, wall and rim thickness, evidence of charring, as well as any decorative treatments. A total of 220 rim sherds were eventually selected for inclusion in the XRF study. The other 19 ceramic artifacts include one ceramic bead, one pipe fragment, four ceramic disks, seven potential handle fragments, and six body sherds with diagnostic decorative features such as painting or incising.

Chemical analysis was conducted using the Delta Graph software package to generate ternary plots and SPSS statistical software to determine clusters.³ The ternary plot (Figure 5) shows the relationship of each ceramic fragment to one another based on three

elements: strontium, rubidium, and iron. Both analyses suggest that most of the ceramic fragments in the sample have a very similar chemical signature, grouping into a large primary cluster (n=190). A secondary grouping of archaeological sherds (n=38) can also be noted, and this group may represent vessels made from another clay source in the general vicinity of the mission site. A very small number of sherds (n=11) also appear as outliers in both representations of the XRF data, and thus they can be tentatively classified as non-local.

Four clay samples representing two distinct sources in the community of Santa Catarina were also analyzed as part of this study. Two raw material samples were collected from the clay source currently used by local potters (Clay Source 1). Two other samples were collected from a clay source (Clay Source 2) that is located roughly 5 km east of the mission site and that was mentioned in two previous ethnographic accounts of pottery production in Santa Catarina (Michelsen 1972; Wilken 1987). Paipai potters no longer use this outlying source. A total of 13 pots purchased from eight different potters in Santa Catarina were also included in the EDXRF analysis. These pots, which were all made with clay from Clay Source 1, represent samples from nearly all the women making pottery in the community today. As seen in Figure 5, the modern pottery samples all fit into the primary cluster of ceramic sherds collected from the mission site, reinforcing the idea that the ceramics in this particular group were in fact locally produced from clays available near the mission site. The two raw material samples from the clay source employed by modern potters also fit into this primary group. The raw material samples from the ethnographic clay source, however, do not cluster with the modern ceramics or with the primary group of archaeological ceramics. These two clay samples instead cluster with the secondary group of archaeological samples. Based on the strong correlation between the modern pots and the clay used to construct them, it may be possible that the archaeological sherds from

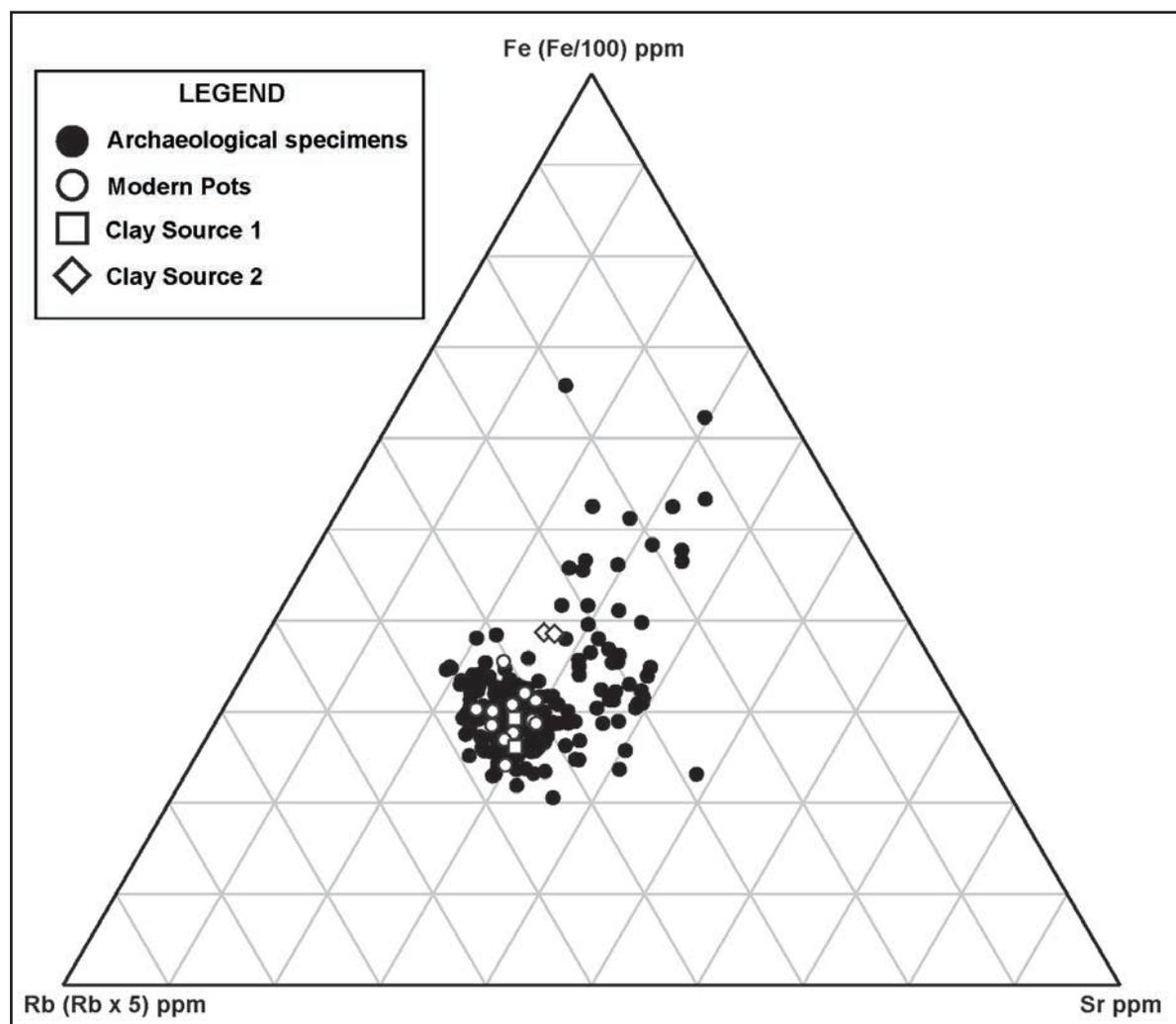


Figure 5 Clay source analysis. Ternary plot showing results of EDXRF study. Values for iron and rubidium were adjusted to facilitate presentation of data.

this secondary group were made from clay gathered at the outlying clay source.

EDXRF Data Interpretation

The EDXRF data from Mission Santa Catalina are interesting when compared to the ceramic provenance data collected by Hildebrand et al. (2002). While their sample size for the mountain sites was relatively small ($n=30$), Hildebrand and his colleagues offered a

picture of ceramic source variability for Late Prehistoric southern California Kumeyaay sites that may serve as a general proxy for precontact sites in the vicinity of Mission Santa Catalina. The primary, local cluster of ceramics from the mission site represents 79 percent of the total sample, which corresponds well to the 80 percent figure for local ceramics found in mountain sites in the Hildebrand et al. (2002) study. Yet, the secondary cluster from Santa Catalina comprises approximately 16 percent of the sample, and it too includes ceramic artifacts that macroscopically

appear to be brown wares and that may have been produced from a clay source only 5 km from the mission study site. The remaining 5 percent of sherds from Santa Catalina appear to be made from non-local clays based on the geochemical analysis. This percentage is much lower than those shown for the mountain sites (Hildebrand et al. 2002). While more comparative studies are needed to define regional and temporal patterns, the XRF data from Santa Catalina nonetheless suggest that the mission site may contain less non-local pottery than precontact sites in the region.

A related pattern at Mission Santa Catalina is the near total lack of ceramics characterized macroscopically as Lower Colorado Buff Ware. While it is possible that some buff ware sherds are among the many thousands of body sherds collected from the site, only one artifact macroscopically identifiable as buff ware (a painted body sherd) was among the rim and diagnostic sherds chosen for the XRF study. Not surprisingly, it did not cluster with either the local or secondary group.⁴ McKusick and Gilman (1959) in their study of ceramics from Mission Santa Catalina similarly classified the entire ceramic assemblage as Tizon Brown Ware.

This pattern is notable, especially considering the presence of buff ware sherds in the mountain sites discussed by Hildebrand et al. (2002) as well as the fact that many of the mission neophytes likely had strong kinship and social relationships with people living near the Colorado River (Panich 2010). It may be that buff ware pottery was rare even in precontact times, since McKusick and Gilman (1959) also did not note buff ware sherds for the ceramics recovered from Cerrito Blanco, a prehistoric processing site roughly 20 km west of Santa Catarina.

Ethnolinguistic Background

Paipai belongs to the Yuman language family, which also includes languages from northern Baja California,

southern California, the Colorado River region, and southwestern Arizona (Hinton and Watahomigie 1984). Strong linguistic ties between the Paipai and the Upland Pai peoples, such as the Yavapai, Hualapai, and Havasupai of Arizona, have led some researchers to suggest that the Paipai might be fairly recent arrivals to the mountains of the northern Baja California peninsula (Winter 1967). The Paipai themselves believe that their ancestors came from the northeast. The Arizona Pai also retain oral tradition of a group of Pai that migrated to Baja California (Mixco 2006).

In historic times a permanent settlement of Paipai was located on the western margin of the lower delta of the Colorado River in the territory of the Cucapá (Kelly 1977), possibly a remnant link between the Pai peoples of Arizona and Baja California. Recent exchanges between the Baja California Paipai and the Arizona Pai groups have corroborated the existence of strong linguistic and cultural ties between the groups. The chronology of a Pai migration into Baja California, however, remains unclear (Mixco 2006). Laylander (1997, 2007) has explored a variety of scenarios, most of them involving migrations south into the peninsula but also including the possibility of a Baja California Pai homeland.

While Santa Catarina is principally thought of as a Paipai community, it also home to speakers of the Ku'alh language, a southern variant of Tipai, also known as Kumiai/Kumeyaay, or Diegueño (Owen 1963; Michelsen 1977; Mixco 2006). The Ku'alh have intermarried with Paipai speakers and except for their language today are ethnically indistinguishable from the Paipai.⁵ The Ku'alh may represent the remnants of the southern Tipai speaking peoples who lived in the area before the arrival of the Paipai; linguist Mauricio Mixco (2006) pointed out that many of the place names still used in Santa Catarina come from the Ku'alh language. The question of whether the local pottery tradition was originally associated with Paipai or Ku'alh culture, or whether it arrived after their

admixture, is unclear. It is worth noting, however, that most of the potters interviewed by ethnographers over the past 50 years spoke Ku'ah as their first language (Wilken 1987). On the other hand, the association of the Paipai with Colorado River peoples and the Upland Pai groups might suggest the arrival of ceramics technology to the peninsula along with the Paipai migration. Future research in northern Baja California and adjacent regions may shed light on these important questions.

Baja California's Paipai people today live in two federally recognized indigenous communities of the northern peninsula, Santa Catarina and San Isidoro (Hinton and Owen 1957; Owen 1962; Alvarez Williams 2004). Most of the current population (approximately 400) and all modern potters live in the western part of Santa Catarina's 68,000 ha, near the 1797 Santa Catalina Dominican Mission site (Wilken-Robertson 2004). According to Paipai cultural authorities interviewed by twentieth century ethnographers, precontact Paipai lineages, called *shimuls*, inhabited a territory stretching across the peninsula from the Pacific coast near San Vicente through the southern Sierra Juárez to the desert lands of the lower Colorado River Delta (Owen 1962; Hohenthal 2001). Like other Late Prehistoric peoples of the northern peninsula, they were seasonally mobile bands of hunter-gatherers, exploiting a variety of environments on their annual round (Hicks 1963; Michelsen 1977). Ceramics, bows and arrows, plant fiber cordage, and carrying nets facilitating the foraging economy were already well developed before the arrival of the Spanish missionaries (Rogers 1936; Michelsen 1974; Laylander 1987; Moore 2006).

The Historic Mission

In the 1790s Spanish officials searching for potential mission sites with access to the Colorado River desert found several *rancherías*, or settlements of indigenous people, living in the vicinity of the mountain

springs where the Dominicans would eventually establish the Santa Catalina Mission (Arrillaga 1969). The groups encountered were bands inhabiting the area during the summer and autumn harvests of agave, pine nuts, sweet acorn, prickly pear, yucca fruits, and other plant resources. It is unlikely that they would have stayed in the high elevation area (approximately 1,200 m asl) through the cold winter (Hicks 1963; Michelsen 1977).

During the mission's 43 years of existence, Paipai, Ku'ah/Tipai, and probably Cucapá speakers from a broad area of northern Baja California were brought to the mission or influenced by it. The missionaries attempted to introduce a sedentary way of life based on agriculture and livestock (Panich 2009). Mission Santa Catalina eventually had a large and relatively stable neophyte population, with roughly 250 Native people attached to it in any given year (Meigs 1935:120; Nieser 1998; Panich 2010). Some people lived as neophytes in the immediate vicinity of the mission, while others maintained limited or no contact with the mission as they attempted to continue their hunting and gathering lifeways in an ever shrinking territory (Magaña Mancillas 1997). One aspect of indigenous culture that continued in spite of the tremendous changes of the mission period was ceramic technology.

Modern Paipai Potters

The Paipai of Santa Catarina, the direct descendants of Mission Santa Catalina's neophyte population, continue to make pottery. While some aspects of the contemporary tradition are ethnoarchaeological and reflect continuity with prehistoric ceramic technology, manufacture, and stylistic preferences, other aspects such as economic function and distribution are completely new. These are responses to the many dramatic changes faced by Paipai potters since the demise of the mission. The role of pottery within Paipai culture and society has also changed since the middle of the nineteenth century.

After the destruction of the mission in 1840 and with the establishment of an ever more sedentary way of life, livestock production and, to a lesser degree, agriculture became increasingly important to the Paipai economy. For the last century and a half many Paipai have also made a living outside of the community working as wage laborers for neighboring ranches, in mines during Baja California's 1860–1880 gold rush, and in seasonal agricultural projects (Owen 1962; Goldbaum 1984). Today, livestock and agriculture are just part of a diversified economy; many Paipai also make a living extracting natural resources such as yucca and firewood for sale to outsiders, working for state run road maintenance and other rural community development projects, teaching in the local school, or manufacturing and selling traditional handcrafts such as pottery (Wilken-Robertson 2004).

Throughout these changing circumstances Paipai potters have found many ways to adapt their ceramic skills even as pottery's economic function has been transformed. Due to their isolated location, their marginal economic status, and possibly to cultural preferences, the Paipai continued producing pottery for domestic use until metal, glass, and plastic substitutes and non-indigenous ceramics became common by the mid-twentieth century. Even after that time certain forms such as water ollas have continued to be prized as superior in function to exotic wares. The local demand for pottery manufactured for domestic use, however, declined with increased access to wares made from new materials (Wade 2004).

The mining period brought a huge influx of prospectors to Baja California and in particular to the nearby town of El Alamo, where many local Indians were also employed (Chaput et al. 1992). Paipai pottery was undoubtedly a valuable asset on the isolated mining frontier; one of us (MW-R) was shown an antique ceramic gold pan in Santa Catarina. During the ranching period and well into the twentieth century, some potters would make vessels for sale or trade to mestizo

ranchers, as documented by archaeologist Sue Wade. Wade (2004) noted that the prehistoric trading tradition facilitated the historic transformation of pottery from local, utilitarian contexts into a valuable trade item as the influx of travelers, ethnographers, collectors, and other visitors began in the early twentieth century.

Documentation of the regional pottery tradition began with the work of Malcolm Rogers (1936) and Peveril Meigs (1939). Rogers's ethnoarchaeological field work was carried out in 1928 with a southern California Kumeyaay woman, Rosa Lopez (Owas Hilmawa) at Manzanita, California. Rogers detailed the process of pottery manufacture in ten steps. Also in 1928 but further south, Peveril Meigs (1939) described the pottery manufacturing process of a Paipai woman who lived in the Kiliwa community of Arroyo Leon. In 1936 he interviewed and photographed Kumiai potter Maria Ja'tám at the settlement of Manteca, Baja California (Meigs 1974). Thirty years later Ralph Michelsen (1972) photographed Paipai potter Petra Higuera making ceramics in Santa Catarina. Wilken-Robertson (Wilken 1987) studied the next generation of Paipai potters, many of whom were also documented in detail by Campbell (1999).

These ethnographic descriptions were made when pottery was already a valuable item in a cash economy. Meigs' (1939) account from his 1928 fieldwork mentions that "peddlers who buy pots for 25 cents each for the Ensenada tourist market complain that the Indians are so conservative that they won't make decorations to enhance the salability of their wares." Potter Maria Ja'tám offered her pots for sale to Meigs (1974) during his 1936 fieldwork, but the researcher at first declined the offer. Later her relative Abram walked two miles to Meigs's camp to offer some small pots and an agave fiber net for sale; these were traded for a blanket and some old clothes. Rogers (1936) and Michelsen (1972) purchased sets of pottery from potters during their fieldwork, some of which are now in museum collections.

As it became better known, collectors, researchers, and tourists shaped the demand for Indian pottery, leading to changes in both form and function (Wade 2004).

Today, buyers often select flat-bottomed pots with colorful fire clouding to be used as art objects on coffee tables. Some collectors seek only the most traditional shapes, while casual buyers often prefer more innovative designs. Potters have begun signing their work, scratching their initials or “brand” onto the base, as they have found it improves sales. Artistic innovation is rewarded; potter Daria Mariscal has developed novel shapes that have become her trademark, although these are quickly imitated by others (Figure 6). Mariscal still uses a paddle and an anvil, and when teaching students to process clay in the old way, she uses a metate and mano; however, at home her husband has rigged up a clay grinding contraption using a washing machine motor.

Since 1992, U.S. Yuman groups who have lost their pottery tradition have invited the Paipai to teach their



Figure 6. Paipai potter Daria Mariscal displays examples of her work.

skills at U.S. Indian reservations (Figure 7). The once isolated potters have become well-known instructors among related tribes, state parks, and universities. In some cases the Paipai have been able to identify clay sources within the U.S. tribes’ localities, clays which have subsequently been processed and successfully fired. The potters find that not only their products but also their knowledge and skills are valuable export items, and at a much wider scope than in the past. As Paipai pots appear on eBay, the global market for authentic indigenous arts leads to new patterns of distribution of Tizon Brown Ware. Through a balancing act between the value added concept of traditional Paipai pottery and the creativity of the artists in responding to the demands of the market, the “well-finished earthen pots” described by Cañizares in 1769 have managed, for now, to survive into the twenty-first century.

Conclusion

The community of Santa Catarina and its associated archaeological sites offer a unique opportunity to



Figure 7. Paipai potter Tirsia Flores and a group of students from the Yavapai Prescott Indian Tribe prepare to fire their paddle-and-anvil pottery.

examine the long-term dynamics of ceramic production from the prehistoric period to the present. Combined archaeological and ethnographic studies reveal that Native peoples creatively manipulated pottery during times of significant social change, including the mission period and their incorporation into the modern cash economy. Yuman pottery making, as exemplified by ceramic production in Santa Catarina, demonstrates important and enduring technological continuities, while the economic context of ceramic objects has expanded from primarily utilitarian objects to pieces manufactured explicitly for sale to collectors, tourists, and anthropologists. The Paipai ceramic tradition is remarkably flexible. It continues to serve as a means of local pride and Native identity, and it will continue to be important to the economic survival of this unique group of Native Californians.

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End Notes

1. The distinction must be recognized between the Dominican Mission of Santa Catalina (with an “l”), in operation from 1797 to 1840, and the modern Paipai settlement of Santa Catarina (with an “r”). The spelling of the saint’s name indicates the historical context.

2. For a more complete discussion of the ceramic assemblage from Mission Santa Catalina, see Panich (2009:178–220).

3. More detailed discussions of these analyses can be found in Panich (2009:185–195).

4. Since iron content is typically cited as one main difference between the residual clays of the Peninsular Ranges and the sedimentary clays of the Lower Colorado, buff ware sherds, if present, should separate out geochemically through XRF testing.

5. In this article we use the term “Kumiai” to refer to groups living in Baja California and the term “Kumeyaay” for those in the United States. Unless indicated otherwise, the term “Paipai” refers to all members of the Paipai community, including Ku’alh speakers.

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