Northern Paiute. University of California Anthropological Records 4(3).

1942 Culture Element Distributions: XVIII, Ute-Southern Paiute. University of California Anthropological Records 6(4).

Thomas, Jacques
1983 Why Boomerangs Boomerang (and Killing Sticks Don't). New Scientist 99(1376): 838-843.

Voegelin, Erminie W.
1938 Tubatulabal Ethnography. University of California Anthropological Records 2(1).

Walker, Gilbert T.
1901 Boomerangs. Nature 64(1657):338-340.

Wray, John
1983 Who Invented the Killing Stick? New Scientist 99(1376):839.

Middle Holocene Ceramic Technology on the Southern California Coast: New Evidence from Little Harbor, Santa Catalina Island

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A recently discovered collection of fired clay artifacts from the Little Harbor Site (CA-SCAI-17) on Santa Catalina Island establishes that an indigenous ceramic craft had developed on the Channel Islands of Southern California by hunter-gatherer-fishers during the Middle Holocene, possibly as early as 5,000 years ago. This predates any influence from the Southwest and is coeval with the earliest ceramics discovered in the western hemisphere. The Little Harbor fired clay objects appear to be associated with a similar ceramic technology that is being revealed at some Southern California mainland coastal sites, especially in Orange and Riverside counties to the east. If so, the Little Harbor collection of fired clay artifacts supports the idea of a dynamic Middle Holocene socioeconomic interaction sphere connecting the southern Channel Islands and the mainland.

EARLY ceramic technology has evoked little attention from archaeologists working in coastal southern California. Ceramic artifacts occur with low frequency in this area, and many of those recovered in the past lacked reliable provenience or chronological context. California archaeology has also been constrained by the belief that ceramic technology was a Late Prehistoric Period development in California, diffused from Southwestern cultures primarily associated with sedentary lifestyles or incipient agriculture requiring storage vessels and pots (Rogers 1936; Meighan 1954; Shepard 1971; Dillon 1993).

A newly discovered collection of fired clay artifacts from the Little Harbor site (CA-SCAI-17) on Santa Catalina Island (Fig. 1) establishes that an indigenous ceramic craft was developed on the western margin of southern California by hunter-gatherer-fishers during the Middle Holocene, possibly as early as 5,000 years before present (B.P.). This predates any influence from the Southwest and is coeval with the earliest ceramics found in the western hemisphere (Rice 1987:7, 20). The Little Harbor fired clay objects appear to be linked to a similar (and possibly older) ceramic technology coming to light at some southern California mainland coastal sites, especially in Orange and Riverside counties directly east of Santa Catalina Island. If this is accurate, the Little Harbor collection of fired clay artifacts supports the concept of a dynamic Middle Holocene socioeconomic interaction sphere connecting the southern Channel Islands and the mainland.

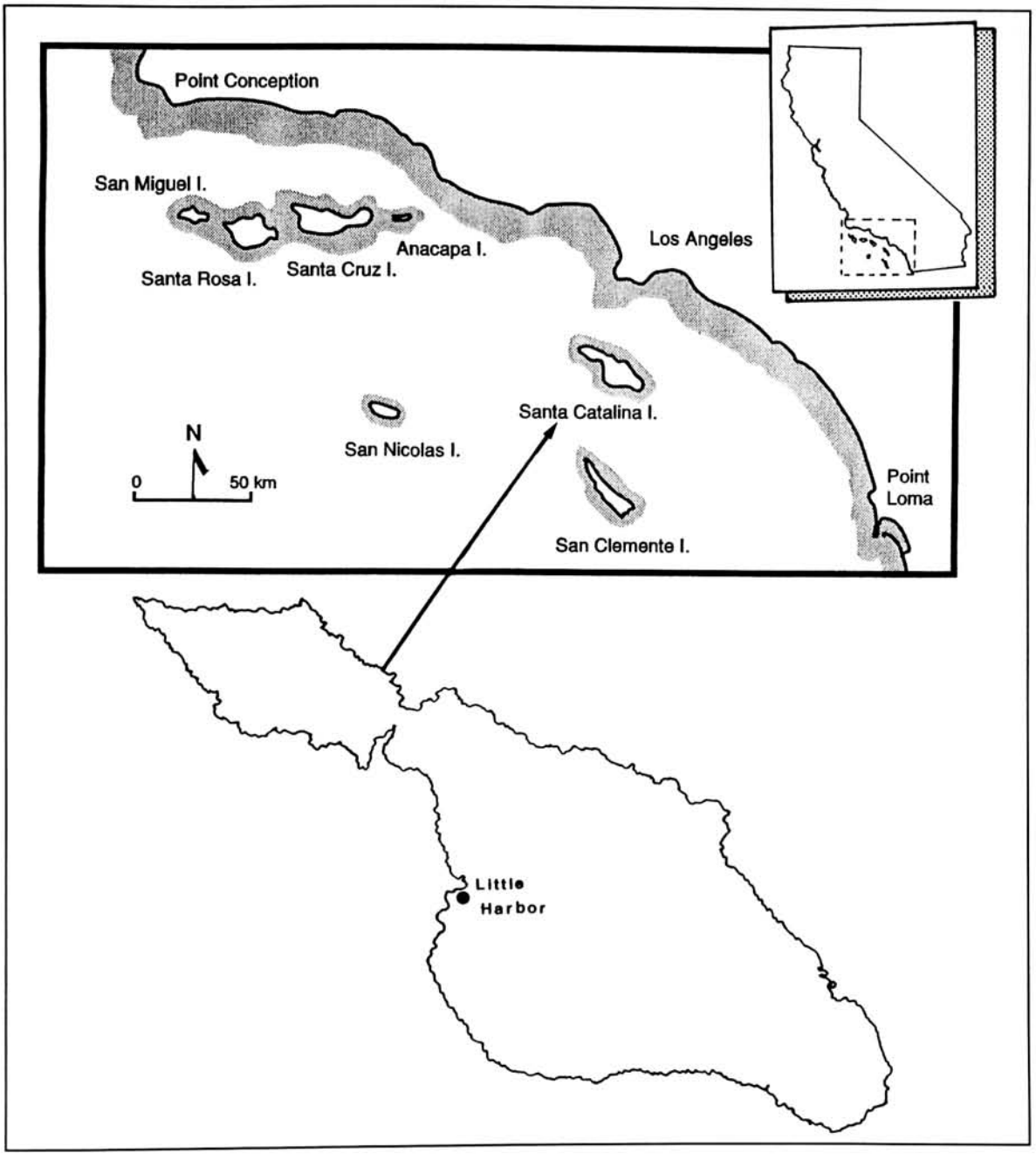

Fig. 1. The California Channel Islands and the Little Harbor site.

THE LITTLE HARBOR EXCAVATIONS

Archaeology at Little Harbor has revealed an exclusively maritime-adapted population of hunter-gatherer-fishers that reached its zenith during the Middle Holocene (Meighan 1959a; Raab et al. 1995). The midden is 70 cm. deep in some areas, with the richest cultural deposit occurring in a widespread stratum between 30 and 60 cm. deep, dated ca. 3,316 B.C. (Raab et al. 1995:294).

Little Harbor was excavated by the University of California, Los Angeles (UCLA), between 1953 and 1955, and the first detailed report of the site included an ecological interpretation based on the unique archaeofauna of fish and large quantities of cetaceans (Meighan 1959a). Although many artifacts and lithic "effigies" were found, no fired clay artifacts were reported. A single radiocarbon date of 3,880 ± 250 years RCYBP (Michigan Laboratory No. 434) was derived from the basal level of the midden.

The site was again excavated in 1973 by a crew from UCLA. Although no report on that work has been issued, two remarkable fired clay artifacts recovered from the basal level of the site were subjected to thermoluminescence (TL) dating (Drover 1975, 1978). One object was TL dated to 2,849 years B.P. and the other to about 2,002 years B.P., a clear indication that the two fired clay specimens were not recent intrusions (Drover 1978:82), although it is recognized that TL dates rarely correspond to radiocarbon dates (Drover et al. 1979). Three additional radiocarbon dates were subsequently derived from a single unit (Kaufman 1976). Two of these dates confirmed that the richest midden layer, between 30 and 60 cm., was about 5,000 years old.

In 1991, an excavation of Little Harbor by California State University, Northridge (CSUN), resulted in a revised ecological synthesis and a critique of a controversial marine paleotemperature model for cultural change (Raab et al. 1995). Six additional radiocarbon dates were obtained, establishing a sequence of occupational components beginning in the early part of the Middle Holocene. The entire suite of Little Harbor dates and the occupational components were presented in Raab et al. (1995:293, 295).

A lively debate subsequently ensued regarding alternative ecological and paleoclimatological interpretations and possible resultant cultural impacts (Arnold 1997; Arnold et al. 1997; Raab and Bradford 1997; Raab and Larson 1997). In response to this debate, I undertook analysis of the previously unanalyzed mammal and bird remains recovered during the 1973 excavation, synthesizing these data with faunal data from the 1991 excavation. While examining the 1973 faunal collection, I discovered 17 previously unrecognized fired clay objects. Thus, added to the two artifacts reported by Drover (1975, 1978), a total of 19 fired clay artifacts were recovered during the 1973 project.

DESCRIPTION OF THE FIRED CLAY OBJECTS

Drover's (1975, 1978) characterization of the materials, inclusions, color, and forms of the two previously reported pieces from Little Harbor is excellent and will not be repeated here. The newly discovered fired clay objects are made of the same basic material and by the same technique (hand-molding and smoothing). The clay is untempered, coarsely textured, and has inclusions of quartz grains and other nonplastic materials. The clay is predominantly orange-brown, but some specimens have gray or black patches produced by firing. The orange-brown clay appears to be local to the site. Two objects are made of black, possibly carbonaceous clay, or clay that turns black when fired or burned. However, the clay used for the remainder of the specimens is probably not carbonaceous, since there are no indications of dark carbon-bearing material inside the pieces.

Figure 2c illustrates a newly discovered artifact which closely resembles the pair reported by Drover (Fig. 2a-b). All three are rounded, knob-like forms with tapering stems, projecting flanges, and various surface decorations, such as incised lines, perforations, or pigmentation. This clustering of attributes is justification for defining this as a local artifact type.

The sides of the large end of the artifact illustrated in Figure 2c are somewhat flattened, making it more rectangular than the other two. This artifact weighs 27.9 g. and is 4.85 cm. long,

Fig. 2. Three fired clay artifacts recovered from Little Harbor.

with a maximum thickness of 4.15 cm.[1] It was recovered from the uppermost level of Pit 14. Although similar fired clay artifacts have often been interpreted as effigies, I hesitate to imply any such ideological or ritual meaning to these specimens. All three excavations at Little Harbor produced artifacts that were classified as effigies (Meighan 1959a:392; Accession No. 417 field catalog of the 1973 excavation, Catalina Island Museum; field catalog of the 1991 excavation, California State University, Northridge, Center for Public Archaeology). With a single exception, all of the Little Harbor effigies are made of stone, primarily polished steatite.[2] Most of them are flat with projecting stems, having the general shape of the head of a golf putter. The only similarity between the fired clay artifacts and the stone effigies is that they both have projecting stems. It seems unlikely to me that the people of Santa Catalina Island would fabricate fired clay objects for the same use as stone effigies, since the island provides a variety of workable lithic materials. These two classes of artifacts probably had different meanings within the culture.

Figure 3 illustrates 11 other fired clay objects recovered during the 1973 project. Table 1 presents measurements, provenience, and further details on these small artifacts. Some of these specimens have decorative perforations, shallow flanges, or thin, incised lines. None of them have any pigmentation. One (Specimen 417-386, not illustrated) has impressions that either were applied as decoration or were the result of being pressed against fronds, wood, or sticks, as in wattle-and-daub construction. Several of the pieces appear to be broken parts of larger objects or by-products of the ceramic

Fig. 3. Small fired clay objects from Little Harbor.

technology. Some show evidence of burning, perhaps related to initial firing.

The Little Harbor ceramics differ greatly from later California ceramics: they are neither representational figurines nor utilitarian pottery. The more recent Southwest-inspired fired clay objects found in California are either clearly anthropomorphic, zoomorphic, or distinctly functional (pottery, pipes, etc.).[3]

CHRONOLOGICAL AND STRATIGRAPHIC CONTEXT OF THE FIRED CLAY OBJECTS

With 10 radiocarbon dates now available for Little Harbor, it is possible to outline the chronology and cultural components of the site as a context for the fired clay objects. Meighan (1959a) identified five layers or distinct depositions at the site, with the deepest layer (Layer 5) being noncultural subsoil. Layer 4 was identified as the dense cultural midden, which produced a rich collection of artifacts and faunal remains. Above Layer 4, Layers 2 and 3 contained less concentrated cultural material. The uppermost stratum (Layer 1) consisted of clay washed in from the slope to the east of the excavation, and some of its cultural content had probably been displaced. The steeper slopes of the site had no clay cap, presumably because surface erosion had worn it off (Meighan 1959a: 387). Meighan's radiocarbon assay of 3,880 ± 250 RCYBP was derived from Layer 4 and has now been dendrocalibrated and corrected using CALIB 3.0.3 (Stuiver and Reimer 1993) as 2,384 B.C. (range between 1,950 and 2,832 B.C.), which equates to about 4,334 years B.P. However, Meighan's original date remains problematic since the charcoal sample was derived

Table 1
ATTRIBUTES OF SMALL FIRED CLAY OBJECTS FROM CA-SCAI-17[a]

Figure	Pit	Level (in cm.)	NL[b]	Length	Width	Weight	Description
3a	55	40-50	3	2.00	2.43	4.40	"bottlestopper"
3b	27	10-20	2	1.93	1.42	2.90	tapered cylinder
3c	29	20-30	2	1.82	1.00	0.93	pointed tip
3d	22	10-20	1	2.00	1.80	3.58	cylinder, burned with perforation
3e	23	20-30	2	1.72	1.00	0.90	small oval
3f	54	10-20	1	1.87	1.73	3.32	rectangle; burned
3g	55	0-10	2	2.37	1.15	3.10	rounded tip
3h	20	10-20	1	3.40	1.96	8.60	"lip" shape
3i	23	10-20	2	2.93	1.20	3.00	tapered point with incised lines
3j	31	10-20	2	3.10	1.90	4.70	pointed oval
3k	24	60-70	3	3.49	0.70	1.89	"worm"
--	22	10-20	2	2.70	0.92	0.60	"doll's boot"
--	4	10-20	1	1.96	0.70	0.95	thin cylinder
--	54	10-20	1	2.84	2.53	13.5	black clay ball; 3 pieces glued
--	23	0-10	1	1.30	0.46	0.30	tiny cylinder previously catalogued (No. 417-1385) as bone
--	11	20-30	1	2.16	1.96	3.90	flat, black plug with 2 diagonal grooves previously catalogued (No. 417-386) as asphaltum

[a] All metric measurements are in centimeters and grams.
[b] NL = natural level.

from three different portions of the basal midden between 50 and 60 cm.

The complete suite of 10 radiocarbon dates (Raab et al. 1995:293, Table 1), established a sequence of five cultural components for Little Harbor (Raab et al. 1995:295, Table 2). Component 2 corresponded to Meighan's (1959a) Layer 4. This component was defined by six dendrocalibrated radiocarbon dates averaging 3,316 ± 30 years B.C., calibrated to about 5,266 years B.P. This places Component 2 in the early portion of the Middle Holocene.[4]

During the 1973 excavation, four natural levels (NL) relating to observable changes in the cultural deposit and its matrix were established. The most productive of these, NL-2, corresponded to Meighan's (1959a) Layer 4 and Raab et al.'s (1995) Component 2. This zone is referred to hereinafter as the "main midden." Kaufman (1976:23) concurred with this correlation and established the age of the main midden at about 5,000 years B.P.

Of the 19 fired clay artifacts recovered from Little Harbor, eight (42%) were found in the main midden. Three others were recovered from below this level and are at least as old or older. Thus, 11 of the 19 objects (58%) can be reasonably dated to the early portion of the Middle Holocene. Eight other objects (42%), including the artifact shown in Figure 2c, were found above the main midden. The presence of these artifacts in more recent deposits may be due either to stratigraphic disturbance or continuance of the fired clay craft throughout site occupation.[5]

The integrity of the upper levels of the Little Harbor site is questionable (Arnold et al. 1997). Both Meighan (1959a) and Raab et al. (1995) acknowledged that the uppermost portion of the site was mixed with soil and possibly cultural material washed down from an adjoining knoll. Pothunting, prehistoric digging, and/or pedoturbation may have introduced an unknown amount of disturbance. My analysis of the faunal material indicates that bioturbation by burrowing animals is nonexistent at this site. Meighan (1959a: 386) and Raab et al. (1995:294) concurred that any disturbance is likely confined to the upper 30 cm. of the site and is absent in the main midden, which yielded most of the clay artifacts.

EARLY CERAMIC TECHNOLOGY IN COASTAL SOUTHERN CALIFORNIA

Most ceramic objects recovered from southern California archaeological sites have Late Prehistoric Period contexts and traceable antecedents in Southwest cultures.[6] Only a few sites have produced fired clay artifacts from controlled proveniences confidently attributed to the Middle Holocene. To date, all such sites are either on the Channel Islands or the adjacent southern California coast.

Prior to this study, only four ceramic objects had been reported from the islands, including the two intricately designed fired clay objects from Little Harbor identified by Drover (1975, 1978). A fired clay "head" was reported from San Nicolas Island in the late 1800s, but nothing else is known about this artifact (Nelson 1936: 204; Chace 1973). It might have been another knob-like artifact similar to those shown in Figure 2. The fourth specimen, a single fired clay object that was either impregnated or pigmented with hematite, was reported from Santa Rosa Island (Orr 1968:176) and attributed to the Early Period (between about 3,000 and 1,000 B.C. or 4,950 and 2,950 B.P.) (King 1990:263). This artifact is totally unlike the Little Harbor specimens.

During the current research, I discovered a single fired clay artifact not unlike the Little Harbor artifacts in an as-yet-undocumented UCLA collection from the Eel Point site on San Clemente Island (CA-SCLI-43) (Fig. 4). Eel Point has been extensively dated by a suite of 36 radiocarbon assays from 1994 and 1996 excavations by CSUN. At depths of 100 to 180 cm., dates ranging between 6,000 and 9,000 years B.P. have been produced from numerous units (L. M. Raab, personal communications 1995, 1997). The Eel Point ceramic artifact (Cat. No. 3687) was recovered from a depth of 100 to 110 cm. It is a cupped discoidal object with a broken stem resembling half of a spool, earplug, or labret. It is made of coarse, untempered black clay with granular nonplastic inclusions. It has a diameter of 1.78 cm., is 0.94 cm. thick at the stem, and weighs 1.7 g.

Although the stratum that yielded this artifact during the UCLA excavations was not radiocarbon dated, numerous obsidian hydration dates derived from nearby units at similar depths cluster between 4,000 and nearly 8,000 years B.P. (see Table 2). These dates are consistent with the radiocarbon dates obtained during the CSUN 1994 and 1996 seasons. Based on this evidence, this object may be contemporary with the Little Harbor ceramic artifacts. However, the chronological context of this artifact remains to be established.

On the mainland, early ceramics are somewhat more numerous. Three fired clay artifacts were recovered from CA-ORA-64 in coastal Orange County (Drover 1971) and ascribed to a "pre-third millennium B.C. context" (Drover et al. 1983:20). Several projects conducted during the 1920s and 1930s (but not documented until decades later) produced a number of fired clay objects of fairly consistent style in coastal Orange County (Anonymous MS; Ashby and Winterbourne 1966; Winterbourne 1968; Chace 1973; Dixon 1977; Koerper et al. 1996). Another collection of similar fired clay figurines

Fig. 4. Fired clay artifact from Eel Point (scale in cm.).

originally ascribed to the Mason Valley in San Diego County (McKinney and Knight 1973) may actually have been recovered from Orange County (Dixon 1970, 1977). A fired clay artifact recovered during a Works Projects Administration excavation in Orange County at what is probably CA-ORA-58 (Anonymous MS) is nearly identical to one from CA-ORA-64 (Drover 1971:46).

More recent studies on the mainland coast have produced additional evidence of this same craft (Drover 1971, 1975, 1991; Drover et al. 1983; Macko et al. 1998). Ongoing excavations at CA-ORA-64 (1994 and 1996) have yielded more than 100 ceramics of the same type as reported by Drover in 1971 (Macko et al. 1998). Furthermore, there is strong evidence that many of these artifacts may represent the same Archaic Period cultural component as that found at Little Harbor. Forty-two radiocarbon dates and 12 of the 18 obsidian hydration readings for CA-ORA-64 date the site to 4,340 through 9,010 years B.P. (Macko et al. 1998). Three other obsidian hydration dates are older than 9,010 B.P. Current (but as yet unpublished) work at CA-RIV-6069 has produced some 30 fired clay artifacts (similar to those described in this paper and by Macko et al. 1998) from depths of 2.0 to 3.5 m., with eight of 10 radiocarbon dates ranging between 7,000 and 8,340 B.P. (uncalibrated). Seven of these dates are directly associated with the fired clay artifacts in the lower component of the site (M. Horne, personal communication 1998).

The fired clay artifacts recovered from these various mainland sites are associated with early Middle Holocene dates and are made by the same technology as the crude artifacts recovered from the island sites. Although these bits of evidence are scattered and unsynthesized, they hint at the antiquity and indigenous nature of a coastal fired clay industry (Drover 1975:105; Drover et al. 1979:286; Moratto 1984:149; Macko et al. 1998:63).

With the recovery of this sizable, well-provenienced collection of fired clay artifacts from Little Harbor, there is evidence that the manufacture of ceramics during the Middle Holocene was more common than previously believed. Reports of similar ceramics in more northern and inland sites in Los Angeles, Riverside, and even Ventura counties (King n.d.; Kowta et al. 1965; Rosen 1978) suggest that the geographical range of this technology might have been quite extensive. The distribution of sites producing Middle Holocene fired clay artifacts is shown in Figure 5.

A SYNTHESIS OF THE SOUTHERN COASTAL INTERACTION SPHERE

The similarity and synchroneity of the island and mainland Archaic Period fired clay artifacts lend support to an emergent hypothesis of Middle Holocene technological and socioeconomic interaction in coastal southern California. Several lines of archaeological evidence point to widespread cultural interface between Middle

Table 2
OBSIDIAN HYDRATION DATES FOR
EEL POINT (CA-SCLI-43), SAN CLEMENTE ISLAND

Lab No.[a]	Mean Rind Measurement[b]	Age B.P.[c]	Artifact Type	Provenience
10244	6.9	6,294	flake	Unit 3, 190-205 cm.
10249	5.8	5,024	flake	Unit 2C, 190-205 cm.
10256	7.0	7,869	flake	Unit 3, 160-175 cm.
10257	5.5	4,629	flake	Unit 2, Feature 1
10258	5.4	4,488	flake	Unit 2, 205-220 cm.
10300	5.9	5,515	flake	Unit 2A, 180-205 cm.
10301	5.2	4,176	projectile point	Unit 4A, 180-215 cm.

[a] University of California, Los Angeles (UCLA), Obsidian Hydration Laboratory.
[b] Measurement in microns; mean of six measurements.
[c] In determining these ages, the UCLA Laboratory considered adjusted density (ratio of sample weight in the air versus weight in the water), effective hydration temperature (20.2 C), relative humidity (estimated 98% for deep contexts), percentage of natural water ions by weight, and diffusion constant (rate of change in hydration through rim width).

Holocene island and mainland peoples. It is known that shell, steatite, and marine mammal products, such as otter skins, were traded from the islands in exchange for mainland products (King 1976; Wlodarski 1979; Johnson 1982; Walker and Snethkamp 1984; Salls 1986, 1988; Bennyhoff and Hughes 1987; Scalise 1994). Citing Walker (1951:60), Meighan (1959a:392) reported that a stone effigy identical to those from Little Harbor was recovered in Level 2 at the Malaga Cove site on the mainland immediately east of Catalina Island, and suggested that it indicates trade between these two areas and a possible cross-date for Level 2 of the Malaga Cove site at about 4,000 years B.P. My faunal analysis confirms that portions of deer were brought to Little Harbor from the mainland. Both the 1973 and 1991 Little Harbor bone collections contained small quantities of deer bone, primarily lower leg elements, typically used to make bone tools.

Howard and Raab (1993) presented yet another line of evidence for the socioeconomic interaction of the southern California maritime peoples. On the basis of a collection of *Olivella* grooved rectangle (OGR) beads (Class N beads as described by Bennyhoff and Hughes [1987]) recovered from Little Harbor's 5,000-year-old cultural component, as well as from similarly dated sites on neighboring San Clemente and San Nicolas islands (Vellanoweth 1995) and the adjacent mainland coast, they proposed a socioeconomic interaction sphere beginning as early as 5,000 years ago. King (1990:111) noted that grooved rectangle beads were used at the end of what he defined as the Early Period or at the beginning of the Middle Period (approximately 3,000 to 1,000 B.C.), primarily in areas where the ethnographic native people spoke Uto-Aztecan (Takic) languages. It is possible that the presence of these beads on the southern California coast may mark the "Shoshonean wedge" of Takic peoples migrating into southern California (Kroeber 1925:574-580).

Because Class N beads are made of marine shell, Howard and Raab (1993:8) suggested that this design may have originated on the coast and moved east and northward from there. Raab and Howard (1996:7-8) also considered whether the distribution of these beads could represent a

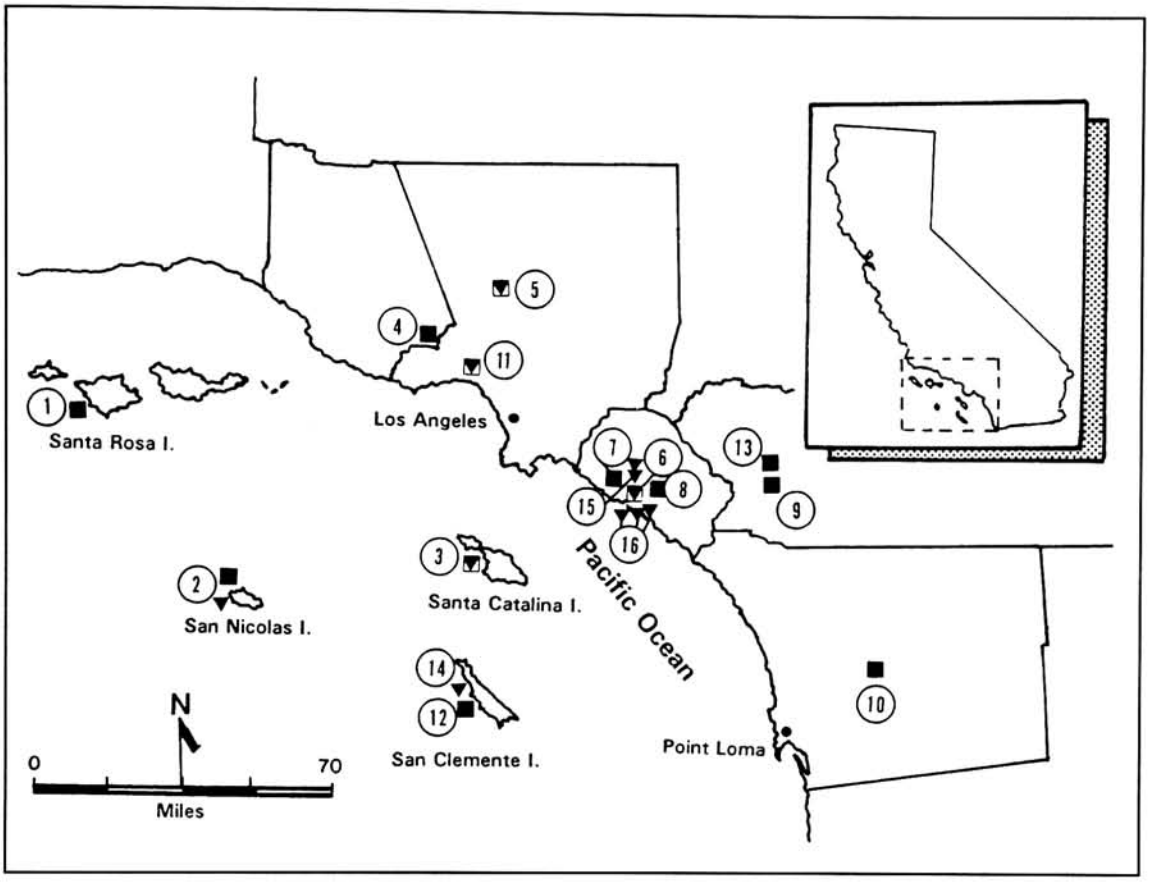

Fig. 5. Sites with reported Middle Holocene fired clay artifacts (identified with dark squares): (1) Santa Rosa Island (CA-SRI-41); (2) San Nicolas Island (site unpublished); (4) Oak Park (CA-VEN-294); (7) Banning Estate (Norris Property, Fairview Hospital; CA-ORA-58); (8) Coyote Canyon (CA-ORA-236); (9) Christensen-Webb Site, Menifee Valley (CA-RIV-332, -333); (10) Mason Valley, San Diego County (provenience disputed; see discussion in text); (12) Eel Point (CA-SCLI-43) (dating problematic); (13) CA-RIV-6069 (Early Holocene dates). Sites yielding *Olivella* grooved rectangle beads (Howard and Raab 1993; Raab and Howard 1996; Macko et al. 1998) (identified with dark triangles): (2) San Nicolas Island (CA-SNI-12 or -16, -161); (14) Nursery site, San Clemente Island (CA-SCLI-1215); (15) Irvine Ranch (CA-ORA-665, -667); (16) Bolsa Chica Mesa (CA-ORA-85, -365, -368). Sites with reported fired clay artifacts and *Olivella* grooved rectangle beads (identified with open squares filled with dark triangles): (3) Little Harbor (CA-SCAI-17); (5) Vasquez Rocks (CA-LAN-361) (dating inconclusive; see discussion in text); (6) Irvine Site (CA-ORA-64); (11) Encino Village (CA-LAN-43) (dating inconclusive; see discussion in text).

Uto-Aztecan frontier stretching from the Great Basin south into California. The distribution of the beads is similar to the distribution of sites with early fired clay craft on the coast (Fig. 5). Like the fired clay objects, these beads have been found at sites extending from the southern Channel Islands eastward through Orange and Riverside counties, north and eastward through what is now northern Los Angeles County. Recently, a Class N bead dated to the Middle Holocene was recovered in the northwestern Great Basin, hinting that this interaction may have extended north and east through the Great Basin of eastern California and Nevada into Oregon (Jen-

kins and Erlandson 1996). Ongoing excavations at CA-ORA-64 have produced several large, possibly ceremonial, bifaces similar to those recovered from some Great Basin sites (Macko et al. 1998).

Both the Class N beads and crudely formed fired clay objects such as those from Little Harbor are reported from CA-LAN-361, the Vasquez Rocks site, in northern Los Angeles County (King n.d.). While the obsidian hydration dates from that site are inconclusive for ascribing the fired clay objects to the Middle Holocene, radiocarbon dates place the Class N beads in the Early Period, and several of the fired clay objects were recovered from depths corresponding to the Early Period (King n.d.). Finally, in southern Ventura County, a single fired clay object virtually identical to one found at CA-ORA-64 (Drover 1975:103, Fig. 1, top row) has been recovered and dated to about 7,000 years B.P. (Rosen 1978). To date, this discovery marks the northernmost extent of these Archaic Period fired clay artifacts. However, its similarity to artifacts from the southern counties suggests that these distant sites might fall within the boundaries of the hypothetical interaction sphere.

The geographical and temporal relationships of the sites yielding Middle Holocene ceramics and Class N beads generate questions as to where the crafts originated and whether a single but widespread cultural group produced the artifacts, or if the presence of these artifacts reflects interaction between neighboring but unrelated peoples. This is a fertile direction for future study and research.

NOTES

1. Specimen 417-1228 (Fig. 2a) is 4.27 cm. long with a diameter of 2.7 cm. on the large end and 1.25 on the small end. Specimen 417-1461 (Fig. 2b) is 4.9 cm. long with a diameter of 2.89 on the large end and 0.78 cm. on the small end. Drover (1978:80) reported "diameters" in excess of 7 cm., but it appears that he meant to record circumference.

2. The 1973 excavation produced an "effigy" of diatomaceous earth. It is a ping-pong-ball-size knob of flaky white material unlike any other artifact found at the site. Like the stone and some of the fired clay artifacts, however, it has a projecting stem.

3. See Campbell (1932), Morss (1954), True (1957, 1970), Wallace (1957, 1964), Davis (1959), True and Warren (1961), Bryan (1964), Ruby and Blackburn (1964), Galdikas-Brindamour (1970); McKinney et al. (1971), Hedges (1973), Knight (1973), McKinney and Knight (1973), Sutton (1979), Koerper et al. (1996), and Schaefer (1997).

4. The Middle Holocene is defined herein as 6,650 to 3,350 radiocarbon years B.P. (per Erlandson 1997:6).

5. A cautionary note is required regarding the two artifacts recovered in 1973 from Pit 55. That pit was located amid the units excavated between 1953 and 1955, and the stratigraphy may have been compromised.

6. See Mason (n.d.), Campbell (1932), Meighan (1954, 1959b), True (1957, 1970), Wallace (1957, 1964), Davis (1959), True and Warren (1961), Bryan (1964), Ruby and Blackburn (1964), Ashby and Winterbourne (1966), Winterbourne (1968), Evans (1969), Dixon (1970, 1977), Ross (1970), McKinney et al. (1971), Hedges (1973), Knight (1973), McKinney and Knight (1973), Haury (1975), Joesink-Mandeville (1983), Farnsworth (1990), Dillon (1993), Koerper and Hedges (1996), Hurd and Miller (1997), and Schaefer (1997).

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REFERENCES

Anonymous
MS Drawings of Indian Artifacts: Ceremonial-Hunting, Household and Decorative and Indian Art. Works Project Administration Anthropological Project No. 4465. MS on file at University of California, Irvine, Library Special Collections.

Arnold, Jeanne E.
1997 Bigger Boats, Crowded Creekbanks: Environmental Stresses in Perspective. American Antiquity 62(2):337-339.

Arnold, Jeanne E., Roger H. Colten, and Scott Pletka
1997 Contexts of Cultural Change in Insular California. American Antiquity 62(2):300-318.

Ashby, G. E., and J. W. Winterbourne
1966 A Study of Primitive Man in Orange County and Some of its Coastal Areas (1939). Pacific Coast Archaeological Society Quarterly 2(1):3-52.

Bennyhoff, James A., and Richard E. Hughes
1987 Shell Bead and Ornament Exchange Networks Between California and the Western Great Basin. American Museum of Natural History Anthropological Papers 64(2).

Bryan, Bruce
1964 A Clay Figurine Found in Southern California. The Masterkey 38(2):66-69.

Campbell, Elizabeth W. Crozer
1932 Cremation in the Desert. The Masterkey 6(4):105-112.

Chace, Paul G.
1973 Clay Figurines, Additional Data. Pacific Coast Archaeological Society Quarterly 9(3):41-43.

Davis, James T.
1959 Further Notes on Clay Human Figurines in the Western United States. Berkeley: Reports of the University of California Archaeological Survey No. 48.

Dillon, Brian D.
1993 Archaeological Survey and Impact Assessment of the Vista Prescribed Burn at Puerta La Cruz, A 650 Acre Parcel Near Warner Springs, San Diego County, California. Report on file at the Center for Public Archaeology, California State University, Northridge.

Dixon, Keith A.
1970 A Brief Report on Radiocarbon and Obsidian Hydration Measurements from ORA-58 (The Banning Norris or Fairview Hospital Site), Orange County, California. Pacific Coast Archaeological Society Quarterly 6(4):61-68.

1977 The Mason Valley Clay Figurines: Their Decoration and the Problem of Provenience. Pacific Coast Archaeological Society Quarterly 13(4):73-86.

Drover, Christopher E.
1971 Three Fired Clay Figurines from 4-Ora-64, Orange County, California. Pacific Coast Archaeological Society Quarterly 7(4):45-49.

1975 Early Ceramics from Southern California. The Journal of California Anthropology 2(1):101-107.

1978 Prehistoric Ceramic Objects from Catalina Island. The Journal of California Anthropology 5(1):78-83.

1991 Ceramic Object. In: Coyote Canyon Cave, An Inner Coastal Rockshelter Excavation of CA-ORA-236, Laura Lee Mitchell, ed., pp. 72-73, 120. Pacific Coast Archaeological Society Quarterly 27(2 and 3).

Drover, Christopher E., Henry C. Koerper, and Paul E. Langenwalter II
1983 Early Holocene Human Adaptation on the Southern California Coast: A Summary Report of Investigations at the Irvine Site (CA-Ora-64), Newport Bay, Orange County, California. Pacific Coast Archaeological Society Quarterly 19(3 and 4).

Drover, Christopher E., R. E. Taylor, Thomas Cairns, and Jonathon E. Ericson
1979 Thermoluminescence Determinations on Ceramic Material from Southern California. American Antiquity 44(2):285-295.

Erlandson, Jon M.
1997 The Middle Holocene Along the California Coast. In: Archaeology of the California Coast During the Middle Holocene, Jon M. Erlandson and Michael A. Glassow, eds. pp. 1-10. University of California, Los Angeles, Perspectives in California Archaeology, Vol. 4.

Evans, William S., Jr.
1969 California Indian Pottery: A Native Contribution to the Culture of the Ranchos.

Pacific Coast Archaeological Society Quarterly 5(3):71-81.

Farnsworth, Laurie A.
1990 Changing Patterns of Animal Resource Exploitation in the San Fernando Valley: The Application of Optimal Foraging Models to the Faunal Assemblage of CA-LAN-43. Master's thesis, University of California, Los Angeles.

Galdikas-Brindamour, Birute
1970 Trade and Subsistence at Mulholland: A Site Report on LAn-246. Los Angeles: University of California Archaeological Survey Annual Report No. 12:120-161.

Haury, E. W.
1975 The Hohokam: Desert Farmers and Craftsmen. Tucson: University of Arizona Press.

Hedges, Ken
1973 Hakataya Figures from Southern California. Pacific Coast Archaeological Society Quarterly 9(3):1-40.

Howard, William J., and L. Mark Raab
1993 Olivella Grooved Rectangle Beads as Evidence of an Early-Period Southern Channel Islands Interaction Sphere. Pacific Coast Archaeological Society Quarterly 29(3):1-11.

Hurd, Gary S., and George E. Miller
1997 Another Application of Neutron Activation Analysis to the Study of Southern California Prehistoric Ceramics. In: Reconstructing 2000 Years of Environmental and Cultural Change on the CSULB Campus: Contributions from Midden Tract G, the Parking Structure Site, Matthew A. Boxt, ed., Appendix 5. Report on file at the Department of Physical Planning and Facilities Management, California State University, Long Beach.

Jenkins, Dennis L., and Jon M. Erlandson
1996 *Olivella* Grooved Rectangle Beads from a Middle Holocene Site in the Fort Rock Valley, Northern Great Basin. Journal of California and Great Basin Anthropology 18(2):296-302.

Joesink-Mandeville, L. R. V.
1983 Early Formative Archeological Linkages Between Nuclear America and Upper California. Journal of New World Archaeology 5(3):27-48.

Johnson, J. R.
1982 An Ethnohistoric Study of the Island Chumash. Master's thesis, University of California, Santa Barbara.

Kaufman, Thomas S.
1976 Environmental Analysis of the Little Harbor Archaeological Site, Santa Catalina Island, California. Master's thesis, University of California, Los Angeles.

King, Chester D.
1976 Chumash Inter-Village Exchange. In: Native Californians: A Theoretical Retrospective, Lowell J. Bean and Thomas C. Blackburn, eds., pp. 288-318. Socorro: Ballena Press.

1990 Evolution of Chumash Society: A Comparative Study of Artifacts Used for Social System Maintenance in the Santa Barbara Channel Region Before A.D. 1804. New York: Garland.

King, Chester D. (with contributions by Charles Smith and Tom King)
n.d. Archaeological Report Related to the Interpretation of Archaeological Resources Present at Vasquez Rocks County Park. Report on file at the Los Angeles County Museum of Natural History.

Knight, Lavinia C.
1973 A Figurine from China Ranch (4-Iny-962). Pacific Coast Archaeological Society Quarterly 9(3):48-51.

Koerper, Henry C., and Ken Hedges
1996 Patayan Anthropomorphic Figurines from an Orange County Site. Journal of California and Great Basin Anthropology 18(2):204-220.

Koerper, Henry C., David E. Earle, Roger D. Mason, and Paul Apodaca
1996 Archaeological, Ethnohistoric, and Historic Notes Regarding ORA-58 and Other Sites Along the Lower Santa Ana River Drainage, Costa Mesa. Pacific Coast Archaeological Society Quarterly 32(1):1-36.

Kowta, Makoto, Robert A. Appleton, Jr., David J. Harris, David A. M. Lane, and Clay A. Singer
1965 Excavations at the Christensen-Webb Site, Menifee Valley, 1963-1964. San Bernardino County Museum Association Quarterly 13(2):1-72.

Kroeber, A. L.
1925 Handbook of the Indians of California.

Bureau of American Ethnology Bulletin 78.

Macko, Michael E. (with contributions by Jeffrey S. Couch, Owen K. Davis, Henry C. Koerper, Paul E. Langenwalter II, and Glenn S. Russell
1998 Neolithic Newport Executive Summary: Results of Implementing Mitigation Measures Specified in the Operation Plan and Research Design for the Proposed Newporter North Residential Development at ORA-64. Report on file at Macko Archaeological Consulting, Huntington Beach.

Mason, Roger D.
n.d. Summary of Work Carried Out at LAN-43, The Encino Village Site. Report on file at the South Central Coastal Archaeological Information Center, University of California, Los Angeles.

McKinney, Aileen, and Lavinia Knight
1973 Baked Clay Figurines from Mason Valley, San Diego: Bowers Museum Strandt Collection. Pacific Coast Archaeological Society Quarterly 9(3):44-47.

McKinney, Aileen, Duane Hafner, and Jane Gothold
1971 A Report on the China Ranch Area. Pacific Coast Archaeological Society Quarterly 7(2):1-47.

Meighan, Clement W.
1954 A Late Complex in Southern California Prehistory. Southwestern Journal of Anthropology 10(2):215-227.

1959a The Little Harbor Site, Catalina Island: An Example of Ecological Interpretation in Archaeology. American Antiquity 24(4):383-405.

1959b Archaeological Resources of Borrego State Park. Los Angeles: University of California Archaeological Survey Annual Report No. 1:25-44.

Moratto, Michael J.
1984 California Archaeology. Orlando: Academic Press.

Morss, Noel
1954 Clay Figurines of the American Southwest. Cambridge: Papers of the Peabody Museum, Harvard University 49(1).

Nelson, N. C.
1936 Notes on the Santa Barbara Culture. In: Essays in Anthropology Presented to A. L. Kroeber, pp. 199-209. Berkeley: University of California Press.

Orr, Philip C.
1968 Prehistory of Santa Rosa Island. Santa Barbara: Santa Barbara Museum of Natural History.

Raab, L. Mark, and Katherine Bradford
1997 Making Nature Answer to Interpretivism: Response to J. E. Arnold, R. H. Colten, and S. Pletka. American Antiquity 62(2): 340-341.

Raab, L. Mark, and William J. Howard
1996 A Middle Holocene Uto-Aztecan Frontier in California and the Great Basin: A Proposed Archaeological Model. Report on file at the Center for Public Archaeology, California State University, Northridge.

Raab, L. Mark, and Daniel O. Larson
1997 Medieval Climatic Anomaly and Punctuated Cultural Evolution in Coastal Southern California. American Antiquity 62(2): 319-339.

Raab, L. Mark, Katherine Bradford, Judith F. Porcasi, and William J. Howard
1995 Return to Little Harbor, Santa Catalina Island, California: A Critique of the Marine Paleotemperature Model. American Antiquity 60(2):287-308.

Rice, Prudence M.
1987 Pottery Analysis: A Sourcebook. Chicago: University of Chicago Press.

Rogers, Malcolm J.
1936 Yuman Pottery Making. San Diego Museum Papers No. 2.

Rosen, Martin D.
1978 Archaeological Investigations at Ven-294, an Inland Chumash Village Site. In: The Archaeology of Oak Park, Ventura County, California, C. W. Clewlow, Jr., Helen Wells, and Alan G. Pastron, eds., pp. 7-113. University of California, Los Angeles, Institute of Archaeology, Monograph 5.

Ross, Lester A.
1970 4-ORA-190: A Descriptive Site Report of a Late Prehistoric Horizon Site in Orange County, California. Pacific Coast Archaeological Society Quarterly 6(2 and 3):1-135.

Ruby, Jay, and Thomas C. Blackburn
1964 Occurrence of Southwestern Pottery in Los Angeles County, California. American Antiquity 30(2):209-210.

Salls, Roy A.
1986 Subsistence Change and the Concept of Alternate Stable-State Communities in Prehistoric Marine Adaptations. Paper presented at the annual meetings of the Society for American Archaeology, New Orleans.

1988 Prehistoric Fisheries of the California Bight. Ph.D. dissertation, University of California, Los Angeles.

Scalise, Janet L.
1994 San Clemente Island's Social and Economic Exchange Networks: A Diachronic View of Interaction Among the Maritime Adapted Southern and Northern Channel Islands, California. Ph.D. dissertation, University of California, Los Angeles.

Schaefer, Jerry
1997 The Archaeology and Ethnohistory of Tahquitz Canyon, Palm Springs. Society for California Archaeology Newsletter 31(2):1, 3-6.

Shepard, Anna O.
1971 Ceramics for the Archaeologist. Washington: Carnegie Institution of Washington, Publication 609.

Stuiver, M., and P. J. Reimer
1993 Extended ^{14}C Data Base and Revised Calib 3.0 ^{14}C Calibration Program. Radiocarbon 35:215-230.

Sutton, Mark Q.
1979 Three Baked Clay Figurines from Antelope Valley, California. Journal of California and Great Basin Anthropology 1(2): 367-369.

True, D. L.
1957 Fired Clay Figurines from San Diego County, California. American Antiquity 22(3):291-296.

1970 Investigation of a Late Prehistoric Complex in Cuyamaca Rancho State Park, San Diego County, California. University of California, Los Angeles, Archaeological Survey Monograph.

True, D. L., and Claude N. Warren
1961 A Clay Figurine from Santa Monica, California. The Masterkey 35(4):152-155.

Vellanoweth, René L.
1995 New Evidence from San Nicolas Island on the Distribution of *Olivella* Grooved Rectangle Beads. Pacific Coast Archaeological Society Quarterly 31(4):13-22.

Walker, Edwin F.
1951 Five Prehistoric Archaeological Sites in Los Angeles County, California. Los Angeles: Publications of the Frederick Webb Hodge Anniversary Publication Fund, Vol. 6.

Walker, P. L., and P. E. Snethkamp
1984 Final Report, Archaeological Investigations on San Miguel Island—1982: Prehistoric Adaptations to the Marine Environment. Report on file at the Office of Public Archaeology, Social Process Research Institute, University of California, Santa Barbara.

Wallace, William J.
1957 A Clay Figurine from Death Valley National Monument, California. The Masterkey 31(4):131-134.

1964 A Cache of Unfired Clay Objects from Death Valley, California. American Antiquity 30(4):434-441.

Winterbourne, J. W.
1968 Report (1937) of Banning Estate Excavation (Norris Property) (Orange County Historical Research Project 1935). Pacific Coast Archaeological Society Quarterly 4(2):10-21.

Wlodarski, R. J.
1979 Catalina Island Soapstone Manufacture. Journal of California and Great Basin Anthropology 1(2):331-355.