

ARCHAEOLOGICAL INVESTIGATIONS AT THE THIRD MISSION SITE, SANTA CLARA UNIVERSITY, AND A COMPARISON OF SHELL BEAD ASSEMBLAGES WITH RECENT MISSION-ERA FINDINGS

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Olivella and clam shell beads have been found in abundance in a neophyte cemetery associated with the third Mission Santa Clara site. More recent excavations have found features associated with neophyte residency, and recovered similar shell bead assemblages. Comparison of these materials has implications for dating the features, and prompts further discussion of neophyte systems of value.

INTRODUCTION

The site of the Mission, which in the language of the natives is called Támien is a plain stretching more than three leagues in every direction, pleasant to behold, with much land for irrigation of crops, and extensive areas for raising cattle. There is abundance of Ash, Alders, White Poplar and Red, Willow, Laurel, Black and Live Oaks. At the distance of four leagues to the west there is much redwood, so-called, from which we have already obtained some boards.

Large populations of Gentiles surround the site; such that we judge there are more than forty rancherias within a radius of five leagues, of a people that we may call the Tares, since this is the name they give to the men [Letter to Padre Presidente Junípero Serra from Padre Tomás de la Peña, Mission Santa Clara de Thamien, December 31, 1777].

Between 1988 and 1992, Caltrans worked to realign State Highway 82 in Santa Clara. The new alignment required the demolition of several old warehouses and streets, but sought to avoid the presumed site of the third location of Mission Santa Clara. The new alignment for Route 82 required that an existing road, Franklin Street, be converted into a cul-de-sac. The asphalt-composite overlay that covered Franklin Street had been paved in 1911- directly over the location of the third Mission. Figure 1 shows the layout of the third Mission complex and is based on reported foundation exposures (in black) and historical documents.

In 1989, when the old asphalt was lifted, mission features were exposed at grade (Figure 2). Human bone elements, a variety of glass beads, *Haliotis* pendants, clam disk beads, and many *Olivella* A1a-c and H1a series beads were observed scattered throughout the disturbed overburden soils. After clearing away the construction debris from the demolition of old Franklin Street, it became possible to expose and

record the mission-related features. Portions of the church wall foundations were exposed, recorded, and re-covered for protection. Ultimately, the road was reengineered to lie over the site rather than remove it. The site itself was covered, and the Mission foundation alignments were demarcated with pavers, on top of new street and landscape. Hylkema (1995) provides a report of this excavation.

Researchers Mark Hylkema and Randall Milliken have continued to study the artifact assemblage found at the third Mission location, especially the shell beads and pendants. From this site, a total of 337 clam disk beads and five *Haliotis* pendants were recovered from the cemetery area adjacent to the church wall. A total of 309 spire-lopped *Olivella* beads (A1 series) was also recovered, along with 1,231 H1a Ground Disks. The dating potential inherent in these artifacts has long been understood, but recent excavations at Mission Santa Clara has made the study and dating of *Olivella* beads particularly relevant. Hylkema (1995:78-79) also discussed social and economic implications of shell beads for Mission neophytes. Recent discoveries at Mission Santa Clara and comparison with Mission Santa Cruz (Allen 1998) prompts even further discussion.

SHELL BEADS AT THE THIRD MISSION SITE

Shell beads were abundant within the Franklin Street cul-de-sac soils, and all of them were associated with the neophyte cemetery. They include three distinctive types: whole *Olivella* Type A1 Simple Spire-lopped, cut *Olivella* Ground Disks (Type H1a), and clam disk beads Type V1 (Table 1). Prior to 1995, when the third Mission site was written up, only 16 shell beads had been recovered from previous excavations conducted by Santa Clara University at the eastern and western portions of the mission quadrangle. At the time of the Caltrans investigation, shell beads from mortuary contexts far outnumbered those found at other locations.

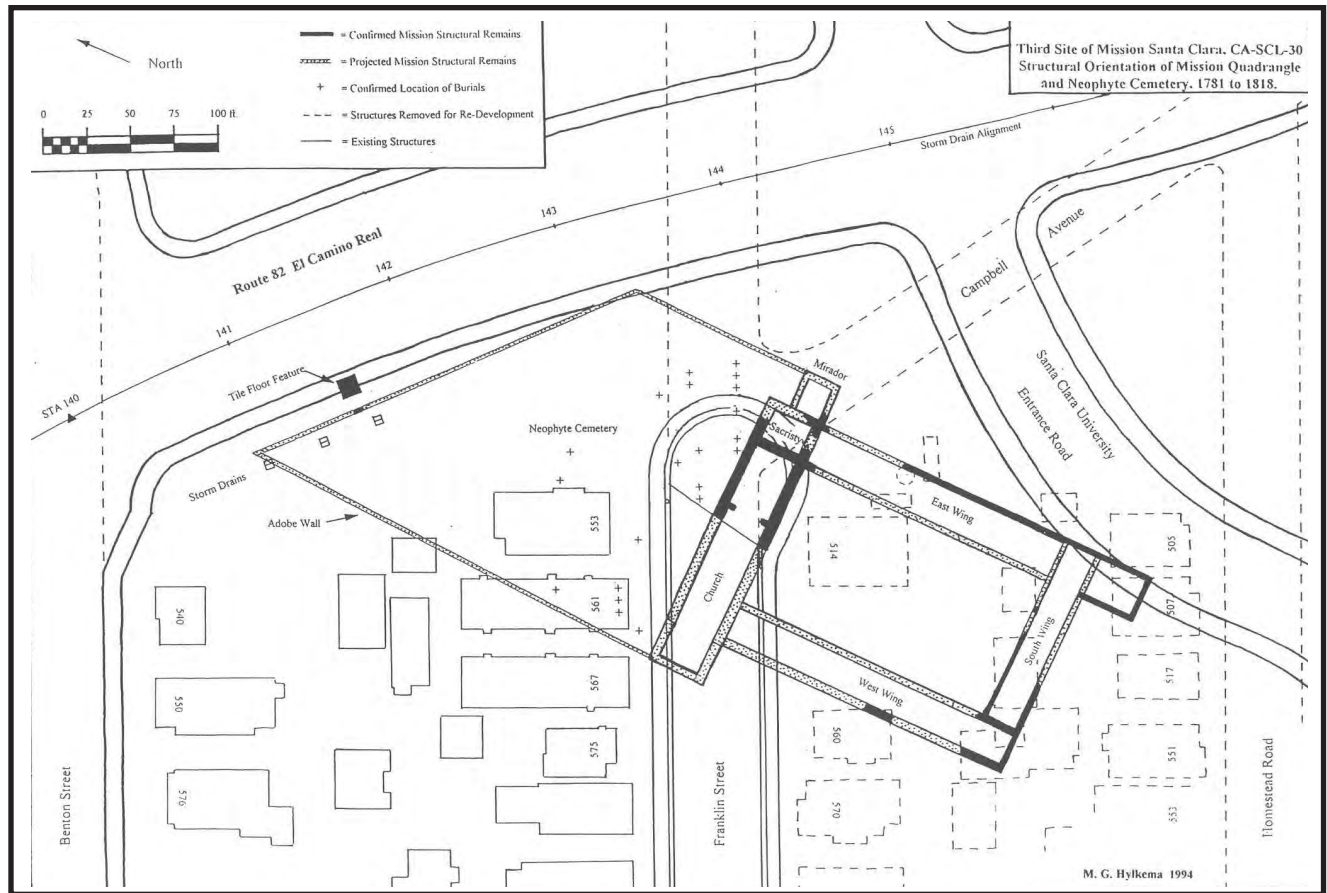


Figure 1. Third site of Mission Santa Clara, CA-SCL-30, structural orientation of Mission quadrangle and neophyte cemetery, 1781 to 1818. Drawing by Mark G. Hylkema.

All of the beads from the Caltrans investigations were reinterred with the human bone at the Ohlone Indian Cemetery in the city of Fremont. Only beads from the Santa Clara University excavations remain for future reference and are curated at the university. Those beads represent the same morphological attributes as the ones that have been reinterred. Cherie K. Walth measured the *Olivella* A1 series beads and the clam shell disk beads from the cemetery site, and Randall Milliken reviewed and commented on the *Olivella* H1a series beads using the Bennyhoff and Hughes (1987) nomenclature.

Table 1. Shell Bead Types Recovered from the Third Mission Site

	Type	No.
<i>Olivella</i> beads	A1a	114
	A1b	188
	A1c	7
	H1a	1,231
Clam shell disk beads		382

Using digital calipers, the *Olivella* disk beads were measured for maximum diameter, maximum thickness, and aperture opening (centrally drilled hole). It was observed that the small circular disks (type H1a) had straight-sided, cylindrically drilled apertures. Aperture measurements were taken from the dorsal surface of the specimens. Figure 3 illustrates bead types and measured attributes.

Olivella whole beads (type A1) have had the spire portion either ground or broken, creating an aperture so that the shells can be used as beads. Spire-ground beads generally have minimal exfoliation and exhibit a flat, smooth rim. Bennyhoff and Hughes (1987) subdivided the A1-series beads (spire-lopped) into sub-types based on the maximum diameter of the beads. These include small A1a (3.0-6.5 mm), medium A1b (6.51-9.5 mm), and A1c large (9.51-14.0 mm). At the neophyte cemetery site, 114 A1a, 188 A1b, and 7 A1c beads were identified in the assemblage. The largest bead measured 21.33 mm in length and 12.46 mm in diameter. The smallest measured 6.40 mm in length and 4.76 mm in diameter. The mean length and diameter of the sample were 10.13 mm and 7.06 mm, respectively. In general, the Class



Figure 2. During the 1989 excavations, portions of the church wall foundations were exposed, recorded and covered for protection. Caltrans re-engineered the project to lie over portions of the site rather than remove it. Photograph by Mark G. Hylkema, 1989.

A1 beads lack temporal significance and can occur within sites of any given antiquity over the past 6,000 years.

Bennyhoff and Hughes (1987:135) subdivided the H1 class of beads into two types: H1a and H1b. They described the two types as follows:

Circular, shallow beads with very small central perforations, made from the shell wall. There is a progressive shift from ground edges to chipped edges, associated with an increase in size. A single tradition of the Historic Period has been documented (King, 1973:11, fig. e, f; 1974:90, fig. 5e, f; Gibson, 1976:124-125). The Central California distribution of the revised types is given in Bennyhoff (1982:312-313). Metal needles were used for drilling the very small perforation.

A total of 1,231 *Olivella* class H1a beads was recovered from the area of the neophyte cemetery. Also, the Santa Clara University excavations recovered 11 from the east wing of the mission quadrangle. The H1a type has an average diameter of 4.0-7.0 mm., with an aperture diameter of 1.0 mm. These beads are attributed to a temporal span described as Early Mission period, circa A.D. 1770 to 1800. The edges of this type are ground smooth. The H1b type has the same average dimensions as the H1a, but it is distinguished by partially ground edges. Apparently the degree of edge grinding diminished during the Late Mission period, circa A.D. 1800 to 1816 (Gibson 1976; King 1974:91). All of the beads recovered by the Caltrans and Santa Clara University investigations exhibit very ground edges and are very circular in shape. A sample of 100 H1a beads was measured to obtain a range of morphological attributes. From this sample, Table 2 presents measurements from 11 arbitrarily chosen specimens, plus one made from abalone shell.

Concerning the origin of these beads from the cemetery assemblage, at the time of the report (Hylkema 1995:78), it was surmised that these beads were either traded into the Mission, brought by new neophyte arrivals, or received as payment for labor from Mission Santa Clara priests. More recent finds at Santa Clara, and evidence of shell bead manufacture at Mission Santa Cruz (Allen 1998:73-75) suggest a fourth alternative: neophytes at Mission Santa Clara may also have been manufacturing shell beads.

SHELL BEADS FROM RECENT SANTA CLARA UNIVERSITY EXCAVATIONS

The paper by Allen and Blount (this volume) describes recent excavations within two other areas at Santa Clara University, the Jesuit Center Residence and the Leavey School of Business. Within the Leavey block, as noted previously, archaeologists excavated a housepit (Feature 57) and nine features that have been interpreted as storage pits. Across Franklin Street, in two areas excavated as part of the Jesuit Center Residence project area, researchers found four additional Mission-era storage pits, and one area (Feature 1) currently interpreted as a butchering area.

The number of shells recovered from these neophyte areas of residential occupation is remarkable, and includes beads made out of *Olivella*, abalone (*Haliotis* sp.), and clam shell. Tables 3 and 4 summarize the numbers and kinds of beads recovered. Rebecca Allen has preliminarily identified the bead types, based on her experience with the shell bead assemblage from Mission Santa Cruz (Allen 1998). Amanda Allen and Rebecca Allen measured disks for maximum diameter and maximum thickness, using digital calipers; the noted sizes correspond to the typical-sized beads noted in Table 2. It was observed that the *Olivella* disks (type H1a and type H1b) had straight-sided, cylindrically drilled apertures,

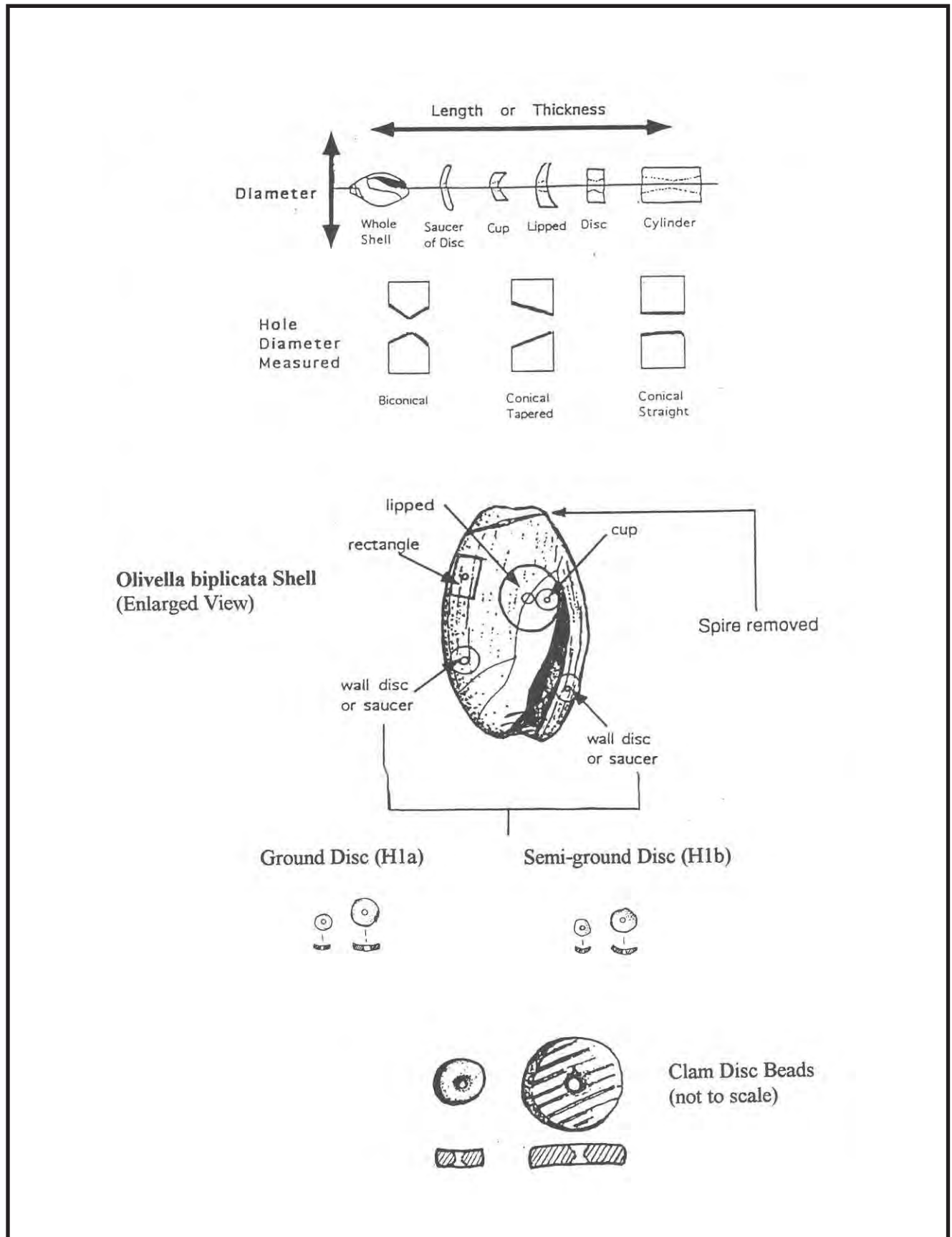


Figure 3. Shell bead attributes and types (after Bennyhoff and Hughes 1987; Hylkema 1995:74). Drawing by Mark G. Hylkema.

Table 2. Measurements of Randomly Selected Sample of *Olivella H1a* Bead Measurements (mm) from the Third Mission Site (from Hylkema 1995:78)

Diameter Length	Diameter Width	Maximum Thickness	Minimum Hole Diameter	Weight (g)
6.2	5.8	0.7	0.9	0.08
4.3	4.2	0.7	0.9	0.03
6.2	5.3	0.8	0.9	0.08
5.8	5.4	0.8	1.1	0.08
5.9	5.5	0.8	0.8	0.05
6.3	5.9	0.8	0.8	0.10
6.4	6.1	0.8	0.9	0.10
6.2	6.1	1.2	1.3	0.10
5.9	5.3	0.5	1.2	0.08
6.3	6.1	0.9	1.1	0.10
6.5	6.2	0.8	0.8	0.10
5.8	5.4	1.5	0.9	0.20

indicating use of a needle for perforation. Interestingly, about half of the clam shell beads had bi-conical perforation marks (indicating use of a stone drill), as well as needle-made straight-sided perforations. The sheer number of beads demonstrates the continued social and economic importance of shell beads to the Mission's neophytes, and also has implications for helping to date the housepit and storage pits.

The predominance of H1b beads in the artifact assemblages indicates that the pits were filled in during the later Mission period, and suggests that the features postdate the cemetery findings from the Third Mission site. The bead assemblage appears to support the theory that the housepit dates to the period after the arrival of San Joaquin Valley Yokuts into the Mission Santa Clara system after 1811 (see Allen and Blount, this volume). One bead from the housepit was identified as H2, an even rougher version of a disk bead, indicating a later date. It could, however, have been an unfinished bead. *Olivella* disk beads from the presumed storage pits were also predominantly of the H1b variety, indicating a later Mission period date.

There are only hints of bead manufacture found during the Santa Clara excavations, as contrasted with clear evidence at Mission Santa Cruz (Allen 1992, 1998:73; Bennyhoff 1992). Within the Santa Clara assemblages, many whole *Olivella* beads were found, but only 17 pieces of *Olivella* from Feature 64 (Table 4), and only some of these pieces could possibly be interpreted as manufacturing detritus. No definitive cut marks were noted, but the presence of the whole shells and pieces is suggestive. It is also quite possible that the *Olivella* beads were not manufactured at the site (more evidence is needed), but were traded in or brought in as more Indians came into the mission system.

EVIDENCE OF A NEOPHYTE SYSTEM OF VALUE

The large number of beads found indicates that Mission Santa Clara neophytes had regular access to shell beads, and they valued this resource. A1-series beads have a long tradition in California prehistory and are also found within many Mission-period native occupation areas. They are not temporally diagnostic of any particular cultural phase. The A1 series transcends the Early, Middle, and Late Holocene Periods, and are among the oldest artifacts directly dated by radiometric assay (Hylkema 2006). Given their persistence into the historic period, it stands out as noteworthy that these items retained a cultural value and significance that spanned nearly 10,000 years (Fitzgerald, Jones, and Schroth 2005).

The clam shell disk beads represent an economy that has been documented within Late Period prehistoric and post-European contexts among Native Californian groups of the North Coast Ranges, South Coast Ranges, and interior San Joaquin Valley. The large number of clam shell beads in this sample (more than 3,000) suggests that when the San Joaquin Valley Yokuts arrived, they brought beads with them.

Prehistoric coastal groups used the raw shells as a medium of exchange with interior people, and probably regulated the rate of exchange to keep the value high (Hylkema 1991). Ethnographic accounts indicate that people of the Sierra Nevada foothills continued to use *Olivella* shells for beads even after the mission system interrupted the exchange system. Evidently these communities preferred that the shells be colored white and would bake them in ovens to make them so:

Olive shells were obtained, at least in part, from Monterey Bay. The Costanoan inhabitants of its shores allowed the Miwok to make journeys thither to procure these shells. The Miwok did not appreciate the lustrous grays, browns and whites of the living shells, and proceeded to destroy the luster and to whiten the shells by gently baking them in the ashes of a fire made of buckeye wood and white oak bark, after which they were sifted from the ashes in an open work basket. Care was taken constantly to turn the shells lest they burn to an unpleasant brown. Any other wood was said to have this effect [Barrett and Gifford 1933:251].

Evidence from Missions Santa Cruz and Santa Clara demonstrates that neophytes in the southern San Francisco Bay area and Monterey Bay region maintained a system of value that used *Olivella* shells as currency. Allen (1992:30-32; 1998:94-97) has previously suggested that neophytes within the Mission system actively maintained their own economic values, fueled in large part by objects of native manufacture, particularly shell beads. Certainly European artifacts also entered this system of value, such as glass

Table 3. Preliminary Summary of Shell Beads from Leavey School of Business Project Area

Bead Type	Feature	Type	No.
<i>Olivella</i> beads	51	A1c	2
	57	A1b	1
		A1c	3
		H1a	2
		H1b	3
		H2	1
	57B	A1b	3
		A1c	3
		H1b	1
	59	H1a	1
	60	H1b	1
	62	Bead raw material	1
<i>Haliotis</i> beads	57	H7a1	1
	57	H7a2	2
Clam disk beads	53		28
	57		20
	57B		1
	60		3
Clam shell cylinder bead	59		1

Bead types

Olivella

H1a ground disk
H1b semi-ground disk
H2 rough disk
A1a small spire-lopped (< 6.5 mm diam)
A1b medium spire-lopped (6.5 – 9.5 mm diam)
A1c large spire-lopped (>9.5 mm diam)

Haliotis

H7a1 beads with bi-conical perforation
H7a2 beads with needle perforation

Table 4. Preliminary Summary of Shell Beads from Jesuit Center Residence Project Area (See Table 3 for Bead Type Description)

Bead Type	Feature	Type	No.
Olivella beads	1	A1c	2
	21	A1a	1
		A1b	1
		A1c	1
		H1a	2
	23	H1a	1
		H1a	1
	26	H1a	9
	63	A1a	30
		A1a-sized whole shells	4
		A1c	3
		H1a	10
		H1b	50
	64	A1a	
		A1a-sized whole shells	2
		A1b	13
		A1b-sized whole shells	46
		A1c	7
	A1c-sized whole shells	4	
	H1a	4	
	H1b	45	
	Side wall detritus – possible blanks	17	
Haliotis bead	64	H7a2	1
Clam shell disk beads	63		2,073

beads, which were also found in abundance at the Santa Clara cemetery assemblage and during recent excavations. Ceramic and glass vessels also had use and value, and while certainly useful when whole, they also proved to be a new source of raw material when broken.

The authors are currently teasing out more ideas about the origins and uses of the objects and materials that were economically valued by the Mission neophytes. At Santa Cruz, the ocean was nearby, and the abundance of shellfish and shell materials suggests that neophytes had the time to go and gather these food and economic resources (Allen 1998:68). Santa Clara is farther from the shores, but neophyte *paseos* (literally “free walks,” or time away from the Mission) have been documented at all California missions. It is possible

that Santa Clara’s native population made regular trips to the shore to gather *Olivella* shells. It is also quite probable that neophytes brought shell beads with them as they entered the Mission system. Clam shell disk beads either arrived with the neophytes or were traded into the area. The authors surmise that Native trading patterns continued well into the Mission period, but these patterns are not currently well understood, either in the documentary or the archaeological record. Finally, as Hylkema (1995:89-91) suggests, the value placed on shell (and glass) beads was in part co-opted by Franciscan fathers and military leaders. At both missions and presidios, there was a regular and repetitive pattern of paying for neophyte labor with beads. California’s natives, though, continued to value the shell beads for their own reasons, as they had been doing for thousands of years.

ACKNOWLEDGMENTS

At the 2007 SCA meetings, Randy Milliken presented a paper entitled “Archaeological Investigations at the Third Mission Site, Santa Clara University” by Randall T. Milliken and Mark G. Hylkema. This paper evolved from that presentation, and from many discussions between the authors.

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