

## AN INTEGRATIVE APPROACH TO MORTUARY ANALYSIS: SOCIAL AND SYMBOLIC DIMENSIONS OF CHUMASH BURIAL PRACTICES

Lynn H. Gamble, Phillip L. Walker, and Glenn S. Russell

*Although most archaeologists recognize that valuable information about the social lives of ancient people can be obtained through the study of burial practices, it is clear that the symbolic nature of burial rituals makes interpreting their social significance a hazardous enterprise. These analytical difficulties can be greatly reduced using a research strategy that draws upon the strengths of a broad range of conceptually and methodologically independent data sources. We illustrate this approach by using archaeological data from cemeteries at Malibu, California, to explore an issue over which researchers are sharply divided: when did the simple chiefdoms of the Chumash Indians first appear in the Santa Barbara Channel area? First we establish the social correlates of Chumash burial practices through the comparison of historic-period cemetery data, ethnohistoric records, and ethnographic accounts. The resulting understanding of mortuary symbolism is then used to generate hypotheses about the social significance of prehistoric-period Malibu burial patterns. Finally, bioarchaeological data on genetic relationships, health status, and activity are used to independently test artifact-based hypotheses about prehistoric Chumash social organization. Together, these independent data sources constitute strong evidence for the existence of a ranked society with a hereditary elite during the late Middle period in the Santa Barbara Channel area.*

*Aunque la mayoría de los arqueólogos reconocen que a través del estudio de las prácticas de enterramiento puede obtenerse una valiosa información sobre las relaciones sociales de las poblaciones humanas pasadas, el determinar el significado social de unos rituales de enterramiento de naturaleza simbólica puede convertirse en una empresa arriesgada. Estas dificultades analíticas pueden resolverse en gran parte combinando información proveniente de un amplio espectro de fuentes de datos conceptual y metodológicamente independientes. Ilustramos esta aproximación con de información arqueológica proveniente de cementerios prehistóricos e históricos de Malibú, California, para explorar un aspecto controversial: ¿en qué momento las sociedades Chumash del Canal de Santa Bárbara se organizaron en cacicazgos: a principios del Período Tardío, entre ca. 1200 y 1300 d.C., o a finales del Período Temprano, hace unos 2,600 años? Para responder a esta pregunta, primero establecemos el significado social de las prácticas de enterramiento Chumash mediante la comparación de datos arqueológicos del periodo histórico con fuentes etnohistóricas y etnográficas. El simbolismo mortuario del periodo histórico se utiliza para generar diversas hipótesis acerca del significado social de los rituales de enterramiento del periodo prehistórico de Malibú. Finalmente, se utiliza la información bioarqueológica acerca de las relaciones genéticas, la salud y los patrones de actividad, como fuente de datos independiente para probar las hipótesis sobre la organización social del periodo prehistórico Chumash, generadas a partir de la interpretación de la cultura material. La combinación de estas fuentes independientes de datos apunta hacia la presencia de una sociedad jerárquica, con una élite hereditaria, ya bien establecida en el área del Canal de Santa Bárbara durante el Período Intermedio.*

The interpretation of mortuary remains has been an important focus of archaeological research throughout the history of the discipline, from the earliest antiquarian and classical studies, through the rise of investigations using culture-historical, processual, and post-processual approaches. One con-

tribution of processual archaeology was the introduction of a new method of cemetery analysis that emphasized the importance of understanding the relationship between mortuary behavior and social organization. This approach underscored the value of identifying cross-cultural patterns in the treatment of

Lynn H. Gamble ■ Department of Anthropology, San Diego State University, San Diego, CA 92182  
Phillip L. Walker ■ Department of Anthropology, University of California, Santa Barbara, CA 93106  
Glenn S. Russell ■ Institute of Archaeology, University of California, Los Angeles, CA 90095

the dead and using these regularities as a basis for exploring the social significance of ancient burial practices (Binford 1971). For example, in his influential study of burials from the Spiro mound, Brown (1971a, 1971b) investigated similarities and differences between ethnographic descriptions of the social context of Natchez/Taensa and Choctaw mortuary practices and archaeological data on differential treatment of the dead in Caddoan culture. Although there were inconsistencies between the ethnographic and archaeological data, Brown's research clearly illustrated the value that ethnographic and ethnohistoric evidence have for interpreting archaeological data from cemeteries.

A common assumption of such studies is that mortuary practices provide a symbolic tool that the living can use to legitimize hereditary rights over the control and use of critical resources (Saxe 1970). Goldstein (1976) tested this proposition using ethnographic data on a cross-cultural sample and found that formal cemeteries with discrete burial areas typically are found in societies where a person's ancestral relationships and descent group are of great social significance. All of these researchers argue that patterns in the treatment of the dead can provide archaeologists with valuable information about the social relations of the living. During the past thirty years, many archaeologists have used this approach to make inferences about social organization (e.g., Brown 1971a; O'Shea 1984; Peebles 1971; Rothschild 1979; Saxe 1970; Shennan 1975; Tainter 1978).

This strategy for reconstructing social organization has received considerable criticism. For example, it has been noted that post-depositional processes and certain cultural practices can alter the archaeological record in ways that make simplistic social interpretations of mortuary practices hazardous (Chapman and Randsborg 1981). Others argue that too little attention has been paid to the sometimes counterintuitive ways in which ritual behavior can distort archaeological evidence from mortuary contexts (Hodder 1982). This critique is echoed by other scholars who argue that new approaches to mortuary analysis are needed that emphasize the many ways in which ideology and ritual behavior can transform social reality (Beck 1995; McGuire 1992; Morris 1991, 1992; O'Shea 1995; Scarre 1994; Shanks and Tilley 1987).

From the ethnographic examples given by these authors, it is clear that there are many ways archae-

ologists can be misled if they simply equate the distribution of artifacts in cemeteries with social organization. The arbitrary nature of symbolic systems poses a formidable interpretive challenge. In the absence of detailed ethnographic information about the group being studied, there is often no empirical basis for deciding among several equally plausible alternative social explanations of mortuary data. This conundrum has caused some theoretically oriented archaeologists to doubt the value of mortuary analysis as a tool for reconstructing the social relations of earlier human populations (Hodder 1982; Shanks and Tilley 1982).

In this paper we employ an approach to mortuary analysis that exploits the strengths of using a broad range of conceptually and methodologically independent data sources to develop and test alternative hypotheses about ancient social organization. By testing hypotheses using data from ethnographic and ethnohistoric sources, artifact analyses, and bioarchaeological studies, it is possible to greatly increase the reliability of the social inferences we make. Data regarding a group's social relations derived from a single source may be open to multiple or paradoxical interpretations. However, as the number of independent data sources that are consistent with the same conclusion increases, the viability of alternative explanations dramatically decreases (Walker 1996; Wylie 1993). Bioarchaeological studies provide one such independent data source that has not been fully exploited by previous researchers. Skeletal data on sex and age are part of most mortuary studies. Few if any researchers, however, have fully exploited the interpretive value of grave goods in association with bioarchaeological data on genetic relationships, health status, and activity patterns for research on the social significance of burial practices. Using ethnographic analogy to reconstruct the behavior of prehistoric people is a hazardous adventure that can easily lead to interpretations that are little more than projections of the images we have of the ethnographic present onto earlier populations. There are some situations, however, in which archaeological data on ethnographically well documented groups can be used effectively to gain insights into that group's prehistory. Such ethnoarchaeological comparisons are very revealing because they allow identification of the material manifestations of social behavior in a specific cultural context. These insights can then be used to generate hypotheses about the

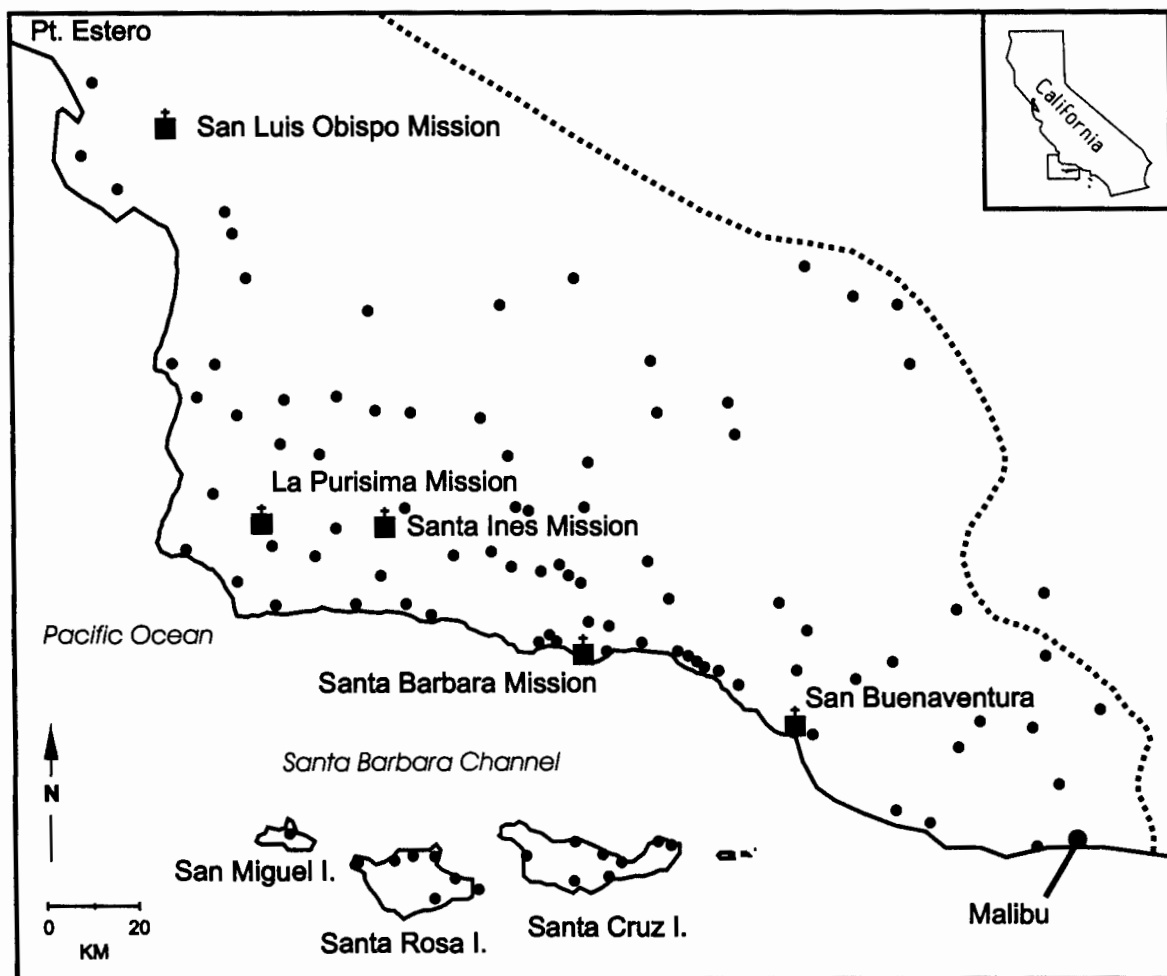


Figure 1. Map of the Chumash territory (delimited by dotted line) showing the location of Malibu and other historic- and protohistoric-period Chumash villages (black dots), and Spanish missions.

evolution of social relationships in that same culture that have clear test implications for the archaeological record.

To illustrate this approach, we describe research that addresses a long-standing debate about the evolution of social complexity in the Santa Barbara Channel area (Figure 1). Ethnographic data show that, at the time of European contact, many of the Chumash Indians of this area lived in large, permanent villages organized into simple chiefdoms controlled by a hierarchy of chiefs and a social elite. This unusual level of social complexity for a nonagricultural society was made possible by an economic system based on intensive marine resource exploitation, long-term food storage, local craft specialization, and intensive intervillage exchange (Arnold 1987; King 1976, 1990; Lambert and Walker 1991). This economic system sustained a population of greater density than that found in many other areas of pre-

historic North America, including those in which agriculture was practiced (Kroeber 1925).

Researchers are sharply divided over the question of when simple chiefdoms first appeared in the Chumash region (Arnold 1992; Gamble 1991; King 1969, 1982; King 1990; Martz 1984). Arnold (1992) explains the origins of a ranked society in this area from the perspective of control of labor in the context of environmental degradation, political opportunism, and the manipulation of labor by rising elites. She argues that the social ranking that characterized the Chumash chiefdom developed around A.D. 1200–1300 in response to social inequalities resulting from environmentally induced population-resource imbalances (Arnold 1992). King (1990:xix) rejects this view of social complexity in the area as a late prehistoric period phenomenon. Based on his analysis of burial associations, he argues that a ranked society with a hereditary elite first appeared in the

Santa Barbara Channel area about 2,600 years ago at the end of the Early period (King 1990). Arnold and O'Shea (1993) criticize King's analysis of mortuary data as an oversimplified projection into the past of the meanings that shell beads and other artifacts had during the historic period.

The prehistoric and historic period cemeteries at the site of Malibu provide a unique opportunity to explore the relationship between mortuary practices and social complexity among the Chumash (Figure 1). Most historic-period Chumash cemeteries contain both late prehistoric and protohistoric period burials. This, along with the late prehistoric period practice of repeatedly using the same burial area, usually makes it impossible to separate the remains of people who lived during the historic period from those interred before European contact. At Malibu, in contrast, artifact associations show that there is little or no mixing of prehistoric and historic burials (Bickford 1982; King 1996). These temporally discrete cemeteries make it possible to compare mortuary practices before and after the time Arnold (1992) has postulated that the transition to a chiefdom level of social organization occurred.

Before presenting our analysis of archaeological data from these cemeteries, the relevant ethnohistoric and ethnographic information on Chumash economic activities, social organization, and burial rituals will be summarized. Archaeological data from the historic-period Malibu cemetery will then be analyzed from the perspective of these ethnographic and ethnohistoric accounts. Our goal is to determine how Chumash social organization manifested itself symbolically in the archaeological record of their mortuary practices. If the hypothesis of a Late period transition to a chiefdom level of social organization is correct, then we would expect to see evidence of this in burial practices. Specifically, the historic and Middle period Malibu cemeteries should differ in ways that reflect the emergence of the ethnographically documented social hierarchy based on ascribed status that characterized Chumash chiefdoms.

### **Ethnographic Background**

Ethnographic and ethnohistoric records provide an unusually rich source of information relevant to understanding the social organization of the historic-period Chumash who buried their dead at Malibu. Topics relevant to interpreting the Malibu archaeological materials include descriptions of mortuary

practices, social organization, and economic activities. Ethnographic data on the relationship between social hierarchy and mortuary practices is of special interest because, as we have noted, there are many complicated ways in which mortuary practices can distort social reality (Bartel 1982; Binford 1971; Goldstein 1976; Hodder 1982:201; Saxe 1970; Tainter 1978; Trinkhaus 1984; Ucko 1969). Scarre (1994:81) and others (Flannery and Marcus 1996) caution that to fully understand the meaning of mortuary symbolism, a researcher needs written records, oral traditions, and ethnographic evidence that can be used to reconstruct the conditions that existed before the disruptive influences of European contact. Fortunately, such a situation exists for the Chumash Indians.

The historic Chumash settlement of *Humaliwo* (CA-LAN-264) was located in the Santa Monica Mountains at the southern end of the Santa Barbara Channel within the modern town of Malibu, which carries its name. Ethnographic and ethnohistoric data indicate that the Chumash Indians of the Santa Monica Mountains and their neighbors, the Western Tongva (Gabrielino), considered *Humaliwo* an important political center (King 1982:12; King 1994:65). The chief of *Humaliwo* was described as a "god" and "king" to all the inhabitants of the region by Juan Esteban Pico, a Chumash consultant who was interviewed by Stephen Bowers in the late 1800s (King 1994:65). Another Chumash Indian, Felipe 'Alilulai, told Fernando Librado (an important Chumash consultant of the ethnographer, John P. Harrington) that "Tculkumyacwit was the name of the big captain that used to be in Humaliwo, and means 'centro,' for Humaliwo was capital. . ." (King 1994:77). Although *Humaliwo* was recognized as a center by the Spanish, it should be stressed that the settlement lies near the periphery of the Chumash region. *Humaliwo* was probably never as important as the large centrally located historic Chumash settlements at Goleta and Santa Barbara that had multiple chiefs and populations of more than 500 people (see Gamble 1991; Johnson 1988).

Mission records show that the Indians who lived at *Humaliwo* had extensive marriage ties with Chumash and Tongva villages in the interior and coastal regions of the Santa Monica Mountains. One of these was the village at Medea Creek, a large protohistoric site whose cemetery has been the subject of extensive archaeological research (Brown 1967:45-46;

Green 1999; King 1994:78; King 1969, 1982). Mission records identify one of the people who came from *Humaliwo* as the village's chief and state that he originally lived on Catalina Island (King 1994:78). By 1801, when José Tapia gained title to the Rancho Topanga Malibu Sequit land grant, many Malibu area Indians were working as hired hands and paid, at least in part, with glass trade beads (Bickford 1982; Engelhardt 1927:9).

The earliest documented contact between the Chumash and Europeans occurred in 1542 when the Spanish explorer, Cabrillo, briefly visited the Santa Barbara coast and recorded his observations of the native people he met. For the next 227 years, there was little contact between the Chumash and Europeans, with only a few poorly documented visits by merchant ships (Walker and Hudson 1993; Walker and Johnson 1992). Portola's 1769 expedition, overland from Baja California to Monterey in northern California, marks the beginning of intensive historic period European-Chumash interactions (Walker and Johnson 1992, 1994). This early phase of European exploration culminated in 1782 in the establishment of a presidio (fort) at Santa Barbara and missions at Ventura and Santa Barbara. Diaries and other records from these early explorers, although sometimes difficult to interpret, provide detailed accounts of life among the Chumash before their culture was profoundly disrupted by intensive European contact.

#### *Historic-Period Socioeconomic Organization*

The Chumash had a highly developed economic system in which shell beads were used as a standardized form of money (King 1976). Craft specialization has been clearly documented on Santa Cruz Island, which was a center for the production of beads and bead drills (Arnold 1987; King 1976). Use of shell bead money allowed the Chumash to efficiently redistribute the abundant resources that were available in different environmental zones (King 1976:317). The technological innovation of the plank canoe, or *tomol*, was integral to trade between the Channel Islands and the mainland (Arnold 1987:7; Hudson et al. 1978:131–142). Chiefs and other rich men funded plank canoe construction because they were the only people who could afford to commission them. These wealthy boat owners apparently were not the only people who used them. Instead, fishermen would bring their catch to their boat's owner, and the owner would decide how the fish

would be distributed (Blackburn 1975; King 1969).

The Chumash had hereditary chiefs, referred to as *wot*, who wielded considerable power (Blackburn 1974, 1975; King 1969). Although these chiefs were sometimes women, usually they were men. According to Fages, a member of the Portolá expedition, the chief was the only person in Chumash society who wore an ankle-length cloak made of skins (Priestley 1937:32). Mission records show that some large Chumash settlements, which have been interpreted as higher-level political centers, had more than one chief (Johnson 1988). This is consistent with the description Father Juan Crespi, a member of the Portolá expedition, gave of Chumash chiefs near Ventura: "They have their own style of government in these villages. As we have understood from this good chief here, all of these villages have three or four chiefs, one of whom is head, and gives orders to everyone and to the other chiefs, and these all have two wives while the rest of the men have only a single wife apiece" (Brown 1999). Mission records corroborate Crespi's observation that many Chumash chiefs had more than one wife (Johnson 1988; King 1984).

Other reports indicate that the Chumash also had regional chiefs whose jurisdiction encompassed many villages. Diaries from the 1542 Cabrillo expedition contain descriptions of two large provinces in the Santa Barbara Channel area, each of which was governed by a paramount chief. An old Indian woman, described as a "princess," was evidently the leader of 16 villages between Point Conception and Santa Barbara, and had the authority to summon people living in these villages to come to her. This woman is described as living at the village of *Syux-tun*, in Santa Barbara, which evidently was the capital of this large province. The diaries of members of the Portolá expedition confirm this earlier account that Chumash chiefs governed large territories. Crespi met two important chiefs while traveling along the coast between San Luis Obispo and Gaviota. One of these chiefs, whom the explorers named El Loco, led the Portolá expedition and arranged feasts for the expedition members at every settlement between Gaviota and San Luis Obispo (King 1984:I-39). In Crespi's account, El Loco wore a "good sized feather Head-dress like a sort of crown" (King 1984:I-38), which presumably distinguished him from the other Indians.

El Buchón, another important chief described by

Crespí, was said to be greatly respected and feared by many Indians over a great territory, so that members of the expedition regarded him to be sort of a little king (King 1984:I-39–40). He traveled with a retinue of people who were not allowed to sit in front of him or his wife or sons unless they were ordered to do so (King 1984:I-39). Buchón fed the expedition on its way north and south at the village of Pismo.

Ethnographic sources describe three types of Chumash chiefs: a “big chief” whose control encompassed a group of settlements, a “chief” or head of a village, and a “lesser chief” who was subordinate to the others (King 1969:41). Historical records also suggest the existence of a hierarchical system of chiefs (Brown 1967).

Ethnographic sources suggest that status differences among the Chumash were ascribed or partially ascribed at birth. Economic, political, and ritual statuses were well defined and associated with substantial differences in wealth and social prerogatives. Households or families were apparently the only corporate social units (Blackburn 1975:49). A person’s social ranking appears to have been based on kinship (King 1969:41). Blackburn (1975:51), in his interpretation of Chumash narratives, suggests that there was an “incipient class system based on wealth, with a great deal of social distance between rich and poor families. Money is the standard by which social prestige is measured, and money figures prominently in most kinds of transactions.” In addition to chiefs, Harrington’s informants describe a class of people, referred to as “nobility,” who received special privileges. The Ventureño Chumash had a term “that applied to the dynasty of nobility, people who enjoyed special privileges and who had to make no effort to live: ‘If they wanted to shit, somebody let down their pants for them. But the bear moiety is *’alt-shaljewe*, for he has to work to live’” (King 1969:45).

Part of this nobility included a group of religious specialists who belonged to an association known as the *’antap*. Each major village had twelve *’antap* members who were “baptized” into the society when they were children (Walker and Hudson 1993). Parents of these children were presumably from high-status families because they had to pay a considerable amount of money for this privilege (Blackburn 1974:104–105). Chiefs and all members of their family evidently were required to belong to the *’antap*. The primary responsibility of the *’antap* was the per-

formance of dances and other rituals at large public ceremonies. The *’antap* society appears to have served as a social mechanism that linked wealthy individuals throughout the Chumash territory (Blackburn 1974:105). Although there was certainly regional variability among the Chumash in terms of cosmology and specific religious beliefs, it appears that all of the Chumash recognized the *’antap* society and distinguished commoners from the elite *’antap*, even in smaller peripheral settlements.

Ethnographic accounts indicate that both matrilineal and patrilineal post-marital residence was practiced by the Chumash (Harrington 1942:30–31). This corroborates mission register research on the Barbareño Chumash, which shows that although matrilineal postmarital residence accounts for 68 percent of all marriages, patrilineal (22.5 percent), bilocal (3.9 percent), and neolocal (5.6 percent) post-marital residence also occurred (Johnson 1988:154). From the perspective of our discussion of social hierarchy, it is interesting that patrilineal post-marital residence was more common for people listed in the mission records as “chiefs” than it was for other people (Johnson 1988).

#### *Cemeteries and Mortuary Ritual*

The early explorers described Chumash burial customs in considerable detail. In a previously unpublished manuscript, Father Crespí describes a Chumash funeral that occurred on January 10, 1770, at the large historic village of *Syuxtun* in what is now Santa Barbara:

On reaching it, we found the whole town, men, women and children, all gathered together and weeping loudly; and while the gentlemen went about their business of looking for fish among the houses, along with one or two of their chiefs, the heathens continued in their ceremony of crying without stopping or disturbance. There must not have been under four or five hundred souls gathered together; we noted that they had a dead man laid out, and three or four of them shrouding the body. We stood about eight paces away watching them, seeing they had tied the whole body up with a great many sewn rabbit skins of the sort they all employ to cover themselves with after the fashion of a blanket or cape. We then saw all the heathens cutting a piece off the string of beads that they use and make, of about the length of an ell. All these sections of bead strings were taken by two or three heathens—whether their chiefs, or relations of the dead man, we cannot

tell—and six or eight heathens between them, using the sections of beads everyone had cut off their own, began thoroughly adorning the body over the skins they had put on it. At the same time, a heathen was walking about smoking on a very large Indian pipe made of stone, very serious and blowing good-sized mouthfuls of smoke into the air as though toward the sky, [raising his head; as soon as they had finished adorning it, the smoker approached], and as those who had been adorning it raised its head, he proceeded to blow a large mouthful of fumes at it; then they would raise a leg, then an arm, with the smoker providing his mouthful of fumes. They were in the midst of this when the gentlemen [i.e., officers] advised us that there was no fish, whereupon we left in the midst of their ceremony; there is no telling how the burial must have ended [Brown 1999:653–655].

Of relevance from our perspective is the fact that lengths of beads were placed with the dead person's body. It might also be assumed that this funeral was that of an important individual considering the number of people in attendance and the quantity of beads placed on him. However, it is unclear from this reference if the deceased owned the beads or whether the body was dressed with beads before the addition of beads by mourners.

Another account by Crespí provides additional information on the structure of Chumash cemeteries:

They bury their dead, and have their graveyards, one for men and the other for women, all being enclosures of very tall sharp-pointed poles much painted in hues, and some upright boards painted the same way, surrounding or enclosing the graveyard, where they have placed very large whale-bones. One or two of a sort of round stone fonts are to be found at all of the graveyards, very delicately carved, so that they might serve very well for holy water fonts and even for baptismal fonts. They have another room, very clean, with many upright stones around it and with a large feather ornament set up in the center, which we suppose must be their places of prayer. They also have another very smooth clean spot, with quite a large-sized whale-bone driven in the midst of it, and as soon as they die the body is brought to this last spot to hold a wake over it. They lay it out and place the head resting on the whalebone stake. From here they take it, if it is a man, for burial in the men's graveyard, and the hair of the dead person's head is left hanging upon one of the many upright poles that are there. If it is a woman, they do the same as in the case of the men and take the deceased person from here to her own graveyard, and a bowl or basket

belonging to the dead woman is left hanging upon one of its poles. And so at both graveyards there are a great many objects hanging up, as a result [Brown 1999:794].

Although this reference suggests that areas near the cemetery were used for ceremonial purposes, it is unclear if these areas were in the cemetery or adjacent to it. Other ethnohistoric accounts, such as the report of the 1542 Cabrillo expedition, indicate that Chumash cemeteries were enclosed by "board" fences (Wagner 1929:88).

A key issue from the perspective of interpreting the archaeological record is the extent to which people were buried with the wealth they possessed when they were alive. Most of the data we have on this issue comes from notes J. P. Harrington took during interviews with elderly Ventureño Chumash consultants (the site of Malibu is within Ventureño Chumash territory) at the beginning of the twentieth century. Based on her analysis of Harrington's notes, Linda King (1969:51) concluded that some but not all of a person's belongings were placed in the grave. In the case of important Ventureño men, some of their possessions evidently were destroyed at a mourning ceremony held after the funeral (Harrington 1942). One Chumash Indian Harrington spoke to stated that a mourning ceremony, in which beads and other items belonging to the dead were burned, was held every four or five years for people who had died during the same period (Hudson et al. 1977:47–48, 104).

Harrington's Chumash consultants told him about specialists, referred to as *'aqi*, who served as undertakers. These people could be either women or men, and there is some evidence that this was a role filled by male homosexuals or transvestites (Hollimon 1997; King 1969:47–48). The *'aqi* were paid for their services and one account shows that they dug graves and filled them using new baskets. After the grave was filled, the *'aqi* was paid in the baskets he or she used in this process (King 1969:47). The implication of this account is that the depth of the grave was proportional to the number of baskets the *'aqi* received.

Harrington's notes suggest that the Chumash maintained family burial plots (King 1969:47–49), and that the location of a person's burial was of considerable social significance: "plots were so restricted in area that when interments were made, old bones were unearthed and were reverently laid to one side and were reburied again when the earth was being

scooped back into the grave after the burying of the fresh body” (Hudson and Blackburn 1986:70). An early reference from Costansó, a member of the 1769 Portolá expedition, suggests that the burial of a chief was conducted with much pomp, and high poles were used in the cemetery to signify the status of a chief (Hemert-Engert and Teggart 1910:47). Chumash mortuary practices were evidently more elaborate for people of high status.

This review of ethnohistoric and ethnographic data on Chumash socioeconomic organization and mortuary behavior is not intended to portray a perfect reality to which archaeological data may simply be matched. There is undoubtedly bias and distortion in the fragmentary ethnohistoric record. This record, however, includes relevant eyewitness accounts, administrative documents, and oral historical information on early historic Chumash society. These records indicate that the historic Chumash lived in chiefdoms with a sociopolitical hierarchy based on ascribed status that was codified in the organization of ceremonial activities, including mortuary ritual. A central theme of this paper is that a thorough analysis of mortuary behavior must be based on a critical interpretation of all available lines of evidence. As Brown (1971a, 1971b) discovered, the lack of a perfect match between the ethnohistoric and archaeological records does not negate the value of critically using ethnohistoric data in the interpretation of prehistoric mortuary practices.

### *Burial Associations*

Ethnohistoric and ethnographic sources shed light on the symbolic significance of the artifacts found in the Malibu cemeteries. For analytical purposes we have divided these burial associations into three groups: ornaments, religious objects, and utilitarian objects.

*Ornaments.* Objects used to decorate the body, such as beads and ear spools, can usefully be grouped under the heading of ornaments. Beads were by far the most common ornaments found with the Malibu burials. Ethnographic and ethnohistoric records indicate that the Chumash considered such objects items of wealth or prestige (King 1990). Most of the ornaments in the prehistoric-period Malibu cemetery were *Olivella biplicata* shell beads. The historic cemetery contained glass trade beads as well as many shell beads. Although many different types of shell beads were buried with the dead, *Olivella biplicata* wall disc beads are the most common type in the pre-

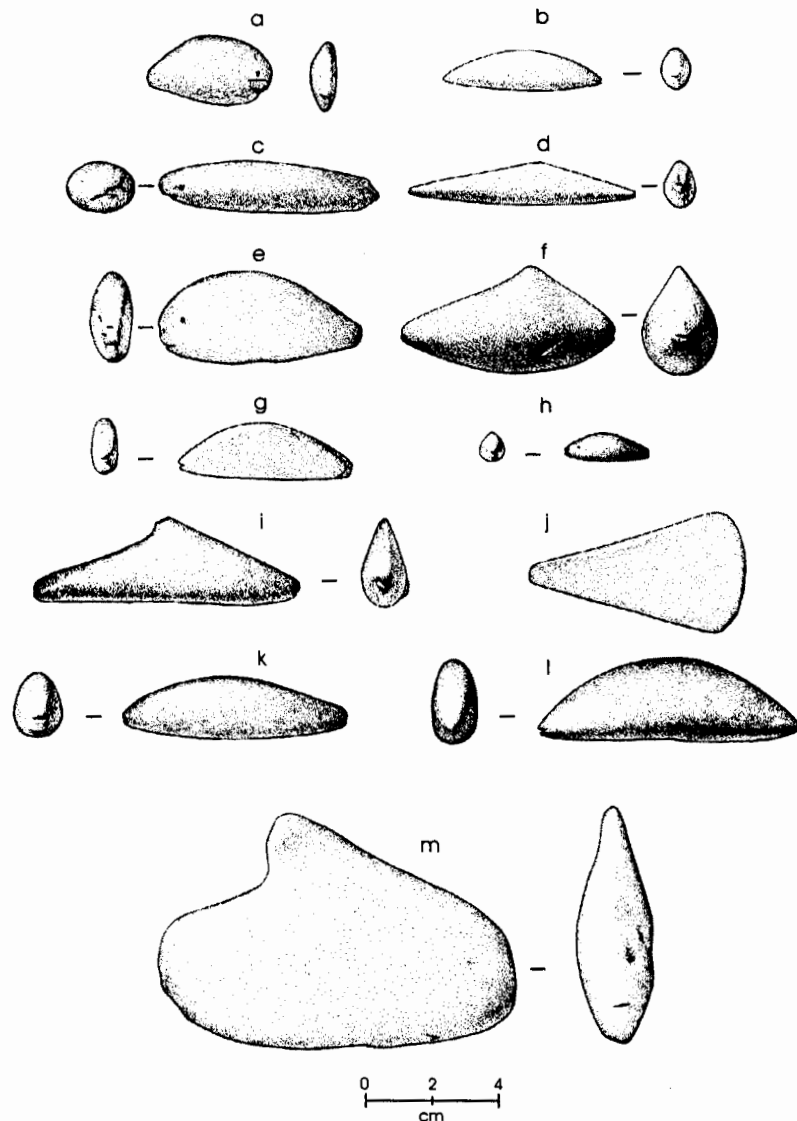
historic-period cemetery, and *Olivella biplicata* rough disc beads predominate in the historic period (Gibson 1987:Table 1).

We know from ethnographic accounts that the Chumash used *Olivella biplicata* beads both as ornaments and as a medium of exchange (King 1990). These “money beads” were carried in bags and displayed on top of the head (Blackburn 1975:129, 139, 208; Simpson 1961:45). Martínez remarked on how Chumash men made an ostentatious display of their wealth by adorning their heads with strings of beads woven in different designs like a rope belt: “all make a show of their wealth, which they always wear on top of the head, whence it is taken for gambling and trafficking” (Simpson 1961:45). Uncritically assuming that these same historically documented functions and meanings of beads extend far back into the prehistoric era is unwarranted. However, shell beads have substantial intrinsic value that derives from the large labor investment required for their production, and it is consequently safe to assume that their use as wealth symbols extended back into the prehistoric period.

*Religious Objects.* We have grouped stone effigies, smooth pebbles, charmstones, quartz crystals, pipes, turtle shell rattles, flutes, whistles, and painted rocks together as religious paraphernalia. This classification is based on ethnographic evidence that the use of these objects was confined to religious activities whose goal was to mobilize and control supernatural powers or natural forces. The defining characteristic of these religious objects is that they were not multipurpose artifacts with secular uses. In this respect, they contrast with items such as shell beads, which, although they were used as offerings in religious ceremonies, also had important secular functions.

Stone effigies, charmstones, and small rounded pebbles were found with several of the Malibu burials (Figure 2). Similar objects are known to have served as talismans throughout southern and central California (Hudson and Blackburn 1986; Walker and Hudson 1993). The Chumash carved steatite images of whales and canoes, which they use as talismans to aid in their seafaring activities (Applegate 1978:54). Two shamans interviewed by Lorenzo Yates (1889) stated that such effigies often were used in conjunction with the ingestion of toloache (*Datura metaloides*) and to bring rain or disease and death to one’s enemy (King 1990). Among the members of





**Figure 2:** Effigies from the Middle-period Malibu cemetery: (a) UCLA Catalog No. 1737, grey steatite; (b) UCLA Catalog No. 1750, grey steatite; (c) UCLA Catalog No. 1743, Catalina anthophyllite; (d) UCLA Catalog No. 1740, red siltstone; (e) UCLA Catalog No. 1734, grey steatite; (f) UCLA Catalog No. 1742, grey steatite; (g) UCLA Catalog No. 1771, brown shale; (h) UCLA Catalog No. 1772, green serpentine; (i) UCLA Catalog No. 1741, grey-brown biotite schist; (j) UCLA Catalog No. 1751, brown metamorphic slate, possible fish effigy; (k) UCLA Catalog No. 1764, grey steatite; (l) UCLA Catalog No. 1770, grey shale; (m) UCLA Catalog No. 3218, grey steatite whale.

southern California tribes, including the Chumash, talismans were buried with their owners (Applegate 1978:56; Hudson and Blackburn 1986:172). According to Applegate (1978:53–56), at least some Chumash acquired talismans during vision quests conducted while under the influence of toloache. The dreamer would awake with the talisman in hand. Evidently talismans obtained in this fashion were only of use to their owner, with whom they would be buried. It has been suggested by several scholars (Koerper and Labbé 1987; Lee 1981) that a special

class of stone effigies identified as pelican or bird stones, because they resemble birds, may be dimorphic sexual symbols. Koerper and Labbé (1987:113) review concepts of duality among the Luiseño and argue, based on the shapes of these artifacts, that they are symbols of a male-female dualism described in creation myths (Koerper and Labbé 1987:115–116).

The Chumash thought quartz crystals had supernatural power and believed that lightning bolts produced them. If people were struck by one of these lightning bolts, they would die; otherwise the light-

ning would enter the ground (Hudson and Blackburn 1986:154). The Chumash used quartz crystals in a number of ways, including as talismans to bring rain and good luck (Applegate 1978:54; Hudson and Blackburn 1986:154). It has been stated that quartz crystals were also used as power objects by the '*antap*' (Hudson and Underhay 1978:49) and as parts of medical kits of medical practitioners (Walker and Hudson 1993:53).

The Chumash used pipes, usually made from stone or clay, to smoke wild tobacco in ceremonial contexts. As indicated by Crespi's description of a funeral quoted above, pipe smoking figured prominently in Chumash burial ceremonies. The status of pipes as religious objects is verified by Chumash consultants who stated that pipes were not used for pleasure, but instead by shamans for making rain, averting a storm, and healing the sick (Hudson and Blackburn 1986:118–125; Walker and Hudson 1993). Harrington's consultants also describe a pipe blessing ceremony, giving more credence to the limitation of pipe use to religious contexts (Hudson and Blackburn 1986:120–121).

Turtle-shell rattles, flutes, and whistles were found with several of the Malibu burials. Turtle-shell rattles were used throughout the Chumash region, as well as southern California, to accompany dancers and singers in a variety of ceremonial contexts (Hudson and Blackburn 1986:329–330; King 1982:387–390). There is no mention of rattles being used outside of such ceremonies. Bone whistles and flutes were used as musical instruments in ritual contexts by medicine men, dancers, members of the '*antap*', or musicians accompanying dancers (Hudson and Blackburn 1986:349–368).

*Utilitarian Objects.* Objects with utilitarian functions found with the Malibu burials include fragments of mortars and pestles that were probably used to pound acorns and other plant foods into meal, shell hooks used for fishing, bifaces used as weapons and for butchering animals, and bone awls used in basket making. The identification of these objects as utilitarian is based upon their use as tools in subsistence activities by the living community. Although it is conceivable that their burial with a person stems from a belief that they would continue to have utilitarian functions among the dead, it is also possible that their symbolic significance in burial contexts is unrelated to their former use in the subsistence activities of the living.

## The Malibu Cemeteries

Extensive archaeological excavations were conducted at the Malibu cemeteries in the early 1970s. The prehistoric cemetery was excavated by UCLA field classes from 1971 to 1975 under the supervision of Clement Meighan, and the historic cemetery was investigated under the direction of Nelson Leonard and Christopher Donnan in 1972 (Martz 1984:394). Several significant manuscripts and publications on various aspects of the collections have been written (Bickford 1982; Davidson 1992; Gibson 1975, 1987; Green 1999; Meighan 1978; Profant 1992; Suchey et al. 1972). The most thorough archaeological analysis of the grave goods and skeletal remains from the Malibu cemeteries is a study by Martz (1984) in which mortuary data from five Chumash cemeteries is explored in an attempt to understand the development of social complexity among the Chumash. Martz's analysis differs from ours in the way she grouped artifact types into functional categories. In addition, she did not have access to recently published detailed osteological (Walker et al. 1996) and artifact analyses (Gamble et al. 1995) of the *Humaliwo* collections.

### Chronology

The chronological relationships of the Malibu cemeteries can be inferred from radiocarbon dates and temporally diagnostic artifacts. Shell beads and other artifacts from the prehistoric cemetery indicate that it was used between about A.D. 950–1150 during Phase 5 of the Middle period (King 1990, 1996). Based on King's research, some of the burial lots within this time span can be assigned the following Middle period subphases: Phase 5a (A.D. 950–1000), Phase 5b (A.D. 1000–1050), and Phase 5c (A.D. 1050–1150). One radiocarbon date (UCLA-1886) on bone collagen from a burial in the prehistoric cemetery provided an uncorrected date of 1,246 ± 60 RCYBP (King 1990:Table 1). Martz (1984:228) reports that there was another radiocarbon date (UCLA-1883) from the prehistoric cemetery that indicates it was used during the ninth century. She did not report whether this date was corrected, nor did she specify the material used for dating. Beads recovered from the historic cemetery show that its use began around A.D. 1775 and terminated in 1805, when the process of recruitment to the missions was complete (Gibson 1975:117; King 1996).

### *Excavation Biases*

Before exploring the archaeological evidence from the Malibu cemeteries, it is important to consider possible effects that differences in post-depositional processes and recovery techniques had on the material we had available for analysis. Such biases can introduce significant distortions in burial distributions that can be misinterpreted as being of both demographic (Walker et al. 1988) and cultural significance (O'Shea 1984). Bioturbation is the most significant post-depositional process influencing the integrity of the Malibu burials. Rodent tooth marks were found on several of the Middle-period skeletons, and burrowing (primarily by gophers) has undoubtedly displaced some bones and grave goods. Although we have no evidence that such disturbance has differentially affected the artifact distributions in the two cemeteries, it is reasonable to expect, owing to its greater antiquity, that the Middle-period cemetery has experienced more bioturbation than the historic-period cemetery.

Soil conditions clearly influenced the completeness of burials recovered from some areas. The skeletal remains from the historic cemetery were poorly preserved in comparison to those from the prehistoric cemetery (Walker et al. 1996). Given these post-depositional processes, we decided not to include certain burials in our analysis. The original excavation notes and catalog identified 90 excavated burials in the prehistoric cemetery and 140 burials in the historic cemetery. The ensuing analysis includes all excavated burials, but some burials were excluded from particular detailed analyses and maps.<sup>1</sup> Previous technical reports on the Malibu collections include maps and descriptions of all skeletal remains and associated grave goods from the sites (Gamble et al. 1995, 1996; Walker et al. 1996).

A final consideration is the influence of differences in the completeness of burial recovery at each cemetery. The entire historic-period cemetery was excavated. Although much of the prehistoric cemetery was excavated, a small portion of it (the available data from test excavations are inadequate to precisely determine its extent) was destroyed by road-building activity or remains unexcavated. Although we do not know the contents of this unexcavated area, we have no reason to believe that the burials it contains differ in any systematic way from those in the larger excavated portion of the cemetery.

### **Historic Archaeology from an Ethnographic Perspective**

Our method of mortuary analysis requires comparing archaeological evidence from the historic-period Malibu cemetery with the ethnographic and ethnohistoric descriptions of Chumash social organization and mortuary practices. This comparison provides the empirical basis for understanding the culture-specific ways in which, through the symbolism of burial rituals, historic-period Chumash social relations are reflected in the archaeological record. Based on the results of this comparison, we will then examine the Middle-period cemetery to determine if similar patterns of ritual behavior are observed. This comparison provides insight into the important issue of the time depth of social complexity in the Chumash region. One reconstruction of prehistoric Chumash society focuses on the emergence of complexity during the Late period (Arnold 1992), while a differing interpretation considers complexity to have emerged in the Middle period or even earlier (King 1990).

A summary of the ethnographic and ethnohistoric data provides a basis for exploring the specific ways in which Chumash social organization manifested itself in the contents and spatial organization of the historic Malibu cemetery. First, it is clear that the Chumash had a hierarchical social system in which status and wealth were inherited along family lines. Shell beads were a significant form of wealth and some of them were used as money. The Chumash had chiefs who were distinguished from commoners by dress, membership in guild-like organizations, and ownership of wealth and economically important resources such as plank canoes. There was a hierarchy of chiefs, with primary chiefs exerting some control over more than one village. The Chumash maintained enclosed cemeteries with family burial plots. Men and women are said to have been buried in different areas. Funerals were community events in which beads were placed with the body of the deceased. Graves were dug by specialists, who were paid for their labor. Funerals of chiefs apparently were more elaborate than those of common people. The Ventureño Chumash held mourning ceremonies several years after the deaths of important men in which baskets and other personal possessions were burned.

These ethnographic and ethnohistorical observa-

tions have obvious implications for the archaeological record. Clearly, Chumash social distinctions found symbolic expression in wealth-related burial practices. Ethnographic data and ethnohistoric reports suggest that the much of the wealth in Chumash society belonged to a small cadre of people from chiefly lineages whose families owned plank canoes. The base of the social pyramid, on the other hand, was occupied by a majority of common people with much less access to wealth. A small number of elite individuals should thus have many beads in their graves and the rest should have modest burial offerings or nothing at all. Wealthy people not only could afford to place expensive items, such as beads, with the bodies of their dead relatives, but they also had the economic wherewithal to pay "undertakers" to dig deep graves. We would thus expect to find a positive correlation between grave depth and the richness of burial accompaniments. In Chumash society, the statuses of "commoner" and "nobility" depended upon lineage affiliation, not personal accomplishment; the distinctions of age and sex were less significant as social status determinants than family membership. Owing to their familial origin, the sumptuous burials of the Chumash elite should thus include people of all ages and both sexes.

There are several possible sources of distortion in this straightforward mapping of Chumash society upon the symbolic space of their cemeteries. First, the emotional saliency of the deaths of some people, such as children, might result in large investments in their burials that are unrelated to other determinants of their social status (Green 1999). It is also plausible that part of the motivation for placing lavish burial accompaniments with some children may have been the realization that they would never be able to establish an adult identity. In this case, the quantity and types of their grave goods would be a recognition that this is all the child would ever have; they would never reach maturity and their full potential in life, whether it be as an *'antap* society member, a chief, or a commoner. The grave goods selected by the living for a child may, therefore, reflect that child's projected adult social identity.

The custom of holding mourning ceremonies for important men is another potentially complicating factor. This practice could conceivably reduce the amount of wealth available for the burials of important men owing to the necessity to retain some of their possessions for use in an anticipated mourning cer-

emony. On the other hand, the burials of lower status men, for whom a mourning ceremony was not anticipated, might contain many grave goods.

In many respects, the archaeological evidence from the historic-period Malibu cemetery confirms the ethnographic and ethnohistoric descriptions of Chumash social organization as an ascribed status hierarchy in which wealth was inherited along family lines. Shell and glass beads of the types known to have been used as money and symbols of wealth have an uneven distribution in the cemetery that is entirely consistent with the ethnohistoric and ethnographic evidence we have concerning Chumash social organization. Forty-five percent ( $n = 65$ ) of the burials in the historic cemetery were accompanied by less than 20 beads, and of these, just under half ( $n = 30$ ) had no beads included as burial offerings. This is consistent with the ethnographic evidence that many Chumash had limited access to economic resources, such as plank canoes, which were necessary to generate large amounts of wealth. At the other end of the burial-offering spectrum, 9 percent ( $n = 12$ ) of the burials in the historic-period cemetery had sumptuous grave goods that included 1,000 or more beads. Visual inspection of the distribution of individuals with large quantities of beads reveals a clear spatial patterning (Figure 3). With one exception, all of the people with more than 1,000 beads are clustered in the southern area of the cemetery. Although people with few beads are scattered throughout the cemetery, they are concentrated along the western edge and perimeter of the burial area (Figure 3). These data are consistent with historic accounts indicating that some Chumash were extremely wealthy owing to their membership in chiefly lineages that controlled the production and use of plank canoes. These data are also consistent with archaeological evidence from the protohistoric cemetery at the Medea Creek site (CA-LAN-243), where spatial differences in the quantities and types of shell beads have been interpreted as reflecting a hierarchically organized society in which the political elite acquired and controlled wealth through ownership of canoes and control of trade (King 1969, 1982).

The ethnohistoric and ethnographic data indicating that family membership was more important as a social status determinant than age, sex, or personal accomplishments is consistent with the demographic composition of the subset of burials with 1,000 or more beads. These richly endowed graves include

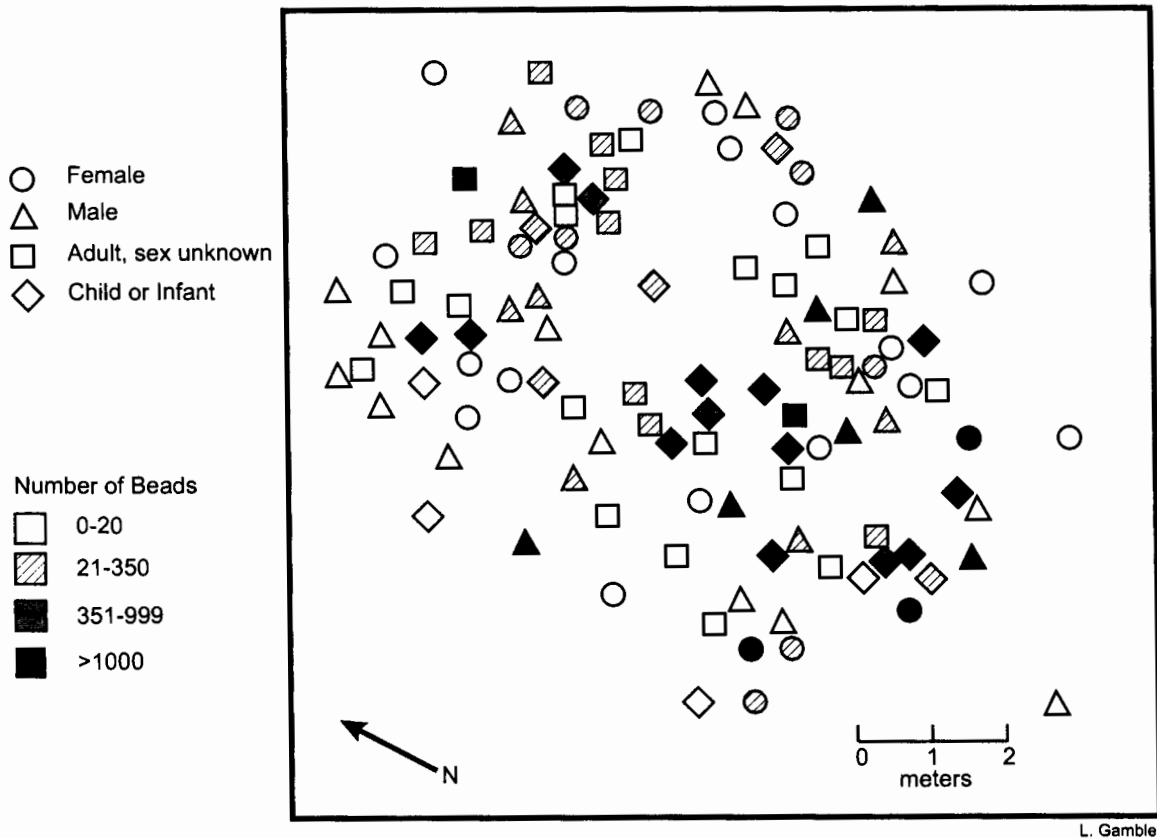


Figure 3: Map of the historic-period Malibu cemetery (Excludes burials lacking information on age, location, or artifact association).

people of all ages and both sexes, as would be expected if they were the burials of the members of a wealthy family instead of individuals who attained high status through personal accomplishment. Although more of these well-endowed burials are males ( $n = 3$  of 12) than females ( $n = 1$  of 12), this sex ratio does not differ significantly from that of the other less sumptuous burials (Fisher's exact test,  $p = 1.0$ ). The age distribution of the burials with many beads is also consistent with the evidence that high social status in Chumash society was inherited and not earned. The proportion of subadults among the people who lacked grave goods does not differ significantly from the proportion of subadults among the people buried with over 1,000 beads ( $\chi^2 = .029$ ,  $p = .5$ ). These archaeological data reinforce the ethnographic accounts that social status differences found symbolic expression in the amount of wealth the Chumash buried with their dead.

This conclusion is bolstered further by a clear relationship between burial depth and the richness of grave goods. In the historic cemetery, there is a significant positive correlation between grave depth

and the number of artifacts buried with a person ( $r_s = .32$ ,  $p = .0006$ ; mean depth for > 1,000 artifacts = 82 cm; mean depth for < 1,000 artifacts = 66 cm). This is consistent with the ethnographic reports that hiring undertakers to dig deep graves was expensive (Hollimon 1997; King 1969:47-48). A similar pattern was noted at the Medea Creek cemetery (ca. A.D. 1300 to ca. A.D. 1785) where, in certain areas of the cemetery, children buried at a greater depth had more grave goods (King 1969:35).

Our data lend little credence to the hypothesis that the lavish burial accompaniments of some historic-period Malibu children is not a symbolic manifestation of the inheritance of social status in a socially ranked society, but instead an expression of the intense emotional anguish parents experience when a child dies (Green 1999). The age distribution of burials with lavish grave goods does not differ significantly from that of burials with few grave goods. This suggests that children were not focused upon as the subjects of especially elaborate burial owing to the intensity of their parents' bereavement.

The Ventureño Chumash practice of holding

mourning ceremonies in honor of important men in which baskets and other personal possessions were burned also does not seem to have significantly distorted the symbolic relationship between historic-period Chumash social organization and the quantity of grave goods they placed with their dead. There is certainly no evidence that men were buried with few burial goods owing to the anticipation of a subsequent mourning ceremony. In fact, men were more frequently buried with large quantities of grave goods than women, which is the opposite of what would be expected if possessions were withheld at the time of burial for use in a mourning ceremony.

Whatever the disposition of the dead person's personal belongings, it seems likely that the artifacts the Chumash interred with a body serve an important role as a symbolic expression by the living community of the social relationships that have been disrupted through death. As Earle notes (1994:432), the need to use burial objects to symbolically reinforce social boundaries is likely to be much greater in chiefdoms, where social status is inherited, than it is in a less socially stratified Big Man society where wealth and political power are amassed by dint of personal effort. In Chumash society, where a person's social standing derived from an institutionalized system of hereditary social relationships, it is likely that the wealth interred with a person served more as a symbolic statement of the dead person's status in life than it did as a straightforward inventory of their personal belongings. In this way, the ritual placement of wealth in burials would serve to symbolically reinforce the hereditary basis of status differences in Chumash society.

The symbolic use of burial offerings to reinforce social boundaries is suggested by the distribution of plank canoe parts in the historic-period Malibu cemetery. Chumash plank canoes were expensive, high-status items that only wealthy people such as chiefs were able to own (Gamble 1991; Hudson et al. 1978; King 1982). Evidence of burial with a plank canoe is thus likely to indicate high social status. People buried with plank canoes would also be expected to be interred with other wealth symbols such as large quantities of beads and ornaments. Eleven of the historic-period Malibu burials were associated with asphaltum or wood, suggesting that they were buried with canoes or canoe parts. This is consistent with archaeological evidence indicating that pieces of canoes were buried with their owners (Hudson et al.

1978:160; King 1969, 1982). Three of these people had very clear associations with plank canoes. Burial 56, a 19-year-old male, was found with many canoe planks and appears to have been buried with a canoe or part of a canoe. Burial 81, whose age and sex could not be determined, was associated with large quantities of asphaltum caulking, canoe plugs, and redwood plank fragments. A 26-year-old (Burial 152) of unknown sex was also found with many canoe parts. All three of these were accompanied by hundreds of beads (Table 1). However, Burial 56 had by far the greatest quantity with a total of 2,347 shell beads and 48 glass beads, indicating that the people responsible for his burial possessed significant wealth. It is likely, given the ethnographic evidence we have presented, that this person was from an elite family of canoe owners and possibly a chief.

Of the people buried with canoe remains whose sex could be identified, four were males, one was a female, and two (a one-year-old and a four-year-old) were children. The ethnographic record suggests that males were usually the canoe owners; thus, it makes sense that most of the individuals associated with canoes were males. However, the burial of young children with canoe parts suggests that family membership was also an important determinant of the practice of burial with canoe parts. Ethnographic evidence indicates that membership in the canoe-maker's guild, called the "Brotherhood of the Tomol," was often inherited (Hudson et al. 1978:154–155). The burial of children with canoe parts may indicate that they were members of elite canoe-owning families who would have become members of this elite guild had they reached adulthood.

In addition to about 15,000 glass trade beads, the historic Malibu burial offerings included a few other objects of European origin. Some of the metal artifacts left as grave goods were typical of the tools of European origin used by the Spanish and Indian cowboys, or *vaqueros*, who worked on the ranchos that were established in the greater Los Angeles area. These items include five *higos* (small ornaments suspended from saddle skirts), ornaments from Spanish bridles; part of an iron spur consisting of a star rowel and heel plate; and one iron concho, an ornament *vaqueros* wore both on the sides of their pants and on bridles or hats (Bickford 1982). Other metal objects include four iron knives, adzes, six iron spikes or nails, pieces of firearms, a copper bead, a St. Francis de Sales medal (Green 1999), two metal cups (one

Table 1. Beads with Burials that have Canoe Parts in Association.

Burial No.	Sex	Age	No. of Shell Beads	No. of Glass Beads
44	Sex Undetermined	1	227	11
56	Male	19	2,347	48
72	Male	Adult	24	52
81	Sex Undetermined	Unknown	163	262
92	Sex Undetermined	Unknown	10	21
144	Sex Undetermined	20	2	12
146	Female	Adult	4	86
152	Sex Undetermined	26	144	179
153	Male	Adult	0	27
154	Sex Undetermined	4	721	77
159	Male	Adult	19	91

copper, the other iron), two buckles, seven metal buttons, and parts of a sword.

Given the abundance of European artifacts interred with the historic-period Malibu burials, there clearly was considerable interaction between the people of Malibu and the Spanish colonists (Bickford 1982). The Chumash probably obtained some of these goods in exchange for work they did as cowboys and farm laborers. On a trip between Ventura and Los Angeles in 1795, Father Vicente de Santa Maria reported seeing Indians working as "cowherds, cattlemen, irrigators, bird catchers, horsemen, etc." (Engelhardt 1927:9). He also saw Indians cultivating watermelons, sugar melons, and corn. By this time, many Chumash had adopted European clothing. "Here we see nothing but pagans passing, clad in shoes with sombreros and blankets, and serving as muleteers to the settlers and rancheros, so that if it were not for the gentiles there would be neither pueblo nor rancho . . . these pagan Indians care neither for the Mission nor for the missionaries" (Engelhardt 1927:9).

Because Crespí noted that beads were placed on the wrapped body before burial, we examined the excavation records to determine if this pattern of bead placement could be identified archaeologically. At both cemeteries, the field recorders noted bead placement for most of the individuals, and in over 80 percent of the cases, they were found around the neck or in the area of the skull. The male in a plank canoe (Burial 56) had *Olivella* necklaces composed of 2,347 beads completely surrounding his head. Sixteen countable strands of *Olivella* rough disc beads were found attached to the skull. This is consistent with Martínez's observation that bead wealth was displayed on top of the head (Simpson 1961). These

archaeological data suggest, however, that the ritual Crespí observed at Santa Barbara, where lengths of beads were placed upon an enshrouded body, was not practiced in exactly the same way at Malibu. However, both the archaeological and ethnohistorical records are consistent in emphasizing the importance of the practice of including beads in graves.

It is apparent from the patterning observed in the historic cemetery at Malibu that even at smaller, peripheral Chumash settlements such as this, a ranked social system existed in which commoners were symbolically distinguished from the elite. It is likely that this hierarchical social organization would have been even more visible in the larger and politically important settlements in the mainland core of the Chumash region.

There are a few areas in which ethnohistoric and ethnographic descriptions of Chumash burial practices conflict with archaeological data from the historic-period Malibu cemetery. The spatial distribution of males and females (Figure 3) provides no evidence of the division of cemeteries into sex-specific burial areas mentioned by Crespí (Brown 1999). On the other hand, descriptions of special ceremonial areas within cemeteries that were kept clean are consistent with the low density of burials in an area near the center of the historic-period Malibu cemetery (Figure 3). Also, the Crespí account arguably provides us with evidence that high-status individuals were interred as part of an elaborate burial ritual where quantities of beads were placed in the grave. Despite some minor incongruities, the ethnohistoric and ethnographic evidence for Chumash social organization and burial practices are in large part consistent with the archaeological data from the historic cemetery.

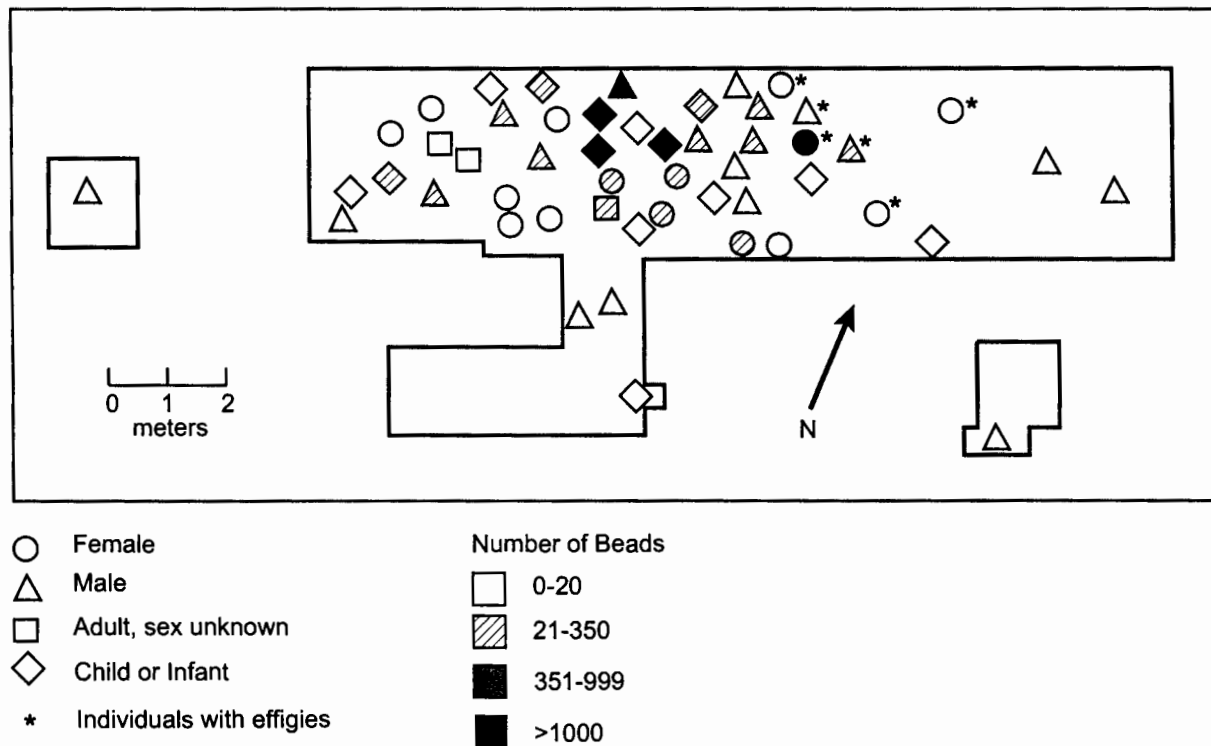


Figure 4: Map of the Middle-period Malibu cemetery (Excludes burials lacking information on age, location, or artifact association).

### Prehistoric and Historic Comparisons

Our analysis of the archaeological data from the historic-period Malibu cemetery suggests a clear symbolic relationship between specific ethnographically and ethnohistorically documented aspects of Chumash social organization and burial rituals. These findings have obvious implications for interpreting archaeological evidence from the Middle-period Malibu cemetery. Through our analysis of the historic-period cemetery, we have shown that the well-developed social divisions of the historic-period Chumash found symbolic expression in their burial rituals. Ethnographic and ethnohistoric reports show that Chumash burial practices symbolically reinforced the division between common people and a small number of elite people who inherited wealth and high social status from their powerful families. The modest burial offerings found with most of the people interred in the historic-period Malibu cemetery contrasts sharply with the enormous numbers of beads and other grave goods found with these wealthy individuals. The demographic profile of these well-endowed burials is consistent with ethnographic and ethnohistoric data suggesting that wealth

was inherited along family lines among the historic-period Chumash.

These findings provide a sound empirical basis for interpreting the Middle-period Malibu cemetery. Overall, the similarities between the Malibu cemeteries are much more striking than the differences, an indication that the social complexity reflected in the historic cemetery is also characteristic of the Middle period. We found many concordances in the distributions of burials and artifacts in the two cemeteries. Perhaps the most important similarity, in terms of its social organizational implications, is in the distribution of grave goods by age and sex (Figure 4). Just as we found in the historic-period cemetery, in the Middle-period cemetery some people were interred with large quantities of grave goods and others were buried with few grave goods or nothing at all. The proportion of people interred with very few beads is even higher in the prehistoric cemetery than it is in the historic-period cemetery. Sixty-eight percent ( $n = 61$ ) of the 90 burials in the prehistoric cemetery were accompanied by fewer than 20 beads, with 26 of these having no beads at all. One thousand or more beads accompanied only 3 percent of the buri-



als in the prehistoric cemetery. If we look at the distribution of beads in more detail, we find that in the Middle-period cemetery, of the five people who had 850 or more beads and ornaments, three are children or infants. The largest Middle-period bead lot, 4,564 beads and ornaments, was found with a child (Burial 38). In both the historic- and Middle-period Malibu cemeteries, the burials with the greatest number of beads are those of children. The proportion of subadults under 12 years of age with beads in the Middle-period cemetery (75 percent) and the historic cemetery (68 percent) does not differ significantly ( $\chi^2 = .22, p = .642$ ). When we compare the quantities of beads buried with infants and children, we also find that the two cemeteries do not differ significantly (Kruskal-Wallis test:  $\chi^2 = .35, p = .5$ ).

In both cemeteries, most of the children were interred with few burial offerings or nothing at all, and a small number of children are buried with enormous quantities of beads. This indicates that children are not buried with beads just because they died at a tragically young age. Instead, in both cemeteries, other social factors have clearly influenced the inclusion of large amounts of wealth with children. The concentration of people with many beads in the central part of the Middle-period cemetery (Figure 4) is also reminiscent of the historic-period cemetery (Figure 3), where people without beads or with very few beads are found on the cemetery's periphery. As in the historic-period cemetery, a statistically significant positive correlation exists between how deep people were buried and the number and diversity of artifacts associated with them (depth:  $r_s = .2, p = .036$ ; number of artifact types:  $r_s = .32, p = .004$ ; mean depth > 1,000 artifacts = 236 cm; mean depth < 1,000 artifacts = 197 cm). This suggests that, as early as the late Middle period, the costs of paying people who specialized in undertaking influenced Chumash burial practices. Overall the distribution of beads in the Middle-period Malibu cemetery is consistent with the hypothesis that, during the late Middle period, personal accomplishment was much less important as a determinant of social status than familial relationships.

Similarities also exist between the historic- and Middle-period Malibu cemeteries in burial placement and orientation. All of the burials in both cemeteries whose position could be determined were in a flexed position. The orientation of the burials also shows an impressive uniformity, with the heads of

more than 70 percent of the burials in both cemeteries oriented toward the west or southwest. Males and females, and adults and children did not differ significantly in their orientation in either cemetery ( $p > .1$  for all comparisons).

Another similarity between the cemeteries is in the average distance between burials. The average horizontal distance between each burial and all other burials was calculated as a measure of how centrally located each burial was in the cemetery. Since the boundaries of both cemeteries are roughly circular or elliptical, these average distances provide a measure of burial centrality. Burials with a larger average distance to other burials are located peripherally in the cemetery in comparison to burials with smaller average distances to other burials. These average distances also provide a measure of burial density. The average distance from other burials is remarkably consistent among and between the age and sex groups of both cemeteries. Analysis of variance indicates that no significant differences exist in this regard ( $F = .60, p = .8$ ). This regular spacing of burials at about 35 cm from each other indicates that a strong cultural preference for closely packing burials within a restricted burial area persisted from the late Middle period until historic times.

A few clear differences exist between the historic- and Middle-period cemeteries. Artifacts were found with a significantly larger ( $\chi^2 = 11.3, p = .001$ ) proportion of historic-period (67 percent) than Middle-period (33 percent) burials, and, in general, more artifacts were placed with historic-period than with Middle-period burials (Kruskal-Wallis:  $\chi^2 = 6.1, p = .01$ ). The large number of beads, including glass beads, placed with the historic-period burials, explains this difference. Utilitarian items, in contrast, were much more common in the Middle-period than in the historic-period cemetery ( $\chi^2 = 24.5, p < .0005$ ). Only 3.6 percent of the historic burials were associated with utilitarian items, whereas they accompanied 25 percent of the Middle-period burials. A similar difference exists in the frequency of religious objects. Only 3.6 percent of the historic burials had such objects, whereas 22.2 percent of the prehistoric burials had them ( $\chi^2 = 19.5, p < .0005$ ).

Bifaces are another artifact type whose use as burial offerings differs significantly between the prehistoric and historic cemeteries. Bifaces were found with 13.3 percent of the prehistoric burials, and only 2.9 percent of the historic burials. This reduction in

the use of stone tools as burial associations may reflect the replacement of stone tools by metal tools during the historic period.

An important difference between the two cemeteries is the lack of any evidence of the plank canoe in the prehistoric cemetery. Malibu's location at the southern periphery of the plank canoe's distribution provides one plausible explanation for this. Most scholars believe that the plank canoe was in existence by A.D. 500 (Arnold 1995; Hudson et al. 1978; King 1990). However, it may have been relatively rare in an area such as Malibu, which was at the southern periphery of the area in which plank canoes were used during the historic period (Hudson et al. 1978). Preservation may also be an important variable. Wood preserves poorly in the Mediterranean climate of the Malibu region. Although asphaltum preserves well, it is brittle and prone to fragmentation, especially when used as thin pieces of caulking. This makes the archaeological identification of asphaltum from canoes difficult in earlier sites. A final possible explanation is that canoes were not privately owned during the late Middle period and, therefore, not available as burial offerings. We suspect that several of these factors account for the absence of plank canoe remnants in the Middle-period Malibu cemetery.

Of special interest from a religious standpoint are the small stone effigies that are common in the Middle-period cemetery and absent in the historic-period cemetery (Figure 2). As noted earlier, such objects are known ethnographically to have been used as talismans throughout southern and central California (Hudson and Blackburn 1986). Many of the 68 effigies in the Middle-period cemetery have anatomical features carved into them such as eyes, mouths, and dorsal fins (Figure 2). A few have nicks at one or both ends, which is typical of Chumash effigies. Most of the effigies are made from talc schist, chlorite schist, siltstone, or sandstone. The schist appears similar to that from Catalina Island, which may be its source. Two of the effigies are "pelican stones" with beak-like projections, and a third obviously represents a whale (Figure 2[m]; Meighan 1976). Some of the effigies are clearly abstract representations of fish. There are 25 stones of similar materials that are either unmodified or show minimal modification. In most cases these pebbles are approximately the size and shape of the fish effigies. Ten of these minimally modified stones were recovered from burials that also had fish effigies; therefore, they were placed in

the same category. Forty-three of the effigies have red ochre on them, and a few of these have indications that they were painted (Gamble et al. 1996:Table 3).

Eleven individuals were buried with effigies. Five of these are females and four are males. Females had 53 (78 percent) of the total effigies, males had 12 (18 percent), and two people of unknown sex had 3 (4 percent). Except for a six-year-old with one effigy, all of the people with effigies whose age could be determined were young adults between the ages of 17 and 30. Burials with effigies are clustered in the eastern portion of the cemetery and most of them do not have large numbers of beads (Figure 4). The one exception to this is Burial 35, who had 21 effigies and 962 beads (Gamble et al. 1996:Table 3). Both of the effigies identified as pelican stones were buried with females who were about 17 years old.

The fact that most of the effigies were found with women can be interpreted from a variety of symbolic perspectives. The ethnographic and ethnohistoric records indicate that fishing was not a major subsistence activity of Chumash women (Gamble 1983). Therefore, it seems unlikely that these women are buried with these effigies because they used them as fishing talismans when they were alive, unless they were held by women to protect their male family members. An alternative interpretation is that the effigies are personal talismans whose form is unrelated to their owner's occupation. A woman could have a fish as a spirit helper, yet not be a shaman or a person who needed luck when fishing. Given the economic importance of fishing among the Chumash, and the small number of fish effigies found with burials, it is obvious that many people who fished were not buried with fish effigies. Another interpretation of the distribution of effigies is that male family members, spouses, or mourners placed these effigies with females. As King (1969, 1982) notes, many items placed in graves may reflect more about the mourners than they do about the deceased.

It is also possible that during the Middle period, more women than men were religious specialists at Malibu. The abundance of effigies with women may, therefore, reflect their use in religious rituals. The small number of beads associated with most of the burials with effigies suggests that these people had less access to wealth than the people buried with many beads and other grave goods. On the other hand, control and ownership of effigies may have had

important social implications owing to their association with shamanic activities. The Chumash accepted many different kinds of people with special knowledge of the natural and supernatural world as "doctors." There were, for example, shamans whose specialties were to make or stop rain, prevent snakebites, locate lost objects, or transform themselves into bears or other animals. Others could foretell the future, cure the sick, or bring about death (Harrington 1942:39–40). Another possibility, at least with the two pelican stones associated with the 17-year-old females, is that these objects are related to fertility (Koerper and Labbé 1987). We present these as interesting problems that are outside the purview of this paper, but that hopefully will be investigated more fully in the future.

The spatial clustering of burials with effigies in a restricted area of the cemetery suggests that these artifacts were not readily available to everyone and perhaps that they were owned by families. In his artifact-based analysis of Chumash social evolution, King (1990) shows that religious artifacts are less common as Late-period burial accompaniments than they were during earlier prehistoric periods. He attributes the decline in their use to the institutionalization of religion. Of the 397 late-prehistoric-period burials excavated at Medea Creek, only seven people were associated with religious objects (Green 1999; King 1982). The Malibu data provide additional evidence for a decrease in use of religious artifacts as burial offerings by the Chumash during the late prehistoric and historic periods.

The distribution of religious objects in the Malibu cemetery is also similar to that seen in other Middle-period cemeteries in the Chumash region. King (1990:226–227) has shown that at the Las Llagas cemetery (SBA-81) on the mainland coast northwest of Goleta, the distribution of stone pipes, charmstones, and effigies differed markedly from the distribution of shell beads and ornaments. Artifacts from this cemetery indicate that it was used during Phase 2a of the Middle period (200 B.C.–A.D. 200). The distribution of artifacts at Las Llagas suggests that wealth objects were buried with different individuals than were religious artifacts, and that the people with wealth were not necessarily the same as the individuals who had access to ceremonial objects. The similar distribution of religious artifacts at Las Llagas and the Middle-period Malibu cemetery suggest that this difference in the distribution of wealth

objects and religious artifacts was a widespread pattern that persisted among the Chumash for a period of more than 1,000 years. In addition, variability in the quantities of beads interred with individuals at this cemetery (King 1990:226) suggests that the differential distribution of wealth seen in the late-Middle-period cemetery at Malibu has an even greater time depth. Our analysis has revealed many significant similarities between the historic-period and Middle-period cemeteries that have important implications for reconstructing the evolution of social complexity in the Santa Barbara Channel area. These include shared burial patterns and artifact distributions that our ethnographic research suggests are symbolic manifestations of a social system based on a permanent ascribed status hierarchy. They are consistent with King's (1990) hypothesis that, by the late Middle period, wealth was unevenly distributed among the Chumash owing to a system of permanent ascribed social hierarchy in which wealth and social status were inherited along family lines.

### Skeletal Evidence

Human skeletal remains are the products of the physiological processes of growth and reproduction. Because of this, the interpretive difficulties posed by human remains differ fundamentally from those posed by artifacts, historical records, and other culture-dependent products of human symbolic activity. Skeletal remains provide an extraordinarily detailed material record, not only of genetic relationships, but also of the physiological responses earlier people made to the challenges they encountered in their natural and sociocultural environments. Skeletal analysis, therefore, is an extremely revealing independent source of evidence for evaluating the divergent, artifact-based interpretations of social evolution in the Santa Barbara Channel area.

The competing theories about the timing of the emergence of ascribed social hierarchy in the Santa Barbara Channel area have some obvious bioarchaeological test implications. For example, with the rise of a hereditary elite, we would expect to see differences in access to wealth manifest themselves in status-related differences in health, activity patterns, and genetic relationships.

### *Genetic Relationships*

The genetic relationships of the people in the Malibu cemeteries were investigated through the analy-

sis of nonmetric cranial traits (also termed "discrete traits," "discontinuous traits," or "epigenetic traits"). Nonmetric traits are minor anatomical variations such as small accessory bones within cranial sutures, bony spurs or bridges, and ossification failures that result in a defect such as the dehiscence that sometimes occurs in the tympanic plate of the temporal bone. They are called nonmetric traits because they can be better classified as present or absent (or as a point on a morphological gradient) rather than quantified on a continuous scale (Buikstra and Ubelaker 1994; Hauser and De Stefano 1989).

Since nonmetric skeletal traits show familial inheritance (Cheverud 1982; Cheverud and Buikstra 1981a, 1981b, 1982; Leamy et al. 1998; Saunders and Popovich 1978; Sjøvold 1984; Torgersen 1951), they provide a basis for assessing the genetic relationships of people buried in a cemetery (Alt et al. 1997). They often can be observed in fragmentary material and are well suited for the analysis of poorly preserved collections such as those from Malibu, in which only a few crania and long bones are complete enough for conventional osteometric analysis. Nonmetric dental traits have been used by other researchers interested in the genetic relationships of the people buried in a cemetery (Howell and Kintigh 1996, 1998). This was not practicable with the Malibu collections because extremely high rates of tooth wear usually made most dental nonmetric trait observations impossible (Walker et al. 1996).

Thirty-two nonmetric cranial traits were recorded in the Malibu collection following procedures recommended in Buikstra and Ubelaker (Buikstra and Ubelaker 1994; Walker et al. 1996). Although bilateral traits were scored on both sides of an individual when possible, data from the side showing the greatest expression of the trait were used in our statistical analysis. This was necessary owing to the large number of individuals for which only one side could be scored. Because of the small sample sizes, multistage traits with several expression levels (e.g., intermediate stages in the division of the hypoglossal canal) were reduced to dichotomous (present/absent) variables.

The genetic relationships of the people in the Malibu cemeteries were explored through the calculation of a matrix of Gower coefficients for individuals with five or more shared nonmetric traits. This similarity measure was selected because of its ability to accommodate both presence/absence traits and miss-

ing data. Gower coefficients were calculated by counting the number of nonmetric traits for which two individuals have identical values and dividing this by the number of attributes for which both cases have valid data (Howell and Kintigh 1996). The crania from the historic-period Malibu cemetery were very fragmentary, and we were only able to calculate Gower coefficients for 16 individuals, many of whom had only a few nonmetric cranial traits that could be scored. Consequently, our analysis of genetic relationships will focus on the Middle-period Malibu cemetery, where Gower coefficients could be calculated for 69 individuals.

The distances between pairs of burials in the Middle-period cemetery show a highly significant negative correlation with the Gower coefficient of those same individuals ( $r_s = -.1005, p = .0001$ ). This agrees with ethnohistoric data indicating that, at the time of European contact, the Chumash had family burial plots. It also suggests that Middle-period Chumash burial rituals included the practice of placing relatives together in the same burial areas.

Male-female comparisons show that the ethnohistorically documented preferences for matrilineal postmarital residence existed at Malibu during the Middle period. The Gower coefficients of female dyads are significantly higher than those of male dyads (Wilcoxon rank test:  $z = -4.5, p < .00005$ ). This suggests that the women buried in the Middle-period cemetery are more closely related to each other than are the males.

Some significant correlations also exist between Gower coefficients and the artifacts buried with people. The average Gower coefficients of people interred in the Middle-period cemetery with religious objects were much higher than those of people lacking religious objects (Wilcoxon rank test:  $z = -5.8, p < .00005$ ). In other words, people with religious items appear, based on their cranial traits, to be more closely related to each other than are the people who lack religious objects. In the historic period, mission priests in the Chumash area noted that special knowledge used in healing ceremonies was passed from father to son (Geiger and Meighan 1976:73; Walker and Hudson 1993:46). The protohistoric cemetery at Medea Creek, where individuals with ceremonial goods were clustered in one area of the cemetery, adds further support to the concept that religious power was inherited (King 1969). The close genetic relatedness of individuals interred with

ritual objects in the Middle-period cemetery may indicate that religious practitioners inherited their roles, perhaps suggesting the presence of a kin-based organization for shamanic or ritual activities, possibly an indication of the 'antap organization.

Burials with many beads show a weaker relationship in the opposite direction: the Gower coefficients calculated for dyads of burials with more than 500 beads are significantly lower than those of burials with fewer than 500 beads ( $z = 2.5, p = .01$ ). This suggests that the people buried with large numbers of beads are less closely related to each other than are the people who lacked these expensive burial offerings. This is consistent with the hypothesis that people who moved to Malibu from other areas had greater access to wealth, perhaps by virtue of their strong genetic and social ties to other villages, than did the members of families with many close relatives residing at the village.

#### *Status-Related Differences in Health*

Osteological studies of health and activity patterns are an important independent source of evidence for testing hypotheses about the social and symbolic significance of burial rituals. Differences in social status are associated with differences in diet, living conditions, health, and workload that can have skeletal manifestations. For example, in modern, industrial societies there is a strong correlation between morbidity, mortality, and wealth. Although such wealth-health relationships are likely to be less clear in earlier, less socially stratified societies such as the Chumash, correlations between social status and health might exist. For instance, people of low status may have had less access to food during times of shortage and may also have had experienced living conditions that differed significantly from those of people who belonged to wealthier elite families.

Our analysis of pathological conditions in the Malibu burials indicates that the status distinctions the Chumash expressed symbolically through their burial rituals did have implications for a person's health. This is suggested by significant correlations between the skeletal indices of growth disruption and the richness of burial offerings. Linear enamel hypoplasias are deficiencies in enamel thickness that develop in children who experience systemic physiological disruptions during enamel matrix formation (Kreshover 1960; May et al. 1993). Convincing experimental and clinical evidence links enamel hypoplasia to episodes

of infectious disease and malnutrition (Giro 1947; May et al. 1993; Sweeney et al. 1969).

At the Middle-period cemetery, people without any grave goods had a significantly higher ( $\chi^2 = 4.9, p = .03$ ) prevalence of hypoplastic teeth (61 percent) than people buried with beads (29 percent). At the historic cemetery, although people lacking beads also have a higher frequency of hypoplasia, the difference is not statistically significant. This may be due the small size of the sample. These data show that during the Middle period, people without burial offerings experienced more unfavorable living conditions during childhood than people who received beads as burial offerings.

In view of the ethnographic descriptions of wealthy "nobility" among the Chumash who did little work, we examined the relationship between skeletal indices of workload and burial associations. Bone spurs at sites of ligament and tendon attachment (enthesopathies) are typically a result of traumatic injuries such as pulled muscles and torn ligaments associated with strenuous physical activity. The frequency of enthesopathies, therefore, provides an index of individual differences in physical activity and the workload distribution among the people of Malibu. Enthesopathies of the major long bones are very rare during the historic period (1 example in 182 observable long bones, or .5 percent) but are more common during the Middle period (12 examples in 310 observable long bones or 3.9 percent). This is a significant difference (Fisher's exact test,  $p = .038$ ) and suggests that work patterns changed between the prehistoric and historic periods (Walker et al. 1996). In the Middle-period cemetery, people buried with artifacts ( $n = 55$ ) are much more likely (Fisher's exact test,  $p = .006$ ) to have enthesopathies than people lacking artifacts ( $n = 35$ ). In fact, none of the people lacking artifacts had enthesopathies of the major long bones. This association between the presence of artifacts and enthesopathies is not the result of a preservation-related difference between burials with and without artifacts; essentially the same difference (Fisher's exact test,  $p = .02$ ) is found between the two groups when the analysis is limited to individuals whose remains include all twelve of the major long bones.

One interpretation of these data is that, during the Middle period, people who could afford to dispose of some of their wealth as burial offering engaged in certain types of strenuous physical activities more

frequently than did poorer people. Our analysis of genetic distances suggests that these same individuals were less closely related to other people buried in the cemetery than individuals whose families had less access to wealth. A clue to the kinds of activities that might account for this difference is provided by the distribution of the enthesopathies. Most of them ( $n = 7$ ) were found on the bones of the lower limbs in areas likely to be traumatized during walking and climbing in rugged terrain, or other locomotor activities. These data suggest a correlation between extra-village kinship ties, spatial mobility, and access to wealth. This, in turn, is what would be expected given the great importance that intervillage resource exchange had for the economic life of the Chumash.

Long bone robusticity is an independent osteological measure of physical activity. Analysis of variance in which sex effects were controlled for shows that in the Middle-period cemetery the ratio of the area of the humeral shaft in the deltoid region to the length of the humerus is significantly ( $F = 8.6, p < .007$ ) greater in people buried with utilitarian items. Since deltoid development is in part a response to activity-related muscular development of the upper arms, these data suggest that people with utilitarian objects engaged in more strenuous physical activities than did the people buried without such objects. This activity-related interpretation is strengthened by the fact that people with and without utilitarian objects do not differ significantly in the length of the humerus or in the robusticity of the humerus in the midshaft area (which is comparatively free of muscle attachments). This may indicate that people buried with utilitarian items were more involved with subsistence activities that entailed strenuous use of the arms such as the use of nets and the collecting and processing of seeds.

### Discussion

We found many consistencies between ethnohistoric and ethnographic descriptions of Chumash culture and archaeological evidence from the historic period Malibu cemetery. The fact that a small proportion (9 percent) of the people buried in the historic-period cemetery had the majority (69 percent) of beads and other grave goods is consistent with the ethnographic descriptions of a society with a well-entrenched, ascribed social hierarchy in which beads and other burial offerings were used to symbolically reinforce

social boundaries. The fact that 46 percent of the people buried in the historic cemetery had almost no beads (less than 20 per burial) also suggests that qualitative social distinctions are reflected in historic-period mortuary practices. Beads account for 99 percent of the historic-period grave goods, and most of these are of the types that have been identified as the "money" beads that the Chumash used as a standardized medium of exchange (King 1990). Prominent variation in wealth, inherited status, and a hierarchical social system based on wealth are described in the ethnographic and ethnohistoric records of the Indians who lived in the Malibu area. Our analysis of the distribution of beads in the historic-period Malibu cemetery confirms these ethnohistoric and ethnographic accounts that large disparities in wealth existed among the historic-period Chumash.

The distribution of beads in the Middle-period cemetery is very similar to that of the historic cemetery. Only 6 percent ( $n = 5$ ) of the people buried in the Middle-period cemetery had the majority (75 percent) of beads, while 68 percent ( $n = 61$ ) were interred with few or no beads (less than 20 per burial). The distribution of the large limpet (*Megathura crenulata*) shell ornaments in the Middle-period cemetery, a bead type absent from the historic cemetery, also was limited. Only 17 percent ( $n = 15$ ) of the people buried in the Middle-period cemetery were interred with limpet bead ornaments. In both cemeteries there is clear patterning in the quantities of goods included as burial offerings. Some people are interred with enormous numbers of beads, while others have very few grave goods or none at all. Richly endowed burials in both cemeteries include males and females, children and adults. The cemeteries also show similarities in spatial organization. There is clustering of individuals with beads in both cemeteries, with peripheral burials having fewer beads (Figures 3 and 4). This is especially clear in the completely excavated historic cemetery, where people with large quantities of beads are found predominantly in the central and southern portion of the cemetery. In both cemeteries, burials are closely packed within a restricted area, which indicates that symbolically circumscribed areas were maintained for disposal of the dead. This suggests that the spatial arrangement of the cemetery was well known to the living, and that certain areas were reserved for particular individuals. In both cemeteries, the depth

of the grave is correlated with the amount of wealth interred with the body. This is consistent with ethnographic evidence that deep burial was a prerogative of the wealthy. It is probable that these spatial regularities in cemetery structure reflect the maintenance of kin-based burial areas.

Skeletal evidence for the genetic relationships of individual burials provides an independent confirmation of a kin-based pattern of interment within the Middle-period Malibu cemetery. It is also significant that both the children and adults with the largest quantities of beads are buried near one another in both cemeteries (Figures 3 and 4). These data suggest that the members of some kin groups could afford to bury their dead with more beads than others. Regardless of whether the beads were the personal possessions of the deceased or were contributed by other people at the time of burial, it seems likely that the patterning in the distribution of these artifacts reflects the social divisions within a hierarchical society with a hereditary elite. These striking similarities between the historic- and Middle-period Malibu cemeteries suggest that such a hierarchical social system had emerged in the Santa Barbara Channel area at least as early as the late Middle period.

Clear correspondences were also observed in the position and orientation of the burials in both cemeteries. All burials are flexed in both cemeteries and there is a strong tendency for the burials to have their heads oriented to the west or southwest. The standardization of burial position and orientation we have documented in the Middle- and historic-period Malibu cemeteries contrasts with earlier practices and suggests that significant, long-lasting changes in religious organization occurred in the Santa Barbara Channel area during the last part of the Middle period. The similarities in the treatment of the dead seen between the late Middle period and historic period at Malibu are paralleled in other Late-period Chumash sites such as the well-documented Medea Creek cemetery (King 1982). This regional continuity suggests that, by the end of the Middle period, a persistent set of religious beliefs and conceptions about certain aspects of the afterlife had developed in the Santa Barbara Channel area that were maintained well into the period of European colonization.

This continuity in many aspects of Chumash burial ritual contrasts sharply with the complete discontinuity between the Middle- and historic-period Malibu cemeteries in the use of stone effigies as bur-

ial offerings. The small number of effigies and other religious objects in the historic Malibu cemetery as well as at Medea Creek and other late prehistoric and protohistoric period Santa Barbara Channel area sites (King 1982, 1990) suggests that significant changes occurred in the use of religious symbolism during the late prehistoric period. The disappearance of such objects as burial offerings may indicate that a power shift occurred during the Late period in which control by secular authorities supplanted that of religious leaders. The ethnographic descriptions of the members of the 'antap as ritual specialists and political leaders is consistent with this hypothesis. Based on our mortuary analysis, it seems likely that during the Middle period the roles of religious practitioners and political leaders were more highly differentiated than they were during the historic period. This is consistent with another difference between the Middle- and historic-period Malibu cemeteries: plank canoes are absent in the Middle-period cemetery, while in the historic-period cemetery they are incorporated into sumptuous burials containing large quantities of glass and shell beads. One plausible interpretation of this change in burial practices is that it reflects a power shift away from religious leaders toward secular authorities whose ownership of plank canoes gave them the capacity to control and profit from intervillage economic exchanges. Certainly there appears to be considerable overlap among religious, political, and economic statuses during the Late period. Membership in the 'antap society was restricted to people who had political power and wealth in the form of shell bead money, yet the primary role of the 'antap was religious in nature. The obligatory membership of the chief in the 'antap society and the mandatory payment of dues to the society suggest that it served to limit access to power to an elite group of wealthy people that had economic, political, and religious authority.

An alternative interpretation of the total disappearance of effigies in the historic cemetery is that this reflects a change in the use and burial of effigies, not a shift in religious power. Perhaps the burial of effigies with individuals reflects a change in how the objects were used and deposited. They may have been cached and not buried with individuals (Green 1999:233). The shift in the disposal of these enigmatic objects and their function throughout time is a subject that is worthy of more extensive investigation.

Some of the differences between the historic- and Middle-period Malibu cemeteries are clearly explained by the economic influences European trade goods had upon the Chumash. During the historic period, people were buried with more beads and the average number of beads per person is higher. This may reflect the sudden availability of large quantities of glass trade beads and a compensatory increase in the indigenous production of *Olivella* rough disc shell beads to counteract the inflation caused by this extraneous source of wealth. Use of these glass beads and many other imported European items as burial accoutrements is a clear indication of the strong influence that Europeans were having on the Chumash, especially by providing new, nontraditional avenues for acquiring wealth and social status. This shift toward the use of expensive imported items as burial offerings may in part explain why objects of indigenous manufacture, such as chipped stone tools and shell fishhooks, are rare or absent in the historic-period Malibu cemetery.

Osteological data reinforce many of our artifact-based interpretations. In the Middle-period cemetery, people with less evidence of childhood growth disruption were buried with more grave goods. The greater humeral robusticity of people buried with utilitarian objects and the higher frequency of enthesopathies among people whose graves contained ornaments indicates that differences in physical activities were correlated with the status distinctions that burial offerings symbolized. This in turn suggests that, by the late Middle period, wealth-based differences in social status had important ramifications for the workload and daily activities of the people who lived at Malibu.

### Conclusions

One objective of this analysis has been to provide data relevant to resolving the long-standing controversy over when the social complexity of the Chumash chiefdoms developed. Significant similarities between the prehistoric- and historic-period Malibu cemeteries provide strong evidence for continuity in many aspects of Chumash mortuary behavior, social organization, and religious beliefs over nearly 1,000 years. These similarities strongly suggest that the emergence of the ranked society characteristic of the historic-period Chumash chiefdoms appeared earlier than has been argued (Arnold 1992). Our data support the hypothesis (King 1992) that social relations

like those of the historic period, including ascribed status, were present during the Middle period.

A principal goal of our research has been to provide a model that illustrates the value of systematically using conceptually and methodologically independent data sources to understand the social significance of mortuary symbolism. The approach we have adopted is especially well suited for situations, such as the one at Malibu, where data from historic archaeological sites can be directly linked to ethnographic and ethnohistoric records. Such comparisons are extremely valuable tools for exploring the social dimensions of mortuary symbolism. They provide a baseline against which hypotheses about the social significance of prehistoric mortuary symbolism can be tested. A key element in our methodology is the use of physical anthropological data at each stage of the analysis as an independent check on the validity of inferences based on ethnographic records and artifact distributions. This bioarchaeological emphasis is one of the elements that clearly differentiated it from a simplistic use of the direct historical approach. Such a research strategy requires close collaboration between osteologists and archaeologists throughout the analytical process. It is in many ways antithetical to the traditional division of labor that relegates perfunctory descriptions of skeletal remains an ancillary status (usually as a report appendix) in studies whose central goal is interpreting the social significance of mortuary rituals. We hope that the success of our collaborative effort encourages others to do the same.

*Acknowledgments.* This research was funded in part by the California Department of Parks and Recreation. Without their support and the foresight of Tom Wheeler, we would have been unable to examine these collections in such detail. Many people facilitated our research. We thank Chester King, Jean Hudson, Francine Drayer, and Susan Kerr for their help in the analysis of the collections. Lisa Pompelli illustrated the effigies in Figure 2, and Terisa Green helped with graphics in earlier versions of the cemetery maps. Michael Glassow and Cynthia Brock gave valuable editorial comments. We want to thank Wendy Giddens, Curator of Archaeology, and Todd Eversgerd at the Fowler Museum at UCLA, who provided help at a moment's notice when there were questions about the collections. Inmaculada Lopez Bueis kindly provided us with the Spanish translation of our abstract. We especially appreciate Lynne Goldstein and four anonymous reviewers for their constructive comments. Finally, we would like to acknowledge our indebtedness to the Chumash Indians whose ancestral remains we studied.



## References Cited

- Alt, K. W., S. Pichler, W. Vach, B. Klima, E. Vlcek, and J. Sedlmeier  
1997 Twenty-five Thousand-year-old Triple Burial from Dolni Vestonice: An Ice-age Family? *American Journal of Physical Anthropology* 102:123-131.
- Applegate, R. B.  
1978 *?Atishwin: The Dream Helper in South-Central California*. Ballena Press Anthropological Papers No. 13, Ballena Press, Ramona, CA.
- Arnold, J. E.  
1987 *Craft Specialization in the Prehistoric Channel Islands, California*. University of California Publications in Anthropology, Volume 18. University of California Press, Berkeley.  
1992 Complex Hunter-Gatherer-Fishers of Prehistoric California: Chiefs, Specialists, and Maritime Adaptations of the Channel Islands. *American Antiquity* 57:60-84.  
1995 Transportation Innovation and Social Complexity among Maritime Hunter-Gatherer Societies. *American Anthropologist* 97:733-747.
- Arnold, J. E., and J. O'Shea  
1993 Review of *The Evolution of Chumash Society: A Comparative Study of Artifacts Used in Social System Maintenance in the Santa Barbara Channel Region Before A.D. 1804*, by C. D. King. *American Antiquity* 58:770.
- Bartel, B.  
1982 A Historical Review of Ethnological and Archaeological Analyses of Mortuary Practices. *Journal of Anthropological Archaeology* 1:32-58.
- Beck, L. A. (editor)  
1995 *Regional Approaches to Mortuary Analysis*. Plenum Press, New York.
- Bickford, V.  
1982 European Artifacts from a Chumash Cemetery, CA-LAN-264. Unpublished Masters Thesis, Department of Anthropology, California State University, Long Beach.
- Binford, L. R.  
1971 Mortuary Practices: Their Study and Their Potential. In *Approaches to the Social Dimensions of Mortuary Practices*, edited by J. A. Brown, pp. 6-29. *Memoirs 25*. Society for American Archaeology, Washington, DC.
- Blackburn, T. C.  
1974 Ceremonial Integration and Social Interaction in Aboriginal California. In *'Antap: California Indian Political and Economic Organization*, edited by L. J. Bean and T. F. King, pp. 93-110. Ballena Press, Ramona, CA.  
1975 *December's Child: A Book of Chumash Oral Narratives*. University of California Press, Berkeley.
- Brown, A. K.  
1967 The Aboriginal Population of the Santa Barbara Channel. *University of California Archaeological Survey Reports* 69:1-99. University of California Archaeological Research Facility, Department of Anthropology, Berkeley.  
1999 Translation of the Juan Crespí Autograph Texts. Ms. on file, Department of English, Ohio State University, Columbus, Ohio.
- Brown, J. A.  
1971a The Dimensions of Status in the Burials at Spiro. In *Approaches to the Social Dimensions of Mortuary Practices*, edited by J. A. Brown, pp. 92-112. *Memoirs 25*. Society for American Archaeology, Washington, DC.  
1971b Introduction. In *Approaches to the Social Dimensions of Mortuary Practices*, edited by J. A. Brown, pp. 1-5. *Memoirs 25*. Society for American Archaeology, Washington, DC.
- Buikstra, J., and D. Ubelaker  
1994 Standards for Data Collection from Human Skeletal Remains. *Arkansas Archaeological Survey Research Series* No. 44.
- Chapman, R. W., and K. Randsborg  
1981 Approaches to the Archaeology of Death. In *The Archaeology of Death*, edited by R. W. Chapman, I. Kinnes, and K. Randsborg, pp. 1-24. Cambridge University Press, Cambridge.
- Cheverud, J. M.  
1982 Phenotypic, Genetic, and Environmental Morphological Integration in the Cranium. *Evolution* 36:499-516.
- Cheverud, J. M., and J. E. Buikstra  
1981a Quantitative Genetics of Skeletal Non-Metric Traits in the Rhesus Macaques on Cayo Santiago I: Single Trait Heritabilities. *American Journal of Physical Anthropology* 54:43-49.  
1981b Quantitative Genetics of Skeletal Non-Metric Traits in the Rhesus Macaques on Cayo Santiago II: Phenotypic Genetic and Environmental Correlations between Traits. *American Journal of Physical Anthropology* 54:51-58.  
1982 Quantitative Genetics of Skeletal Non-Metric Traits in the Rhesus Macaques on Cayo Santiago III: Relative Heritability of Skeletal Non-Metric and Metric Traits. *American Journal of Physical Anthropology* 59:151-155.
- Davidson, K.  
1992 Behavioral Significance of Variations in Morphology of Mastoid. Unpublished Masters Thesis, Department of Anthropology, University of California, Los Angeles.
- Earle, T.  
1994 Positioning Exchange in the Evolution of Human Society. In *Prehistoric Exchange Systems in North America*, edited by T. Baugh and J. Ericson, pp. 419-437. Plenum Press, New York.
- Engelhardt, Z.  
1927 *San Fernando Rey, The Mission of the Valley*. Herald Press, Chicago.
- Flannery, K. V., and J. Marcus  
1996 Cognitive Archaeology. In *Contemporary Archaeology in Theory*, edited by R. Preucel and I. Hodder, pp. 350-363. Blackwell Publishers Ltd., Oxford.
- Gamble, L. H.  
1983 The Organization of Artifacts, Features, and Activities at Pitas Point: A Coastal Chumash Village. *Journal of California and Great Basin Anthropology* 5:103-129.  
1991 Organization of Activities at the Historic Settlement of Helo: A Chumash Political, Economic, and Religious Center. Unpublished Ph.D. Dissertation, Department of Anthropology, University of California, Santa Barbara.
- Gamble, L. H., G. S. Russell, and J. Hudson  
1995 *Archaeological Site Mapping and Collections Assessment of Humaliwo (CA-LAN-264) and Muwu (CA-VEN-11)*. Submitted to California Department of Parks and Recreation, Sacramento, California.
- Gamble, L. H., G. S. Russell, C. King, and J. Hudson  
1996 *Distribution of Wealth and Other Items at the Malibu Site, CA-LAN-264*. Submitted to California Department of Parks and Recreation, Sacramento, California.
- Geiger, M. and C. Meighan (editors)  
1976 *As the Padres Saw Them*. Santa Barbara Mission Archive Library, Santa Barbara.
- Gibson, R. O.  
1975 The Beads of Humaliwo. *The Journal of California Anthropology* 1:110-119.  
1987 *A Preliminary Study of Beads From Humaliwo, 4-LAN-264 at Malibu State Park, Los Angeles County, California*.

- Submitted to California Department of Parks and Recreation, San Diego, California.
- Giro, C. M.  
1947 Enamel Hypoplasia in Human Teeth: An Examination of Its Causes. *Journal of the American Dental Association* 34:310-317.
- Goldstein, L. G.  
1976 Spatial Structure and Social Organization: Regional Manifestations of Mississippian Society. Unpublished Ph.D. Dissertation, Department of Anthropology, Northwestern University, Evanston.
- Green, T. M.  
1999 Spanish Missions and Native Religion: Contact, Conflict, and Convergence. Unpublished Ph.D. Dissertation, Institute of Archaeology, University of California, Los Angeles.
- Harrington, J. P.  
1942 Cultural Element Distributions: XIX Central California Coast. *University of California Anthropological Records* 7(1):1-42.
- Hauser, G., and G. F. De Stefano  
1989 *Epigenetic Variants of the Human Skull*. Schweizerhart, Stuttgart.
- Hemert-Engert, A. V., and F. Teggart (editors)  
1910 The Narrative of the Portolá Expedition of 1769-1770 by Miguel Costansó. *Publications of the Academy of Pacific Coast History* 1(4):9-159.
- Hodder, I.  
1982 *Symbols in Action*. Cambridge University Press, Cambridge.
- Hollimon, S.  
1997 The Third Gender in Native California: Two-Spirit Undertakers among the Chumash and their Neighbors. In *Women in Prehistory: North America and Mesoamerica*, edited by C. Claassen and R. Joyce, pp. 173-188. University of Pennsylvania Press, Philadelphia.
- Howell, T. L., and K. W. Kintigh  
1996 Archaeological Identification of Kin Groups Using Mortuary and Biological Data: An Example from the American Southwest. *American Antiquity* 61:537-554.  
1998 Determining Gender and Kinship at Hawikku: A Reply to Corruccini. *American Antiquity* 63:164-167.
- Hudson, T., and T. C. Blackburn  
1986 Ceremonial Paraphernalia, Games, and Amusements. *The Material Culture of the Chumash Interaction Sphere, Vol. IV*. Ballena Press Anthropological Papers No. 30. Ballena Press/Santa Barbara Museum of Natural History Cooperative Publication, Los Altos and Santa Barbara.
- Hudson, T., T. Blackburn, R. Curletti, and J. Timbrook  
1977 *The Eye of the Flute: Chumash Traditional History and Ritual as Told by Fernando Librado Kitsepawit to John P. Harrington*. Santa Barbara Museum of Natural History, Santa Barbara.
- Hudson, T., J. Timbrook, and M. Rempe (editors)  
1978 *Tomol: Chumash Watercraft as Described in the Ethnographic Notes of John P. Harrington*. Ballena Press Anthropological Papers No. 9, Ballena Press, Socorro, NM.
- Hudson, T., and E. Underhay  
1978 *Crystals in the Sky: An Intellectual Odyssey Involving Chumash Astronomy, Cosmology and Rock Art*. Ballena Press, Socorro, NM.
- Johnson, J. R.  
1988 Chumash Social Organization: An Ethnohistoric Perspective. Unpublished Ph.D. Dissertation, Department of Anthropology, University of California, Santa Barbara.
- King, C. D.  
1976 Chumash Intervillage Economic Exchange. In *Native Californians: A Theoretical Retrospective*, edited by L. J. Bean and T. C. Blackburn, pp. 289-318. Ballena Press, Ramona, CA.
- 1984 Ethnohistoric Background, Appendix I. In *Archaeological Investigation of the San Antonio Terrace, Vandenberg Air Force Base, California, In Connection with MX Facilities Construction*, edited by Chambers Consultants and Planners, pp. I-1-I-54. Submitted to the Army Corps of Engineers, Los Angeles County District.
- 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*. In *The Evolution of North American Indians*, edited by D. H. Thomas. Garland Publishing, Inc., New York.
- 1994 *Prehistoric Native American Cultural Sites in the Santa Monica Mountains*. Report prepared for the Santa Monica Mountains and Seashore Foundation and National Park Service, Western Region. Report on file with the Santa Monica Mountains National Recreation Area, Agoura Hills, California.
- 1996 Appendix I: Beads and Ornaments from Cemetery Excavations at Humaliwo (CA-LAN-264). In *Distribution of Wealth and Other Items at the Malibu Site, CA-LAN-264*, by L. Gamble, G. Russell, C. King, and J. Hudson, pp. 1-42. Submitted to California Department of Parks and Recreation, Sacramento, California.
- King, L. B.  
1969 The Medea Creek Cemetery (Lan-243): An Investigation of Social Organization for Mortuary Practices. *Annual Reports of the University of California Archaeological Survey* 11:23-68. Department of Anthropology, University of California, Los Angeles.
- 1982 Medea Creek Cemetery: Late, Inland Chumash Patterns of Social Organization, Exchange and Warfare. Unpublished Ph.D. Dissertation, Department of Anthropology, University of California, Los Angeles.
- Koerper, H. C., and A. J. Labbé  
1987 A Birdstone from San Diego County, California: A Possible Example of Dimorphic Sexual Symbolism in Luiseño Iconography. *Journal of California and Great Basin Anthropology* 9(1):110-120.
- Kreshover, S.  
1960 Metabolic Disturbances in Tooth Formation. *Annals of the New York Academy of Sciences* 85:161-167.
- Kroeber, A. L.  
1925 *Handbook of the Indians of California*. Bureau of American Ethnology Bulletin 78. Washington, DC.
- Lambert, P. M., and P. L. Walker  
1991 Physical Anthropological Evidence for the Evolution of Social Complexity in Coastal Southern California. *Antiquity* 65:963-73.
- Leamy, L. J., E. J. Routman, and J. M. Cheverud  
1998 Quantitative Trait Loci for Fluctuating Asymmetry of Discrete Skeletal Characters in Mice. *Heredity* 80:509-518.
- Lee, G.  
1981 *The Portable Cosmos: Effigies, Ornaments, and Incised Stone from the Chumash Area*. Ballena Press, Socorro, NM.
- Martz, P. C.  
1984 Social Dimensions of Chumash Mortuary Populations in the Santa Monica Mountains Region. Unpublished Ph.D. Dissertation, Department of Anthropology, University of California, Riverside.
- May, R. L., A. H. Goodman, and R. S. Meindl  
1993 Response of Bone and Enamel Formation to Nutritional Supplementation and Morbidity among Malnourished Guatemalan Children. *American Journal of Physical Anthropology* 92:37-51.

- McGuire, R. H.  
1992 *Death, Society, and Ideology in a Hohokam Community*. Westview Press, Boulder, CO.
- Meighan, C. W.  
1976 Stone Effigies in Southern California. *The Masterkey* 50(1):25-29.  
1978 Obsidian Dating of the Malibu Site. In *A Compendium of the Obsidian Hydration Determinations Made at the UCLA Obsidian Hydration Laboratory*, edited by C. W. Meighan and P. I. Vanderhoeven, pp. 158-161. Monograph 6. Institute of Archaeology, University of California, Los Angeles.
- Morris, I.  
1991 The Archaeology of Ancestors: The Saxe-Goldstein Hypothesis Revisited. *Cambridge Archaeological Journal* 1:147-169.  
1992 *Death-Ritual and Social Structure in Classical Antiquity*. Cambridge University Press, Cambridge.
- O'Shea, J. M.  
1984 *Mortuary Variability: An Archaeological Investigation*. Academic Press, Orlando, FL.  
1995 Mortuary Custom in the Bronze Age of Southeastern Hungary: Diachronic and Synchronic Perspectives. In *Regional Approaches to Mortuary Analysis*, edited by L. A. Beck, pp. 125-145. Plenum Press, New York.
- Peebles, C.  
1971 Moundville and Surrounding Sites: Some Structural Considerations of Mortuary Practices. In *Approaches to the Social Dimensions of Mortuary Practices*, edited by J. A. Brown, pp. 69-91. Memoirs 25. Society for American Archaeology, Washington, DC.
- Priestley, H. I. (Translator)  
1937 *A Historical, Political, and Natural Description of California by Pedro Fages, Written for the Viceroy in 1775*. University of California Press, Berkeley.
- Profant, L.  
1992 Craniometric Variation in Earlier Human Populations of Southern California. Unpublished Masters Thesis, Department of Anthropology, University of California, Los Angeles.
- Rothschild, N. A.  
1979 Mortuary Behavior and Social Organization at Indian Knoll and Dickson Mounds. *American Antiquity* 44:658-675.
- Saunders, S. R., and F. Popovich  
1978 A Family Study of Two Skeletal Variants: Atlas Bridging and Clinoid Bridging. *American Journal of Physical Anthropology* 49:193-203.
- Saxe, A.  
1970 *Social Dimensions of Mortuary Practices*. Ph.D. Dissertation, University of Michigan, Ann Arbor. University Microfilms, Ann Arbor.
- Scarre, C.  
1994 The Meaning of Death: Funerary Beliefs and the Prehistorian. In *The Ancient Mind: Elements of Cognitive Archaeology*, edited by C. Renfrew and E. B. W. Zubrow, pp. 83-92. Cambridge University Press, Cambridge.
- Shanks, M., and C. Tilley  
1982 Ideology, Symbolic Power and Ritual Communication: A Reinterpretation of Neolithic Burial Practices. In *Symbolic and Structural Archaeology*, edited by I. Hodder, pp. 129-154. Cambridge University Press, Cambridge.  
1987 *Social Theory and Archaeology*. University of New Mexico Press, Albuquerque.
- Shennan, S. E.  
1975 The Social Organization at Branc. *Antiquity* 49:279-287.
- Simpson, L. B. (translator)  
1961 *Journal of José Longinos Martínez: Notes and Observations of the Naturalist of the Botanical Expedition in Old and New California and the South Coast, 1791-1792*. J. Howell Books, San Francisco.
- Sjøvold, T.  
1984 A Report on the Heritability of Some Cranial Measurements and Non-metric traits. In *Multivariate Statistics in Physical Anthropology*, edited by G. N. Van Vark and W. W. Howells, pp. 223-246. D. Reidel Dordrech, The Netherlands.
- Suchey, J. M., W. J. Wood, and S. Shermis  
1972 Analysis of Human Skeletal Material from Malibu, California (LAN-264). *Annual Reports of the University of California Archaeological Survey* 14:39-78. Department of Anthropology, University of California, Los Angeles.
- Sweeney, E. A., J. Cabrera, H. Urrutia, and L. Mata  
1969 Factors Associated with Linear Hypoplasia of Human Deciduous Incisors. *Journal of Dental Research* 48:1275-1279.
- Tainter, J. A.  
1978 Mortuary Practices and the Study of Prehistoric Social Systems. In *Advances in Archaeological Method and Theory*, vol. 1, edited by M. B. Schiffer, pp. 105-141. Academic Press, New York.
- Torgersen, J. H.  
1951 Asymmetry and Skeletal Maturation. *Acta Radiologica* 36:374-382.
- Trinkaus, K. M.  
1984 Mortuary Ritual and Mortuary Research. *Current Anthropology* 25:674-679.
- Ucko, P.  
1969 Ethnography and Archaeological Interpretation of Funerary Remains. *World Archaeology* 1:262-280.
- Wagner, H. R.  
1929 *Spanish Voyages to the Northwest Coast of America in the Sixteenth Century*. California Historical Society, San Francisco.
- Walker, P. L.  
1996 Integrative Approaches to the Study of Ancient Health: An example from the Santa Barbara Channel Area of Southern California. In *Populational Significance of Paleopathological Conditions: Health, Illness and Death in the Past*, edited by A. Pérez-Pérez, pp. 98-105. Fundación Uriach, Barcelona.
- Walker, P. L., F. J. Drayer, and S. K. Siefkin  
1996 *Malibu Human Skeletal Remains: A Bioarchaeological Analysis*. Submitted to California Department of Parks and Recreation, Sacramento, California.
- Walker, P. L., and T. Hudson  
1993 *Chumash Healing: Changing Health and Medical Practices in an American Indian Society*. Malki Museum Press, Banning.
- Walker, P. L., and J. R. Johnson  
1992 The Effects of European Contact on the Chumash Indians. In *Disease and Demography in the Americas: Changing Patterns Before and After 1492*, edited by J. Verano and D. Ubelaker, pp. 127-139. Smithsonian Institution, Washington, DC.  
1994 The Decline of the Chumash Indian Population. In *The Wake of Contact: Biological Responses to Conquest*, edited by C. S. Larsen and G. Milner, pp. 109-120. Wiley-Liss, New York.
- Walker, P. L., J. R. Johnson, and P. M. Lambert  
1988 Age and Sex Biases in the Preservation of Human Skeletal Remains. *American Journal of Physical Anthropology* 76(2):183-188.

Wylie, A.

1993 A Proliferation of New Archaeologies: Beyond Objectivism and Relativism. In *Archaeological Theory: Who Sets the Agenda?*, edited by N. Yoffee and A. Sherratt, pp. 20–26. Cambridge University Press, Cambridge.

Yates, L. G.

1889 Charmstones: Notes on the So-called "Plummets" or "Sinkers." In *Annual Report for the Smithsonian Institution for 1886*, pp. 296–305. Smithsonian Institution, Washington, DC.

### Note

1. The bones from a few burials could not be located for osteological analysis. A few additional burials lacked the provenience information necessary to plot them on the cemetery map. Other burials were eliminated from selected analyses because they were too fragmentary or disturbed to reliably determine the person's age or sex. Some burials contained the fragmentary remains of several individuals, and

this made it impossible to reliably associate the recovered grave goods with particular individuals. The number of burials excluded from our analysis owing to these problems varied depending on the question we were addressing. For example, when reliable data on age, sex, location, and associated grave goods were required, we used 112 burials from the historic cemetery and 51 burials from the prehistoric cemetery (see Figures 3 and 4). The burials eliminated during this phase of the analysis were scattered across the cemeteries, and we have no reason to believe that excluding them has produced any systematic bias in our analysis.

---

*Received July 9, 1999; Revised December 13, 1999;  
Accepted March 13, 2000.*