
Changes in Prehistoric Exchange Systems in the Alamo Locality, Contra Costa County, California

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Introduction

IN RECENT YEARS, ARCHAEOLOGISTS have become increasingly aware that trade and exchange systems constitute important measures of cultural complexity. Exchange provides one very effective means of stabilizing resource availability and redistributing those resources which are unequally distributed in space and time. This process somewhat resembles agriculture in that to some extent it frees human groups from the natural limits of given environments. While agriculture and what is sometimes called protoagriculture (or resource management) at their best increase the productivity of given environments, exchange systems allow use of neighboring environments. Thus agriculture, protoagriculture, and exchange systems all help stabilize the amount of resources available throughout the seasonal cycle and to some extent counter annual fluctuations in resource availability.

Another important perspective for viewing exchange systems has been provided by Yehudi Cohen (1970, 1975). Cohen postulated that every society, by virtue of living in contact with other societies, is characterized by two sets of processes. One set Cohen referred to as "inside culture," the other he termed "boundary culture." Inside culture corresponds to the

traditional anthropological concept of culture and need not be developed further here. Boundary culture, on the other hand, represents the processes involved in the interactions between interdependent societies, and is conceived as being organized to regulate, control, or administer the flow of energy, the movement of goods and ideas, between societies (cf. Rathje 1972).

In the model, relations between societies are mediated by designated individuals; and, to the degree that resources outside the group territory are important to a society, these individuals will carry out roles that tend to become specialized and differentiated from the roles of inside culture. A postulate of the model is that centrally administered exchange is more effective in maintaining and regulating an orderly flow of ideas and materials than exchange that is carried out on what I call an ad hoc basis. Thus, once centrally administered exchange systems emerge, positive feedback will tend to emphasize its importance over time as well as emphasizing the importance of the administrative roles. To the extent that boundary culture is important to the successful adaptation of a society, boundary personnel, through their administrative function, will tend to gain social influence and political power. I suggest that since roles of social influence and political power frequently carry with them material representations such as wealth or status

objects, it is possible archaeologically to observe the parallel development of exchange systems and social differentiation based upon wealth.

Cohen's proposal can be effectively applied to Central California exchange systems in that groups within the area were linked together through a complex arrangement of exchanges, some involving direct trade, some involving the exchange of gifts, and some involving direct harvest of surplus resources or the gathering of abundant resources by neighboring groups. In addition, California's ethnographic data suggest that chiefs, or headmen, of the village-community appear to have been the dominant boundary personnel, although their importance in this regard was generally not recognized in the literature. Since data are lacking for the present study area, it is not possible to evaluate the applicability of this suggestion there, but the ethnographic data on the Wappo, situated in Napa, Sonoma, and Lake counties to the north of the current area of concern, does provide support. Driver (1936:211) described the Wappo chief as follows:

The so-called chief was little more than a natural leader, one with excellent physical, mental, and moral qualifications. He had little authority over the rest of the group and no means of enforcing his commands or wishes other than his own physical prowess and that of his relatives and immediate following.

Moreover, when the duties of the chief are spelled out, it is found that the Wappo chief (1) decided when the group should hunt and fish, (2) set dates for "big times," that is, exchange festivities, and (3) carried out negotiations with other groups. Also, a Wappo individual was required to obtain permission from the chief when he wished to visit another community or to undertake any important activity, especially those requiring the individual to leave the home community. Although the Wappo chief did not have coercive power as Driver understood the concept, he was an important administrator and had a significant boundary role.

Calling upon the archaeological record, it can be stated that more and more goods were moving greater and greater distances as time went on. By the time of initial European contact, the Indians of California not only participated in complex exchange systems but also were characterized by sociopolitical systems where

wealth differences existed, where social ranking was important, and where alliances were made between elites of different groups, including intergroup marriages among elites (cf. Bean and King 1974).

During the ethnographic period, and by extension during Phase 2 of the Augustine Pattern in the Prehistoric period, exchanges in Central California frequently involved the use of clam shell disk beads, which functioned as a standardized medium of exchange (cf. Vayda 1967; Chagnon 1970). Paraphrasing from Bohannon (1963:231-65), a distinction can be made between resource wealth and created wealth. Created wealth involves articles usually of non-utilitarian significance, such as beads, ornaments, feathers for decoration, and other items that appear to have little value with respect to subsistence technology. Created wealth, including the clam shell disk beads of Central California, can serve a banking function in that subsistence surplus can be converted through exchange into created wealth and vice versa. Processes described by Lowell Bean (1972) for the Cahuilla of southern California provide a concrete example.

At the time of European contact, the Cahuilla occupied an arid portion of southern California, in the region around the Salton Sea, that was highly variable with respect to resource distribution. A storm might bring rain to one valley resulting in an abundance of new plant growth while leaving another valley quite dry and relatively barren. Natural exigencies of this sort served to randomize the spatial distribution of natural resources at any one time. One locality might have abundant food resources at a given moment while another was low on food. At another time the locality which previously had abundant resources might have a shortage of food, while the locality which had been low might have a surplus. The Cahuilla were organized into tribelets, each with its own territory. Periodically tribelets would, in turn, hold feasts to which they would invite their neighbors. While the host group furnished some food, the guests brought gifts as well. Those guests whose localities were low in food brought created wealth. At the conclusion of the feasts a food surplus always remained. From this surplus and from the gifts of created wealth, the host group gave farewell gifts to their departing guests: created wealth objects were

presented to those who had brought food, food was presented to those who had brought created wealth. Thus, through an exchange system that was not actually a trading system, resources were redistributed in Cahuilla territory in a manner more equitable than that provided by nature. As with many other native Californian social events, the feasting of the Cahuilla had religious functions and motivations as well as secular ones. Thus, the Cahuilla example illustrates another process, the role of religious or spiritual motivation in the movement of goods.

The exchange systems as they existed in the ethnographic period did not always exist in prehistoric California and, in fact, the complexity of ethnographic California implies a long and rich period of cultural development. Data from a series of Contra Costa County sites suggest that six different temporal and cultural periods were represented by at least four different types of exchange systems. As exchange characteristics changed, sociopolitical characteristics, as inferred from the archaeological record, also changed.

The Site Sample from Contra Costa County

During the 1960s several archaeological sites in the Walnut Creek and Alamo areas of Contra Costa County, California were investigated in conjunction with highway, housing, and commercial construction. These sites—CA-CCo-30 (Fredrickson 1968), CA-CCo-308 (Fredrickson 1966), CA-CCo-309 (Curtis and Fredrickson 1964; V. Fredrickson 1968), and CA-CCo-311 (Moss and Mead 1967)—yielded an almost continuous chronological sequence that extended from possibly 2000 B.C. to A.D. 1700, as determined by a series of fifteen radiocarbon dates with support from artifactual cross-dating (table 5.1). Comparative and stratigraphic analyses of artifacts from the sites; of bone, shell, and stone debris from the occupational deposits; and of mortuary patterning at the sites showed significant changes in technology, demography, exchange, and social organization during this long time span (Fredrickson 1965, 1969, 1974b).

CCo-30, located on San Ramon Creek in the town of Alamo, contained two cultural strata which were separated by a stratum of culturally sterile soil. The earlier cultural component (Component B), bur-

ied under alluvial sediments, was attributable to the Berkeley Pattern of the Central California cultural sequence. The later cultural component (Component A) was attributable to Phase 1 of the Augustine Pattern with major occupation occurring during the middle and late portions of Phase 1. A few early Phase 1 and a few Phase 2 traits occurred as well. Four radiocarbon dates from the upper component suggest most intensive use between about A.D. 1200 and A.D. 1500.

CCo-308, the earliest of these sites, also located on San Ramon Creek in the town of Alamo, contained three distinct cultural components, each identifiable with a discrete physical stratum. The site is noteworthy in that artifacts and burials occurred to a depth of over six meters below the surface of the surrounding flood plain. The deepest and earliest stratum (Component C) has been assigned to the early portion of the Berkeley Pattern on the basis of burial mode and artifact forms. Three radiocarbon dates from the deep component support an initial occupation as early as 2000 B.C., a date contemporaneous with the Early period, or Windmill Pattern, of the Delta region of the lower Sacramento Valley. Wallace (1978) has suggested affinities of Component C with West Berkeley (CA-Ala-307; Wallace and Lathrap 1975) and other sites of the San Francisco Bay region. The Windmill and San Francisco Bay sites exhibit major differences in their mortuary practices. In the former, elaborate grave goods accompany the extended burial. In the contemporaneous Berkeley Pattern sites (including CCo-308), few mortuary offerings accompany the flexed burials. In addition, Wallace (1978) pointed out that the paucity of hunting implements and the abundance of mortars, pestles, and bone implements in the Bay region contrast with Windmill where hunting implements are plentiful and mortars, pestles, and bone implements are relatively rare or absent.

The middle cultural component at CCo-308 (Component B) can be assigned to the middle to late portion of the Berkeley Pattern. Although two radiocarbon dates from this cultural stratum provide conflicting ages, occupation sometime during the first millennium B.C. is likely (see table 5.1). The uppermost cultural stratum (Component A) is assignable to the transition phase between the Berkeley and Augustine patterns with occupation continuing into Phase 1

TABLE 5.1
Radiocarbon Dates from Several
Archaeological Sites in Interior Contra Costa County, California

<u>Site</u>	<u>Location</u>	<u>C¹⁴ years B.P.</u>	<u>Laboratory number</u>
CA-CCo-309	Cremation	285 ± 50	I-1193
CA-CCo-30	18-24"	365 ± 50	UCLA-1793c
	18-24"	440 ± 50	UCLA-1793a
	36-42"	465 ± 50	UCLA-1793d
	42-48"	585 ± 50	UCLA-1793b
CA-CCo-308A	Burial, 51"	470 ± 120	UCLA-1786a
	30-36"	865 ± 50	UCLA-1792a
	42-48"	940 ± 50	UCLA-1792b
	48-54"	980 ± 50	UCLA-1792c
	66-72"	1185 ± 125	UCLA-1792d
CA-CCo-308B	144-150"	1250 ± 230	UCLA-1792e
	Burial, 144"	2860 ± 120	UCLA-1786b
CA-CCo-308C	162-168"	3125 ± 230	UCLA-1792f
	Burial, 186"	4450 ± 400	UCLA-259
	Burial, 214"	2870 ± 335	UCLA-1786c

Note: Except as noted all dates are based upon unassociated midden charcoal; other dates based upon burial associated charcoal. Dates B.P. (before present) have not been corrected. See Ericson (1981) for further discussion of these dates.

of Augustine. Initial occupation of this stratum occurred as early as A.D. 700, and final occupation may have overlapped the initial period of occupation of Component A at CCo-30.

The period between the abandonment of the B component and initial occupation of the A component at CCo-308 is represented by remains found at CCo-311, also located on San Ramon Creek in Alamo. CCo-311 contained points considered diagnostic of

the Meganos aspect of the Berkeley Pattern (chapter 1, this volume), whose focal area was the Stockton District. Bennyhoff has proposed that the Meganos aspect intruded from the Stockton District into Contra Costa and Alameda counties (the Diablo and Alameda districts, respectively) in the final portion of the Berkeley Pattern. During the Berkeley/Augustine Transition Phase, Meganos retreated and ancestral Karkin and Saclan groups are believed to have entered their

ethnographic territories (Bennyhoff 1977:134ff.; also Fredrickson 1969).

CCo-309, located on Tice Creek in the city of Walnut Creek, contained a single cultural component assignable to Phase 2 of the Augustine Pattern. Most intensive occupation of the site appears to have been during the earlier portion of Phase 2, dated between A.D. 1500 and A.D. 1700, an age assignment supported by the single radiocarbon date obtained from the site (table 5.1).

The Development of Local Exchange Systems

THE BERKELEY PATTERN

Although the B and C components at CCo-308 appear to represent two distinct time periods which encompass the first two millennia B.C., the cultures of the two time periods appear to have been quite similar. Mortuary and community patterning discussed elsewhere (Fredrickson 1974b) suggest a semi-sedentary settlement pattern with no evidence of status differences based upon wealth distinctions. While there is no need here to present the full argument or the data, the social inferences, based upon mortuary assemblages from the two components, can be summarized as follows.

The mortuary patterning of the CCo-308 Middle Horizon components is consistent with the patterning predicted for egalitarian societies in the following ways. First, assuming that burial associations are marks of social position, it can be observed that such marks do reflect most strongly involvement with subsistence and technological activities. Second, technomic artifacts are found predominantly with older rather than younger persons. Third, relatively few sociotechnic artifacts occur as grave associations. Fourth, marks of social position are of a sort attainable by individual rather than group activities. . . In sum, it is suggested here that the Middle Horizon components at CCo-308 represent an egalitarian sociopolitical organization, with social influence gained by individual achievement rather than ascription, with a high degree of voluntarism correlative to obtaining prestige through achievement (Fredrickson 1974b:62-63).

The religious sphere appears to have been com-

patible with these characteristics as well, in that the bulk of all ideotechnic artifacts which occurred as grave furnishings within the two components were recorded with a single individual, inferentially, a person of distinctive ritual status, possibly a shaman. Animal ceremonialism was also evidenced in the form of a grizzly bear burial with which was recorded a mammal bone tube manufactured from the femur of a second grizzly (Fredrickson 1966:47). In addition, one of the artifacts recorded with the possible shaman described above, a large decorated bone whistle, represented a femur of yet a third grizzly bear (Fredrickson 1966:46-47). There was no evidence for group-oriented religious expression in the mortuary patterning of the two components, as contrasted with the patterning described below for CCo-308A (Fredrickson 1974b).

Exchange relationships between different groups during the period of the Berkeley Pattern did not appear to have been highly developed and may have been ad hoc in nature. Projectile points, never abundant, provide some insight into the nature of exchanges. Points lacked standardization, with no single form dominating. However, they were quite commonly manufactured from nonlocal materials and many appeared to have been brought ready-made to the site locations, since flaking waste that could be attributed to point manufacture was rare. While about two-thirds of the points were manufactured from obsidian, flaking waste contained only about 2% obsidian. In addition, no two obsidian points were of the same form. The overall pattern suggested that the points were obtained on an individual basis from a number of different directions and not through processes of regularized group exchanges (Fredrickson 1966).

Insufficient data were obtained from CCo-311, representing the Meganos culture intrusion from the Stockton District, to allow characterization of the exchange pattern or other cultural attributes.

THE BERKELEY/AUGUSTINE TRANSITION

During the transition between the Berkeley and the Augustine patterns, a shift in exchange relationships was evident, as were shifts in social attributes. Projectile points continued to be rare, but obsidian

points increased from about two-thirds to more than 90%. Obsidian flaking debris was still rare. Point form became standardized with Napa Valley the sole source for obsidian. The point form was morphologically similar to the shouldered lanceolate Excelsior form, common in the southern North Coast Ranges (Fredrickson 1973). Thus, not only was the Alamo obsidian obtained from the Napa Valley, but the point forms at Alamo were identical with forms from the Napa vicinity. One inference is that the Alamo peoples during the Berkeley/Augustine Transition obtained North Coast Ranges points as a result of formalized relationships between particular communities.

Shell beads also gained in significance and number during this period. Such beads frequently occurred in appliqué ornamentation. Shell beads not only indicate exchange relationships since their occurrence in inland sites implies interaction with coastal groups, but they may be representative of wealth. It may be that beads of this period could have served not only decorative and possibly a religious function, but also a banking function in the redistribution of basic resources, assisting in optimizing the distribution of resources which were unequally distributed in space.

There is some evidence that the Kuksu religious system of ethnographic Central California may have had its origin as far back as the transition phase, as suggested by Bennyhoff (1977) on the basis of other data. Mortuary patterning in the Alamo locality during the transition phase suggested the occurrence of a ceremonial organization with participation open to both male and female. Although no direct evidence can be brought to bear on the significance of a group-oriented religious organization, a relationship between the ceremonial and exchange systems can be postulated in which an exchange of ceremonies between groups may have been accompanied by an exchange of material goods by means of reciprocal gift giving, similar to the process described above for the Cahuilla.

THE AUGUSTINE PATTERN

During Phase 1 of the Augustine Pattern, obsidian trade underwent yet another shift. Alamo continued to obtain its obsidian from the Napa Valley, but it

was now in the form of raw material rather than the finished product. Evidence in the form of markedly increased amounts of chipping debris indicates that points were manufactured locally in the Alamo locality. The form of the points now resembled those from the Delta region rather than from the North Coast Ranges.

Evidence of differences in social status became increasingly common as cremation, in the form of preinterment grave pit burning, was introduced at the beginning of Phase 1. Initially cremation was relatively rare and almost invariably associated with grave offerings of created wealth, while the more common primary interments lacked associated goods or contained mostly utilitarian items. By the Protohistoric period, cremation, now in the form of complete cremation, dominated with a few primary interments usually lacking grave goods.

The bow and arrow were introduced during Phase 1 and perhaps through technological advantage eventually replaced the earlier dart and atlatl. Territorial boundaries are postulated to have been fairly well established by the beginning of Phase 1, and the archaeological remains in the vicinity from this time on probably represent the ancestral Bay Miwok (see Bennyhoff 1977). Evidence of differences in social status grew as Phase 1 progressed, with mortuary accompaniments indicative of wealth presumably marking high-ranking individuals. Evidence for group-oriented religious expression continued. Exchange relationships may have been linked to the spread of religious movements which dated back to the period of the shift between the Berkeley and Augustine patterns, as well as to increasing centralization of political authority.

Phase 2 of the Augustine Pattern concludes the development within the Alamo exchange system. The outstanding characteristic of Phase 2 in Central California was the development of clam shell disk beads as a standardized medium of exchange. More groups appeared to enter the exchange system at this time, including important groups within the North Coast Ranges. The Pomo not only controlled the magnesite bead production, but with neighboring groups dominated the manufacture of clam shell disk beads. In the Alamo locality, it is of interest that while burials still

showed evidence of social distinctions based upon relative wealth, evidence of group-oriented religious activities dropped out of the mortuary complex. This is perhaps a sign of the specialization of Kuksu into its ethnographic form. Employing knowledge of the ethnographic period in Central California generally, it also can be suggested that by Phase 2, chiefs were firmly established as administrators of boundary relations.

Summary of Local Exchange Development

In summary, the initial pattern of exchange in the Alamo locality was likely to have been based upon ad hoc, individual, one-to-one transactions and not of such significance that the social unit was heavily dependent upon them. The presumed semi-sedentary settlement pattern allowed the acquiring of resources by changing habitat rather than by regularizing exchange relations. In Alamo, it was not until the transition from Berkeley to Augustine that exchange relations began to develop significantly in complexity, becoming marked by regular exchanges between particular groups, as suggested by the importation of Napa Valley obsidian in the form of ready-made artifacts. It is probably not coincidental that along with the development in exchange systems were the development of social distinctions based upon wealth

and the rise of a group-oriented religious organization. The shift from importation of ready-made obsidian points to the importation of raw material may also mark a significant shift in the nature of exchanges. With respect to the changes in the obsidian exchange system of the Alamo area, Ericson (1981:160) has commented that:

. . . these three sites form only a single node within a much larger and complex exchange system. Most likely the rate of consumption of [Napa Valley] obsidian is quite different if viewed from other points in space. Nevertheless, it does appear that a *general* diachronic view of the [Napa] exchange system can be obtained from data derived from these sites.

Finally, the introduction of a standardized money system added even greater complexity to an already complex network of exchange processes. There can be little doubt, however, that exchange alliances were severely disrupted by sustained contact with Europeans. It is likely that by the time information on native Californian ethnographic cultures was systematically collected, much of the organizational complexity that inferably was linked to these alliances had been lost in practice. Also, pertinent information was not elicited or recognized as important when systematic ethnographic investigation was conducted.