2

A Proposed Integrative Taxonomic System for Central California Archaeology

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Introduction

Workers in California archaeology have long discussed among themselves dissatisfactions concerning the conceptual framework used to encompass the diverse archaeological manifestations in the state. Such workers have also expressed dissatisfaction with the quality of field data as it has been presented in published form. Detailed questions of provenience and even of artifact description and type cannot be answered by reference to publications. The status of archaeology in California today, in terms of mass of excavated material, number of workers, and the wide dispersal of these workers, makes it impractical to visit museum collections and catalogues whenever questions cannot be answered simply because of incomplete reporting.

California archaeologists also have expressed among themselves considerable dissatisfaction with the presentation of field data in site reports. It has usually been impossible to reanalyze data taken from published materials in order to answer many of our current questions. For example, the senior author recently attempted a survey of the distribution of magnesite and steatite beads in archaeological sites in Central California, as reported in the literature. He began with Bulletin 2 (Lillard, Heizer and Fenenga 1939) which at the present time is more a historic document than a source of currently useful data. One problem of interest was the possible priority of one form of magnesite bead over another in terms of time, that is, was the disc magnesite bead earlier in time than the cylindrical? Bulletin 2 lists occurrences of both kinds of beads but does not indicate, for example, when they occurred in the same site whether they occurred in the same grave lot. It was also impossible to determine whether historic material deriving from contact with European culture occurred in association with one or another or both forms of bead. While this lack of information can be excused in Bulletin 2 (since the distinctions being attempted were fine-scale and Bulletin 2 was explicitly described as a summary, preliminary report), other more recent reports suffered from the identical flaw. Significantly, thirty years after the publication of the preliminary report in the form of Bulletin 2, no further site data has been published except for a summary of the Early Horizon (Heizer 1949) which has many of the same drawbacks as Bulletin 2. In essence, what was designed as a preliminary report became the final report, and the cultural taxonomy proposed in Bulletin 2, with subsequent modifications and refinements by Beardsley (1948, 1954), remains, despite its inadequacies, in widespread use in the state.

We propose that the existing taxonomic system utilized in Central California, most fully explicated by Beardsley (1948, 1954), but initially deriving from field investigations reported by Sacramento Junior College (Lillard, Heizer and Fenenga 1939), should be thoroughly revised for three basic reasons. First, to allow substantive inclusion of data not now encompassed in the present system; second, to allow interpretive statements free from the sequential temporal denotation of "Early," "Middle," and "Late;" and third, to reduce terminological confusion by employing terms more widely used in the rest of the New World. In the pages that follow we discuss our criticism of the existing taxonomy, introduce an alternative system, and suggest concepts which are most meaningful for different levels of analysis and synthesis.

In Central California recognition of the three-part cultural sequence of Early, Middle, and Late horizons was achieved in January 1938, when the then-named Transitional period (later to be designated the Middle Horizon) was named and described in field notes (Lillard, Heizer and Fenenga 1939:77). Recognition and identification of this cultural sequence in the lower Sacramento Valley marked a new era in Central California archaeology in that prehistoric cultures were no longer conceptualized in such large-scale units as Paleolithic and Neolithic (Kroeber 1909:15). Beardsley (1948, 1954), in the most detailed presentation of the Central California Taxonomic System (CCTS), introduced the concepts of horizon, province, and facies and identified variants of the Middle and Late horizons in the San Francisco Bay region and along the Marin-Sonoma ocean frontage.

Beginning in the post-World War II era, as archaeological research gained momentum after the lull of the war years, there were increasing attempts by various workers in Central California to extend the three-horizon sequence beyond the immediate geographic region where it had been identified. A number of these attempts created considerable controversy. For example, Heizer (1952:7) identified the artifacts deriving from the Tranquillity site in Fresno County (Hewes 1943, 1946), from which bones of extinct Late Pleistocene mammals were also recovered, as belonging to the Middle Horizon of the Central California cultural sequence. In this example, although Heizer suggested that more work should be done at the site, he stated that if he properly identified the artifacts as to cultural horizon, they were too late in time to be associated with Upper Pleistocene mammals. In a parenthetical aside, Heizer granted the possibility that his Central California sequence was in error. Angel (1966), in a recent study of human skeletal material from Tranquillity, evaluated the chemical evidence presented by Heizer and Cook (1952) as supporting the inference of contemporaneity between the extinct Late Pleistocene mammals and the human bone. The chemical evidence, which indicates a close similarity in content of fluorine, carbon, nitrogen, and water between *Camelops*, *Equus*, and *Bison* and human bone from the Tranquillity site, is part of the same evidence Heizer utilized in the discussion cited above. Angel (1966:2) stated that he could not follow Heizer's arguments in regard to Tranquillity artifact similarities with Middle Horizon assemblages, since in his opinion the published descriptions suggest that the Tranquillity artifacts represent "a somewhat substandard version of those of the Early horizon and that the only major difference is in Tranquillity's semiflexed rather than extended and prone burial position."

Similarly, in terms of suggesting an extension of the Central California cultural sequence as an alternative to other interpretations of the Borax Lake site (Harrington 1948), Meighan (1955:26-27) observed in his synthesis of North Coast Ranges archaeology that artifacts recovered from the site, including the metate and concave-base obsidian projectile points, show several specific similarities to sites of the Middle Horizon in the Sacramento Valley. Nonetheless, he considered the Borax Lake assemblage to be sufficiently distinctive that it could not be fitted into any specifically known Middle Horizon assemblage. Meighan (1955:27) concluded that the site represented the oldest culture so far discovered in the North Coast Ranges and that it "probably dates somewhere in California's long and inadequately defined Middle Horizon." Heizer (1964:129), at one time a proponent of Middle Horizon assignment for the Borax Lake site, more recently acknowledged that Clovis type projectile points have been recovered from the site. While Heizer made the qualification that its "proper position in time has never been satisfactorily agreed upon," by implication he placed the site on an earlier time level than the Middle Horizon when he accepted

such a placement for Nap-131 while pointing out the similarity between the Nap-131 and Borax Lake assemblages.

The two examples discussed above are particularly instructive because of the controversy created by the alternate explanations, that is, Middle Horizon affiliation as contrasted with affiliation with a more ancient cultural stratum (not necessarily Early Horizon). Other examples of attempts to extend the Central California cultural sequence beyond the limits of the San Joaquin-Sacramento Delta region are not as dramatic, but the difficulties encountered by the various workers have encouraged: a) the dropping of the horizon concept as a large-scale integrative concept, b) the development of the archaeological complex as a basic regional unit, c) the use of the horizons of Central California in the same sense as the complexes of other regions, and d) an additional use of the horizons as chronological periods with emphasis upon specific time markers attributable to each horizon. Olsen and Riddell (1963:52-54), for example, in their discussion of the archaeology of the Oroville region, do not attempt to fit their local sequence into the large-scale use of horizon but compare their complexes with the Central California horizons, using the horizon on the same level of integration as the complex. The following statement illustrates this: "Present evidence suggests that relationships [of the Mesilla Complex] are with the Martis Complex to the east and with the Central Valley Middle Horizon to the west." Other workers have on occasion referred to the Central Valley Early Horizon as the "Windmiller Complex." Olsen and Riddell also used the horizon concept with emphasis on time markers.

> The latest period (the Oroville Complex), represented by But-90A, is directly equatable with the Late Horizon Phase II occupation in the Sacramento Valley. Diagnostic trade items include clam shell disc beads and thick lipped Olivella shell beads (Type 3a1). The thin rectangular Olivella beads (Type 2a2) with terminal perforation may have been retained into Phase II times. The shell beads indicate trade relationships with the Central Valley during both late Phase I and Phase II times. (Olsen and Riddell 1963:53).

The original topic for Bennyhoff's doctoral dissertation was to be an analysis of the Late Horizon in Central California. In order to understand this cultural unit, he also re-evaluated the Early and Middle as well as the historic horizons. Unfortunately only one chapter, the ethnogeography, was completed (Bennyhoff 1977). In the early phases of his analysis Bennyhoff attempted to fit his data into the Beardsley framework, dealing with all the excavated Delta sites as a single ecological unit. Anyone who has seen the Hotchkiss (CCo-138, near Antioch) and Hollister (Sac-21, on the Cosumnes River) collections cannot fail but be impressed by the cultural similarity. Nonetheless, when trait lists were prepared for the refined "Facies" which were evident, the differences were as striking as the similarities. Although CCo-138 is ecologically in the Delta, it is culturally aligned with the Coast Ranges and Bay, as evidenced by the absence of baked clay objects, emphasis upon show mortars and carved pestles (in contrast to the wood mortars and chisel pointed pestles of the northern Delta), and emphasis on piled charmstones (in contrast to their near absence in the north Delta). A host of other differences left no doubt that different groups had occupied CCo-138 and Sac-21.

Even more startling was the emergence of still another configuration around Stockton. Although situated in the heart of the Delta, with a baked clay industry barely distinguishable from that on the Cosumnes, the former occupants preferred to import stone mortars and pestles (different from CCo-138 types) rather than use the "ecologically determined" wood mortar. Harpoons, shell ornaments, incised bone, and many other traits were consistently distinguishable from those found in the northern Delta or at CCo-138.

When plotted by site, three discrete and consistent geographic units emerged which, in 1961, Bennyhoff termed the Diablo, Cosumnes, and Stockton localities (now termed districts [cf. Bennyhoff 1977]). It was considerably later, after resolving the cultural boundary problem, that he noted that the available archaeological data had linguistic correlates—that the Cosumnes locality fell within the distribution of the Plains Miwok tribelets, that the Stockton locality coincided with the known Northern Yokuts tribelets, and that the Diablo locality could be assigned to the newly discovered Bay Miwok tribelets. Comparative study of the available, though deficient

in sample-size, collections allowed less definite correlation of archaeological locality and linguistic group in regions to the west and north.

In short, Bennyhoff submits that our cultural units should ultimately be defined inductively by cultural content, not deductively imposed by ecological determinants. Furthermore, when adequate collections are available, typological or stylistic minutiae will be significant guides in the identification of the specific cultural groups which, unfortunately, the ethnographers named in terms of the language spoken. By means of the direct historical approach, these linguistic/cultural groups can be projected backwards in time, and, with proper analysis of adequate data, the history of specific groups hopefully may be revealed.

The complexity now evident in the heart of Central California requires a new conceptual framework. Without citing further examples of the difficulty of utilizing the existing CCTS, we propose here that the existing taxonomic system be revised to allow substantive inclusion of data not now comprehensible and to reduce the terminological confusion by employing terms more widely used in the rest of the New World.

Sufficient information has accumulated to suggest that the terms Early, Middle, and Late are analytically misleading. Cultures which conform to the "Middle" category have been forced into a post-Early temporal position, when, actually, increasing evidence suggests that several "Early" and "Middle" cultures are contemporaneous.

The term "horizon" is employed in the CCTS with a different and less useful meaning than that currently in use in various other New World areas. Beardsley (1954:5-8) never clearly defined the meaning of *horizon*, but he did employ it as the largest unit of archaeological integration.

The time periods are called 'horizons,' because they are definable in terms of culture content, like the smaller units, and are cultural entities, not simply chronological or geographical divisions. Their sequential stratigraphic relationship to each other, independent of culture content, happens to give them a proven time value as well that is recognized in the names applied to them: Early, Middle (in place of Transitional), and Late.The term horizon is employed widely in the New World in a quite different sense (Willey and Phillips 1958:31-34), that is, to denote the time and space occupied by an artifact style or cultural trait which is widely diffused through space, usually by means of trade relations, and at the same time is short-lived in temporal duration. Such a horizon "occupies a great deal of space but very little time" (Willey and Phillips 1958:32). What Beardsley termed a "phase" is more commonly called a "horizon" elsewhere, which compounds the confusion in comparative studies.

In addition, all of Beardsley's "facies," that is, groups of intimately related components comparable to the "foci" of the Midwestern Taxonomic System, can now be refined into smaller units. In the process, substitution of the term "phase" for "facies" would reduce terminological discrepancies. Beardsley's zone-province geographical divisions are also in need of revision; and adoption of the more generally employed Willey and Phillips (1958:18-21) terminology would reduce the confusion which results from employing different names for the same thing.

In Central California for the past year [1968] a number of archaeologists from over a dozen institutions and agencies have been wrestling with substantive and taxonomic problems common to the area. There have been five workshop meetings at the University of California at Davis with a sixth scheduled for February 1969. There have also been numerous meetings of two or more individual archaeologists attempting to resolve some of these problems. The taxonomic system described within this paper is one of the products of the Davis workshops. It should be made clear, however, that the proposal does not represent a consensus but is predominantly the effort of the authors, who were stimulated by the workshops to produce the present work and who gained considerably from the discussions of ideas and substantive issues which constituted the workshops.

Spatial Units

We accept five formal units proposed by Willey and Phillips (1958) and add a sixth, the district, but we do not agree with several of their theoretical interpretations of these units. We will deal with our different view of the equivalence of the archaeological-ethnographic units as each one is discussed below. One general problem needs to be discussed first. Willey

and Phillips (1958), Rouse (1955), and many other anthropologists who accept the culture area concept prefer *static boundaries through time*. Such culture areas as California, the Southwest, the Plateau, the Plains, are delimited primarily by physiographic determinants and cultural distributions during the "ethnographic present." Thus Willey (1966) presents single maps for each area and summarizes the total archaeological record for the territory included within fixed geographic boundaries.

We agree that this is the simplest way to handle broad syntheses but submit that it obscures cultural dynamics on any analytic level. In our opinion, a much clearer view of prehistory is obtained if spatial boundaries fluctuate in synchrony with cultural change. A series of maps for specific time periods is needed to document the already established ebb and flow of southwestern culture into the southern Great Basin and its protohistoric expansion to the Pacific Coast ("Yuman" - Diegueno). A static Basin-Plateau-Plains boundary obscures a similar though more complex fluctuation of the Desert, Riverine, and Bison Hunting cultures. While much more excavation and analysis are needed, the hypothesized early unity of the California-Great Basin-Southwest areas merits serious consideration; reassessment of available data and comparisons *beyond* "established" borders must be a constant method of analysis.

The same problem of static boundaries applies to districts, regions, and subareas. Since our primary concern is with cultural units, we believe that spatial boundaries should follow cultural variation and not break at physiographic boundaries. In Central California the expansion and contraction of the Stockton District across three physiographic provinces can be outlined; a series of maps showing these cultural fluctuations is preferable—at least on the analytical level—to the maintenance of fixed ecological boundaries throughout the time period involved.

In the absence of a detailed sequence, it is customary to project the ethnographic present backwards and include such regions as the Sierra and the San Joaquin Valley in the Central California subarea, but such a placement should not blind us to the possibility that at various earlier times these regions were *culturally* part of the Great Basin or Southern California. Once such possibilities can be demonstrated, our maps and special assignments should be changed. In short, we believe that all too often the spatial unit boundaries defined ethnographically, physiographically, or arbitrarily in the absence of adequate cultural data become entrenched and preserved beyond usefulness. Projected forever into the past, these once-adequate divisions become a hindrance and obscure more meaningful cultural relationships.

Turning to the formal units, we suggest that there is a need for six spatial units. Arranged in ascending order of increasing generality these are *site*, *locality*, *district*, *region*, *subarea*, and *area*. For analytical purposes the most basic unit is the district (within which phases are confined), while the region is usually more important for synthetic purposes.

The Site

We agree with Willey and Phillips (1958:18) that "a site is the smallest [geographical] unit of space dealt with by the archaeologist and the most difficult to define." We insert the term "geographical" here to distinguish the total site from such specific excavation units as components within stratified sites, rooms within structures, and similar units.

An archaeological site can be defined as a discrete area fairly continuously covered by remains of former human occupation or providing evidence of human activity. Of primary concern for our classification system in California are village and campsites, supplemented where possible by cemeteries, workshops, trails, rock art, and whatever clues to former behavior remain. Without minimizing the many problems which still plague the uniform definition of a "site" (in particular, those involving dispersed settlement), the basic concept is obvious and noncontroversial.

The Locality

The locality is a geographical space which exhibits complete cultural homogeneity at any given time (Willey and Phillips 1958:18). These authors suggest that it generally is not larger than the space that might be occupied by a single community or local group. Evidence already available indicates that complete cultural uniformity was often shared by several local groups, which in California can meaningfully be called tribelets (autonomous social units intermediate in size

between bands and tribes). We suggest the locality usually reflects *cooperative groups* of tribelets. This can be documented ethnographically and archaeologically in the Cosumnes District where three to five tribelets each can be grouped into the American River, Cosumnes River, and Mokelumne River localities. Differences between these three localities involve only percentage frequencies—the total culture can be considered "completely uniform." Two localities, each with several tribelets, can be defined for the Diablo District, while six or more localities can be outlined for the Alameda District. It can even be proposed that sublocalities will be needed to deal with tribelets.

A special ethnographic relationship between the Muqueleme Miwok and Chilamne Yokuts can be documented archaeologically (flexure instead of extension at SJo-105). The district language of the Karkin Costanoan tribelet may be reflected by certain differences in the limited archaeological sample from their territory, while differential utilization of local shellfish will allow the identification of several other Costanoan tribelets in the Alameda District. The culturally variant Wolwon Nisenan tribelet is reflected archaeologically by a unique incised bone style at Sut-11, their tribelet center. While these detailed identifications are of extreme importance for the study of group interaction, we believe that such data can best be handled verbally in terms of components of larger units, the district phases.

The District

The district is a geographical space, normally larger than a locality but smaller than a region, which exhibits a significant degree of total cultural uniformity among its constituent components. It is the basic spatial unit of analysis in that phases—the basic temporal unit—are coterminous with district boundaries. Normally, only one phase exists in one district at any one time, and it is the district boundaries which change when necessary—the phase is not extended into multiple districts. In ethnographic terms, we suggest that the unity exhibited is possibly related to the ease of linguistic communication plus other factors such as dance and ceremonial exchanges documented for the Kuksu and Ghost Dance.

Ideally districts are defined in contrast to adjacent districts where cultural differences are already apparent. Most districts appear to have distinctive ecological *core*, but the peripheral boundaries often fluctuate—sometimes radically—into adjacent physiographic provinces. Various reasons can be offered, such as climatic change, acculturation to adjacent groups, and population expansion. The nature of these factors often remains hypothetical unless a large body of analyzed data is available. In California, an area of reasonably stable population, we believe there is already evidence available to equate districts with *language groups* in the Protohistoric and late Prehistoric period. The significance of more ancient districts, as always, becomes an interpretive problem, largely because of lack of data.

In practice it is often necessary to define phases on the basis of excavation in a single site or small cluster of isolated sites. We suggest that ethnographic boundaries be used in such cases for the Late period; if not available, of if older periods are involved, physiographic districts can be defined on the descriptive level, to be modified as needed on the analytical level.

Cultural Units

The Pattern

The cultural units which in Central California have been known as the Early, Middle, and Late horizons are regional representatives of three basic patterns, as defined here. One difficulty in utilization of the horizon concept as an integrative unit is that each horizon was defined with excessive specificity. The basic definitions were based upon regional detail and thus were applicable only to a few of the cultures which actually participated in the pattern. The terms Early, Middle, and Late, applied as labels to the three patterns, have been dropped to remove any necessary association of temporal priority of one pattern as contrasted to another. While such priority may exist, it is not involved in the general definition of pattern.

The pattern is generally the broadest integrative unit employed operationally, although it is middle-range in regard to overall synthesis, being narrower than stage, period, and tradition. A pattern is conceived as a configuration of basic traits representing a cultural adaptation. Pattern as a concept has similari-

ties to the ethnographic culture area, but it is not as broad in application. Applied ethnographically, the distinction Oliver (1962) drew between the social organization of Plains Indians with foraging as contrasted with horticultural backgrounds is the distinction between two patterns [n.b.: or is it the distinction between two aspects?]

An archaeological pattern, as defined here, represents a basic adaptation generally shared by a number of separate cultures over an appreciable period of time within an appreciable geographic space. The pattern is characterized by: a) similar technological skills and devices (specific cultural items), b) similar economic modes (production, distribution, consumption), including especially trade and wealth practices (often inferential), and c) similar mortuary and ceremonial practices.

A single pattern will not be specifically uniform throughout the geographic space which it occupies. Regional variation, sometimes extreme, will occur depending on factors such as: a) abundance and nature of environmental resources, b) regional specializations and elaborations, sometimes resulting from unique historical events, c) degree of cultural and geographic marginality, and d) influences of neighboring patterns.

A specific pattern should be defined in such a way as to make the identifying characteristics as generalized as possible, yet any two patterns should clearly contrast with one another. It should be noted that a pattern is based upon a configuration of characteristics. Individual characteristics may be shared mutually between two or more patterns, but the overall configurations of each pattern should differ.

All localities which participate in the same pattern can be hypothesized to have had some historic relationship, such as common ancestry, mutual influences, and common external influences. Two or more patterns may exist within any given area or subarea at any given time. Such coexisting patterns may be hypothesized to correlate with major linguistic differences, despite the obscuring of the linguistic relationships by factors such as cultural coalescence and extreme borrowing. No *a priori* assumption can be made in regard to the nature of the historical relationship between two succeeding patterns. Aside from the temporal sequence itself, only intensive analysis of adequate data can determine whether the later pattern may or may not have derived from the earlier one.

New patterns can emerge from the physical displacement of cultures practicing the older pattern, from coalescence, such as when new configurations or traits enter an area and are integrated into the existing pattern, and from assimilation, when the preexisting pattern loses its identity by accepting the newly introduced configuration in its entirety.

Once a pattern has been defined, investigations can be formally planned in terms of hypotheses formulated concerning regional and local variation. In stoneless alluvial regions, for example, the absence of certain stone implements could be predicted, or their presence predicted based upon hypotheses concerned with trade. In remote mountainous regions, where resources are often not as abundant as in more open regions and where access to trade routes is limited, hypotheses concerning economic modes can be formulated; wealth and trade complexes in these areas can be expected to be simple.

At this point in the development of the taxonomy, labels for the different patterns are obtained through the general principle of utilizing the name of the first site at which the pattern was recognized. This does not imply any kind of cultural or historical priority for the site thus used. The priority relates only to recognition by archaeologists, not to elaborateness of culture content or to time. If such a label proves ambiguous, for example, if it is already in use in some other context, an alternate label should be chosen. Attempts were made in the development of the concept to apply a label which related to the basic adaptation itself, or to one or more of its significant cultural traits (e.g., milling stone pattern, cultist pattern), but so far such efforts have not been successful. Any suggestions in this regard would be welcomed.

The Aspect

An aspect is a district variant of a pattern. It is differentiated from other aspects by the individuality of its adaptation related to factors such as environmental resources, regional specializations, marginality, and extra-pattern influences. An aspect is made up of a sequence of phases, defined by Willey and Phillips (1958:22) as "an archaeological unit possessing traits sufficiently characteristic to distinguish it from all

other units similarly conceived, whether of the same or other cultures or civilizations, spatially limited to the order of magnitude of a locality or region and chronologically limited to a relatively brief interval of time." The phase is the smallest integrative unit in the taxonomy, and experience in Central California indicates that it can be differentiated at the district level. The localities defined by Bennyhoff, mentioned previously (now renamed districts), are occupied by cultures which are aspects of the Augustine Pattern (Cosumnes, Stockton, and Diablo districts).

Criteria for Several Patterns in Central California

Windmiller Pattern. The Windmiller Pattern of the Lower Archaic period includes the cultures previously included within the Early Horizon. The criteria for the Windmiller Pattern are as follows:

a) Technological skills and devices: Mano and metate, although rare, are accompanied by small mortars (possibly meat or paint grinding implements). The dart and atlatl, as well as the spear occur; atlatl spurs are rare, late, and of polished stone. Bone industry is not elaborate, while the polished stone industry is. Non-obsidian, stemmed projectile points are dominant.

b) Economic modes: The relative number of projectile points as contrasted with the relatively small number of grinding implements suggests a hunting emphasis. Trade appears to be focused primarily upon the acquisition of ceremonial and ornamental objects, which were probably obtained as finished specimens rather than as raw material.

c) Burial and ceremonial practices: Interment occurs, both in intravillage grave plots and in non-midden off-village cemeteries. The mortuary complex has a ceremonial emphasis with abundant, deliberate grave furnishings relatively common. The most common burial posture is westerly oriented ventral extension, although westerly oriented dorsal extension also occurs. One site yielded rare flexure and secondary cremation.

d) Variations in the Windmiller Pattern: The cluster of sites, predominantly on the Mokelumne River, involved in the definition of the original Early culture or Early Horizon, form the nucleus of the present definition of the Windmiller Pattern. The elaborateness of the mortuary practices suggest that this may be a regional specialization due to favorable economic resources allowing a relatively large population density (as compared with hunters and collectors in the Great Basin, for example) with an accompanying elaborateness of the ceremonial practices. If this is assumed, then it can be hypothesized that areas geographically marginal to the Mokelumne cluster of sites will present an abbreviated version of the ceremonial complex (cf. Olsen and Wilson 1964).

Berkeley Pattern. The Berkeley Pattern predominantly of the Upper Archaic period includes those cultures previously included within the Middle Horizon. The earliest phases of the Berkeley Pattern appear to be contemporaneous with late phases of the Windmiller Pattern. The name Berkeley rather than Emeryville (where this pattern was first recognized) has been used to avoid ambiguity, since Beardsley (1954) previous employed Emeryville as the name for a basic Late Horizon facies. The criteria for the Berkeley Pattern are as follows:

a) Technological skills and devices. The minimally shaped mortar and cobble pestle are employed as the virtually exclusive milling implements. Manos and metates are rare. The dart and atlatl are present; the atlatl being represented by rare engaging hooks usually of bone or antler. Chipped stone tools are less frequent, and non-stemmed forms occur in greater proportion than in the Windmiller Pattern. There is a growing emphasis upon the bone industry during the temporal span of the pattern; mammal bone is more commonly used than bird. Polished stone industry is present.

b) Economic modes: The pattern has a collecting emphasis, as indicated by a high proportion of grinding implements in relation to projectile points, probably emphasizing the acorn. The population appears larger than in the Windmiller Pattern based on depth of deposit, the large numbers of sites, and the regional shell accumulation. There is no apparent emphasis upon either trade or wealth. The use of local material predominates. Trade goods, when they appear, are finished specimens rather than raw material.

c) Burial and ceremonial practices: The mortuary complex is rarely elaborated. Flexed burials with variable orientation occurs in village sites. Burial goods are mostly restricted to a few utilitarian items or

to ornamental objects which are compatible with an interpretation of being part of a relatively unelaborate burial costume. Ceremonialism is indicated predominantly by shamanism, that is, by the presence of single graves with objects compatible with "shaman's kits," e.g. quartz crystals, charmstones, bone whistles. Graves are sometimes accompanied by bird and animal bone, sometimes articulated portions of skeletons. Birds and animals occasionally occur as ceremonial burials.

d) Variations in the Berkeley Pattern: Regional specializations reflect at times differing environmental resources. For example, along the San Francisco Bay shoreline and the Marin-Sonoma coast, Berkeley Pattern sites emphasize the collection of shellfish. Notched stones, probably net weights, are common in these localities, while rare or absent in interior sites. Archaeological components in the northern San Joaquin Valley show a blending of the Windmiller Pattern with the Berkeley Pattern, although it appears that the Windmiller Pattern has historical priority in the region.

Augustine Pattern. The Augustine Pattern of the Emergent period includes those cultures previously included within the Late Horizon. The Augustine Pattern appears to be a coalescent pattern merging the previous Berkeley Pattern with many new traits and involving a change in the general economic complex.

a) Technological skills and devices: Well-shaped mortars and pestles are common. The bow and arrow are present, as evidenced by a growing increase in the number of small projectile points beginning in the earlier phases of the pattern. Use of, and work in, shell is common. Fishing implements, while rare in absolute terms, occur more commonly and in different types than in the Berkeley or Windmiller patterns. The harpoon is introduced during early phases of the pattern. Bone awls, probably indicative of a coiled basketry industry, are common. Polished stone now includes tubular pipes as well as charmstones.

b) Economic modes: Fishing appears to be added to a strong collecting emphasis, while hunting (inferred by greater numbers of points found in middens) may be more important than during the Berkeley Pattern. The acorn is the dominant staple, as judged in part by charred specimens found in middens. There is high development of trade, beginning with finished specimens serving as trade items and developing by the addition of raw materials involved in trade. Gradually more trade items that can be identified as coming from relatively great distances appear. Social differentiation in regard to wealth is evidenced by considerable variation in grave furnishings.

c) Mortuary and ceremonial practices: Cremation and preinterment grave pit burning of burial furniture co-occur with flexed burial. Cremation is apparently reserved for relatively wealthy individuals, judging from the differential distribution of grave goods often found with the two kinds of graves. Ceremonialism, possibly indicative of widespread secret societies, is evidenced in the artifactual complexes, markedly emphasizing shell beads and ornaments, found with graves.

d) Variations in the Augustine Pattern: Due to the developing elaborateness of the trade networks, localities which are unfavorably situated in regard to trade routes show considerably less elaboration of the Augustine Pattern than localities which are more favorably situated. Nonetheless, more trade is evident in the marginal localities than in comparable sites following the Berkeley Pattern. The importance of fishing in the Augustine Pattern implies also that localities favorably situated in terms of fish resources will have a more elaborate cultural development than those not so favorably situated. Thus, greater differentiation will be manifest between riverine and shoreline cultures than those in mountainous areas.

Stockton Aspect of the Augustine Pattern[1]

The archaeological-ethnographic continuum strongly supports identification of this aspect as ancestral Northern Yokuts. Several historic tribelet centers

[1] The defining characteristics of the Stockton aspect of the Augustine Pattern appear here as they were originally made by Bennyhoff in 1969 in an unpublished paper entitled "The Need for a New Taxonomic System in Central California Archaeology." This was the position paper from which the present chapter was developed and elaborated. Although this section was not incorporated in chapter 2 as completed in 1969, it seemed appropriate to reintroduce it here because, despite its outline form, it provides a clear example of the way an aspect was then defined, and because, to my knowledge, this description has not appeared in print anywhere else. Compare this section with chapter 6, pp. 69-73, fig. 6.3, Ed.

have been tested. Unfortunately, this continuum can be traced back only through the prorohistoric and later prehistoric—the two earliest expressions of the Augustine Pattern are essentially missing as yet. While the mortuary tradition implies at least some continuity from the antecedent Meganos aspect of the Berkeley Pattern, the geographical distribution of components suggests severe disruption during the earliest part of Augustine. Extensive excavation in the southern San Joaquin Valley will be needed before we have any understanding of Yokuts history. Districts to the east and south are virtually unknown archaeologically.

Ecology: stoneless Delta representing climax of Central California food resources.

Marker traits of the Stockton Aspect: * = diagnostic (i.e., not found in any other district). Characterized by portable stone mortars, simple stone pestles imported mostly from the east (contrast with wood of Cosumnes, different types in Diablo). Individual ownership (contrast with communal ownership in Cosumnes). Baked clay industry (linkage with Cosumnes, contrast with Diablo).

* Emphasis on elk bone artifacts (especially elk ulna awl, punch).
* Distictive simple harpoons in late prehistoric.
* Grass-bundle coiled baskets.
* Open cross-hatched style of incised bone ear tubes.
* Incised elk bone hair pin.
* Distinctive effigy ornaments in late prehistoric.
* Toloache cult (steatite vessels) in protohistoric.

Borax Lake Pattern. What is here referred to as the Borax Lake Pattern was first identified as a distinctive type of cultural manifestation at the Borax Lake site (Harrington 1948), in the vicinity of Clear Lake. Sites, including those subsumed by Meighan (1955), are found predominantly in the North Coast Ranges, with some indication that they may also be found in the South Coast Ranges (Wallace 1954) and the Sierras. It has been suggested that what is here called the Borax Lake Pattern of the Lower Archaic period is historically related to the Windmiller Pattern (Baumhoff 1957; Baumhoff and Olmsted 1963, 1964), although the degree of difference in basic adaptation is sufficient to justify subsuming them under two distinct pattern headings. The criteria for the Borax Lake Pattern are as follows:

a) Technological skills and devices: Mano and metate occur with greater frequency than in the Windmiller Pattern; mortar and pestle are common and co-occur with mano and metate in later phases. Atlalt (inferred) and dart occur, as well as the spear. Stemmed, nonstemmed, and concave base points (occasionally with basal edge grinding), predominantly of local materials (either obsidian or chert) are present.

b) Economic modes: The relative number of milling implements as compared with stone projectile points suggests a generalized hunting-collecting economy, with neither emphasized over the other; no evidence for fishing has been preserved. The use of local materials predominates, and trade does not appear to be particularly well-developed, although in later phases contacts with other cultures appear to increase. There is no evidence of any wealth emphasis.

c) Mortuary and ceremonial practices: No interments have been found in habitation sites in the earlier phases, although in one late phase site burials do occur in the midden. No non-midden burials have yet been identified. Utilitarian objects, mainly pestles and projectile points, were found with the late phase burials. Polished stone items suggestive of ceremonial purposes include rare ovoid perforated charmstones and a single occurrence of a small, tabular, centrally side-notched ground stone object, possibly representing a form ancestral to the "painted tablets" of the Napa and Berryessa valleys.

d) Variations in the Borax Lake Pattern: At present two aspects of the Borax Lake Pattern have been identified, distinguished by the stone materials employed and the forms of the projectile points utilized. There is a northern aspect focused in Mendocino County and extending to the east side of the Coast Ranges, and a southern aspect, focused in Lake County and extending southward into Napa and Solano counties.