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CULTURAL TRADITION AND ECOLOGICAL ADAPTATION
ON THE SOUTHERN CALIFORNIA COAST

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Introduction

Wallace's (1955) "Suggested Chronology for Southern California Coastal Archaeology" marks a turning point in southern California archaeology. Wallace provided a chronological framework and pointed to broad cultural similarities on the southern California coast. He made order out of site reports of varying quality and completeness. Wallace's chronology has continued to serve as a means of organizing southern California prehistory up to the present time, even though there have been modifications in content and corrections in dating. It was not only a timely synthesis, but also a source of stimulation to many archaeologists working in the area. It was a necessary step that has served as a basis for much of the ideas presented here.

The data accumulated since 1955 have split the means of this organizational device, and to force the data into the four horizons as defined is no longer feasible. We have therefore attempted a synthesis of southern California coastal prehistory using two concepts as vehicles of presentation: (1) cultural tradition and (2) cultural ecology.

A cultural tradition is here defined as a generic unit comprising historically related phases. Cultural traditions are identified and distinguished from one another on the basis of differences in cultural patterns reflected in differences in artifact types and assemblages and differences in cultural features within site units. Ideally a tradition is defined in an environmental vacuum with ecology playing no part in the definition.

Cultural ecology is viewed as the interrelationship between a cultural tradition and its environment(s). It is assumed that at the archaic stage of evolution the major ecological factor is the point of articulation between the technology and the environment in the production and processing of materials necessary for subsistence, especially foods. It is assumed that this ecological relationship is often a major influence if not the determining factor in other kinds of ecological relationships such as settlement patterning and certain aspects of socio-political organization. We have, therefore, focused our attention on this aspect of cultural ecology.

It must be stressed that cultural ecological factors are not a part of the definition of a cultural tradition, but that a cultural tradition is the mechanism by which prehistoric populations adapted to their environments. A single cultural tradition is logically capable of adapting to several environments through time and space.

Cultural Traditions on the Southern California Coast

Wallace (1955) defined four horizons for the southern California Coast: I. Early Man; II. Milling Stone; III. Intermediate; IV. Late. Of these, the first three may be interpreted as traditions. The Late Horizon, which lacks adequate archaeological data from many areas, probably represents several traditions. This suggestion is made on the basis of ethnographic and linguistic as well as scanty archaeological data. We would suggest a minimum of three traditions which correlate with the three major linguistic groups: Chumash, Shoshonean and Yuman.

Beginning with the earliest we may define the traditions as follows: I. San Dieguito. This tradition is characterized by a wide range of scraper types made on side-struck flakes and finished by well-controlled percussion flaking, leafshaped knives or large points of several varieties, leafshaped, lanceolate and slightly shouldered points in small number. Chipped stone crescents, often eccentric in form, hammerstones and crudely flaked tools are few in number. Milling stones and manos are noticeably absent.

The San Dieguito tradition is dated by
radiocarbon method as beginning sometime before 700 B.C. in the western United States and persisting until sometime between 6540 ± 400 B.C. (A-724 and A-725) and 5670 ± 380 B.C. (Curtis, Meighan, and others 1967).

The geographic distribution of this tradition on the southern California coast is poorly known. At the present time only one site has been described in any detail (Warren and True 1961; Warren 1966). But it apparently had a distribution over much of western San Diego County (M. J. Rogers 1929).

The ecological adaption of the San Diego coast is well known, some hunting activities may have been implied. This tradition will not be discussed further in this paper.

II. Encinitas: The second tradition suffers from an overabundance of names such as La Jolla, Topanga and Oak Grove. These are all rejected in favor of Encinitas, a name known in the northern San Diego County. At the present time only one site has been described in any detail (Owen 1966; Warren 1966).

The Encinitas Tradition appears at about 1450 B.C. on the San Diego coast. This tradition is intrusive to the Santa Barbara Area. It has been dated on the basis of dates from site SBA-119 (Harrison 1964: 124-79; Harrison and Harrison 1965: 70). However, this interpretation of the latter site is not entirely convincing since it contains many traits of the Campbell Tradition. It does appear, however, that the Encinitas Tradition is intrusive to the Santa Barbara Coast. There are no known precursors of the Encinitas Tradition locally and it now appears to be at least in part contemporaneous with the Encinitas Tradition.

Encinitas: The Campbell Tradition also appears in Los Angeles County at the Zuma Creek Site (Peck 1955) where projectile points, knives and mortars are found in some number and dated at about 1450 B.C. (Bright 1965:370). However, Zuma Creek was inhabited for a fairly long period and the characteristic tools of the Encinitas Tradition are found in great number. Without the tools of the Campbell Tradition appear relatively infrequently.

The Topanga Canyon cultural development of this period and or those from Locus II were recovered in a stratigraphic position near the middle of a component of the Topanga Tradition and therefore appears that the changes in artifact types noted on the San Diego coast may have been stimulated by an intrusive but short-lived cultural unit with affiliation with the Campbell Tradition. This intrusive cultural unit was associated with the Encinitas Tradition and continued relatively undisturbed on the San Diego coast.

IV. Chumash: This last tradition is characterized by a highly developed technology: elaboration of utilitarian objects, and a wealth of "effigies" and "artistic" items. The bow, mantles and spears, stone balls, grooved stones, spear heads, abalone shell dishes, pendant, tubes, effigies of mammals and stylized objects, are all pecked and ground. Chipped stone objects include small and large projectile points.
most often non-stemmed with convex or concave bases, drills and various scrapers and cutting implements. Bone awls, fishhooks, whistles and tubes overlaid with shell beads are found, shell fishhooks, abalone shell dishes, and a very great variety and large number of shell beads and ornaments are characteristic.

Not only are items well made, but the beauty of objects such as bowls, pestles, pipes, etc. is often enhanced by an inlay of shell beads and engraving. Steatite is commonly used for bowls, pipes and ornaments.

Burials are nearly always placed face down in a flexed position with their heads to the west or north. Burials often occur in overly crowded cemeteries and are frequently marked by whose bone placed vertically in the ground. Great quantities of ornaments and utensils are often placed with the dead.

V. Shoshonean and Yuman: Further south in Los Angeles, Orange and northern San Diego counties there is linguistic evidence for a late Shoshonean intrusion from the interior. The late coastal sites of Los Angeles county appear to resemble the Chumash in a few traits (Walker 1951). However, the inland sites, sometimes at least, appear to have affiliations with the desert (Ruby 1966: 116-7). It is not possible at this time to identify a Shoshonean Tradition in Los Angeles county on the basis of archaeological data. It can only be postulated.

In San Diego county the late period is poorly known for the coastal area where sites are apparently neither numerous nor large. It is clear, however, that a new cultural influence was felt on the coast. Cremation was the method of disposing of the dead. Pottery and small triangular projectile points were introduced. The older tool assemblage apparently persists until historic times and the new traits are added to the old Encinitas Tradition. It is not possible at this point to determine whether or not we should speak of a new cultural tradition for the southern San Diego coast.

Inland between the coast and the Penin­sular Ranges three phases have been defined (Mooney 1954, True 1966) which apparently represent two different cultural tradi­tions. The Cuyamaca phase to the south can be related to the Yuman-speaking Diegueno.

San Luis Rey I is defined by the occurrence of small triangular projectile points, mortar and pestle, mano and millingstone, and simple flake scrapers. San Luis Rey II exhibits all of these plus pottery, cremation and pictures.

The Cuyamaca phase is very similar to the San Luis Rey II, exhibiting all of the general traits. However, True (1966) was able to distinguish between these two phases on the differences in projectile point and scraper types, a difference in pattern of cre­mation, quantitative differences in pottery, and the presence or absence of a few projec­tile types. Furthermore, True suggests some degree of cultural continuum between the Encinitas Tradition and the Cuyamaca phase, but not between the Encinitas Traditi­on and the San Luis Rey phases. On this basis it is possible to suggest that San Luis Rey and Cuyamaca phases represent two different cultural traditions: the San Luis Rey phases relating to the Shoshonean intrusion and the Cuyamaca phase relating to the Yuman influences from the Colorado River and perhaps the earlier Encinitas Tra­dition.

The temporal and areal distribution of the cultural traditions on the southern Cali­fornia coast is presented in a schematic fashion in Figure 1.

Ecological Adaptation on the Southern California Coast

The environment of the southern Cali­fornia Coast at 5500 B.C. is largely unknown, but the plant communities were probably similar to what they are now. There is some evidence for more water, and the ecological zones may have occurred at somewhat lower elevations. A major difference appears to have been present in the littoral zone on the San Diego Coast and presumably further north. The ocean level on the San Diego coast was lower (Hubbs and others 1960; 304, 208-9; 1962:212, 233-4; Shepard 1950; Shepard and Susi 1956; Curray 1960), though tectonic movement in the Los An­geles Basin and elsewhere make this im­possible to demonstrate for the entire coastal
tions are those relating to collecting the most numerous tool types. Pinyon nuts. Manos and mullers. and under those conditions, flourishing populations of Pecten and Chione. These conditions would be met by a rapidly rising sea level, during which the accumulation of shore sand would be kept low. The rising of sea level also would serve to reduce the straight sandy beaches of the Santa Barbara coast certain environmental changes were taking place. The straight sandy beaches of the Santa Barbara coast had become buried beneath sand accumulating on the beaches due to the rise in the rate of rising sea level, thus reducing the shellfish population. Presumably the size of the estuaries at the mouths of the rivers and streams was reduced by growing deltas. and sand bars extending across the mouths made them environmentally more variable and less productive in shellfish.

It appears that the aboriginal population on the San Diego coast north of Mission Bay decreased and it is suggested that the center of economic activities and consequently the population center shifted to: (1) inland areas where fresh water and the richer ecological zones of oak parkland. chapparal and prairie occurred. (2) the area of Mission and San Diego Bays where the littoral resources still were plentiful. Furthermore it seems likely that the straight sandy beaches of the San Diego coast north of Mission Bay were not as heavily utilized as rock rookeries at the rocky points and islands in the Santa Barbara Channel. Consequently the straight sandy beaches of the San Diego coast certain environmental changes were taking place. The straight sandy beaches of the Santa Barbara coast had become buried beneath sand accumulating on the beaches due to the rise in the rate of rising sea level, thus reducing the shellfish population. Presumably the size of the estuaries at the mouths of the rivers and streams was reduced by growing deltas. and sand bars extending across the mouths made them environmentally more variable and less productive in shellfish.

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inland origin of the maritime development because "the ocean oriented economy of these people would be difficult to explain" (Kusick 1966:68).

The Campbell Tradition is here interpreted as an intrusive cultural tradition since we have evidence in Santa Barbara and San Diego of culturally distinct site units which are contemporaneous with the older Encinitas Tradition. We do not, however, feel that the Harrisons' hypothesis regarding its origin is correct. If we clearly distinguish the ethnoarchaeological techniques of prehistoric economy from the environment and realize that the productive techniques are operative in a niche of natural surroundings and that is seldom if ever wholly represented in a given environment, then the maritime development of the coast is not difficult to explain. There is little difference between the technology of the "Hunting Peoples" of southern California and those of the Northern Range, since similar assemblages found farther east in California and Nevada, The Herremit (1966:17), themselves noted similarities in point type and pointed out that the obsidian of which some artifacts were made may come from the Mojave Desert, which is its nearest source.

A culture arriving on the coast with a well developed hunting technique has built into its economy the productive system necessary for maritime hunting even though these may appear crude and not adapted to the environment. The large quantities of bones of sea mammals at sites of the Hunting People on the Santa Barbara coast and at the Little Harbor site attest to this even though in neither is there evidence of harpoons or harpoonheads. Speculate spears, in fact, one of Meighan's major points regarding the Little Harbor site was that the tool assemblage did not betray a maritime economy. This interpretation is as hypothetical as Harrison's, but it is based on ecological principles rather than postulated historic events, and does not ask questions regarding the processes involved in developing a maritime economy. While the assumption is not unreasonable, it rather removes such questions to the coast of Alaska and outside the geographic area of inquiry.

We view the Campbell Tradition as resulting from an intrusion or intrusions into the coastal area by inland hunters of a single cultural tradition. However, the possibility that the Campbell Tradition as defined here may be the result of an intrusion of another cultural tradition into the coastal area must be considered an alternative hypothesis. We are of the opinion that this intrusive tradition does not represent a complete replacement of either the earlier population or culture any place on the southern California coast. The intrusion is not difficult to explain. There is little difference between the technology of the "Hunting Peoples" of southern California and those of the Northern Range, since similar assemblages found farther east in California and Nevada, The Herremit (1966:17), themselves noted similarities in point type and pointed out that the obsidian of which some artifacts were made may come from the Mojave Desert, which is its nearest source.

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adaptation to the varied ecological zones of the Peninsular Range. Coastal traditions collect pine nuts and acorns in the vicinity of the oak trees; and the collecting of pine nuts and acorns is assumed to have been of major importance, as was the hunting of land mammals. Moreover, we feel that the evidence now available supports the hypothesis that the Campbell Tradition is intrusive and that it is distinct from the Encinitas Tradition. On the other hand, the Campbell Tradition may be viewed as a single tradition or several historically distinct cultural units with certain adaptations made in similar ways. These hypotheses cannot be adequately tested at this time because the data are lacking.

The model of the prehistoric ecological relationships also sets before us certain methodological problems. If ecological traditions are seen as two interrelated variables which put strictures on the comparative method, then the analyses made between cultural units occupying different environmental zones, the similarities and differences may result from ecological factors as well as cultural historical factors. Under these conditions the units of comparison must be carefully controlled functional equivalents. That is, it does not necessarily follow that projective points used for hunting sea mammals are formally the same as those used for hunting land mammals. Comparisons across ecological zones cannot be as well controlled as those made within a single zone.

The problem may be illustrated in more detail. Non-agricultural people generally follow a seasonal round of activities and at different periods of the year, different portions of their territories and different micro-environments. The most obvious examples from the southern California coast are the acorn harvest and the collecting of pine nuts and acorns in the vicinity of the oak trees; and the collecting of shellfish and other resources of the beach and coastal terrestrial relationships. The Campbell Tradition, for example, is viewed as being intrusive into the area occupied by the Encinitas Tradition. To test this, we must show that this tradition is or is not composed of an assemblage of cultural traits distinct from the Encinitas Tradition, and that it did or did not occupy the same ecological zones as the Encinitas Tradition, and that we can therefore feel that the evidence now available supports the hypothesis that the Campbell Tradition is intrusive and that it is distinct from the Encinitas Tradition. On the other hand, the Campbell Tradition may be viewed as a single tradition or several historically distinct cultural units penetrating to the coast and adapting to the coast in similar ways. These hypotheses cannot be adequately tested at this time because the data are lacking.

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occupied during the spring.

6. Remains of the pelagic fish occur in inland middens. Summer and fall is the time when pelagic fish are abundant at the coast, and when the greatest number of pelagic fish would be available. None of the fish remains at Ven-70 were from pelagic fish, which suggests the site was not inhabited during the summer or fall. Also, there were relatively large quantities of shell, which was primarily exploited during the winter, further indicating a main focus of activities during the spring.

Further innovations in micro-ecological analyses are being made. Margaret Witing (1966) is developing a technique for analyzing the growth bands on Pismo clams. Through the use of this technique, at a site in Orange County, she was able to tell not only what season of the year the site was occupied, but also was able to give a close approximation of the duration of the occupation in number of weeks. Micro-ecological studies of this kind provide a basis for relating sites of different environments to a single cultural unit and provide a sound basis for further comparative studies of cultural traits. As well as providing information on these traits articulate with the environment in which they are found.

Summary and Conclusions

The prehistory of the southern California coast is concerned with two cultural traditions and their relationships to the environment. Following the poorly-defined San Diego-Tusayan Tradition and beginning around 5500 B.C., the Encinitas Tradition is found extending from the San Diego coast to the Santa Barbara Channel, and thence extending from the Santa Barbara Channel to the Channel Islands. This relationship is clearly explained in terms of changes in the environment of the littoral and adjacent ecological zones in San Diego County. The distribution of these zones which is partly a function of the productivity of the sea. This resulted in a shift of economic activities inland to the uplands, the foothills, and the headlands. The area which is now the archaeological site was not inhabited during the spring. It was apparently a summer occupation. The Campbell Tradition represents the introduction of new techniques and economic pattern. The Santa Barbara Channel and thence extending from the Santa Barbara Channel to the Channel Islands. This relationship is fully penetrates the San Diego coastal area.

The Campbell Tradition appears to have been a salt producing area from which the ethnographic Chumash culture developed. Further south, the Shoshoneans "wedge" may be postulated as representing a distinct cultural tradition from the east and adapting to the coastal environment. The Yuman speakers of San Diego appear to represent a break from the earlier Encinitas Tradition. With an influx of cultural traits from Colorado and New Mexico, this Yuman Tradition appears to combine these new traits with some of the older Encinitas Tradition and the environment range similar to that of the Encinitas Tradition, but more efficiently.

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1966 Description of Artifacts. In "The Glen Avenue Cargo Site, SB-147, An Early Parkland, pinyon and chaparral. Hunter was apparently not productive on the San Diego coast, and therefore the Campbell Tradition never fully penetrated the San Diego coastal area.

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SOUTHERN CALIFORNIA COAST

It is our view that by keeping the concepts of culture and environment distinct from one another and investigating relationships between them, we find basis for understanding certain prehistoric developments on the southern California coast. Further, this approach brings into focus problems of method that are generally not apparent and gives direction toward finding solutions to these problems. Although our view of prehistory of the southern California coast is only a fleeting and incomplete understanding of some of the developments, we believe that the approach is valid and will provide sound answers, bringing into focus many problems that are now totally apparent.

1964 An Archaeological Survey of the Santa Barbara Channel and thence extending from the Channel Islands. This represents a pattern divergence in the prehistory of the southern California coast. From this point in time down to European contact, culture of the Santa Barbara Channel is maritime oriented and that of the San Diego coast is not. The distribution is clearly explained in terms of changes in the environment of the littoral and adjacent ecological zones in San Diego County. The greater productivity of the sea. This resulted in a shift of economic activities inland to the uplands, the foothills, and the headlands. The area which is now the archaeological site was not inhabited during the spring. It was apparently a summer occupation. The Campbell Tradition represents the introduction of new techniques and economic pattern. The Santa Barbara Channel and thence extending from the Santa Barbara Channel to the Channel Islands. This relationship is fully penetrates the San Diego coastal area.

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It is our view that by keeping the concepts of culture and environment distinct from one another and investigating relationships between them, we find basis for understanding certain prehistoric developments on the southern California coast. Further, this approach brings into focus problems of method that are generally not apparent and gives direction toward finding solutions to these problems. Although our view of prehistory of the southern California coast is only a fleeting and incomplete understanding of some of the developments, we believe that the approach is valid and will provide sound answers, bringing into focus many problems that are now totally apparent.
Before trying to answer some of the questions asked of discussions, it is useful to define what is meant by Archaic, as it can be seen in the deserts and mountains of southern California and northern Baja California. Here, the Archaic Stage is best understood as a series of Substages, each with characteristic changes in subsistence technology, choice of a few unusual occupation areas, and population size.

It has been useful to us to define a technological Paleo-Indian Stage and an Archaic Stage (Brutt 1969). In addition there is a Transitional Stage, still ill-defined, which precedes the Archaic. In the California deserts, the true Archaic began with strong and easily recognized stone-mill milled, Therefore Substage One is the Milling Archaic. People group up rats (Michelson 1967), dry meats, seeds, nuts, and berries etc. This Substage evidently lasted for thousands of years. It was followed by Pottery Archaic as ceramics diffused gradually from Arizona, perhaps reaching the Colorado River by 900 to 1,000 A.D. Diffusion southward in California was slow and pottery-making seems to have been adopted later, and even later in Baja California — perhaps as late as A.D. 1700 at the latitude of Bahía de Los Angeles, about one-third of the way down the Gulf coast. Cultures of the Pottery Archaic were intruded upon suddenly by the arrival of Europeans and rapid expropriation of resources as well as disruption of indigenous cultures. Thus the sixteenth century can be roughly used as a marker for the beginning of a final Substage — Post Contact Archaic. This is still in progress today, acculturation is still taking place, and there are fascinating opportunities to study various aspects of it among the closely related Yuman-speaking groups of southern California and northern Baja California. There are the Diegoño, Tipai, Coopa, Patiap, Cault and Kiklua, going from north to south. They are so closely related by marriage, co-residence, custom and symmetry that they should be seen as a socio-economic spectrum rather than as separate groups. We personally know best the Diegoño and Paplai, having been among them, and have observed and participated in the last vestiges of the immensely long California Desert Archaic Tradition.

**Environment and Culture**

We do not yet know what were the connections between a hypothesized Desert Tradition and an equally hypothetical Coastal Tradition. There is good evidence that the groups of recent Yuman speakers moved about a great deal within, convenience or yearly variations in food crops dictated. They were anything but fixed, I surmise that a family which spread spring in the desert collecting savvy would then go to the coast and forested mountains as summer waxed. After their acorn harvest, when winter moved in on the mountains with snow and cold, these groups of hunter-collectors had their choice of returning to the desert, or continuing west to the coast. There, winter climate is mild and there was once a wealth of sea-food. However, the same group of people would not leave the same archaeological traces at a shell-fish site, a mountain acorn site (strongly connected with ancillary hunting by the men), and a desert site. All these are different Occupational Modes, each with its separate technology, and a different Structural Pose of the society (Geary 1956).

Within the varied environment of southern California, one of the most exciting questions is: How can an archaeological trace and distinguish the different Occupational Modes (for example the Hunting Mode or Collecting Mode) of the same group of people as they make their living out of different environments? Contingent on this is another question: to what extent did the mobility which is ethnographically recorded prevail a thousand years ago, or five thousand years ago? We simply do not as yet have the data to answer these questions. In our diversified