

## ON THE STUDY OF EARLY MAN IN SOUTHERN CALIFORNIA

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This paper is an effort to define some of the archaeological problems to be met in developing an understanding of human antiquity in southern California, and further to raise certain questions as to the kind of archeological work needed and as to its order of precedence.

The term "Early Man", as used in the Americas, has been generally applied to archeological remains found associated with evidences of a climate, fauna, or flora demonstrably different from that of the present. Thus the chronological placement of such finds has started as a geological problem and has so far inclined to remain so, save in certain areas where seemingly continuous cultural sequences following the early finds have been discovered.

Fortunately for studies carried on in the desert area of southern California, certain sites are located on long extinct water courses which Dr. Antevs can date from his climatic studies. The Mohave and Pinto cultures have been so dated and the large site at Little Lake under excavation by M.R. Harrington, which shows features of both the Lake Mohave and Pinto cultures, can also probably be so dated, adding assurance to the early dating of the other two cultures. Unfortunately these cultures are not as yet placed in a documented desert sequence, although there are increasing evidences that explorations in Death Valley and elsewhere may soon establish sound working descriptions of other culture phases, datable on geologic evidence. The earliest cultural materials at Gypsum Cave in Nevada have been placed with reasonable certainty by radio carbon analysis which supports the earlier tentative dating of the site, although unfortunately the scarcity of artifacts similar to those of Gypsum Cave in the California area has made placement of these finds relative to the desert cultures extremely dubious. It seems reasonable to expect that the desert sequences may eventually be anchored at various stages by additional evidence in the form of bones of extinct animals, found until now only in questionable association with culture remains, and by radioactive carbon dates.

The archeology of the coastal and adjoining areas which surround Los Angeles has until recently lacked a sound chronological framework, despite the large number of excavations and surveys which have been made by various individuals and institutions over many years. Certain characteristics of late sites as opposed to early have been generally conceded such as the extensive use of mortars and pestles, of small projectile points, of elaborate work in steatite, cremation and various other traits, most of which are known to have been present at European contact in this area. Geological evidences of climatic change such as have allowed the desert datings have not thus far been recognized on the coast save at Carter's site near La Jolla where the very early dates assigned have been viewed dubiously by most archeologists. By the definitions with which I started this talk, these materials are not at present eligible for designation as "early" cultures. I shall ask your indulgence to discuss them in hopes that they may sometime become eligible.

The sequencing of archeological materials on internal evidence rather than from the results of other sciences is usually feasible, and is indeed the commonest archeological procedure. The simplest and most straightforward manner of doing this is by stratigraphic excavation, which, however, is dependent on locating a site to which the technique is applicable. Records of such sites in this area are rare. Even our best candidate, the Malaga Cove site, dug by Mr. E.F. Walker, has yielded but very scanty materials from its lower levels. A second archeological sequencing technique is variously known as stylistic analysis, or (Spier's term) seriation. This sort of analysis requires no stratigraphic superposition in the deposit, depending instead on the detection of evidences of culture change for the chronological ordering. The advantage of this technique is allowing the use of unstratified material is a decisive factor at present in the Los Angeles area. A disadvantage is the possibility of the intrusion of nonchronological factors to distort or disarray the order. We have been working for some time at U.C.L.A. on chronological ordering by a statistical technique which, using a mathematically objective analysis of artifact tabulations of the sort standard among archaeologists, will produce an ordering of sites. This technique looks promising. By its use Mr. Charles Rosaire has recently been able to produce an ordering of some 26 sites in the Los Angeles area which shows a very logical pattern of the change in artifact use through time. It is fixed in early-late direction by the ethnologically known late traits and European trade objects. Tests of the statistical technique on previously formulated chronological sequences have been made for the Santa Barbara area and for the Sacramento Valley cultures by Mr. Russell Belous. These tests gave a somewhat dubious and qualified confirmation of the Santa Barbara sequence but in general a clear confirmation of the stratigraphically determined Sacramento Valley sequence. As materials from more desert sites become available there is no reason why the chronology of this area should not also be amenable to statistical ordering.

Thus it may be seen that the archeological chronologies of the Southern California desert and of the Los Angeles areas, although not yet clear and well ordered, still look hopeful. A major chronological problem in all the California area is that of synchronizing regional sequences. The simplicity, regional variability, loosely observed stylistic usages, and conservativeness through time which characterize the artifacts of California Indians make the recognition of trade and immediate cultural copying difficult to recognize. These difficulties are illustrated by the contrasting published statements of Heizer and Treganza on Topanga-Oak Grove culture relationships, and by Heizer's recent claim for close relationships between Early Sacramento and Oak Grove coupled with the explicit statement that the artifacts of the two groups are not similar, the only stated cultural similarity between the two being extended burial position. I should be harder put to it than was Heizer, however, were I asked to show cultural relationships between the coastal and desert cultures of this area. Trade relationships, if at all present in the material we have, must have been tenuous.

Archeological chronology is but a starting point in the reconstruction of culture history. It provides the framework into which the reconstruction may be fitted. Perhaps the next type of information necessary for an archeological reconstruction is information on population and economy and the closely related data on settlement pattern and social organization.

The solution of some of these ecological problems is simplified in

California by the absence of plant domestication over most of the state; this absence eliminates from the field of reasonable conjecture the possibility of many elaborate cultural situations which are known to be found only in agricultural communities. But the simplicity of aboriginal California culture, on the other hand, should not be overstated; Kroeber's estimates on population density suggest this as do records of complexity in perishable artifacts, and the advanced organization of food gathering activities of various of the native groups. A factor which must be considered to have exercised a peculiarly strong effect in California prehistory (as it does now), is the California climate; in interaction with the varied physiography of California today it is coupled with a remarkably closely spaced variation in types of flora and fauna, including man. If we add to this complex situation the climatic changes of the last 10,000 years, the problem appears bewildering, although certain constants can unquestionably be applied to simplify the picture. The prevalence of close-spaced physiographic zones immediately suggests the likelihood of seasonal population movements, and such movements are well documented ethnologically. It seems entirely possible, to me at least, that we might classify as two separate culture phases the dry and rainy season camps of the same people.

The problem of archeological sampling must certainly be the first point of attack in the determination of the history of population density and settlement patterning. This problem is far from solved for most archeological situations but is much more difficult for nonagricultural groups than for others. An identifiable archeological habitation site is formed only where a considerable group of people have lived for a considerable time, and only when these people have left relatively imperishable remains. Dry cave deposits constitute a partial exception to this rule, as do open deposits in such an arid area as the Peruvian coast since in such dry deposits the refuse per man-year is much greater due to better preservation. The relationship between amount of refuse and the factors of population size and duration among nonagricultural peoples is not well known, although S.F. Cook and A.E. Treganza have made a valuable start in the study of this problem.

There is certainly a minimum sized group who will form an identifiable site, and a minimal length of occupation necessary to produce it. It is theoretically conceivable that a preagricultural occupation of some density might not leave remains identifiable by our present archeological techniques. Artifact yields of certain California sites which are recognizable by concentrations of shell and stained earth are extremely small; and both shell and carbon are known to have leached out of other sites, recognizable in their turn only by artifact concentrations. This problem -- looking for people whom one, archeologically speaking, can't see -- is a frustrating one. Unfortunately, it is not merely a philosophical dilemma.

Another deterrent to proper archeological sampling which may cause even more spectacular errors, but at the same time is fortunately more likely to be solved, is the error introduced by geologic action following cultural deposition. In simplest terms, the earth's surface seldom stays as it was over a long period. Either soil is taken away by air or water action, or a soil mantle is deposited by the same and other agencies. Where extensive erosion has occurred and modern vegetative cover is slight, surface sampling is the only possible procedure, and customarily gives excellent material for analysis of population and settlement pattern. For the materials

gathered in such situations, statistical seriation is the indicated procedure for recovering chronology. When geological deposition has been heavy, excavation is necessary and proper sampling is difficult unless arroyo cutting has occurred or some efficient artificial earth-moving technique is available. Although archeological survey is difficult and unreliable in country which bears a heavy overburden, the deposits are usually in good condition for stratigraphic work and for detailed dissection and study. Good examples of generally eroded archeological areas are the Southern California deserts, Yucatan, and many parts of the Southwest. Examples where deposition has complicated sampling are most large river flood plains, probably including the Sacramento Valley as a local example, and many areas such as Guatemala, the Northwest United States, and parts of central Arizona and the Valley of Mexico where recent vulcanism has mantled the landscape.

If we assume that man lived wherever he could get to, and wherever he could economically support himself in the past, and I believe this is a safe assumption, there are many archeological blanks in well explored country which must be a direct result of incomplete sampling. Rigorous, properly conducted sampling should be the first aim of an archeologist studying any area. This is the only way whereby the fundamental facts of population size and distribution, and the patterns of settlement can be studied. It should be pursued, and its techniques improved. The search for the strategic site which will lay down a clean cut chronology of an area, and its meticulous excavation at considerable cost in time may at times have to be postponed to allow time for the less spectacular but even more exacting work of survey. Either excavation or survey will produce chronology, but only survey will allow reliable estimates on population patterning. It is only after we know the chronology, general economics, and population patterning of a culture that we can properly fit more detailed knowledge into place.

So much for the primary value of survey in the California area in the determination of population density and settlement patterns. Density is of course closely associated with the economy which allows it and with the environment which in turn limits the economy. This is short-circuiting the cultural as well as biological factors with a vengeance! There is one cultural factor active in much of California which must certainly have complicated the relationship between the food supply and the population size in California. This is the eating of acorns, which presumably depends on the process of acorn meal leaching. If we accept the well documented fact that in many areas the dense aboriginal California population was overwhelmingly dependent on acorns for food it is obvious that the advent of leaching that permitted acorn eating wrought a change in population density of the same general order as did the advent of plant domestication in other areas. Archeological criteria for the recognition of the use of acorns would be of crucial value. Perhaps directed research might produce such criteria.

The degree and type of social organization is a partial function of settlement pattern, which is dependent in turn on population density. Population density depends to a major degree upon economy. In all of these relationships a variety of cultural factors, often undiscoverable to the archeologist, may at times exert a major influence. Direct, although only partial, archeological evidence on the last three factors named can be gotten, but social organization can only be inferred, usually on quite fragmentary evidence.

In the Los Angeles area, the southern desert area, (and this situation is true for most of California) we can claim only a tentative chronology, and we still have many weak spots there. I am convinced that the most fruitful approach both for an immediate chronology and eventually for a more finely graded one is in typological analysis. I think that surface collecting, particularly in the desert area, is likely to be a rewarding procedure and that, at this stage, survey techniques are likely to yield more important results than concentration on intensive excavations.

I am also particularly enthused, as you may have gathered, by the possibilities of demographic archeological studies in relation to climatic and physiographic factors. California is particularly well suited to such studies due to its strong geographic variability and to the presence of a long sequence of nonagricultural peoples whose final culture period has been intensively recorded ethnologically. Techniques and general theory which can be evolved here may shed light on man's past at many other times and places.

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