

66. Prehistoric Central California:  
A Problem in Historical-Developmental Classification\*

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In a recent article Gordon Willey and Philip Phillips (1) propose an historical-developmental classification of archaeological cultures and assign the prehistoric cultures of the New World to one or another of the six stages which they recognize: Their historical-developmental stages are: Early Lithic, Archaic, Preformative, Formative, Classic, and Post-classic. In a number of instances cultures fail to agree comfortably with the definition, and in these cases a certain misapprehension is the inevitable result of forced classification. It is with one of these classifications, specifically that dealing with Central California (2), that the present paper is concerned.

The Early Lithic stage refers to the large game hunters of late glacial and early postglacial times. This stage is succeeded by the Archaic which is characterized by increased number and types of stone tools, the addition of grinding and polishing of stone implements to the earlier method of stone tool manufacture which was limited to flaking. The economy of Archaic cultures is primarily oriented toward gathering and hunting, and food preparation techniques usually involve use of the metate and/or mortar, stone vessels or basketry for cooking, and stone-boiling. Pottery is lacking. Fishing is important in the food economy. It is proposed that the seed-gathering economy in the Great Basin and Southwest was instrumental in preparing the way for acceptance of agriculture at a later time. It is assumed that in the Early Lithic stage the populations were small and nomadic, and that the beginnings of settled life, perhaps interrupted by seasonal movements, appear in the Archaic stage. The initiation of more or less sedentary life is the result mainly of specialized subsistence economies in favored localities as, for example, along rivers in the southeastern United States near mussel shoals, or on the California coast around San Francisco Bay and along the Santa Barbara Channel. The Preformative, which follows the Archaic, is signalized by the introduction of agriculture which is followed and depended upon to the extent that there is made possible marked population increase and large stable villages. It is not until farming becomes the "central theme" of the culture that the next stage, the Formative, is established. The best definition of Preformative seems to be "semi-horticultural." Basketmaker II culture is classed as Preformative, and not until Pueblo II times in the Anasazi Southwest does the Formative stage appear. By this definition it would appear that

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the Kamia of the Colorado Desert who do some cultivation and supplement their diet with gathering and hunting (3) would be classed as Preformative. Pottery-making may or may not be associated with the incipient agriculture of the Preformative, although generally speaking most North American farmers are also potters. The Formative stage is defined by the presence of maize agriculture and by the degree of socioeconomic integration of farming into well-established sedentary village life. Pottery-making, weaving, stone-carving and a specialized ceremonial architecture are usually associated with the Formative.

Willey and Phillips classify the Central California culture continuum as Archaic, and correctly point out that the Middle and Late Horizons, which fall within the last 3000 years, derive from the pattern established in the antecedent Early Horizon. They admit that the highly developed acorn complex can be viewed as an alternative to agriculture in its capacity to produce conditions of life usually exhibited by Preformative or Formative cultures, but believe that additional traits necessary for such classification are absent (4).

My own impression is that agriculture is not necessarily a determinant for assignment of a culture to the Preformative, since there may be a functional equivalent, in terms of an assured food supply which is derived from uncultivated plants or fishing or hunting. Thus, reading "semi-agricultural" as "an abundant and assured food supply," and adding to it stable settlement pattern, beginnings of craft specialization and developed ceremonialism, we do have in Central California a culture type which can properly, in Willey and Phillips' terminology, be classed as Preformative, or perhaps in local climax areas (5), Formative. The evidence in support of this proposal can now be presented. I use ethnographic data as equivalent to late prehistoric archaeological fact for the reason that a clear historical continuity exists and the ethnographic facts are fuller and easier to deal with. The ethnographic situation of 1770-1800 seems to hold for several centuries preceding the opening of the historic period.

With reference to food supply, the acorn was the single most important food item in Central California. This item was supplemented by hunting, fishing, fowling, root, greens, and small-seed collecting. Acorns were available in practically unlimited quantity at certain times of the year, the limits to the amount collected being set by the number of persons engaged, the technology involved in their gathering, and the bearing period of the oaks. Ethnologists have failed to provide us with information on amounts gathered, but it is known that each family stored its surplus acorns in a granary, and that the supply was usually sufficient to provide the family's needs until the next crop could be gathered. Fremont in 1843 noted Patwin villages with one acorn granary per house, each granary holding from 6 to 10 bushels. Compared to corn meal and wheat flour, acorn meal is in no way inferior as a food. As against 1.9% of fat in corn meal and 1.0% fat in wheat flour, acorn meal contains 25.31% fat. In protein, acorns with 4.5% fall below corn meal with 9.2% and wheat flour with 11.4%. In Carbohydrate, wheat flour is highest with 75.4%, corn meal

next with 74.4% and acorn meal with 62.0% (6). The techniques of collecting acorns, their storage, and preparation as food by hulling, grinding, leaching and stone-boiling in twined or coiled baskets were everywhere pretty much the same in California (7).

Within the political boundaries of modern California only the River Yumans, the Mohave and Yuma, and some of their immediate neighbors such as the Kamia and Chemehuevi practiced cultivation (8). No subsistence farming was practiced in Central California in pre-Spanish times. Although there is abundant evidence of Puebloan and Hohokam trait influence in Southern California in the form of pottery vessels introduced by trade, duplication of ceremonial beliefs and practices, exchange of shell beads and ornaments, and the like (9), the Shoshoneans of Southern California did not adopt agriculture. We know that the agricultural Mohave were accustomed to visit the Yokuts of southern San Joaquin Valley. Father Garcés accompanied a Mohave trading party from the Colorado River to the Yokuts country in 1776, and there is archaeological evidence of their repeated presence in this area in precontact times (10). In view of the undoubted opportunities for Southern and Central California tribes to learn of agriculture, we are left with two alternatives to account for their refusal, or failure, to accept farming, namely, either lack of interest because they found the acorn complex sufficient, or inability to practice agriculture because of an unfavorable environment. C. O. Sauer (11) has this to say about the latter: "Lack of contact with agricultural peoples can hardly account for the absence of agriculture on the Pacific coast of the United States. The Indians of southern California were in communication with agricultural peoples along the Colorado. It is not likely that California Indians refrained from experimenting with the crops grown on the Colorado river. The resistance to the westward diffusion of agriculture was probably environmental rather than cultural. The crops which were available had little prospect of success in winter-rain lands. Maize and squash especially were ruled out by the rain regime, but the conditions also are predominantly unfavorable for beans. The Pacific coast of the United States, as a land of Mediterranean climate, had to wait on the introduction of crops from the European Mediterranean."

I agree fully with Sauer's opinion that the Indians of the Pacific Coast, meaning here the Southern and Central areas of California, were in a position to adopt agriculture, but disagree with him on the reasons for which they failed to do so. In the arid regions of Southern California irrigation would have been necessary to grow corn and beans, and the discussion here omits such regions from consideration since this constitutes a separate problem (12). The well-developed, efficient and traditional acorn economy was, in my opinion, the cause of failure to accept agriculture (13). Some such cultural factor must have been operative, for it is an undoubted fact that the standard Indian crops, maize, squash and beans, can grow in California (14), not only now but under aboriginal conditions also. Zenas Leonard while traversing the Upper San Joaquin Valley and Delta area in 1833 noted Indian settlements where,

"the natives raise a small quantity of corn, pumpkins, melons, etc., the soil being so very strong and mellow, that it requires but little labour to raise good crops." And again he stated that the Indians "cultivate pumpkins, beans and some of them have Indian corn--they also raise an abundance of melons which grow to an enormous size," and later when visiting the renegade Chumash group in Walker Pass which had successfully revolted from Purissima Mission in 1824, some nine years earlier, he said, "They follow agricultural pursuits to some extent, raising very good crops of corn, pumpkins, melons, etc." (15). Since the Interior Valley was not settled by whites in 1833, we can conclude that these farming natives were people who had learned to farm at the missions and when returning to the unmissionized interior brought with them seeds and knowledge of farming. The mission system, of course, was the process which forced the abandonment of the acorn economy and substituted for it the agricultural economy. In pre-contact times there seems to have been no force or circumstance which was sufficiently persuasive to effect this economic change, and thus the conclusion that cultural resistance explains the absence of agriculture in prehistoric Central California.

Of the land area of North America north of Mexico, California comprises two percent, yet in this two percent of space were living, in 1770, about ten percent of the total Indian population. The Central California tribes, for example, totaled 70,000 by Kroeber's estimate, averaging 1.6 persons per square mile and ranging in different parts from 1 to 3 persons per square mile (16). Compare this density to the agricultural Southeastern United States, which Willey and Phillips class as Formative, where the figure never reached 1 and runs pretty consistently 1/2 person per square mile (17). Large stable villages are recorded in some regions of Central California. Thus the Ordaz diary of Arguello's expedition up the Sacramento Valley in 1821 records River Patwin villages with 900 and over 1000 persons (18). Estudillo among the Southern Yokuts in 1819 saw many large villages--e.g., the village of Chischa with 1250 persons covered a surface area of 80,000 square yards; Wowol in 1804 according to Martin held 1330 persons; Telame village had 1200 people in 1806 according to Moraga, and Cabot in 1814 counted 1400 souls in Tachi village (19). Among the mainland Chumash, Crespi in 1776 noted villages with populations of from 50 to over 1000 persons, this concentration being made possible by a semi-maritime adjustment and use of the plank canoe for fishing (20). Although these village populations are apparently rather larger than the average, nevertheless the mere fact of such concentrations shows that large population centers were possible in the coast and valley regions.

As to the absence of pottery, a similar explanation to that accounting for the lack of agriculture may be advanced. True, most Southern California Shoshonean and Yuman tribes made pottery, this art perhaps (though not certainly) deriving from an ultimate Hohokam source. The crude Yokuts-Mono ware made in the southern San Joaquin Valley and Sierra to the east was of a different type and is likely to prove of trans-Basin derivation, its ultimate root perhaps lying in the Woodland culture of the Great Plains. Elsewhere basketry, which figured prominently in the

acorn complex for collecting, storing and cooking, may have been so deeply entrenched that there was no apparent advantage in shifting to pottery with the result that this disinterest effectively militated against its adoption.

The Formative traits of weaving and stone carving (21) are admittedly absent, or practically so, in California, and appear to constitute elaborate aspects of the pattern which may or may not be present and by themselves are not requisite determinants for classification. The Formative trait of specialized ceremonial architecture implies, of course, some highly organized religious pattern, or cult, which employs that architecture for ritual performances. Whether or not the impressive wooden dancehouses of Central California, which have been proposed by Kroeber and Barrett as the largest-scale community undertakings in native California (22), can be equated with the Pueblo kiva or the Southeastern temple mounds, the fact remains that the Datura or toloache cult of Southern California and the Kuksu cult of mid-California are full equivalents to the limited series of North American cult societies which otherwise include those of the Northwest Coast, the Pueblo Kachina cult, the Algonkian Midewiwin, Iroquois False Face and Plains-Prairie societies (23). Highly developed cult ceremonialism, in short, is conspicuously present in aboriginal California.

One further aspect of aboriginal Central California culture which gives an indication of degree of socioeconomic integration is the clear evidence of the beginnings of craft specialization. McKern's "functional families" among the Patwin (24) and Loeb's "professions" among the neighboring Pomo (25) show that certain individuals engaged primarily in activities limited to such pursuits as hunting, fishing, bead-making, obsidian-flaking, net-making, and curing. This clearly implies a development beyond the pale of societal and economic organization established by Willey and Phillips for the Archaic culture stage (26).

In briefest summary, it is argued here that the nature of the economy, density and stability of population, and degree of socioeconomic integration that Central California and western Southern California had achieved in late prehistoric times can more correctly be classed as Preformative, or possibly Formative, in the developmental stage-classification proposed by Willey and Phillips. This correction, by itself, is of little significance, and whatever value it may have rests in demonstrating the arbitrariness of applying a limited set of diagnostic criteria to a culturally, ecologically and historically variable series of phenomena (27).

## Notes and References

1. Willey, G. R. and P. Phillips. Method and Theory in American Archaeology II: Historical-Developmental Interpretation. AA Vol. 57, pp. 723-819, 1955.
2. Ibid., pp. 735, 750.
3. Gifford, E. W. The Kamia of the Imperial Valley. Bur. Amer. Ethnol. Bull. 97, pp. 21-23, 1931.
4. Willey and Phillips, op. cit., pp. 735, 750.
5. Kroeber, A. L. Culture Element Distributions III: Area and Climax. UC-PAAE Vol. 37, No. 3, 1936.
6. These figures are drawn from several sources. The writer and M. Baumhoff are now preparing a paper on the food value of a selected series of wild plant foods used by California Indians.
7. Gifford, E. W. California Balanophagy. In Essays in Anthropology Presented to A. L. Kroeber. Univ. of Calif. Press, 1936 (pp. 87-98).
8. Castetter, E. F. and W. H. Bell. Yuman Indian Agriculture. Univ. of New Mexico Press, 1951. Leslie Spier, Yuman Tribes of the Gila River. Univ. of Chicago Press, 1933 (pp. 58-65).
9. Heizer, R. F. Aboriginal Trade Between the Southwest and California. Southwest Museum Masterkey, Vol. 15, pp. 185-188, 1941.  
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10. Kroeber, A. L. At the Bedrock of History.
11. Sauer, C. O. American Agricultural Beginnings: A Consideration of Nature and Culture. In Essays in Anthropology Presented to A. L. Kroeber. Univ. of Calif. Press, 1936 (pp. 279-98).
12. Compare F. V. Coville. The Panamint Indians of California. AA, o.s., Vol. 5, pp. 351-61, 1892.  
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Treganza, A. E. Horticulture Without Irrigation Among the Great Basin Paiute: an Example of Stimulus Diffusion and Cultural Survival. Univ. Utah. Anthropol. Papers, No. 26, pp. 82-94, 1956.

13. This idea I credit originally to Professor Kroeber, from whom I heard of it in 1935. I have employed it in lecture courses at Berkeley since 1946. Although Professor Sauer does not make the specific point in his 1936 paper (cited above), he did entertain the same idea in seminar discussions in 1942. The theory is first presented in publication in Jennings (op. cit. in note 9, pp. 108-110).
14. It is recorded that the Spanish missionaries grew corn in the coastal valleys as far north as Solano County, and that there was extensive corn production in Los Angeles, Ventura, and Santa Barbara Counties. In the early American period corn was grown in the delta of the Sacramento-San Joaquin Rivers, and corn flourishes in the riverbottoms of all of the streams flowing west from the Sierras into the Sacramento and San Joaquin Rivers (C. B. Hutchison [ed.]. California Agriculture. Univ. of Calif. Press, 1946 [pp. 17, 120]). Dry field beans, for example, in 1954 were grown on 86,000 acres in the 24 Central California counties and unirrigated corn was grown on 10,646 acres, largely in Contra Costa and San Joaquin Counties (1954 Census of Agriculture, Part 33, Vol. 1, 1956).
15. Leonard, Z. Adventures of Zenas Leonard, Fur Trader and Trapper, 1831-1836. W. F. Wagner, ed. Cleveland, 1904 (pp. 189, 193, 230).
16. Kroeber, A. L. Cultural and Natural Areas of Native North America. Univ. of Calif. Press, 1939 (Table 7).
17. Ibid. But, see qualifications proposed by Kroeber (pp. 147-149).
18. Francisco Blas Ordaz. Diary of the Expedition of Señor Don Luis Arguello, Commandant, and Written by Father Francisco Blas Ordaz, Chaplain of the Expedition, 1821. Arch. of the Mission of Santa Barbara, Vol. IV, Expeditions and Excursions, 1806-1821, pp. 161-190. (Ms. in Bancroft Library.) An annotated translation will soon be published by R. F. Heizer and D. C. Cutter.
19. Figures after S. F. Cook. The Aboriginal Population of the San Joaquin Valley, California. UC-AR Vol. 16, pp. 31-80, 1955.
20. On the plank canoe see R. F. Heizer. The Plank Canoe of the Santa Barbara Region, California. Ethnological Studies, Vol. 7, pp. 197-227. Gothenburg, 1938.  
Heizer, R. F. The Frameless Plank Canoe of the California Coast. Primitive Man, Vol. 13, pp. 80-89, 1940. On native California boats in wider perspective, see R. F. Heizer and W. C. Massey. Aboriginal Navigation off the Coasts of Upper and Baja California. Bur. of Amer. Ethnol. Bull. 151, pp. 285-311, 1953.

21. Stone carving in native California was most developed in Northwestern California and in the Santa Barbara Channel region. Future workers should take care not to be misled by certain elaborately modeled and decorated steatite carvings alleged to be archaeological specimens from the Santa Barbara region. There are some pieces of undoubted authenticity, as for example, those recovered by the Wheeler Survey party in the 1870's, and the collection made by de Cessac (see UCAS. Reports Nos. 12 (1951) and 38 (1957)).
22. Kroeber, A. L. and S. A. Barrett. Fishing Among the Indians of Northwestern California. UC-AR (in press).
23. Kroeber, A. L. The Patwin and Their Neighbors. UC-PAAE Vol. 29, No. 4, 1932 (pp. 408 ff.).
24. McKern, W. C. Functional Families of the Patwin. UC-PAAE Vol. 13, No. 7, 1922.
25. Loeb, E. M. Pomo Folkways. UC-PAAE Vol. 19, No. 2, 1926 (pp. 180-182).
26. Among the Great Basin peoples, according to Steward (Bur. Amer. Ethnol. Bull. 120, 1938, p. 45) were "certain men who may have been skilled flint chippers and bow makers or women skilled potters who traded their wares, but such specialization was not sufficient for self-support." Here, under what do seem to be Archaic conditions, there was insufficient food surplus to support individuals who devoted the majority of their time to industrial activities, and the population was so small that there was no year-round market for the production.
27. Since this paper was written, the Willey-Phillips article has been critically reviewed in American Antiquity, Vol. 23, pp. 85-87, 1957.