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History of Great Basin Anthropological Research, 1776-1979

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COLLECTION of information on indigenous Great Basin peoples and cultures began in 1776 (Bolton 1950). However, it was not until the 1860's that any sort of systematic research program was initiated in ethnography and linguistics. Physical anthropological studies were not undertaken until the 1880's, and systematic archaeological work did not begin until after 1900. This article reviews the principal programs of research in Great Basin anthropology carried on since the 1860's, with a brief examination of earlier developments.

ETHNOGRAPHY AND LINGUISTICS

Early Descriptions

Between 1776 and 1868, information on one or more Great Basin Indian groups was collected by members of various exploration parties. These data were part of a range of topographic and "natural history" information collected, and there was no concentration on anthropological data *per se*.

The journal kept by Fray Escalante during the Dominguez-Escalante expedition from New Mexico into present-day Utah and Arizona in 1776 contains several passages describ-

ing various Numic groups encountered by the party. Ute bands were met in western Colorado and the Uintah Basin, Timpanoaguts Utes near Utah Lake, Pahvant Utes south of Utah Lake, and various groups of Southern Paiute near present-day Cedar City, Utah, and along the Virgin River. These brief descriptions provide an ethnohistoric baseline for the several groups.

Lewis and Clark's descriptions of the Northern Shoshoni in 1804-06 (Coues 1893) provide initial information on those people. The *Journals* of the expedition (first published in 1814) contain detailed accounts of subsistence, dress, and territorial and political organization, but little on social organization or religion (Ray and Lurie 1954).

The Wilkes naval expedition of 1838-42 to the Pacific (Tyler 1968) stopped along the coast of what is now Oregon. Horatio Hale and other expedition members collected vocabularies and miscellaneous ethnographic data. Some of these data relate to various Northern Paiute bands of central Oregon and were included in Gallatin's (1848) linguistic compilation.

The numerous early trappers' and emigrants' diaries provide scattered and uneven information on various Great Basin Indians

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from the 1810's through the 1850's (See Malouf 1966 and Liljeblad 1959 for evaluation of these sources, and C. Fowler 1969 for bibliography). Many of the diaries are superficial and heavily ethnocentric and must be used with caution as ethnohistoric sources.

The several federally sponsored exploring expeditions, and later, wagon road and railroad surveys, between the 1830's and 1860's which passed through the Great Basin produced varying amounts of data on indigenous peoples. For example, Stansbury's (1852) report contains only scattered ethnographic data, but the Gunnison-Beckwith report (Beckwith 1855) and the Macomb Survey in 1859 (Macomb 1876) all contain substantial amounts of ethnographic data on Great Basin peoples. Some information on the Chemehuevi Paiute along the Lower Colorado River is also found in the reports of Whipple (1856) and Ives (1861). Additional ethnographic materials are reported in the annual reports and unpublished correspondence of the Commissioner of Indian Affairs and the various Indian agents stationed at Great Basin reservations and colonies between the 1850's and 1900 (see C. Fowler 1969:293-359 for relevant bibliography).

Beginnings of Systematic Work, 1870's

The first person to devote extended periods of time to the study of Great Basin ethnography and linguistics was John Wesley Powell. Between 1868 and 1876, Powell collected substantial amounts of data on subsistence, technology, social organization, mythology, religion, and linguistics, with the aim of producing an ethnography of the Numic-speaking peoples. He did not complete the project, and his extensive manuscript and material culture collections were not published until recently (Fowler and Fowler 1971; Fowler and Matley 1979). Powell, in collaboration with George W. Ingalls, did produce the first systematic survey of Great Basin

Indian demography and political organization (Powell and Ingalls 1874; reprinted in Fowler and Fowler 1971:97-119). The report remains a baseline document for Great Basin aboriginal demography.

Between 1866 and 1877, Edward Palmer collected miscellaneous ethnographic data on the Northern Ute and Southern Paiute in the course of his archaeological and botanical collecting expeditions in southern and central Utah (Palmer 1876, 1878; Heizer 1954, 1962; Fowler and Matley 1978). In 1875, Stephen Powers collected ethnographic data on the Washo and Northern Paiute in western Nevada in the course of an expedition to gather Indian materials for the 1876 Philadelphia Exposition (Powers 1877; Fowler and Fowler 1970).

Also in the 1870's, members of the Hayden Survey, e.g., Barber (1876, 1877), Hoffman (1876, 1878), and Loew (1876), made various ethnographic observations on Great Basin peoples. The historian Hubert Howe Bancroft (1875, 1876) compiled a variety of miscellaneous ethnographic and linguistic data, much of it inaccurate, on Great Basin Indians.

A further, albeit somewhat romanticized, contribution to Northern Paiute ethnography was made by Sarah Winnemucca Hopkins (1883), the daughter of "Chief" Winnemucca.

There was a general lack of systematic ethnographic work in the Great Basin between 1880 and 1900. An exception was James Mooney's brief visit with Wovoka or Jack Wilson, the "prophet" of the 1890 Ghost Dance (Mooney 1896).

One of the first to achieve the Doctor of Philosophy in American anthropology, Alfred Louis Kroeber, did some brief ethnographic work with the Northern Ute in 1900 (Kroeber 1901, 1908) and shortly thereafter with the Washo (Kroeber 1907). In 1906, Robert H. Lowie, on his first ethnographic field trip, briefly studied the "Lemhi" Shoshoni of Idaho (Lowie 1909). In later years, Lowie "paid

scouting visits to a good many Shoshonean [Numic] groups in Idaho, Wyoming, Utah and Nevada" (Lowie 1960:76; cf. Lowie 1924*a*, 1924*b*), and in 1926 he worked for some weeks with the Washo (Lowie 1939, 1963).

In 1910, Edward Sapir worked extensively with Tony Tillohash, a Kaibab Southern Paiute who was then a student at the Indian School in Carlyle, Pennsylvania. Sapir also worked briefly with the Uintah Ute of Northern Utah. The results of his work are contained in various articles (Sapir 1910*a*, 1910*b*, 1913, 1916) and in an extensive language analysis, dictionary, and collection of texts (Sapir 1930-31). A series of ethnographic notes remains unpublished, although extended sections of them are quoted in Kelly (1964) and Fowler and Matley (1979).

Other ethnographic work conducted in the first decade of the twentieth century includes that of Ralph V. Chamberlin (1908, 1909, 1911, 1913), who collected materials on Ute and Gosiute Shoshoni ethnobiological nomenclature and toponyms. C. Hart Merriam conducted ethnographic and linguistic research among the Washo in 1903 and 1904 (Merriam 1903-35), and periodically among other Great Basin peoples (e.g., Merriam 1955:*passim*; Heizer 1966). Samuel Barrett briefly worked with the Washo and Northern Paiute in 1915, later publishing the first major monograph on the Washo (Barrett 1917). In the early 1920's, Grace Dangberg collected text materials on the Washo (Dangberg 1922, 1927).

In 1927 and 1928, Julian H. Steward, sponsored by the University of California, Berkeley, initiated a long-range study of various groups, beginning with the Numic Owens Valley Paiute (Steward 1933*c*). In 1930, Isabel T. Kelly spent three months with the Surprise Valley Paiute (Kelly 1932*a*, 1932*b*) and more extended periods with several Southern Paiute groups in 1932-34 (Kelly 1939, 1964).

The 1930's was a most active period of Great Basin ethnographic research sponsored by the University of California, Berkeley, and Yale University. Between 1934 and 1938, the University of California, Berkeley, conducted a Culture Element Survey of Native Western American groups. The immediate aim of the program was to develop lists of comparable culture elements or traits from over 200 tribes in western North America. The ultimate objective was to develop sets of data which could be statistically manipulated in hopes of elucidating aboriginal "internal history" (Kroeber 1939:*passim*), that is, as a device to determine cultural relationships between and among tribes. These "laundry lists," as they were sometimes called, were developed and elaborated during the course of the project. Those for Great Basin groups each include several hundred "elements" or traits, with extensive annotation. Surveys of Great Basin groups were conducted principally by Julian Steward (1941, 1943) during a six-month field season in 1935, and four months in 1936, and by Omer Stewart (1941) during nine weeks in 1936 and twelve weeks in 1937-38. Both men collected additional materials leading to their various studies of sociopolitical organization (Steward 1938), peyotism (Stewart 1944, 1968), and band organization (Stewart 1966).

Also during the 1930's, Yale University sponsored field research by five students. Willard Z. Park (1938) conducted three summers' fieldwork among the Paviotso Northern Paiute in 1933-35. Beatrice Blyth (Whiting) studied the Northern Paiute in Burns, Oregon, in the summers of 1936-38 (Whiting 1950). Maurice Zigmond (1938, 1941, 1972) worked with the Kawaiisu in 1936 and 1937. Edgar Siskin worked with the Washo in 1937 and 1938 (Siskin 1941). In the eastern Great Basin, Anne Cooke Smith (1937, 1940, 1974) studied Northern Ute material culture and mythology.

Other research during the 1930's included Demetri B. Shimkin's (1939, 1947) work with the Eastern (Wind River) Shoshoni in 1936, Carling Malouf's research among the Gosiute Shoshoni in 1938 and 1939 (Malouf 1940; Malouf and Smith 1942), and research with various Shoshoni groups by E. Adamson Hoebel (1935, 1938) and Jack Harris (1940).

In the 1940's, very little ethnographic research was conducted in the Great Basin with the exception of Fred W. Voget's (1948, 1953) work with the Eastern Shoshoni and the initiation of research with the same tribe by Åke Hultkrantz between 1948 and 1958 (Hultkrantz 1953, 1960, 1961).

The 1950's saw a renewed interest in Great Basin ethnography. The Washo were studied by several individuals. Ruth and Stanley Freed worked intermittently between 1952 and 1957 (Freed 1960, 1963; Freed and Freed 1963). In 1953, Warren d'Azevedo (1963) began long-term work with the tribe. Philip Leis (1963) conducted Washo research in 1954. Freda and Norman Scotch (1963) conducted research on epidemiology, nutrition, and diet in 1955. James Downs (1961, 1966a) conducted research in 1959. William Jacobsen, Jr., began linguistic research among the Washo in 1955 (Jacobsen 1964, 1966). John A. Price (1962) worked with the group in 1961.

Ethnographic research among other Great Basin peoples also resumed in the 1950's. Margaret Wheat (1967) began extended studies of Northern Paiute material culture. Robert Euler (1966, 1967, 1972) worked with Southern Paiute in 1956 and 1959. Joseph G. Jorgensen (1959, 1964, 1972) began an extended study of various facets of Northern Ute culture and society in 1957-58, and Gottfried Lang (1953, 1954) carried out studies in psychological anthropology of the Northern Ute during the early 1950's.

With the passage of the Indian Land Claims Commission Act of 1946, various anthropologists were employed by the U.S.

Justice Department or by attorneys for the plaintiff tribes to collect data relating to aboriginal tribal distributions and lands. Sources relative to the Great Basin derived from these researches include Steward (1955a), Steward and Voegelin (1954), Murphy and Murphy (1960), and Manners (1974). (See also a general summary of these researches relating to "tribal boundaries" in Stewart 1966.) Extensive files of unpublished ethnohistoric data relating to the Land Claims cases for the Great Basin and elsewhere, collected by Omer C. Stewart, are deposited at the University of Colorado Library, Boulder.

The 1960's saw an expansion of ethnographic and linguistic research. In 1961-63, research on Southern Paiute ethnography and ethnohistory was conducted (Euler 1966, 1972; C. Fowler 1966) in conjunction with the Upper Colorado River Basin Archaeological Salvage Project of the University of Utah, centering on the Glen Canyon section of the Colorado River. Since 1964, Catherine S. Fowler and others (Fowler 1972a, 1972b; Fowler and Leland 1967) have conducted extended studies of comparative Numic ethnoscience. In 1958, James Goss initiated a long-term study of Southern Numic linguistics (Goss 1961, 1968, 1972a, 1972b). Since the mid-1960's, Wick Miller and his students have developed an extensive program in the study of Central Numic languages (Miller 1966; Miller, Tanner, and Foley 1971; Crapo 1970). In 1964 and 1965, under National Science Foundation sponsorship, the University of Nevada, Reno, conducted intensive field schools on several western Nevada Indian reservations and colonies. Several students connected with the project continued research beyond the field schools (Handelman 1967a, 1967b, 1968; Hittman 1973; Houghton 1973; Lee 1967; Lynch 1971; Mordy 1966; Olofson 1979; Shimkin and Reid 1970). Archival materials from the project are on file at the Department of Anthropology, University of Nevada, Reno.

Other recent important ethnographic works include Bean's (1972) summary of data on the Cahuilla and that of Laird (1976) on the Chemehuevis. Lawton *et al.* (1976, c.f. Wilke and Lawton 1976:46-47) have recently reviewed previous ethnographic and ethnohistoric data relating to aboriginal irrigation practices in Owens Valley, California.

Classifications of Great Basin Indian languages have existed since Gallatin's (1836) pioneering work in the early nineteenth century. The Powell (1891) classification has remained the standard, with various proposed changes in nomenclature (Lamb 1964; Miller 1966; Goss 1968).

The foregoing list of ethnographic and linguistic research is not exhaustive, but it is illustrative. As noted, data on Great Basin indigenes began to be collected in 1776, and more or less systematically, a century later. By 1875, Great Basin Indian peoples were already being forced onto reservations and aboriginal life-ways were in a rapid state of decline, as Powell noted in 1873 (Fowler and Fowler 1971: 97-118). Subsequent ethnographic and linguistic work was essentially "salvage ethnography" of "memory cultures."

Consonant with the tenets of the historicalist paradigm of American anthropology after 1900 (Harris 1968:250-318), a major effort in Great Basin studies, as elsewhere, was to "reconstruct" the "ethnographic present." That is, to describe aboriginal cultures as they were, in effect, the day before initial White contact. In the eastern Great Basin-Plains transition area, this approach was complicated by the fact that horses had spread to several Ute and Shoshoni groups long before any actual face-to-face White-Indian contact. In that area, the post-horse, pre-White cultures came to be baselines for the "ethnographic present." Julian Steward's (1938) classic monograph on peoples of the Great Basin is archetypical of the ethnographic present approach: a compilation of "memory cultures"

from aged informants combined with available ethnohistoric data (cf. Malouf 1966).

As previously noted the University of California traitlist studies were a major focus of research in the 1930's. These studies also were oriented toward "cultural reconstruction" as a first step toward the statistical manipulation of "traits" as a means to delineate "culture areas" and age areas (see also archaeology section, below).

Thus, until 1950, with minor exceptions (e.g., Steward 1939), Great Basin ethnographic and linguistic research was carried out within the American historicalist paradigm—reconstruction of the "ethnographic present."

By 1950, new areas of interest had developed within American anthropology, notably psychological anthropology (then generally called "culture and personality"), and medical anthropology. These interests are reflected in the works of Scotch and Scotch (1963) and Lang (1953, 1954). There was also a shift to concerns with present-day communities, with problems of acculturation and those of ethno-science. These concerns are reflected in Great Basin studies by Houghton (1973), Mordy (1966), Shimkin and Reid (1970), Lynch (1971, 1978), Hittman (1973), Fowler and Leland (1967), Goss (1972*b*), and Clemmer (1978).

A bibliography of Great Basin Anthropology (C. Fowler 1969), current through 1968, lists 2000 references on archaeology, 1650 references to ethnohistorical sources, and over 2700 published and unpublished items on linguistics and ethnography. Despite this seeming plethora of data, there are serious gaps in knowledge of Great Basin aboriginal cultures and peoples. For example, data are insufficient and ambiguous enough to permit wide disagreement over the nature of Great Basin sociopolitical organization (Service 1962; Steward 1970; cf. D. Fowler 1966). Details of subsistence and technology are somewhat better understood (see Downs 1966*b* for a summary). Aspects of ideational

culture have been studied for specific groups (e.g., Park 1938, Smith 1940, Goss 1972*b*, Olofson 1979, Whiting 1950), but large gaps exist. A recent development of great interest and promise has been studies conducted by Indian people of their own histories and cultures (Johnson 1975; Nevada Intertribal Council 1974*a*, 1974*b*; Robertson 1977).

Although the Great Basin is sometimes called a "laboratory" for anthropology, such a designation may be overrated. In cultural anthropology, with one exception, no new ideas, concepts, or methods were produced in the "laboratory"—rather, research was carried out within paradigmatic and methodological frameworks developed elsewhere. The exception is Steward's (1936*b*, 1938, 1955*b*) concept of cultural ecology, which developed out of his Great Basin data and which has had wide applicability throughout the world (Murphy 1970).

PHYSICAL ANTHROPOLOGY

Relatively little research has been done on the physical anthropology of indigenous Great Basin peoples. At the turn of the century Franz Boas (1895, 1899, 1905) published a series of anthropometric observations on Ute, Southern Paiute, Shoshoni, Bannock, and Achomawi-Atsugewi peoples. These and other scattered osteological and anthropometric studies are summarized by Kennedy (1939). Recently, extant osteological collections from archaeological locales at Pyramid Lake, the Humboldt Sink, and the Lost City area were analyzed by Brooks, Galliher, and Brooks (1977). However, there is no current general overview of physical anthropological data for the Great Basin.

ARCHAEOLOGY

1850-1874

Great Basin archaeological remains were occasionally reported by members of various

exploring parties who crossed the area between about 1850 and 1874. The reports describe village sites, petrographs, scattered surface finds, and aboriginal salt mines (Stansbury 1852:182; Beckwith 1855:63; Carvalho 1858:207; Remy and Brenchley 1861, I:364-374; Bancroft 1886:713-715). Many of these reports speculate on the origins of the remains, linking them, variously, to the Hopi of Arizona or ill-defined "Aztec" or "Mexican" empires.

1875-1900

This period saw the beginnings of excavation of sites to provide collections for eastern museums, especially the Smithsonian Institution and the Harvard University Peabody Museum. Scant, if any, attention was paid to provenience control; the aim was collections of objects. "Dr." Edward Palmer collected for both the Smithsonian and the Peabody, excavating in sites near Santa Clara and Kanab, Utah (Palmer 1876, 1878; Fowler and Matley 1978). Parts of these collections were exhibited at the 1876 Philadelphia Exposition and later partially described by Holmes (1886:*passim*). Others collecting for the Peabody Museum included C. C. Parry, who dug into a "mound" near St. George, Utah (Parry 1877). The federally-sponsored "Great Surveys" of the 1870's, especially the Wheeler Survey (Putnam *et al.* 1879), noted various archaeological sites during the course of their topographic work. Henry Montgomery, a University of Utah naturalist, excavated various "mound" sites in western and central Utah in the 1880's and early 1890's. His report (Montgomery 1894) is an attempt to summarize Utah archaeology as then known and relate the sites to a vague "Mexican" empire.

Thus, prior to 1900, Great Basin archaeology consisted of scattered observations of "antiquities," the collection of artifacts for museums with little or no attention to provenience control, and speculations about external cultural relationships. Most recorded sites

were along the Wasatch Front in Utah, or in the Virgin River Valley of Utah and Nevada.

1900-1970

The principal archaeological research projects conducted in the Great Basin area between 1900 and 1920 were Neil Judd's reconnaissances and excavations at sites along the Wasatch Front in Utah between 1915 and 1920 (summarized by Judd 1926), and L. L. Loud's initial excavations at Lovelock Cave in central Nevada in 1912 (Loud and Harrington 1929; Grosscup 1960).

In 1925, Mark R. Harrington, supported by the Heye Foundation of New York and the State of Nevada, commenced excavations at the Lost City, or Pueblo Grande de Nevada, complex in the lower Moapa Valley, Nevada. In 1926, Harrington became affiliated with the Southwest Museum of Los Angeles, but continued his work at Lost City. He and his staff worked in the area through 1930, conducting surveys as well as excavations of Lost City, Mesa House, and in Paiute Cave (Harrington *et al.* 1930). In 1930-31, Harrington also directed the excavation of Gypsum Cave in which artifacts were reportedly found in association with the dung of the extinct ground sloth, *Nothrotherium* (now *Nothrotheriops*) *sp.* (Harrington 1933). This association has subsequently been disproven (Heizer and Berger 1970).

Between 1933 and 1938 Harrington resumed excavations at the Lost City complex as part of an archaeological salvage project prior to the inundation of the sites by Lake Mead. Harrington issued only scattered preliminary reports on the Lost City excavations, and the sites were not fully reported for many years until Richard Shutler (1961) pulled together the extant data and collections. During this same period, Harrington and his associates conducted surveys and test excavations in Meadow Valley Wash, Lincoln County, Nevada, and along the east slope of the Snake

Range on the Utah-Nevada border (Harrington 1936; Wheeler 1939, 1942).

Harrington subsequently directed excavations at various pluvial lake sites in the Mojave Desert area (Harrington 1948; Campbell *et al.* 1937) including the Stahl site (Harrington 1957), which had a buried stratum containing Pinto and Silver Lake projectile points found in association and, possibly, the remains of houses.

In the late 1920's, the Peabody Museum of Harvard University sponsored a survey and excavation program, the Claflin-Emerson Expeditions, in eastern Utah. In 1928, a survey, led by Donald Scott, was made on the Kaiparowits Plateau and in the tributaries of the Colorado River between the Escalante and Fremont rivers. In 1928 and 1929, Noel Morss, as a member of the expedition, conducted extensive survey and excavation work along the Fremont River. His report (Morss 1931) initially defined the Fremont culture. Survey work under Henry Roberts continued in 1929 and 1930 in the western tributaries of the Colorado. In 1931, Donald Scott and J. O. Brew carried out surveys and test excavations along the Green River and its tributaries from Green River, Utah, to the Uintah Mountains. With the exception of the Morss report, the results of the expedition remained unpublished until they were compiled by James H. Gunnerson (1969). While the work was outside the Great Basin, it led to the initial definition of the Fremont culture later found in the eastern Great Basin area (see below).

During the 1930's, the University of Utah conducted a variety of studies on the Fremont cultures of Utah (Steward 1933*b*, 1936*a*; Gillen 1940) and in cave sites on Promontory Point, northern Utah (Steward 1937). The latter work defined the seemingly anomalous Promontory culture, regarded by some as a variant of the Fremont culture (Aikens 1972). Also, in the 1930's Luther S. Cressman of the University of Oregon began a pioneering program of archae-

ological research in the eastern Oregon section of the Great Basin (Cressman 1943, 1956; Cressman *et al.* 1936, 1942) including the excavation of several important cave sites, notably Fort Rock Cave. Subsequent research was carried on in the Fort Rock region by Bedwell (1973) and Fagen (1974) and in the Warner Valley area by Weide (1975). Elsewhere in the Oregon portion of the Great Basin, excavation at the Dirty Shame Rockshelter was also undertaken (Aikens, Cole, and Stuckenrath 1977).

Archaeological research in southern Idaho began in 1929 with a survey along the Snake River in the southwestern section of the state by Louis Schellbach (1967) of the Heye Foundation. However, systematic research in southern Idaho did not begin until the 1950's (Bowers and Savage 1962; Barnes 1964; Tuohy 1962). A museum was established at Idaho State University at Pocatello (then the University of Idaho, Southern Branch) in the 1930's (Butler 1968:17-18). Under the initial direction of Earl H. Swanson, Jr., the museum has conducted a systematic research program since 1957, with many important sites being excavated (e.g., Gruhn 1961; Swanson 1974). More recent work is summarized in Butler (1978) and in the pages of the *Idaho Archaeologist* (Norquist 1977 *et seq.*). (See also Pavesic *et al.* 1979).

In Northern Nevada, systematic archaeological research began with the excavation of Lovelock Cave near Lovelock, Nevada, in 1912, under the direction of L. L. Loud and the sponsorship of the University of California, Berkeley (Loud and Harrington 1929). Starting in the 1930's, the University of California, Berkeley, conducted its program of Great Basin research under the leadership of the late Robert F. Heizer, including excavations of several important cave sites, notably Humboldt Cave (Heizer and Kreiger 1956), Wagon Jack Shelter (Heizer and Baumhoff 1961), South Fork Shelter (Heizer, Baumhoff,

and Clewlow 1968), Leonard Rockshelter (Heizer 1951), and the re-excavation of Lovelock Cave (Heizer and Napton 1970).

In 1958, the Nevada State Museum began a statewide archaeology program under the direction of Richard Shutler, Jr., and subsequently under Donald Tuohy. Research included the excavation of important cave sites that included Stuart Rockshelter (Shutler, Shutler, and Griffith 1960), and Deer Creek Cave (Shutler and Shutler 1963) and the large-scale re-excavation of the Tule Springs site (Wormington and Ellis 1967). Since 1966, the Desert Research Institute and the University of Nevada, Reno, have conducted surveys and excavations in eastern and southeastern Nevada (Fowler, Madsen, and Hattori 1973).

In the southern Great Basin area several archaeologists have undertaken various studies to define early lithic complexes and cultural chronologies (Hunt 1960; Wallace 1962; 1977; Warren 1967; Warren and Ore 1978). Others have defined chronologies based on projectile point sequences for other areas of the Great Basin (Lanning 1963; Clewlow 1967; Hester 1973; Heizer and Hester 1978).

During the 1970's much new archaeological research was undertaken or completed in Nevada and the extreme western Great Basin areas of California. James O'Connell (1975) conducted excavations in Surprise Valley, California, in the early 1970's. Layton (1970, 1979; Layton and Thomas 1979) conducted an excavation program in the High Rock region of northwestern Nevada (see also McGonagle 1979). Donald Tuohy (1980) directed a program of research at sites around Pyramid Lake, Nevada, and Philip Wilke (1978) researched lacustrine adaptations in the now-arid Salton Basin of California.

Throughout the decade, David Hurst Thomas conducted several projects in central Nevada. These include surveys and excavations in the Reese River Valley (Thomas and Bettinger 1976), the excavation of the deep,

stratified Gatecliff Shelter in Monitor Valley and, more recently, the re-excavation of Hidden Cave near Fallon (reports on Gatecliff and Hidden Cave are presently in preparation; but see Thomas [1979:*passim*] on Gatecliff Shelter).

In eastern Nevada, Alan Bryan and Ruth Gruhn, in association with the Nevada State Museum, re-excavated Smith Creek Cave (Harrington 1936), and excavated several other adjacent rockshelter sites yielding a long cultural chronology (Tuohy and Rendall 1979). Elston (1971) and his associates added materially to the understanding of Washo prehistory along the east slope of the Sierra Nevada. Further south in Owens Valley, California, Bettinger (1976, 1977*a*, 1979) conducted extensive sampling surveys, as well as additional research in Long Valley (Bettinger 1977*b*). In Grass Valley, north of Austin, Nevada, Clewlow and his associates conducted an intensive program of prehistoric and historic archaeology (Clewlow and Rusco 1972; Clewlow, Wells, and Ambro 1978).

In 1949, the University of Utah established a statewide Archaeological Survey (Gunnerson 1959) under the leadership of Jesse D. Jennings. Research in the 1950's included a survey of western Utah (Rudy 1953), excavation of the Garrison site (Taylor 1954), the excavation of Danger Cave (Jennings 1957), and surveys and excavations in the Fremont areas of the state (Gunnerson 1957, 1960). From 1957 through 1963, the University of Utah also conducted the Glen Canyon project along the Colorado River. Most of the areas covered by the project lie within the Southwest archaeological province and are not discussed here (see Jennings 1966 for a summary). In the 1960's, the University of Utah sponsored excavations at several important Fremont sites (Aikens 1972; Marwitt 1968), at Hogup Cave in northwest Utah (Aikens 1970), and at other sites (Dalley 1976).

In the 1950's and early 1960's, the Univer-

sity of California, Los Angeles, sponsored excavations at several sites in the Parowan Valley, south-central Utah (Meighan *et al.* 1956).

CONCEPTUAL FRAMEWORKS

For many years Great Basin prehistory was conceptualized primarily in terms of the area being "peripheral" to other, adjacent areas—either the Southwest, or California, or both (Rohn 1973). This conception in part grew out of assumptions implicit in the historicalist paradigm of American anthropology, especially the culture-area and age-area hypotheses (Wissler 1923) which guided most North American anthropological research between 1900 and about 1940 (Willey and Sabloff 1974:88-130). These assumptions were: (1) that "traits" can be isolated and studied individually; (2) that the "history" of a trait or a trait complex is known if its areal distribution is known; and (3) that "traits" diffuse from centers of invention toward peripheral areas—the "center" being the point of highest elaboration and complexity. Given these assumptions, and with no means to establish absolute chronologies, the Great Basin was seen to be "peripheral" to the Anasazi culture of the Southwest or to California. In both the Southwest and California, trait complexes were found in more elaborate forms (and, therefore, presumably earlier) than in the Great Basin.

The idea that the Great Basin was peripheral to the Southwest was most fully formulated by A. V. Kidder (1924:78-82) in his classic summary of Southwestern archaeology. Therein Kidder designated all of Utah north of the San Juan River drainage as a "Northern Peripheral District" on the basis that "Puebloid" house types, pottery, and other artifacts were less elaborate than those found in the classic Anasazi Pueblo remains in the San Juan, Chaco, and Kayenta regions of the Four Corners area.

A second concept which underlay the general model of Great Basin prehistory was the Pecos Classification, formulated in 1927 (Kidder 1927). The classification, developed principally for the Anasazi region, contains eight sequential stages or periods: Basket Maker I, or Early Basket Maker; Basket Maker II, or Basket Maker; Basket Maker III, or Late (Post-) Basket Maker; Pueblo I, or Proto-Pueblo; Pueblo II; Pueblo III, or Great Pueblo; Pueblo IV, or Proto-historic; and Pueblo V or Historic (Kidder 1927:490). As dendrochronological dating was not yet fully developed with the exact dating that the technique was later to permit, these periods or stages (except Pueblo V) in the Anasazi area were of unknown duration.

In the 1930's, non-ceramic Great Basin archaeological sites or site components were viewed as relating to the first two Basket Maker stages. Basket Maker I was defined as "a postulated stage, pre-agricultural yet adumbrating later developments"; Basket Maker II was defined as "the agricultural, atlatl-using, non-pottery-making stage" (Kidder 1927:490). Since there were "trait" similarities between Great Basin and Southwestern basketry, it was implicitly assumed that non-pottery-bearing sites or strata in the Great Basin, in which Southwestern-like basketry was found, were of equivalent age with Basket Maker sites within the Anasazi heartland. After the development of dendrochronology, and the dating of many Basket Maker sites in the Anasazi core area, the assumption of equivalent age between Anasazi Basket Maker and Great Basin "Basket Maker" sites was continued, as indicated below.

Based on his researches in Utah in the early 1930's, Julian H. Steward (1933a) divided Kidder's Northern Periphery into four sub-areas. The area drained by the northern tributaries of the Colorado River and lying west of the San Juan River (Steward's Area 4) was seen as part of a Northern Periphery, but

re-designated as the "Western Periphery." The rest of Utah was divided north-south along the crest of the Wasatch Mountains. East of the mountains was Area 1, vaguely divided into northern and southern sections with no definite dividing line. West of the Wasatch was Area 2, encompassing essentially the Sevier Lake drainage, and an Area 3 encompassing the Great Salt Lake drainage. The distinction between Areas 2 and 3 was made on the basis of house types (Steward 1933b) and differential artifact inventories (Steward 1936a).

In 1934, Gladwin and Gladwin (1934) proposed that the San Juan Anasazi culture "Stem" be divided into Kayenta and Nevada "branches," the Nevada "branch" being further divided into the Moapa and Parowan "Phases." Later, on the basis of pottery collections, Colton (1942) renamed the Nevada Branch, calling it the Virgin Branch (after the Virgin River), with three "foci": Muddy River, Lost City, and Mesa House, the latter two having earlier been proposed as "stages" by Harrington *et al.* (1930). Colton's Virgin Branch corresponds closely to Steward's (1933a) Area 4.

In her re-appraisal of the Fremont culture, and in her summary volume on the Southwest, H. Marie Wormington (1955, 1956:72-73) retained the concept of a Northern Periphery, but excluded the Virgin Branch from it. In 1956, Jennings *et al.* (1956) reconsidered the "Northern Periphery problem," retaining the term "Fremont" proper for Steward's Area 1 east of the Wasatch Mountains. This usage was followed by Taylor (1957) and Gunnerson (1969).

The concept of the eastern Great Basin as "peripheral" to the Southwest, together with the assumption that non-pottery bearing sites or cultural strata were coeval with the Basket Maker stage of the Anasazi "center" led Steward (1940) into a labyrinthine explanation of Great Basin prehistory. On typological grounds he posited cultural connections and

temporal contemporaneity between certain Great Basin cultures and the "Classical" Basket Maker Culture(s) of the Anasazi region. The same reasoning led him to see both the Puebloid cultures of western Utah and the Lovelock culture of western Nevada as derivative from "Classical" Basket Maker (Steward 1940:455, and Fig. 30). This was done despite the fact that several earlier writers had postulated an "early basic culture stratum" in the Great Basin, Southwest, and California antecedent to Basket Maker development (Lowie 1923; Kroeber 1923; Kelly 1932*a*; Zingg 1939). The primary problem lay in the lack of any applicable absolute dating methods in the Great Basin. Once radiometric dating was developed and several cave sites dated, notably Danger Cave (Jennings 1957), it was clear that the derivation of non-ceramic Great Basin cultures from Basket Maker cultures was untenable. In fact, the reverse appeared to be the case, that the Basket Maker-Pueblo tradition of the Southwest was derived from a much older and widespread Desert, or Western Archaic, culture (Jennings 1973; Irwin-Williams 1973), with the addition of cultigens and pottery. The history of the Desert Culture concept is considered below.

But despite the reversal, interpretations of the Puebloid cultures of Utah and eastern Nevada continued to be informed by the concept of a "Northern Periphery." Although Jennings and Norbeck (1955:8) proposed the abandonment of the term in the 1950's, it was not until the 1960's that proposals were put forth to completely abandon the idea of a "periphery" and accord the area a taxonomic status equivalent to the Anasazi, Mogollon, and Hohokam areas of the Southwest (Ambler 1966:170; Aikens 1972:64). Since these proposals were made, emphasis has been placed on defining subareas within the general "Fremont" area (Ambler 1966:169-287; Aikens 1972; Marwitt 1968) in terms of amalgams of prior Desert Archaic subcultures with

"Puebloid" traits—pottery, horticulture, pueblo villages, etc.

Genetic models relating to the Great Basin began in part with Lowie's (1923) early summary and speculations advanced by Krieger (1928). The first comprehensive model was advanced by Zingg (1939), who attempted to relate various archaeological complexes and Uto-Aztekan languages in Western North America and Mexico. Subsequent models were proposed by Romney (1957), Taylor (1961), and Hopkins (1965). A partial test of these models, especially as they relate to the "Numic Spread" hypothesis (Lamb 1958), has been advanced on ethnobiological grounds by C. Fowler (1972*a*, 1972*b*).

Other genetic models have focused on the Fremont cultures and their possible relationships with "Shoshonean" cultures. Most attention has been devoted to questions such as, Who were the carriers of the Fremont cultures? What happened to the cultures and peoples after *ca.* A.D. 1300? and, Can they be linked to, or regarded as, the ancestors of one, or more, historic groups?

Three hypotheses, with variations, have been advanced. One, proposed by Gunnerson (1962), Rudy (1953), Jennings and Norbeck (1955), Jennings (1957), and Taylor (1957), holds that the Fremont culture was an indigenous development from a Desert Culture base, with the addition of diffused traits from the Anasazi area. The Fremont culture existed for several hundred years and then broke down, due to changing environmental conditions. This forced a reversion to the older Desert Culture lifeways. Implicit in this hypothesis is the idea that the carriers of the Fremont culture(s) were the ancestors of the Numic-speaking peoples of historic times.

The second hypothesis (Steward 1933*b*; Wormington 1955) holds that the Fremont culture resulted from diffusion of traits from the Southwest to an indigenous population, plus some migrations from the Southwest.

After the culture collapsed, the people migrated back to the Anasazi area and were absorbed. The Fremont area was then occupied by historic Numic-speaking peoples.

A third hypothesis (Aikens 1966, 1967) holds that there was a migration of people from the Northwestern Great Plains who moved into the Great Basin and assimilated a small indigenous Archaic population. This amalgamated group then received, by diffusion, a number of traits from the Southwest. Subsequently, the Numic expansion from the western Great Basin pushed the Fremont folk onto the Great Plains where their presence is manifested archaeologically in the Dismal River culture (Gunnerson 1960). Historically, these people emerge as the Athapascan-speaking Plains Apache (Aikens 1972:63). All three hypotheses have been questioned on complex grounds, summarized by Aikens (1972), and Marwitt (1968). (See Madsen *et al.* [1979] for a more recent summary of the issues.)

The concept of the Desert Culture (later broadened to the Desert Archaic, and then to the Western Archaic), as formulated by Jennings (1957, 1964, 1974; Jennings and Norbeck 1955), has been the central focus of archaeological theorizing since the 1950's. The concept must necessarily be discussed in relation to an hypothesis concerning post-Pleistocene climatic fluctuation in western North America. This hypothesis was formulated by Ernst Antevs (1955) and has subsequently been modified (Baumhoff and Heizer 1965).

The hypothesis posits three sequential climatic periods since Wisconsin glacial times in the Desert West: the Anathermal, dating from *ca.* 9000 B.C. to 6000-5000 B.C., with climatic conditions at first like the present but growing warmer and drier; the Altithermal, from *ca.* 6000-5000 B.C. to *ca.* 2500 B.C., with arid climatic conditions, warmer and drier than at present; and the Medithermal, from *ca.* 2500 B.C. to the present, with a gradual amelior-

ation of the arid Altithermal climate to that of the present.

In the initial formulation of the Desert Culture concept, Jennings and Norbeck (1955:3) recognized the possible influence of such a climatic sequence:

Throughout most of the area of the Great Basin the pattern of living we have called the Desert Culture is established [by *ca.* 9000 B.C.]. For nearly ten millennia the same general pattern of life is followed, a nomadic wandering from valley to upland, to take advantage of the resources of nature. Although regular seasonal routes are followed, there are no permanent or substantial dwellings. Caves and rock-shelters are used intermittently and many of the habitation sites are open.

As the climate varied, man appears to have continued life with little change by means of adjustment to different altitudes [italics added]. Essentially identical flora and fauna persisted to historic times, and following fluctuations in rainfall and lake levels, the range in altitude of man and the plants and animals he gathered also fluctuated.

Thus, under this hypothesis, despite climatic fluctuations, people continued to live in the Great Basin from *ca.* 9000 B.C. until historic times. Within this general framework, other scholars have defined regional traditions or cultures adapted to specific ecological settings, such as the lacustrine patterns around relict pluvial lakes (Weide 1968; Heizer and Napton 1970), mountain adaptations (Swanson 1974), and riverine adaptations (Daugherty 1962). (See also Hester 1973.) But despite proposed modifications and interpretation of details, the concept of the Desert Culture, or Western Archaic, remained the central conceptual framework in Great Basin prehistory (Jennings 1973; Aikens 1978*a*, 1978*b*; cf. Cressman 1977:*passim* for a variant interpretation).

In summary, between 1910 and the mid-1970's, studies of Great Basin prehistory were framed within an historicalist paradigm, and since the 1930's with an additional emphasis on cultural-environmental relationships, following the work of Steward (1936*b*, 1938, 1955*b*; cf. Murphy 1970).

PALEOENVIRONMENTAL STUDIES

As noted above, Great Basin prehistory as discussed between the 1950's and 1970's was framed within a model of Post-Pleistocene climatic change. However, it was clear that the model needed verification and possibly revision. During the 1960's and 1970's, much additional research was undertaken on paleoclimate and paleoenvironments within the Great Basin. Major summary papers include those by Morrison (1965), Baumhoff and Heizer (1965), Mehringer (1977), Weide and Weide (1977), Elston (1978), and Mifflin and Wheat (1979).

PRE-ARCHAIC OCCUPATIONS

The question of Pre-Archaic occupation of the Great Basin has been discussed for several decades. Reports of very early occupation at Tule Springs, Nevada, were subsequently disproven (Wormington and Ellis 1967). Surface finds of "Clovis" points and other early lithic complexes have provided tantalizing hints of "paleo-Indian" occupation within the Great Basin (Tuohy 1974). Despite extensive recent research (e.g., Davis 1978), the problem remains unsettled (see Watters 1979 for a summary of some of the problems).

HISTORIC ARCHAEOLOGY

Research on the archaeology of Euro-american sites in the Great Basin is a relatively recent undertaking (e.g., Hardesty 1978*a*, 1978*b*, 1979; Fike and Headley 1979). So too is the archaeology of Post-Contact Native American sites. Few such sites have been systematically excavated. Those that have (Hattori

1975; Clewlow and Rusco 1972; Clewlow, Wells, and Ambro 1978) provide beginning baseline data for the study of acculturation in the Great Basin.

CULTURAL RESOURCE MANAGEMENT

The original version of this paper was essentially written prior to the watershed Cultural Resource Management Conference held in Denver, Colorado, in April, 1974 (Lipe and Lindsey 1974). Since that time, the conduct of archaeological research in the Great Basin, as elsewhere in the United States, has changed dramatically. Federal agencies and private entities have struggled to meet the requirements of federal historic preservation legislation and the mandate of Executive Order No. 11593. Numerous survey and excavation projects have been undertaken. The implications of cultural resource management in the Great Basin (and elsewhere) cannot be discussed herein (but see Fowler n.d.), but it is abundantly clear that there is a need for regional, possibly Basin-wide research designs. Since one purpose of the present paper is to elicit additional data for a more inclusive history of Great Basin anthropological research, readers are requested to bring key "CRM" reports (especially those of limited distribution) to the author's attention.

NOTE

1. This article was originally prepared in 1974 as a contribution to the Great Basin volume of the new Smithsonian *Handbook of North American Indians*. Delays have been encountered in the publication of that volume. At the suggestion of the *Journal* editor, the article has been updated through 1979 and is published herein to elicit additional input from the profession. Scholars are encouraged to communicate additional data, comments, and suggestions to the author for incorporation into a revised version to be included in the *Handbook*.

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