

California Archaeology
Anthropology 196R; California State University, Sacramento
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California Archaeology: characterized by diversity and variability

- a. persistence of very simple societies and very complex (for hunter-gatherers)
- b. changes in environment
- c. changes in population
- d. migrations
- e. technological changes
- f. changes in social organization

-How all of the above affected variability and diversity in prehistoric California

Goals of Course:

- 1) Culture/Historical Overview (what happened where and when)
 - a. regional developments
 - b. history of research in different areas, methodology, different emphases have led to different reconstructions (more similarities may actually be present in the record than has been thought)
- 2) Placing Cultural/Historical developments within theoretical contexts
 - a. exploration of various proposed models
 - b. in order to give artifacts/assemblages meaning, theory is needed
 - c. nature of post-Pleistocene adaptations, maritime economies, environmental change, use and abuse of archaeological classifications, relationship to linguistics, models of resource intensification

Because of variability, CA is a unique area to explore the development of hunter-gatherer societies.

The natural environment is a basis for study [i.e., a “Materialist” perspective]

Archaeology is a historical discipline, but depends on the present to interpret the past

- the ethnohistory of CA is important
- ethnographic record of CA was mostly made after much contact had already occurred (“memory culture”) Still, is one of the richest sources of hunter-gatherer observation available. This is particularly true because many of these people were not inhabiting marginal environments. In Europe and Asia, hunter-gatherers were long ago replaced by early agriculturalists - much of the New World was spared this development.
- Ethnography has played a central role in archaeological research in CA -has often been a starting point for inquiries.

Archaeology itself – what the records of various areas look like and how they are interpreted

- also, conceptual basis for interpretation of data
- the same data can be later reinterpreted

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California had more than 80 languages in 14 families- most other areas in the world the size of California only contain 1 or 2 language families.

- this suggests antiquity of occupation
- population movements frequent and extensive
- could also be an artifact of ethnographic sophistication in west

The economic orientations of CA groups were highly varied-even in similar environments

- acorns weren't always important until relatively late in record
- anadromous fisheries were important in the north part of the state (this is sometimes overemphasized)
- social and political organization variable -some large polities, others highly mobile, small bands

Explanations of how this situation of diversity came to be:

- By the time anthropology was a serious discipline, most hunter-gatherer people were gone or were living in marginal environments and had simple organizations
- CA is a good area for showing what foraging peoples in a rich environment were like
 - a. there was no or very little agriculture (just along the Colorado River)
 - b. there is a large historical record of CA hunter-gatherers
- Many arguments and explanations for the complexity of CA cultures had to be homegrown because most hunter-gatherer societies in the world don't get so complex
 - most researchers attribute this to the environment (rich environment allows sedentary living, specialization...)
 - the environment is therefore an important starting point
- Environment considerations:
 - 1) Some groups domesticated a few plants or had domestic dogs, but hunting and gathering was the mainstay
 - 2) The natural environment was therefore important to these people (environment and climatic variability that they coped with)
 - 3) The different subregions in CA played a large role in what kinds of exploitation could occur and what types of technology were involved
 - 4) Not all resources were available at all times

Steward -method of cultural ecology -concept of *culture core*

Culture Core -environment + production technology > subsistence organization > other culture elements

- how people organize their technology, subsistence are related to environment
- deterministic effects of technology and environment (in Steward's model) are overemphasized for today's anthropologists
- this still is a useful model for pre-state level societies (common sense)
- Not all parts or features of the environment are of equal significance
- General environment vs. Effective environment:

- effective environment is subset of general environment -only the attributes of the environment that a group articulates with
- this distinction has important implications for models that deal with changes in General environment relating to culture change
 - unless meaningful aspects of the environment are changing, groups may not respond

Hydrology - how water affects resources that a group articulates with

Geology - most rocks have no bearing on people living in an environment

Vegetation -nutritional benefits of plants important (not just presence/absence)

-Changes in the General environment may or may not have an effect on the effective environment

**did people actively preserve their effective environments?*

California -geopolitical entity, not a realistic division

- this artificial border sometimes hinders communication between archaeologists
- CA can't be understood without understanding neighboring areas
- eastern Sierra and deserts of eastern CA are more properly in Great Basin
- not a lot of time will be spent dealing with these areas in this class

California Climate/Environment

- we have 50+ years of weather records available -this gives some idea of variability
- also, there are historical sources describing vegetation

Land use patterns have altered CA dramatically:

- 1) most major water courses have been dammed/diverted
- 2) agriculture in San Joaquin Valley- was once alkali plain
- 3) Southern CA would be nearly unoccupied without water changes
- 4) the introduction of domestic animals caused severe erosion and brought in alien grass species
- 5) overhunting (market hunting) had a strong effect (Gold Rush era amounts of wildlife killed are staggering -waterfowl, elk...) -like bison's fate

CA has an impoverished environment today, but humans have always been altering their environments

- burning was an important management tool, created better forage...
- Long-term changes in climate -studied using *proxy data* (indirect indicators)
 - lake level fluctuations, pollen, tree line and tree ring studies, glacial geology, pack rat middens, sediment characteristics

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[note at top of page "Friday afternoons Socals on Folsom ARC beer thing 4:30-6:00, no class next Tuesday"]

Climate in California-Variability in space and time

- coastal zones are complacent
- most precipitation in CA October through April (Mediterranean climate)

- southern CA-occasional summer precipitation from monsoonal pattern
- mountain ranges produce rain shadows (arid areas)

Kuchler's 1977 map is probably best effort to date to document what vegetation in aboriginal CA looked like

Paleoenvironments -past environments were variable over space as well

- some parts of state have changed more than others during the Holocene
- paleoclimate vs. paleoenvironment - climate change is a large-scale process that has variable effects on the environments on the ground. A minor shift in climate can have a major effect on biota on the ground and *vice versa*. This is related to the requirements and tolerances of various species that make up an environment.
- with humans, the cultural filter comes into play -some major environmental changes may not have an effect on the effective environment.. Because of this, the functional link between climate changes and changes in technology must be explored.

The Paleoclimatic data for California are more uneven than for other parts of the world. Some parts of the state do not preserve good records and so guesses must be made.

-During the Early Holocene (10,000-7500bp), the climate was cooler and wetter overall, but was hotter and drier in some areas (e.g. Southern Sierra Nevada)

-The Middle Holocene (7500-4000bp), was warmer and drier overall, but the degree of deviation from norm was different in different areas.

-The Late Holocene (4000-present), is marked by a trend from a warmer period to modern conditions, but there have been some fluctuations in this trend such as the Medieval Warm interval.

In the last decade, there has been greater resolution and more data on CA climates. Also the use of computers has increased our knowledge about past climates in CA.

Aspects of native culture that intersect with the environment

- how various components of the environment and components of subsistence/settlement system come together

Ecological and evolutionary perspective:

-The set of traits that are exhibited by a group will over time guarantee the economic and reproductive success of that culture.

- not all traits exhibited by a culture must be adaptive, many traits will be neutral or even maladaptive
- systems that do not successfully articulate with their environment will perish in some way

Most evolutionary models assume that selection acts at the level of the individual

- this does not mean that behavior patterns don't have broader consequences
- evidence of individuals is lacking in the archaeological record
- instead, we are able to observe regional or directional trends -the combined consequences of individual behavior (modified by culture)
 - while evolution acts at the level of the individual, its consequences are seen at the group level
- The patterns in the archaeological record usually reflect long-term success stories
 - most changes fail to take hold- they are small and invisible
 - if behavior is thought of as a bell-shaped curve, archaeologists can better characterize the mean rather than the tails
 - rarer behaviors will be harder to find, less likely statistically to preserve
 - because we are observing the mean, simple, boring explanations are probably more accurate than outlandish ideas

Using an evolutionary framework does not mean we have to disregard the role of "softer" levels of culture (e.g. kinship, ritual)

- Models give us a yardstick to work with -economic models provide a framework for analysis - specific units of analysis are assigned, expectations are made very clear
- this allows us to see the cases in which we find a poor fit (then we can look elsewhere for explanations) other types of models that deal with "softer" aspects
 - if there is no such yardstick, then it becomes impossible to figure out in which cases ideology or something else would better explain observed trend
 - economic models are testable

- Economic theory, not sociobiology is the origin of these models
- There will be some general correlation between environment and archaeological record, but it can't be assumed to be a direct correlation

Resource Procurement System (Flannery's idea)

- Flannery's 1968 paper on Mesoamerica -how subsistence economies are organized
- developed this idea with Steward's culture core in mind but made articulations more explicit between culture and environment
- believed cultural adaptations could be seen as systems (systems theory was the "big thing" at the time)

Resource procurement system characterized by:

- geared towards a single resource or a set of similar resources
- a particular technology required for each
- also includes facilities (big tools with a long lifespan) such as large drive nets, storage features, ovens...
- certain kinds of work organization (steps to get the job done)
- resources or resource sets exploited each had distinctive seasonal and distributional characteristics
- the broader subsistence pattern had to track resources

-only certain levels of resource procurement can be sustained without modifying either the resource or the technology used to exploit it

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California Indians and Natural Resources

Resources in CA had specific technological demands, seasonality, nutrition (using Flannery's model)

There were three staple resources in CA:

- 1) Acorns -there are a diversity of species, some preferred over others
- 2) Fish -specifically anadromous species (salmon, steelhead) along coast; there were specialized technologies to get at pelagic (deep water) fish
- 3) Large game animals (elk, deer, mountain sheep, antelope)

Baumhoff, in his dissertation, Ecological Determinants of CA Population felt he could predict accurately the populations of various areas of the state based on these three crucial food resources

- modeled fish abundance on streamflow and length
- for acorns, he looked at modern range management maps
- for large game, he based model on modern wildlife and vegetation studies

-Secondary resources: Buckeye, Chia, root crops

-Even though this overlooks certain aspects of subsistence, the point is that there are some major resources and other resources that fill in the gaps

-root crops replaced acorns in northwest CA, there are not a lot of good vegetal resources there - this is thought to have promoted fish resource use

Ralph Beals and James Hester (1960) A New Ecological Typology of the CA Indians

[see: Ralph L. Beals and Joseph A. Hester (1960) A New Ecological Typology of the California Indians. In: Men and Cultures: Selected Papers of the Fifth International Congress of Anthropological and Ethnological Sciences, Edited by Anthony F. C. Wallace, University of Pennsylvania Press.

See also:

Heizer, Robert F., and Albert B. Elsasser (1980) Chapter 3: Ecological Types of California Indian Cultures. In: Heizer, Robert F., and Albert B. Elsasser. The Natural World of the California Indians. Vol. 46. Univ of California Press, 1980.]

-tried to identify patterns of subsistence, came up with 7 classifications:

- 1) Tideland collectors -moved inland on occasion, non-specialized, simple technology, gathering important, surf fish exploited, but not deep water fish, diet augmented by terrestrial resources (deer, elk, acorns)
- 2) Sea hunters and fishers -had sophisticated technologies for exploiting resources off the coast - made watercraft of redwood washed down from north, hunted sea mammals, exploited deep sea fish, terrestrial resources used as well, shellfish less important

- The distinction between these first two categories is largely arbitrary. There was a diversity of exploitative strategies up and down the coast
 - there was a continuum from minimal to robust exploitation of resources -this is largely a factor of technology, not resources themselves *per se*
 - all along CA coast, sea mammal remains are found in sites, Sea mammal hunting, though, was more important in some areas than others
- More sophisticated technology (nets, boats) required greater input of time and effort, some boats were communally owned or rich people owned them
 - heavy reliance on fish -seasonality of fish -scheduling conflicts with other resources -preservation of food stuffs important -organizational implications of fish drying
- 3) Riverine fisherman -anadromous fisheries of northern CA (salmon and steelhead)
 - there were two main runs, Spring-summer and Fall-Winter, within which there was a narrow window of opportunity to exploit this resource
 - specialized technology (nets, weirs, spears) required
 - demands on storage
 - terrestrial resources also important to these groups
- 4) Lakeshore fisherman/ hunter-gatherers -Pyramid, Klamath, Clear, Tulare Lakes
 - freshwater fish were abundant, wetland environment important
 - plant resources (tule, cattail, acorns) game, waterfowl also important
 - had simple tule boats
 - all four lake areas very different (e.g. no acorns in Modoc country)
- 5) Valley and plains gatherers -characterized by extremely diversified subsistence patterns, no real focus on any particular resource -these are the classic CA hunter-gatherers
- 6) Foothill hunter-gatherers -occupied some of the richest environments in CA
 - acorns were very numerous, were the subsistence focus, burning was important to these cultures to increase productivity for game, plants
- 7) Desert hunter gatherers and agriculturalists -not really in CA area

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Beals and Hester Typology -ecological types

- this is an arbitrary classification and it oversimplifies reality, but it is useful in a general sense
- Baumhoff study -Ecological determinants of CA population
 - importance of raw resource abundance in determining how many people a region could support
 - decided that environment determined population
- subsequent study by Timothy Gage also included other animals that compete for the resources used by aboriginal populations
 - deer consume most of the acorn crop (other animals impact it too)
 - certain areas had more competition than others
 - therefore correlation between raw nut abundance and population is not as direct as was previously thought
- also, acorns were not always as important to earlier cultures -there is evidence for later intensification

-the absolute abundance of a resource is not the only factor that makes it appealing to people -instead, it has to do with cost-benefit analysis

Acorn Procurement System

- certain traits are positive, others are negative
- 1) acorns were widely distributed (many different species)
- 2) where acorns are present, they tend to be abundant
- 3) acorns ripen in the fall -potential scheduling conflicts (e.g. with salmon harvest)
- 4) acorns are simple to collect
- 5) acorns are very costly to prepare (returns are seriously compromised by processing time)
 - a. nuts are shelled
 - b. nuts are processed into meal (with mortars)
 - c. tannins are leached out with water
 - d. meal is cooked into mush or bread
- 6) acorns are very nutritious
- 7) acorns are highly storable (tan oak stores really well because of its thick shells)
 - a. cost of building and maintaining storage facilities is incurred
- 8) acorns have the potential for producing surpluses
 - a. this can help offset future costs
- 9) storage poses constraints on mobility

-the procurement and processing costs must be factored in with the abundance of the resource
-the use of acorns was not the result of a technical innovation, but instead a new-found need to increase effort to increase production levels

History of Anthropological research in CA

-The history of anthropological research in CA is long and complex and was influenced by many outside developments

-archaeological studies developed alongside social anthropology

-much archaeology today uses ethnographic material to support a poor material record (the direct historical approach)

- 1) the direct historical approach assumes cultural continuity between present and past but it is generally accepted that the information gets less accurate the further back one goes (further than 1000 years is more debatable, but varies)
- 2) in CA, we know there were numerous population movements (this would affect the accuracy of the ethnographic record as a model for the past)
- 3) when it gets back as far as the Paleoindians, there is no reason to think what they did had anything to do with historic populations
- 4) archaeology is dependent on ethnographic analogy, but we need to remain cautious in our use of it

Sources of ethnographic information for CA:

1) Logs of European explorers -Cabrillo's log, Francis Drake...etc. -not many details about Indians recorded

2) Documentation from Mission Period -more details recorded, but much of it indirect, baptismal records, census data tell us about marriage patterns, population

3) Records after statehood -more systematic effort to record cultures -most, however, based on third-hand information

- between 1769 and 1850, the native population was reduced from 300,000 to 100,000

- between 1850 and 1900, the population went down to 50,000

- the precontact situation was already greatly altered by the time any systematic effort was made to record cultures

Powers - 1877, *Tribes of California* -it is difficult to tell how much of the information in the book is first-hand

- he did go out and see and talk to Indians, but the whole text is not based on this

C. Hart Merriam -worked on his own; rich benefactors supported his research

John Peabody Harrington -with Bureau of American Ethnology, was an eccentric character, ended up "going native" later in his life

- both Merriam and Harrington were more interested in doing anthropology than writing about it, extensive notes still exist

4) 1901 -Department of Anthropology at Berkeley -Kroeber started collecting data

- UCPAAE series started in 1903 -much of the primary ethnographic literature comes from here

-Archaeological research started in CA in the 1870s -the early work was started to obtain collections for museums.

-In San Francisco Bay in 1900s -Max Uhle excavated Emeryville shellmound, Nels Nelson excavated Ellis Landing shellmound

- these excavations were important because they salvaged information from some of the best sites, most of the sites of this caliber were later obliterated in the face of development

- these were also the first real excavations in CA that looked for stratigraphic relationships and evidence for change over time

-Two things slowed archaeological research in CA in the earlier part of the century:

1) Kroeber was more interested in salvaging ethnographic information about California's native cultures

- he believed that the archaeological record would always be there in the future to look at whereas the native cultures were quickly disappearing

-between 1900 and the 1930s, most of the standard ethnographic work was assembled: (most are Phd students)

- Samuel Barret: Pomo and Sierra Miwok
- Edward Gifford: Pomo, Karok, Yuki
- Anna Gayton: Yokuts, Western Mono
- Pliny Goddard: Hupa, NW Coast groups
- Isabel Kelly: Great Basin, Coast Miwok
- Waterman: Yana, Yurok
- Roland Dixon (associated w/ American Museum): Maidu, Shasta
- Sapir: linguist

-it was not until the 1930s that students could pursue archaeology projects

-Kroeber was wrong in both of his assumptions:

A.) his belief that CA Indian culture was dying, it's still around today

-He almost certainly failed at recording the contact state of groups, instead he got memory culture -a crude reflection of the way of life before contact -there were already changes in the subsistence patterns, the introduction of wheat flour, restrictions in movement. Certain foods assumed new importance because of changed circumstances. Also, the peaceable relationships between tribes recorded in ethnographies may have been "colonial peace" where groups were forced to band together. George Dalton made this point.

B.) Kroeber was also wrong about the archaeological record being preserved for later study

-this was not true in much of CA -Bay area, LA basin, Central Valley -there was already serious development and destruction of archaeology

2) The other factor that helped to slow archaeological research in the 1900s-1930s was that Kroeber didn't believe in much time depth for CA archaeology (maybe hundreds or a couple of thousand years) at any rate, not enough time for significant cultural change to occur

-also, so little work had been done, that the spatial differences had not yet become apparent

-not until the 1930s-1950s that a serious effort was made to explore time depth

-David Banks Rogers (Santa Barbara Museum of Natural History) was one of first to see change and time depth in the archaeological record -constructed a 3-part sequence

- 1) Oak Grove -millingstone pattern
- 2) Hunting Culture -no milling stones, many projectile points, mortars & pestles
- 3) Canalino -antecedent to Chumash, maritime pattern

-his book was *Prehistoric Man on the Santa Barbara Coast (1929)*, not much quantitative data in the book, but his patterns have by and large held up to modern scrutiny

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Malcom Rogers (San Diego Museum of Man) -the other Rogers

-was also seeing cultural change, but in interior deserts

- 1) earliest pattern lacked milling tools but had flake tools
- 2) later assemblage had plant processing tools, projectile points, pottery

- Rogers arranged these in relative order (primitive seriation) -overlap of elements occurring
- he also noticed the differences in landforms between older and younger sites
- Elizabeth Campbell -developed this idea further -older sites were in older landforms, fossil springs...
- there was no sense of absolute age, but there was change through time

San Joaquin Valley, Delta -the development of the CCTS (Central California Taxonomic System) 1920s-1930s

- key players: Robert Heizer, Jeremiah Lillard, Franklin Fenenga
- large mound sites (cemeteries) were excavated -there seemed to be patterned differences in burial modes, orientation, and associated grave goods
- 3 cultural horizons were proposed: Early, Middle, and Late -this scheme remains essentially intact though earlier occupations without cemeteries are now also recognized

Beardsley -tied this all together -Ph.D. dissertation, articles, monographs

1930s-1940s -cultural change was now recognized and meaningful research was now occurring

- this is part of a larger trend in American archaeology; this same period of time was when an emphasis on chronology started all over the country
- Wiley and Sabloff (*History of American Archaeology*) defined this period as the Classificatory/Historical period (1914-1940)
- seriation and more sophisticated typologies began to be used
- CA was lagging behind other parts of North America -in the Southwest, this sort of work started sooner
- these chronologies and similar studies continued until late 1950s
- Bennyhoff, Riddel, Fenenga, Meighan, Treganza -pieces were emerging from all over the state
- in many cases, reconstructions were problematic; too few sites were used, the dating methods were crude; some of these earlier reconstructions turned out to be incomplete or just plain wrong

Late 1940s-1950s -something else was happening in American archaeology -There was a growing frustration with narrow classificatory aims.

-1948 Walter Taylor's bombshell -dissertation entitled *A Study of Archaeology*

-he rejected wholesale the current concern with time-space systematics. He wanted a more behavioral archaeology; more of a social anthropological approach.

- this started changing the goals of research in CA and elsewhere
- Archaeologists became more focused on the same sorts of topics as today: subsistence and settlement, technology, site formation

-In CA, the classificatory passion persisted longer than elsewhere

Sherburne Cook -studied mound sites in SF bay -looked at dietary debris, collected and analyzed everything in them -looked at cultural vs. natural deposit to make inferences about population, time depth
-settlement pattern studies were also big at the time (Willey and the Viru Valley in Peru) also elsewhere; Heizer and Baumhoff in CA looked at houses and villages
-these studies were largely descriptive in their intent; they were interested in *what*, not *why*

-The 1960s changed this -Processual Archaeology rejected the limited goals and pure simplicity of description; wanted it to be a more scientific pursuit
-Processual archaeologists developed models that might account for behavior and hypotheses linking behavior to the archaeological record
-they specified the types of data needed to get the kinds of answers they sought
-they rejected relativity and qualitiveness

-in hindsight, a lot of this looks a bit naive and obsessive (from the perspective of the 1990s) - they saw no limits to what we could reconstruct
-nevertheless, the work of the processual archaeologists expanded the horizons of archaeology (even though archaeology will never be a true experimental science; because it is non-repeatable)

-new kinds of data were needed for these types of studies, more detailed kinds of information
-now collected faunal and floral remains in addition to the “goodies”

-the reaction to this perspective was a lack of concern with chronology and context -this lasted through the 1970s
-it eventually became clear that chronology was needed

Fredrickson and Bennyhoff stayed with the classificatory/historical tradition -endeavored to make it fit with processual archaeology

Another huge factor -in 1969 the *National Environmental Policy Act* was passed
-mandates that cultural resources need to be considered
-now archaeology was being done by CRM archaeologists; there were many more archaeologists around
-this sounds like a good thing, but the results have not been so clear cut

-before there was CRM, there was the WPA in the 1930s (River Basin Surveys) -Buena Vista Lake excavations (Wedel), also a lot of reservoirs in CA were looked at, also there was occasional salvage work

-CEQA passed in the 1970s -state level legislation

-Good and bad of CRM in CA: more areas surveyed, more sites excavated...but contributions to knowledge have not kept up, it could have been done better

1) CRM projects are determined by where a job is happening rather than where research is needed. The projects often deal with small areas; they are not regional in scope. Many are linear -piecemeal aspect of results; The work is accretionary, but not necessarily comparable

2) CRM projects are intended to meet regulatory requirements, not scientific goals; the quality of the results is dependent on the quality of agencies and firms

- there is wide variation in the skill of the practitioners and motivation (profit motive)

- if there was better oversight, this would not be such a problem, but there is no oversight

3) there needs to be better coordination between CRM and academic archaeology

- most archaeology is being done by CRM, too many academic programs have looked down on CRM, this has contributed to a schism

- because CRM is determined by the vagaries of project development, it can never have the research focus of an independent academic project. It can still be made more productive, however. (this is not just a CA problem)

- CRM has tried to keep up with method and theory of academic programs- has succeeded more in keeping up with method than theory

- CRM has found ways to make the excavation of sites more efficient, has used obsidian hydration more fully than academic archaeology in CA

- post-processual schools have largely rejected scientific methods and have not had much impact in CA in general (rock art studies excepted)

- these theoretical approaches do not lend themselves well to CRM context, this has helped keep post processualism out of CA

Contemporary role of ethnography:

- even though native cultures have been altered, data are still useful

- can't be used as a reconstruction of "pristine" lifeway -this is what was done by early archaeologists

- CA ethnographies are useful analogs, but ethnography from other areas of the world works as well

- cultures are always changing -there is no such thing as a pristine society

- ethnographic research is still important today -it is more socially aware now; it has helped with tribal recognition and land claims

- common ground between Indians and archaeologists is now being found

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First Californians:

- a lot is not known of the archaeological record of earliest people

- there are some very specific reasons why we don't know more:

- 1) This all happened a long time ago -processes have obscured record
 - sea level rises, extensive sedimentation, subsequent geologic events have eroded or covered up evidence (altithermal eroded older surfaces)
 - more bad things can happen to a site over time
- 2) it is not known whether the earliest remains are identifiable, do we know what we are looking for?
 - fluted points...etc... are known, but there are probably also other early artifact types that are unknown
 - certain non-diagnostic scrapers...etc... are probably often misinterpreted as late
 - some areas have more information -not just artifact types change through time, also raw material types change
- 3) Most early sites are surface finds or have uncertain stratigraphy
 - no organic remains are usually associated
 - when dates are obtained, association is often ambiguous
 - earliest sites occur in geological contexts rather than archeological

-ancillary dating techniques (e.g. obsidian hydration) have other sets of problems

Some ideas about what earliest occupation looked like: (known vs. unknown)

- fluted points, crescents, stemmed points
- pre-Clovis claims, animal or human bones, dating is faulty -also archaeological remains that do not appear to be artifactual

Skeletal remains: early phase (later part of 19th century) -mineralized remains pulled out of gravels during mining in the Sierras (Hrdlicka, others put an end to these claims)

-Later in 1960s and 1970s, other skeletal remains again claimed to be ancient -places like the San Diego Coast, deeply buried in the Bay area

- Yuha Burial* (Imperial county): rock cairn burial with 14C date on caliche, not organics in bone -21,000-22,000 bp. -context (cairn burials) known to be late
- Del Mar Man* (San Diego): coastal marine terraces (George Carter) amino acid racemization 40,000 bp., subsequent AMS date to late Holocene
- Sunnyvale* (Bay Area): 70,000 bp. amino acid date, AMS date to late Holocene

-all were recovered from what looked like old contexts, but there was no way of dating them

- also cation ratio dating on desert varnish -rock art and artifacts patina
 - some dates came back 15-20kybp. on crude artifacts and rock art
 - these results could not be replicated -whole techniques appears to have been fraudulent (Dorn)

Stone tool finds:

- southern CA deserts -surface scatters, crude, sand blasted, hand axes
 - contexts are undatable, age estimates are on form or weathering
 - other archaeology in the area has shown these to be quarry rejects
- Farmington complex: from Sierra Nevada near Stockton
 - Treganza 1950s, streambed deposits, thousands of crude flakes and cores eroding out of streambeds, they were real artifacts, but the dating was problematic, 14C dates between 1600 and 1000 bp.
 - there was a lack of more refined tools (projectile points) at Farmington
- Warm Springs dam (Sonoma county): crude percussion flakes tools well below midden sites
 - Baumhoff saw similarities to Farmington
 - historic debris was also often embedded in stream channel as well -also dates show contemporaneity with midden sites (material apparently washed into cut banks)
- Calico Hills -very old deposits, questionable tools (BLM funded)
 - questions about context
 - clearly there are artifacts present, also clearly some broken stones which are not artifactual
 - it is important to realize that tens of thousands of purported artifacts have come out of Calico, some are bound to look more real than other by pure statistical chance
 - the ratio (between real and not real looking) goes down in lower depths, quarry sites nearby on surface
- fringe archaeologists: Carter, Brott, Minshal, Childers
 - Texas Street, Buchanan canyon -said to be 100,000 bp. or older based on morphology
 - these artifacts all fail the Barnes test -natural breaks will tend to form obtuse angles
- Phil Orr -pygmy mammoths and hearths on Santa Rosa island -Orr was initially cautious, but Carter et. al. ran with his data
 - 30,000 year old mammoth bone in "hearths" -no real association

What does the initial occupation look like- -we have no idea

- opinions are influenced by fluted point traditions elsewhere (e.g. Clovis gave way to Folsom and then Plano...)
 - number of actual kill sites is low, big game hunting stereotype
 - not many Clovis points found in CA outside the desert (only 2 sites)
- Borax Lake (LAK-36)
 - Tulare Lake
 - both suffer from interpretive complications

There are no reliable 14C dates from CA proper, in Great Basin, dates are equivocal (11,000-8,000bp.)

- these sites tell us nothing about the lifeways of early inhabitants

Examples:

- Isolated Fluted points within landscape or as part of an assemblage
- rockshelters with single fluted point at bottom of cave
- many occur within assemblages dominated by other things (e.g. Skyrocket site)
- what is needed is a large number of artifacts with other types of tools and dates

Borax Lake -edge of dry lake bed near Clear Lake (Lake County) said to have held water in past

- in 1938, fluted points were reported by Chester Post (local collector)
- excavated by Mark Harrington (published 1948) retrieved 20 fluted lanceolate points in mixed alluvium 2 1/2m deep
- some points have multiple detachment fluting scars
- Harrington was unable to date but used morphology to say they were old
- In 1970, Meighan and c. Vance Haynes revisited site
 - they excavated 20 backhoe trenches
 - did hydration analysis of artifacts -this suggested great antiquity (8.7 microns avg.) among largest rims recorded for this area of US
 - basal sediments may be 12,000 years old (according to Haynes) no radiocarbon dating

-Problem: There are other later cultural complexes mixed in with fluted points

- there are also crescents, later points, groundstone implements
- hydration showed that crescents probably went with fluted points
- still unknown where ground stone goes in sequence

Fredrickson -attributed fluted point component to basal component in North Coast Ranges - called it the Post Pattern (only found at Borax Lake)

Greg White -looking to pursue additional excavations -site is BIG -may contain unmixed areas

- CA archaeologists have traditionally dug in areas of greatest artifact concentrations.

These same areas may exhibit more overlap of components

Tulare Lake -Witt Site -not really a site, 2-3 miles long, 1/2 mile wide

- fluted points and fossil bones found along old shoreline features
- most artifacts collected by private individuals
- also diverse assemblage of Pleistocene fauna
- radiometric dates 7300bp on unidentifiable bone, Uranium-thorium dates 10,700-18,800
- human 11,400; 15,800 bp -not as tightly dated as c14
- Published description -Riddell and Olsen 1969 American Antiquity -had access to one collection with 30 points -made from cherts and chalcedony (maybe from desert)
- other points from other time periods also found

Fenenga -limited excavations -sediment histories difficult to unravel -no reliable associations

-This lack of good sites in CA forces us to turn to Desert areas to east -even though environment may have been very different than in CA proper

-possibility that Tulare lake may contain some desert raw materials may provide weak association

-Desert areas have better stratigraphic associations than CA proper

China Lake -Emmalou Davis 1960s-1970s -scattered areas around former lake

-fluted points, Pleistocene animal bone on deflated surfaces

-limited excavations -dates on faunal remains, Davis suggested that Clovis complex may have evolved at China Lake

-based on artifact weathering, Davis ordered artifacts in time with more poorly made materials earlier than classic Clovis- also said these people were hunting Pleistocene mammals but said they had a very diversified system of subsistence

-unfortunate thing is that more outrageous claims have eclipsed more reasonable claims

-Davis's spatial controls were impeccable for her day

-Overprinting -caused by deflation of layers above

-Still no good data on Horizontal positioning of materials -this may sort out different assemblages and fossil bones -deviant distributions should exist

-there are sites still unexcavated that clearly contain fluted points in good contexts (e.g. basalt ridge which protected embayment from deflation) -ARC dug at some of these areas in 2001- Basgall was right

China Lake -has advantage of no later sites superimposed (at least not as many as at Borax or Tulare lakes)

-other tools are found with fluted points that are typical of Clovis elsewhere

Komodo Site -in Long Valley Caldera -Basgall dug in mid 1980s

-produced 50 concave base points, obsidian, basally-thinned and edge-ground

-most points thinned with multiple flake removals, but some classic Clovis

-Shallow deposit <20cm -but points not intermixed with more recent forms -the whole lot likely goes together as a single assemblage

-Hydration showed bigger rims than other areas of Great Basin and nearby (Points avg 9.7 microns, tools avg. 10 microns)

-absolute age is more unclear -using Hall's rate 8200 bp but this rate gets less accurate further back in time [note: dates to ~11,500 calBP according to Stevens et al. 2019 Casa Diablo rate]

-most or all of Komodo site artifacts date to same time (more importantly)

-no milling tools were found despite extensive excavation

What do we really know about earliest inhabitants of CA?

- 1) The fact that we haven't found more early sites may mean populations were sparse
 - other sites with stemmed points are more common (either fluted points were much older or there were fewer people)
 - the fact that few occurrences are in any large midden-like sites may point to mobile populations, small numbers
 - 2) Even though well-established associations are problematic, some other artifact types are found with fluted points -Crescents may be with stemmed points though (elsewhere crescents not found with fluted points)
 - Do fluted and Stemmed points go together here- elsewhere, no
 - statistical co-associations of these two, are they made of same materials-, same techniques-
 - there are some places where these two types (Clovis and Stemmed) co-occur (Tulare Lake, Skyrocket, Nelson Lake)
 - Generally co-associations are extremely lopsided -usually more stemmed points
 - also overall distributions are different -fluted points frequently found as isolates, stemmed points not, they are also made differently
 - also material types differ -(fluted points=good, fine-grained material)
 - Extensive modification suggests something further: tools were curated for a long time and resharpened -they end up with steeper edges
 - many flake tools have multiple working edges (swiss army tools)
 - many tools seem to be made from material from far away (e.g. Komodo site)
- Curated tools vs. expedient -curated tools most often found in systems of high mobility and where needs are uncertain
 - fluted point people probably were highly mobile and were probably tracking high-quality food resources (not necessarily large game)
 - their activities were probably organized around high-ranked resources
 - some think assemblages reflect a hunting focus -dearth of plant processing implements at "clean sites"
 - if anything, frequencies of milling tools are much less than later on

[note at top of page: Field School Jul 12-14 survey of Long Valley bottom river terraces]

3/11

- Stemmed point assemblages -sometimes co-occur with fluted points
 - we know more about these point complexes

Rogers, Malcom – San Diego Museum of Man – sites along San Diego coast

- old terrace of San Dieguito River (C.W. Harris site) -flash flood event exposed fresh stream cuts with buried artifacts
- range of flaked stone tools made from felsite (characteristic green metavolcanic material) including large numbers of unifacial scraping implements
- bifacial tools, also ovate blades, crescentic objects (amulets?)
- heavier core tools, large amounts of debitage
- many of these tools were fairly refined
- conspicuously absent were milling tools and crude cobble tools (these tools were common at other sites nearby)
- also missing was any indication that marine resources were being used (despite being close to ocean)
- some coastal middens had no pottery
- other sites also had little use of felsite, also different tool types

Rogers had no way to place these in time, also problematic was that none of the sites had been carefully excavated – had no way of ordering the assemblages

- therefore, Rogers assume “ruder” simpler sites were older

“Shell midden people” –coastal sites with crude cobble tools (older to Rogers)

“Scraper maker” –(younger to Rogers) – C.W. Harris site

“Yuman” – later sites, related to historic people

It gets convoluted at this point of story.

Rogers was also working in interior deserts, relying on same logic for ordering assemblages in time

- crude bifaces – “Malpais industry” – also large side-struck flakes with cortex, also crude scrapers, choppers
- we still don’t know what these things are, now thought to be quarrying refuse
- among desert assemblages were artifacts similar to the Harris site
- Rogers called these the “Playa industry” –(occur on the shores of playas)

1939 Rogers published the Playa site, also started digging at Harris site

- was conservative in his dating, 400 years old tops for Playa industry
- still, had excavations that showed he had reversed the order of the industries, cruder industry followed refined one

Renamed them “San Dieguito” (older) and La Jolla (younger), San Dieguito/Playa complex

Rogers recognized that these were a similar series of artifacts over much of southern California and out into the west, further that there was little or no groundstone with these assemblages

- published a number of overview statements over the years but never a monograph on the Harris site excavations
- no empirical justifications for many of his conclusions
- this led to confusion in the literature (people attributed many things to San Dieguito)

Claude Warren (1958) dissertation on California coast, revisited Harris site

1959, Claude Warren, D. L. True published San Dieguito material

- small collection, but generally the same, showed that Rogers was not wrong or that far off after all

Sandstone substrate upon which are alluvial gravels (with San Dieguito materials), because artifacts were not water-worn, said they were *in situ*. Concluded that people were living on sand bars/gravel bars at the time

- this was overlain by a sterile silt layer
- overlying sterile layer was another layer with fire-affected rock and cobble tools that conform to the La Jolla pattern
- overlying this was pottery, etc, indicating “Yuman” later assemblages

This excavation provided the first radiocarbon dates for La Jolla (8490-9030 BP)

This paper (Warren and True) elaborated regional nature of these assemblages

- argued this complex should include all assemblages called “Playa”
- similar stuff found at Lake Mojave, Death Valley, Panamint Valley
- because it lacked milling tools, saw it as a hunting adaptation
- didn’t match up with paleoindian assemblages from Great Plains and Southeast U.S.
- considered San Dieguito an independent cultural tradition, probably from North rather than East
- this synthesis was based on similarities in fairly simple artifact forms
- most other areas were undated
- Rogers hit by a car in front of the Museum of Man, never published Harris site materials...

Warren and True recognized similarities to Northern Great Basin and Plateau, but were unwilling to call this one mega complex, environmental setting thought to be too different

- also, some sites up north appeared to look less like a hunting culture, site on Columbia Plateau had milling and fishing equipment

Bedwell, Stephen (1970) suggested stemmed points assemblages might be profitably collapsed into “Western Pluvial Lakes Tradition” (WPLT)

- these all tended to occur on shorelines of Pleistocene lakes, this tied them together
- believed these were substantial wetland environments, waterfowl, fish, small and large game, plant resources – generalized adaptation

Harris site isn’t in this sort of setting

WPLT is still fairly popular among archaeologists, but by 1980s WPLT began to unravel because of two developments:

- 1) in the Great Basin –model didn’t hold up well
- 2) in San Diego county ?

-discrepancies in Great Basin Paleoenvironmental information showed no rich resource base that Bedwell hypothesized, many playa lakes had already dried up by the time these traditions occurred, were seasonal lakes

- also, archaeology itself, did artifacts show functional relationship to wetland adaptation?
- did food remains indicate wetland exploitation?

Assemblages – difficult to answer, many expected tools are perishable (e.g., nets...) nothing in flaked stone assemblages fit with exploiting wetlands

Dietary remains – fail to show marsh adaptation, faunal assemblages dominated by terrestrial animals that are more general desert occurrences

Milling equipment occurs in small quantities (not much plant exploitation)

Just how good are wetland environments? Consensus had been that wetlands were “resource magnets” now it’s not as straightforward, now many believe wetlands have a lot of biomass but not a lot of exploitable by humans (limited economic value) costly to exploit

- also not all desert wetlands are the same, some not very rich

Settlement organization problems – association with fossil lakes, now looks to be more apparent than real

- in desert West, older surfaces tend to preserve better in centers of broad playas than other places – other places would have been buried or destroyed
- also, more have been found outside of playa contexts now that they have been looked for more closely

Mojave desert, Eastern Nevada, many in non-lakeshore settings

-but, some of the largest accumulations have been around shorelines of these playas – they are also bigger, richer

-may have been more well-watered than surrounding areas, draw for game and birds, but probably not focus of wetland adaptation with sedentary populations, instead more of a node.

-some parts of desert west had areas similar to what Bedwell envisioned, (e.g., Columbia Plateau) not as clear all over now though

3/16

Lake Mohave Complex – near town of Baker, Silver and Soda Lake playas (Lake Mohave)

-now known from all over desert but name “Mohave” stays (“Mohave” with and “H”)

-sites range from small lithic scatters to impressive multi-acre concentrations

Characteristic artifacts:

- 1) Stemmed points – 2 different types, Lake Mohave (long stem), Silver Lake (shorter stem)
- 2) Lanceolate bifaces, ovate bifaces, crescents
- 3) Milling tools occur regularly but in low proportions, smaller than later milling stones, maybe not for seed processing, or not as important

Claude Warren wrote about Lake Mohave complex –emphasized big game hunting (sheep, deer, antelope), actual faunal assemblages don’t reflect this, smaller animals well-represented, diversified, no plant remains have been recovered yet

Dating still imprecise – but at least 9500 BP – 7000 BP, more radiocarbon dates in last decade

Coast – California proper, other problems with WPLT model:

- California was not subject to the same kinds of aridity and water-related tethering that desert had, there is no reason to expect the same kind of focus
- many stemmed point sites not near wetland areas (Harris site)

-San Dieguito complex was defined from one site (Harris site), this has caused a lot of controversy, we don't know what the range of variation for this complex is, whether Harris site was a unique occupation

-some have treated the Harris site as being representative of the larger pattern (Warren)

-Paul Ezell and others have treated this site as a unique site, where lithic tools were manufactured

-during 1980s, residential development caused new sites to be excavated, some were known to Rogers

- these sites seemed to show a mixture of traits, some looked more like La Jolla, some like Harris, some like something else
- Rancho Park North -Russ Kaldenberg -most well-known site
- 5 km from the ocean, had 3 distinct cultural strata, top strata were like Rogers' Yuman and La Jolla, lower level looked like San Dieguito
- 8280-8010 BP, similar date to Harris site
- only problem was San Dieguito portion of the site had a lot of shellfish
- other similar sites have been found and excavated, most also have typical San Dieguito tools in shell midden, some have milling equipment

Some San Diego archaeologists are not convinced that San Dieguito and La Jolla are separate entities -may represent seasonal poses

Others argue that mixed elements are chronologically mixed deposits

Either way, Harris site assemblage seems to not be a good example of the entire pattern

- San Dieguito was probably not a general hunting adaptation as was thought
- San Dieguito sites should be expected to reflect the environment they are found in (this happens in later sites)

Some archaeologists have proposed a paleocoastal tradition to explain these shell midden San Dieguito sites, this really took hold when Moratto (1984) championed this idea, included Diablo Canyon site further north, -overall, based on a handful of sites...

Exploring adaptive variability over time and space more important than proposing long-term traditions like the WPLT

- Neither WPLT nor paleocoastal tradition has much utility

Stemmed point tradition also known from more northern areas too:

- Tulare Lake

Buena Vista lake (KER-116) in 1960s, Dave Fredrickson and Joel Grossman called in to re-excavate a site excavated in the 1930s (Wedel)

- they dug deeper than Wedel had dug (3m), found small assemblage resembling San Dieguito, dated to 8200-7600 BP on freshwater mussel shell

Skyrocket Site -near Copperopolis in Sierra foothills above Stockton

- John Pryor, work in advance of gold mining operation 800 ft. deep
- was initially recognized as an extensive Late Period site with burials but near end of first field season, an older component 2-3m below ground surface was found
- “Black Clay” -compact, possibly black clays are evidence of an old spring or seep
- radiocarbon 9000 BP on Black Clay stratum
- projectile points include long stemmed and indented stemmed points similar to Lake Mohave points, indented points look like Pinto points, also one fluted point
- other artifacts typical, scrapers, cores, etc...
- but a lot of millings and handstones, many from extensive rock feature “platform” several meters in extent, maybe built on marshy surface, maybe also burial cairn
- chronology of site may be questionable, especially related to large number of Pinto points found “Stanislaus stemmed” in Mojave desert, these date to 8000-4000 BP and also associated with huge quantities of milling equipment
- dates made on bulk sediments, not artifacts or features

Clark’s Flat site (also Sierra foothills) – excavated by Ann Peak, Harvey Crew, Moratto earlier

- 2 deeply-buried components paralleling Skyrocket
- 8000-10,000 BP
- contains long-stemmed points and very little or no milling equipment
- overlain by component with Stanislaus Stemmed points and moderate amounts of milling equipment, ca. 6000 BP
- makes Skyrocket seem troubled

Other sites in area with these points, but these two (Skyrocket and Clark’s Flat) are the main ones

Other claims for stemmed points along central and Northern California coast

- Duncan’s landing, Scott’s Valley, Monterey area
- some sites also with crescent

WPLT then doesn’t seem to be a California-wide tradition, what do we know:

- 1) stemmed point assemblages are old
- 2) are not ubiquitous in California, Great Basin or Desert focus
- 3) these are first assemblages in California that we can call fully integrated complexes
- 4) appear linked in terms of general technology, but subsistence-settlement patterns are varied
- 5) while this could be one integrated tradition, most archaeologists would have a problem with this having anything to do with culture
- 6) probably no such thing as WPLT (or paleocoastal tradition for that matter)
- 7) what about NW California? We don’t know

After this, prehistory becomes more regionalized, this is the last giant pattern we can talk about in California

3/18

Regional Developments – Millingstone Horizon, Southern California

Coastal proper as well as immediate interior – 3 major language groups:

- 1) Chumash family – 9 dialects/languages, from Morro Bay to Santa Monica Bay, all the way to the edge of the San Joaquin Valley
- 2) Takic family – subfamily of Uto-Aztecan, Los Angeles to Orange counties and desert interior, related to Numic speakers
- 3) Yuman – Diegueno

All three language groups are in blocks

Hokan – hypothetical stock (Chumash and Yuman)

Contemporary environments:

- coastal strip, narrow marine terraces with grasses
- interior more chaparral and oaks/conifers
- scrub environments thought to be resource-poor for humans when at climax stage – reason for burning – ecotones at edges of burns have more resources
- populations on coast would have had to relocate into interior to take advantage of nut crops, moving whole communities or sent groups inland
- greater elevations of mountains in Santa Barbara area would have made more zones available to people living there
- coastal habitats in Santa Barbara area marine environment more diverse, rocky coasts, estuaries...
- in south (e.g., San Diego), less variability
- coastal lagoons were present in San Diego area but silted in around 4000 BP
- reconstruction of past environments based mainly on pollen
- somewhat problematic but suggests that by 7800 BP, major increase in more open oak and grass, as opposed to closed forest of Pleistocene
- especially last 2200 years, essentially modern conditions
- another core suggests modern vegetation community was present by 9200 BP
- increasing warmth and aridity but no extreme changes
- sea levels continued to rise until around 7000 BP then much slower rise until 4000 BP, then levels off
- effects: coastal lagoons were quickly flooded, formed large bays, estuaries, and lagoons along coast, increased coastline
- formed many new microenvironments

- probably decreased terrestrial productivity at same time
- 20-30m rise in sea level between 10,000 and 7000 BP
- after 4000 BP, major increases in alluviation, rich microenvironments vanished rather quickly

Archaeology:

South Coast of California was focus of archaeological scrutiny in mid-19th century for museum collections, was recognized that material culture was very rich, especially in shell and steatite industries (bowls, ollas, effigy figures, charmstones, shell beads and ornaments)

- asphaltum used to seal basketry but also in decorative ways for inlays
- large amount of material culture (e.g., plank canoes)

Result of this unsystematic looting was that many of the large, more impressive sites had been seriously damaged (by the time archaeologists got to them)

Paul Schumacher -Smithsonian, Stephen Bowers – museum looter types

-1875, in one month's time, Schumacher unearthed 700 burials on Santa Monica Island alone

J. P. Harrington –Burton mound in Santa Barbara 1920, it had already been mined

David Banks Rogers – 1920s work in Santa Barbara area, “Prehistoric Man on the Santa Barbara Coast”

- identified 3 phases and economic patterns (Oak Grove, Hunting Culture, Canalino)

Ronald Olson – was working about same time, mainland and island areas, provided different sequence, noted proportions of different artifacts

- Olson proposed 5 periods: Archaic, Early Mainland (local specialization), Intermediate Mainland (lacks millingstones, only mortars and pestles, more steatite), Late Mainland (development of Chumash)

Malcom Rogers –about same time, working in San Diego area

Interior: Topanga Canyon first work in interior (1940s)

- first thing recognized was sediments were hard, stone tools patinated

R.F. Heizer, E. Lemert – suggested that was old due to sediments and artifacts

Treganza – did Ph.D. work here – 2 important sites: LAN-1(the “Tank Site”) and LAN-2

- Topanga assemblage characterized by large, heavy stone tools, scraper planes very common, choppers
- battered looking but flaked tools, heavy stuff
- points and refined bifaces are rare (like La Jolla) but thousands of milling stones and handstones
- evidence of secondary burial under millingstones

Treganza recognized 2 vertically segregated components:

- 1) upper one with mortars and pestles, small points, cogstones (Topanga II)

2) lower component as described above (Topanga I) – heavy tools, millingstones... no mortars and pestles

Keith Johnson (Chico State) – later worked at LAN-2, identified 3rd phase, the site had Topanga II and one later phase (Topanga III)

- this later phase had circular rock-lined ovens, flexed burials buried under cairns, dominated by mortars and pestles, more smaller points, core tools continue
- Johnson obtained first dates (2700-2400 BP) for Topanga 3 complex

[note: Fitzgerald and Green added new dates for LAN-1 in 2019: 6650-6059 calBP]

-bone was poorly preserved but rest of assemblage similar to Oak Grove (D.B. Rogers) and La Jolla (M.J. Rogers), scraper planes thought to be for yucca and agave

Pauma Complex – 1958 D. L. True started reporting of complex from interior of San Diego county –broad upland table area

- small to moderate-sized surface scatters, not a lot at them, not a lot of depth
- True first believed this represented a mixture of La Jolla and San Dieguito type stuff, millingstones of La Jolla but with crescents and points like San Dieguito
- no significant excavations at Pauma complex site yet
- except maybe Moosa Canyon –Caltrans late 1970s, difficult to tell

True went back and collected larger surface samples with better provenience

- led him to different conclusion (ca. 1977) Pauma complex consistent with La Jolla and San Dieguito material “overprinted”
- many sites had only Puma, others were “mixed” –needs to be dug to be sure
- other materials found True related to desert people further in

Sayles Complex –Crowder Canyon first identified on edge of Mojave Desert

- first excavated in 1960s, classic site is Sayles Site (SBR-421) big site complex with different loci
- Mark Kowta (Chico State) when at Riverside described set of materials similar to La Jolla and others
- large amounts of milling stones, core tools, small amount of refined flaked stone tools
- 1970s Caltrans dug other three loci and SBR-713 the “Ridge Site” and came up with similar stuff and some different stuff, wasn’t written up
- True and Basgall later wrote it up [[Crowder Canyon report](#)], got dates, 5000-1000 BP for Sayles complex, Ridge Site most recent site (has mortars and pestles) 2500-1000 BP

3/23

[notes at top of page: “April 8th take home midterm -1 week to work on” “Talks for potential new professors: April 6th Delacorte, 7th Zeanah (Jerry’s class 11-12:15”]

Particulars of earlier complexes and implications for lifeways:

Oak Grove – (Rogers 1929) – data a little sketchy but:

- sites on higher ground away from the ocean
- containing between 5 and 25 semi-subterranean pit houses (4-5.5m diameter, 0.5m deep)
- prepared floors containing charcoal and ash, hearths, rarely are tools found in houses
- sediments that contain the sites tend to be hard, carbonate impregnated soils (indurated, “caliche” –could mean ancient
- burials were all fully extended, arms along side, ventral or dorsal side up
- grave goods uncommon but red ochre and single abalone shells sometimes
- burials marked by cairns, milling tools or beach cobbles
- sometimes metates inverted over burials
- dominant artifact is milling stone, large, 0.5m long and basined
- handstones often well-worn, formalized pieces
- other artifacts relatively uncommon (points, choppers, scrapers)

Rogers never reported numerical data, hard to tell how these patterns varied from site to site

True and Basgall (Crowder Canyon report) did site-by-site presence/absence matrix

- manos and metates definitely prevalent but other features not known

There hasn't been a lot of subsequent work in Santa Barbara since Rogers

- a lot of sites excavated but few seriously excavated
- a lot of these sites don't contain a lot of artifacts per unit volume (all up and down coast)
- a lot of dirt has to be moved (to get decent assemblages)
- CRM archaeology is constrained by budgets
- also the Santa Barbara school of archaeology have taken a position that they should not dig more than they have to to get information (Glassow)

Exceptions (2 sites, late 1960s-early 1970s): Glen Annie Canyon Site and Brown Site

- these are different than Rogers' Oak Grove, but close

1) Glen Annie Canyon Site [[CA-SBA-142](#)]:

- burials are loosely flexed, not extended
- wider range of tool types that Rogers considers rare
- this is explained through recovery techniques (no screens for Rogers)
- also sample size problems, some sites Rogers dug more than others
- still, many features shared (cairns, milling stones...)
- Rogers noted small quantities of bone and shell, not a lot of subsistence information
- Rogers was looking for burials, dug more at sites where he found burials

2) Brown Site [[CA-VEN-150](#), [Greenwood](#)]:

- different proportions of artifact classes, some flexed burials

Many of the Oak Grove sites are now destroyed, some still have remnants, we may never know with certainty

La Jolla pattern sites

- initial sites (Malcom Rogers) at silted-in lagoons at immediate coast or within a few kilometers, low elevation
- shell middens located on mesa rims, edges of canyons
- artifacts (surface observations) –metates, manos, hammerstones, cobble flakes (Teshoa flakes), few well-made flaked stone tools
- unlike Santa Barbara, some major excavations have since occurred in La Jolla sites

1) Scripps Estate Site (Morriarty and Shumway, 1959)

- large deposit overlooking a bluff on immediate coast
- focused largely on burials
- was missing upper levels, had been bulldozed, nevertheless valuable info
- mano and metates
- heavy cobble tools
- burials marked by inverted milling stones though not cairns
- few bifacial tools
- some non-utilitarian objects with burials (doughnut stones)
- burials flexed
- dates 7000-5000 BP (upper component missing though)

2) Batiquitos Lagoon (Warren and True)

- replicated this pattern but found more
- found bone artifacts
- found some points –large crude corner-notched points

Two kinds of features:

1. large clusters of rock –oven features?
 2. diffuse scatters of burned rock – torn apart of above?
- dates 7500-3500 BP
 - small pieces of asphaltum were found with sea grass weaving impressions
 - faunal remains testify to near-shore fishing and terrestrial fauna, no evidence of deep marine exploitation

Warren concluded that La Jolla pattern extended to 2000 BP

- sites were full-service sites, people lived there for extended periods

Numerous other La Jolla sites have been excavated though not well-published

- metates basic milling component –slab ones rare
- cobble and core tools common, may have been multipurpose tools
- manos, also multipurpose, often pecked
- most people believe these tools were involved with plant processing (cobble tools) but no one knows which specific resource(s)
- hammerstones typical also (continuum from flaked tools to battered tools)
- refined flaked stone rare, occasional dart points
- occasional cogstones (not common)
- burials flexed, sometimes cairns and inverted metates
- simple spire-lopped Olivella beads, no wall beads

There are occasional San Dieguito-type tools (lanceolate bifaces), more in early La Jolla

- 1) maybe San Dieguito and La Jolla are the same?
- 2) maybe Sa Dieguito materials intruded?
- 3) sampling error?
- 4) San Dieguito may sometimes look like La Jolla, similar problem with Oak Grove

Because they were excavated so long ago, we don't know how representative the excavated sites are

These two complexes (San Dieguito and La Jolla) are probably different, we don't have to go far away from San Diego county to lack San Dieguito substrate

Pauma Complex: mainly surface materials, difficult to determine what goes with what

- also some San Dieguito-like elements may occur at these sites, True originally thought these were part of the pattern then later said they were intrusive
- there is no reason to believe this couldn't all be Pauma, can't exclude them
- principal artifacts are metates and manos, deep basin to slab forms
- same kinds of cobble core tools –combination tools
- discoidals and stone balls
- rare refined flaked stone
- only one burial found, under inverted metate
- not a lot of faunal material, but seems to be emphasis on deer and lagomorphs
- 6800 BP –only date (within range of La Jolla)

Not a lot more can be said about Pauma – looks like La Jolla, but interior

Topanga: a lot of overlap in these assemblages

2 basic features:

1. concentrations of buried rock with charcoal (rare)
 2. accumulations of ground and battered stone –grave markers
- metates variable from deep basin to slab
 - core cobble tools most frequent artifacts, most are minimally-shaped, expedient
 - wear on scraper planes shows they were used as planes
 - cogstones from LAN-1, LAN-2
 - poor preservation of subsistence remains
 - 12 burials at both sites, poor conditions, extended and reinternment
 - inverted metates, few or no other burial accompaniments
 - at LAN-2, all burials are flexed, 2 may have had cairns

Other sites with similar assemblages: LAN-215 Century Ranch

Similar sites along immediate coast between Los Angeles and Santa Barbara:

1. Little Sycamore Shellmound (CA-VEN-1) William Wallace
 - had 2 components, one deeper with indurated soils (6900 BP), upper shell midden (2600 BP)
 - 15 burials, 5 flexed primary, 10 reburials, 6 of later had metate markers
 - discoidals and cogstones

2. Zuma Creek (CA-LAN-4), poorly excavated in 1950s
 - millingstones, varied projectile points, core tools
 - cogstones, stone ball...
 - burials included reburials under millingstones, and primary burials of various postures

[from Moratto 1984: 129: “In 1968, the Zuma Creek Site was totally destroyed to make way for ‘terrace upon terrace of mobile homes’ (T. King 1973)”]

3/25 Great Basin Day [Mark Giambastiani guest lecture]

Owens Valley

Period	Owens Valley	Date Range	SW Great Basin	Date Range	Point Types
Early			Lake Mojave Period	pre 6000	Lake Mohave
	Clyde Phase	5500-3200	Pinto Period	6000-3200	Pinto
Middle	Cowhorn Phase	3200-1400	Newberry Period	3200-1400	Elko
Late	Baker Phase	1400-700	Haiwee Period	1400-700	Rosespring
	Klondike Phase	700-140	Marana Period	700-100	DSN/Cottonwood

Dry, desert environment -natural resources different than other areas of California

- acorn in to Central California as pinyon is to desert cultures
- social structure, seasonal round accordingly different than Central California

Prehistoric Eastern California populations are thought to have been smaller, less dense than rest of California

- subsistence resources very patchy (water, game, plant resources)
- some resources predictable, others less predictable

Small, often single-family units (nuclear)

- these groups often had to move great distances (residential mobility)
- this may have prevented groups from getting too large

During last 10,000 years, several adaptive changes

Owens Valley – most well-known archaeological locality in Eastern California

Julian Steward -first ethnographic work in area, developed his ideas of cultural ecology here

-decades of archaeological work in Owens Valley -especially starting in 1970s

Bettinger 1975 Dissertation – huge surface survey with cultural chronology

- his chronology still basically stands with a few modifications

Prior to Haiwee period, populations low, highly mobile groups

- subsistence fairly equally plants and animals
- moved 30-50 miles a year
- weapon of choice for hunting was atlatl/dart

- large points that could be resharpened and used for long periods
- points have long use-life during which they get smaller and thinner

Major change at beginning of Haiwee period

- technologically, this was characterized by the bow and arrow
- these points were made on flakes rather than biface preforms
- growing populations – intensification
- many different resources, each with a cost, some cost more than others
- at some point in prehistory, people start looking harder at more costly items because less-costly items are less available
- involves bulk storage of food – some high-cost foods store well (acorns, pine nuts)
- if people are processing and storing more, they become less mobile
- decrease in residential mobility, people are going shorter and shorter distances to get things because by the time someone gets to a resource area, someone else is already there
- obsidian, competition for it may have increased during Haiwee period
- Owens Valley may not have been typical of the Great Basin in general (in most recent time periods)
- higher population levels, rudimentary agriculture, more complex social structure

Two main issues:

1) Numic spread hypothesis (Bettinger and Baumhoff), Late period changes (such as change to bow and arrow) argued another population moved into the area and displaced current inhabitants, spread out into huge fan over Great Basin

- Numic speakers armed with “intensification package”
- pre-Numic were not doing intensification

Bettinger called these groups “Travelers (pre-Numic)” and “Processors (Numic)” [similar to Binford’s “foragers” vs. “collectors” but not exactly]

- not everyone buys this hypothesis, why does it have to be population replacement?

Could just be changed technology

2) Obsidian exchange – especially over Sierra Nevada

- we know eastern obsidians end up all the way to the coast
- people argue that there must have been exchange routes over the mountains
- meeting at crest or coming down to central valley and back over
- production sites -people believe huge bifaces were traded
- production sites are dominated by biface debris
- quarry studies – obsidian production peaked in later Newberry/early Haiwee periods
- at about 1000 BP, notable increase in Northern California obsidians going into Central Valley
- explanations –
 - a. Hall argued that volcanism limited access (not a very popular argument anymore)
 - b. more popular is the territoriality argument -related to population increase
 - c. change from dart point to arrow point technology in conjunction with intensification changes, maybe not as much obsidian needed
- how obsidian studies can help us understand these changes:

-Volcanic Tablelands -obsidian is the major toolstone, many sources nearby, many sites have 5-7 different types

- curated artifacts (dart points) vs. expedient or trash (arrow points included)
- if people are moving around landscape, it is likely they would have access to more obsidian sources, carrying several different types on them
- dart points are more diverse than arrow points for obsidian types
- later in time, people use obsidians closer to them
- all over California, there is an association between population growth and cultural change
- *decreased mobility forced people to make smaller points from less-available obsidian – this forced bow?

4/6 Michael Delacorte's lecture

[note: this lecture was Michael Delacorte's "job talk" when he was applying to be a professor at Sac State – both he and David Zeanah got the job]

Numic expansion – usually thought to be around 1000 BP

Great Basin – important in American anthropology and archaeology

-big question over last 50 years has been whether or not there has been significant culture change over the last 10,000 years

-classic example of simple human culture in ethnography

Great Basin was one of the last places colonized – Indians avoided conflict until 1850s

-just about same time anthropology as a discipline started

-people held on to their traditions a lot longer than in other places

Great Basin was the birthplace of cultural ecology (Steward) – he was a student at Deep Springs college [in Deep Springs Valley adjacent to Owens Valley – where Delacorte did his Ph.D. work and where he was an instructor]

-it was noticed early on that the Great Basin had very early prehistory, lakeshore sites (playas)

Jennings – Danger Cave had oldest radiocarbon dates for a while (ca. 9000 BC)

From mid 1940s-1960s, first episode of argument about whether or not there had been culture change

-there was no evidence of significant culture change

-changes in past environment were looked at to show change (or lack of it)

-this is where the debate centered during this time, there wasn't much paleoclimate data at the time

-changes in glaciations, lake levels, etc. -coarse-grained

-these coarse-grained data could be argued either way

Baumhoff was on the variation side, Jennings on the stability side

New Archaeology – changes in research focus, emphasis on regional ecosystem studies rather than single-site oriented

-people picked a region (usually a valley) as study universe

-next, locate a series of sites in different environments or sample each environment for sites

Environments – marsh, desert scrub, mid-elevation woodland, upper sagebrush community (woodland sans trees), second high-elevation woodland (bristlecone and limber pine), alpine tundra

- certain areas in central Great Basin were argued to have no significant culture change
- other areas (especially southwestern Great Basin) had significant change – such as pinyon intensification ca. 1300 BP

Final (most recent) phase in the debate -approaches problem in a different way, from theoretical rather than archaeological perspective

Numic – northern, central, southern, Lamb 1958, languages spread very rapidly into Great Basin
Bettinger and Baumhoff – coupled evolutionary ecology and linguistics with archaeology

- showed how there didn't need to be a major change in technology or climate (for one population to replace another)
- how do we identify a population in prehistory? (genetics is still in its infancy), politics and ability to sample don't always match up
- artifact types, basketry, pottery, petroglyph styles -these have never been established well, and these are not common

Delacorte instead proposed that DSNs (Desert Side-notched projectile points) could be a marker

- different subtypes (Sierra, General, Delta, Redding)
- also Cottonwood points at same time -these are significantly shorter than DSNs and so were not preforms, have larger distribution than DSN outside Great Basin

Young and Bettinger (1992) -computer simulation suggests that Numic expansion could have happened very rapidly

Delacorte – compared regional abundance of DSNs to Rosegates – if same population made both, distribution should be the same for both

- when DSNs are found outside of Numic culture area, they tend to be clustered
- Cottonwoods increase in abundance as you move out of the Numic area
- Rosespring points were used longer further away from Numic homeland
- DSNs were used longer ago in Numic homeland and more recently further out

How could Numic people replace existing population?

- Bettinger and Baumhoff argued that lesser-quality resources were exploited by them
- problem with this explanation when applied over larger area of Great Basin
- occupied very different environments, some groups relied on fish more than seeds, Numics expanded into areas where seeds were not important
- The archaeological record of the Great Basin as a whole (not just Numic homeland), some sorts of intensification were going on elsewhere before Numics got there
- a pattern of large, multihousehold, band-like, villages disappear about 1000 BP and replaced by small household occupation sites
- may have been organization of Numic peoples into households that gave them the advantage over pre-Numic band structure

4/8 Basgall again

- differences in opinion in archaeology stem from different initial assumptions
- “Yoda lecture” good info on wisdom of archaeology

[note: the above was literally all I wrote down for this lecture but I can remember all us students were excited about it and called it the “Yoda lecture.” It’s too bad this is all we have but I like to think I took something useful from it. Looking back, I wonder what was going on with Mark at this point in the semester – maybe he was in the thick of some larger disagreement in archaeology, or maybe it was department politics, or maybe he just didn’t have a lecture prepared?]

4/13

Southern California Millingstone Horizon [continued from 3/23]-characterized by large amounts of milling stones, not much flaked stone, certain non-utilitarian objects

William Wallace – called this the Millingstone Horizon (Oak Grove, Sayles, Topanga included)
Claude Warren -called this the Encinitas Tradition based on a different emphasis on common cultural continuity, not just chronology like Wallace, but groupings were very similar to Wallace’s

All over except on islands, not same milling tools, etc., probably due to nature of island resources

Very strong temporal differences between some of these (San Dieguito persists a lot longer -ca. 3000 years – than Oak Grove)

Similarities in perceived lifeways of these people, non-utilitarian artifacts in common, also similarities in burial complex (placed under rock or milling stone cairn)

- differences (Rogers’ Oak Grove had extended burials) may be more imagined than real
- south of Santa Barbara, burials are flexed
- some differences in proportions of artifact types at these sites
- differences in relative use of different types of resources, coastal resources along coast, drops off in interior

Explanations for similarities (within Millingstone Horizon)

1) Common cultural connection -because of burial mode, non-utilitarian objects

- problem is a common archaeological problem -once you buy into a cultural continuity argument, you haven’t explained anything
- if this is the same culture, why did it happen differently in different places?
- differential persistence of culture in south (San Diego county) and north (Santa Barbara county) pose a problem for this explanation
- if explained by saying something in Santa Barbara was different, then adaptation still has something to do with it
- We can’t escape adaptation -if we discount this, we are forced to argue for cultural replacement (Warren argued this)

2) Common adaptation arguments

- most contemporary archaeologists believe this
- most assemblages, the pattern reflects a generalized, broad-spectrum subsistence pattern that occurs all over arid southern California
- this explains difference through differences in resources

3) Recent model from Kelly McGuire, Bill Hildebrandt

- explanation for conservatism and lack of flaked stone
- start with equating plant processing with women, hunting with men, not universal, but statistically sound in modern hunter-gatherers (80-90%)
- McGuire and Hildebrandt suggest reason Millingstone Horizon looks like it does is that men and women did essentially the same thing, due to the “dreaded Altithermal” people were forced to share their resource getting activities more than before
- looked at assemblages and found some ethnographic evidence that men did do plant processing
- also argue that this accounts for core-cobble/scrapper plane tools which has to do with Yucca processing

Problems with the McGuire-Hildebrandt argument:

- a. it just replaces one ethnographic explanation with another
- b. it does not pinpoint the conditions under which division of labor between men and women balance out – this doesn’t happen that often
- c. climatic correlation doesn’t really work – so many of these Millingstone complexes were already thriving by the time the Altithermal occurs (7500 BP), some by 9000 BP [or earlier now -Cross Creek site in San Luis Obispo county]
- d. doesn’t account for why hunting remained important in interior deserts (e.g., Pinto tradition has a lot of ground stone but clearly a lot of hunting too)

This McGuire-Hildebrandt model developed out of Kowta’s influential monograph on the Sayles complex (but without the gender slant)

- Kowta said cobble-core tools related to yucca/agave, these are widespread plants in southern California
- said people who were doing this fled the desert during the Altithermal (for 2 reasons)
 1. conditions were getting bad in the interior deserts
 2. changing climate was good for yucca and agave – expanded range

Problems with these models (McGuire-Hildebrandt and Kowta)

There is probably some element of truth in each of these models, but it is important that association between cobble-core tools and yucca has not been made conclusively

- Brantley Jackson 1980s MA Thesis Washington State, said these were hammerstones for sharpening milling stone surfaces
- other use-wear studies show wide range of uses, not just what one would expect for yucca
- still not shown that yucca/agave changed range
- timing of Millingstone and Altithermal don’t correlate well

There is still a lot not known about the Millingstone complex

- there are very similar complexes well outside southern California area
- North Coast Ranges, Lake Berryessa, Northern Sacramento Valley, San Francisco Bay
- work to be done – there should be some interesting patterned differences from south to north [one of those great examples of Basgall just tossing out a terrific research idea to students in the normal course of a lecture]
- still unknown whether this was a common cultural tradition or an adaptive pattern

This is part of a continent-wide (even world-wide) transition from early to archaic cultures

What is intermediate horizon? Between Millingstone and Late cultures

- poorly understood outside of Santa Barbara area
- Rogers' "Hunting Culture" – sudden fluorescence in flaked stone material, bifaces, projectile points
- termination of millingstone core-cobble industries, especially core-cobble scraper planes
- serious increase in mortars and pestles, acorns assumed but correlation is not sure, used to process a lot of things, but where mortars and pestles are very prevalent in late cultures, it is for acorn processing

Rogers called the earlier pattern "Oak Grove" because he thought they were also processing acorns (with the basined millingstones) but hadn't perfected it yet (i.e., with mortars and pestles)

- in most places in the state, correlations between mortar/pestle and acorn is lacking

Intermediate pattern – Chumash forebears after this

- Hunting culture sites show coastal resource use but not real maritime adaptation like later

Claude Warren – called this the Campbell Tradition – because he sees similarities between these sites and desert sites at same time (named after Elizabeth Campbell who did early work in desert)

- 1) large side-notched dart points (like Elko)
- 2) large corner-notched dart points (like Pinto)
- 3) indented base points

- Warren hypothesized a migration of desert peoples
- he emphasized hunting – argued they were used as harpoons to hunt sea mammals, saw as a modification of their desert hunting lifeway
- he then looked at San Diego – no hunting tradition, all La Jolla
- some of the points show up – but are with Millingstone assemblages, he argued people came down south occasionally
- no one believes this anymore -site unit intrusion (Santa Barbara area points in La Jolla assemblages)

Changes in Middle Horizon:

- 1) more substantial hunting technology
- 2) somewhat greater elaboration of maritime focus -some use of deeper water resources
- 3) drop in reliance on shellfish
- 4) more mortars and pestles – at least increased use of fleshy nuts or fruits if not acorns
- 5) increasing specialization to local environments

This period of time is difficult to investigate for 3 reasons:

- 1) we don't have a good idea of the distribution of sites across the landscape – not many sites to work with, no control over variability, problem of "type sites", some differences we see may be due to aspects we can't control for yet

- but there are well-documented Millingstone Horizon assemblages that continue right through the Campbell tradition
- it is tempting to see the Campbell tradition as result of special circumstances of resources in Santa Barbara area – better resources

-maritime economies always lag behind in the south -never achieved level of complexity and sophistication of north (Santa Barbara)

What we do know is that there seems to be some boundedness to where the pattern occurs – nearer the Santa Barbara area

Most current archaeologists have rejected explanation of desert culture migration, instead thought to be *in situ* development of people in Santa Barbara area due to nature of resources and population pressures

2) Archaeology has a hard time dealing with migrations, cultural replacements, etc., also was not fashionable during the processual period, still not in favor but has not been shown that this could not be the case

-Warren was no dummy, there may be a desert connection

3) in Santa Barbara area, not as much is known about Millingstone assemblages, but a lot is known about what they ate, differing research focus

-for hunting culture, there's just not enough sites

4/15

Last time, discussed Middle Horizon (Campbell Tradition) in Santa Barbara area, elsewhere (e.g., San Diego) change from Millingstone does not really occur

-in San Diego county area, early investigators thought area might have been depopulated during Middle Period, but with new radiocarbon dates, etc, gap has been filled in with Pauma Complex

Santa Barbara area -2 scenarios:

1) Warren – desert migration

2) changes reflect gradual intensification among in-place populations

-Campbell Tradition sites show greater maritime adaptation, increased use of (probably) acorns, also possibly increased sedentism, more people occupying sites

-These changes thought to be due to better setting, better resource base in Santa Barbara area (when compared to, say, San Diego area)

-a lot is left unanswered, it is premature to discount migration theory

Explanations based on historical events have fallen out of favor, but not considering them is a dangerous thing

-gradual intensification best exemplified on Channel Islands

-more deep-water strategies developing earlier than on mainland

-resource pressure greater on islands, could have hastened development

Late Period in Southern California – starting between 2000 and 1000 BP

-in San Diego area, Millingstone pattern disappeared *no later than* 1500 BP

-in Santa Barbara area, Chumash-like cultures may have been around by 2000 BP

-several archaeological complexes have been described, all emerged about same time in Southern California

Warren – identifies 3 patterns -these correspond to 3 major linguistic stocks

1) in north there are Chumash – Warren's Canalino (Hokan [now Chumashan?] stock)

2) in center, there is Shoshonean tradition – (Takic stock)

3) in south, Yuman, San Diego county (Hokan stock)

Coastal Chumash area – almost certainly most complex of the three

1) almost certain evidence of ascribed status, people were born into their positions (as opposed to achieved status)

- young children buried with as much grave goods as adults

2) craft specialization highly developed – not everyone could make everything

- boatbuilders, beadmakers, etc...were supported by other people

3) strong evidence of long-distance trade -import and export

4) by Late prehistoric times, had fully monetized economic exchange system

- money had set values, formalized shell beads

5) had highest population densities, largest villages of these 3 groups

- some villages had more than 1000 people

- some villages confederated together under single leader

Caveat: much of what has been written about the Chumash reflects ethnohistorical record as much as archaeology

- the Spanish reported a very complex society

- unclear from archaeology, what kind of time depth or areal extent of this phenomenon

- some could be wishful thinking -people have been intent on showing sophistication of this area, misconceptions have crept into the literature

- material culture also shows unusual level of sophistication

- steatite vessels, shell fishhooks, ornaments and other non-utilitarian objects (beads for money, ornamental) pendants, charmstones

- this is why early museum collectors like the Santa Barbara area

- bead making specialists, especially on the islands

- emphasis on shell inlay -using asphaltum

- basketry among finest in California

- also Chumash rock art

- evidence suggests this was a full-scale maritime adaptation

1) technology – sea worthy plank canoes, fishing gear, nets, harpoons

2) movement of materials regularly to and from islands

- chert drills for beads made on islands, beads probably also

- terrestrial animal remains also from mainland found on islands

- an integrated and complementary economic system between islands and mainland

3) food refuse -attests to maritime economy – a lot of sea mammals

- more diagnostic is amount of pelagic fish

- tendencies in this maritime adaptation had started earlier but really reached fluorescence in Chumash period

Chester King – argued that mainland villages were sedentary, groups moved out to exploit resources at various times of year

Leif Landberg -suggests villages were only quasi-permanent, sees them breaking up into family groups at certain times of the year, for terrestrial resources

Bill Hildebrandt – dug a very late Chumash village in the Santa Barbara area, found there was no real comparative data to compare this site to

- many have not been written up, not many dug
- ethnohistory has filled in the gaps – for better or worse

Complications – issue of storage, resources may show up in a site at times far removed from when they were procured

- this is a common issue in archaeology in general related to seasonality

Basgall's opinion is that both ideas may reflect reality

- related to fact that not all Chumash were the same
- in fringe areas (e.g., SLO County), colonized relatively late by Chumash
- appear to be a bit more backward – “country cousins”
- less emphasis on deep water resources, more shellfish
- less elaboration of material culture
- sites are smaller, fewer sites per unit area (population density lower)

Chumash phenomenon should be recognized as a localized phenomenon

- stereotype does not extend all along Santa Barbara channel area

Interior groups -not only used on seasonal basis by coastal groups – had as strong a connection to San Joaquin Valley groups as to people on coast

- Oak Park, Century Ranch -only about 10 km in interior
- very late sites, as similar to earlier sites as to sites along coast
- residential sites small, terrestrial focus, some contact with coast

The problem with coastal archaeology in California is that coastal archaeologists like to work on the coast, not interior – this has obscured articulation between coast and interior

- the point is we have a stereotype of Chumash as sophisticated, but peripheries of Chumash area (up coast and inland), look much simpler

South of Santa Barbara

Ventura, L.A. County area – not widely reported archaeologically

- many of these areas were wiped out by development
- D.L. True was a pothunter before he was an archaeologist and he used to routinely loot sites in the area, these same sites were gone by the time he was a professional

Exceptions

- 1) Little Sycamore shellmound – has a late component
 - 2) Medea Creek
- these suggest an adaptation with clear maritime affinities, but not so developed as the Santa Barbara area
 - Gabrieleno also had plank canoes, southern channel islands had Shoshoneans [so, different linguistically than northern islands]

Orange County, Northern San Diego County -more information is available

Meighan and True -identified San Luis Rey Complex

- identified with historic Luiseno people
- coastal settlements of Late Period were few and small, no major residential complexes
- much reduced evidence of sea mammal use
- fishing seems to be shore species, no good evidence for real seaworthy boats
- major villages were along major drainages in interior
- sites contained both portable mortars and large bedrock mortar complexes
- steatite industry very poorly developed, but these people had pottery (unlike the Chumash)

- toolkits look very similar to La Jolla, though more projectile points (small Cottonwood triangular points)
- still a lot of core cobble tools, scrapers of earlier times
- cremation had replaced burial

Yuman Complex – southern part of San Diego county

- Cuyamaca Complex represents this
- very similar to San Luis Rey though True tried to differentiate the two – differences:
 - a. ceramics more abundant
 - b. cremations placed in pottery urns
 - c. burial is away from residential sites
 - d. more milling stones/handstones – lacks mortar and pestle concentrations of San Luis Rey
- seasonal transhumance similar to San Luis Rey (with villages located a little ways inland so both marine and terrestrial resources can be exploited)

Shoshonean intrusion – produced San Luis Rey -from outside whereas Cuyamaca represents in situ development from La Jolla

- this is on fairly firm ground because it is more recent

4/20

Debate about cultural factors vs. adaptive factors in complexes in Late Period

- influences were certainly coming out of Chumash area
- the rich marine environment of the Santa Barbara channel probably contributed to the development of complex system
- peripheral Chumash were simpler, this tells us it was partly an environmental causation

Why the Chumash came to be the Chumash (even though the idea of the complex Chumash has been exaggerated)

- what was driving this? 2 perspectives:

1) more traditional perspective – resource intensification

- interaction of population and environment
- utilization of lower-ranked resources (acorns, some deep sea resources)

2) social intensification

- people manipulating resources for their own interest, selfish gain of some sort
- effect of surplus production
- heredity, social positions, chiefs, etc...

The relative importance of these two explanations is where most Chumash scholars do most of their disagreeing

San Joaquin Valley and Coast Ranges

- archaeological investigations began relatively early (1920s-1930s) very little subsequent research
- many assumptions made about it being like north [Sac/San Joaquin Delta area] which is better known
- extensive excavations mostly predate recent period -methodologies not well defined, poor dating, etc...
- this part of California is comparatively hot and arid
- coast ranges do have permanent water – more than meets the eye – but many streams are seasonal

- this is due to rainshadow effect
- water that the San Joaquin valley gets is mostly from the Sierras
- relatively productive oak woodland and pinyon-juniper in coast ranges, but most hills are bald until closer to the coast
- prior to historical transformation, vegetation ranged from grassland scrub (alkali), further north more luxurious grass vegetation was said to be over 6ft tall in many places historically
- more northern area, though, had seasonal flooding, this restricted movement and where settlements could be, water also supported large amount of wildlife -elk, migrating waterfowl, fish, freshwater mollusk, tule, cattail
- by contrast, southern 3rd of valley had more xeric vegetation, much like western Mojave desert in playa areas (saltbrush, sagebrush)
- water was restricted to a few large and connected lakes [Tulare, Buena Vista]
- water levels varied somewhat over time, when lakes were full of water, supported rich lacustrine resources, magnet for prehistoric occupation
- beyond lakes, much of south valley subsistence systems would have had to be focused on other areas of the valley besides lake

At the time of contact, people were Yokutsan (Penutian stock)

- 3 groups, northern valley Yokuts, southern valley Yokuts, foothill Yokuts, each was tied to a certain type of area
- southern valley Yokuts tied to lake resources (this is the stereotype)
- northern Yokuts specialized more on fish and acorns
- foothill Yokuts “typical California cuisine”

About 60 tribelets -permanent or semi-permanent villages centralized in prime location within the valley

- portions of the south coast ranges were inhabited by groups with ties further west (Salinan and Chumash) -this is not known for sure, a lot of disagreement
- a lot of the south coast range area may have functioned as a joint use area -used at different times of year for task-specific reasons

Dates – most linguists say 3500-3000 BP (north), 3000-2500 BP (south) for Penutian immigration to the area

- they filled up the area quite rapidly
- pre-Yokuts people were probably Hokan speakers
- expansion of Penutian stock is common theme all over central California

Archaeological record

Gifford and Schenck -first reported on southern part, Schenck and Dawson, first reported on northern part (Stockton area)

- these early investigations focused on mound sites, cemeteries
- by early 1940s, was commonly assumed that there was a three-part sequence that could be applied to all of Central Valley
- initial characterization of these assemblages were trait lists organized into horizons

Early Horizon – known mainly from delta area but was assumed to be present in San Joaquin Valley too

1) burials were extended (ventral -on stomach)

- 2) most graves were associated with artifacts (85%) -quartz crystals, red ochre too
- 3) distinct kinds of beads -Olivella types (small spire-lopped, wall bead called thick rectangle), Haliotis rectangle beads, also Haliotis ornaments in burials
- 4) charmstones – most perforate
- 5) conical smoking pipes
- 6) heavy stemmed and leaf-shaped projectile points (large – atlatl)
- 7) bone artifacts rare – but some distinctive – cannon bone daggers, made of deer metapodial bone, spatulate objects made of ribs
- 8) hand-molded baked clay objects – net sinkers, stone poor environment
- 9) rarity of mortars or other plant processing tools – economic orientation was said to be focused on fish and hunting (but based only on burials)

Middle Horizon – wider distribution of sites, not just delta

- 1) burial mode was tightly flexed, 5% cremations, nearly all cremations but less than half of primary inhumations have grave goods
- 2) other kinds of Olivella and Haliotis beads (split half-shell Olivella, oval saddle “F” and saucers “G” Haliotis subrectangles and circular, new kinds of Haliotis ornaments, perforated canid teeth, bear claws
- 3) charmstones – most imperforate
- 4) cobble mortars occur fairly regularly -wooden mortars inferred from chisel-ended pestles
- 5) extensive and diverse bone tool inventory
- 6) projectile points still large (atlatl-dart) foliate and concave base forms
- 7) violent death apparently common
- 8) baked clay objects still common
- 9) diversified subsistence pattern inferred (due to mortars)

Late Horizon – most widespread, even into non-valley areas

- 1) burial mode quite diverse -varies from place to place, a lot of cremation
- 2) new Olivella bead types -wall beads (thin lipped Olivella) sequins
- 3) elaboration and proliferation of Haliotis ornaments
- 4) magnesite disk beads, cylinders, steatite, clam shell disk beads come in in a big way in the valley
- 5) introduction of bow and arrow, side and corner-notched points, some heavily serrated (Stockton serrates)
- 6) a lot of mortars and pestles – flat bottomed with cylindrical pestles
- 7) incised bird bone tubes (beads, whistles)
- 8) subsistence focused on acorns inferred

More ink was spilled at this time listing artifacts, limited time spent trying to figure out what people were doing

They were having a hard time dating these complexes -no radiocarbon dating yet,
 -also, after radiocarbon dating was available [after 1949], not a large number of sites were dated
 -depth of burials was considered a good guide to age

Early: 7500-4500 BP (many people believe this is too old today)

Middle: 4500-2000 BP

Late: 2000 BP to historic

-these dates still not for sure

The main point of this is that tripartite sequence was developed mainly from data in the top end of the [San Joaquin] valley -was assumed to apply to more southern areas but never demonstrated

-now seems clear that San Joaquin Valley had other types of cultural influences

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Southern San Joaquin Valley

Tulare Lake has a lot of early archaeology -clearly earlier than the Early, Middle, Late sequence

-Tulare Lake has also yielded Pinto-like points -probably 7500-4500 BP

-may overlap with Early Horizon of Central Valley but is clearly very different

-many of the earlier points at Tulare Lake seem to be coming from desert sources to east (materials suggest this)

Most influential excavation program is Waldo Wedel's at Buena Vista Lake by WPA in 1930s

-excavated 2 mounds using unemployed oil workers

-uncovered very deep (9-10 ft) deposits in these mounds

-arbitrary 1-foot levels, 1/2 of matrix was screened through 1/4-inch mesh (rare for the day)

*intensification among archaeologists (smaller screen sizes)

-recognized 2 mounds had different chronology

-both sites contained older basal horizon with millingstones/handstones, hearths, extended and caliche-encrusted burials

-above these deposits, looser midden with more diverse assemblages – flexed burials, circular post molds, asphaltum

Wedel believed Site no. 1 had more diverse assemblage reflecting contact with coast (Santa Barbara region)

-also this site was thought to be later

-said this represented Yokuts presence in area (ties with Chumash)

-had no chronometric control – couldn't explore anything more fine-grained

Not until 1980s did Buena Vista Lake data get looked at again – by Leslie Hartzell – dissertation research

-did new excavations and revisited Buena Vista Lake collections

-goal was to provide better chronological control of Wedel's Sites 1 and 2

-never fully synthesized or reanalyzed Wedel collection but found interesting information anyway

-implications for long-term use of Buena Vista Lake basin

What does record in this part of California tell us about relative importance of wetland environments in California -probably most important general research question for this area applicable to rest of California

-what are advantages and drawbacks of such environments?

In Great Basin, issue has been couched in terms of whether lakeshore (lacustrine) environments have sufficient resources year-round to permit permanent settlement, compared with desert environment

1) Limnosedentary Model – some see overall biotic potential being so great that it did permit permanent settlement

- resources were constantly available, no seasonal shortfalls
- tule roots, fish, etc. could have been acquired when little else available elsewhere
- other times were “bonanza” times (when waterfowl, other stuff coming through)

2) Limnomobile Model – accepts high productivity, but not all available to humans or is very costly to process or harvest

- when time and energy constraints are factored into the equation, only limited returns are probable
- it would be better to be elsewhere (desert)
- hunter-gatherers will utilize lacustrine environments when elsewhere is not as good

This dichotomy is too black and white – in reality it is more complex

- the answer is empirical and not universal – there is no general rule
- not all lakes and marshes are the same
- not all surrounding environments are the same

Hartzell -her conclusion related to the above

- looked at various components, looked for subsistence resources (animal)
- no plant remains were collected by Wedel in 1930s, unfortunately

Early Holocene period: ca. 8000 BP, CA-KER-116 (San Dieguito-like component)

- fairly diverse faunal record (waterfowl, fish, mammals, pond turtles)
- fish species dominated by Sacramento Perch (slow-moving backwaters, tolerant of alkaline conditions)
- waterfowl contained no diving ducks, but shallow water forms were important (mergansers, grebes, coots)
- concluded there was greater aridity during this period (drying lake), fits with paleoclimatic data -moving from wet to warm and drier
- looking at artifacts (not many) characterized this as short-term seasonal camp

Middle Holocene period: ca. 7000-4000 BP – no excavated sites have any evidence of occupation during this period

- people weren't in this exact area?
- this was a period of increased erosion, aridity -may have blown away
- probably, though, wasn't a lot of occupation during this period
- lake levels were widely fluctuating – lake might have destroyed sites

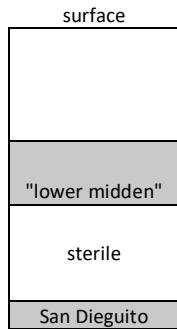
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Hartzell continued

Late Holocene period: 4000 BP-historic, archaeological record returns again, divided into 3 periods.

First Late Holocene period 4000-2000 BP: “lower midden” at CA-KER-116 (Fredrickson’s site) [above the San Dieguito-like component], bottom of Waldo Wedel’s site [Site 1 or 2?]

-Extended burials associated with dart points (Pinto and Elko-like, more like Elko)



- millingstones and handstones, hearths, limited inventory of other stuff
- broader range of faunal types -fish look like deeper, fresher water fish, pronghorn, lagomorphs
- Hartzell considered this a more productive environment -people were using a broad range of resources (besides lacustrine)
- suggestion of longer-term but seasonal residential use
- seasonality by looking at faunal data – fish point to spring-summer, spawning season for these fishes, more easily taken in large numbers
- minimal evidence of exotic goods – little obsidian, little shell beads, less economic interaction with far away areas
- things have started to pick up

Second Late Holocene period: 2000-1000 BP

- “upper midden” at CA-KER-116 and most of Wedel’s Site 1, and upper midden at Site 2 (well represented sample)
- transition to bow and arrow -Cottonwood series points (most not obsidian)
- problem is hydration data (1000-700 BP) -3 points
- Hartzell based temporal placement on stratigraphy -might have been last part of this time period [closer to 1000 BP or even later than to 2000 BP]
- most interesting thing is there is evidence of numerous house structures from this period
- implies sedentism or scheduled use
- also, stone-lined hearths -reused probably
- clay-line storage or cache pits
- a lot of steatite, baked clay net weights, bone fish gorges
- milling equipment dominated by mortars and pestles
- burials are flexed, evidence of trauma on a lot of them, similar to Middle Horizon in Delta area
- fish again spring-summer species, winter migrant birds uncommon, fish suggest full-on lake conditions
- terrestrial fauna still consistent with lake and upland species, probably very productive lake and near-lake environment

-exotic goods are abundant, obsidian from east and shell ornaments from west

Third Late Holocene period: 1000BP-historic

- also Cottonwood points
- decline in use of lakeshore sites, house structures disappear, occupation seems more temporary
- hearths not as well-made, shell middens –“opportunistic clam bakes”
- residential sites were probably away from lake

Controversy: Hartzell thinks this correlates with 1100-700 BP Medieval Warm period

- the drought is not demonstrated for the Buena Vista Lake area
- in the last 200 years, some return to lakeshore occupation
- these sites lack some kinds of ground stone and the focus on lake resources
- this runs counter to the ethnographic record – Yokuts focused on lakeshore environments
- Hartzell suggests that ethnographic pattern was restricted to most productive wetland areas of the Buena Vista Lake basin
- more northern areas should have more impressive sites (seems to be true)

Common problem in California archaeology: holes in record due to sites in certain areas being dug but can't be compared to region – unclear whether information applies only to one specific area or to region as a whole

What does this all mean?

-we don't understand a lot still -older excavations, current excavations haven't yielded sufficient data to say much, Kern County Archaeological Society Journal is typical -small sites with small amount of data

Recent studies are a good example of more regional focus, paper by Sutton at SCAs on Buena Vista Lake basin -293 artifacts, found all through occupation sequence, glass was coming from Coso, minimal quantities from North

- much of this glass is relatively early
- sites in foothill zones were 8-12 microns (2500 BP and older)
- sites near lakeshore were 3-7 microns (1000-2500 BP)
- no glass for post 1000 BP period from anywhere -drop off in access
- supports idea that most intensive use of lakeshore environments was between 2000-1000 BP

Northern San Joaquin Valley

Group of sites at western edge of San Joaquin Valley in Merced County (Pacheco Pass)

- there is more information for this area -series of reservoir at eastern edge of coast range (Los Banos, San Luis, Little Panoche) 1960-1972 multiple sites were looked at
- down side is that it was State Parks that did the work
- identified 4 broadly defined complexes, Pacheco Pass sequence – same time period as Early, Middle, Late Horizon in Sacramento Valley
- no info on earlier periods, across valley in Sierra foothills, looks like sparse occupation, Pinto-like points

- original sequence for this area was Olsen and Payen 1969
- showed gap between 1000 and 600 BP...

Earliest phase – Positas Complex 5500-4600 BP

- only one site, Grayson site, Grayson mound, not that well documented, probably dates back further but can't tell from data
 - traits from one site may not be representative
- 1) small scraper planes
 - 2) small shaped mortars, short cylindrical pestles
 - 3) millingstones and handstones
 - 4) perforated cobbles and cogstones
 - 5) ornaments -spire-lopped Olivella, pendants made from pebbles 2m deep

- this assemblage remains enigmatic, broader cultural and economic implications remain unclear, looks most like later millingstone patterns from south (Topanga complex)
- fact that there isn't a lot of evidence of these people implies mobile lifestyle

Pacheco Complex – better documented 2 phases

Pacheco B 4600-2600 BP

- 1) also known from only Grayson mound
- 2) large leaf-shaped projectile points
- 3) millingstones and mortars
- 4) variety of ornaments and bead types, thick rectangular Olivella
- 5) no dwellings

Pacheco A 2600-1000 BP

- 1) better represented, Grayson site and CA-MER-27
- 2) leaf-shaped bipoints but addition of large side-notched and contracting stem
 - latter 2 similar to types found along coast and Monterey area
- 3) diverse array of bone artifacts -whistles, awls
- 4) milling equipment more abundant, both millingstones and mortars
- 5) beads include modified saddles, saucers, split punched forms, also slate rings, perforated pebbles, perforated canid teeth
- 6) good evidence of houses – small, circular
- 7) flexed burials with grave goods in many (most often with adults but some children)

Difference between Pacheco A and B, entire Pacheco A and B occurs in thin stratigraphic section 20cm thick [Mark was probably basing this on an incorrect figure that suggests this entire 3000 year interval occurred within a stratum only 20cm thick (Moratto 1984: Figure 5.10), the Pacheco complex actually makes up the bulk of the deposit at CA-MER-94, ranging from approximately 80-195cm (Olsen and Payen 1969:3, 40)] -only reason Pacheco A and B are separated is based on seriation -Pacheco B is suspect, Pacheco A is probably good

Marine shell refuse and stylistic affinities during Pacheco A suggests an affiliation with Monterey Bay area

-core residential areas were probably intermediate between coast and valley

Late Prehistoric period – Gonzaga Complex 1000-500BP

- 1) small square and tapered stem projectile points (arrow points) some are serrated
 - 2) diverse range of bone implements
 - 3) milling equipment remains abundant – millingslabs and mortars still
 - 4) ornaments -thin rectangular, split punched, small spire-topped Olivella variants, whole limpet shell beads
 - 5) extended burials with a lot of grave offerings -burial pattern is similar but later than Windmiller pattern, Bennyhoff suggested that Windmiller pattern persisted here longer -later expansion of people holding onto this pattern (Bennyhoff called it “Meganos”)
 - this is weird, even late for Meganos
 - people have said this reflects movement of Yokuts populations down to San Joaquin Valley
 - 6) houses -extremely large 7-10 m diameter, hypothesized that these housed extended families of kin groups
 - required a lot of investment in construction, inferred extended occupation
- There are a lot of Gonzaga sites – probably a real pattern

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Pacheco Pass sequence continued

Protohistoric Period -Panoche Complex 500 BP-historic

- considered cultural climax in area -continuity between Yokuts populations
- 1) small triangular and DSN points, panoche side-notched (a DSN variant)
 - 2) diverse bone artifacts -awls, whistles, daggers
 - 3) milling dominated for first time by mortars and pestle, millingslab/handstone still present
 - a lot of sites with bedrock mortars (BRMs), Gonzaga period also but this is clearly an increase -probably tied to acorns
 - 4) beads and ornaments are prevalent – clamshell disk beads, abalone beads, rabbit bone beads, glass trade beads at end, Olivella (thin-lipped, ground disks, callus beads)
 - 5) steatite industry especially well developed -more than before (pipes, bowls, some other items not known what for)
 - 6) further increase in size of buildings (10-15 m in diameter) large social groups, even larger communal houses -dance houses
 - 7) mortuary – flexed primary and cremations
 - Meganos pattern is gone -suspicious, problematic because Meganos is supposed to equal Yokuts
 - mortuary patterns are considered a very conservative aspect of culture -it doesn't make sense that it would change and then change back [from flexed in Pacheco A, to extended in Gonzaga, then back to flexed in Panoche -see also Marsh Creek (CCO-548) patterns]
- Site densities are difficult to quantify because surveys were subjective -they looked where they thought they would find sites
- but seems to be a general increase in number of sites over the periods
- Earliest phase -connections to south coast
- Pacheco -connections to central coast

Gonzaga -connections to north and northwest (Bay Area/Delta)

Panoche -connections to north and northeast (valley, Sacramento area)

How much can be made of this is hard to assess, but makes sense that there was variability apparent in cultural ties

Most important is importance of Pacheco Pass area (a “peripheral area”) seems to increase over time -sites become larger, artifacts become more diverse, more midden formation (longer duration settlement), features suggestive of more intensive and prolonged use patterns

Switch from seasonal use of coast ranges to living there more for extended periods, probably last 1000 years represent autonomous political units in their core range (this is an intuitive guess), not just visiting

None of the researchers were interested in why the changes occurred
-probably regional intensification

As more productive parts of the valley were being occupied by larger populations, peripheral areas became increasingly attractive

- coast range area used for a more general range of activities, more intensive use of acorns
- also increases in social and economic organization (bigger houses, more kinds of artifacts)
- details of this not all worked out, more careful survey and excavation needed
- early work concentrated on larger, sexier, sites -didn't pay attention to smaller sites on ridges, etc. -these would be important to look at in reference to this pattern (intensification)

Northern and Southern San Joaquin valley – parallels in how population in both areas responded to changing conditions

Southern case has good paleoenvironment, not so good archaeology -appears most intensive use of lakeshore habitats occurs late in time, probably larger populations

- also during period of best lake productivity
- latest period became lake oriented again [\[ethnohistoric Yokuts?\]](#)
- “limnosedentary” pattern only during 2000-1000 BP period, more mobility before and after

Gilroy -Hildebrandt – lake resource became more attractive when other areas were not as available -when Elkhorn slough becomes more developed

- intensive use after more favorable alternatives eliminated -earlier use would have been during leaner times (e.g., winter)
- similar arguments explain patterns in both places (Gilroy and Buena Vista Lake), maybe archaeologists are on the right track?

North -Pacheco Pass -rely more on archaeological record because not so much paleoenvironmental – must rely on what isn't there archaeologically

- coastal areas and valley were probably first focus, coast ranges more marginal areas, more sporadic use
- by later times, population strained best resources, also maybe paleoenvironmental variation
- coast ranges would have offered better resources than previously -in a relative sense

Problem in California archaeology -recognized since 1960s, that sites have to be understood in relation to larger area, everyone understands that people moved between environments but not many studies have ever really tried to explore these relationships (coast vs. interior, valley vs. coast ranges, valley vs. foothills)

Sierra Nevada

- very complex area -naturally and culturally -still a lot of confusion over the fundamental issues (chronology, etc.)

Gaps in knowledge from:

- 1) limitations imposed by nature of record
- 2) important projects were done a long time ago -different methods
- 3) the Sierras are a big place – gaps in coverage

Environment and Ethnography

- the Sierras are the highest and among the most massive ranges in lower 48, major biogeographic boundary between California and desert areas to east
- differences in environment from north to south

Zonations, in past, were referred to as “life zones” -similar climate and types of animals but not same species, now people speak in terms of “vegetation communities” instead of life zones (splitting instead of lumping)

- a. valley grassland (formerly lower Sonoran), on valley floor
- b. foothill woodland (formerly upper Sonoran), pine and oak woodland, valley oak, live oak, buckeye, also chaparral (more limited)
- c. yellow pine forest (formerly transition zone) -ponderosa and Jeffrey pine, also black oak, incense cedar, sugar pine, Sequoia, white fir
- d. lodgepole pine/red fir (Canadian life zone) -more precipitation, shorter growing season
- e. subalpine forest (Hudsonian) -dwarf pines at lower elevations, sparser
- f. alpine (arctic) -extremely short growing season

Implications for native peoples:

- yellow pine and below had most economically important nut crops, though some up higher
- longer growing seasons had a lot of consequences for other edible plants as well -more reproduction, growth
- highest elevations had few animal resources during cold parts of year, not a lot of plant and animal productivity
- implications for how long people can stay up there...

Paleoenvironment -tree rings, palynology

-glacial advances during Holocene, earlier 3000 BP, then 1100 BP [[previously thought to have been Holocene, now probably late Pleistocene -so no glaciation until later during Little Ice Age “Matthes”?](#)]

-Little Ice Age 800-200 BP – may have hindered travel across passes, not demonstrated yet – also vegetation changes

Pollen sequence:

- late glacial (pre-10,000 BP) colder and drier, a lot of disagreement
- Early Holocene (10,000-7,000 BP) Davis and Moratto believe Southern Sierra was significantly warmer and drier, most other researchers see cooler and moister or near modern conditions, everywhere else (e.g., Great Basin) doesn't seem to be warmer
- Mid Holocene (7,000-4,000 BP) agreed to be warmer and drier, upward migration of oaks and mid-elevation plant communities (e.g., yellow pine)
- Late Holocene (4,000 BP-present) more-or-less modern conditions

Recent treeline data ([Graumlich](#)) suggests that at 6300 BP, growing conditions were good and treeline was 223 ft. higher than today

- after this, conditions cooled and treeline dropped to 125 ft. above current by 3200 BP
- by 2400 BP, dropped to 39 ft. above today
- stopped here for some time, by 1400 BP, treeline was 33 feet below present
- this contradicts White Mtns data (LaMarche) which says was drier

Ethnography

- several linguistic divisions:
 - a. North Sierra Maiduin
 - b. Tahoe area had Washoe (also Great Basin people)
 - c. Between Mokelumne and Fresno Rivers – Sierra Miwok
 - d. Southern Sierra – lower elevation foothills Yokuts, higher was Western Mono (Monache)
 - e. base of Sierras were Tubatulabal

-“every library should have Volume 8 and Lord of the Flies” [[Basgall here referring to Volume 8 of the Handbook of North American Indians](#)]

Transhumant lifestyle – major semi-sedentary villages near major water sources

- occasional winter occupation above snowline but generally only during warm season
- hunting at high elevations, gathering of pine nuts, trade
- major settlements contained several hundred people, 10 or 15 people in higher summer camps, usually BRMs near major residential areas, one or more sweathouses, chief's house, maybe a large dance house

Generalized subsistence patterns, but dependent on stored foods in winter

- fishing is important, then large game, etc...

Washoe are exception – in Tahoe area, more mobile, smaller social groups, went down to Carson City area in winter

Archaeological research

- dates back to Gold Rush, auriferous gravels, Calaveras skull, also mastadon, etc. later debunked [as very early human evidence]
- Julian Steward reported on rock art for portions of the Sierra in 1929, made observation that survives today – that a lot of petroglyphs had abstract designs, were similar to Great Basin forms, painted pictographs with representational elements were in Southern Sierran foothills

River Basin surveys -initiated the tradition of reservoir archaeology (1940s-1950s)

- mainly associated with Berkeley (Fenenga, Drucker, Fredrickson, Riddel, Clarence Smith)
- work was extremely minimal and superficial but established presence of major sites

Nature of Sierra sites poses some important problems to archaeology:

- 1) sites tend to have extremely poor preservation -especially in higher elevations
 - lower elevation studies are ones that provide direct evidence of subsistence and mortuary data, makes it difficult to compare lower and higher elevation sites in certain ways
 - we are left with ethnographic record for settlement reconstruction
- 2) many deposits are difficult to date reliably, projectile points have to be relied on more, no shell bead preservation, no radiocarbon dates
 - have to be aware that the Sierra is a boundary area, influences from many areas over long span of occupation
 - we see stylistic influences from the Great Basin (certain projectile points), and also from Central Valley (stemmed points, charmstones)
 - also endemic developments to Sierra -doesn't go anywhere else
 - so many time markers seem to be restricted to the Sierra, can't assume that points similar to east or west have same meaning (date, function)
 - a lot of variability in point forms in Sierra -local in origin
 - frequent finds of small triangular stemmed arrowpoints in late components in northern and central Sierra are a case in point
 - some have said they are like NW California Gunther barbed points – but real Gunthers have longer barbs...

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Elston's Tahoe sequence (1977)

- relates changes between Martis and Kings Beach phase to climate changes
- it was rainier, higher productivity, higher population densities during Martis phase
- also during Martis times, some territorial control of resource tracts
- this paper was a dry run for Great Basin stuff later (1982) "Good Times, Hard Times"
- local Sierran basalt sources used to produce tools for exchange
- environment became worse during Kings Beach times, lower populations, shift to smaller, more expedient tool forms, people making do with what they had, termination of basalt quarrying, instead chert nodules in secondary stream deposits
- more temporary use of sites, lack of house pits, lack or scarcity of domestic features (ovens, hearths), also not a lot of ground stone

25 miles north, 50 miles west, Lake Oroville, lower elevation, Eric Ritter proposed 5 cultural phases (3000 BP to present)

- 1) Mesilla Complex (3000-2000 BP) – seasonal occupation of foothill zones by people with dart-atlatl, mortar and pestle, and mano/metate
 - charmstones, etc. suggest contact with Sacramento Valley
 - also heavy use of basalt, slate, cherts, suggests contact with Martis
- 2) Bidwell Phase (2000-1100 BP) continuation of large slate and basalt points
 - shift to residence in more permanent villages
 - people were centralized at major villages and moving around logistically
 - millingstones are abundant, wooden mortars are inferred from pestles
 - notched and grooved cobbles, fishing was important, also limited use of steatite
 - burials are flexed on back or on side
- 3) Sweetwater (1100-500 BP) continuation of same residential pattern as during Bidwell times
 - change to bow and arrow (Rose Spring and Gunther-like points)
 - also a lot of Olivella and abalone beads and ornaments
 - a lot of steatite, cups, platters, bowls
 - shift to extended or semi-extended burials
- 4) Oroville (post 500 BP)
 - DSN points
 - bone artifacts, bird bone tubes, gaming pieces
 - Olivella and abalone beads
 - steatite pipes and disk beads
 - dominated by mortar and pestle, more BRMs
 - structures include domestic houses and large circular dance houses
 - burials are flexed on side, occasionally under rock cairns

There is still a lot we don't understand about Lake Oroville area, no one has gone back to the materials for synthesis [\[note: this was before Basgall and Delacorte conducted a multi-year \(2004-2015\) survey and excavation project at Lake Oroville through the Sac State Archaeological Research Center \(ARC\) -see those reports for updates\]](#)

-we don't understand relationships between Tahoe and Oroville

Similarities:

- a. Martis type points and material use profiles same
- b. also similar plant processing technology over time, changes too
- c. parallels in site centralization and permanence
- d. some groups at valley/foothill ecotone and others higher up in mixed woodland

Central Sierra

- Buchanan and New Melones reservoirs -low elevation, Moratto
- Mokelumne River -higher elevation, James Cleland

Buchanan Reservoir – 500-ft. elevation

- 1) Chowchilla phase (2300-1600 BP)
 - relatively few large, residential sites along main river drainages, large groups
 - diverse subsistence patterns, hunting, fishing, seed exploitation, also some mortars and pestles

- dart points, Elko-like and Humboldt-like points
 - cobble mortars and cylindrical pestles
 - bone fish spear tips
 - beads like Windmill
 - abundant use of obsidian from eastern sources
 - burials with a lot of grave goods -differences look like ascribed status distinctions
- 2) Raymond phase (1650-450 BP)
- different than preceding phase
 - Moratto sees only sporadic use of old sites near river, instead smaller settlements on tributary drainages
 - suggests reduced and dispersed population
 - projectile points Rosegate forms, bow and arrow
 - subsistence included clear use of acorns, portable mortars “go through the roof”
 - millingstones remain (for hard seeds?)
 - significant decrease in shell bead and ornament frequencies
 - evidence for violent deaths, social conflict
 - burials lack accompaniments, flexed
- 3) Madera phase (450 BP-historic)
- emergence of ethnographic pattern
 - larger village sites near river tied to satellite hamlets in hinterland
 - higher population density, more sites
 - economic connections between satellite centers and primary villages were important (this is based on ethnography more than archaeology)
 - bedrock mortars (BRMs) acorns well-represented, still some millingstones
 - projectile points: DSNs and Cottonwoods
 - shell beads again abundant
 - elaborate steatite industry (relatively)
 - burials flexed and cremations, cremations with artifacts
 - Moratto ties these changes to changes in climate

New Melones reservoir

- longer sequence but pattern of cultural development similar (to Buchanan)
 - 1000-ft. elevation, Stanislaus River, “notorious project” 1948-1981[[speculating here, but I assume “notorious” in sense of how long it went on, how expensive it was, and how long it took to produce the reports, how difficult it was to get your hands on the reports...](#)]
 - 295 prehistoric sites, 68 had been excavated, open-air midden sites, BRMs, small lithic scatters, quarry sites, cemeteries, mortuary caves
- 1) Clarks Flat (pre-8000 BP) named after Clarks Flat site
- marked by Great Basin stemmed points, crescents, scrapers
 - no milling equipment found, now known from Skyrocket site (maybe)
 - Ann Peak dug Clarks Flat site, Moratto didn’t dig deep enough
- 2) (8000-5500 BP) hypothetical phase, undesignated,
- thought there might be two phases during this time, one with large basalt scrapers, other like Spooner phase (Tahoe area -Pinto points, etc.) not enough material to say
 - short-term occupation, diversified subsistence, a lot of debitage at sites
 - some milling implements, but not enough to say much

- 3) Texas Charley (5500 BP) also problematic, Basgall has never figured it out, relates to one component at one site with nicely made bifaces and notched scrapers
- 4) Calaveras phase (5500-3000) also poorly represented
 - Pinto and Humboldt series points
 - some milling equipment

Record really starts at 3000 BP

- 5) Sierra phase (3000-1500 BP) first good evidence of occupation
 - large, well-developed middens with cemeteries away from living areas
 - similar to Chowchilla phase at Buchanan
- 6) Redbud phase (1500-650 BP) similar to Raymond phase at Buchanan
 - sites ephemeral, smaller, of 23 components, only 3 have midden
 - projectile points are Rosegate forms (bow and arrow)
 - less obsidian use
- 7) Horseshoe Bend phase (650 BP-historic)
 - proliferation of sites, similar to pattern at Buchanan (Madera phase)
 - projectile points, DSNs and barbed points

Similarities between Buchanan and New Melones are obvious, interpretations are the same too (same investigator)

Between Clarks Flat and Sierra Phase is a “big muddle”

Mokelumne River Project

- 1980, James (Jamie) Cleland, major project along North Fork Mokelumne River, from Blue Lakes (8000 ft.) to Salt Springs (4000 ft.)
 - surveyed drainages, identified 67 sites, wide variety of sites (villages, temporary camps, lithic scatters, BRMs)
 - 75 sites were evaluated [\[check these numbers\]](#) 6 of 15 were excavated
 - mid-elevation sites (Salt Spring), higher elevation sites (Blue Lakes)
- 1) 2500-1500 BP (Blue Lakes phase in both high and mid elevations)
 - similar stuff at upper and middle elevations
 - Elko series points at both areas, higher elevation area (Blue Lakes) also had Martis forms
 - both areas show high use of Bodie Hills obsidian
 - higher frequency of projectile points at higher elevation sites
 - moderate site density, fairly intensive use of montane habitats
 - at Salt Springs (lower elevation areas) more portable mortars (acorns?), also maybe BRMs but this is seat of the pants
 - 2) 1500-750 BP major difference between upper (Blue Lakes) and mid-elevation (Salt Spring) patterns
 - Salt Springs (Mokelumne phase)
 - Blue Lakes (Early Kings Beach? [\[Kings Beach is from nearby Tahoe sequence\]](#) or maybe Mokelumne phase)
 - Salt Springs area: Rosegate points and small saucer and square saddle Olivella beads

- decrease in obsidian use, increase in local quartz
 - BRM use, settlement intensity was high, permanent or semi-permanent
 - Blue Lakes area: same points but continued use of Bodie Hills obsidian
 - not as many sites, less occupational intensity
- 3) 700-100 BP: Amador phase at Salt Springs, Late Kings Beach phase at Blue Lakes
- DSN points: rare up high, abundant at Salt Springs
 - heavy use of obsidian continues up high (Blue Lakes) and increases from earlier period down lower (Salt Springs)
 - maybe seasonal fishing at Blue Lakes
 - Salt Springs, maybe more permanent villages

The differences between Buchanan reservoir (Moratto, lower elevation foothills), and here are interesting

- during Moratto's Raymond phase, finds decreased population and dispersed settlement at the same time that Cleland identifies increased settlement intensity [\[higher up at Salt Springs Reservoir- ca. 4000 ft\]](#)
- could be an altitudinal shift in key resources
- could also mean climatic conditions had little or nothing to do with what was going on
- Late Holocene shifts were not that serious – to change major vegetation distributions

Yosemite

- 4000 to 13,000 ft., a lot going on
 - Bennyhoff's initial work led to the development of a 3-part sequence still used today
- 1) Crane Flat (3000-1450 BP)
- Elko series points, millingstones and handstones
 - not a lot else known
 - Kathleen Hull, dissertation, sites of this age are on terraces and ridges above valley floors, not along main drainages, similar to Cleland and Moratto
- 2) Tamarack (1450-750 BP)
- poorly represented in original sequence, later work has filled it in well
 - Rosegate series points
 - settlements in certain contexts, far from water
 - settlement dispersed, fewer components, less flaking debris
- 3) Mariposa (750 BP-historic)
- DSN points
 - BRMs, steatite objects
 - common, frequently adjacent to major rivers
 - well-developed middens
 - smaller sites in higher elevation areas, larger low elevation sites (seat of pants)
 - protohistoric Miwok

Not a lot of interpretation of findings in Sierras -each canyon has a different sequence
 -a lot of the work is culture-historical in nature

There has been some explanatory stuff, Tom Jackson, late 1980s
 -settlement model for southern Sierra Nevada

- larger settlements had midden and BRMs
- sites with 14 or more BRMs were “K-sites”
- North fork Kings river
- K-sites are maximum 3000m from nearest neighbor
- within 1000m radius of K-sites, there tend to be smaller sites

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More on K-sites (Tom Jackson model, 1986 JCGBA)

- concluded that this [the pattern of widely-spaced K-sites, each surrounded but many smaller, satellite sites] was a complex logistical organization (but this is an atemporal distribution)

David Hunt applied the same model to the Eldorado National Forest

- found similar patterning, took it further
- looked at the distribution of all sites with BRMs and distribution of black oak, sugar pine, and deer aggregation areas
- found correlations between BRMs and below snowline oaks, possibly sugar pine too, but also found in larger areas and at higher elevation
- some BRMs harder to explain at higher elevations, above snowline at meadows
 - a. possibly processing resources when traveling
 - b. possibly other resource sets (besides acorn), like root and tuber resources
 - c. also in western Great Basin, BRMs are rare, but occur in wetland settings

Another paper by Tom Jackson looks at geological factors in distribution of BRM sites

- people needed water for leaching acorns, at end of summer, springs and seeps are dry
- obvious tendency for more water later in year in larger drainages
- also 2 major formations (permeable volcanic and granite), interface between 2 forms dike with water forced out
- Rob Jackson, F.A.R.M. document in northern Sierra found same relationship

North Coast Ranges

- south of Klamath Mtns, north of San Francisco Bay and Delta
- some of the richest habitat in California
- a lot of variation within the region, northern areas are higher and more resource-restricted than Sonoma county area in south

Fredrickson – divided the area into 3 parts: 1) northwest coastal area, 2) Eel River area, 3) Russian River area

- environmental and cultural variability both within and between zones

-33 language dialects, many language families represented (Athabaskan, Algic, Hokan, Yukian, Penutian)

- some are more recent than others

Archaeological research shows long and diverse record (Borax lake, other isolates that are old - ca. 10,000 BP), Bodega Bay, Duncan’s Landing had radiocarbon approaching 9,000 BP

Population densities – in southern North Coast Ranges, Lake and Sonoma counties, among highest found in California (6-10 persons/square mile), productive resource base

Pattern of research is similar to the Sierras, early work focused on a few locations (like reservoirs in Sierras), whole portions have seen very little examination

Two important early investigations -Harrington's work at Borax Lake and Meighan's work at CA-MND-500 (site at Willits -1955)

-these two investigations together led to a tentative regional sequence (with 6 complexes)

1) Borax Lake (4000-1600 BP) -assumed equivalent to Middle Horizon in central California [but this was later found to be wrong -see below]

2) Mendocino (1500-1000 BP) -found at base of CA-MND-500, dart points, leaf-shaped, stemmed, concave base)

3) other 4 complexes assigned to much smaller areas, based on materials from individual sites

This was a sloppy approach (even for Meighan), all over California, he dug one site and then wrote a synthesis for that region, with rarely any chronological support, small samples

-these sequences lasted for 20 years unchallenged, even though they were based on nothing

-Meighan was a “quick hit or miss” sort of guy, rarely familiarized himself with areas

Dave Fredrickson 1973 dissertation, also 1974 summary paper

-first real order brought to North Coast Ranges

-first systematic assessment in the region, examined old collections, tested sites, looked at obsidian hydration, developed new framework

More than a simple ordering of materials in time and space, proposed a series of taxonomic units that would simultaneously do several things:

a. time

b. space

c. adaptive mode

d. cultural affinity

In 1984, he characterized this as an attempt to reconcile normative and processual schools of archaeology [normative (culture-historical) school believed in the entities (cultural periods, artifact types...etc.) as real while processual school believed the variability was more important and the entities were epiphenomenal, it was the changes that were important]

-he believed both cultural and adaptive forces shaped prehistory

[note: there is so much here on the North Coast Ranges and it is not divided into multiple class periods in the notes for some reason -maybe I forgot to note the day or maybe it was just an epic notetaking day!]

Fredrickson scheme -continued

Periods -within periods, similar adaptive patterns, broken into more geographically limited units called patterns

Patterns – spheres of cultural interaction with common adaptive pattern

Then, more areally restricted units of cultural uniformity called districts
Within districts, there are sequences of cultural development called aspects

Examples:

Period	Pattern	Aspect	Time (BP)
Emergent	Augustine	Clear Lake	1500-100
Upper Archaic	Berkeley	Houx/Emeryville	2500-1500
Mid Archaic	Borax Lake	Mendocino/Hultman	5000-2500
Lower Archaic	Borax Lake	Borax Lake	8000-5000
Paleoindian	Post		12000-8000

What is he trying to do?

- Periods are primarily temporal
- Patterns -spatial, limited cultural
- Districts -geographic
- Aspects – cultural

It is possible to have patterns or aspects that persist for different periods of time in different areas
-not necessarily unilineal

Problem as archaeologists is -how much is enough? Fredrickson has been vague about how each of these units are defined (he says “artifact-specific time-space comparisons)

- Basgall’s opinion is that this is essentially an impressionistic procedure
- problem with operationalizing this is later time periods have better representation
- early sites have much narrower range of material culture, might lead us to see greater differentiation later in prehistory or greater uniformity earlier [which might be the case anyway?]
- not clear whether these represent linguistic groups or other cultural groupings (could be either or several things)
- another problem with the model is how it is used, many archaeologists identify something like the Borax Lake pattern or aspect based on one projectile point
- in fact, there should be a constellation of traits

The more independent units we incorporate into a classification system, the more difficult it becomes to see the differences between them

- when only dealing with time and space, relationships are more straightforward
- if adaptive expectation is added, what do we do if point is found with another adaptive association? (e.g., BRMs as opposed to millingstones)
- this is the variation we are trying to explain, but if we ignore deviance in record and adhere too rigidly to the scheme, then we’re not doing our jobs as archaeologists
- also, all the differences can’t be given too much importance or each site would have its own sequence
- if we dwell on minutia, then we get bogged down in details

Archaeologists have abused Fredrickson's system -every new site carries all the baggage (of, say, Borax Lake) whether it is part of it or not

- Fredrickson is still working on it [he died in 2012] -others are focusing more on time-space relationships
- Basgall is into refining chronology first, then worrying about culture

Good points of Fredrickson's model:

- culture and environment and adaptation have shaped prehistory, it is therefore crucial to look at cultural relationships in the past
- is there a more systematic way to do this? More refined approaches needed that are mutually agreed upon
- chronological dimensions of the model are good
- adaptive relationships trusted less
- cultural relationships are to be trusted least (makes sense because culture is the hardest thing to identify in the archaeological record)

Major themes guiding research in the North Coast Ranges:

- 1) Chronology/taxonomy
- 2) settlement pattern studies
- 3) ethnolinguistic/archaeological comparisons
- 4) exchange and social boundary research
- 5) social and resource intensification

Chronology: Greg White's work at Clear Lake is interesting, possibly major changes are in order

- he has assembled good evidence showing multiple phases represented at Clear Lake at the same time (based on obsidian hydration)
- e.g., 3 units during Middle Archaic (Houx, Mendocino, Hultman)
- throws out concept of unilineal sequences, groups can occupy different niches at same time and interact in a number of ways
- similar to Basgall and Hildebrandt at Sacramento River (Shasta area) -2 groups together for 1000 years, was criticized initially

Fredrickson's model is forcing people to contend with more complex relationships

- Greg White is also looking at evolution of cultural traditions, more time depth than previously thought

Settlement pattern studies: grew out of reservoir studies in 1960s

- 1970s real concern with this, Tom Jackson's first work, Pam Roberts, Sonya ...?
- focused on ethnographic data to generate expectations about land use
- used this to come up with expectations of types of artifacts (material correlates)
- also, what kinds of groups would be expected when and where
- also looked at ecological characteristics of areas
- what site content would look like: larger, more diverse artifacts at longer-term sites...etc., there is a lot of this in the literature of the period
- tested models with survey data – very little digging

At the time, the studies were notable for their concern with bringing North Coast Ranges archaeology out of the narrow focus on chronology only, but there were problems

- 1) studies had overly synchronic (as opposed to diachronic) perspective
- 2) expectations of models were too closely geared to ethnographic record and environment (vegetation etc.) of today (as opposed to past conditions)
- 3) underemphasized implications of temporal differences in archaeological record
- 4) also problem relates to what a site is and how it was formed, didn't take into account other processes that might account for these patterns (e.g., palimpsests)

When Tom Jackson worked on the Eel River, he tried to date sites based on obsidian hydration - whenever he encountered Borax Lake widest points, they were made of chert, looked at debitage, flakes all tended to be recent (suggested overprinting)

Ethnolinguistic models: long history in California (Baumhoff and Olmsted [1963, 1964] in Northeastern California got the ball rolling)

- peak in late 1970s and 1980s (e.g., Moratto 1984 last chapter), some of this was "overkill" - every complex was being assigned to a linguistic group
 - despite some excesses (e.g., Moratto chapter), there are some good studies and the whole method of inquiry should not have been thrown out
- 1) many surviving elements of material culture are technomic ones, related to utilitarian activities (not a lot of social or ideological context)
 - most patterns are probably adaptive horizons
 - 2) some population replacements that happened will be more visible than others
 - cultural transmission is not mated to population movement
 - diffusion front of cultural traits
 - also incoming population may have been archaeologically identical
 - 3) no reason to expect all languages spoken in California in past were still in roster at contact times

Ethnolinguistic models must be a multidimensional approach

- 1) must have good reason/evidence for language dispersal
- 2) need to find significant shifts in assemblages that account for migration
 - some will be missed, start with dramatic ones
- 3) have to identify a mechanism that would have allowed migration to happen (e.g., Bettinger and Baumhoff 1982)

[end of 1999 California Archaeology class notes]