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Linguistic Prehistory and the Archaic-Late Transition in the Colorado Desert

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Valid links between prehistoric material residues and the languages that were spoken by their creators are notoriously difficult to establish. Nonetheless, linguistic evidence does set limits on the archaeological scenarios that are tenable concerning prehistoric ethnic stability, displacements, and interactions. In the Colorado Desert, several of the synchronically observed linguistic patterns can plausibly be connected to events that fell within a broadly defined Archaic-Late transition period (ca. 1,000 B.C. to A.D. 1000). Most likely falling within this period and region were the splits within the Cupan and Serran groups of the Uto-Aztecan family and the Delta-California and River branches of the Yuman family. There are also at least a few hints concerning the geographical directions in which linguistic expansions occurred. In general, linguistic evidence suggests that the region was marked by relatively severe sociocultural instability throughout the late Holocene.

An important early goal in North American archaeology was to match archaeological remains with historically known ethnolinguistic groups. Such efforts met with only mixed success, and perhaps partly as a result, this particular research objective has often enjoyed no more than lukewarm support during recent decades. However, the question of whether the prehistoric societies within a region experienced long-term stability or whether there were episodes of ethnic displacement is still critical for understanding how the region's prehistoric adaptive systems functioned. Archaeological evidence can be brought to bear on this issue, but the independent lines of evidence that historical linguistics can offer also have considerable value.

It is worth stressing that the collaboration between linguistic prehistory and archaeological prehistory is full of difficulties. Archaeologists cannot excavate the languages of nonliterate cultures. Linguistic affiliation may be correlated with other dimensions of group identity, such as shared material culture, sociopolitical affiliation, and biological descent, but each of these factors can also vary independently, crosscutting the distributions of the other factors. In addition, the picture of prehistory that linguistics presents is only fuzzy and probabilistic rather than sharp and solidly established.

For the Colorado Desert of southern California and northern Baja California (Fig. 1), prehistorians are likely to pose four main questions to historical linguists concerning the broadly defined Archaic-Late transition period (ca. 1,000 B.C. to A.D. 1000): (1) When did the historically known Yuman and Uto-Aztecan groups of the region arrive in their ultimate territories? (2) Where did they come from? (3) Who were their predecessors in the Colorado Desert? (4) With what other groups were they interacting most intensively? This paper surveys the linguistic testimony that offers some answers—however tentative and subject to dispute—to those questions.

PRELIMINARY CONSIDERATIONS

Several general methodological issues are involved in reconstructing the linguistic prehistory of the Colorado Desert groups. It may be useful to note these issues briefly before turning to substantive interpretations.

Genetic Linguistic Relationships

A key tool for linguistic prehistory is the genetic model of linguistic descent (e.g., Crowley 1997:19–26). According to this model, related languages descend from a shared ancestral language in a forward-branching family tree. Important limitations to the validity of this model have been recognized; above all, that a substantial amount of linguistic borrowing can occur across lines of linguistic descent, both between emerging dialects and between

Figure 1. Location of the Colorado Desert.

related or unrelated languages. Nonetheless, it seems fair to say that most linguists consider the genetic model to be generally valid.

Given that historical linguistics can identify a sequence of branchings within a linguistic family tree, a key issue is the meaning of these branchings, in terms of events in non-linguistic prehistory. Schisms within language communities can arise from several causes, but in general they probably reflect situations in which the social interactions between different segments of the community are no longer sufficiently intensive to overcome a natural tendency to drift apart, as groups speaking different dialects spontaneously and continuously change their speech in different ways. This failure to level out emerging differences between dialects might arise within territorially stable populations, for instance, through the growth of political barriers to interaction, through an increase in local economic self-sufficiency, or if regional demographic growth reduced the need to look as far afield as previously to find suitable marriage partners. However, under the conditions that prevailed in prehistoric California, it seems reasonable to argue that the main trigger for linguistic splitting would have been territorial expansion, when a linguistic community extended its geographical range to such an extent that the advantages of maintaining uniformity in language could no longer overcome centrifugal linguistic drift. If that generalization is valid, then the onset of most linguistic splitting may be associated with the spread of language communities into new territories.

Linguistic Chronology

The genetic model implies a framework of relative chronology, represented by the successive branching of different lines of linguistic descent within a family. Several methods have been used to discover relative chronologies, most notably the linguists' classic comparative method. Those methods do not need to be discussed here, except to note that discrepancies or disagreements in their conclusions are not uncommon.

Estimating an *absolute* chronology on the basis of synchronic linguistic evidence is considerably more difficult and controversial. Yet such an absolute chronology is critical to establishing any firm links between linguistic prehistory and archaeological prehistory. There have been three main methods of estimating absolute linguistic

chronology: intuitive assessments, glottochronology, and the use of archaeological correlations.

Absolute time depth is sometimes intuitively assessed. This is based on the linguist's familiarity with the similarities and differences between the related languages under study, and with the comparable degrees of linguistic change that are found within historically documented languages, such as members of the Romance, Germanic, and Indo-European families. A serious weakness in this approach is that it is essentially based on the authority of the linguist who makes the assessment. One expert's pronouncement can be replaced by another expert's more authoritative assessment, but these opinions effectively cannot be critically evaluated or progressively refined in detail.

A single attempt has been made so far to develop a relatively objective basis for estimating absolute linguistic chronology, at least as far as the region and period addressed here are concerned. The tool in question is glottochronology, which was first proposed by Morris Swadesh in the early 1950s. Glottochronology is based on the idea that the proportion of apparent retained cognates within a standardized list of basic vocabulary items (now usually 100 words) that are still shared by two languages is correlated with the length of time that has elapsed since their ancestral languages separated. Glottochronology has been challenged on several grounds, most notably for its assumption that there is a significant degree of uniformity in the rate at which basic vocabulary is replaced within a language and because of the uncertain reliability with which apparent retained cognates have been recognized. Some authorities claim that the majority of historical linguists now reject glottochronology as unreliable, while other authorities suggest that its acceptance and/or rejection by linguists has been more evenly balanced (e.g., Campbell 1997:210; Foster 1996:65; Renfrew et al. 2000). Granting that many of the criticisms are well founded, it is still arguable that these criticisms do not justify outright rejection. Glottochronology may be a crude tool, able to provide only very rough estimates, but it may still be worth pursuing for its relative objectivity and its openness to further refinement, particularly in the absence of any better alternatives. Perhaps the example of Lyle Campbell's (1997) synthesis of New World historical linguistics is instructive. Campbell repeatedly asserted that glottochronology was considered unreliable by most linguists, yet he also repeatedly employed dates based on glottochronology in his discussions.

The final method for giving linguistic prehistory an absolute chronology has been to link linguistic events with archaeologically dated patterns. One method of linkage, known as the *Wörter und Sachen* technique, has been to note terms for archaeologically datable material innovations that can be reconstructed in a proto-language, such as agriculture, the bow and arrow, and pottery. The main pitfall in this method is the difficulty in distinguishing valid retained cognates from cognates that have arisen through subsequent borrowing or from resemblances due to parallel innovations.

An alternative method of linking archaeological and linguistic evidence is to view region-wide prehistoric similarities in material remains as evidence of regional linguistic uniformity, or to see continuity in material culture through time as evidence of linguistic continuity, or to interpret material discontinuities as evidence of linguistic replacement. Stylistic aspects of material culture, such as shell bead types or modes of pottery decoration, are more likely to match linguistic identities than strongly functional aspects, such as the use of pottery or the bow and arrow. The uncertainties in correlations between material culture and language have already been mentioned. Moreover, in applying this method, some idea of absolute linguistic chronology is usually already implicit in the choice of which linguistic family, branch, or language might plausibly be associated with which material pattern.

Linguistic Paleogeography

In addition to knowing *when* the events of linguistic prehistory occurred, it is critical to know where they occurred. In particular, where were the proto-languages spoken, prior to their splitting and their presumed territorial separation? Four main methods have been used to try to determine such linguistic homelands: center of gravity, environmental clues, borrowing, and archaeological correlates.

Center-of-gravity arguments are based on a principle similar to Occam's razor: the probability is considered highest that the proto-language's homeland would have been located in the area where the greatest linguistic diversity within the family is found (e.g., Foster 1996:64; Sapir 1916). This assumption requires the least complex pattern of subsequent migrations or expansions to

account for the ultimate distribution of the descendant languages. Note that the linguistic center of gravity is not necessarily the geographical center of gravity of the languages' territories, nor is it the area containing the largest number of descendant languages.

Environmental arguments are based on the presence of geographically specific lexical items, such as words for plants, animals, or natural features, that are reconstructed for the ancestral language. Some of these terms may refer to phenomena that would not have been known to speakers of the proto-language if they had lived in certain otherwise plausible homeland locations. The problems of subsequent borrowing, parallel innovations, environmental change, and knowledge of phenomena beyond a group's own territory need to be considered in evaluating environmental arguments.

Evidence of borrowing between languages may provide clues to changes in linguistic paleogeography. A substratum of borrowed elements within a language has sometimes been interpreted as reflecting an intensive interaction with and a social absorption of speakers of a different language when an expanding language took over its predecessor's territory. Evidence of borrowing between unrelated or distantly related linguistic groups that were no longer living in contact with each other during the early historic period may point to the former proximity of the homelands of their ancestral languages. This sets some constraints for linguistic paleogeography, but it still leaves open the questions of where the early interactions may have occurred and during which stage in the evolution of the ancestral languages they occurred.

Linguistic homelands may be proposed on the basis of similarities between the material archaeological remains found in the territory of a descendant linguistic community and earlier remains that were found either within the same region or in a different region. As is the case with reconstructing linguistic chronology through archaeological correlates, it is essential to keep in mind the likelihood that different dimensions of culture may have had crosscutting distributions.

COLORADO DESERT SCENARIOS

Given the possibility of reconstructing at least a vague absolute chronology and paleogeography for linguistic prehistory, an attempt can be made to identify linguistic events that might have been associated with the Archaic-Late transition in the Colorado Desert. The events that are reflected in the region's linguistic record can be grouped into five chronological categories: (1) those that evidently happened too early to have been associated with the Archaic-Late transition; (2) those that appear to have been somewhat early, but might have occurred during that period; (3) those that probably did occur during the transition period; (4) those that seem to have been a little too late, but might belong to this period; and (5) those that evidently took place after the end of the Archaic-Late transition.

Too Early: Amerind, Hokan, Aztec-Tanoan

Some of the events that are reflected in the Colorado Desert region's linguistic record are not germane to the problem of the Archaic-Late transition, because they represent processes that must have occurred substantially earlier than 1,000 B.C.

Continent-wide Groupings. The most remote event is represented by the differentiation from each other of the two major linguistic families represented in the Colorado Desert: Uto-Aztecan in the northern portion, and Yuman in the southern and eastern portion. A few linguists have linked these families within very widespread groupings, such as Amerind (Greenberg 1987; Swadesh 1964, 1967). However, in the view of most investigators, no persuasive evidence for a genetic connection between these two sets of languages has yet been discovered. If Uto-Aztecan and Yuman do share a remote ancestral language, the split in that language must have occurred in the late Pleistocene or early Holocene, and it is not relevant to the present topic.

Hokan. Next in remoteness is the breakup of the Hokan phylum, to which the Yuman-Cochimí family has been considered to belong. Other Hokan linguistic families were scattered around the periphery of California and extended farther south into Mexico. Many linguists have somewhat hesitantly accepted the probable reality of the Hokan phylum as a genetic grouping, while others now reject it as lacking substantial supporting evidence (see Campbell 1997:290–296). If the Hokan split was a real event, it must have occurred no more recently than the early Holocene, given the tenuousness of the linguistic connections that have been preserved among its descendant languages.

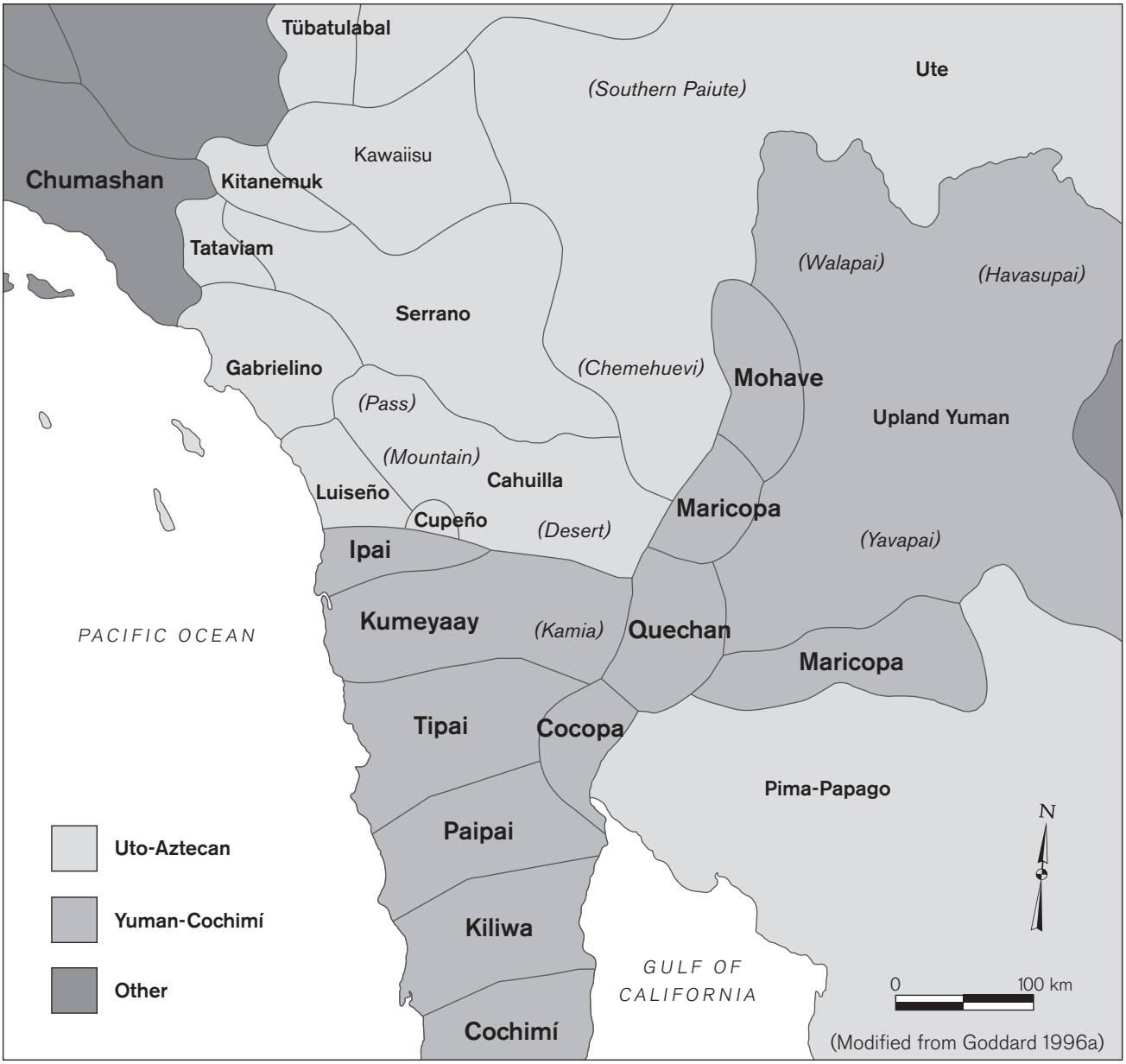

Figure 2. Ethnohistoric distribution of languages in the Colorado Desert and surrounding regions.

Aztec-Tanoan. Similarly, an Aztec-Tanoan phylum has been proposed but also has been rejected by many linguists (Campbell 1997:269–273; Miller 1983:122). If it is a valid genetic group, ancestral Aztec-Tanoan would also have been too remote in time to be relevant here.

The Problem of the Shoshonean Wedge. The so-called "Shoshonean Wedge" poses an issue that is related to the Hokan problem. A widely noted feature of the aboriginal linguistic geography of western North America is the fact that the "Shoshonean" (that is, Northern Uto-Aztecan) languages were extensively represented in the western U.S. but only reached the Pacific coast along a short strip between Malibu and Carlsbad, as well as on the southern Channel Islands (Fig. 2). When the existence of the Hokan phylum was hypothesized in the early twentieth century, it linked the Chumashan languages with the Yuman-Cochimí languages, and the coastal Uto-Aztecans of the Takic branch could plausibly be seen as a dynamic wedge that had split a previous Hokan continuum in coastal southern California (e.g., Kroeber 1923).

However, any suggestion that the Shoshonean wedge was responsible for the original linguistic

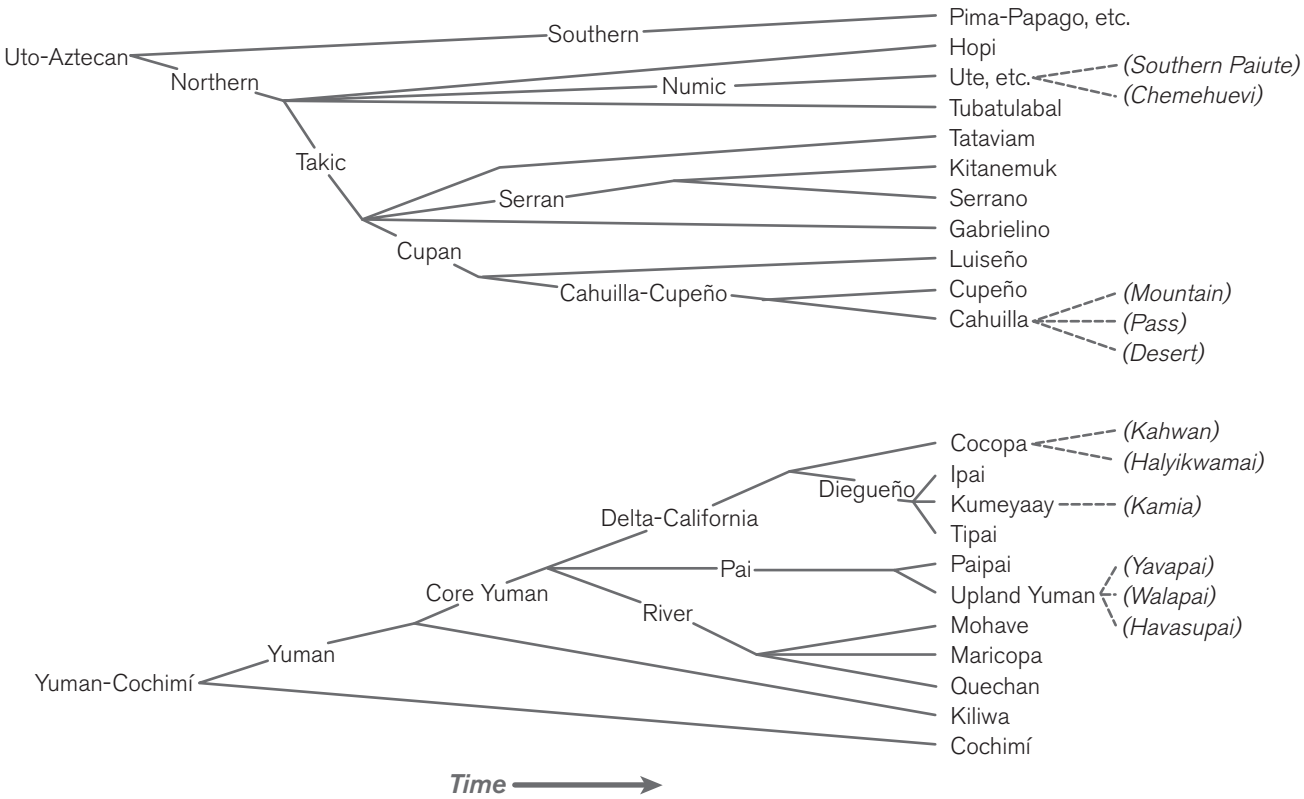

Figure 3. Tree showing hypothesized linguistic branching and relative chronology within the Uto-Aztecan and Yuman families. (Names in parentheses are dialects.)

division between the Chumashan and Yuman-Cochimí families can be dismissed. If Proto-Hokan ever existed, it must have been spoken during a very remote period. Moreover, some scholars who accept Hokan as a plausible hypothesis now reject the inclusion of Chumashan within that phylum (cf. Campbell 1997:127; Goddard 1996:6–7). There are no indications of any closer affiliation between Yuman-Cochimí and Chumashan subsequent to their hypothesized membership in the Hokan phylum. If the "Shoshonean Wedge" was produced by an expansion of interior-based Uto-Aztecans to the coast, it evidently happened long after Chumashan and Yuman-Cochimí were fully differentiated from each other.

There is also some evidence, in the form of an apparent substratum of borrowed non-Uto-Aztecan words in the Gabrielino and Luiseño languages, suggesting that the previous southern California languages that were displaced by the intruding Takic speakers were neither Chumashan nor Yuman-Cochimí but something else, perhaps representing a now-extinct Hokan family or families, or perhaps non-Hokan languages (Bright and Bright 1976:202; cf. Laylander 1985:39–43). The phrase "Shoshonean Wedge" may be too firmly wedged into the archaeological literature to be easily withdrawn, but "Takic Expansion" would be a better designation for the event in question.

Early, but Perhaps Possible: Yuman-Cochimí, Uto-Aztecan, Takic

In the case of the Uto-Aztecan and Yuman-Cochimí families, the genetic affiliations of the languages within the two families are not in doubt, nor is their division into several genetic subgroups (Fig. 3). The earliest of the splits within the Uto-Aztecan and Yuman-Cochimí families are likely to have predated even the broadly defined Archaic-Late transition period in the Colorado Desert. However, given the gross uncertainties of absolute linguistic dating, there may have been some overlap with the transition period.

Yuman-Cochimí and Yuman. The most remote but well-established affiliation of the Yuman languages spoken in the Colorado Desert is with the now-extinct Cochimí language or languages of central Baja California. Mauricio J. Mixco (1978, 2006) classified Yuman and Cochimí as "sister families" that were clearly related to each other but were considered too distinct to be subsumed within a single Yuman-Cochimí linguistic "family," using that term in a restrictive sense. Other scholars have used the term "family" more liberally and have recognized a Yuman-Cochimí family (Campbell 1997:128; Goddard 1996:7; Mithun 1999:577). There are no glottochronological estimates for the timing of the Yuman-Cochimí split, but estimates for more recent divisions within the Yuman family would suggest that Yuman separated from Cochimí no more recently than the first millennium B.C. Victor Golla (2007) estimated the time depth within the Yuman family as "certainly no greater" than 2,000 years, and the time depth within Cochimí-Yuman as "at least twice as great" as Yuman, suggesting that an estimated date for Proto-Cochimí-Yuman might be about 2,000 B.C.

The next split within this family separated Kiliwa, a Yuman language spoken in northern Baja California, from "Core Yuman," consisting of the remainder of the Yuman family. Two sets of glottochronological calculations by Carlos Robles Uribe (1964) and the present writer (Laylander 1985) gave estimates for the split between Kiliwa and Core Yuman ranging from 800 B.C. to A.D. 100, while Jesús Ángel Ochoa Zazueta (1982a, 1982b) arrived at substantially earlier estimates, between 2,900 and 1,500 B.C. David Leedom Shaul and Jane H. Hill (1998:395) estimated the breakup of Proto-Yuman at about 1,000 B.C. As noted above, Golla (2007) put it at no more than 2,000 years ago. Apparent cognates shared by different branches of the Yuman family that have possible chronological implications include words for "arrow*," "arrowhead," "bow*," "cooking pot*," "corn*," "cotton*," "mortar," "pestle," "quiver," and "squash (pumpkin)*," as well as "beef," "blackeyed peas," "cow*," "metal knife*," and "wheat*" (Law 1961; Mixco 1985; Wares 1968). (Items marked here with asterisks are shared by Kiliwa as well as Core Yuman languages.) Clearly, at least some of these terms represent historic-period borrowings or parallel innovations rather than cognates retained from Proto-Yuman or Proto-Core Yuman. Without further analysis, semantic categories can tell us little or nothing about the timing of the Proto-Yuman breakup. In sum, the Yuman-Cochimí and Core Yuman-Kiliwa splits may have occurred either prior to or early within the broadly defined Archaic-Late transition period.

Where were Proto-Yuman-Cochimí, Proto-Yuman, and Proto-Core Yuman spoken? It has sometimes been assumed that the lower Colorado River area was the most likely Proto-Yuman homeland, because this region was more or less central to the historic Yuman territories and it contained the densest populations and most technologically sophisticated Yuman cultures during the early historic period. This amounts to a "pseudo-center-of-gravity" argument, which is not based on the geographical center of greatest linguistic diversity within the families. The true centers of gravity for both the Yuman-Cochimí family (represented by the boundary between Yuman and Cochimí) and the Yuman family (represented by the boundary between Kiliwa and Core Yuman) lie in northern Baja California (Golla 2007; Laylander 1985; Mixco 2006).

Environmental arguments concerning the Yuman homeland have been advanced by Howard W. Law (1961) and Mixco (2006:34–36). Law proposed a homeland for Proto-Yuman in the lower Colorado River valley, on the basis of cognate environmental terms shared by Core Yuman languages. Methodological problems with Law's argument have been examined in detail elsewhere, and his case does not appear to be persuasive (Laylander 1985:43–46). Mixco argued against the location of the Yuman homeland in a coastal, riverine, or lacustrine region, using negative evidence in the form of a scarcity of reconstructable Proto-Yuman terms for fish and other aquatic phenomena. If Mixco's argument is valid, it would exclude both northern Baja California and the Colorado River area as likely homelands.

Apparently on the basis of archaeological evidence, Michael J. Moratto (1984:556, 561) assigned all of the Colorado Desert to Yuman languages during the period from 2,000 B.C to A.D. 1000. It is not clear whether he understood this region to be a Proto-Yuman homeland or merely a region that was occupied fairly early by a variety of descendant Yuman languages, in the manner subsequently suggested by Leanne Hinton (1991).

On balance, giving some preference to the center-of-gravity argument, it appears unlikely that the initial split

between Yuman and Cochimí involved the Colorado Desert region. It is more plausible that Core Yuman separated from Kiliwa by spreading into this region, and this expansion may have happened during the early part of the Archaic-Late transition period.

Uto-Aztecan and Northern Uto-Aztecan. The apparent time depth of Uto-Aztecan makes it improbable that the initial splits within that family occurred as late as the Archaic-Late transition. Glottochronological calculations suggest a separation between the northern and southern extremes of the Uto-Aztecan family prior to 3,000 B.C. (Miller 1983:118, 1984:15; cf. Hale 1958:106–107). Impressionistically, Shirley Silver and Wick R. Miller (1997:290) argued that "Uto-Aztecan as a whole is about as diverse as Indo-European or perhaps slightly more so, so that the time depth is somewhere between five and six thousand years." Several scholars have similarly suggested that Uto-Aztecan divisions began around 3,000 B.C. or a little earlier (Bellwood 2000:129; Campbell 1997:137; Mithun 1999:540). The Uto-Aztecan cognate sets assembled by Miller (1967) included "arrow," "bow," "mortar," and "pestle," but "pot" and "corn" were represented only by southern Uto-Aztecan examples. However, Hill (2001:913, 926) argued for a later breakup of Uto-Aztecan, around 2,500–900 B.C., basing her argument on the presence of agricultural vocabulary within Proto-Uto-Aztecan.

Primary branching within the Uto-Aztecan family has been variously interpreted. Suggestions have ranged from the existence of seven to nine independent primary branches (e.g., Goddard 1996; Mithun 1999; Steele 1979), to four or five northern branches and a single southern branch (Miller 1983; Silver and Miller 1997), a single northern branch and four southern branches (Hill 2001), or only two branches, Northern and Southern Uto-Aztecan (e.g., Campbell 1997). Glottochronological estimates have variously put the separation between the northern Uto-Aztecan families (Numic, Takic, Tübatulabal, and Hopi) at about 2,600–700 B.C. (Swadesh 1963, 1967), 1,600 B.C. (Miller 1984), or 1,400–200 B.C. (Goss 1968; Hale 1958). Mark Q. Sutton (2009) dated the split within Northern Uto-Aztecan at about 2,000 B.C. Hill (2001:927; 2006:4) thought that Northern Uto-Aztecan was still unified around 1,500–1,000 B.C. but split around 500 B.C. to 0 A.D. By some of these estimates, the fission of Northern Uto-Aztecan might have overlapped with the early portion of the Archaic-Late transition period.

Suggestions for the location of the Uto-Aztecan homeland have varied widely, if not wildly. Proposed homelands have included northern California (Nichols 1981), the Rockies and northern Great Basin (Hopkins 1965; Taylor 1961), the Colorado Plateau (Goss 1977; Moratto 1984), the Arizona-Sonora border area (Campbell 1997; Fowler 1983; Romney 1957), and central Mexico (Bellwood 2000, 2005; Hill 2001, 2006). According to a center-of-gravity argument, if Aztec-Tanoan is accepted as a valid higher-level genetic grouping, this would give some support to a northern homeland, perhaps in Arizona or on the Colorado Plateau (Silver and Miller 1997:332). If all seven to nine branches of the Uto-Aztecan family are primary, no particular region within the southwestern United States or western Mexico is clearly favored. If four primary northern branches and a single southern branch are accepted, a location in Arizona or eastern California seems to be favored. If the earliest split was between Northern and Southern Uto-Aztecan, a homeland in or near Arizona would seem to be favored. Several primary southern branches and a single northern branch would favor a homeland farther south, in Mexico. Evidently the internal classification of the Uto-Aztecan family is an important unresolved issue whose solution is a prerequisite for any persuasive center-of-gravity argument.

Environmental clues, borrowing, and archaeological correlates have also been brought to bear on the issue of the Uto-Aztecan homeland. On the basis of environmentally specific lexical cognates, A. Kimball Romney (1957) and Catherine S. Fowler (1972, 1983) proposed a Uto-Aztecan homeland in southern Arizona or its vicinity. Problems with these environmental interpretations have been discussed elsewhere (Laylander 1985:46–49). At most, it can be argued that the shared environmental cognates discourage any belief in a homeland farther north than the southern Great Basin. Peter Bellwood (2000) and Jane Hill (2001) favored a Uto-Aztecan homeland in central Mexico, based on agricultural terms shared by Hopi and the southern Uto-Aztecan languages, as well as on apparent loan words in Proto-Uto-Aztecan from Proto-Western Otomanguean and the potential of agriculture as an explanatory factor to account for the Uto-Aztecan expansion. Michael J. P. Nichols (1981) proposed that

Proto-Uto-Aztecan was spoken in northern and central California, based on borrowing between Uto-Aztecan and several Californian languages.

Proposed homelands for Northern Uto-Aztecan have been less widely scattered. Loan words shared by Proto-Northern Uto-Aztecan and Proto-Kiowa-Tanoan point to a northern homeland for Uto-Aztecan's northern branch, according to Hill (2001). Nichols (1981) placed Proto-Northern Uto-Aztecan in the southern San Joaquin Valley. Fowler (1972, 1983) argued for a Northern Uto-Aztecan homeland in the southern Sierra Nevada foothills. Sutton (1994, 2000, 2009) located the Northern Uto-Aztecan homeland in the region of the southern Sierra Nevada and western Mojave Desert region. Moratto (1984:541) suggested that Northern Uto-Aztecans had first entered California from the east around 2,000 B.C. Golla (2007) suggested that between about 1,500 and 500 B.C., dialects of Northern Uto-Aztecan were spoken across the southern Great Basin from the Colorado River to the Sierra Nevada.

Some analysts have proposed the operation of something like a "Yuman Wedge," analogous to the Shoshonean Wedge. Fowler (1983) suggested that an expansion of Proto-Yuman had caused the split between the Northern and Southern Uto-Aztecan families. Golla (2007) proposed a genetic division within Northern Uto-Aztecan between an eastern (Hopi and Numic) and a western (Takic and Tübatulabal) branch, and he suggested that "it is not unlikely that this east-west split was correlated with the northward expansion of Yuman along the Colorado River after 2500 BP." However, Golla's suggestion of eastern and western linguistic groupings has not yet been evaluated by other authorities. It is not clear that a Yuman (meaning, presumably, a River Yuman) expansion would have occurred early enough and would have extended far enough to the north to have separated the hypothesized Northern and Southern Uto-Aztecan branches or the Hopi-Numic and Takic-Tübatulabal branches of Northern Uto-Aztecan. The Yuman Wedge is more credible than the Shoshonean Wedge, but it still does not seem to be well supported.

In summary, the evidence concerning homelands for Uto-Aztecan and Northern Uto-Aztecan does not rule out some involvement of the speakers of these languages with events in the Colorado Desert. Neither does it specifically point toward this region.

Takic. Glottochronological calculations have estimated the breakup of Takic at between 1,200 and 300 B.C. (Swadesh 1963, 1967). Miller (1983:118) put it at about 2,000 B.C. Impressionistically, Silver and Miller (1997:290) suggested that "the Takic languages are somewhat more diverse than the Germanic languages, which would give them a time depth of three thousand to thirty-five hundred years [1,500–1,000 B.C.]." Shaul and Hill (1998:395) put the breakup of Proto-Takic in about the same time range as the breakup of Proto-Yuman; that is, around 1,000 B.C. Hill (2001:927) subsequently estimated the breakup of Takic at about 500 B.C. to 0 A.D., comparable to the time depth of the Germanic family, but she also suggested that the difference between Cupeño and Serrano might be comparable to the difference between French and Spanish, which would suggest a time depth of only A.D. 500 for Takic. Sutton has variously dated it to between 1,000 B.C. and 0 A.D. (Sutton 1994:133), to about 1,000 B.C. (Sutton 1994:135), or to about 1,500 B.C. (Sutton 2009:31).

The separation of the northern Uto-Aztecan languages may have marked the arrival of Takic speakers in some portion of their subsequent territory, which is near the southern limits of the historic northern Uto-Aztecan range. Fowler (1983:244–245) proposed a homeland for Takic in the Mojave Desert, based on a shared desert-oriented lexicon. Moratto (1984:560) suggested that Takic may have spread westward across the Mojave Desert and into the Tehachapi Mountains as early as 1,500–1,000 B.C., or alternatively that it may have spread south from the San Joaquin Valley. According to Sutton's (1994, 2009) scenario, Takic groups expanded out of the southern San Joaquin Valley into the southern Mojave Desert and subsequently southward around 1,500 B.C. According to one variant (Sutton 1994:135), Takic groups first entered the northwestern Colorado Desert and only subsequently reached coastal southern California. An alternative version (Sutton 2009:39) had Takic groups arriving at the coast first and subsequently expanding eastward into the Colorado Desert. Makoto Kowta (1969:47, 50) had the Takic speakers crossing the Transverse Ranges into the Los Angeles Basin around 1,000 B.C., based on archaeological evidence. Golla (2007) put the most likely homeland of Proto-Takic in the vicinity of Tehachapi Pass.

Certain non-Uto-Aztecan words in Gabrielino and Luiseño may represent a substratum of borrowing from

the displaced predecessors of their linguistic ancestors in coastal southern California, according to William and Marcia Bright (1976; see also Laylander 1985:39–43). These apparent borrowings have almost no known cognates in either Chumashan or Yuman languages; hence the argument that the latter two groups were already separated by speakers of other languages prior to the "Shoshonean Wedge." It is also notable that the two languages, Gabrielino and Luiseño, do not share many of the same apparent non-Uto-Aztecan borrowings. This would support the view that the Uto-Aztecans who first arrived in coastal southern California were not Proto-Takic speakers, but instead were their later pre-Gabrielino and Proto-Cupan descendants. Of 38 apparently non-Uto-Aztecan forms in the Brights' Luiseño lists, just over half (20) can be matched with apparent cognates in word lists for Cahuilla, Cupeño, or both (Hill and Nolazquez 1973; Seiler and Hioki 1979). This suggests that the borrowing occurred into a still-undivided Proto-Cupan language, rather than later and specifically into Luiseño. If the source of this non-Uto-Aztecan, non-Yuman linguistic substratum was indeed present in the relatively densely populated region of late prehistoric coastal southern California, that would point to the arrival of Proto-Cupan speakers in that region.

Hinton (1991:136–137) used phonological evidence to argue that a southward-expanding Proto-Cupan community had replaced some now-extinct Yuman language or languages. The phonological similarities were not specifically with Ipai but rather with the Yuman family as a whole, and perhaps had their closest affinities to the River Yuman branch rather than the Delta-California branch. On this basis, Hinton proposed that Yumans had occupied all of the ethnohistoric Luiseño, Cupeño, and Cahuilla territories prior to the southward Cupan expansion. If this scenario is correct, it seems peculiar that almost none of the apparent non-Uto-Aztecan words borrowed into Luiseño (and Cupan) in the Brights' list appear to have potential Yuman sources, either specifically in Ipai or more generally in a comparative word list for the other Yuman languages (Wares 1968).

About Right: Core Yuman, Delta-California Yuman, River Yuman, Cupan, Serran

Core Yuman. According to glottochronological calculations, the split of Core Yuman into its River, Delta-California, and Pai branches may have occurred around 1,500–700 B.C. (Ochoa 1982a, 1982b), 100 B.C.–A.D. 700 (Robles 1965), or A.D. 200–700 (Laylander 1985). Kenneth Hale and David Harris (1979:172) thought that the time depth of Core Yuman must be less than 2,000 years. As previously noted, Core Yuman may well have been spoken in or near the Colorado Desert. The separation of its branches almost certainly involved movements within this region.

River Yuman and Delta-California Yuman. The breakup of the River and Delta-California branches of the Yuman family into their constituent languages probably occurred sometime during the second half of the Archaic-Late transition period. River Yuman is composed of Quechan, Mohave, and Maricopa. Shaul and Hill (1998:395) suggested that "a date for the Proto-River Yuman community at about 2,000–1,500 B.P. [B.C./A.D.–A.D. 500]…is by no means unrealistic." They documented evidence of linguistic contacts between the Proto-River Yuman and Proto-Tepiman (southern Uto-Aztecan) languages that hint at a Proto-River Yuman homeland located no farther west than the lower Colorado River area and no farther north than the Gila River area in southern Arizona.

Delta-California Yuman includes Cocopa and the Diegueño language or languages. Glottochronological estimates for the separation between Cocopa and Diegueño (specifically, the variants of Diegueño spoken in northwestern Baja California) have ranged from 500 B.C.–A.D. 300 (Ochoa 1982a, 1982b) to A.D. 300–400 (Robles 1965) to A.D. 900–1000 (Laylander 1985). Geographically, this split would almost certainly have involved the Colorado Desert, although whether the spread occurred eastward into this region or extended westward out of it is not confirmed linguistically.

Cupan and Serran. There is no firm consensus regarding the genetic subdivisions of Takic. Generally recognized branches have included Cupan (Cahuilla, Cupeño, and Luiseño) and either Serran (Serrano and Kitanemuk) or Serrano-Gabrielino (Serrano, Kitanemuk, and Gabrielino) (Goddard 1996; Mithun 1999). William F. Shipley (1978:90) anomalously included Gabrielino in the Cupan family. Glottochronological counts suggest separations between Cahuilla and Luiseño and between Serrano and Gabrielino around 500–400 B.C. (Swadesh 1963, 1967). Miller (1983:118)

gave an estimate of about 1,500 B.C. for the separation between Luiseño and Cahuilla-Cupeño, but he put the separation between Cupeño and Cahuilla as late as A.D. 200. Roderick A. Jacobs (1975:5) suggested that the divisions between the three Cupan languages of Luiseño, Cupeño, and Cahuilla are comparable to the separations between Italian, Spanish, and Portuguese, respectively, which would imply the breakup of Cupan occurred around A.D. 500. Sutton (2009:31) proposed that the breakup of a Gabrielino-Cupan group occurred between A.D. 500 and 1000.

Center-of-gravity arguments would seem to favor placing both Proto-Cupan and Proto-Serran (or Proto-Serrano-Gabrielino) homelands to the west of the Colorado Desert, perhaps in the Peninsular Range or coastal regions in the case of Proto-Cupan, and in the Transverse Ranges or western Mojave Desert in the case of Proto-Serran. Golla (2007) suggested that ethnohistoric Cupan territory represented an intrusion that had taken place since A.D. 1000, including expansion eastward into the Colorado Desert through the San Gorgonio Pass. The breakups of Cupan and Serran might have coincided with the initial entry of Cahuilla and Serrano speakers into the Colorado Desert, or they might have predated that entry.

Late, but Possible: Diegueño, Pai Yuman

Diegueño. There is some uncertainty as to whether Diegueño should be considered a single language with a chain of strong dialects or as a family containing two, three, or more separate languages. The usual linguistic view at present recognizes three closely related but distinct languages: from north to south, these are termed Ipai, Kumeyaay, and Tipai (Campbell 1997; Goddard 1996; Langdon 1990; Mithun 1999). There is also some support for possible further language-level divisions within Tipai in northern Baja California (Laylander 1985; Mithun 1999:577; Ochoa 1982a). Available glottochronological estimates for separations within Diegueño, which address specifically the variability within Baja California, have ranged from A.D. 600 to 1200 (Laylander 1985; Ochoa 1982a, 1982b; Robles 1965). Diegueño's expansion beyond its limits of sustainable unity may therefore have begun as early as the later part of the Archaic-Late transition period. Geographically, the greatest variability within Diegueño is represented west of the Colorado Desert.

Pai Yuman. The Pai branch of the Yuman family is of special interest for Colorado Desert prehistory. The noncontiguous ethnohistoric territories of the Pai lay just outside of the region, but they were centered on the Colorado Desert, which seems to imply a migration either across the region or out from it.

Two Pai languages are generally recognized: Upland Yuman, spoken by the Yavapai, Walapai, and Havasupai of northwestern Arizona; and Paipai, spoken in northern Baja California (Campbell 1997:127; Goddard 1996:7; Kendall 1983:4; Mithun 1999:577). However, there has been some debate as to whether Paipai should be considered a separate language or merely another dialect of a single Pai language. Different observers have both asserted and denied mutual intelligibility between Paipai and Yavapai (Kendall 1983:8; Mixco 2006:31–32; Winter 1967).

The large and discontinuous geographical range of the Pai family clearly implies territorial expansion, although it is uncertain whether the spread proceeded from north to south or from south to north. One intriguing hypothesis is that it occurred in both directions, extending outward from a central location in the southern Salton Basin or in the Colorado River delta, and that it was a response to the environmental instability associated with one of the episodes of Lake Cahuilla's filling or desiccation (Laylander 2006:65–66, 2007). The apparent closeness of the relationship between Paipai and Upland Yuman suggests that their split was quite recent, perhaps subsequent to A.D. 1000.

Probably Too Late: Chemehuevi, Upland Yuman Dialects, Cahuilla Dialects, Kamia, Delta Yumans

Dialect-level differences within a language can represent either a sustainable, steady-state condition or an incipient split that has not yet had time to eliminate mutual intelligibility. In the latter case, the separations involved are generally believed to be no more than 1,000 years old, and they would therefore represent events subsequent to the Colorado Desert's Archaic-Late transition period.

Chemehuevi. The Chemehuevi presence on the northern fringe of the Colorado Desert seems to be a very late element in the regional linguistic pattern. Chemehuevi is recognized as differing from Southern Paiute or Ute only at the dialectal level (Campbell 1997:134; Goddard 1996:7; Miller 1983:121; Mithun 1999:539). The Chemehuevi are generally believed to

have entered the southern California deserts from the north during the final centuries of prehistory or in the early historical period. Given the Chemehuevi's geographical and cultural distinctiveness from their Southern Paiute kin, it seems likely that their dialect would eventually have evolved into a separate language, but that sufficient time for this to happen had not yet elapsed by the late nineteenth century.

Yavapai, Walapai, and Havasupai. The Upland Yuman language was spoken over an extensive area in northwestern Arizona by three culturally and politically distinct groups, the Yavapai, Walapai, and Havasupai. It seems almost certain that their linguistic unity was unstable, and therefore that their territorial expansion had taken place after A.D. 1000. The Upland expansion probably proceeded from south to north, as reflected in greater differences between dialects within Yavapai than between Walapai and Havasupai (Kendall 1983:5).

Mountain, Pass, and Desert Cahuilla. Three major dialect-level divisions of Cahuilla have been recognized: Mountain, Pass (or Wanakik), and Desert (Kroeber 1925:693–694; Seiler 1977:6–7; Strong 1929:36). An interesting but unanswered question is whether Cahuilla linguistic unity (i.e., mutual intelligibility) was sustainable within its fairly extensive and diverse territory, or whether the Cahuilla dialects represent incipient language splits. If the latter is the case, Cahuilla territory had probably expanded after A.D. 1000, and the most likely direction of that expansion would have been eastward into the Colorado Desert.

Kamia. The ethnohistoric Kamia of Imperial Valley were somewhat distinct culturally from their Kumeyaay kin to the west. Again, given the extent and diversity of the territories occupied by Kumeyaay speakers, it may well be that the Kamia were on their way toward developing a distinct linguistic identity. Because the center of gravity of linguistic diversity within the Diegueño group (Ipai, Kumeyaay, and Tipai) lies to the west, it might be argued that the Kamia represent a recent eastward expansion of the Kumeyaay. On the other hand, the next higher level of Diegueño linguistic affiliation is with Cocopa, which is a Colorado Desert language, raising the possibility that Kumeyaay might have spread westward. (Was there perhaps a "Kumeyaay Wedge" that split Ipai and Tipai?).

Cocopa, Kahwan, and Halyikwamai. Early Spanish explorers reported a high degree of ethnic diversity in the Colorado River delta. Groups that were specifically named and that seem to have had some long-term persistence included the Cocopa, Kahwan, and Halyikwamai. Almost no information is available concerning the language or languages of the Kahwan and Halyikwamai, although there is one hint that the Kahwan and Halyikwamai spoke something that was essentially indistinguishable from Cocopa (Kroeber 1943:21–22). Speculatively, it might be suggested that Cocopa, Kahwan, and Halyikwamai were recent sociopolitical divisions whose dialects would eventually have developed into distinct languages but that had not had time to do so by the nineteenth century. If this had happened, the differentiation of Delta Yuman into multiple languages would most likely have been attributable to emerging sociopolitical institutions and regional demographic growth rather than to any territorial expansion.

CONCLUSIONS

The contributions of historical linguistics toward reconstructing the prehistory of the Archaic-Late transition in the Colorado Desert are—at best—vague and probabilistic rather than sharply defined or firmly established. Nonetheless, linguistic evidence does support some usable generalizations for the regional prehistorian:

(1) It would probably be better to discard the misleading image of the "Shoshonean Wedge." The Takic expansion into coastal southern California did not separate anything that was not already separate.

(2) Uto-Aztecan entry into the ethnohistoric Takic region probably proceeded from north to south, and it probably happened prior to the Archaic-Late transition period.

(3) The initial Core Yuman expansion into the Colorado Desert probably came from the south, from northern Baja California. It may well have occurred during the early portion of the Archaic-Late transition period.

(4) The spreads that led to the differentiation of the various Cupan, Serran, Delta-California Yuman, and River Yuman languages probably occurred during the Archaic-Late transition period. These splits may have happened earlier among the Uto-Aztecans than among the Yumans.

(5) Linguistic clues seem to give a preference to Cupan and Serran homelands lying to the west of the Colorado Desert. The initial Cupan and Serran entrants into the desert may already have been speaking Cahuilla and Serrano rather than Proto-Cupan and Proto-Serran.

(6) Despite archaeological evidence for an east-to-west spread of ceramic and agricultural technologies among the Yumans during this period, there is no clear linguistic argument to favor an east-to-west spread of Delta-California Yumans as against a west-to-east spread. The potential for technology and other aspects of culture to diffuse across linguistic boundaries is clearly attested by many cultural continuities that extended across the Yuman-Takic boundary during ethnohistoric time.

(7) Linguistic displacements in prehistoric southern California evidently did not occur as a single, traumatic *völkerwanderung* identifiable with the Archaic-Late boundary. Linguistic evidence points to the existence of many separate episodes of expansion by the linguistic ancestors of the historically-known native peoples of southern California. These events continued to unfold throughout the later Archaic, Late, and early historic periods.

(8) Linguistic evidence supports the view that sociocultural instability was greater in the prehistoric Colorado Desert than in many other parts of aboriginal California. This relative instability is not difficult to understand, given the incentives for expansion or migration that arose from the practice of agriculture on the lower Colorado and Gila rivers and from the natural environmental instability associated with Lake Cahuilla and the Colorado River delta.

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