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Anthropological Linguistics, Volume 59, Number 1, Spring 2017, pp. 1-23
(Article)

Published by University of Nebraska Press

DOI: <https://doi.org/10.1353/anl.2017.0000>



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Uto-Aztecan Maize Agriculture: A Linguistic Puzzle from Southern California

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Abstract. The hypothesis that the members of the Proto-Uto-Aztecan speech community were maize farmers is premised in part on the assumption that a Proto-Uto-Aztecan etymon for ‘maize’ can be reconstructed; this implies that cognates with maize-related meanings should be attested in languages in both the Northern and Southern branches of the language family. A Proto-Southern Uto-Aztecan etymon for ‘maize’ is reconstructible, but the only potential cognate for these terms documented in a Northern Uto-Aztecan language is a single Gabrielino word. However, this word cannot be identified definitively as cognate with the Southern Uto-Aztecan terms for ‘maize’; consequently, the existence of a Proto-Uto-Aztecan word for ‘maize’ cannot be postulated.

1. Introduction. Speakers of Uto-Aztecan languages lived across much of western North America at the time of their earliest encounters with Europeans or Euro-Americans. Their communities were distributed from the Columbia River drainage in the north through the Great Basin, southern California, the American Southwest, and most of Mexico, with outliers as far south as Panama (Miller 1983; Campbell 1997:133–38; Caballero 2011; Shaul 2014). Comprising thirty documented languages, the Uto-Aztecan language family is divided into northern and southern branches based on phonological innovations shared among the languages within each branch (Manaster Ramer 1992; Merrill 2013). The Northern Uto-Aztecan languages are or were spoken exclusively in the western United States and can be classified into four subdivisions: Takic, Numic, Hopi, and Tubatulabal. The Southern Uto-Aztecan languages are or were spoken from central Arizona to Central America and traditionally have also been classified into four subdivisions: Tepiman, Taracahitan, Cora-Huichol, and Aztecan (Shaul 2014). Tubar, a poorly documented southern language now extinct, may represent a fifth subdivision within the southern branch (Stubbs 2000, 2003:6; Hill 2011:255–59).

The members of the majority of Uto-Aztecan societies relied to varying degrees on maize agriculture for their livelihood, the principal exceptions being the full-time foragers of southern California and the Great Basin. In 2001, Hill proposed that maize farming formed part of the subsistence strategy of the Proto-Uto-Aztecan speech community, basing her proposal on a set of maize- or agriculture-related etyma that she suggested could be reconstructed for

Proto-Uto-Aztecan. Her arguments were questioned by other Uto-Aztecanists (Campbell 2002; Kaufman and Justeson 2009; Merrill et al. 2009, 2010; cf. Hill 2010, 2012), leading Merrill (2012) to complete a comparative study of the agricultural vocabularies documented for all of the Uto-Aztecan languages. He concluded that an agricultural lexicon could be reconstructed for Proto-Southern Uto-Aztecan but not for Proto-Northern Uto-Aztecan, arguing on the basis of this evidence that maize entered the Uto-Aztecan world after the diversification of the proto-language into its northern and southern branches.

A key question that remains unresolved is whether a Proto-Uto-Aztecan (PUA) etymon can be reconstructed for ‘maize’ itself, a reconstruction that is possible only if cognate terms for ‘maize’ can be identified in both the northern and southern branches of the language family. The generic term for ‘maize’ usually is reconstructed for Proto-Southern Uto-Aztecan (PSUA) as the disyllabic **sunu* (Miller 1966:96; Fowler 1994:449–53; Hill 2004:65–68), although Merrill (2012:209) proposed that the trisyllabic **suhunu* was more likely. Because Southern Uto-Aztecan (SUA) *-n-* reflects PUA *** -ŋ-* and regularly corresponds with Northern Uto-Aztecan (NUA) *-ŋ-* (Merrill 2013:84–94), the expected PUA etymon for ‘maize’ is ***sunu* or ***suhunu*, which also is the form expected for Proto-Northern Uto-Aztecan (PNUA). (Sounds and etyma are marked with **** for PUA and *** for PNUA, PSUA, and the other intermediary protolanguages.)

Words attested in a few NUA languages closely resemble phonologically the expected reflexes of PUA ***sunu*. One example is Hopi *soŋowī*, in which *o* is the regular reflex of PUA **u* and *-wī* probably derives from the PUA augmentative suffix. This word labels the giant sandreed (*Calamovilfa gigantea*), a tall wild grass (Whiting 1966:65; Hill 2001:918, 920). A second example is the Gosiute Shoshone word *suŋ*, the name for a different wild plant, shadscale (*Atriplex confertifolia*) (Chamberlin 1911:52–53). If these Hopi and Gosiute terms are in fact cognate with SUA terms that reflect PSUA **sunu* or **suhunu*, the possibility exists that PSUA speakers adopted a term for a wild plant as their generic label for ‘maize’ (Merrill 2012:209–10).

The same reasoning cannot be applied to a third NUA term, attested in Gabrielino, also called Tongva, a Takic language spoken in the Los Angeles area of southern California. The word in question is *soŋáaxey*, recorded in 1933 by John Peabody Harrington as ⟨soŋáaxey⟩ with the gloss of ‘tortilla’. We analyze this word into two principal components: *soŋ-* + *-áaxey*. The second component, *-áaxey*, is a nominalization of the verb *áax-* ‘to put into the mouth’ to which the literal gloss of ‘something put into the mouth’ can be assigned (see section 4). In contrast, the word class and meaning of the first component, *soŋ-*, is unclear. Given that Gabrielino short unstressed *o* can result from the lowering of *u* (the reflex of PUA ***u*), Hill (2007:206, 2010, 2012:58) identified Gabrielino *soŋ-* as a noun reflecting a postulated PUA etymon ***sunu* ‘maize’. She analyzed *soŋáaxey* as ‘maize-put.in.mouth-NOM’, an interpretation consistent with the Gabrielino gloss of *soŋáaxey* as ‘tortilla’.

Hill's source for *ʃoŋáaxey* was an index compiled in 1964 by Kenneth C. Hill of a portion of Harrington's unpublished field notes, housed at the time in the Survey of California Indian Languages at the University of California, Berkeley. Between 1976 and 1979, these notes were transferred to the Smithsonian Institution's National Anthropological Archives and incorporated into the John Peabody Harrington Papers, which were subsequently made available on microfilm (Mills and Brickfield 1986:xi; Golla 2011:273–81). In 2011, Merrill reviewed the microfilm of Harrington's Gabrielino field notes but was unable to locate *ʃoŋáaxey*. He did, however, find a similar word, transcribed by Harrington as ⟨ʃaŋahaj⟩ and glossed as 'bread' (Merrill 2012:241, set 17). In the revised orthography that Harrington used in 1933, the word would be transcribed as ⟨jaŋahay⟩ and in our orthography as *ʃaŋahay*.

In 2012, the National Anthropological Archives initiated a project to digitize the microfilm of Harrington's massive corpus of field notes and to make the entire collection available online. This endeavor has greatly facilitated the use of Harrington's research materials and has allowed us to find the attestation of *ʃoŋáaxey* again. It appears in the online version in volume 3, reel 104, frame 0428. The other word, *ʃaŋahay* 'bread', appears in volume 3, reel 102, frame 0683.¹ (Hereafter we cite the online version of the Harrington Papers by volume, reel, and frame numbers only, e.g., 3.104.0428 and 3.102.0683 for the two citations just given.)

Our purpose in this essay is to bring a philological perspective to bear on these two words, evaluating the circumstances within which they were documented, the forms in which they were transcribed, the possible relationship between them, and their relevance to understanding the cultural history of maize agriculture among Uto-Aztecan societies. Our analysis is challenged by the fact that each word is attested only once in Harrington's Gabrielino corpus, and Harrington provided no linguistic commentary on either. Nonetheless, the fairly extensive corpus of Gabrielino linguistic data that Harrington compiled allows us to at least partially contextualize these two words within the broader framework of the Gabrielino language.

The remainder of our essay is organized into seven sections. In section 2, we provide a brief overview of the Gabrielino language and its speakers, followed in section 3 by a summary of Harrington's work on the language. We present our linguistic analyses of *ʃoŋáaxey* and *ʃaŋahay* in sections 4 and 5, respectively, and in section 6, we consider the relationship between them, proposing that the two forms likely represent distinct words rather than alternate transcriptions of the same word.

In the final section, we conclude that doubts about the etymology of *ʃoŋáaxey* preclude identifying *ʃoŋ-* as an unassailable attestation of a Northern Uto-Aztecan word for 'maize' and consider three alternative scenarios, all highly speculative, that might account for the presence of *ʃoŋáaxey* in the Gabrielino lexicon and its gloss 'tortilla'.

2. The Gabrielino language and people. The Gabrielino language belongs to the Takic subfamily of Northern Uto-Aztecan languages (Munro 1983:289–97, 1989, 2000). The documentation of the Takic languages, all spoken in southern California, is uneven, but sufficient data exist to support their classification into three subgroups. Gabrielino and Fernandeno, probably dialects of the same language, comprise the Gabrielino-Fernandeno subgroup. It is distinguished from the Serran subgroup, which includes the Serrano and Kitanemuk languages, and the Cupan subgroup, which includes the Cahuilla, Cupeño, and Luiseño languages. While the genetic unity of the Takic subfamily and each of its subgroups is generally accepted, the historical linguistic relationships among the subgroups and the possible Takic affiliation of several other southern Californian languages and dialects has been the subject of considerable debate (Hill 2011:267–73; Golla 2011:178–85).

Traditional Gabrielino territory, centered in the Los Angeles Basin and San Fernando Valley, encompassed diverse environmental zones, ranging from mountains and prairies in the interior to the Pacific Coast and Channel Islands. The abundant wild resources available to the Gabrielino, combined with their participation in extensive trade networks, supported the development of one of the more complex hunter-gatherer societies in southern California, rivaled only by those of their Chumash neighbors to the north and west (Johnston 1962; Bean and Smith 1978; McCawley 1996). As Bean and Smith note, “With the possible exception of the Chumash, the Gabrielino were the wealthiest, most populous, and most powerful ethnic nationality in southern California, their influence spreading as far north as the San Joaquin valley Yokuts, as far east as the Colorado River, and south into Baja California” (1978:538).

Spanish colonization of the Gabrielino area began around 1769, and Franciscan missionaries congregated the members of many Gabrielino-Fernandeno communities at the San Gabriel and San Fernando missions, founded in 1771 and 1797, respectively. The missionaries initiated a systematic program of religious conversion and cultural change that transformed Gabrielino life and disrupted the ecosystems upon which they depended for their survival. Extensive European-style agriculture was introduced at this time, with large-scale production of wheat and maize directed toward sustaining the mission populations and Spanish military garrisons in their vicinities (Jackson and Castillo 1995; Sandos 2004). Economic records from Mission San Gabriel document that wheat was sown the year of its founding and maize was first planted two years later, in 1773 (Jackson and Castillo 1995:117).

The Gabrielino mission residents undoubtedly were engaged in producing these crops, and some may have begun their own small-scale horticulture on mission lands or in settlements outside the missions, as is documented for the nearby Luiseño mission of San Luis Rey. Reporting on the year of 1813, the Franciscan missionary Gerónimo Boscana noted that one Indian resident of San Luis Rey planted a garden of maize, pumpkins, and watermelons every year

(Harrington 1934:54). From later in the nineteenth century, a possible reference to the Gabrielinos' consumption of maize in the form of tortillas is found in the biography of an early California settler L. J. Rose written by his son L. J. Rose, Jr. Rose (1959:54–56) described a place known as the “Rancheria,” where Mexicans and “domesticated Indians” lived while working on his father’s ranch. Although he does not explicitly identify the Indians as Gabrielinos, the “Rancheria” was located near the Gabrielino settlement of ?Akuuronga (McCawley 1996:206). In commenting on the workmen’s diet, Rose reported,

Bread was not used; as a substitute they had *tortillas*, made from a dough of ground corn and water and a little salt, of a proper consistency to handle easily, as they took a ball of it the size of an orange and patted it out between their hands into pancake shape about an eighth of an inch in thickness and ten or twelve in diameter. This was toasted on a large piece of sheet iron, placed on the rocks over the coals. [1959:55]

There is no evidence that Gabrielino people practiced any form of agriculture prior to European contact, and as seen in (1), all documented Gabrielino words for cultigens are loanwords from Spanish.

- (1) *mais* ‘maize’ < SP *maíz* (McCawley 1996:278)
melón ‘melon’ < SP *melón* (3.105.0146)
rehóor ‘bean’ < SP *frijol* (3.105.0013, 3.105.0044)
sandíya ‘watermelon’ < SP *sandía* (3.105.0146)
tariüwo? ~ *teriüwo?* ‘wheat’ < SP *trigo* (3.105.0012, 3.105.0013)

Nonetheless, it is highly likely that Gabrielino people were aware of maize and other New World cultigens prior to European contact. They were engaged in trade with the members of Yuman-speaking societies who lived along the lower Colorado River and are documented as cultivating maize in 1540, the year of initial European contact, and maize, beans, and squash in 1604–5 (Alvarez de Williams 1975:24–25, 31, 34; cf. Castetter and Bell 1951). In addition, Lawton and Bean (1968; cf. Bean and Saubel 1972:22–23, 153–54, 197–210) argue that the Takic-speaking Cahuilla, the Gabrielinos’ neighbors to the southeast, farmed before the arrival of Europeans, and the Cahuilla leader Francisco Patencio reported “Pa ha vosh lum” [*pahavošlum*] as the Cahuilla word for ‘maize’ (Patencio and Boynton 1943:25). This word appears to be a deverbal noun derived from a verb meaning ‘to plant’. The verb is not documented for Cahuilla. It is attested in Gabrielino as *poháawvax* ‘to plant’ (3.103.0476) and *páavoxaya* ‘we are going to plant’ (3.102.0212). The word is also attested in the Serran subgroup of Takic, as Kitanemuk *pavuhaču* (Anderton 1988:465) and Serrano *paavuha?* (K. Hill 2011:50), both glossed as ‘to plant’. All four words are similar but the sound correspondences are not regular, suggesting that they may derive from a loan into the Takic languages, from an unknown source.

The hardships of mission life devastated the native California populations, already depleted by epidemics from repeated contact with Europeans that began

with Juan Rodríguez Cabrillo's landfall on their coast in 1542. Even Indians who managed to stay beyond the reach of the missions lost lands and resources to Spanish colonists and their livestock. In the early 1830s, a newly independent Mexican government secularized the missions, largely ignoring the needs of Indigenous people in the distribution of mission lands and property (Jackson and Castillo 1995:87–106). While Spanish-speaking Mexican ranchers often employed Indians who lived on their lands, Americans who began to take over these grants after 1848 were more likely to displace the Indian communities. During the second half of the nineteenth century, a series of smallpox epidemics and systematic social discrimination further undermined the Gabrielinos' ability to sustain their culture and their language (Bean and Smith 1978:540–41; McCawley 1996; Hinton 1998:83–86).

In 1914, when John P. Harrington began his Gabrielino fieldwork, their communities were scattered, their ceremonies were held only sporadically, and their language was moribund, spoken only by a few elderly people who had little opportunity to interact and converse with one another. By the late 1930s, no native speakers of the language remained (Golla 2011:180), but by the early twenty-first century, members of several Gabrielino and Fernandeño descendant communities had initiated language revitalization programs, based on the materials that Harrington had begun collecting from the last speakers nearly a century before and on the analysis of these materials by Pamela Munro (1983, 1989, 2000; cf. Bogany et al. 2012).

3. John P. Harrington and the Gabrielino language. Harrington completed fieldwork on the Gabrielino language during two periods. Between 1914 and 1922, he worked mainly with three elderly speakers, José María Zalvidea, José de los Santos Juncos, and Felicita (aka Felicitas) Serrano Montaño. In 1933, he worked with Jesús Jauro, who was then 90 years old and died the following year (Mills and Brickfield 1986:67–71; photographs of Zalvidea and Serrano Montaño appear on p. xxxi). Although all four of Harrington's consultants had learned the Gabrielino language as children, it is likely that they had used it very rarely as adults. Their primary language appears to have been Spanish, but they also spoke or were familiar with other Takic languages like Serrano, Luiseño, Juañeno (a dialect of Luiseño), and Cahuilla, as well as Fernandeño.

The circumstances of Harrington's work with these speakers can be reconstructed to some degree from his field notes. He and his consultants were obviously "speaking the past," Harrington attempting elicitation based on materials from older documents, and the speakers frequently citing earlier generations as the authorities for their own knowledge. A word remembered as "real Grabiellino" (the local Spanish pronunciation) would be licensed by a comment that "My mother used to say . . .," or "At a fiesta at Morongo I once heard . . .," or "At a sheepshearing an old man said . . ."

Harrington relied on a variety of elicitation techniques in his interviews with Gabrielino speakers. He was particularly interested in place names and their etymologies, and elicited toponymic data by requesting information on places mentioned in a variety of older sources. He also explored family histories, collected song texts, and compiled questionnaires of basic vocabulary, simple sentences, and the like. The speakers could not always provide the information that Harrington sought, but as they became more engaged in Harrington's efforts to document the language, they often remembered and volunteered related—or even unrelated—vocabulary items or expressions.

Harrington was famous for having an excellent ear for the sounds of the languages he studied, and he often requested that his consultants repeat words several times so that he could rehear them. Nonetheless, in his handwritten notes he occasionally indicated that a form was “not clearly heard.” He appears to have had the most difficulty making out the sounds produced by Zalvidea and Serrano Montaño.

Harrington checked, rechecked, and cross-checked his elicitations. Thus, during the 1914–1922 period of his fieldwork, he cross-checked materials elicited from Juncos and Zalvidea against each other and also checked their materials with Serrano Montaño. Materials collected from Serrano Montaño in 1914 and 1915 were rechecked with her in 1922, and materials from all these speakers were checked with Jauro in 1933. Harrington did not cross-check the information provided by Jauro because he could not identify any Gabrielino speakers in 1933 whose knowledge of the language was comparable to Jauro's.

Harrington never published any linguistic studies based on his Gabrielino research. In fact, he produced only two publications on the Gabrielino people: an inventory of “cultural elements” that he and others had documented among the Gabrielinos and other Native peoples of California's central coast (Harrington 1942) and a two-page preface to a compilation of articles written about the Gabrielinos by Bernice Johnston (Johnston 1962:vii–viii). Neither includes any linguistic data or analysis. As a result, Harrington never identified what he considered to be the “definitive” forms of the Gabrielino words or expressions that he documented with variant forms, sometimes provided by the same speaker or more frequently by different speakers. By the same token, his Gabrielino linguistic materials preserve a record of the idiosyncratic pronunciations of several different speakers.

Various scholars have commented on the challenges of working with Harrington's linguistic materials (e.g., Anderton 1991; Callaghan 1991; Golla 1991), which range from deciphering his handwriting to determining the sound values he assigned to the graphemes in his evolving orthographic systems. The most significant problem we encountered was the absence of additional attestations and any commentary by Harrington or his consultants on the validity of the forms of the two Gabrielino words that are the focus of our study. Because Harrington stored his field notes in warehouses and other informal

“repositories” (Stirling 1963:375–76; Walsh 1976:13), we can hope that additional Gabrielino data on these words will be discovered in the future.

4. The Gabrielino word for ‘tortilla’. In this and the following section, we present our analysis of the two Gabrielino words documented by Harrington that potentially have maize-related meanings: *ʂoŋáaxey* ‘tortilla’ and *ʂaŋahay* ‘bread’. Jesús Jauro, one of the last fluent speakers of Gabrielino, provided the first of these words to Harrington in 1933. Harrington elicited the word while checking with Jauro a Gabrielino version of the Lord’s Prayer that Harrington had collected from Felicita Serrano Montaña on 20 March 1922. As seen in figure 1, Serrano Montaña translated the concept of ‘daily bread’ with a Gabrielino phrase glossed in Spanish as “todas las mañanas hay pan [‘every morning there is bread’],” using the Spanish loanword *pan* instead of a Gabrielino word for ‘bread’. Her phrase is transcribed in the middle of the slip, as a handwritten fair copy of Harrington’s original field notes prepared by Marta J. Herrera, Harrington’s copyist at the Smithsonian Institution’s Bureau of American Ethnology, where Harrington was employed between 1915 and 1954 (Golla 1991:337–39) (an image of the original field notes is located at 3.104.0419).

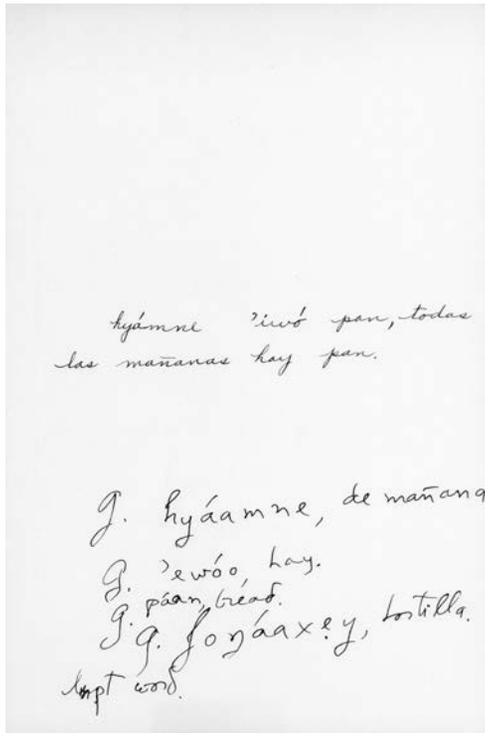


Figure 1. Gabrielino <ʂoŋáaxey> ‘tortilla’, from Jesús Jauro. National Anthropological Archives, Smithsonian Institution, The John Peabody Harrington Papers, Digital Microfilm 3.104.0428 (detail).

On the remainder of the slip, written in Harrington’s hand, are his notes from the interview with Jauro. Like Serrano Montaña, Jauro used the Spanish loanword for ‘bread’, the pronunciation of which Harrington transcribed more accurately with vowel length and stress as ⟨páan⟩. On the next line, Harrington recorded ⟨ʃoŋáaxey⟩ ‘tortilla’, adding the notation “Impt. word” (i.e., “Important word”). The absence of additional commentary suggests that Harrington and Jauro were confident in the word’s pronunciation and meaning.

The word *ʃoŋáaxey* is not attested elsewhere in Harrington’s extant Gabrielino field notes. In another section of Harrington’s notes (3.103.0596), Jauro identified *?áax-* as a verb meaning ‘to put into the mouth’ (see figure 2).

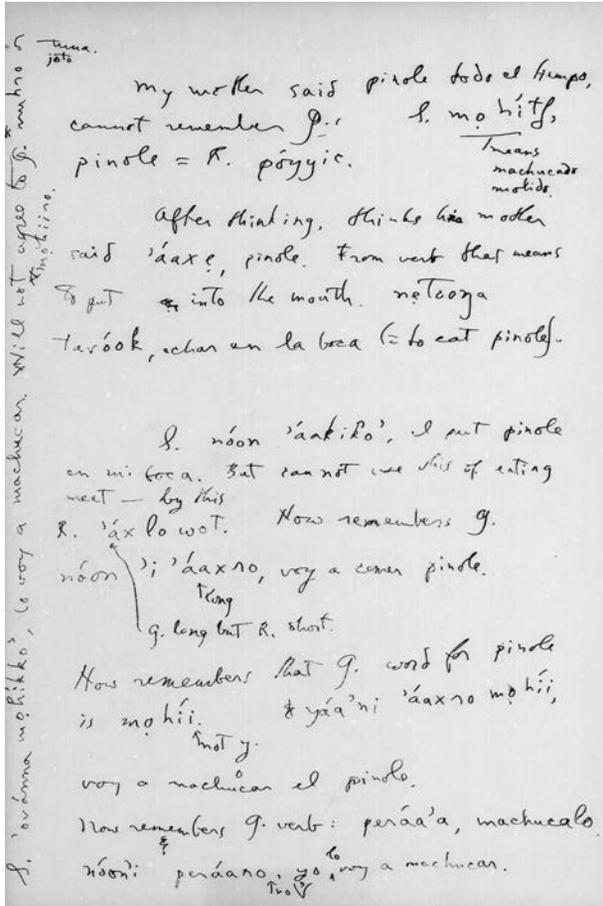


Figure 2. Gabrielino *?áax-* ‘to put into the mouth’, from Jesús Jauro. National Anthropological Archives, Smithsonian Institution, The John Peabody Harrington Papers, Digital Microfilm 3.103.0596 (detail).

His comments on this verb were given in response to Harrington’s query about a Gabrielino term for the finely ground flour that the Gabrielino prepared from

wild seeds, as well as maize and wheat, known in Mexicanized Spanish as *pinole* (Santamaría 1978:854). Jauro implied that *?áax-* was associated primarily with eating pinole, noting that it could not be used to refer to the consumption of meat, and he gave an example of its usage with the future suffix *-ro* in the sentence *nóon ?i ?áaxro* ‘I am going to eat pinole’. In fact, he first remarked that he thought his mother had used *?áaxe* as a noun to label ‘pinole’ and then said that he remembered *mohíi* as the Gabrielino word for ‘pinole’. This word presumably is related to the Serrano word for ‘pinole’, which Harrington transcribed as ⟨mohítʃ⟩ (3.104.0585).

Although *?áax-* is only attested in interviews with Jauro, we have no reason to doubt that Harrington’s data on this verb are accurate, since cognates with similar meanings are documented in other Northern Uto-Aztecan languages, as seen in (2).

(2) CP *?áx-* ‘to eat pinole’

SR *aak(i)* ‘to eat flour-like substance, to throw in the mouth’

TB *?aagit* ~ *?aak* ‘to open the mouth, yawn, inhale ground-up tobacco’

KW *?agi-* ‘to lick or eat (a mealy substance)’

SPA *aki-* ‘to take into one’s mouth’

The existence of cognates in three of the four subfamilies of Northern Uto-Aztecan—Takic, Tubatulabal, and Numic—suggests that these words reflect PNUA **aki-*, but they could also be the result of areal diffusion or an early loan from another Californian language (Hill 2014). Klar (1977:60–61, 154) reconstructs **aq-* as the Proto-Chumashan instrumental prefix meaning ‘with or affecting the mouth’ and also notes Proto-Pomoan **?ahxá* ‘mouth’.

The segments *-e-y* suffixed to Gabrielino *?áax-* are the object and event nominalizer *-e-* ~ *-i-* and the nonpossessed noun (or “absolute”) suffix *-y*. The result is the deverbal noun *?áax-e-y*, which means ‘something put into the mouth’. This construction is entirely regular, as seen in the other deverbal nouns presented in (3).

(3) *che?ée-?-e-y* ‘song’ < *che?ée-nax* ‘to sing’

?ées-e-y ‘picture, design, painting’ < *?ées-ax* ‘to paint’

ho?éex-e-y ‘work, job’ < *ho?éex-ok* ‘to work’

hoŋ-íi-y ‘meat’ < *hoŋ-* ‘to roast’ (attested *hoŋáa?a* ‘roast it!’)

šeráaw?-e-y ‘word, language’ < *šeráaw?-ax* ‘to speak’

Because *?áax-* is documented as an independent verb and *?áax-e-y* is the expected nominalization of it, we speculate that *šoŋ-áax-e-y* could be either a nominalization of a verb with an incorporated noun or a compound word. Although limited noun incorporation is attested in the closely related Serrano languages,² the only clear example of noun incorporation in Gabrielino is seen in (4).

- (4) *kotáamay*
kotáa-may
 wood-make
 ‘woodpecker’ (lit., ‘[one who] makes wood’)

This word differs from *ʃoŋ-áax-e-y* in that the verb *maay-nok* ‘to make, to do’ is not nominalized. The nominalization, *may-ʔ-éé-y*, is attested in *kotáa mayʔéey* ‘firewood’, but in this construction, the noun *kotáa* ‘wood’ and the nominalized verb are independent words, each with its own stress.

Harrington’s Gabrielino corpus includes only a dozen or so examples of compound words, none of which appears to include verbs or deverbal nouns. A sample of these are presented in (5)–(8).

- (5) *pééʃ-pivat*
 ʔ-tobacco
 ‘tobacco mixed with lime for chewing and drinking as a purgative’
- (6) *túuk-meʔo-ʃot-om*
 ʔ-ʔ-star-plural
 ‘a constellation, La Harpa’
- (7) *hetéek-runay*
 above-god
 ‘God’
- (8) *ʃóo-mwaač*
 flower-month
 ‘April’

In (5), the second component *-pivat* is the reflex of PUA ***pípa* ‘tobacco’, but *pééʃ-* is of unknown meaning and origin. In (6), *ʃot-om* is clearly ‘star-plural’, and *túuk-* probably relates to darkness (cf. *-túukʃe* ‘shade, shadow’), but the second component, *-meʔo-*, cannot be identified. These two compounds are similar to *ʃoŋ-áaxey* in that they combine transparent and obscure components. The words in (7) and (8) represent rare examples of Gabrielino compounds in which all elements are analyzable.

The data that we have reviewed thus far suggest that noun incorporation, the nominalization of verbs with incorporated nouns, and compounding were unusual in Gabrielino. Although *kotáa-may* in (4) provides an example of noun incorporation in which the noun is the object of the verb, no other evidence exists to support the conclusion that the *ʃoŋ-* in *ʃoŋ-áaxey* is a noun that denotes the substance that was ‘put into the mouth’. Harrington’s Gabrielino corpus includes no examples of verbs related to eating or drinking that have the names of the substances consumed as incorporated nouns, and in the few attested Gabrielino names for foods that indicate the source of the substance that is consumed, the terms for the sources are independent words, as seen in (9).

- (9) *pekúura ?awée?e* ‘brown cane sugar’ (*pekúur-a* ‘cane-3SG.GENITIVE’ + *?awée?e* ‘sugar’)
şokáat ?aşáahen ‘venison broth’ (*şokáat* ‘deer’ + *?a-şáahen* ‘its broth’)
mamáahar ?aşáahen ‘grass juice’ (*mamáahar* ‘grass’ + *?a-şáahen* ‘its juice’)

In light of this morphological evidence, *şoŋ-áaxey* appears to be an anomalous, if not unique, form. The interpretation of *şoŋ-* in terms of PUA phonology also is complicated. The consonants *ş* and *ŋ* reflect PUA ***s* and ***ŋ*, respectively, but as shown in (10a) and (10b), Gabrielino *o* reflects both the PUA mid-back rounded vowel ***o* and the high central unrounded vowel ***i*.

- (10a) *o* < ***o*
?oŋóor ‘salt’ < PUA ***oŋa*
-tóoŋon ‘knee’ < PUA ***toŋa*

- (10b) *o* < ***i*
totáa ‘rock’ < PUA ***tita*
-nóom ‘liver’ < PUA ***nima*

In addition, as seen in (11), the contrast between Gabrielino *o* and *u* is neutralized when they are short and unstressed, resulting in a correspondence of Gabrielino *o* with PUA ***u*.³

- (11) *honáar* ‘badger’ < PUA ***huna*
kotáa ‘wood, tree, stick’ < PUA ***kuta*

As a result, the component *şoŋ-* attested in *şoŋáaxey* could reflect PUA ***şoŋ-*, ***şiŋ-*, or ***şuŋ-*.

5. The Gabrielino word for ‘bread’. Such ambiguity does not exist in the case of the vowels in *şañahay* ‘bread’ because Gabrielino *a* derives solely from PUA ***a*. The word is attested in Harrington’s Gabrielino materials only in the fair copy transcription shown in figure 3. The original field notes on which this fair copy was based are not found in the National Anthropological Archives. As a result, we cannot determine the context of the elicitation of this word or whether Harrington commented on it; such comments were not included in the fair-copy renderings of his field notes. However, the “Z.” in the top right corner of the slip reveals that José María Zalvidea was the source of the word. Zalvidea worked with Harrington between 1914 and 1917 (Mills and Brickfield 1986:67).

The absence of an indication of stress placement in ⟨*şañahay*⟩, rendered ⟨*şañahaj*⟩ in Harrington’s earlier orthography, is puzzling because stress is marked by hand (presumably by Harrington or his copyist) on the majority of words represented in the set of fair-copy slips in which the attestation of *şañahay* appears (3.102.0574–3.102.0684), and a háček is added to ⟨*s*⟩ and a hook to ⟨*n*⟩ to convert the typed ⟨*sanahay*⟩ into ⟨*şañahay*⟩. A possible explanation for

the omission of a stress marker is that Harrington himself was unsure about which of the syllables in this word was stressed.

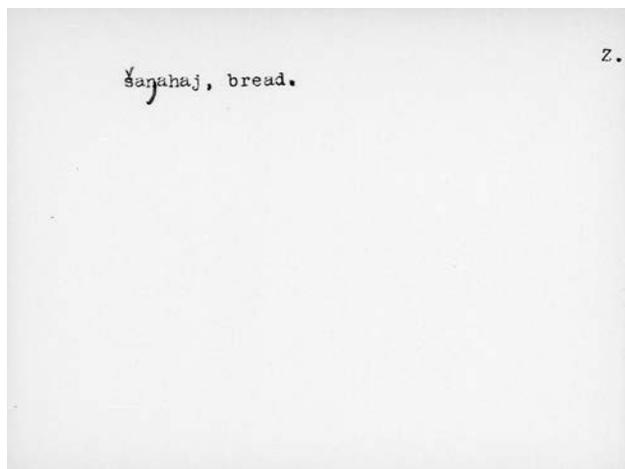


Figure 3. Gabrielino ⟨šarəhaj⟩ ‘bread’, from José María Zalvidea. National Anthropological Archives, Smithsonian Institution, The John Peabody Harrington Papers, Digital Microfilm 3.102.0683 (detail).

Given the phonological similarities between *šarəhaj* and *šoŋáaxey*, we considered the possibility that *šarəhaj* is a flawed early rendering of *šoŋáaxey*, perhaps mispronounced by the elderly Zalvidea or misheard by Harrington. In this hypothesis, the unstressed *o* in the first syllable and the unstressed *e* in the third syllable of *šoŋáaxey* assimilated to the stressed *a* in the second syllable, the voiceless velar fricative *x* was pronounced by Zalvidea or heard by Harrington as the voiceless glottal fricative *h*, and Harrington failed to record vowel length and stress on the second syllable. However, several lines of evidence suggest that this hypothesis cannot be sustained.

With regard to vowel assimilation, Zalvidea provided multiple words that show an unstressed short *o* in the initial syllable of words, including some in which the vowel in the stressed second syllable is *a*. A sample of these words is seen in (12).

- (12) *totáa* ‘rock’
yoáat ‘snow’
yováar ‘church’

Harrington (3.102.0577) also reported that Zalvidea contrasted unstressed short *o* and *u* in the minimal pair *továaŋa* ‘whole world’ versus *tuváaŋa* ‘world’. In any case, the fact that *a* is the only vowel that appears in *šarəhaj* does not in itself make this word an anomaly. As seen in (13), Harrington’s Gabrielino corpus includes several multisyllabic words in which the same vowel appears in all

syllables, all of which were collected from Gabrielino consultants other than Zalvidea.

- (13) *kwaʔáaynax* ‘to feed’
mamáahar ‘grass’
paʔáayvar ‘on top of’
čeʔééʔey ‘song’
toŋóoko ‘below, under’

The possibility that Zalvidea or Harrington failed to distinguish between *h* and *x* also is contradicted by the evidence. Examples of both *h* and *x* in words provided by Zalvidea are presented in (14).

- (14) *maháar* ‘five’
šúuhar ‘hair brush’
naxáar ‘bad rocky place’
taxáay ‘baby’

The absence of nominalized verbs in the data collected from Zalvidea raises the possibility that the final *-ay* in his *šaŋahay* actually represents the nominalizing suffix *-e-y* attested in *šoŋ-áax-e-y*. There are, however, no examples in Harrington’s Gabrielino corpus of *-a-y* serving as a nominalizing suffix and, as seen in (15), there are several Gabrielino nouns and adjectives not derived from verbs in which the final sequence is *-ay* or *-áay*.

- (15) *ni-páahay* ‘my music’
keháay ‘fiesta’
moháay ‘bad’
roŋáay ‘God’
yáahway ‘happy’

These considerations lead us to regard *šaŋahay* as a close-to-accurate transcription of the Gabrielino word for ‘bread’, being flawed only by Harrington’s failure to indicate stress placement on it. Because Gabrielino has a second-mora stress pattern and examples of words with stressed short vowels are extremely rare, we assume that *šaŋahay* had a stressed long *áa* in either the first or second syllable: *šáaŋahay* or *šaŋáahay*.

Given the gloss of the word as the noun ‘bread’, we identify the final *-y* as the nonpossessed noun suffix, but further morphological analysis based on the available data is impossible. Nonetheless, it may not be coincidental that *šaŋahay* shares the initial segments *sa-* with words for ‘tortilla’ and ‘bread’ attested in other Takic languages. These are presented in (16).

- (16) CA *sáw-iš* ‘tortilla’ < CA *-sáw* ‘to make tortillas’
 CP *šáwi-š* ‘bread (n.); baked (adj.)’ < CP *šáwe-* ‘to bake’
 LS *šáawoki-š* ‘tortilla, bread’ < LS *šáawoka* ‘make tortillas, make bread’
 SR *šaawt* ‘bread’ (cf. SR *nišaawaʔ* ‘my bread’)

The first three words reflect Proto-Cupan **šáawi-* and all are deverbal nouns. The Serrano word could be a loanword because the verb from which it would derive is not attested. The Serrano word for ‘to bake’ is *ti?*, which also means ‘to roast’. These words form part of number of words attested in both Northern and Southern Uto-Aztecan languages that have **sa-* as their initial syllable and are associated with cooking (Hill 2001:920–21; Stubbs 2011:92, 130).

The velar nasal in Gabrielino *šaŋ-* or *šáaŋ-* presumably precludes identifying this morpheme as cognate with the Cupan words in (14) that reflect Proto-Cupan **šáawi-*, because Gabrielino *ŋ* regularly reflects Proto-Takic **ŋ*, and Proto-Takic **w* is regularly reflected in Gabrielino as *w*. There also is no clear evidence for the alternation of *ŋ* and *w* in Gabrielino, but such alternation is attested in Luiseño, in a word that also shows *ša-* as its initial syllable: *šáŋi* ~ *šáwi* ‘to scorch, singe’.⁴ This example raises the possibility that the Gabrielino noun *šaŋahay* is a loan from Luiseño, but *šáŋi-š* ~ *šáwi-š*—the expected nominalization of *šáŋi* ~ *šáwi*, which would be glossed literally as ‘something that is scorched or singed’—is not attested in Luiseño.

6. The relationship between the Gabrielino words for ‘tortilla’ and ‘bread’. We have no reason to doubt that Harrington’s *šoŋáaxey* is an accurate transcription of Jesús Jauro’s pronunciation of the Gabrielino word for ‘tortilla’, but in the absence of other attestations of the word, it is impossible to evaluate the accuracy of Jauro’s pronunciation of it. It is tempting to propose that Jauro’s *šoŋáaxey* is a mispronunciation of *šaŋáaxey*, which would open the possibility that it formed part of the suite of words related to cooking and reflecting PUA ***sa-* mentioned in section 5. In this case, *šaŋáaxey* could be interpreted ‘something cooked and put into the mouth’, a fitting literal gloss for ‘tortilla.’ Yet, even if *šoŋ-* is a mistake for *šaŋ-*, we are inclined to conclude that *šoŋáaxey* and *šaŋahay* are different words because the *-ahay* in *šaŋahay* cannot be identified as the nominalized verb *-áaxey* attested in *šoŋáaxey*.

Weak support for this conclusion is found in a Gabrielino word list collected in 1903 by C. Hart Merriam from Mrs. James V. Rosenmyre in Bakersfield, California, and reprinted by McCawley (1996:247). Merriam recorded ⟨sang-ah-he⟩ as the Gabrielino word meaning both ‘bread’ and ‘tortilla’. Merriam identified the value of ⟨s⟩ as that of ⟨s⟩ in English words like *see*, *sink*, and *soft*, but he did not mention a contrast between *s* and *š*. He used the grapheme ⟨ng⟩ to represent the velar nasal *ŋ*, and he distinguished between the fricatives *h* and *x*, representing *h* as ⟨h⟩ and *x* as a superscript ⟨^{ch}⟩, comparable to German ⟨ch⟩ and distinct from the English ⟨ch⟩ in *chap*, *chin*, *chum*, and *church*. The ⟨ah⟩ in the second syllable is not the vowel-consonant sequence [a-h] but rather Merriam’s grapheme for the vowel *a*, as in English *far*, *father*, and *what*. His grapheme ⟨e⟩ represents the high front vowel *i*.

The sound that he intended to represent with the ⟨a⟩ in ⟨sang-⟩ is ambiguous. In explaining his orthography, Merriam (in McCawley 1996:237) first stated,

“Sounds that have fixed and definite value in English, like our words pin, peg, hat, not, and so on, are pronounced exactly as in English. In such syllables diacritical marks are unnecessary and as a rule are omitted.” He then noted that, with the exception of such syllables, unmarked vowels “have the usual long or pure sound given them in the English alphabet.” He does not reveal which convention applied to ⟨sang-⟩. Since no diacritics appear in ⟨sang-ah-he⟩, he could have interpreted ⟨sang-⟩ as corresponding to the English verb “sang,” with the ⟨a⟩ representing his short vowel ⟨ä⟩ (“as in fat, bat, hat, have, man”) or simply as an unmarked vowel, with the ⟨a⟩ representing his long vowel ⟨ā⟩ (“as in acorn, date, late, mane”). Merriam’s ⟨ä⟩ corresponds to IPA *æ* and his ⟨ā⟩ to IPA *e*.

Thus, with ⟨sang-ah-he⟩, Merriam appears to have intended to transcribe either *sæŋahi* or *seŋahi*. Although *sæŋahi* resembles Harrington’s *şaŋahay* more closely than his *şonáaxey*, the ambiguity in Merriam’s orthographic conventions precludes using his word for ‘bread, tortilla’ to clarify the first vowels in Harrington’s *şonáaxey* and *şaŋahay*. Nonetheless, Merriam’s word is important because it does not appear to be a deverbal noun and thus is distinct in this regard from Harrington’s *şonáaxey* but likely comparable to Harrington’s *şaŋahay*.

The final syllable *-hi* recorded by Merriam in *sæŋahi* or *seŋahi* is not the Gabrielino nominalizing suffix, which Merriam documented as ⟨-ē^{ch}⟩ ~ ⟨-ā^{ch}⟩, equivalent to *-i^x* ~ *-e^x*. An attestation of the allomorphs of this suffix in Merriam’s word list is ⟨che-ā-ā^{ch}⟩ ~ ⟨che-ā-ē^{ch}⟩ ‘song’ (McCawley 1996:248). In our orthography, these alternate forms are *čī-e-i^x* ~ *čī-e-e^x*, clearly the same word as Harrington’s *če?ée?ey* ‘song’, but with a different word-final sound. We suspect that Merriam recorded the voiceless velar fricative *x* as the sound following the nominalizing suffix *-i-* ~ *-e-* because of the rather conspicuous devoicing that appears with word-final glides in Takic languages. If so, it could be a phonetic representation of Harrington’s voiced palatal glide ⟨-y⟩, which Harrington often recorded as a voiceless palatal fricative (sibilant), represented in his orthography as ⟨-ç⟩.

7. Discussion. Gabrielino *şonáaxey* ‘tortilla’ potentially is of great significance to understanding Uto-Aztecan cultural history because its initial component *şon-* could be cognate with reflexes of the PSUA etymon for ‘maize’, reconstructed as **sunu* or **suhunu*, and thus could indicate that ***suŋu* or ***suhuŋu* should be reconstructed as the PUA etymon for ‘maize’. We have encountered no other NUA word with a maize-related meaning that could be identified as a reflex of PUA ***suŋu* or ***suhuŋu*. As a result, *şonáaxey* provides the only evidence from the northern branch of the Uto-Aztecan language family that supports the reconstruction of a PUA etymon for ‘maize’.

Nonetheless, as we indicate in section 4, the identification of *şon-* as the reflex of PUA ***suŋ-* cannot be considered conclusive, because Gabrielino *şon-* could equally reflect PUA ***sor-* or ***siŋ-*. In addition, in order for a reflex of a

PUA etymon to be attested in Gabrielino but in no other NUA languages, reflexes of this PUA etymon would have to have been retained in Proto–NUA and Proto-Takic and then lost or never documented in all NUA languages except Gabrielino. Such a scenario appears farfetched, given how poorly Gabrielino is documented compared to most other NUA languages and the fact that, to our knowledge, no reflexes of PUA etyma exist that are attested in the SUA languages and Gabrielino but in no other NUA language.

Given these uncertainties about the interpretation of *ʃoŋáaxey*, the hypothesis that *ʃoŋ-* reflects PUA ***sur-* ‘maize’ must be regarded as an interesting conjecture that cannot be tested on the basis of the data currently available. In this circumstance, alternative etymologies for Gabrielino *ʃoŋáaxey* can be proposed that do not require *ʃoŋ-* to be a reflex of PUA ***sur-*.

The first is that *ʃoŋ-* and its combination with the nominalized verb *áaxey* to form *ʃoŋáaxey* ‘tortilla’ are Gabrielino innovations. In this case, the verb *áax-* in isolation could have referred to the consumption of floury or mealy substances in general, as suggested by the meanings associated with cognates of this verb in other NUA languages (see (2) above), with the morpheme *ʃoŋ-* added by Gabrielino speakers to designate the consumption of preparations in which the floury or mealy substances were cooked before being eaten (see sections 5 and 6 above). There are, however, no other attested Gabrielino words in which *ʃoŋ-* is associated with the preparation or consumption of food.

A second alternative etymology is that *ʃoŋáaxey* entered the Gabrielino lexicon as a loanword from a neighboring non-Uto-Aztecan language. In section 4, we noted that the verb *áax-* could have been a loan from another California language, with Chumashan or Pomoan languages as the most likely source. However, we have not encountered a word or morpheme in these or other California languages that would be a likely candidate as the source of Gabrielino *ʃoŋ-*.

A third alternative etymology is that *ʃoŋ-* derives from a loanword introduced into Gabrielino during the Spanish and Mexican periods of Alta California history, in which case an Indigenous language spoken in Mexico could have been the source. Very little information is available regarding the Indigenous people from Mexico who participated in the Spanish colonization of Alta California in the second half of the eighteenth century. It is known, however, that “Christian Indians” from Baja California were among the first colonizers (Chapman 1930:222), and the possibility exists that Indigenous people from Baja California and other parts of Mexico could have formed part of the military garrisons established in Alta California or the crews of ships that arrived there.

Of the various Indigenous languages spoken in Baja California missions, words for ‘maize’ are documented for only two: ⟨*aguax*⟩ for Guaicura (Burrus 1964:194; Ibarra Rivera 2011:59) and ⟨*pechkarai*⟩ and ⟨*pīkaraj*⟩ for Cochimí (Gatschet 1877:401; Mixco 1977:48). More closely resembling Gabrielino *ʃoŋ-* are terms for ‘mature maize ear’ attested in Tarascan (Purépecha) as *šanini*

(Lathrop 2007:31) and in Classical Nahuatl as *sen-* ~ *sin-* (Karttunen 1992:31, 35); the Nahuatl word is a reflex of PSUA **sunu* ~ **suhunu* ‘maize’. Of course, a loan from either Tarascan or Nahuatl might be ruled out because *-n* rather than *-ŋ* would be expected in the Gabrielino form, but Harrington’s notes include at least one example of the alternation of *-n* and *-ŋ* in a Gabrielino word: *-?áaʃon* ~ *-?áaʃoŋ* ‘wife’ (3.103.0603). Although this third etymology requires a large dose of credulity even to be considered, it is intriguing to speculate that the Gabrielino word for ‘tortilla’ might include a morpheme introduced after European contact that derives ultimately from the Proto-Southern Uto-Aztecan word for ‘maize’.

Notes

Acknowledgments. We are grateful to Kenneth Hill for sharing his index of the Harrington papers originally housed at the University of California, Berkeley; Pamela Munro for providing information on the Gabrielino language and contemporary Gabrielino (Tongva) and Fernández-Tataviam language revitalization efforts; Daisy Njoku for preparing the images of Harrington’s Gabrielino field notes that appear in figures 1–3; and the National Anthropological Archives, Smithsonian Institution, for permission to reproduce these images.

Abbreviations. The following abbreviations are used in this article: adj. = adjective; CA = Cahuilla (Seiler and Hioki 1979); CP = Cupeño (Hill and Nolasquez 1973); KW = Kawaiisu (Zigmond, Booth, and Munro 1990); LS = Luiseño (Elliott 1999); n. = noun; NUA = Northern Uto-Aztecan; PNUA = Proto-Northern Uto-Aztecan; PSUA = Proto-Southern Uto-Aztecan; PUA = Proto-Uto-Aztecan; SP = Spanish; SPA = Southern Paiute (Sapir 1931); SR = Serrano (K. Hill 2011); SUA = Southern Uto-Aztecan; TB = Tubatulabal (Munro and Mace 1995).

Orthography. Our orthography corresponds to the International Phonetic Alphabet with the following exceptions: identical vowel sequences represent long vowels, *č* represents the voiceless alveopalatal affricate, *š* the voiceless alveopalatal fricative, *ʃ* the voiceless apicoalveolar fricative, and *k̠* the voiceless stop with an intermediate velar-uvular articulation.

1. The online digital version of Harrington’s Gabrielino field notes is available at http://anthropology.si.edu/naa/harrington/harrington_mf3.html. Merrill (2012:241, set 17) gives the location of the attestation of *ʃaŋaħay* ‘bread’ as “reel 102, frame 0672,” citing the original microfilm edition of volume 3 of Harrington’s papers. The frame numbers differ because the front matter is included in the frame count in the online digital edition but not the microfilm edition.

2. Kitanemuk examples of noun incorporation include *ho-kim* [hole-make] ‘make a hole’ and *wivi-kim* [string-make] ‘make a catscradle figure’ (Anderton 1988:155–56, 315, 575). Serrano examples include *ħuħah-čacu?* [deer-sing] ‘sing a deer song’ and *ki:nim* [house-walk] ‘to visit’ (K. Hill 2011:16, 25).

3. By 1933, Harrington used the grapheme ⟨o⟩ to represent both underlying short, unstressed *o* and *u*. PUA ***o* is reflected in Gabrielino as *e*, as well as *o* and *u*, e.g., Gabrielino *pée* ‘road’ < PUA ***poʔo*.

4. Munro (1973) discusses the possibility that some examples of Luiseño *ŋ* reflect PUA ***w*.

References

- Alvarez de Williams, Anita
 1975 *Travelers among the Cucapá*. Los Angeles, Calif.: Dawson's Book Shop.
- Anderton, Alice J.
 1988 *The Language of the Kitanemuks of California*. Ph.D. diss., University of California, Los Angeles.
 1991 *Kitanemuk: Reconstruction of a Dead Phonology Using John P. Harrington's Transcriptions*. *Anthropological Linguistics* 33(4):437–47.
- Bean, Lowell John, and Katherine S. Saubel
 1972 *Temalpakh: Cahuilla Indian Knowledge and Usage of Plants*. Banning, Calif.: Malki Museum Press.
- Bean, Lowell John, and Charles R. Smith
 1978 *Gabrielino*. In *Handbook of North American Indians*. Vol. 8: California, edited by Robert F. Heizer, 538–49. Washington, D.C.: Smithsonian Institution.
- Bogany, Julia, Virginia Carmelo, Jacob Gutierrez, and Carol Ramirez
 2012 *Hyaara' Shiraaw'ax 'Eyooshiraaw'a (Now You're Speaking Our Language, Gabrielino/Tongva/Fernandeño)*. 2nd ed. Edited by Pamela Munro. N.p.: Pamela Munro and the Gabrielino/Tongva Language Committee.
- Burrus, Ernest J., ed.
 1964 *Kino escribe a la duquesa: correspondencia del padre Eusebio Francisco Kino con la duquesa de Aveiro y otros documentos*. Madrid: Ediciones José Porrúa Turanzas.
- Caballero, Gabriela
 2011 *Behind the Mexican Mountains: Recent Developments and New Directions in Research on Uto-Aztecan Languages*. *Language and Linguistics Compass* 5(7):485–504.
- Callaghan, Catherine A.
 1991 *Encounter with John P. Harrington*. *Anthropological Linguistics* 33(4): 350–56.
- Campbell, Lyle
 1997 *American Indian Languages: The Historical Linguistics of Native America*. Oxford: Oxford University Press.
 2002 *What Drives Linguistic Diversification and Language Spread? In Examining the Farming/Language Dispersal Hypothesis*, edited by Peter Bellwood and Colin Renfrew, 49–63. Cambridge: MacDonal Institute for Archaeological Research, University of Cambridge.
- Castetter, Edward F., and Willis H. Bell
 1951 *Yuman Indian Agriculture: Primitive Subsistence on the Lower Colorado and Gila Rivers*. Albuquerque: University of New Mexico Press.
- Chamberlin, Ralph V.
 1911 *The Ethno-Botany of the Gosiute Indians*. *Proceedings of the Academy of Natural Sciences of Philadelphia* 63:24–99.
- Chapman, Charles E.
 1930 *A History of California: The Spanish Period*. New York: Macmillan Company.
- Elliott, Eric B.
 1999 *Dictionary of Rincón Luiseño*. Ph.D. diss., University of California, San Diego.
- Fowler, Catherine S.
 1994 *Corn, Beans, and Squash: Some Linguistic Perspectives from Uto-Aztecan*.

- In Corn and Culture in the Prehistoric New World*, edited by Sissel Johannessen and Christine A. Hastorf, 445–67. Boulder: Westview Press.
- Gatschet, Albert S.
 1877 Der Yuma-Sprachstamm nach den neuesten handschriftlichen Quellen dargestellt. *Zeitschrift für Ethnologie* 9:365–418.
- Golla, Victor
 1991 Introduction: John P. Harrington and His Legacy. *Anthropological Linguistics* 33(4):337–49.
 2011 *California Indian Languages*. Berkeley: University of California Press.
- Harrington, John P., ed.
 1934 A New Original Version of Boscana's Historical Account of the San Juan Capistrano Indians of Southern California. *Smithsonian Miscellaneous Collections*, Vol. 92, No. 4. Washington, D.C.: Smithsonian Institution.
- Harrington, John P.
 1942 Cultural Element Distributions: XIX, Central California Coast. *University of California Anthropological Records* 7(1), 1–46. Berkeley: University of California Press.
- Hill, Jane H.
 2001 Proto-Uto-Aztecan: A Community of Cultivators in Central Mexico? *American Anthropologist* 103(4):913–34.
 2004 The Non-Agricultural Origins of the Proto-Uto-Aztecan Vocabulary of Maize Use. *In Memorias del VII Encuentro Internacional de Lingüística en el Noroeste*, Vol. 2, edited by María el Carmen Morúa Leyva and Rosa María Ortiz Ciscomani, 59–81. Hermosillo: Universidad de Sonora.
 2007 The Proto-Uto-Aztecan Cultivation Hypothesis: New Linguistic Evidence. *Proceedings of the 33rd Annual Meeting of the Berkeley Linguistic Society*, 204–18. Berkeley: Department of Linguistics, University of California, Berkeley.
 2010 New Evidence for a Mesoamerican Homeland for Proto-Uto-Aztecan. *Proceedings of the National Academy of Sciences USA* 107(11):E33.
 2011 Subgrouping in Uto-Aztecan. *Language Dynamics and Change* 1(2):241–78.
 2012 Proto-Uto-Aztecan as a Mesoamerican Language. *Ancient Mesoamerica* 23(1):57–68.
 2014 "Old California Uto-Aztecan": A Re-evaluation. *In Lenguas yuto-aztecas: acercamiento a su diversidad lingüística*, edited by Karen Dakin and José Luis Moctezuma Zamarrón, 191–248. Mexico City: Instituto de Investigaciones Filológicas, Universidad Nacional Autónoma de México.
- Hill, Jane H., and Rosinda Nolasquez
 1973 *Mulu'wetam: The First People*. Cupeño Oral History and Language. Banning, Calif.: Malki Museum Press.
- Hill, Kenneth C.
 2011 *Serrano Dictionary: Serrano to English*. MS.
- Hinton, Leanne
 1998 Language Loss and Revitalization in California: Overview. *International Journal of the Sociology of Language* 1998(132):83–93.
- Ibarra Rivera, Gilberto
 2011 *Vocablos indígenas de Baja California Sur*. La Paz, Baja California Sur: Instituto Sudcaliforniano de Cultura.
- Jackson, Robert H., and Edward Castillo
 1995 *Indians, Franciscans, and Spanish Colonization: The Impact of the Mission System on California Indians*. Albuquerque: University of New Mexico Press.

- Johnston, Bernice E.
1962 California's Gabrielino Indians. Los Angeles, Calif.: Southwest Museum.
- Karttunen, Frances
1992 An Analytical Dictionary of Nahuatl. Norman: University of Oklahoma Press.
- Kaufman, Terrence, and John Justeson
2009 Historical Linguistics and Pre-Columbian Mesoamerica. *Ancient Mesoamerica* 20(2):221–31.
- Klar, Kathryn A.
1977 Topics in Historical Chumash Grammar. Ph.D. diss., University of California, Berkeley.
- Lathrop, Maxwell
2007 *Vocabulario del idioma purépecha*. 2nd ed. (electronic). Mexico City: Instituto Lingüístico de Verano.
- Lawton, Harry W., and Lowell J. Bean
1968 A Preliminary Reconstruction of Aboriginal Agricultural Technology among the Cahuilla. *Indian Historian* 1(5):18–24, 29.
- Manaster Ramer, Alexis
1992 A Northern Uto-Aztecan Sound Law: *-c- → -y-. *International Journal of American Linguistics* 58(3):251–68.
- McCawley, William
1996 The First Angelinos: The Gabrielino Indians of Los Angeles. Banning, Calif: Malki Museum Press; Novato, Calif: Ballena Press.
- Merrill, William L.
2012 The Historical Linguistics of Uto-Aztecan Agriculture. *Anthropological Linguistics* 54(3):203–60.
2013 The Genetic Unity of Southern Uto-Aztecan. *Language Dynamics and Change* 3(1):68–104.
- Merrill, William L., Robert J. Hard, Jonathan B. Mabry, Gayle J. Fritz, Karen R. Adams, John R. Roney, and A. C. MacWilliams
2009 The Diffusion of Maize to the Southwestern United States and Its Impact. *Proceedings of the National Academy of Sciences USA* 106(50):21019–26.
2010 Reply to Hill and Brown: Maize and Uto-Aztecan Cultural History. *Proceedings of the National Academy of Sciences USA* 107(11):E35–E36.
- Miller, Wick R.
1966 Anthropological Linguistics in the Great Basin. In *The Current Status of Anthropological Research in the Great Basin: 1964*, edited by Warren L. d'Azevedo, Wilbur A. Davis, Don D. Fowler, and Wayne Suttles, 75–112. Reno: Desert Research Institute, Technical Report Series S-H, Social Sciences and Humanities Publications No. 1.
1983 Uto-Aztecan Languages. In *Handbook of North American Indians*. Vol. 10: Southwest, edited by Alfonso Ortiz, 113–24. Washington, D.C.: Smithsonian Institution.
- Mills, Elaine L., and Ann J. Brickfield, eds.
1986 The Papers of John Peabody Harrington in the Smithsonian Institution, 1907–1957. Volume Three: A Guide to the Field Notes: Native American History, Language, and Culture of Southern California/Basin. White Plains, N.Y.: Kraus International Publications.
- Mixco, Mauricio J.
1977 J. P. Harrington's Cochimi Vocabularies. *Journal of California Anthropology* 4(1):42–49.

Munro, Pamela

- 1973 Proto-Uto-Aztecan *w—One Source for Luiseño η . *International Journal of American Linguistics* 39(3):135–36.
- 1983 Selected Studies in Uto-Aztecan Phonology. *International Journal of American Linguistics* 49(3):277–98.
- 1989 Gabrielino: Language of the Indians of Los Angeles. *News from Native California* 3(2):27–28.
- 2000 The Gabrielino Enclitic System. *In Uto-Aztecan: Structural, Temporal and Geographic Perspectives: Papers in Memory of Wick R. Miller by the Friends of Uto-Aztecan*, edited by Eugene H. Casad and Thomas L. Willett, 183–201. Hermosillo: Editorial Unison.

Munro, Pamela, and William E. Mace

- 1995 A New Tübatulabal Dictionary (revised preliminary version). MS.

Patencio, Francisco, and Margaret Boynton

- 1943 Stories and Legends of the Palm Springs Indians. Los Angeles, Calif.: Times-Mirror.

Rose, L. J., Jr.

- 1959 L. J. Rose of Sunny Slope, 1827–1899: California Pioneer, Fruit Grower, Wine Maker, Horse Breeder. San Marino, Calif.: Huntington Library.

Sandos, James A.

- 2004 Converting California: Indians and Franciscans in the Missions. New Haven, Conn.: Yale University Press.

Santamaría, Francisco J.

- 1978 Diccionario de Mejicanismos. Mexico City: Editorial Porrúa.

Sapir, Edward

- 1931 Southern Paiute Dictionary. *Proceedings of the American Academy of Arts and Sciences* 65(3):539–730.

Seiler, Hansjakob, and Kojiro Hioki

- 1979 Cahuilla Dictionary. Banning, Calif.: Malki Museum Press.

Shaul, David L.

- 2014 A Prehistory of Western North America: The Impact of Uto-Aztecan Languages. Albuquerque: University of New Mexico Press.

Stirling, M. W.

- 1963 John Peabody Harrington, 1884–1961. *American Anthropologist* 65(2):370–81.

Stubbs, Brian D.

- 2000 The Comparative Value of Tubar in Uto-Aztecan. *In Uto-Aztecan: Structural, Temporal, and Geographic Perspectives. Papers in Memory of Wick R. Miller by the Friends of Uto-Aztecan*, edited by Eugene H. Casad and Thomas L. Willett, 357–69. Hermosillo: Universidad de Sonora.
- 2003 New Sets Yield New Perspectives for Uto-Aztecan Reconstructions. *In Studies in Uto-Aztecan*, edited by Luis M. Barragan and Jason D. Haugen, 1–20. Cambridge, Mass.: MIT Working Papers in Endangered and Less Familiar Languages 5.
- 2011 Uto-Aztecan: A Comparative Vocabulary. Yorba Linda, Cal.: Shumway Family History Services and Blanding, Utah: Rocky Mountain Books and Publications.

Walsh, Jane M.

- 1976 John Peabody Harrington: The Man and His California Indian Fieldnotes. Ramona, Calif.: Ballena Press.

Whiting, Alfred F.

1966 Ethnobotany of the Hopi. Flagstaff: Museum of Northern Arizona.

Zigmond, Maurice L., Curtis G. Booth, and Pamela Munro

1990 Kawaiisu: A Grammar and Dictionary with Texts. University of California Publications in Linguistics 119. Berkeley: University of California Press.