

## Linguistic Evidence for a Prehistoric Polynesia–Southern California Contact Event

KATHRYN A. KLAR

*University of California, Berkeley*

TERRY L. JONES

*California Polytechnic State University*

**Abstract.** We describe linguistic evidence for at least one episode of prehistoric contact between Polynesia and Native California, proposing that a borrowed Proto–Central Eastern Polynesian lexical compound was realized as Chumashan *tomol* ‘plank canoe’ and its dialect variants. Similarly, we suggest that the Gabrielino borrowed two Polynesian forms to designate the ‘sewn-plank canoe’ and ‘boat’ (in general, though probably specifically a dugout). Where the Chumashan form speaks to the material from which plank canoes were made, the Gabrielino forms specifically referred to the techniques (adzing, piercing, sewing). We do not suggest that there is any genetic relationship between Polynesian languages and Chumashan or Gabrielino, only that the linguistic data strongly suggest at least one prehistoric contact event.

**Introduction.** Arguments for prehistoric contact between Polynesia and what is now southern California have been in print since the late nineteenth century when Lang (1877) suggested that the shell fishhooks used by Native Hawaiians and the Chumash of Southern California were so stylistically similar that they had to reflect a shared cultural origin. Later California anthropologists including the archaeologist Ronald Olson (1930) and the distinguished Alfred Kroeber (1939) suggested that the sewn-plank canoes used by the Chumash and the Gabrielino off the southern California coast were so sophisticated and unique for Native America that they likely reflected influence from Polynesia, where plank sewing was common and widespread. However, they adduced no linguistic evidence in support of this hypothesis. Another archaeologist, Robert Heizer, soon dismissed this possibility (Heizer 1941b), arguing that the Polynesian sewn-plank craft were technically and stylistically distinct from California Indian boats and that it was much more likely that they represented independent inventions. Heizer made a naive attempt to use linguistic data to support his rejection of the idea; we discuss this below. The issue was subsequently forgotten by most of the broader anthropological community for the latter half of the twentieth century, although, in the mid-1970s, the late Travis Hudson of the Santa Barbara Museum of Natural History urged one of the present authors to look for such evidence; at the time, however, no likely linguistic “artifacts” were apparent.

In this article, we revive this long-lost debate by describing linguistic evidence for at least one episode of prehistoric contact between Polynesia and Native California. These findings support and enhance additional material evidence reported by Jones and Klar (2005).<sup>1</sup> In the intervening decades between Kroeber's proposal for a Chumash-Polynesia nexus, Heizer's dismissal of it, and the present, unequivocal evidence has demonstrated at least one case of prehistoric contact between Polynesia and the Americas—namely, the distribution of the sweet potato. Sweet potatoes were domesticated in the New World, yet they were being cultivated throughout much of Oceania during the early historic era. The recovery of sweet potato remains from unequivocal prehistoric contexts on the Central Polynesian island of Mangaia in 1989 demonstrated conclusively that this domesticate had made its way into the Pacific before European explorers and was thus a product of direct cultural contact between the New World and Polynesia (Hather and Kirch 1991). Unlike the hypotheses about the North American origin of the sewn-plank canoe, the case for the sweet potato representing direct contact between South America and Polynesia has always included a linguistic component, as diffusionist geographers have long pointed out that the word *kumara* (or a dialect variant) means 'sweet potato' in both Peru and Polynesia (Yen 1974:12–20). The sweet potato and its name are widely accepted as borrowings from America into Polynesia, and, as Adelaar and Muysken note, “[*kumara*] constitutes near proof of incidental contact between inhabitants of the Andean region and the South Pacific” (2004:41). The problem has not been seen as one requiring demonstration that the South American and Polynesian lexical items are one and the same in origin; the only difficulty (and not a simple one) has been to explain when and how it happened.

Earlier assessments of linguistic evidence for Polynesian-American contact (e.g., Key 1984; Schumacher 1989), which sought broad areas of correspondence between Oceanic and South American languages and found acceptable even a single consonantal correspondence to define cognates (without differentiating genetic or borrowed status), were highly flawed and have received little scholarly recognition. Studies such as these were largely inspired by the “omnicomparative studies dealing with intercontinental big families such as Proto-Nostratic” (Schumacher 1989:5) led by Joseph Greenberg. Greenberg's much-contested, largely intuitive methodology is especially perilous in the present case because Polynesian dialects (and the protolanguage) have small phonetic inventories—usually five vowels and as few as eight consonants (Hawaiian, Marquesan). This severely limits the actual number of phonetically distinct consonant + vowel (CV) combinations. Polynesian words frequently are sequences of phonetically similar morphemes that in turn consist largely of CV combinations; any one of the small number of possible CV combinations is likely to occur in many words. A high proportion of chance resemblances with almost any other language is thus guaranteed for any given CV sequence in a Polynesian language. The probability of chance similarities decreases precipitously as more consonantal

correspondences are found within the same word: while a single correspondence is no evidence of any kind of historical connection, two correspondences are more convincing, three render borrowing highly probable (as in *kumara*), and four mean that the word is nearly certain to be borrowed.

Linguistic data—in this case “words”—are evidence as real and solid as archaeological artifacts. With the same kind of careful consideration that is applied to archaeological artifacts, linguistic data allow us to infer historical and cultural processes which would otherwise be unattested. Further, the two kinds of information can allow us a fuller understanding than either can alone. There are strong, if not incontrovertible, suggestions of at least one incident of contact between Polynesians and the North American groups that built and used plank boats in southern California—the Chumash and Gabrielino. Standard linguistic principles are rigorously applied to the analysis of the Chumashan and Gabrielino data presented below. Of the two southern Californian groups which built and used sewn-plank canoes, we consider the Chumash first.

**2. Chumashan languages.** The Chumashan language family is now generally considered an isolate within California. Earlier workers (e.g., Dixon and Kroeber 1913, 1919; Sapir 1920, 1925; Haas 1964; Langdon 1974) included it in a disparate group which they labeled “Hokan.” Subsequent research, however, has not demonstrated a particular affinity of Chumashan languages with any of the other so-called Hokan languages, nor with any other known language group. In his provocative proposal for research on reconstructing Proto-Hokan, Kaufman accepted Hokan as a viable construct, but considered Chumashan a “doubtful member” of the Hokan stock (Kaufman 1988; Campbell 1997). We consider Chumashan an isolate language family—possibly a descendant of the oldest layer of occupation in California, although this is not presently demonstrable.

The family is divided into three branches (see figure 1): Northern Chumash (at least two dialects), Island Chumash (one known dialect with several subdialects), and Central Chumash (at least four dialects with further subdialect divisions). Island and Central Chumash can probably be grouped more closely with one another (as Southern Chumash) than either can with Northern Chumash; the evidence for this is scanty, however, due to the relatively poor attestation of Island Chumash. Northern Chumash is, in many ways, profoundly different from its southern sisters. Chumashan is an old family, but since written records are lacking for any of its dialects prior to the eighteenth century, no absolute dating is possible for the family. The clear divisions, especially between Northern Chumash and Southern Chumash, and the subsequent divergence of Southern Chumash into Central and Island divisions, suggest a sufficient time depth for three “daughter” groups to diverge widely and for the Central dialects to show an internal family relationship pattern of their own. A minimum (conservative) time depth of fifteen hundred to two thousand years for the Central group is not unlikely; the split between Northern and other Chumashan groups

likely happened much earlier. There is some internal evidence for a “pre-Proto-Chumash” stage (Klar 1977), but how much more time depth this adds is unknown. The last native speaker of any Chumashan language, Mary Yee, passed away in 1965; she spoke Barbareño Chumash.

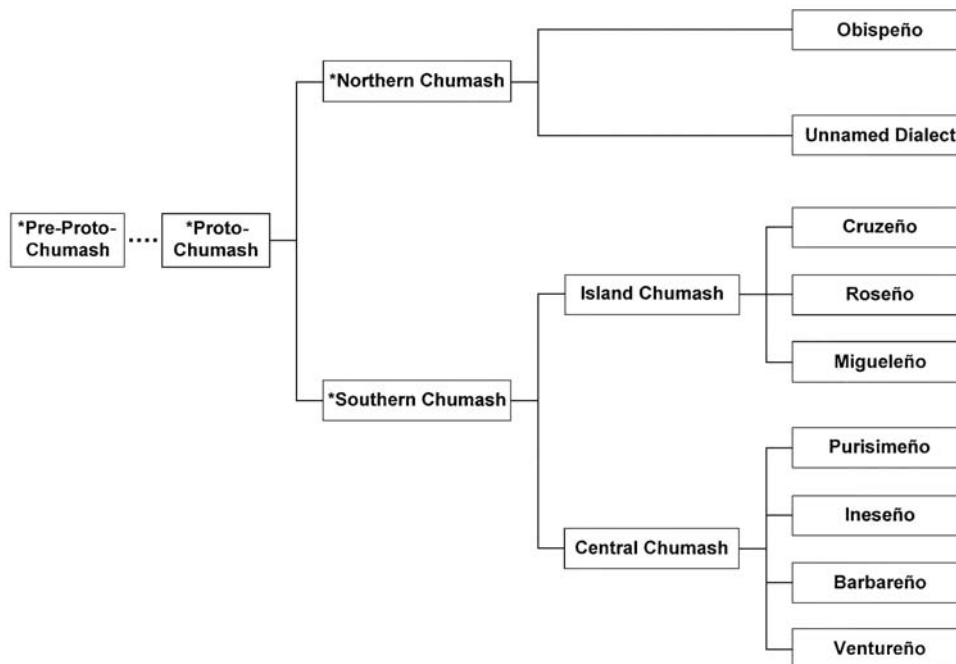


Figure 1. The Chumashan languages.

**3. Chumashan words for ‘sewn-plank canoe’: the *tomolo* semantic complex.** As shown in table 1, Island Chumash and all Central Chumash languages had words for the distinctive marine craft, the sewn-plank canoe or *tomolo*.<sup>2</sup>

Table 1. Chumashan Words for ‘Sewn-Plank Canoe’

Central Chumash	Ventureño	<i>tomol</i>
	Barbareño	<i>tom’ol</i>
	Ineseño	<i>tomol</i>
	Purisimeño	<i>tomol, tomol̥</i>
Island Chumash	Isleño	<i>tomolo, tomolo</i>
Northern Chumash	Obispeño	(no attested form)

In 1878, as part of the Leon de Cessac French scientific expedition to California, Alphonse Pinart recorded an extensive comparative vocabulary of the speech of seven Chumashan speakers. He includes six forms for ‘canoe’ (Heizer 1952:44–45), shown in table 2.

**Table 2. Pinart's Forms for 'Canoe'**

Barbareño	<tomol>
Ineseño	<tmolo>
Ventureño	<tomol>
Purisimeño	<suasuax>
Cruzeño	<tmolo>
Roseño	<tomolo>

Pinart, untrained in any traditional or standard method of phonetic representation, heard or recorded glottalization erratically. Allowing for that, his forms (with the exception of the anomalous Purisimeño<sup>3</sup>) accord well with Harrington's forms.

From 1881 to 1884, as part of the Powell Survey for the Bureau of American Ethnology, Henry W. Henshaw made several trips to collect information on the Indian cultures and languages of the western United States. Using Powell's system of phonetic representation, Henshaw collected forms for 'canoe' in three dialects (Heizer 1955:117), shown in table 3.

**Table 3. Henshaw's Forms for 'Canoe'**

Barbareño	<to-mátl>
Ventureño	<to-mâtc>
Roseño	<tâ-mâlt/tâ'-mâl>

Precisely how to render these in standard phonetic symbols is uncertain, but there is no doubt that they constitute the usual words for 'plank canoe'. The *t* in the final syllable of the Barbareño and Roseño forms may indicate glottalization. In the Ventureño form, <tc> represents [č] (regular in Henshaw's renderings); thus the form is most likely a diminutive form ('little canoe'). (See below for more on diminutive derivations in the *tomolo* semantic complex.)

Henshaw's manuscript adds several notes about the Roseño (Island Chumash) consultant Pa-hi-la-tcet and about canoes in general. Pa-hi-la-tcet had come to the mainland from the Channel Islands as a child, about seventy-two years before Henshaw interviewed him. He noted that "the inhabitants of S[anta] Rosa, S[anta] Cruz and S[an] Miguel islands spoke the same language by which I [Henshaw] infer that they were able to understand each other without difficulty. Each language doubtless differed from the others dialectically though not to the same extent that they did from the dialects spoken on the mainland" (Heizer 1955:87). It is reasonable to suppose that the possible glottalization and certain lack of a final *-o* in Pa-hi-la-tcet's form were due to accommodation to mainland (probably Barbareño) speech during the many decades since his removal from the islands. Henshaw also notes that "[canoes] were made by the Santa Rosa Indians in shape like a fish's tail, as my informant said, with room for three paddlers. They shaped their canoes with stone implements

without the use of fire. He claims there used to be pines on Santa Cruz which they used for canoe timber. The outside was coated with asphaltum" (Heizer 1955:151).

Speakers of both English and Spanish borrowed forms of this word during the historical period, so that the craft is called a *tomol* or *tomolo* in everyday usage today. In the twentieth century, John P. Harrington collected forms from speakers of Ventureño, Barbareño, Ineseño, Purisimeño, and Island Chumash. Europeans or Americans who had contact with various Chumashan groups in the eighteenth and nineteenth centuries also recorded a form for each of these dialects. However, neither Harrington nor anyone else ever recorded a form for 'sewn-plank canoe' (or for any boat, for that matter) for Northern Chumash (Obispeño). In historical times, the Northern Chumash did not build plank canoes, nor is there evidence that they did so in prehistory. They may have had a word and lost it, but a far more reasonable supposition is that the deep division between Northern Chumash and the rest of the family occurred before the advent of plank sewing technology and that the northerners subsequently acquired neither the technology nor the lexical reference.

There are two other lexical items for Chumashan boat types. The Ventureño form *?axipeneš* means, according to Harrington, 'wooden dugout' (Hudson and Blackburn 1982:338–40). It is also attested for Ineseño, where Applegate glosses it as 'a finished piece of carpentry' (Applegate 1972:5). The word is probably from an old stratum of Chumashan development. It is clearly not related to the *tomolo* complex, but expresses the basic nature of woodworking technique in a maritime culture. It is also a word whose morphological and syllabic structures are transparent (unlike the *tomolo* forms) and decidedly Chumashan. Applegate derives the form from three morphemes: the instrumental prefix *?axi-* 'to work wood', the root *pen* 'to strip off; to be bare, stripped', and the resultative suffix *-(V)š*. The literal meaning is 'wood stripped (of bark)'. This derivation suggests that the wooden dugout was the quintessential product of native woodworking technique before the introduction of plank sewing; the name of the process became the name of the product. (With glottalization of the second root consonant, i.e., *?axipen'eš*, the form means 'knife to work wood with'.)

Ventureño *tomol-?ištapan* is 'tule balsa', literally, 'tule *tomol*' or '*tomolo* made of tule'. This is a derivative of a base form *tomol* formed by the regular juxtaposition of the modifying noun *štapan*, joined by the connective particle *?i-*. Other Central dialects have similar forms. Since it is not unlikely that the sewn-plank canoe replaced the five-bundle tule balsa as a sea-going craft, and that the former became a high-status item possessed by relatively few affluent Chumash, it is possible that an original word for 'tule balsa canoe' (perhaps related to Pinart's Purisimeño form (suasuax); cf. n. 3) was replaced by this new, prestige formation; that is, after the advent of plank-sewing, all boats constructed of discrete parts were called *tomolo*.

Another word in the *tomolo* complex is Ventureño *?ontomoy*, said by Harrington's consultant Fernando Librado to mean 'soaking trough for straightening sticks' (Hudson and Blackburn 1987:104). This probably derives from a prefix *?Vn-* + *tomol* with a diminutive sound symbolism process changing *l* to *y*. The meaning of the prefix is not certain, but is likely related to *?an-*, specifying an agent (vowel harmony rules would cause the vowel of the prefix to be realized as [o]<sup>4</sup>). The form thus means "little *tomolo*-(making) thing." Librado described it as "a trough of wood six feet long, used for heating water with rocks for straightening sticks, etc." Hudson and Blackburn say that "no examples of this item are known to exist." Librado also noted a kind of "waterproof pit in the ground to hold water for bending boards in canoemaking," which the Indians lined with clay. They then hardened the clay walls into "the hardness of brick" by burning wood in the pit (Hudson and Blackburn 1987:104). Librado, whose extraordinary memory for the details of plank canoe construction has given us nearly everything we know about the technical aspects of this process, did not provide a word other than *?ontomoy* for the pit in the ground. Harrington also recorded the Ventureño derivative form *?ontomoyič* 'trough-shaped'. Two entirely different forms (not derived from *tomol*), Ventureño *xšo* 'wooden bowl' and *quyiwaš* 'basket dish', designated the soaking troughs or bowls for basketry (Hudson and Blackburn 1987:243).

In addition to the general forms for 'canoe' that Pa-hi-la-tcet gave Henshaw, the latter recorded a form ⟨to-mo'-tci⟩ 'large water jug for holding water in house'. This can probably be reconstituted phonetically as [tomoč']. Whether it is related to the *tomolo* complex is not certain; so little is known about Island Chumash (and less about the dialect of Santa Rosa Island than that of Santa Cruz Island) that only a conjecture is possible. The word could, however, be another derivative of *tomol* with diminutive sound symbolism, here changing *l* to *č*, meaning "little *tomolo*" (or "*tomolo* thing"). Analysis is especially difficult as neither Harrington nor anyone else recorded the form in a standard phonetic orthography. If it is a diminutive of *tomol*, it likely originally referred to the kind of water bottle used to carry and store water on ocean voyages, and secondarily to the household storage bottle. The Ventureño form given to Henshaw is ⟨pu-ce'-mi⟩, clearly not related to *tomolo*. Henshaw also recorded Barbareño forms ⟨a'-wak⟩ 'large basketry water bottle (covered with pitch inside)' and ⟨h'im⟩ 'water bottle (not covered with pitch)', also not members of the *tomolo* complex.

From the base form *tomol*, Chumashan languages could derive a number of forms by active morphological processes, e.g., Ventureño *tomolič* 'to travel in a boat', *?al-?altomolič* 'boatman', and *tomoliwaš* 'an old boat; a leaky, no good boat'. Ineseño *tomolič* meant 'to own a *tomol*' (Applegate 1972:277).

As noted above, both Spanish and English speakers adopted the Chumashan word *tomolo* for the sewn-plank canoe. In Spanish, this went one step further: a 'canoe captain' was a *tomolero*. The Chumash then borrowed that form as *tomolelu* (cf. the native form *?al-?altomolič* 'boatman' above). The entire history

of the word, then, takes it from what we argue to be its ancient Polynesian roots into Chumashan (where it was used as the basis for several related items), into English and Spanish, and back into Chumashan from Spanish.

The *tomolo* form was also used in historical times to name one (or more) of the types of wood available on the Santa Barbara coast from which suitable planks could be hewn; the record here is not straightforward and is particularly hampered by the spotty nature of attestations by different observers (most with little linguistic training) over more than a century during which Chumashan culture was rapidly disappearing. In 1910, Kroeber observed that in the (Chumashan) languages of Santa Barbara and Santa Cruz Island the words for “pine” (species unspecified) are, respectively ⟨*tomoL*⟩ and ⟨*tomol*⟩ [*sic*]. Precisely what Kroeber intended is not clear; he encloses his gloss for this form in the full quotation marks reproduced here. He also records ⟨*tomolo*⟩, ⟨*tomol*⟩, and ⟨*tomolo*⟩ for ‘boat’ in the speech of Santa Ynez, Santa Barbara, and Santa Cruz Island, respectively (Kroeber 1910:266). Heizer, too, noted the obvious correspondence of these forms, confidently asserting that “the equivalence of ‘pine’ and ‘canoe’ pretty clearly indicates, as nearly as linguistic data alone are able, the local origins of the plank canoe made of ‘pine’” (Heizer 1941a:60). The data do not in fact support Heizer’s notion. Harrington obtained forms for varieties of ‘pine’ in as many dialects as he could, as shown in table 4.

**Table 4. Harrington’s Forms for ‘Pine’**

Central Chumash	Ventureño	<i>wima</i> ‘red pine’
		<i>c’ikinín</i> ‘any kind of pine’
		<i>?al’owow</i> ‘white pine’
	Barbareño	<i>?alčošoy</i> ‘black pine’
		<i>wim’a</i> ‘red pine’
		<i>poš</i> ‘singleleaf piñon’
Ineseño	<i>taq</i> ‘white pine’	
	<i>wima?</i> ‘red pine’	
	<i>tak</i> ‘pine tree’	
Purisimeño	<i>cekenen</i> ‘pine’	
	<i>tomol</i> ‘pine’	
	<i>?aposš</i> ‘piñon’	
Island Chumash	Isleño	<i>tmolo</i> ‘pine’
		<i>walaxš</i> ‘pines which grow tall and broad’ (= ‘cedar’; also in Ventureño, Barbareño, and Ineseño)
Northern Chumash	Obispeño	<i>twitak’a</i> ‘pine sp., white pine’

Harrington also recorded a Ventureño form *wili*, glossed “palo fierro’ [*sic*]. Made paddles for canoe from it, also harpoons.”

Hudson, Timbrook, and Rempe (1978:46–50), excerpting and annotating Harrington’s notes on canoemaking, give the following information:

The *tomol* [sic] was made of pick-ups; that is, it was made from driftwood pieces called *wi'ma*. Far up the coast, to the north where the *wi'ma* grows, there are large pieces of such wood, and there are also many of them. But there the sea is stormy and there are no islands. Also, the board canoe is not found there. It was here where the *wi'ma* does not grow and is hard to get, that the Indians made good board canoes.

*Wi'ma* is driftwood, mostly redwood, which floats down the coast after a storm on the sea and comes from the west into the channel. In the north where it grows it first is carried down creeks to the sea and then down the coast on the water to the [Santa Barbara] Channel. Before Christianity, it was gathered by the Indians, either when it was found floating on the ocean or when they found it stranded on the beach. Much *wi'ma* drifted ashore at Santa Rosa Island, whose name was also *Wi'ma* [sic] in our language. . . .<sup>5</sup>

Redwood was the best of the *wi'ma* from which to make a board canoe. . . .

There were also good trees for making canoes growing in the mountains, but these were far from the esteros and seashore along the channel and the wood was not as good. The Indians knew about these trees and when the Spanish came, they commanded that we bring them wood from the mountains.

The mountain trees were considered by the canoemakers as either *tak* or *tomol*. The branches of *tak* trees grew upward and the wood was very knotty. It was not good for canoemaking, but sometimes pieces of them were used for plank boats. The other kind, *tomol* wood, was good for canoes. Its branches grew downward and there were fewer knots. Next to *wi'ma*, *tomol* wood was best for making a board canoe. [Hudson, Timbrook, and Rempe 1978:47–48]

The editors add a footnote regarding Harrington's linguistic records of *tak* and *tomol*:

The linguistic meanings behind these two words, *tak* and *tomol*, greatly fascinated Harrington, besides the problem of identification of the species of tree represented by each name. Several pages of his notes are devoted to Chumash pine tree vocabulary. In a letter requesting information, Harrington summarized his thoughts: digger, Coulter, sugar, bishop, single-leaf piñon, Santa Cruz Island, limber, and Torrey pines were considered to be *tak*. *Tomol* pines were ponderosa and Jeffrey. He was apparently never sure of his *tak* group, however, since the vocabulary for pines was incomplete and he could not find a Chumash speaker in the 1950s who could identify them. The *tomol* group he seems to be sure of, stating that the word applied to Jeffrey and ponderosa pines in Santa Barbara Chumash. . . .

Both Jeffrey pine (*Pinus jeffreyi*) and ponderosa pine (*P. ponderosa*) . . . are considered "yellow pines"; Jeffrey pine wood is a light straw color and wide-grained, while ponderosa pine ranges from a lemon yellow to an orange-brown or reddish yellow. [Hudson, Timbrook, and Rempe 1978:48]

The net yield from Harrington's observations is that pine wood species that were good for making canoes (plank or otherwise, presumably) were called *tomol* (which we could designate generically as 'yellow pine wood') while types unsuitable for canoemaking were *taq* or *tak*. The term *wi'ma* referred to driftwood, probably from several species, but especially to pieces of redwood which floated into the Santa Barbara Channel from the north and which was the preferred

raw material for a plank canoe. The ‘red pine’ designation in the forms above probably refers not to a pine species, but to ‘redwood’. Under our hypothesis, this particular distinction between *tomol* and *taq* or *tak* pines would not have been made until the introduction of plank-sewing technology. However, the range of other forms in various Chumashan languages above makes it unlikely that there was only a single word for all ‘pines’ before then.

Heizer provides the only detailed previous attempt we know of for an etymology of *tomolo* (Heizer 1941a). He cites attestations from an early explorer, Miguel Costansó, and from Kroeber, which were probably the only sources available to him at the time, though he subsequently edited Henshaw’s record (Heizer 1955). Heizer then proceeded to cite forms from a short Island Chumash vocabulary (probably the Santa Rosa Island dialect) recorded by one Daniel Hill, which

includes two words for canoe, *toak* and *somow*. The first of these is obviously similar to the Santa Ynez word *tak* (meaning “pine” and analogous to the *tomol* “boat” and “pine” equivalence), and the second to the usual *tomol* or *tomolo*. [Heizer 1941a:61]

This equivalence of ⟨toak⟩ to Ineseño *tak* (Applegate n.d.) is likely, but the relationship between ⟨somow⟩ and *tomol* is not transparent, if the two are related at all. The form ⟨somow⟩ could represent a local Santa Rosa Island pronunciation of *tomol*—perhaps \*[comow] with affrication of the initial [t] and vocalization of the final [l], a further development of other, more reliably attested, Chumashan forms. But documentation of Santa Rosa Island Chumash is scantier than that of any other dialect for which records are available; it was said to be mutually intelligible with the Santa Cruz Island dialect, but in what particulars it may have differed we have almost no information. Heizer’s equation between ⟨somow⟩ and *tomol* must be considered undemonstrated.

Heizer then attempts to provide a semantically appropriate etymology for *tomolo*.

The word for water seems to enter into the forms signifying boats and paddles; thus water is *to*, *o*, or *oa* in the San Luis Obispo, Santa Ynez, Santa Barbara, and San Buenaventura dialects, but on Santa Cruz Island it is *mih*. The Santa Rosa Island word for paddle is *simih*, which obviously bespeaks its association with water. [Heizer 1941a:61]

The Chumashan words for ‘water’, as recorded by Harrington, are as in table 5.

**Table 5. ‘Water’**

Obispeño	<i>to?</i>
Barbareño	<i>?o?</i>
Ineseño	<i>?o?</i>
Ventureño	<i>?o</i>
Purisimeño	<i>?aho</i>
Island	<i>mih</i>

The Obispeño (Northern Chumash) never had plank canoe technology; thus, if *tomolo* did contain the root for water as Heizer speculates, it would be unlikely that the Northern Chumash form would be the one used. The Northern Chumash initial *t-* is an old frozen (nonproductive) noun classifier which the more southerly dialect forms may never have had, but which would have been lost in any case long before the acquisition and development of plank-sewing technology. Heizer's "correspondence" is, in fact, a Chumashan faux ami. For present purposes, it is enough to note that although Heizer's understanding of the Chumashan words for 'water' was limited, his association of Santa Rosa Island (simihi) 'paddle' with the Santa Cruz Island form (mihi) 'water' was probably correct, though the prefixed element needs explanation. However, his conclusion that "the words for canoe seem to have been compounded locally among the Channel people from their words for water and pine" (Heizer 1941a:61) does not withstand closer scrutiny.

**4. Reconstruction of the Proto-Southern Chumash form for 'sewn-plank canoe'.** From the various forms for 'plank canoe' noted above, we can reconstruct a Proto-Southern Chumash form. The forms are attested in two of the three branches of the family, and these likely were the only Chumashan groups who ever used the word; the record is thus remarkably complete for a Chumashan lexical item. The differences between the dialect forms, which may appear small, would nonetheless require a significant length of time to develop into the dialect variation in the modern attested forms.

The most likely reconstruction is *\*tomolo?* (with the normal echo vowel after a final glottal stop, the form would be phonetically realized as [tomoloʔ<sup>o</sup>]). This reconstruction acknowledges the final syllable of the Island forms (and implicitly suggests the archaism of the borrowing of the form into Purisimeño) and the glottalized segments in Barbareño and (derived) Ventureño form. Cross-dialect studies of glottalization in Chumashan have not been done, and the historical development of the glottal stop and glottalized consonants in Chumashan is not well understood, but some general features can be discerned. Barbareño has been particularly well described by Beeler (1976) and Wash (2001). A productive synchronic process of "floating glottalization . . . results in the glottalization of a consonant not adjacent to the original position of the glottal feature," a process which "operates over all combinations of morphemes" (Wash 2001:35). Its operation is, in the examples Wash gives, invariably regressive.

Something similar must have occurred historically, as there are many pairs of words that are phonetically identical, except that a glottal stop or glottalized consonant occupies a different position in the word. Applegate notes that in Ineseño, "glottalization occasionally shifts; this can be seen in alternative transcriptions such as *tak'a* ~ *takaʔ* 'where', in an optional rule of glottal shift . . . : /s-lox'-it/ *sloxit* 'he surpassed me' and diachronically, in many cognate pairs" (1972:10), as shown in table 6.

**Table 6. Cognates Differing in Position of Glottalization**

BARBAREÑO	INESEÑO	VENTUREÑO	
-top'o	-topoʔ	n/a	'navel'
-kuy'uw	-kuyuw'	n/a	'right hand, right side'
t'amay	tam'ay	n/a	'to forget'
wim'a	wimaʔ	wima	'driftwood, red pine' (= 'redwood')

NOTE: The first three Barbareño-Ineseño pairs above are from Applegate (1972:10). Here "n/a" = not available at this time.

Additionally, there is sometimes an internal alternation within the same dialect; compare Ventureño *miʔik* 'far' ~ *mikiʔiç* 'to go far'.

The diachronic import of the collapse of a final sequence of CVʔ to C' (where C is a resonant) can be seen in the pan-Chumashan word for 'tree, wood' (Klar 1977:115–16), shown in table 7.

**Table 7. Cognates for 'Tree, Wood'**

Ineseño	<i>pon'</i>
Barbareño	<i>pon'</i>
Ventureño	<i>pon'</i>
Island	<i>pon'</i> (borrowed from Ventureño?)
Obispeño	<i>t-ponoʔ</i>
Proto-Chumash	<i>*ponoʔ</i> (= *[ponoʔ°])

At the time of our proposed borrowing from Polynesian, the Southern languages would have still had nonreduced final syllables. Part of the split between Central and Island groups probably involved the fate of these sequences.

Our records of Island Chumash speech are truly "salvage linguistics" in its most extreme form. No speaker of any Island dialect had lived on his or her ancestral island for decades before being interviewed for linguistic information. They had come to the mainland as young children, or had even perhaps been born on the mainland of Island-speaking parents. Because of these historical circumstances in the lives of the last speakers of Island Chumash dialects, there is always the possibility of intrafamily borrowing when the attested forms are identical between mainland and Island speech. Chumashan specialists always use the available resources with care.

That said, this final syllable collapse may not be a universal sound change in Chumashan, as the set in table 8 shows.

**Table 8. Cognates without Final Syllable Collapse**

Ineseño	<i>hawaʔ</i>	'mother's sister'
Barbareño	<i>xaw'a</i>	'mother's sister'
Obispeño	<i>hamaʔ</i>	'mother's sister'

In this particular case, however, the (diachronic) alternation of the resonant with a semivocalic segment may have blocked final syllable collapse. The alternation of *w* and *m* offers particular challenges in reconstructing Proto-Chumashan forms. In the case of the *tomolo*-type words, Barbareño *tom'ol* retains a trace of the earlier glottalization in the singular form; in this it is conservative. However, in *tomtomo?ol*, the attested Ventureño plural form of *tomol*, the ancestral glottal stop reappears as well. In reconstructing *\*tomolo?* (= [tomoloʔ<sup>o</sup>]), we have assumed some such process.

Although the relatively long sequence of CV syllables is phonotactically possible in Chumashan, it is unusual; we would expect some morphological transparency in the form, but there is none. With regard to meaning, *\*tomolo?* is irreducible; it means, simply, 'sewn-plank canoe'. This is a strong hint that it may not be of Chumashan origin. Indeed, when we look elsewhere for a possible source, we find a promising candidate in the Chumashan family's nearest neighbor to the west, namely, Polynesian.

### 5. Relevant features for comparison of Polynesian and Chumashan languages.

Comparison between modern Polynesian forms and modern Chumashan forms recorded in the nineteenth and twentieth centuries is potentially misleading since each group would have spoken ancestral forms of the source and recipient languages at the time when contact occurred. Instead, it is better to compare reconstructed protoforms for each language family whenever possible, avoiding the anachronism of citing only modern attestations. Thus, our comparison will be of roughly contemporaneous forms of the lexical items under consideration.

Polynesian languages have several characteristics which are advantageous for comparison of Chumashan and Polynesian lexical items. As noted above, the consonant inventories are simple in comparison to Chumashan. Hawaiian, for example, has only eight consonant phonemes, *w, m, p, l, n, k, h, ʔ* (Krupa 1982:26), as does Marquesan, *p, v, m, t, n, k, h, ʔ* (Lynch 2002:865). Samoan (ceremonial style) has eleven, *v, m, f, p, l, n, s, t, ŋ, k, ʔ* (Krupa 1982:24) (colloquial-style Samoan has only nine consonants, lacking *n* and *t* [Krupa 1982:25]), and reconstructed Polynesian has thirteen, *\*p, \*t, \*k, \*ʔ, \*f, \*w, \*s, \*h, \*m, \*n, \*ŋ, \*l, \*r* (Krupa 1982:18–19). By contrast, modern Chumashan dialects have approximately thirty-four phonemically distinct segments (Wash 2001:31), and the protolanguage was of approximately comparable complexity (Klar 1977:10–12). The individual sounds of the minimal Polynesian inventories are largely represented by a subset of sounds within the Chumashan inventory, so that consonants in words borrowed from Polynesian into Chumashan are retained with relatively little change. In the case of the reconstructed Chumashan form *\*[tomoloʔ<sup>o</sup>]*, it is not necessary to posit huge phonetic leaps in order to recognize corresponding points of articulation. In addition, in Hawaiian, the voiceless stop consonants *p* and *k* are "about as in English but with less aspiration" (Pukui and

Elbert 1986:xvii). The Chumashan voiceless stops *p*, *t*, *k*, *q* are unaspirated in most positions; they become aspirated in predictable environments. A Chumashan speaker would have no difficulty reproducing Polynesian voiceless, lightly aspirated, or unaspirated stops.

Polynesian vowels (*a*, *e*, *i*, *o*, *u*, short and long) tend to be conservative between dialects; “the changes which have transformed the Proto-Polynesian phonological system into those of the modern Polynesian languages, have mainly affected the consonantal system” (Krupa 1982:15). Thus, we can be fairly certain of the vocalic raw material of the borrowing, and can apply normal rules of Chumashan phonotactics and morphotactics to the purported borrowed form(s). Were the Polynesian vowels not conservative, we could not be sure that the input (the proposed borrowing) would in fact yield the Chumashan output (the reconstructed protoform as well as the modern attested dialect forms). Modern Chumashan dialects have six vowels, *a*, *e*, *i*, *o*, *u*, *i*; the Proto-Chumashan vowel system had only five segments, *\*a*, *\*e*, *\*i*, *\*o*, *\*u*. The mid to high central unrounded vowel *i* is of “relatively recent status in the Chumash[an] vowel system” (Applegate 1971:12) and is possibly intrusive from Uto-Aztec. Vowel length is not distinctive in Chumashan languages; Chumashan speakers most likely would not have perceived a meaningful difference in the Polynesian length distinction.

Polynesian lexical items tend to have very wide semantic ranges, with discriminations of meaning being acquired by combining lexical items. Most Polynesian nouns are, in fact, compounds of smaller elements (see, e.g., Elbert and Pukui 1979:123–27; Marsack 1962:27). Chumashan does precisely the opposite, having rather precisely defined roots and a large number of very precise prefixes and suffixes which are added to stems (Applegate 1972; Klar 1977; Wash 2001). On an intuitive level, possible Polynesian words can be fairly readily distinguished from native Chumashan ones if the words are two syllables or more in length. Of course, sequences shorter than that must always be suspect as possible coincidental resemblances, and great care must be taken with them.

**6. The proposed borrowing.** Table 9 shows lexical compounds from four Central Eastern Polynesian languages that are relevant to the proposed borrowing.

**Table 9. Present-Day Polynesian Forms Relevant to Chumashan ‘Sewn-Plank Canoe’**

Hawaiian	<i>kumulaa?au</i>	‘tree’	(Pukui and Elbert 1986:188)
Marquesan	<i>tumu ?akau</i>	‘arbre’	(Le Cleac’h 1997:226)
Tahitian	<i>tumu raa?au</i>	‘arbre’	(Le Maitre 1995:103, 144)
Raratongan (= Cook Islands Maori)	<i>tumu raakau</i>	‘stump, trunk, taproot’	(Buse and Taringa 1995:524)

Each of these forms is compounded of two widespread Polynesian bases, *\*tumu* and *\*ra?a-akau*, shown in tables 10 and 11, respectively.<sup>6</sup>

**Table 10. \**tumu***

Proto-Polynesian		'origin, base'
Easter Island (= Rapanui)	<i>tumu</i>	'origin, base'
Hawaiian	<i>kumu</i>	'origin, base'
Maori	<i>tumu</i>	'foundation'
Marquesan	<i>tumu</i>	'origin, base'
Mangarevan	<i>tumu</i>	'tree trunk'
Rarotongan (= Cook Islands Maori)	<i>tumu</i>	'origin, base'
Tahitian	<i>tumu</i>	'origin, base, trunk, foundation'
Tuamotuan	<i>tumu</i>	'origin, base'

**Table 11. \**ra?a-kau***

Proto-Polynesian		'wood, tree'
Easter Island	<i>raakau</i>	'castor oil plant'
Hawaiian	<i>laa?au</i>	'wood, tree, plant, timber, forest, stick, thicket, club'
Maori	<i>raakau</i>	'wood, tree, timber, stick, spar, mast'
Marquesan	<i>?akau</i>	'bois'
Mangarevan	<i>rakau</i>	'wood, timber, tree'
Rarotongan	<i>raakau</i>	'wood, tree, shrub, plant, pole, rod, stick, weapon'
Tahitian	<i>ra?au</i>	'wood, tree, timber, plants'
Tuamotuan	<i>raakau</i>	'wood, tree, bush, plant, stick, twig, log'

Compounds such as Hawaiian *kumulaa?au* and its Marquesan, Tahitian, and Rarotongan (Cook Islands Maori) cognates are "word[s] consisting of two or more bases with meanings not deducible from the meanings of the parts" (Pukui and Elbert 1986:180), the latter characteristic being "the main criterion for distinguishing compounds and noun + qualifier sequences" (Pukui and Elbert 1986:124). "Most compounds are nouns. . . . Such compounds are mostly of ancient vintage" (Pukui and Elbert 1986:123). The selection of lexical items in any given lexicon or dictionary is fortuitous, based largely upon the collector's or compiler's purposes, biases, training, date of recording, and opportunity for work with native speakers. Whether or not this compound was more widespread in Polynesia we may never know. The attested distribution does, however, suggest an association with late Polynesian voyaging in the eastern Pacific. In fact, the linguist Jeff Marck relates that

Tahitian *tumu ra?au*, Marquesan *tumu ?akau*, Hawaiian *kumulaa?au* most strongly suggest Proto-Central Eastern (PCE), Proto-Tahitic and Proto-Marquesic \**tumu rakau*, a reconstruction with some antiquity in East Polynesia (A.D. 1000 or before) and present in Hawaiian due either to direct inheritance from Proto-Marquesic (upon settlement) or borrowing from Tahitic (some hundreds of years later). From a linguistic perspective, the Hawaiian form could

have originated in either way. But from a comparative material culture perspective, planked construction of sailing canoes goes back to Proto-Oceanic/Ancestral Lapita Society (1000 B.C.); the Hawaiian technique and word for it are more likely due to “direct inheritance” (PCE > Proto-Marquesic > Hawaiian) and the fluid prehistoric situation in canoe part terminology. The apparent Southern California coast borrowing of a particularly Central Eastern appellation places the time and origin of the borrowing at A.D. 800–1000 or later from the general area of East Polynesia other than, on present linguistic evidence, Rapanui (Easter Island). The time of the Hawaiian sound shift *\*t > k* is unknown and is dialectal in any event, *\*t > t* having continued into some of the Hawaiian dialects into historic times. [Jeff Marck p.c. 2003]<sup>7</sup>

In almost all Polynesian languages, *\*t* has remained [t], the main exception being Hawaiian, where (as Marck notes) it is usually [k], though archaically and in dialects [t] was retained. Thus, a compound of the Central Eastern Polynesian reflexes of Proto-Polynesian *\*tumu + \*raʔa-kau* would be *\*tumuraakau*. Throughout the modern attested Polynesian languages, the tendency is to have only one “liquid” consonant, either *l* or *r*, in the consonant inventory. Proto-Polynesian *\*l* and *\*r* fall together in most Polynesian dialects; where there is no historical way to determine which liquid a prehistoric dialect may have had, linguists can represent the ambiguous liquid as *\*R*. In a dialect where the pair fell together as *l* (e.g., Hawaiian), the compound would be *\*tumulaakau*. In a dialect where the pair fell together as *r* (e.g., Tahitian), the compound would be *\*tumuraakau*.

We suggest that there was a compound in an early Central Eastern Polynesian language in which the intervocalic *\*k* had already become a glottal stop (cf. the Hawaiian and Tahitian forms above), giving *\*tumuRaaʔau*, and that meant, most generally, ‘tree trunk’. We further suggest that the specific associations of *\*Raaʔau* with ‘medicine’ (as in Tahitian and Easter Island) or with wood products (e.g., stick, club, weapon, timber) allow a closer specification of the compound as a plant item from which useful items could be made or obtained—that is, as a ‘useful plant’ or the ‘source (of) wood’ for items such as the above. One thing that could be so obtained would be wooden planking for canoes (‘timber’).<sup>8</sup> We contend that a form *\*tumuRaaʔau*, part of the specialized maritime vocabulary of Central Eastern Polynesian, was the source of the Proto–Southern Chumash form *\*[tomoloʔo]*. In the following section, we demonstrate how such a Proto–Central Eastern Polynesian form would be realized in modern Chumashan dialects.

**7. Phonological considerations.** According to Lyle Campbell, “the strongest evidence for loanword identification and the direction of borrowing comes from phonological criteria” (1999:64). Among the criteria for establishing borrowing, one of the strongest is that “words which violate the typical phonological patterns (canonical forms, morpheme structure, syllable structure, phonotactics) of a language are likely to be loans” (Campbell 1999:64). In addition, “in some

cases where the phonological history of the languages of a family is known, information concerning the sound changes that they have undergone can be helpful for determining loans, the direction of borrowing, and what the donor language was" (Campbell 1999:65). As we see below, all of these conditions apply to the Proto-Southern Chumash form \*[tomoloʔ<sup>o</sup>] and the daughter language reflexes, making a strong case that the form is a borrowing.

The most minimal Chumashan syllable is CV; the maximal syllable is CCVC (Wash 2001:32). The consonants can include glottalized segments. A long monomorphemic sequence such as [CVCVCVʔ<sup>v</sup>] is unusual. Longer forms, which are invariably complex morphologically, tend to contain consonant clusters, the results of either modern or historical morphophonemic processes. Chumashan morphemes often end in consonants, and forms of two or more syllables are likely to be morphologically complex and therefore contain ambisyllabic consonant clusters (e.g., Barbareño [sul.kuw] 'night'). A sequence CVCVCVCV or [CVCVCVʔ<sup>v</sup>], especially without a glottalized or aspirated segment (glottalization sometimes and aspiration always being a product of the reduction of a consonant cluster) is highly unusual, even in reconstructed forms.

Our suggested Polynesian source language form had a full vocalic sequence following the glottal stop, i.e., \*-CVʔVV. (Recall that vowel length is nondistinctive in Chumash.) Vowel sequences such as [au] are impossible in Chumash; such a sequence would immediately be reinterpreted as a diphthong, yielding a sequence [-CVʔaũ]. Even diphthongs are uncommon in Chumashan. A word-final diphthong (especially when in an unstressed syllable) would reduce to a simple vowel, in this case [-o], yielding [-CVʔo]. Thus, the next step in nativizing the Polynesian form in Chumashan would be a reshaping of the vowels of the last two syllables by rendering the Polynesian long vowel \*aa as a Chumashan [a], unspecified for length, and by a reduction of the final diphthong, giving \*tumuRaʔo.

All known Chumashan dialects exhibited vowel harmony, the most general rule for which states that only certain combinations of vowels can cooccur in a morpheme, or across certain morpheme boundaries (Applegate 1971). For the Chumash, the new form \*tumulaʔo (see below concerning *l*) would be perceived as a single morpheme, a four-syllable stem (even though in Polynesian it had two bases, a fact which would be unknown to the Chumash), and would undergo a right-to-left harmonization of the vowels. With no morpheme boundaries to block the operation of the vowel harmony rule, all vowels in the source word would become [o] in Chumash, resulting in \*tomoloʔo.

In Chumashan languages, a final sequence of vowel plus glottal stop is usually followed by an echo of the vowel that precedes the glottal stop, rather than a full vowel. Consequently, a Chumash speaker would be inclined to reinterpret word-final \*-Vʔo in a borrowed form as underlyingly \*-Vʔ, with the glottal stop followed by an echo vowel at the phonetic level \*[-Vʔ<sup>o</sup>]. But the earlier form in the proposed source would have had a full final vowel, and this is

significant in considering the fate of the other Polynesian vowels in the Chumashan sequence.

We can note that a borrowing whose first stage protoform had an echo vowel in place of the final full vowel \*[-o] would likely have yielded a (hypothetical) form \*[tamalaʔ<sup>a</sup>], since the syllable governing the regressive harmonic assimilation would be \*[la]. If this word is indeed a borrowing, the Chumash heard the final diphthong as a full vowel, realized it first as \*[ʔo], retaining the full final [o] long enough for it to govern regressive harmony, and only subsequently reduced it to a phonetic echo vowel more in keeping with the fact that final open vowels are unusual in words of any length in the language. In this case, knowing the source of a borrowed form would tell us more about the Chumashan protoform than we can derive from internal reconstruction alone.

The third-stage form \*[tomoloʔ<sup>o</sup>] (i.e., the stage at which we are able to reconstruct a Proto–Southern Chumash form) would have immediately (or at least within a fairly short time) undergone changes that further normalized it in Chumash terms (much as *tomol* and *tomolo* were Anglicized or Hispanized when borrowed into English or Spanish). Thus, in the Central languages (Ventureño, Barbareño, Ineseño, Purisimeño), the basic form would be shortened to something resembling the most common phonological shape of a Chumashan word, \*CVCVC—i.e., \**tomol*—by contraction of the final syllable. (See the discussion in section 4 above on the fate of glottal stops in various Chumashan dialects.)

We can see no evidence that would allow us to decide what the phonetic realization of *R* was in the source language. However, Chumashan has only *l*; any [r] (whether of the trilled Spanish variety or the retroflex English variety) is invariably borrowed into Chumashan as [l], as in [sumpelelu] < Spanish *sombrero*. Chumashan speakers would pronounce the Polynesian liquid in the source as \**l* in any case, resulting in \**tumulaaʔau*. Chumashan languages do not permit vowel clusters, and show a marked preference for closed final syllables, so the final syllable of the source form would be reshaped. The entire reshaping process can be summarized as in table 12.

**Table 12. Reshaping of Polynesian \**tumuRaaʔau* in Chumashan**

Polynesian	* <i>tumuRaaʔau</i>	(proposed source form)
Chumashan-1	* <i>tumulaaʔaũ</i>	(realization of <i>R</i> as <i>l</i> ; final V cluster > diphthong)
Chumashan-2	* <i>tumulaʔo</i>	(reduction of final vowel cluster; vowel length reduction)
Chumashan-3	* <i>tomoloʔo</i>	(vowel harmony)
Chumashan-4	*[tomolʔ <sup>o</sup> ]	(final vowel reduced to echo vowel)

The common borrowed form \*[tomoloʔ<sup>o</sup>] then developed in the Chumashan dialects according to late phonological processes peculiar to each idiom. The Island form lost the final glottal stop (and echo vowel), yielding \*[tomolo], later (sometimes) syncopated to [tmolo], both changes occurring under the influence of the

strong penultimate stress common to all Chumashan languages. The Central Chumash languages probably went through a phase where the form was *\*tomol*' (cf. the collapse of final vowel plus glottal stop in section 4). With a typical Chumashan penultimate stress, the final glottalized consonant in the unstressed final syllable was weakened and lost in Ventureño and Ineseño, yielding *tomol*; a further devoicing of the final liquid, typical in Purisimeño, gave *tomol̥*. In Barbareño, the glottal stop floated regressively, yielding *tom'ol*. The attested Ventureño plural *tomtomo?ol* reminds us of the original presence of a glottal segment in that dialect.

**8. Morphological considerations.** Morphologically complex Chumash forms can be analyzed into smaller units, and those units can in turn be reconstructed as phonetically simple sequences. For instance, the root *\*way*' 'hang' turns up in many forms in all dialects, as is seen in table 13. (Note again also the variable position of glottalization.)

**Table 13. Chumashan *\*way*' 'hang'**

Ineseño, Ventureño	<i>maq-wayan</i>	'to swing'
Obispeño	<i>qi-wayan</i>	'swing back and forth'
Ineseño, Ventureño	<i>su-wayan</i>	'earrings'
Barbareño	<i>su-wayan'is̥</i>	'earrings'
Island	<i>su-ta-way</i>	'earrings'
Ineseño	<i>?away'</i>	'moon' (i.e., 'what hangs in the sky')
Barbareño	<i>?aw'ay</i>	'moon'
Ventureño	<i>?awhay'</i> (< <i>?at-wa?y</i> )	'moon'
Purisimeño	<i>?ahwa</i>	
Obispeño	<i>t-awa?</i>	
Island	<i>?awhay?</i>	(borrowed from Ventureño?)

We have indicated morpheme divisions in the surface forms in table 13. Not only is *\*way*' 'hang' reconstructable, but so are the prefixes *maq-* and *qi-* (which probably come from a morphologically complex protoform such as *\*ma-qi*), the nominalizer *al-*, the old noun classifier *t-*, and the causative *su-*, as well as the resultative suffix *-Vš̥*. To demonstrate this, however, would involve citing numerous examples from other stem sets, and this is outside the scope of this article. For another example of typical Chumashan derivational processes, see the analysis of *?axipeneš*' 'dugout canoe' in section 3.

As noted above, compounds in Polynesian are formed by juxtaposing two base forms, the one with basic meaning followed by the one which qualifies the first. Nothing intervenes. Chumash compounds similarly, except that between the two nouns there must be a connective particle, e.g., *tomol ?ištapan* 'tule canoe' < *tomol* 'canoe' + *?i* 'connective particle' + *štapan* 'tule'. Could *\*tomolo?o*, contain prefixes or suffixes adjoining a root syllable? It could, but to date, no

candidates have appeared that remotely meet the phonological and semantic requirements. (See Heizer's ill-fated attempt [section 3 above] to derive the Chumashan form from 'water' and 'pine'.)

There is nothing in the modern attested forms or in the reconstructed \*[tomoloʔ<sup>o</sup>] which can be analyzed as a connective particle, prefix, suffix, or noun classifier. By Chumashan standards, this is not a nominal compound, though its length would normally suggest morphological complexity. Within modern Chumashan dialects, we have found no source which could account for the apparent morphological complexity of the protoform; it appears to be monomorphemic with no deeper synchronic or diachronic analysis possible without stepping outside of the family. The form had such complexity only in its Polynesian source language; to the Chumash, it was not analyzable into discrete, meaningful units. Further, the lack of morphological complexity in Chumashan as compared with the obvious complexity of the Polynesian form allows us to say with near certainty that the direction of borrowing was from Polynesian to Chumashan (Campbell 1999:65–66).

**9. Gabrielino words for 'boat'.** The only other culture in North America known to have constructed sewn-plank canoes were the Uto-Aztecan Gabrielino, a group which occupied the California coast directly to the southeast of the Chumash. Very closely related to the Gabrielino were the Fernandeano, whose territory, in historical times at least, probably included a small stretch of coast between the Chumash and Gabrielino areas (Bright 1976:205). Landberg noted that "the maritime-oriented subsistence of the Chumash and Gabrielino of the Santa Barbara Channel was exceptional in native California," and included both groups in the Chumashan "climax area" mainly on the basis of shared plank-canoe technology (and possibly fishhook design as well, though Landberg's text is ambiguous here) (Landberg 1965:3). The Gabrielino are part of the Takic, or Southern California Shoshonean, subgroup of Uto-Aztecan (Campbell 1997:134, Mithun 1999:539; Bright 1976).

The Gabrielino word for 'sewn-plank canoe', as recorded by Harrington, is *tiʔat* (Hudson and Blackburn 1982:341). The word for 'boat' in general is *tarayna* (Pamela Munro p.c. 2002). Uto-Aztecan and Chumashan languages are not related at any presently demonstrable level, and the words for 'sewn-plank canoe' are clearly unconnected. In a note (in the Harrington papers), consultant José María Zalvidea says, "the *tiʔat* was so called because it carried many people. *ʔat*, people. Made of boards, caulked with mineral tar, and tied together with string made of horsenettle" (Hudson and Blackburn 1982:342). The usual Gabrielino word for 'person' is *taxaa-t*; Proto-Takic *\*taka* 'person' is, in fact, the source of the name of the Takic subgroup (see Campbell 1997:136). It may be tempting to suppose that the consultant's etymology is correct; it suggests that one cultural group observed another's innovative watercraft and subsequently adopted the new technology themselves, naming it for its memorable carrying

capacity (a possible scenario). However, this understanding is more likely a “folk etymology,” a late reinterpretation (even perhaps under pressure of Harrington’s questioning) of a form whose meaning is no longer transparent. Pamela Munro (p.c. 2003) says that the word is odd in Gabrielino, and doubts the Zalvidea-Harrington etymology. According to her, the stem of the form Harrington recorded would be *ti?a-*; the citation form would, as is normal for unpossessed nouns in Uto-Aztecan languages, contain an absolutive ending *-t*, and the form would be realized phonetically as [teʔaat]. Harrington gives the plural as *tetii?aatam* ‘canoes’. Munro says that a more usual plural formation would be *tetii?atam*; the underlying stem of a form like Harrington’s would be *ti?aa-t* and would realize on the surface as [teʔaa-t]. We suggest that a better etymology is possible for the Zalvidea-Harrington form *ti?at* if we assume that this lexical item was also borrowed from a Polynesian language, most probably during the same encounter in which the Chumash borrowed \*[tomoloʔ<sup>o</sup>].

Biggs and Clark (1994) give a Polynesian form *\*tia*, which has two different semantic fields, as shown in table 14. The form *\*tia<sub>1</sub>* is concerned with weaving and sewing; *\*tia<sub>2</sub>* with stakes and posts.

**Table 14. Polynesian Forms *\*tia***

<i>*tia<sub>1</sub></i>		
Proto-Polynesian		‘sew, stick in a peg or a needle, make a net’
Easter Island	<i>tia</i>	‘sew’
Maori	<i>tia</i>	‘to stick in, as a peg or a thatching needle’
Marquesan	<i>tia</i>	‘couvrir’
Mangarevan	<i>tia</i>	‘enfonceur un clou, clouer’
Rarotongan	<i>tia</i>	‘close a sack by sewing’
<i>*tia<sub>2</sub></i>		
Proto-Polynesian		‘stake, post’
Hawaiian	<i>kia</i>	‘pillar, prop, post, nail, spike, mast’
Maori	<i>tia</i>	‘peg, stake, stick a peg or stake’
Mangarevan	<i>tia</i>	‘push a stake into the ground; to nail’
Rarotongan	<i>tia</i>	‘drive in a peg or stake’
Tahitian	<i>tia/tia</i>	‘small posts’
Tuamotuan	<i>tia</i>	‘penis’

It is likely that the two *\*tia* forms are related (the primary meanings having diverged during some early phase of dialect differentiation); ‘to sew’ or ‘to weave’, one uses a small stake or post (i.e., a needle or shuttle). (The Tuamotuan ‘penis’ is, of course, metaphorical.)

Of additional interest is the reduplicated Tahitian form *titia* ‘short sticks used for fastening together the pieces of a canoe when building it’ (Andrews and Andrews 1944). The Mangarevan forms *tia* ‘to pierce, bore’, ‘to fasten with a nail; to stick a piece of wood into the ground’ and *tiatia* ‘to pierce with a needle or similar instrument’ (Tregear 1891) are particularly informative, suggesting

that the Gabrielino named their sewn-plank boat not after the source material (as did the Chumash) but after some feature of it (short pieces of wood or a mast (cf. the Hawaiian metaphorical extension ‘mast’), or a technique associated with building it (piercing the short pieces of wood to sew them together). Subsequent development in Gabrielino included regularizing the form with the addition of the native absolutive *-t*. Unusual vowel lengths and qualities could result from the borrowed status of the word, but Munro suggests that it is “unlikely that any such irregularity would have survived” for such a great length of time; “rather,” she suggests, “this word was just not recorded as carefully as most of [Harrington’s] data. There are other recordings of words that seem equally odd” (Munro p.c. 2003).<sup>9</sup>

Munro (p.c. 2003) finds the other Gabrielino word for ‘boat’, i.e., *tarayna*, anomalous as well. As with *tiʔat*, Munro finds no cognate form(s) in any other Uto-Aztecan language, and cannot provide further information on the morphology of this form. In light of the foregoing discussion, we would like to suggest that this may also be of Polynesian origin. Biggs and Clark (1994) give the reconstruction in table 15.

**Table 15. Polynesian \**talai***

<i>*talai</i>		
Proto-Polynesian		‘hew, carve’
Easter Island	<i>tarai</i>	‘carve, model, mold, sculpt’
Hawaiian	<i>kaalai</i>	‘hew, carve’
Maori	<i>taarai</i>	‘dress, shape, fashion (particularly of working timber with an adze)’
Marquesan	<i>taʔai</i>	‘tailler, ciseler, travailler le bois ou la pierre’
Mangarevan	<i>tarai</i>	‘rough hew; dress timber or stone’
Rarotongan	<i>tarai</i>	‘chop, chisel or adze something into shape; carve something out’
Tahitian	<i>tarai</i>	‘tailler le bois ou la pierre’
Tuamotuan	<i>taarai</i>	‘dress, shape, fashion, carve (of timber)’

The suffix *-na* in the Gabrielino *tarayna* is obscure in the Uto-Aztecan context. However, the most usual nominalizing suffix in Hawaiian is *-na*; its addition derives a noun from a verb, as in *kaalai* ‘to carve’, *kaalai-na* (with stem vowel shortening) ‘carving’ (Elbert and Pukui 1979:81). A Proto-Central Eastern Polynesian form *\*taRai + \*-na* would yield *tarayna* if borrowed into Gabrielino. In this case, the process of adzing or hewing—the quintessential technique in maritime construction—is the salient feature which determines the borrowing. As in the case of the posited Chumashan borrowing, where a morphologically complex form from Polynesian was borrowed into Chumashan as a monomorphemic form, so here Gabrielino has the morphologically simpler form, confirming the direction of transfer.<sup>10</sup>

This particular borrowing, *tarayna*, has a further implication. The native Chumashan *?axipeneš* ‘dugout canoe’ (lit., ‘a finished piece of woodworking’) is the lexical equivalent of Gabrielino *tarayna*. The Chumash borrowed only a form for ‘sewn-plank canoe’. The Gabrielino, however, appear to have borrowed forms both for that item and for any other kind of boat (i.e., a dugout or perhaps a tule balsa canoe). This may be a case of replacement of an earlier (now lost) lexical item for ‘boat’ with a new one from a Polynesian source, but it could also imply that the Gabrielino at the time of contact had no native woodworking tradition for either dugout or sewn-plank vessels—that is, that they acquired terminology for their entire maritime tradition from Polynesians, and not from the Chumash as has been previously assumed. Since Takic language speakers are relatively late arrivals on the southern California coast, their arrival (from the east) could have taken place at about the same time as, or not long before, the arrival of the Polynesians. Kroeber (as reported by Bright) had suggested that “Shoshonean speakers reached the coast about 500 A.D.” (Bright 1976:190). Bright compares the Proto-Uto-Aztecan forms for 116 basic lexical items with the forms in Gabrielino, Luiseño (another southern California Takic language), Chumash, and Diegueño. He shows that the data “suggest that in each [Uto-Aztecan] language roughly one half of these basic vocabulary items are not directly derived from Proto-Uto-Aztecan. But of these words, a very low percentage can be explained as borrowings from the neighboring Hokan languages” (Bright 1976:199). (At the time Bright wrote this, Chumashan was generally considered to be Hokan, an affiliation that has been questioned since then, as discussed earlier; see, e.g., Kaufman [1988].) Bright concludes:

Since a large number of words in Gabrielino and Luiseño do not derive from either Proto-Uto-Aztecan or from Hokan borrowings, it seems likely that the Uto-Aztecan speakers encountered other Indians speaking a language (or languages) now presumably extinct, and that they lived in the same area long enough to take over a lot of vocabulary. It seems most likely that the moving out to the coast by the Shoshonean speakers was both gradual and peaceful. It is not likely that these people, with their low-level desert economy, could ever have had any military power. [Bright 1976:202]

Whatever the source of other non-Uto-Aztecan lexical items in Gabrielino, it appears that the maritime vocabulary was enhanced by visitors from Polynesia; the two groups may have arrived in California at approximately the same time. Further exploration of this possibility is beyond the intent of the present article, however.

**10. Semantics.** An objection might be raised to assuming that a Polynesian source word meaning ‘wood’, ‘stick, mast, pierce’, or ‘adze, hew, carve’ could reasonably be thought to take on the meaning ‘sewn-plank canoe’ in the recipient language. But this kind of metonymy—specifically, denoting an item by the material of which it is made, by a discrete part of it (*pars pro toto*), or by the

process used to construct it—is common in languages. *Silver* for eating utensils; *plastic* for a credit card; *soda* for fizzy liquid; *iron* for an object used to smooth cloth, a particular type of golf club, a tool (as in *tire iron*) or (in the plural) the shackles prisoners are forced to wear; *redwood* (lexicalized) for timber from the Sequoia tree; *brain* for an exceptionally intelligent person; *suit* for a businessman; *eats* for food; *diggings* for an mining operation, a *dig* for an archaeological site, and even the extreme metaphorical extension of *digs* for lodgings—these are but a few common usages in English, and the process is universal in, and between, human languages. In Hawaiian, for instance, *laaʻau* was used to mean ‘club’, i.e., something made of ‘wood’. (See citations in tables 10 and 11 and section 6 for additional metaphorical usages of each of the Polynesian bases relevant to our analysis.) The visiting Polynesians may well have been referring to the wood they needed to repair or rebuild their boats (see the quotation from Diamond (2005) in n. 8); the Chumash either understood the utterance as designating the craft itself or, more likely, used the term for the material it was made of to refer to the boat. (Compare the use of the name of the mineral substance ‘iron’ for several things which are made from it.) After all, *tomol* is also used in Chumash for types of wood suitable for shaping into planks, and there are other examples of the same type of metonymy, e.g., *wili* means both ‘harpoon’ and ‘palo fierro’ (‘ironwood’), the wood from which harpoons are made. This suggestion gains in force if, as several commentators have recently suggested to us, an impetus for Central Eastern Polynesians to explore further eastward than Hawaii was to find the geographical source of the redwood logs which sometimes washed up on Hawaiian beaches, carried by ocean currents from North America. Inhabitants of islands lacking in this prime building material would certainly want to find a reliable source of it, much as inhabitants of other islands sought out sources of basalt for adzes.<sup>11</sup>

Something similar obtains if the Gabrielino ‘boat’ forms are also borrowed from Polynesian. Gabrielino *tiʻat* would be derived either from the components (small planks) or from a salient feature or portion of a Polynesian watercraft, such as the mast. Likewise, *tarayna* would derive from the resultant product of the adzing process by which the wood for canoes was shaped (similar to the Chumashan *?axipeneš*. These three peoples spoke entirely different languages, and communication could not have been easy or straightforward, but a strong motivation to make the effort needed to understand one another would have been a shared knowledge of, and interest in, the technology of maritime culture.

A final question deserves attention, namely, why the Chumash did not borrow a Central Eastern Polynesian cognate of the widespread Oceanic form *\*waga* ‘large sailing canoe’ or ‘(generic) canoe’ (see Biggs and Clark 1994), the Proto-Polynesian reflex of which is *\*waka*. Ubiquitous as the single general word for ‘canoe’ is, the lexicon associated with the canoe, its construction and sailing, is extensive and detailed, and it varies widely in different parts of Oceania. The difficulty of reconstructing specific associated lexical items is intensified by the effects of continuous migrations throughout the Pacific Basin and by

the mere variety of watercraft in use; as Jeff Marck notes, there was a “fluid prehistoric situation in canoe part terminology” (p.c. 2003; see section 6 for the complete quotation). Ross, Pawley, and Osmond reconstruct “upwards of twenty terms to do with watercraft and seafaring” in Proto-Malayo-Polynesian (1998:208–9), nearly all of which were continued into Proto-Oceanic and Proto-Central Polynesian. In addition there are “around ten terms [which] can be attributed to [Proto-Oceanic] and [Proto-Central Polynesian] that have not so far been reconstructed for [Proto-Malayo-Polynesian]” (1998:208). The authors conclude that, “while these figures are impressive, they probably represent only a small proportion of the total body of terms for canoes and seafaring used by the speech communities in question. In contemporary societies where large sailing canoes remain in use, it is usual for a language to have over one hundred terms for parts of the vessel alone” (Ross, Pawley, and Osmond 1998:208). In the eastern reaches of Oceania, there certainly existed a localized subset of the possible Oceanic canoe terms. Some terms may represent continuations from earlier stages of migration; others would be later innovations. While the particular Polynesian base forms we cite were of wide Oceanic distribution, their particular usages in the forms *\*tumuRaa?au*, *\*taRai-na*, and *\*tia* were part of the localized canoe and voyaging lexicon of Central Eastern Polynesia. In the context of canoe building, the three forms would have designated, respectively, the source of wooden material for the planks themselves, the result of the construction process, and one salient part of the unfamiliar new technology. When the long-distance voyaging period ended, these vocabulary items were either retained but lost direct association with canoe building (the reflexes of *\*tumuRaa?au* becoming ‘tree’, ‘tree trunk’, ‘log’, etc.); retained in connection with boats (*\*tia*, as in the numerous Hawaiian glosses of *kia* cited in table 14); or lost altogether (*\*taRai-na*) (Pukui and Elbert 1986:146). If all this is correct, Chumashan languages and Gabrielino have preserved lexical items which were part of the Proto-Central Eastern Polynesian canoe vocabulary complex. All Central Eastern Polynesian languages have cognates derived from the Proto-Polynesian *\*waka* ‘canoe’. However, in the context in which Polynesian and Chumashan speakers would have interacted, the focus would not have been on the general idea of canoes or boats, but on specific characteristics of the craft and its production. The Chumash did not borrow a Polynesian canoe, they borrowed technology associated with the construction of canoes, and adapted it to their own situation. The borrowed forms reflect this.

**11. Summary of the linguistic data.** To recapitulate, we propose that a borrowed Proto-Central Eastern Polynesian lexical compound *\*tumuRaa?au* was realized as Chumashan *tomol* (and its variants). The form we reconstruct for Proto-Southern Chumash (*\*[tomolo?°]*) shows four points of consonantal correspondence with the proposed Polynesian source form. The Chumashan vowel sequence, although different from that in the Polynesian source, is internally predictable within the Chumashan family. The length of the reconstructed

Chumashan form suggests morphological complexity, but no individual morphemes can be located within the purely Chumashan context, so an explanation must be sought elsewhere. The proposed Polynesian source, on the other hand, is morphologically complex and transparent. Each syllable of the Southern Chumashan form corresponds to one (or possibly two) syllable(s) in the proposed Proto–Central Eastern Polynesian source lexical item, without excluding or rearranging the phones or syllables in order to make them fit a preconceived notion. The relevant base forms for *\*tumuRaa?au* are widespread in Polynesia. In California (in fact, in all of North America), the *tomolo*-type forms occur only in Chumashan, and then only among those groups known to have built plank canoes. Whereas the Polynesian bases are widespread and of divergent (though related) meanings, the Chumashan form is restricted entirely to the plank canoe itself and to a few very transparently derived items related to these boats. We do not propose that the Chumashan and Polynesian languages have a genetic affiliation (i.e., a recoverable common ancestor) nor that they exhibit large-scale lexical borrowing. Rather, we merely propose that a morphologically complex lexical item in the source language for a new (in the target language) and culturally significant technology (plank sewing) was borrowed along with the technology itself, and has remained a part of the Chumashan vocabulary into modern times, likely replacing an earlier Chumashan form. Close internal analysis of Chumashan languages reveals regular processes for transforming a putative Proto– or early Central Eastern Polynesian form into a modern Chumashan one, and any form so borrowed should show regularity of correspondence under similar borrowing conditions. Attestations of the particular compound we adduce as the source of the Chumashan borrowing occur within the Central Eastern Polynesian language group, known to have spread late in the Polynesian exploration period. These points are strong evidence for our assertion that a Polynesian language was the source for the Chumashan form, not the other way around.

Similarly, we suggest that the Gabrielino borrowed *\*tia* and *\*tarai-na*, respectively, to designate the ‘sewn-plank canoe’ and ‘boat’ (in general, though probably specifically a dugout). The source forms were retained in Gabrielino with little change; subsequent development yielded the modern forms *ti?at* (with absolutive suffix and “breaking” of the vowel cluster) and *tarayna*. Where the Chumashan form speaks to the material from which plank canoes were made, the Gabrielino forms specifically referred to the techniques (adzing, piercing, sewing). The usages are, in all three cases, metonymic.

The borrowed forms of *kumara* ‘sweet potato’, evidence for contact between South America and Polynesia, constitute only a single lexical item from what must have been a complex of agricultural words in the South American groups which cultivated the sweet potato. Likewise, with *tomolo*, *ti?at*, and *tarayna*, we have only a few lexical items, not the large array we would ideally wish for. However, William Adelaar and Pieter C. Muysken, well aware of this situation in

South America, nonetheless state that, “apparently, there were sporadic contacts that led to an occasional interchange of words, not to migrations of entire populations that could have brought along their languages” (2004:41). We believe that the same is true for North America.

**12. Afterword.** Given the sailing capabilities of the ancient Polynesians, it would be more surprising if they had not reached the Americas than if they had. That any linguistic evidence at all of that contact remains is first of all a testament to how quickly and thoroughly the new technology was adopted into Chumashan and Gabrielino culture and adapted to local usage, and to the enduring importance it assumed in native Southern California. We can also add our voices to the chorus of those who suggest that, as the number of the world’s languages rapidly diminishes, it is ever more imperative for linguists to recognize the importance of recording as much as they can of as many languages as possible. It is not wise to assume that any language anywhere is completely safe; the world is too unpredictable a place for that. Field linguistics is not an idle pastime. Without our written records of Chumashan, especially those of John P. Harrington, this article would not have been possible at all. Equally, without the assiduous work of generations of linguists and lexicographers and of the Polynesianists whose work resulted in POLLEX, and the Californianists who sifted and sorted Harrington’s hundreds of thousands of pages of field notes, the connection could not have been demonstrated. It is sobering to consider how much of prehistory is forever lost to us because of the accidents of linguistic survival and preservation.

### Notes

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1. Our earlier essay (Jones and Klar 2005) discussed the archaeological evidence for prehistoric Polynesian–North American contact. Due to length considerations, we were required in that earlier piece to limit the linguistics section to a summary; the present article supplies the detailed linguistic evidence and analysis. Readers should consult the two papers together, as the data and our interpretations are part of an essentially seamless, interdisciplinary argument.

2. Throughout this article, we refer to the sewn-plank canoe as *tomolo*, the native Island Chumash term for the boat, and the modern attestation closest to its ancestral pronunciation. Unless otherwise noted, all Chumashan forms cited in this article are from the extensive field notes of John P. Harrington (Mills 1985).

3. At present this Purisimeño form is otherwise unknown, unless it is related to the Santa Cruz Island place name *swaxit* ‘boat place (?)’. Since the Purisimeño are not

known to have constructed plank canoes in historic or prehistoric times, this word may refer to another type of watercraft. Or perhaps it is the (reduplicated) “old Chumash” lexical item for ‘boat’, which has been replaced by *tomolo* forms in the other dialects. The forms *tomol*, *tomol̥* that Harrington obtained were likely borrowed from another Chumashan dialect into Purisimeño in historic times, as *tomolo* and *tomol* were later borrowed into Spanish and English. One of Harrington’s Purisimeño attestations retains the ancestral final vowel, albeit in devoiced form (regular in this dialect).

4. See Applegate (1971:6–8). Low vowel harmony can operate across morpheme boundaries, but is less likely the further from the stem the prefix is. In *?ontomoy*, the prefix is adjacent to a disyllabic stem with identical low vowels, and vowel harmony would operate. It is also worth noting that this form retains a glottalization which seems to have been lost in the simple Ventureño form *tomol*.

5. Pinart’s Cruzeño consultant gave (huimax) as the name of Santa Rosa Island (Heizer 1952:50). Heizer cites a note “in a penciled [Bancroft Library] manuscript (undated) written by James L. Ord and found without comment in Benjamin Hayes’ Scrapbook of the Indians of California” (Heizer 1955:87) in which the “Island of San Miguel was called *Wimat*.” Harrington’s designation for Santa Rosa Island was *wimal*. (See maps in Johnson and McClendon 1999:32, 52.) Perhaps one or both of these islands were places where supplies of redwood driftwood could be obtained.

6. Unless otherwise noted, Polynesian data are taken from Biggs and Clark (1994) (POLLEX). Long vowels are written doubled (e.g., Hawaiian *kaalai*). Only attestations from Eastern Polynesia are given here (with transcriptions slightly modified); POLLEX contains a substantially larger set of cognates from all of Polynesia.

7. Marck’s comments predate our discovery of the form in Rarotongan; in subsequent correspondence (p.c. 2004) he confirmed that his original statement is still valid when Rarotongan is included. Roger Green (p.c. 2004), commenting on the four compounds, agrees that their distribution suggests that the compound is archaic and was in use by 1200 A.D. or before. As the selection of lexical items in any given lexicon or dictionary is fortuitous, we may never know whether or not this compound was more widespread in Polynesia. The attested distribution, however, clearly suggests that the compound was associated with late Polynesian voyaging groups in the eastern Pacific.

8. Jane Hill and Kenneth Hill, in an independent critique (p.c. 2005) of an earlier version of this article, pointed out the following quotation from Jared Diamond on the reception of early European visitors to Easter Island:

When five of Easter’s little two-man leaky canoes paddled out to trade with a French ship anchored off Easter in 1838, its captain reported, “All the natives repeated often and excitedly the word *miru* and became impatient because they saw that we did not understand it: this word is the name of the timber used by Polynesians to make their canoes. This was what they wanted most, and they used every means to make us understand this. . . .” [Diamond 2005:107]

9. Hill and Hill (p.c. 2005) deal with the presence of the glottal stop in *ti?at* by noting that a vowel cluster such as that in Polynesian *\*tia* would not be tolerated in Gabrielino.

10. This form, *tarayna*, was supplied by Pamela Munro (p.c. 2003). Hill and Hill (p.c. 2005) give the item as *taraynxa*. They agree that the form is odd in Gabrielino, and they believe that the *x* is significant. They analyze the form as containing the Uto-Aztecan adjectival suffix *\*-xa*. In a form such as *\*taraynaxa* the penultimate vowel would syncope, resulting in *\*taraynxa*. Either form—with or without a Uto-Aztecan suffix—could be borrowed from a Polynesian language, with *\*taraynxa* being more fully nativized in Gabrielino than is *tarayna*.

11. The authors recently presented this paper at a meeting of the Group in American Indian Languages at the University of California, Berkeley. At that time, an audience member (Andrew Garrett) commented that the specific type of metonymy we suggest in the case of the Polynesian to Chumashan borrowing of *\*tumuRaaʔau* > *\*tomoloʔo*, in which the material of the canoe specifies the canoe itself, while common enough within a language community, is rare in borrowings between radically different languages when the recipient language already has a word for the item in question (in the Chumashan case, 'boat'). The questioner, an historical linguist, could not think of a single instance of what we propose between languages from two discrete families. We think it unlikely that Chumashan would be the only language family in the world that would do this, but a solution occurred to us that both addresses this dilemma and suggests that the Purisimeño form *suasuaax* 'sewn-plank canoe' which Alphonse Pinart recorded (see section 3) and which is otherwise unattested in Chumashan may be a reduplicated form of the generic Chumashan word for 'boat' prior to the advent of plank sewing. There is little doubt that we can reconstitute the stem of this form as *swax*, a simple, unanalyzable, canonically Chumashan form. The word *ʔaxipeneš* 'wooden dugout canoe,' is readily analyzable, and *tomol ʔištapan* 'tule balsa canoe' is a compound, literally, 'tomol made of tules'. The scenario we now propose is that when the Chumash borrowed *\*tumuRaaʔau* > *\*tomoloʔo*, it was in fact borrowed not as the word for the canoe itself, but precisely as the material from which the canoe planks were hewn, and that it became part of a compound, *\*swax ʔitomoloʔo*, as suggested by the model of *tomol ʔištapan* above. Eventually, the modifier in the compound, via the metonymy we suggest, became the word for a 'sewn-plank canoe', and later, perhaps because of the prestige of the *tomolo*, the old word was lost almost everywhere in Chumashan except among the Purisimeño, the only Central Chumashan group who did not build plank canoes. A tule balsa canoe may have been *\*swax ʔištapan* prior to the arrival of the *tomolo*, but the new, prestige word replaced *\*swax* as the sewn-plank craft became the dominant cultural artifact in the culture of the Santa Barbara Channel groups. This makes it even more likely that the place name *swaxił* refers to a boat landing place (see n. 3).

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