

THE RISE AND FALL OF *l* SANDHI IN CALIFORNIA ALGIC¹

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The two Algic languages of California, Wiyot and Yurok, have comparable external sandhi patterns whereby initial *h* surfaces as *l* after certain preverbs. We argue that *h* → *l* sandhi in each language originated by the reanalysis of final *l* in certain preverbs after the presence of *l* had become opaque. The former presence of *l* in these preverbs is shown by other internal evidence and Algonquian comparison. Despite the similarity of the sandhi patterns, we conclude that they do not support the hypothesis that the California languages form a subgroup within Algic.

[KEYWORDS: Algic, Proto-Algonquian, sandhi, Wiyot, Yurok]

1. Introduction. The Algic language family consists of Algonquian and two languages of northwestern California, Wiyot (with no native speakers) and Yurok (with about a dozen native speakers). The family has been of general interest not only because the connection between Algonquian and California Algic lies near the limit of persuasively demonstrable linguistic relatedness (Goddard 1975) but also because Wiyot and Yurok are surprisingly dissimilar for languages spoken in immediate proximity over a thousand miles from their nearest relatives. It is a matter of debate whether they form a subgroup (usually called “Ritwan”) within Algic. The debate so far

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has focused on shared sound changes. In what follows, we identify a new shared pattern of the California Algic languages—a striking external sandhi process. Our main goal is to describe this process and explain its genesis, but we also consider whether it warrants positing a subgroup. In this case, as often in historical linguistics, it is hard to show that common origin is a likelier explanation than independent natural change or contact-induced convergent change.

We present our discussion initially as if the relevant sandhi patterns are independent, treating Yurok in **2** and Wiyot in **3**. In each case we describe the patterns and propose an account of their origin. In **4** we discuss Algonquian comparative data supporting our account, and in **5** we return to subgrouping: Are the Wiyot and Yurok patterns independent or do they constitute evidence for a California subgroup of Algic?

2. Yurok *l* sandhi. Yurok has 11 vowel phonemes (*i ii u uu e o oo a aa r [ə] rr*) and the following consonants: four voiceless stops (*p t k kw [kʷ]*); four glottalized or ejective stops (*p' t' k' k'w*); two affricates (*ch [tʃ] ch'*); six voiced sonorants (*m n l r [ɹ] w y [j]*); six preglottalized sonorants (*'m 'n 'l 'r 'w 'y*); five fricatives (*s [ʂ] hl [h] sh [ʃ] x g*); and two laryngeals [*ʔ*] *h*). Note that double letters are used for long vowels, that the symbol *r* is used for a vowel in the syllable nucleus and a consonant elsewhere, that *hl* is a voiceless lateral fricative, and that *g* varies between a voiced velar fricative [ɣ] and a lax velar stop with very short closure duration.

In present-day Yurok, as described by Robins (1958) and observed in the speech of elders today, certain external sandhi patterns are associated with words or particles that have initial *h*. When an *h*-initial word is medial in a phonological word—in particular, when an *h*-initial verb or particle is phrased prosodically with a preceding particle—the *h* may have a range of surface realizations. If it follows a consonant, it surfaces as *h*; but if it follows a vowel, it may surface either as *y* (if the vowel is *i* or *ii*) or as *g* (otherwise).² These sandhi realizations are not invariably observed, because prosodic phrasing patterns vary, but they are well documented. These patterns are illustrated in (1).

(1) Modern Yurok *h* sandhi

	Position in the Phonological Word	Surface Form	Examples
(1a)	Initial	<i>h</i>	<i>hego'l</i> 'he goes'
(1b)	Postconsonantal	<i>h</i>	<i>kich hego'l</i> 'he just went'

²The *y* realization does not appear in words beginning in *hi*, however; Yurok prohibits word-initial *yi* sequences. The phonological word is the domain of other Yurok phonological processes as well as sandhi (Blevins 2002b).

the speech of his main consultant, Florence Shaughnessy, Robins evidently normalized the texts in favor of the pattern found in her speech.

What is interesting about the earlier pattern is that initial *h* sometimes surfaces as *l* in sandhi. The postconsonantal *h* realization is well documented, as is the *y* realization after *i*, but after a nonhigh vowel two sandhi realizations are documented in the earlier language: *g* and *l*. The *l* sandhi variant appears after several preverbs, while *g* appears elsewhere. As illustrated in (3), the preverbs found with *l* sandhi are locative *'o*, past-time *ma/me*, past-time *'emal/eme*, and conative *tema*; the last two also have variants *'em* and *tem* derived by a low-level apocope process. In addition, as also seen in (3), there is some evidence for a *w* sandhi realization after preverbs ending in *u*.

(3) Earlier Yurok *h* sandhi

	Position in the Phonological Word	Surface Form	Examples	
(3a)	Initial	<i>h</i>	<i>hego'l</i> <i>hohkum-</i>	's/he goes' 'to do'
(3b)	Medial			
	Postconsonantal	<i>h</i>	<i>kich hego'l</i>	's/he's just going'
	After <i>i</i>	<i>y</i>	<i>ki yego'l</i>	's/he will go'
	After <i>u</i>	<i>w</i>	<i>nu wohkum-</i>	'to go and do'
	After other vowels			
	After the preverbs <i>'o, me/ma, 'em(a)'em(e), and tem(a)</i>	<i>l</i>	<i>'o lego'l</i>	's/he goes there'
	Elsewhere	<i>g</i>	<i>kolo gego'l</i>	's/he seems to be going'

These patterns are illustrated from texts in (4)–(9); again, words or morphemes printed in boldface have initial *h* underlyingly.

(4) Yurok *h* initially and medially after consonants

(4a) **Ho** megetohlkw-i-' k'i hlkehl 'o Wechpus.
 PAST take.care.of.-PASS-3SG ART land LOC Weitchpec
 'The land was taken care of at Weitchpec'. (Ia)

(4b) **Ho'owen-s ho** neskwech-ok'w.
Ho'owen-OBV PAST arrive-3SG
 'He came to Ho'owen'. (I4)

(4c) *Kwelekw wit ki mehl hewoloch-e'm.*
 CONJ DEM FUT CIRC **get.well-** 2SG
 'You will get well from that'. (I4)

(5) Yurok *h* → *y* medially after *i*

(5a) *Kwelekw woy n(i) kiti yoole'm k'i*
 CONJ differently LOC NRFUT **go.around:COLL** ART
'oohl.
 people

'There is going to be another race of people'. (I4)

(5b) *Chuhl ni yimrk'ses!*
 well LOC **hurry:IMPV:2SG**

'Well, hurry!' (SW2)

(6) Yurok *h* → *w* medially after *u*

Ki ko'l nu wohkum-ek'.
 FUT something MOT **do-1SG**

'I will go work'. (Sapir 1927:55)

(7) Yurok *h* → *l* medially after four preverbs: locative '*o*', past-time *me/ma* and '*emel'em(a)*', and conative *tem(a)*

(7a) '*O le'm kwelekw nek ki nep-aane'm ko*
 LOC **say:3SG** CONJ PRO.1SG FUT eat-2SG/1SG FUT
'o lewoloch-e'm.
 LOC **get.well-2SG**

'It (a plant) said, "You will eat me. You will recover"'. (I4)

(7b) *Kich nimi wi 'o lo'omah.*
 PERF NEG DEM LOC **make.fire:COLL**

'People can no longer make fire there'. (MM2)

(7c) *Tu' witu mehl mi wo 'o I<eg>ohk-u'*
 CONJ DEM CIRC NEG PAST LOC **do<ITER>-PASS-3SG**
niigem.
 obsidian

'That is why obsidian was not made there'. (X16)

(7d) *Tu' hii, to' kwelekw me leg- o'l mewimor.*
 CONJ *hii* CONJ CONJ PAST **go-3SG** old man

'*Hii*, the old man is the one who was there'. (X16)

(7e) *Tu' witu mehl ho gooluul-i-' k'i*
 CONJ DEM CIRC PAST carry.around-PASS-3SG ART

ha'aag tem lo gooleni.
 rock CON PAST go.around:ATTR:3SG

'That is why he carried the rock around, he was going around in vain'.
 (X16)

(8) Yurok *h* → *l* after locative 'o in place-names (Waterman 1920:234, 238, 240, 249)

<i>ha'aag</i>	'rock'	'o <i>la'aag</i>	'where there is a rock'
<i>heg-</i>	'to go'	'o <i>leg</i>	'where one goes'
<i>ho'mono'</i>	'tan-oak'	'o <i>lo'mono'</i>	'where there is a tan-oak'

(9) Yurok *h* → *g* medially elsewhere (V # __, V ≠ *i*)

(9a) *Tu' wi nini yo gooluulow-i-' k'i*
 CONJ DEM around PAST carry.around-PASS-3SG ART

ha'aag.
 rock

'The rock was being carried around there'.
 (X16)

(9b) *Woomehl kwehl kem woy n(i) soo*
 acorn EMPH EMPH differently LOC thus

gohk-u-'.
 gather-PASS-3SG

'Acorns are gathered differently'.
 (Ia)

Note that the past-time preverb *ho* surfaces in different sandhi contexts as *ho* (4a, 4b, 7e), *yo* (9a), and *lo* (7e) but never itself triggers *l* sandhi, nor does the preverb *soo* in (9b).

In present-day Yurok, *l* sandhi and the rare *w* sandhi have been eliminated in favor of *g* and *y* sandhi. In particular, the four preverbs that once triggered *l* sandhi now give rise to surface *g* like other vowel-final preverbs: a simple case of leveling. Apart from place-names, as in (8), traces of *l* sandhi remain only in a few fossilized forms, notably the collective plural stem *le'm-* associated with the verb *heg-* 'go'. Since *-eg-* is the iterative infix, the underlying verb root is simply *h-*. Its expected collective plural stem in combination with the collective suffix *-e'm-* would be **he'm-*; in this prototypical motion verb, the stem *le'm-* was apparently generalized from sandhi with the locative preverb 'o.

How can the earlier Yurok sandhi patterns be explained? Cross-linguistically, regular consonant epenthesis shows three recurrent patterns: epenthetic glides occur adjacent to homorganic vowels; epenthetic laryngeals occur at prosodic boundaries; and intervocalically, other epenthetic consonants occur only where the same consonant was lost historically in other contexts.⁵ Well-known examples of this last pattern include *r* sandhi in English dialects of Britain and New England (*the idea-r-is*), *l* sandhi in the English dialect of Bristol (*in India-l-and-China*), and French *t* sandhi (*chante-t-il*).⁶ The consonant in each case was lost historically in word-final position when not followed by a vowel within the same phrase. Subsequently, surface *C/∅* alternations resulting from historical consonant loss were reinterpreted as instances of consonant insertion, giving rise to phonetically unmotivated surface sound patterns.

We suggest that all three of these cross-linguistic patterns of consonant epenthesis can be seen in Yurok. First, glide epenthesis after high vowels (*h* → *w* and *h* → *y* sandhi) has a transparent phonetic explanation: the glide arose in $V_1 \# V_2$ transitions, where V_1 was a high vowel. Second, Yurok initial *h* itself appears to have originated via laryngeal epenthesis. It is well established that Wiyot and Yurok *h*-initial words systematically correspond to vowel-initial words in Proto-Algonquian (Berman 1984); cf., e.g., PA **e-* ‘say so’ vs. Wiyot *h-* ‘to say to’ and Yurok *h-* in *hek* ‘I say’ (irregular by-form of *hegolek* ‘I say’). While this could in principle be interpreted by positing either initial Proto-Algonquian *h* loss or initial Wiyot and Yurok *h* epenthesis, several considerations favor the epenthesis account. One is that Yurok *h*-initial nouns occurring with pronominal prefixes show surface forms without any trace of initial *h*. Examples with the first-person prefix *'ne-* (*'ne-luhl* ‘my/our mouth’, *'ne-lin* ‘my/our eyes’, etc.) are given in (10); inalienable noun stems (as in 10a–10c) never occur without prefixes.

(10) Yurok possessive prefixation, *'ne-* → *'n-* ‘my/our’

	Stem	Unprefixed	Prefixed	
(10a)	<i>-ahpew</i>	—	<i>'nahpew</i>	‘my wife’
(10b)	<i>-aawech</i>	—	<i>'naawech</i>	‘my back’
(10c)	<i>-iphl</i>	—	<i>'niphl</i>	‘my tongue’
(10d)	<i>huuksoh</i>	<i>huuksoh</i>	<i>'nuuksoh</i>	‘my/our children’

⁵ See Blevins (forthcoming). We use “epenthesis” as a cover term for segment addition in any position in a word, whether initially (what is traditionally called “prothesis”), medially, or finally.

⁶ For the Bristol English pattern, see Wakelin (1986:31). In French, the third-person singular *-t* ending was lost by 1150 in first conjugation verbs like *chanter* ‘sing’; in other conjugations *-t* was preserved in interrogative forms, from which it was later reintroduced analogically to create first-conjugation interrogative forms like *chante-t-il* with analogical *-t-* (Nyrop 1924:171 and Pope 1952:338–39).

(10e)	<i>hooloh</i>	<i>hooloh</i>	<i>'nooloh</i>	'my/our basket(s)'
(10f)	<i>hekwch</i>	<i>hekwch</i>	<i>'nekwch</i>	'my/our eating basket(s), cup(s)'

These facts are readily explained if prefixed forms predate *h* epenthesis, which therefore did not affect them. If *h*-initial forms always existed, it is unclear how prefixed forms without *h* would have arisen.⁷

Yurok initial *h* and sandhi *w* and *y* thus reflect two of the three cross-linguistically documented sources of consonant epenthesis. We suggest that sandhi *l* reflects the third, and that it originated by the reinterpretation of a word-final lateral consonant.

There are basically only two Yurok morphemes that triggered *l* sandhi: the locative preverb *'o* and the final element of the related preverbs *me/ma*, *'eme/em(a)*, and *tem(a)*. Yurok *a* and *e* are etymologically identical (Blevins 2003), having become differentiated in different prosodic contexts, and the second element of *'eme/ema* is identical to *me/ma*; note that both are past-time preverbs. Moreover, the historical source of Yurok glottal stop is **t* (Berman 1982*b* and Blevins 2002*a*); the **t > '* change too seems to have been prosodically conditioned. Conative *tema* is thus etymologically identical to past-time *'ema*; the latter presumably reflects semantic bleaching or generalization. For explanatory purposes, the triggers of Yurok *l* sandhi thus boil down to the preverbs *(te)ma* and *'o*. Our hypothesis is that the *l* was originally part of these preverbs and was reinterpreted as the onset of a following word in suitable prosodic contexts.

There is good evidence that both of the forms that triggered *l* sandhi originally contained final laterals. For conative *tema*, there is a by-form *temaloh* 'for a long time, in vain' with the *l* intact. For locative *'o*, the most direct comparison is with its Wiyot cognate *to* (discussed below); we suggest that both reflect an earlier California Algic form **tol*. Within Yurok itself, evidence of two types points to an original final lateral. First, an apparently

⁷ The Yurok pattern is similar to that found in Algonquian and Wiyot for a small class of dependent nouns, e.g., PA **ni:wa* 'my wife' (Aubin 1975:114 and Hewson 1993:142), Wiyot *wiwa'l* 'his wife'. A competing pattern, regular in Wiyot and Algonquian, inserts *-t-* between prefixes and underlyingly vowel-initial bases (so **ne-t-*, **ke-t-*, **we-t-*); this **-t-* is the historical source of the glottalization of the Yurok prefixes (Berman 1982*a*). The historical relation between the two patterns is unclear, but in describing both of them it is easier to assume forms without initial *h*.

To be precise about our account of *h* epenthesis, we assume that this was originally restricted to initial position in the PHONOLOGICAL word and was later generalized to initial position in the MORPHOLOGICAL word. If Proulx (2005*a*:196–97) were correct in reconstructing *h* epenthesis for Proto-Algonquian, we would assume that Proto-Algic (and perhaps Proto-Algonquian) epenthesis was limited to phonological word boundaries. What is crucial for our account is that, at the relevant stage, *h* was not inserted in VC # V sequences within phonological words (e.g., at the preverb–verb juncture).

related root with a final lateral is found in verb stems like *'ohl-pey-* 'eat from, bite' < *'eat at' (cf. *ten-pey-* 'eat much' with *ten-* 'much').⁸ Second, Yurok has a productive nominal locative suffix *-ohl* (e.g., *kewoyohl* from *kewoy* 'burden basket', *looginohl* from *loogin* 'fish dam', *tektoohl* from *tektoh* 'log').

Though the evolution of a case-marking suffix from a preverb might seem odd, it is unsurprising in context. Yurok has a set of particles that surface in two distinct syntactic frames: as prepositions, appearing postverbally; and as preverbs. These include the "circumstantial" particle *mehl* 'about, because, by, from with' in addition to *so* 'toward' and locative *'o* itself. When such particles are used as prepositions their nominal arguments follow them, but when they are used as preverbs nominal arguments precede them. We quote several examples in (11).

(11) Yurok N + preverb + V

(11a) *Pishkaahl mehl lohpi'hl.*
 sea:LOC CIRC be.cloudy.3SG

'The clouds are gathering **from the sea**'.

(R 104)

(11b) *Yo' ha'aag mehl srmrt-' ch'uch'ish.*
 PRO stone CIRC kill-3SG bird

'He killed the bird **with a stone**'.

(R 104)

(11c) *Choolekh so sloych-ok'.*
 downhill DIR descend-1SG

'I climbed **down the hill**'.

(R 105)

(11d) *K'i tokus kem pishkaahl wi' 'o hunow-oni.*
 ART pelican also sea:LOC EMPH LOC grow-ATTR:3PL

'Pelicans also grow up **in the sea**'.

(AS1)

We suggest that the preverb **tol* has two diachronic reflexes based on original *NPV* sequences: it is the source of the preverb *'o*, but it has also been grammaticalized in locative nouns (**N tol > N 'ol > N-ohl*) that can now be used in any position in the sentence.⁹

⁸ The root *'ohl-* is thus equivalent in morphological status to its Algonquian cognate, the relative root **taθ-*, as discussed below.

⁹ The loss of a suffix-initial glottal stop is phonologically irregular; we suggest that this might reflect influence from the nominal locative suffix *-ik*. In any case, there is evidence for an earlier suffix form *-'ohl*: several irregular locative forms have a synchronically unexpected glottal stop, including *ch'isha'ohl* (*ch'ishah* 'dog') rather than expected †*ch'ishaahl* and *'yonche'ehl* ('*yonch-* 'boat') rather than expected †*'yonchohl* or the like.

To summarize so far, there are good typological and etymological reasons to believe that the Yurok preverbs triggering *l* sandhi once contained final *l*. But why did sandhi arise at all? In the English and French cases mentioned above, *C/∅* alternations were created by the differential treatment of word-final consonants, which were lost before consonant-initial words but re-syllabified into the onset of following vowel-initial words. The resulting opaque alternations led to the emergence of sandhi processes in these languages. What comparable opacity might have led to Yurok *l* sandhi?

Several phonological processes interacted to produce the relevant opacity. Two processes that are evident synchronically serve to eliminate coda *l* in certain contexts: a general process of degemination (Robins 1958:9) and an *ln > nn* assimilation process variably attested in older Yurok texts (Berman 2001:1030). Together these processes would have eliminated final *l* before words beginning with *l* or *n*. A final process contributing to the opacity of sandhi *l* was a prehistoric coda *l > hl* change. Though no longer transparently active, this change has left many traces. One is seen in the synchronic distribution of Yurok *l* and *hl*. In some contexts their distribution is nearly complementary. Prevocally in syllable onsets, both *l* and (in fewer distinct morphemes) *hl* occur; word-finally after vowels, *l* is extremely rare except in words that are related to other words that are longer (where the *l* is medial), have final *hl*, or have final *r* (via diminutive sound symbolism). In other contexts, as seen in (12), only *hl* occurs; Yurok has no *lC* clusters (except in the transparently reduplicated form *mulmul* ‘wild currant’) and no coda *Cl* clusters.

(12) Yurok phonological contexts where only *hl* (not *l*) appears

(12a) Initial onset (preconsonantal)

<i>hlkrr.wrs</i>	‘salamander’
<i>hlkwr.trkws</i>	‘frog’
<i>hlme.yo.wo.ni</i>	‘mean’
<i>hlpr.grp</i>	‘flounder (fish)’

(12b) Medial coda

<i>kehl.kem</i>	‘red clay, floor’
<i>kehl.pe’n</i>	‘it (cloth) is thick’
<i>myaahl.ke.pok’</i>	‘I jump, I jump at’
<i>te.no.nihl.kwok’</i>	‘I pay a lot for’

(12c) Final coda (postconsonantal)

<i>’niphl</i>	‘my tongue’
<i>’yekwhl</i>	‘maggot, worm’

These patterns are explained by assuming a prehistoric *l* > *hl* change in coda and preconsonantal position. Further evidence of a coda *l* > *hl* change is seen in the alternations in (13)–(15). In (13), we cite alternations involving several patterns of locative noun formation: the productive pattern in (13a) and unproductive formations in (13b). In all cases, final *hl* surfaces as *l* before a vowel-initial locative suffix.¹⁰

(13) Yurok *l/hl* alternations in locative nouns

	Base Noun	Locative	
(13a)	<i>me'yehl</i>	'stinging nettle'	<i>me'yel-ohl</i>
	<i>'ne-luhl</i>	'my mouth'	<i>'ne-lul-ohl</i>
(13b)	<i>hlkehl</i>	'land, ground'	<i>hlkel-i, hlkel-ik</i>
	<i>'we-hlp'ohl</i>	'her vagina'	<i>'we-hlp'ol-ik</i>

In (14) we cite several alternations found in reduplication, and in (15) we cite a few additional miscellaneous examples.

(14) Yurok *l/hl* alternations in reduplication

(14a)	<i>lehlkoo'</i>	'to fall, be heard (of noises)'	< * <i>le-lk-</i>
	<i>lehlken-</i>	'to throw, to scatter'	< * <i>le-lk-en-</i> ; cf. * <i>lek-</i> in <i>lekol-</i> 'fall down'
(14b)	<i>tehltelun-</i>	'to be branchy, twiggy'	< * <i>tel-telun-</i>
(14c)	<i>t'ohl'tolihl</i>	'to be muddy'; cf. <i>t'ohl'tohl</i>	'mud, swampy ground'

(15) Miscellaneous related forms with *l/hl* correspondence

(15a)	<i>hlkohl</i>	'mud'	<i>hlkoolon</i>	'mud'
(15b)	<i>mehl</i>	'with'	<i>megehl-</i>	'to accompany < *be with' (iterative infix <i>-eg-</i>)
(15c)	<i>mehlkwehl</i>	'cane'	<i>mehlkwelew</i>	'use a cane'
(15d)	<i>'oohl</i>	'person'	<i>'oolekwoh</i>	'people'
(15e)	<i>'weskwehl</i>	'kin, body, flesh'	<i>'weskwelon</i>	'body, value'
(15f)	<i>pehl</i>	'big, deep' (of snow)	<i>pelin</i>	'big'

Given all these facts, it is plausible to assume that Yurok sandhi *l* arose by the reanalysis of a coda *l* in two sets of preverbs. Opacity was an essential precondition, onset *l* was reinterpreted as a sandhi variant, and *hl*-final preverb alternants were simply lost.

¹⁰ For *'ne-lulohl* in (13a), Howard Berman reminds us of the existence of a competing locative *'ne-luhlik*. Either the medial *l* in *'ne-lulohl* reflects an analogical extension of the productive pattern of *-ohl* locatives or the medial *hl* in *'ne-luhlik* reflects leveling from unsuffixed *'ne-luhl*.

3. Wiyot *l* sandhi. Wiyot has five vowel phonemes (*i u e o a* [ə]) and the following consonants: four voiceless stops (*p t k kʷ*); four aspirated stops (*pʰ tʰ kʰ kʷʰ*); four affricates (*c* [ts] *č* [tʃ] *cʰ čʰ*); three voiceless fricatives (*s ʃ ʃ̥* [ʃ]); three voiced continuants (*b* [β] *d* [r] *g* [ɣ]); six voiced sonorants (*m n l r* [ɹ] *w y* [j]); and two laryngeals (*ʔ h*). Like Yurok, Wiyot shows a consistent sandhi pattern involving words and particles with initial *h*. When these are phrase-medial after *i* or *e*, they are pronounced with initial *y*; elsewhere, medially, they are pronounced with initial *l*. The general pattern is set out in (16).

(16) Wiyot *h* sandhi

	Position in the Phonological Word	Surface Form	Example	
(16a)	Initial	<i>h</i>	<i>haʔlabi</i>	‘I dance’
(16b)	After <i>i, e</i>	<i>y</i>	<i>ki yaʔlabiʔ</i>	‘They never danced’
(16c)	Elsewhere	<i>l</i>	<i>pitaba laʔlabiʔ</i>	‘Only he dances’

The patterns in (16) are illustrated with text examples in (17)–(19); words printed in boldface have initial *h* underlyingly. (Glosses follow the conventions of Teeter and Nichols 1993.)

(17) Wiyot *h* phrase-initially

Harawakhúʔnad, *bò.*
3.DF.gets.completely.dark all.the.way.to

‘It got completely dark’ (TN 59)

(18) Wiyot *h* → *y* / {*i, e*} # —

(18a) *Bas hi yákʷtad.*
 fire then **IMP.SUBJ.fixes.3.OBJ**

‘Then one builds a fire’. (TN 130)

(18b) *Khokadówiwil, ki yaʔlabiʔ.*
 woman EMPH.NEG **3.DF.dances**

‘The married women never danced’. (TN 153)

(18c) *Kitko té yokab.*
 gonna finally **1.SG.does.3.OBJ**

‘I’m going to try to do it’. (TN 27)

(18d) *Tokukuce yutágadokw.*
 DUR:again:a.while **there.is.sitting.down.to.rest**

‘They sit down and rest a while’. (TN 156)

(19) Wiyot *h* → *l* in other medial positions: after vowels other than *i*, *e*;
and after consonants

(19a) *Kitko kowa láp.*
gonna INCH **3.DF.is.cooked**
'They are almost cooked'. (TN 131)

(19b) *Wé'sog, to lalabéwu?lawuy.*
five DUR **3.IN.danced.for.so.many.nights**
'They danced five nights'. (TN 153)

(19c) *Kókwawa?n kitko kíl láp.*
there.is.knowing.by.3DF.of.3OBJ gonna INCH **3.DF.is.cooked**
'When they know that they are completely cooked . . .'. (TN 131)

In Wiyot, as in Yurok, the sandhi domain seems to be the phonological word; Reichard (1925) regularly transcribes the preverb + verb complex as a single word.

Our account of Wiyot *l* sandhi is similar to our account of its Yurok counterpart in 2 above, except that the Wiyot process has been generalized so that it is no longer restricted to etymologically *l*-final preverbs. (Similar generalizations underlie the English and French cases mentioned above.) In this account, Wiyot and twentieth-century Yurok moved in opposite directions from the same basic starting point, with Wiyot extending *l* sandhi and Yurok eliminating it.

For Wiyot, as for Yurok, we would reconstruct originally vowel-initial words corresponding to Algonquian vowel-initial words, with a later initial *h*-epenthesis. The major difference between our accounts of Wiyot and Yurok *l* sandhi concerns the motivation of the change. For Yurok, we argued that alternations involving preverb-final *l* were made opaque by degemination, assimilation, and a coda *l* > *hl* change. It is unclear if these changes also occurred in Wiyot, given comparisons like Yurok *me-luhl* 'someone's mouth' = Wiyot *balul* 'mouth' and Yurok *chkwohl* = Wiyot *cwol* 'steelhead' (*tswa-l* in Reichard [1925:134]). What other processes might have led to opacity in Wiyot?

A possible answer to this question emerges from another Wiyot alternation involving *l* at the preverb + verb boundary. When a preverb ending in *o* is followed by *b* or *w*, the sequence *la* is inserted at the boundary. An exhaustive list of preverbs showing this pattern is given in (20); note that this list includes the preverb *to*, whose Yurok cognate 'o is also implicated in *l* sandhi.

(20) Wiyot preverbs with epenthetic final *-la* (Teeter 1964)

	Basic Form	Before <i>h</i> or <i>w</i>	Gloss
(20a)	<i>bo</i>	<i>bola</i>	'go to do'
(20b)	<i>ho</i>	<i>hola</i>	'around'
(20c)	<i>ho</i>	<i>hola</i>	locative
(20d)	<i>to</i>	<i>tola</i>	durative
(20e)	<i>kado</i>	<i>kadola</i>	Negative 1
(20f)	<i>kho</i>	<i>khola</i>	Negative 2
(20g)	<i>ko</i>	<i>kola</i>	Negative 3
(20h)	<i>talo</i>	<i>talola</i>	'around' (= <i>ta</i> + <i>ho</i>)
(20i)	<i>tokowalo</i>	<i>tokowalola</i>	Dur + Inch + around (= <i>to</i> + <i>kowa</i> + <i>ho</i>)

A typical pair is *ho toli?yak* 'on my ship' vs. *hola wápti?yam* 'on your teeth' (Teeter 1964:42, 82). In (21) we cite several additional pairs from texts.

(21) Wiyot preverbs with epenthetic final *-la*

- (21a) (i) **Bo** *t^hálimił.*
go.to.do 3.DF.talks.to.3.OBJ
 'She came to talk to her'. (TN 16)
- (ii) *Tidalúl* **bola** *bétu?mił.*
 Table.Bluff.Rancheria **go.to.do** 3.DF.gets.3.OBJ
 'He's going to Table Bluff Rancheria to get him'. (TN 92)
- (21b) (i) **To** *nítwił.*
DUR 3.DF.closes.eyes
 'She kept her eyes closed'. (TN 9)
- (ii) **Tola** *wóyadapši?r.*
DUR there.is.gambling.all.night
 'They gamble all night'. (TN 167)
- (21c) (i) **Kado** *kokwáwu?m.*
NEG.1 1.SUBJ.knows.3.OBJ
 'I don't know about it'. (TN 40)
- (ii) **Kadóla** *bicada?.*
NEG.1 not.asleep
 'I am not asleep'. (TN 9)

- (21d) (i) **K^ho** yówi? yo?
 NEG.2 is.not.ashamed Q
 ‘Aren’t you ashamed?’ (TN 11)
- (ii) **K^hola** bílasa?
 NEG.2 not.fear.2.OBJ
 ‘I’m not afraid of you’. (TN 63)
- (21e) (i) **Ko** t^hálimit.
 NEG.3 3.DF.talks.to.3.OBJ
 ‘He won’t talk to her’. (TN 2)
- (ii) **Kola** walú?, bíwi?
 NEG.3 not.see.3OBJ fish
 ‘There was no fish’. (TN 24)
- (21f) (i) **Talo** pičabéřitato?^r.
 around there.is.going.barefooted
 ‘They go around barefooted’. (TN 141)
- (ii) **Tówadakada?l** tokwun, talola wí malutwił.
 sibling.of.3 3.PL around 3.DF.floats.with
 ‘The siblings floated around with it’. (TN 34)

The alternations in (20) and (21) are obviously unusual from a cross-linguistic point of view. A clue about their origin can be found in general Wiyot phonotactics: *lb* and *lw* sequences are prohibited. When either sequence occurs word-internally, it is broken up by an epenthetic vowel *a*; for example, *wal-* ‘see’ plus *-w* gives *walaw-* with epenthetic *a* (Teeter 1964:27). We suggest that this same epenthesis is responsible for the alternations in (20) and (21). In this account, one or more of the preverbs in (20) originally ended in *l*, and *a* was inserted before words beginning with *b* or *w*. Of course, before vowel-initial words, final *l* was resyllabified into the following word. Thus, for example, the preverb **tol* (= Yurok ‘*o*’) would have had three surface variants: **tola* before words beginning with *b* or *w*; **to # IV* before vowel-initial words; and **tol* elsewhere. The existence of **tola*, and after initial *h*-epenthesis the coexistence of *l*-initial and *h*-initial variants of formerly vowel-initial words, made the whole pattern opaque; from this starting point sandhi was generalized.

4. The origin of an Algonquian relative root. Our argument in **2** and **3** above rests on evidence internal to Wiyot and Yurok. Plausible as this argument is on its own, it requires positing ancestral forms whose reconstruction would ideally be supported by further comparative data. For example, is there any Algonquian evidence for a final lateral in our reconstructed pre-verb **tol* (Wiyot *to(la)*, Yurok *'o*)?

We propose that **tol* has a cognate in the Proto-Algonquian relative root **taθ-* ‘there’. This new etymology is supported both formally and functionally. Yurok glottal stop reflects earlier **t*, as noted in **2**, and Wiyot *t* and Yurok *'* < **t* correspond to PA **t*; Wiyot and Yurok *o* likewise correspond to PA **a* (Berman 1982a; 1984; 1990 and Garrett 2001). The only irregularity in the proposed comparison is the correspondence CA **l* = PA **θ*.¹¹ There may be one or two other examples of this correspondence, but there is evidence against it, and we suggest the following simpler account. Goddard (1982:22, n. 24) has observed that “a set of [Proto-Algonquian] roots had an alternation between PA **θ* and PA **l* in their last consonants,” citing the examples in (22a)–(22d). To this dossier we add the example in (22e) and contend that California Algic languages preserve the cognate of **tal*.¹²

(22) Proto-Algonquian root-final *θ/l* alternation (*a–d* from Goddard)

(22a) **mi:θ-l/*mi:ʔl-* ‘hairy’

(22b) **mo:θ-l/*mo:l-* ‘suspected’

(22c) **mya:θ-l/*mya:l-* ‘quasi, not exactly’

(22d) **weθ-l/*wel-* ‘well’

(22e) **taθ-l/*tal-* ‘there’

The semantic and syntactic match between CA **tol* and PA **taθ-* is also excellent. To begin with Algonquian, Goddard (2002:49) defines relative roots as “initials or stems that bear a valence for an oblique complement, which is sometimes optional.” In addition to PA **taθ-* itself, relative roots

¹¹ The phonetic value of PA **θ* is debated; candidates include [ʃ] and [θ]. We find the argument for [ʃ] more convincing than does Goddard (1994); the fricative [ʃ] differs in both manner and voicing from the approximant [l], and a [ʃ] interpretation of PA **θ* is consistent with the conclusion (from their behavior in mutation contexts) that PA **l* and **θ* “differed in some feature in addition to voicing” (Goddard 1994:205). Note that Goddard (1994:190, 204) presents evidence from early spellings of Algonquian languages that PA **l* may have been an *r*-like sound.

¹² Ives Goddard points out to us that this expected root **tal-* is actually attested in a stem **tal-* ‘have (animate object) (somewhere)’ and that the root **taθ-* too has a homophonous stem ‘have (inanimate object) (somewhere)’; the two stems underlie Atikamekw *tar-* and *tat-* (Béland 1978:577–78), and similar pairs (initial = transitive stem) are well attested (Goddard 1990b:456–61). As an alternative account, Howard Berman suggests to us that formations with two distinct suffixes might underlie **tal-* vs. **taθ-*; cf. Pentland (1998).

cited by Bloomfield (1946:120, corrected by Goddard 1997:36) include **aθkw-* ‘so far’, **aθpiiht-* ‘to such intensity’, **eθ-* ‘thither, thus’, **tahθ-* ‘so many’, and **went-* ‘from there, therefore’. In (23) we quote three Nishnaabemwin sentences with relative roots (Valentine 2001:745–46); in each case the relative root (glossed ‘there’ or ‘from’ for convenience) serves syntactically to license a locative argument.¹³

(23) Nishnaabemwin sentences with relative roots

(23a) *Mnishenyng* *ngiidaami*.
 island.LOC we.were.staying.**there**
 ‘We (excl.) camped on an island’.

(23b) *Doopwining* *ngiindinaan*.
 table.LOC I.got.INANIM.SG.**from**
 ‘I picked it up from the table’.

(23c) *Oodenaang* *dnakii*
 Detroit.LOC ANIM.SG.lives.**there**
 ‘He lives in Detroit’.

The example in (23c) contains the Nishnaabemwin reflex of PA **tahθ-*. Its Yurok cognate, the locative preverb ‘*o*’, occurs in precisely comparable contexts such as those in (7b), (7c), (11d) above, and in (24).¹⁴

(24) Yurok locative ‘*o*’
Kwenomet-ish ‘*o* *chy<eg>uuk’w*.
 sweathouse.exit- OBV **LOC** sit<ITER>:3SG
 ‘He always sat in front of the sweathouse exit’. (I3)

The Wiyot preverb *to* is called “durative” by Teeter; this function diverges from an original locative function. However, in their cross-linguistic survey of the evolution of aspectual markers, Bybee et al. (1994:129) write: “The

¹³ The sentences in (23) are from texts by Andrew Medler, originally edited and published by Bloomfield (1958), and re-edited by Valentine. Nishnaabemwin is also known as Ojibwe or Chippewa.

¹⁴ Yurok also shows a generalizing extension of this usage. Robins (1958:102) writes that locative preverbs “link the event referred to by the verb with features of the context or environment. Their reference may be local . . . or metaphorical. . . . Frequently they have an anaphoric reference to something already mentioned.” We take this as a natural development from an original strictly spatial function, and we would not be surprised to find similar patterns in Algonquian languages.

majority of progressive forms in our database derive from expressions involving locative elements,” a pattern said to be a “worldwide trend.” We take this as support that an original locative function for this preverb is plausible.¹⁵

Even in Wiyot, *to* retains a locative function in at least one construction, also paralleled in Yurok and Algonquian. This is seen in the formation of nominal expressions meaning ‘where X happens’, illustrated in (25).

(25) Wiyot *to* nominals

(25a) *tokadókwsuʔy* ‘the hitching post’ < *kadókwsuy*, ‘3-IN fastens, ties, hitches, 3-OBJ’

(25b) *tokalabatkak* ‘where things go over’ < *kalabaʔn* ‘one goes over’

(25c) *tobaloʔn* ‘where it is built’ < *balod* ‘3-DF is built’

In Yurok, this construction is seen in (26) and in place-names like those in (8) above; examples of both types are extremely common.

(26) Yurok *’o* nominals

(26a) *’o schegep* ‘(place) where one lands’ < *schep’oo* ‘land from a boat’

(26b) *’o slegoych* ‘a declivity . . .’ < *sloych-* ‘descend’

A comparable Algonquian example is quoted from Nishnaabemwin in (27).

(27) Nishnaabemwin participial construction from PA **taθ-* (Valentine 2001:723)

Gye go mii giimiin’gooyaang rooms waadnizyaang.
and EMPH then we.were.given rooms **where**.we.will.stay

‘And we were then given rooms in which we were to stay’.

In this example the participle *waadnizyaang* ‘where we will stay’, in which the relative root takes the form *-dn-*, is dependent on the noun *rooms*.

In short, the Wiyot, Yurok, and Algonquian contexts are comparable not only generally but in some details. We take this as evidence that Wiyot *to*, Yurok *’o*, and PA **taθ-* are indeed cognate. No language preserves the original syntax and meaning fully intact, but the basic profile is clear. Underlying the Algic formations seen above was a particle which licensed locative expressions; in the California languages it remains a particle, with some further

¹⁵ Developments comparable to the Wiyot one are found in some Algonquian languages, where the reflex of PA **taθ-* can be used without an oblique argument to express progressive aspect. Goddard (1990a:45) cites a Meskwaki example *wi-h=taši wi-ke-či peseše-ya-ni* ‘for me to be listening carefully’ in which progressive meaning arises from the preverb *taši* ‘there’ (related to the root **taθ-*).

semantic developments, and it has been grammaticalized as a root in Algonquian. More generally, we suggest that the inventory of Wiyot and Yurok preverbs may be a fruitful place to look for cognates of other Algonquian relative roots.¹⁶

5. Conclusion. In this paper we have described an unusual pair of sandhi processes in the two California Almic languages. In Yurok, as documented early in the twentieth century, otherwise *h*-initial words surfaced with initial *l* after certain preverbs; we argued that these preverbs formerly ended in a voiced lateral. Sandhi *l* was gradually eliminated over the twentieth century in Yurok, but in Wiyot an originally comparable *h* → *l* sandhi process became general, occurring after all preverbs ending in segments other than *i* and *e*. In both California Almic languages, then, preverb-final laterals have given rise to initial sandhi *l* in originally vowel-initial words.

As a common feature of Wiyot and Yurok, the development of *l* sandhi might suggest a shared innovation. It could be seen to support the “Ritwan” hypothesis, according to which Wiyot and Yurok form a subgroup within Almic.¹⁷ Yet we believe that this conclusion is unwarranted. An *h* → *l* sandhi process might seem to be precisely the sort of “nontrivial” innovation often said to be diagnostic for subgrouping, but here it is a natural development given the phonological profiles of earlier stages of Wiyot and Yurok. Each language had three properties favoring *C/∅* sandhi alternations: a rigid consonant-initial syllable structure; fluidity of prosodic word formation, with resyllabification across syntactic word boundaries; and sound patterns resulting in partial opacity of corresponding syllable-initial and syllable-final laterals. All three properties are characteristic of languages with similar *C/∅* sandhi alternations, such as English dialects with intrusive *r* or *l*. Intrusive *l* in Bristol is surely independent from intrusive *r* in other dialects of Britain and New England (which may in turn also be partly independent); similarly, independent changes cannot be excluded for the sandhi processes we have analyzed here.¹⁸

Despite the similarity of these *l* sandhi processes, we conclude that they do not constitute evidence for a Wiyot–Yurok subgroup within Almic. Just as

¹⁶ The California Almic languages also have roots that act like Algonquian relative roots; a Yurok example is *son-* ‘thus’ and a Wiyot example is *hal-* ‘so many’ in (19*b*) above. The latter would match the Algonquian relative root **eθ-* ‘thither, thus’ formally (just like CA **rəl* = PA **raθ-*) but not semantically.

¹⁷ For different views on “Ritwan,” see Berman (1982*a*; 1984; 1990), Garrett (2004), and Proulx (1984; 2004; 2005*b*).

¹⁸ Cf. Blust (1990) on independent word-initial *y* epentheses before *a* in a range of Austronesian languages. The word-initial context suggests that these changes may also have originated in sandhi.

shared morphological idiosyncrasies remain the strongest evidence for Algic itself, so the strongest evidence for a “Ritwan” subgroup would emerge from shared morphological innovations. Ultimately, we believe, only a deeper understanding of Wiyot and Yurok morphology will illuminate the prehistoric relationships between these two languages of northwestern California and provide a clearer picture of the Algic language family as a whole.

APPENDIX A

YUROK TEXTS CITED

- AS1 = Alice Spott, “Ethnobiological Interview with William Bright,” ca. 1962, recorded and transcribed by William Bright
- I3 = Domingo of Weitchpec, “Wohpekumew’s Flute Song,” 1906, edited by Kroeber (1911:424)
- I4 = Domingo of Weitchpec, “Buzzard’s Medicine,” June 3, 1907, edited by Andrew Garrett (in preparation) based on the wax cylinder recording (Hearst Museum 24–985) and A. L. Kroeber’s transcript (Yurok field notebook 75, pp. 19–31) and English translation (Kroeber 1976:313–14)
- Ia = Domingo of Weitchpec, “Hunting Lands Belonging to Weitchpec,” June 3, 1907, edited by Andrew Garrett (in preparation) based on the wax cylinder recording (Hearst Museum 24–987) and A. L. Kroeber’s transcript (Yurok field notebook 74, pp. 2–13)
- LA16–1 = Florence Shaughnessy, “The Mourning Dove,” 1951, edited by R. H. Robins (1958:155–57)
- LA16–7 = Florence Shaughnessy, “The Young Man from Serper,” 1951, edited by R. H. Robins (1958:164–71)
- MM2 = Mary Marshall, “Death Purification Medicine,” edited by Andrew Garrett (in preparation) based on A. L. Kroeber’s transcript (Yurok field notebook 66, pp. 16–42a)
- SW2 = Susie of Weitchpec, “Second Menstruation Medicine,” June 23, 1902, edited by Andrew Garrett (in preparation) based on the wax cylinder recording (Hearst Museum 24–548) and A. L. Kroeber’s transcript (Yurok field notebook 42, pp. 42rev–47rev)
- X16 = Captain Spott, “The Obsidian Cliff at Rek’woy,” June 17, 1907, edited by Andrew Garrett (in preparation) based on the wax cylinder recording (Hearst Museum 24–1031) and A. L. Kroeber’s transcript (Yurok field notebook 75, pp. 1–8) and English translation (Kroeber 1976:435–36)

REFERENCES

- AUBIN, GEORGE F. 1975. A Proto-Algonquian Dictionary. Canadian Ethnology Service Paper no. 29. Ottawa: National Museums of Canada.
- BÉLAND, JEAN PIERRE. 1978. Atikamekw morphology and lexicon. Ph.D. dissertation, University of California, Berkeley.
- BERMAN, HOWARD. 1982a. Two phonological innovations in Ritwan. *IJAL* 48:412–20.

- _____. 1982*b*. A supplement to Robins's Yurok-English lexicon. *IJAL* 48:197-222.
- _____. 1984. Proto-Algonquian-Ritwan verbal roots. *IJAL* 50:335-42.
- _____. 1990. New Algonquian-Ritwan cognate sets. *IJAL* 56:431-34.
- _____, ed. 2001. Yurok texts. *Collected Works of Edward Sapir*, vol. 14, Northwest California Linguistics, ed. Victor K. Golla and Sean O'Neill, pp. 1015-38. Berlin: de Gruyter.
- BLEVINS, JULIETTE. 2002*a*. Notes on sources of Yurok glottalized consonants. *Proceedings of the Meeting of the Hokan-Penutian Workshop, Survey of California and Other Indian Languages, Report 11*, pp. 1-18. Berkeley, Calif.: Department of Linguistics, University of California.
- _____. 2002*b*. Prosodic words in Yurok. Ms., Department of Linguistics, Max Planck Institute for Evolutionary Anthropology, Leipzig.
- _____. 2003. One case of contrast evolution in the Yurok vowel system. *IJAL* 69:135-50.
- _____. Forthcoming. Consonant epenthesis: Natural and unnatural histories. *Explaining Linguistic Universals: Historical Convergence and Universal Grammar*, ed. Jeff Good. Oxford: Oxford University Press.
- BLOOMFIELD, LEONARD. 1946. Algonquian. *Linguistic Structures of Native America*, ed. Cornelius Osgood, pp. 85-129. New York: Viking Fund.
- _____. 1958. Eastern Ojibwa: Grammar, Texts, and Word List. Ed. C. Hockett. Ann Arbor: University of Michigan Press.
- BLUST, ROBERT. 1990. Three recurrent changes in Oceanic languages. *Pacific Island Languages: Essays in Honour of G. B. Milner*, ed. J. H. C. S. Davidson, pp. 7-28. London: School of Oriental and African Studies, University of London.
- BYBEE, JOAN; REVERE PERKINS; AND WILLIAM PAGLIUCA. 1994. *The Evolution of Grammar: Tense, Aspect, and Modality in the Languages of the World*. Chicago: University of Chicago Press.
- EXLINE, JESSIE. [n.d.] *Yurok Dictionary*. [Eureka, Calif.:] Yurok Tribe.
- GARRETT, ANDREW. 2001. Reduplication and infixation in Yurok: Morphology, semantics, and diachrony. *IJAL* 67:264-312.
- _____. 2004. Proto-Algonquian *š and "Ritwan": A rejoinder. *Algonquian and Iroquoian Linguistics* 29:50-51.
- GODDARD, IVES. 1975. Algonquian, Wiyot, and Yurok: Proving a distant genetic relationship. *Linguistics and Anthropology: In Honor of C. F. Voegelin*, ed. M. Dale Kinkade, Kenneth L. Hale, and Oswald Werner, pp. 249-62. Lisse: Peter de Ridder Press.
- _____. 1982. The historical phonology of Munsee. *IJAL* 48:16-48.
- _____. 1990*a*. Paradigmatic relationships. *Proceedings of the Sixteenth Annual Meeting of the Berkeley Linguistics Society, February 16-19, 1990, Special Session on General Topics in American Indian Linguistics*, ed. David J. Costa, pp. 39-50. Berkeley, Calif.: Berkeley Linguistics Society.
- _____. 1990*b*. Primary and secondary stem derivation in Algonquian. *IJAL* 56:449-83.
- _____. 1994. The west-to-east cline in Algonquian dialectology. *Actes du vingt-cinquième Congrès des algonquinistes*, ed. William Cowan, pp. 187-211. Ottawa: Carleton University.
- _____. 1997. Addenda and corrigenda for Leonard Bloomfield, "Algonquian" (1946). *Algonquian and Iroquoian Linguistics* 22:31-36.
- _____. 2002. Explaining the double reflexes of word-initial high short vowels in Fox. *Diachronica* 19:43-80.
- HEWSON, JOHN. 1993. *A Computer-Generated Dictionary of Proto-Algonquian*. Canadian Ethnology Service, Mercury Series, no. 125. Hull, Quebec: Canadian Museum of Civilization.
- KROEBER, A. L. 1911. The languages of the coast of California north of San Francisco. *University of California Publications in American Archaeology and Ethnology* 9:14-26.
- _____. 1976. *Yurok Myths*. Berkeley and Los Angeles: University of California Press.

- NYROP, K. 1924. *Grammaire historique de la langue française*. Vol. 2: Morphologie. 2nd ed. Copenhagen: Gyldendalske Boghandel.
- PENTLAND, DAVID H. 1998. Cree *asikan* 'sock': Menominee *asēkan* 'blade of grass'. *IJAL* 64:394–97.
- POPE, M. K. 1952. *From Latin to Modern French with Especial Consideration of Anglo-Norman: Phonology and Morphology*. 2nd ed. Manchester: Manchester University Press.
- PROULX, PAUL. 1984. Proto-Algic I: Phonological sketch. *IJAL* 50:165–207.
- _____. 2004. Proto Algonquian *š and the Ritwan hypothesis. *Algonquian and Iroquoian Linguistics* 29:30–32.
- _____. 2005a. Reduplication in Proto-Algonquian and Proto-Central-Algonquian. *IJAL* 71:193–214.
- _____. 2005b. Ritwan again: Some notes on theory, method, and presentation. *Algonquian and Iroquoian Linguistics* 30:13–15.
- REICHARD, GLADYS A. 1925. Wiyot grammar and texts. *University of California Publications in American Archaeology and Ethnology* 22:1–215.
- ROBINS, R. H. 1958. *The Yurok Language: Grammar, Texts, Lexicon*. UCPL 15. Berkeley: University of California Press.
- SAPIR, EDWARD. 1927. Yurok field notes. Ms. 30(A7.2), American Philosophical Society, Philadelphia.
- TEETER, KARL V. 1964. *The Wiyot Language*. UCPL 37. Berkeley: University of California Press.
- TEETER, KARL V., AND JOHN D. NICHOLS. 1993. *Wiyot Handbook*. 2 vols. *Algonquian and Iroquoian Linguistics, Memoirs* 10 and 11. Winnipeg.
- VALENTINE, J. RANDOLPH 2001. *Nishnaabemwin Reference Grammar*. Toronto: University of Toronto Press.
- WAKELIN, MARTYN F. 1986. *The Southwest of England. Varieties of English Around the World, Text Series, vol. 5*. Amsterdam: John Benjamins.
- WATERMAN, T. T. 1920. Yurok geography. *University of California Publications in American Archaeology and Ethnology* 16:177–314.