

# Glottalization in Alosea

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This paper considers a range of issues in the analysis of glottalization in Alosea, an extinct language of the Oregon coast — philological questions in ascertaining the presence of this feature, and aspects of its phonological distribution. Data are mainly from the large corpora of Leo Frachtenberg (=F, collected 1910 and 1913) and Melville Jacobs (=J, collected 1935), but also from smaller corpora by J.P. Harrington (=H), Edward Sapir, and others. Phonemizations follow Buckley (2007), but some phonemic and morphological analysis is tentative.

## Ejectives

The available sources have uneven reliability in the notation of glottalization in its various forms. For ejective obstruents, the more accurate transcriptions by J mark a superset of the ejectives found in F's notes, so we can generally assume that F missed the distinction (quite frequently); sometimes other transcribers, such as H, have data to confirm these analyses.

(1)		/sut'aʔst/ 'five'	/ʎaq'ayst/ 'six'	/sawt'st/ 'ten'
	Milhau 1856	tsóot-hatz	klick-í-es-ter	psow-er-tés-ter
	Dorsey 1884	cú-t'ăct'	çlûk'-k'a'ict'	ca'-u-t'ïct'
	Sapir 1906	s·üt!ā <sup>re</sup> tst	Lqaist	ca'utEst
	Frachtenberg 1910	sūdā <sup>a</sup> st, sūtā <sup>a</sup> st	ʎaqāi'st	saū'tist
	Drucker 1934	sū'tahst	Lq'hai:st	sautust'
	Jacobs 1935	cu't'a''tst, cu <sup>(o)</sup> t'a <sup>(o)</sup> tct	ʎəq'a'ict, ʎaq'a'ict	ca'uD.CD, ca'ut'.CD
	Harrington 1941	su't'â'ts't'	ʎa'k'âyst'	sá-wt'ïst'
(2)		/həyk'/ 'almost'	/ʎuk'/ 'head'	/pick'm/ 'sun, day'
	Milhau 1856			péech-ko; peetz-kúm-
	Dorsey 1884	haink'q'	çlú-k'ï	pí-tck'ÿ, pí-tck'ÿm
	Sapir 1906		Lōk <sup>y</sup> !I, ʎōk <sup>y</sup> !I	
	Frachtenberg 1910	ha <sup>n</sup> k·	Lōk, ʎōk·	pī'tskum
	Drucker 1934		Lóq <sup>h</sup>	p'ī':tck'um
	Jacobs 1935	ha'ik̚', ha'ik̚'	ʎu'k̚'	Bi'tck'um; p'i'tcGum-
	Harrington 1941	h̚q̚·yk <sup>y</sup> '	ʎó·k <sup>y</sup> ̚, ʎó·k <sup>y</sup> '	bí'tsk'òm, pí-tʃk'òm

In cases where J and H disagree, it is less certain whether to posit glottalization.

(3)		/q'umuq <sup>(o)</sup> t/ 'blue [?]'	/k <sup>(o)</sup> mʎ/ 'maternal aunt'
	Dorsey 1884		k'yü-mūçl'
	Sapir 1906		
	Frachtenberg 1910	qōmū'qut	k-i'miʎ
	Drucker 1934		kimiL, kīmī'L
	Jacobs 1935	q'u·mu'q <sup>w</sup> t	k̚'imə'ʎ
	Harrington 1941	K'o·mó'kwâ·lt', K <sup>w</sup> o·mó'k'w̚t'	k <sup>y</sup> emma'ʎ; g <sup>y</sup> ama'ʎ, g <sup>y</sup> ema'ʎ

## Glottalization of sonorants

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Evaluation of transcriptions for sonorants is more difficult, since there is less consistency even in J's notes, but there are sufficiently clear examples to be confident of this phonemic category, if not always its assignment to specific lexical items.

(4)		/ḫam'/ 'one'	/q'al't/ 'man'	
	<i>Milhau 1856</i>	khump	kcka'h-el-tay	
	<i>Dorsey 1884</i>	qa'm, qûm'	k'alt	
	<i>Sapir 1906</i>	xam, xam <sup>e</sup>	k!ält	
	<i>Frachtenberg 1910</i>	xam, xam <sup>e</sup>	qā'alt	
	<i>Drucker 1934</i>	xûm'	q'a <sup>a</sup> lt'	
	<i>Jacobs 1935</i>	ḫa'm, ḫa'm'	q'a <sup>m</sup> lt, q'a'lt	
	<i>Harrington 1941</i>	xa'm'	K'âtlt'	
(5)		/ʔq'l'it-, ʔq'l't-/ 'be sick'		
	<i>Dorsey 1884</i>	çk'ûllít-		
	<i>Sapir 1906</i>	ʔqalét-		
	<i>Frachtenberg 1910</i>	Lqalit-, Lqalt-	Lqaldiyaï's 'sickness'	Lqalhi'sxam 'sickness'
	<i>Drucker 1934</i>			ʔqulisxám 'disease object'
	<i>Jacobs 1935</i>	ʔq'ali-'D-, ʔq'alD-		ʔq'ali-'cḫam 'pain power'
	<i>Harrington 1941</i>		ʔK'al'diya'ys 'sickness'	ʔK'a'l'li'sxam 'pain'

The glottalized /m'/ in 'one' is especially well documented. Dorsey's use of two *l*'s in a language that apparently disallows geminates suggests something unusual; compare also H's notation *l'l* suggesting laryngealization during the sonorant.

## Glottal stops

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F sometimes indicates glottal stop in final and preconsonantal position. Such transcriptions are generally supported by others.

(6)		/ʔyaʔ/	/waʔ, waʔna/	/maʔtun/
		'not'	'none, without'	'daughter-in-law'
	<i>Dorsey 1884</i>	çli-yí'	wă	ma'-tʃfun
	<i>Frachtenberg 1910</i>	ʔLiya <sup>e</sup>	wa <sup>e</sup> , wa <sup>e</sup> na'	ma <sup>e</sup> tûn
	<i>Drucker 1934</i>	Lī:ya''		maton, matōn
	<i>Jacobs 1935</i>	ʔiyé', ʔiya''	wa'na'	ma''Du'n
	<i>Harrington 1941</i>		wa'na'	ma''ḏu'n

Glottal stops transcribed before a final stop (especially a coronal) may not be distinctive (Jacobs 1935b); cf. allophonic glottalization of coda /t/ in English. There may also be active alternations between /t/ and simple glottal stop in the coda ('all'), and an association with ejectives ('body' versus 'older brother'), but more research on this point is necessary.

(7)	/hamstit/ 'all'	/hit/ 'body'	/hat'/ 'older brother'
<i>Milhau 1856</i>	hum sté tah		ha'ht
<i>Dorsey 1884</i>		hīt	ha'tç, ha't
<i>Sapir 1906</i>	hamstît, hamstî <sup>ε</sup> , hamstî-		
<i>Frachtenberg 1910</i>	hamstî <sup>ε</sup> , hamstî <sup>ε</sup> t-	hīt	hā <sup>ε</sup> t!
<i>Drucker 1934</i>			hat', ha:t'
<i>Jacobs 1935</i>	hamcDi't, hamcDi'(°)t	hi't	ha't'
<i>Harrington 1941</i>	hamstí't'	hí't'	há't'

One important gap in F's transcription is that he does not write a glottal stop intervocally. It appears from comparisons with J and H that whenever F has two vowels adjacent without a glide between them, then we can assume a glottal stop. See also /sut'a?ct/ 'five' above.

(8)	/k'a?aysa/ 'all right'	/p'u?uya/ 'bucket'	/p'u?ut/ 'full'
<i>Frachtenberg 1910</i>	k·eai'sa	puū'ya <sup>ε</sup>	puū't
<i>Drucker 1934</i>		p!ō <sup>o</sup> ya'	
<i>Jacobs 1935</i>	ḡa'a'ica	p'u'u''ya	
<i>Harrington 1941</i>	k <sup>y</sup> 'a'â·yσα		pu'ú·t

These further examples compare just F and J, with 'horn' to illustrate simple glides.

(9)	/k'ayas-iyu/ 'horn'	/tqay?alt-x/ 'want'	/ʔu?-uy-nx/ 'skinned it'	/ʔ-ʔaltx <sup>w</sup> t-iyu-sx/ 'have grown up'
	k·aya'siyū	tqai'a'ltx	luūi'nx	L'aʔtux <sup>u</sup> tī'yusx
	k'εye'ciyu	tçai'ε'ltx	ʔu'wi(°)nx	ʔi'a'ʔDuçDiyucx

An especially common example is the transitive irrealis suffix, which has the basic form -V?V with the vowel determined by the root; F's -a'a, -i'i, -u'u correspond to J's -a'a, -i'i, -u'u.

It appears that all words in Alsea begin with a consonant, so that those transcribed with an initial vowel actually have a glottal stop. Only H marks initial glottals with any consistency, but in prefixed and other forms we can see evidence of the glottal stop from F and J. In some cases it may be inserted by rule, for instance *yac* 'live' → *yc* → *ic* → *?ic* found in 'house'.

(10)	/ʔay-ay(-m)/ 'went, (will) go'	/-ʔay-/ 'house'	/ʔic-ay-s/ 'house'
<i>Sapir 1906</i>	aiém		iđj·éc·
<i>Frachtenberg 1910</i>	ayai', ayai'm	māā'yax	itsai's
<i>Jacobs 1935</i>	aya'i, aya'im	çin'aya'im	iĐJa'ic
<i>Harrington 1941</i>	'ayāy		'itʃa'yʃ

Glosses for the middle column: *mā-ā'y-al-x* 'kept going', *ç-in* 'ay-a'i-m 'I will go'. J also shows a glottal stop at the beginning of 'house' in certain phrases such as *ic* 'iĐJa'ic 'in the house'.

## Morphologically triggered glottalization

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In the majority of diminutives recorded by J, he marks glottalization (laryngealization) on a vowel or sonorant (or both); this never applies to an obstruent (Buckley 2005).

(11)	ḳ'i <sup>(o)</sup> p	'grandchild'	ḳ'i'i'B-au	'little grandchild (5 or 6)'
	Da <sup>(o)</sup> p	'wing'	Da''aB-au	'little wing'
	tGu'tc	'niece'	tGu''uDJ-au	'little niece'
	Bayə'm	'fox'	Ba'a'yə'm-au	'little fox'
	ma'Dəl	'pheasant'	ma'a'Də <sup>(o)</sup> l-au	'little pheasant'
	ca'yu	'basket (?)'	ca'a'yu'w-au	'tiny basket'

Note that forms such as *Da<sup>(o)</sup>p* appear to reflect allophonic pre-glottalization of final stops, rather than glottalization of the vowel. This feature disappears when the diminutive suffix is added and the stop becomes intervocalic.

Glottalization is also found with the durative suffix, similarly /aw/. Glottalization in both contexts is attested in some Salish languages, suggesting an areal influence.

(12)	ʔi-ya'h-ayu	'he's grown big now'	ya'a'h-au	'he is growing'
	q'i'n-Dəx̣	'he died'	q'i'i'n-au	'he is dying'
	ʔu'n-Dəx̣	'it's high tide'	ʔu'u'n-au	'the tide is coming in'
	tcal-ε'cal	'the fire went out'	DJa'a'l-au	'the fire is going out'

There is a small bit of evidence that F noted some glottalization in these contexts; recall that adjacent vowel letters (such as *iā*, excluding diphthongs such as *ai*) typically imply a glottal stop in his transcriptions.

(13)	pīyā'x <sup>a</sup> x	'is hiding'	l-pīā'x-a <sup>u</sup> x	'in the act of hiding'
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## Ejective dissimilation

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Glottalization as a phonologically active feature in the language can be seen in the results of dissimilation in some instances of (mainly fossilized) reduplication (Buckley 2008). The evidence comes primarily from J, but is confirmed by all sources except F in the case of 'hand'.

(14)		/tam-t'm/ 'hand'
	Dorsey 1884	tām't'ûm-, ta'mt'ûm
	Sapir 1906	dā'mt!ûm
	Frachtenberg 1910	tā'mtEm
	Drucker 1934	damt'um
	Jacobs 1935	Da'mt'əm
	Harrington 1941	ḍá·mt'àm, dá·mt'àm, tá·mt'àm

Other reduplications from J show a similar pattern, although the documentation is more limited and not without complications. For example, the form 'fish backbone' is an apparent exception.

(15)	/ɬpax-ɬp'ax/	ɬba·xɬp'ax	'scapula; shoulder bone at back'
	/q <sup>w</sup> ɨc-q <sup>w</sup> c'/	qwi <sup>m</sup> tcq <sup>w</sup> tc'	'brains'
	/ck <sup>w</sup> ul-ck <sup>w</sup> l-/	tcgu·'ltck'wlaw	'hoop game'
	/qat-qt'-/	qa'a'tqat'a	'chain'
	/t'ul-t'l/	t'u·'lt'əl	'fish backbone'

This dissimilation process is reminiscent of Grassman's Law in Greek and Sanskrit, which deletes aspiration from the first of two aspirated consonants.

### Glottal stop epenthesis in hiatus?

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The final case requires some background. An alternation is found with Alsea stems containing a medial sonorant adjacent to the vowel (Buckley 2007). The full stem has two realizations, named according to syllable weight: LIGHT, where the sonorant precedes the vowel (schematically CCVC), and HEAVY, where the sonorant follows it (CVCC).

(16)	/slax <sup>w</sup> -sa-nx/	'was melting it'	/salx <sup>w</sup> -t/	'melt it!'
	/ɬq'l'it-x/	'is sick'	/ɬq'il't-ay-mc/	'(don't) hurt me!'
	/tmus-x/	'is closed'	/tums-a/	'door'
	/culaq'n-tx/	'is packing'	/cualq'n-t/	'pack it!'
	/pyax-x/	'is hiding'	/payx-x/	'hide!'

When two unlike glides or vowels become adjacent as the result of this metathesis, they are generally both preserved, with a transitional homorganic glide. (17 is from J, 18 from F.)

(17)	/culaq'n-tx/	'is packing'	/cualq'n-t/	'pack it!'
	DJu·la'q'an-txa		DJuwa'lq'an-t	
(18)	/pyax-x/	'is hiding'	/payx-x/	'hide!'
	pīyā'x- <sup>a</sup> x		pa <sup>i</sup> 'x-ax	

It's less clear, however, what happens when two identical vowels are brought together, as in the underlying stem /yalas/ 'return home' where one expects the immediate outcome /yaals/.

(19)	/yalas-/	/yaʔals-/ ??
<i>Frachtenberg 1910</i>	yalā's-al	yā <sup>a</sup> 'ls-əx, yā <sup>a</sup> 'ls-əx
<i>Jacobs 1935</i>	—	ya <sup>(ʔ)</sup> a'lc-aʔ
(20)	/mʌnat-/	/mʌʔant-/ ??
<i>Frachtenberg 1910</i>	mɛʌnā't-xasx	m <sup>ɛ</sup> Lā <sup>a</sup> 'nt-xəsx <sup>a</sup> i
<i>Jacobs 1935</i>	məla <sup>(ʔ)</sup> na'D-aʔ, məla'na'd-aʔ	məʌa <sup>(ʔ)</sup> a'nD-ət, məʌa'and-ət

The notations used by both sources suggest a glottal element adjacent to the stem vowel, which may correspond to epenthesis as in *yaals* → *yaʔals*. The evidence for possible glottalization in such heavy forms is best for a few verbs containing repeated /a/ vowels. For high vowels,

which have glide counterparts, the derivation may consist of  $i\ddot{i} \rightarrow iy \rightarrow i$  and  $uu \rightarrow uw \rightarrow u$ , changes that find some support in other contexts.

However, the often tenuous transcription of glottalization makes interpretation difficult. For example, F has  $y\bar{a}^{\prime}ls-\acute{a}x$  and simple  $y\bar{a}^{\prime}ls-\acute{a}x$  for ‘go home!’; and forms such as  $y\bar{a}^{\prime}ls-\acute{a}i^{\prime}$  ‘started home’ (short /yals/, not the result of metathesis) and  $m\acute{a}la^{(o)}na^{\prime}D-\acute{a}x$  ‘is hidden’ (a light form) suggest that the laryngealization may actually originate in the sonorant. The available transcriptions will make satisfactory resolution of some questions impossible.

**Notation.** The following segments are assumed: /p p' t t' k k' k'w k''w q q' q'w q''w c c' s λ' ʃ x x' x''w h h'w ʔ m m' n n' l l' w w' y y' a i u ą ı ɥ/. In some transcriptions *c* is roughly [š], but reflects the phonemic category /s/; when the symbol *c* appears in phonemic slashes here it is the affricate /ts/. J often writes the small capitals [B D DJ G Ğ] for “lenis” versions of /p t c k q/, especially between two vowels or other voiced segments. Another noncontrastive notation is the fronting of velars such as [k̟ x̟], which correspond to the phonemes /k x/. J and H use the apostrophe ['] to mark glottalization generally, whether on a vowel, sonorant, or ejective consonant, or an independent glottal stop. By contrast, [ʰ] marks aspiration or simple release.

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