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This file is made available for ease of dissemination. Because the original word processing document from 1988 contained a phonetic font that was no longer usable, this file has been reformatted with a Unicode font.

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Note, however, that the analysis of Alsea phonemic contrasts has advanced since this paper was published. The most thorough subsequent presentation is in a forthcoming paper for *IJAL* (likely to appear in 2007) which includes this quote:

“For more discussion of most of these issues in phonemicization, see Buckley (1988); that paper is more conservative and retains certain features, such as fronted velars and vowel length, that have been abandoned here as the result of further study.”

From: Eugene Buckley, to appear. Vowel-sonorant metathesis in Alsea. *International Journal of American Linguistics*. The manuscript can be downloaded from the author's website:

ftp://babel.ling.upenn.edu/papers/faculty/gene_buckley/Alsea_metathesis.pdf

Reconstructing the Sounds of Alsea

EUGENE BUCKLEY

University of California, Berkeley

0. Introduction

This paper represents a first attempt to reconstruct the phonemic system of Alsea, a Penutian language of the Oregon coast which has been extinct for nearly forty years. It is hoped that the results will be useful for historical and areal comparisons, as well as enabling more precise analysis of the phonology and morphology of Alsea. I proceed in two ways: after discussing the relative value of the philological sources available and what previous work there is on Alsea phonemes, I compare the transcriptions of the various sources for the lower numerals and decide on the probable consensus form; I then turn to more specific consideration of issues raised there, and of further problems as well. Finally I give a proposed phonemic inventory, based tentatively on the results of the discussion.¹

1. Summary of Field Work

The following table gives the names of all individuals who have collected data in Alsea, along with their consultants and what materials they collected.

<i>Year</i>	<i>Researcher</i>	<i>Consultant(s)</i>	<i>Materials produced</i>
1846	Horatio Hale	?	word list
1856	John P. Milhau	?	word list
1884	J. Owen Dorsey	US Grant Ben Yaquina John William Smith William Jackson	words and phrases
1900	Livingston Farrand	US Grant Alsea George	texts
1906	Edward Sapir	William Smith	words and short sentences
1910 1913	Leo J. Frachtenberg	William Smith Thomas Jackson	texts, lexicon, grammar
1934	Philip Drucker	Leona Ludson John Albert	words
1935	Melville Jacobs	John Albert	extensive slip file, grammatical notes
1941	John P. Harrington	John Albert	words 66 aluminum discs

¹ I would like to thank the following people for their comments after my presentation of the paper: Howard Berman, Victor Golla, Dale Kinkade, Larry Morgan, Mike Nichols, Bill Seaburg, and Ken Whistler. Completion of this paper was supported under a National Science Foundation Graduate Fellowship.

I will now discuss the advantages and disadvantages of each of these sources, concentrating on the trustworthiness of the transcriptions.

1.1. Hale and Milhau

The first recorded word list was, according to Gatschet (1879), compiled by Horatio Hale in 1846. Gatschet cites 19 Yaquina words from that list, but I have been unable to find a copy of the original. Since the available words are so few, not available in their original form, and taken from the poorly attested Yaquina dialect, I will not use Hale's work here.²

Another early word list was collected by John P. Milhau in 1856, and consists of 166 items on a standardized form prepared by the Smithsonian Institution. They seem to be from the Alsea proper dialect, although this is not stated explicitly on the form. Milhau apparently had little linguistic training; his transcription is based on English orthography and is therefore somewhat unclear, though certain regularities can be observed.

The anonymous consultants who are responsible for the word lists collected by Hale and Milhau may have been among those who worked for later researchers, but there does not seem to be any information to confirm this. Since they supplied the vocabulary lists years before the move to Siletz Reservation in 1875 was to destroy traditional life, there can be no doubt that these consultants were excellent speakers of Alsea - probably significantly less influenced by Chinook Jargon than the other Indians on whom we base our present knowledge of Alsea, and perhaps totally ignorant of English. Unfortunately, the phonetic transcription that preserves their pronunciation was not clearly defined, so Milhau's data will not be given great weight here.

1.2. Dorsey

The next linguistic researcher to work with the Alsea was J. Owen Dorsey, who came to Siletz in 1884. He collected a significant amount of vocabulary and some verb paradigms in both dialects, though primarily Alsea, using the Powell (1880) schedule. Dorsey obviously had more training than Milhau, and he uses the phonetic alphabet set forth by Powell in his introduction to the use of the schedule. Certain diacritics are not explained, and some important sounds, such as uvulars and glottal stops, are absent from the alphabet, though he does show syllable boundaries which gives clues to the latter. Overall the data is fairly clear and much more extensive than in the previous lists. Dorsey's lists are more comprehensive and also include many annotations and related items that he added to Powell's. There are also some examples of grammatical processes such as subject marking on the verb, and noun possession.

All consultants from this point on had moved from their native territory to Siletz, where they surely spoke Alsea less often, since the common language of the reservation was Chinook Jargon. Dorsey's consultants, however, had been on the reservation only nine years and probably still conversed in the language among themselves with considerable frequency. According to a census in 1885 (Whitlow, n.d.), the five men who worked with Dorsey were all fairly young, ranging in age from 24 to 49.³ Even the youngest had reached his teenage years

² Gatschet cites some of Milhau's words in a more regularly phonetic form which is not entirely satisfactory, suggesting that he may have also modified the words from Hale's list in potentially unhelpful ways.

³ Specifically: William Jackson, 24; U.S. Grant, 28; (Alsea) Ben, 37; Yaquina John, 44; and William Smith, 49.

before the move to the reservation, so we can safely assume that all were fully competent speakers whose first language was Alsea.⁴

1.3. Farrand

The first connected texts were collected by Livingston Farrand in 1900, also at Siletz. Five of the texts are in Alsea and four in English only. Farrand did not record the distinction between the velar and uvular stops, but otherwise his transcriptions seem adequate. He never published the texts, but gave his notes to Leo J. Frachtenberg, who edited them for inclusion with his own (see below).

By the time Farrand arrived on the scene, the Alsea had been on the reservation for a quarter-century. There is no indication that they were teaching their children the traditional language; it is likely that parents primarily used Chinook Jargon or even English with their children (Kent 1973). Nevertheless, a number of older speakers of Alsea were still alive, and they probably used the language when they were talking to each other. Farrand's main consultant, U.S. Grant, was 44, and had worked with Dorsey as well. Alsea George, 65 at the time, had spent more than half his lifetime in traditional Alsea culture, which explains why Frachtenberg could comment that he was 'the older and more reliable informant; this is shown by the completeness and clearness of the stories obtained from him' (1920:9). Unfortunately, however, Alsea George gave only a few words in his native language; his four texts are in English.

1.4. Sapir

Edward Sapir spent a short time at Siletz in 1906 and recorded a few pages of short sentences and phrases and the numerals one to ten. Sapir was one of the best field linguists of his time and his transcriptions, though few in number, can generally be considered very reliable. However, his skill is offset by his short exposure to the language, which may lessen the accuracy of his notes. Sapir's consultant was William Smith, who is discussed below.

1.5. Frachtenberg

Frachtenberg did most of his work at Siletz in 1910, with a shorter visit in 1913. He was apparently trained by Franz Boas, since he refers to him as 'my teacher' (1922a:303). He collected more Alsea data than any other linguist, and is the only one to have published anything more than a handful of words, including a book of texts (1920) with an extensive two-way lexicon, and a journal article (1917) with four additional short texts. He wrote a grammar as well (1918), but it was never published. Although Frachtenberg is the main source of information on Alsea, his work presents some problems. He does not clearly distinguish the two dialects. His transcriptions give the appearance of being rigorously phonetic, but in reality seem to have been somewhat regularized without the benefit of modern phonemic theory. His explanations of the grammar are useful mainly for distinguishing morphemes. Many of these shortcomings are due to the relatively undeveloped state of linguistics at the time, but the problems are real nonetheless.

William Smith was one of the most important of all the consultants. Even back in 1884, he was the oldest of Dorsey's group, and was in his seventies when he

⁴ In fact, all the other consultants for Alsea (except perhaps Leona Ludson) were born before William Jackson, Dorsey's youngest consultant; thus all would have learned the language before coming to Siletz.

worked with Sapir and Frachtenberg. I have seen no comments by Sapir about Smith, but Frachtenberg had this to say:

In spite of his willingness to work, William Smith was not so reliable an informant as I should have liked. He was comparatively an old man, possessed of an exceedingly poor memory, and having but an imperfect command of English. His chief difficulties seemed to be an inability to speak slowly, to relate facts clearly and in consecutive order, and to state definitely the subjects and objects of a given action (1920:9-10).

Notice that Frachtenberg's complaints do not touch on knowledge of the language per se, but refer to storytelling ability and usefulness in the role of consultant. There is no reason to doubt that he was a perfectly fluent speaker of the language. However, if he was somewhat forgetful and unclear in his presentation, we might expect his narrative to be somewhat disjointed at times, but that should not affect the present study.

Thomas Jackson, Frachtenberg's other consultant, was in his late forties. He 'related facts briefly but clearly and to the point', and his 'knowledge of English made him a valuable factor in the rendition of the native texts obtained from William Smith'; but his relative youth meant that 'he was not thoroughly familiar with all the traditions of his tribe' (Frachtenberg 1920:10). Jackson was young enough to have learned English well and retained his mental alertness, but old enough to have grown up speaking Alsea; apparently he represented a comfortable balance between the two qualities. Frachtenberg writes elsewhere that Smith's 'knowledge of the Alsea language surpassed by far that possessed by Jackson' (1918:10). Without a comprehensive comparison of their texts it is difficult to decide what he means by this, though given his emphasis on cultural knowledge he may be referring to the same relative ignorance of myths and folklore mentioned above. In addition, it is possible that Smith was comfortable with a greater number of unusual words and constructions than Jackson, who nonetheless was perfectly at ease with the core of the language.

Frachtenberg also compared his consultants to those of Farrand, whose work he edited:

From considerations of a linguistic character, as well as from the point of view of subject matter, the material collected by Doctor Farrand forms the more important part of the present collection. His texts contain archaic forms, and are told in a style and language of which neither of my informants seemed to be capable (1920:11).

It is not clear what sort of archaisms and style are found in the older texts which are not present in Frachtenberg's own. In casual comparisons I have not noticed any striking differences between the two sets of texts, but a more thorough analysis might reveal interesting patterns.⁵ At any rate, this generational difference should have no real effect on the phonemics.

1.6. Drucker

Philip Drucker, an anthropologist, worked with two Alsea Indians in 1934.⁶ His main interest was in the culture, but he gathered native words for many practices and culture items and published them in his ethnographic description (1939). His

⁵ One difference might be found in Grant's use of the habitual in storytelling, but this matter requires further study (Buckley 1986:60).

⁶ As Bill Seaburg (p.c.) has demonstrated, the date 1933 given in Drucker (1939) is an error.

transcription is based on the Boas system and seems good, though he often differs from the other sources, suggesting that he had limited skill in recording the language. The small number of Drucker's words is partially offset by the clear cultural context in which they are defined.

Leona Ludson was the main consultant for Drucker's anthropological work, and gave him a number of isolated words and a few phrases. Ludson provides us with the only speech by an Alsea woman (excepting quotes in a narrative told by a man), but no connected text where some sex differences might arise. I have not done a systematic comparison of the lexical items that she gives to see whether there are any significant divergences from the men's usage. Ludson is not listed in the 1885 Siletz census, so her year of birth is unknown, though a 'Leona' is listed as the 18-year-old wife of one Frank Garfield, who may have been her first husband; if so, she would have been 66 when she worked with Drucker.⁷ Frachtenberg mentions 'Major Ludson and his wife' (1918:10), but does not say explicitly that they lived on the reservation. Drucker (1939) does say that she is from Siletz. At any rate, since he is not mentioned, it is likely that her (second) husband was dead before she worked with Drucker, so she probably had not spoken Alsea for a number of years.

1.7. Jacobs

Melville Jacobs compiled a large number of file slips (approximately 3000), with Alsea vocabulary and example sentences, from his work in 1935. His transcriptions are detailed and seem to include a number of words absent from Frachtenberg's materials, whose skill he surpasses. Jacobs also made at least one recording of spoken Alsea, but it is reportedly almost inaudible. He wrote an unpublished paper on Alsea phonemes which is discussed below.

John Albert, the last living speaker of Alsea, gave a few words to Drucker, but his main linguistic work was with Jacobs and Harrington. Although he previously lived in Siletz, he had moved by the early thirties to Oakville, Washington, where he would have had little or no contact with Ludson even while she was still alive.⁸ As he says in one of Harrington's recordings: 'I never used my language for many years...there's no one for me to talk to.' Despite this fact, however, Albert seems to have remembered a great deal. When asked to translate sentences he generally responds very quickly and confidently, although he has more trouble with individual words, especially those that are less common. And he obviously knew enough for Jacobs to assemble a slip file with thousands of words and sentences.

1.8. Harrington

The last person to work with a speaker of Alsea - in 1941 - was John P. Harrington, who made notes on a number of words, with very clear information on pronunciation and occasional comments on Frachtenberg's transcriptions and definitions. Since Harrington was well-known for his keen ear, these notes constitute a very important supplement to those of Frachtenberg and Jacobs. Harrington also had his assistant John Marr make 66 sound recordings on aluminum disc. Most are 'rehearings' of Frachtenberg's texts and vocabulary, but some are

⁷ This would also make her the last of all the consultants to be born - in 1867, less than ten years before the move to Siletz. This is basically consistent with Frachtenberg's field notes from 1910, where she is listed as 40 years old.

⁸ I am assuming here, due to a lack of other names being mentioned, that Ludson was the second-to-last speaker of Alsea. I do not know when she died, but it must have been before 1941, when Harrington worked with Albert, described then as the 'last speaker' of the language.

translations of materials not originally in Alsea. I have heard a few of them and they are moderately audible; the rest must still be cleaned and transferred to audio tape. John Albert speaks very quickly and quietly, and many times it is hard to make out what he says, but at other times it is possible to catch everything. Today these recordings constitute our best direct link to spoken Alsea, and are the only source of information on such things as sentential intonation. Because of their relatively poor quality, however, they are seldom useful in deciding on the phonemic form of a word.

1.9. Conclusions

The basic problem regarding the sources is that the best linguists worked with the least reliable speakers, and vice versa. However, it does not appear that their advanced age or lack of practice speaking Alsea was seriously detrimental to the later consultants such as John Albert. It may be that he remembered fewer words than Milhau's speaker knew, but it seems safe to say that he retained his basic competence as a native speaker. The demise of the Alsea language was also too rapid to have permitted the phenomenon of language death (Dorian 1981) to cause changes in the grammar among later speakers: the all learned it as children when the language was healthy. Therefore I will weigh the relative reliability of the different sources primarily on the basis of the linguist who transcribed the data, and not the speaker who provided the data, since they all seem to have been fully competent.

2. Previous Research on Alsea Phonemes

Frachtenberg (1918) talks about the sounds of Alsea but does not have a clear discussion of phonemes, since the field of linguistics had not progressed to that point yet. This table (slightly rearranged from his own) gives an idea of the range of sounds he recorded:

<i>vowels</i>	<i>semi-vowels</i>				<i>diphthongs</i>			
E								
a i e o u	w y				ai au ūi			
ā ī ē ō ū					aī aū			
a ⁿ i ⁿ e ⁿ o ⁿ u ⁿ					ai ⁿ			
ā ⁿ ī ⁿ ē ⁿ ō ⁿ ū ⁿ					aī ⁿ ōu aū ⁿ			
	<i>stops</i>				<i>affricatives</i>			
	<i>sonant</i>	<i>surd</i>	<i>fortis</i>	<i>aspirated</i>	<i>surd</i>	<i>fortis</i>	<i>spirant</i>	<i>nasal</i>
<i>velar</i>		q	q!		qx		x, x ^h	
<i>palatal</i>		k(w)	k!(w)	k ^h				
<i>anterior pal.</i>	g ^h	k ^h	k!				x ^h	
<i>alveolar</i>	d	t	t!	t ^h	ts	ts!	s	n
<i>labial</i>		p	p!	p ^h				m
<i>lateral</i>					L	L!	l, l ^h	
<i>glottal stop</i>	ʔ							
<i>aspiration</i>	ʰ							
	y	h	w	ʰw				

In the accompanying text Frachtenberg discusses alternations which suggest the nonphonemic status of certain segments listed in the table, though he does not articulate this idea. For example, all voiced stops are allophones of the voiceless correlate: he describes [d] as appearing 'only between vowels and after l' (1918: 23).

The only explicit treatment of Alsea phonemes is Jacobs (1935), which is also not entirely satisfactory. Jacobs divides the sounds into two types, ‘primary’ and ‘secondary’ phonemes. He gives the following table:

	Primary	Secondary phonemes						
		nasalized				semi-vowels	diph-nasalized thongs	
<u>Vowels</u>	<i>a</i>	<i>a·</i>	ε	<i>aⁿ</i>	<i>a^{n·}</i>		<i>εi</i>	
	<i>i</i>	<i>i·</i>		<i>iⁿ</i>	<i>i^{n·}</i>	<i>y</i>	<i>iu</i>	<i>i·u</i> <i>iuⁿ</i>
	<i>u</i>	<i>u·</i>		<i>uⁿ</i>	<i>u^{n·}</i>	<i>w</i>	<i>ui</i>	<i>u·i</i> <i>uiⁿ</i>
<u>Diphthongs</u>	<i>ai</i>						<i>a·i</i>	<i>aiⁿ</i>
	<i>au</i>						<i>a·u</i>	<i>auⁿ</i>

<u>Consonants</u>	Primary phonemes					Secondary
	stops	affric.	continuants		nasals	stops
bilabial	<i>B</i>	<i>p'</i>			<i>m</i>	<i>p'</i>
alveolar	<i>D</i>	<i>t'</i>			<i>n</i>	<i>t'</i>
s-c series			<i>DJ</i>	<i>t'c</i>	<i>c</i>	
prepalatal	<i>G</i>	<i>k'</i>			<i>x</i>	
midpalatal	<i>G</i>	<i>k'</i>			<i>x</i>	<i>k'</i>
rounded	<i>GW</i>	<i>k'w</i>			<i>xw</i>	
velar	<i>G</i>	<i>q'</i>			<i>x</i>	<i>q'</i>
rounded	<i>GW</i>	<i>q'w</i>			<i>xw</i>	
lateral			<i>t'ł</i>	<i>l</i>	<i>ł</i>	
faucal		<i>,</i>			<i>h</i>	
rounded					<i>hw</i>	

Jacobs claims that ‘both primary and secondary phonemes are true phonemes in the sense in which phoneme theory regards phoneme units’, but I am dubious that all the segments he lists in his chart are to be considered phonemes in the modern sense. The vowels especially seem overrepresented, and it is unclear whether aspirated stops are phonemic. This issues will be dealt with in more detail below.

2.1. Notes on Orthography

The different sources use varying symbols, which makes it sometimes confusing to compare them. I give here some of the more important variations. Note that in this paper all symbols in brackets are standard Americanist, while italic symbols are taken directly from the sources and may not reflect modern usage.

Milhau: it appears that he uses *ck* for [q], *kl* for [ʈ]; otherwise he follows English values, so *tch* = [č], *i* = [ay], etc. He has no symbol for glottalization, though his syllable boundaries between vowels may represent glottal stops.

Dorsey: *q* represents [x], ζ = [θ] so ζ and *çl* are used for [ʈ]; as for Milhau, syllable boundaries may indicate intervocalic glottal stops.

Sapir, Frachtenberg: an exclamation point marks an ejective, and ^ε indicates a glottal stop; *E* = [ə], *L* = [ʎ]; a raised dot indicates palatalization, so *k·* is [k̟] or [kʲ]; *x* is uvular [x̟].

Jacobs: capital voiced obstruents stand for ‘intermediates’ which are slightly or potentially voiced (phonemically they are voiceless); a dot under a velar indicates a uvular.

Harrington: $\kappa = [q]$; what I have represented as *a* here is really handwritten alpha, which is a short, perhaps centralized [a].

In all the sources *c* stands for [š], whereas in my phonemicization it is used for [ts].

3. An Overview of the Situation: the Numbers

The best way to get an idea of the range of variation in the transcriptions by different researchers is to look at specific examples. The numbers are a good starting place since they are often attested in all the available sources. In the process we will encounter many of the problems that must be confronted in determining the probable underlying forms and phonemic inventory. I will not discuss seven through nine, since they are based on the lower numbers.

(1) ‘one’: /xamʔ/

<i>Mil</i>	khump
<i>Dor</i>	qám, qûm [‘]
<i>Farr</i>	xam
<i>Sap</i>	xam, xam ^e
<i>Fra</i>	xam, xam ^e
<i>Dru</i>	xûm [’]
<i>Jac</i>	xám; xám [’]
<i>Harr</i>	xám [’]

Everyone recorded quite similar versions of the number ‘one’: voiceless back fricative, short low vowel, and final [m]. The fricative seems to be uvular; Harrington omits the dot under *x* here but includes it in the derivative ‘ninety’ given below. One inconsistency even within sources is the presence of glottalization on the [m]; however, all but Farrand seem to have had some representation of glottalization at least some of the time, if we include the homorganic stop from Milhau and the aspiration from Dorsey (who had no symbol for a glottal stop). I conclude that the correct form is /xamʔ/, which is directly corroborated by Sapir, Frachtenberg, Jacobs, and Harrington. This word contrasts minimally with /xam/, the second-person singular possessive pronoun. There is some doubt as to whether the glottalization is part of a unit phoneme /mʔ/ or whether there is actually a cluster /mʔ/. Harrington says that the glottalization is ‘after the m’, suggesting a cluster; but he writes the glottalization directly over the *m* in the derived word ‘ninety’: *xaniwá’ làsk^yè sáwt’istk^y’àm*. The phoneme /mʔ/ may simply be realized phonetically as [mʔ] when word-final. Note that in sources where both glottalized and unglottalized [m]s are recorded, the unglottalized form is found when the suffix /c/ is added and an epenthetic vowel is inserted. This fact suggests a rule of either deglottalization (or loss of glottal stop) before a vowel; or else it was simply harder to hear in that case, where it might be realized as creaky voice.

(2) ‘two’: /xítʃk/

<i>Mil</i>	tchó-wah; cf. hilk-katchów-tes-ter ‘twenty’
<i>Dor</i>	qăçʔ-kĩ; q-etl’-kĩ; qûtl’-ik
<i>Sap</i>	xîLk ^y
<i>Fra</i>	xéLk·
<i>Dru</i>	xʔil̩k
<i>Jac</i>	xótk̩, xítʃk̩-; xítʃk̩
<i>Harr</i>	xétk ^y ’, xétk ^y l̩

The situation gets a little more complicated here. Milhau’s form is not matched by the others, and seems to be related to the first part of the word for ‘four’; this fact is reminiscent of Siuslaw

and Miluk Coos, two languages possibly related to Alsea where the element [(x̣a)c'u] occurs in both 'two' and 'four'. At any rate the form [hilk] is found in Milhau's word for 'twenty', which fits with the other sources. There is some variation in the vowel but since in Frachtenberg's data [i] and [u] seem to lower to [e] and [o] next to a uvular, it seems reasonable to assume a phonemic /i/ here. All sources agree that it is short. The initial consonant is the same as for 'one'. There is disagreement about whether the lateral is an affricate or a fricative, but since these do not seem to contrast I will assume the fricative as basic (see section 7). The final stop is clearly palatalized, though whether this is a result of assimilation to the lateral (which Frachtenberg describes as palatal) or an underlying phoneme is not clear. I will play it safe and posit /x̣iɬḳ/. I assume that the final vowels seen in some forms result from the release of the stop and are nonphonemic.

(3) 'three': /psinɬx̣/

<i>Dor</i>	pc̣in'-ṭɬ ^l q
<i>Sap</i>	pṣÉnLx̣; pṣînLx̣
<i>Fra</i>	psinLx̣
<i>Dru</i>	p'ṣi'nLh'á
<i>Jac</i>	pc̣ónɬx̣, pc̣ínɬx̣; pṣínɬx̣
<i>Harr</i>	pṣénɬx̣

For 'three' there are fewer sources but fairly good agreement. Initial /p/ is unanimous, as is following /s/ if we discount the difference between [s] and [š]. It appears that Alsea has a type of /s/ common in California and the Northwest, which is articulated with the grooved blade of the tongue, giving an impression between that of English [s] and [š]. Jacobs (1935) explicitly states that the Alsea sound 'is just about perfectly intermediate between *c* [=š] and *s*', but chooses to write 'c' since the sound strikes him as slightly closer to that point. I have chosen 's' because the symbol 'c' is now used for [ts], and also because it is more often used in the other sources. Jacobs' use of 'š' in his third form above is exceptional, since elsewhere he uses almost exclusively 'c'. The others also use a single symbol for the sibilant, except for Harrington who sometimes uses multiple symbols for the same word (e.g. 'four' below), indicating that the sound was in fact difficult to pin down. Frachtenberg uses only 's' in his published work but in the original field notes uses 'c' at times as well. Evidently upon reflection he realized that the sounds are not contrastive (see also section 6). The vowel is again the least consistent segment, though everyone but Harrington includes [i] in one of the forms. Because of this, and also because there is no strong evidence that [i] and [e] ever contrast, I will assume that all examples of [e] are actually lowered allophones of /i/. In this particular case, unlike in 'two', there is no clear lowering environment. I also assume that the nasalization that Harrington shows is the result

of the following /n/ and not phonemic. As above, [t̚] and [ʎ] are considered noncontrastive. I thus take the underlying form to be /psin̩t̚x̩/.

(4) ‘four’: /c̥u·k̩˘ʎ-cux̩t/

<i>Mil</i>	tchúnk-hat-shut
<i>Dor</i>	tcũñ'-ki-qã-tcũqt''
<i>Sap</i>	tcú"̩k̩x̩atcux̩t
<i>Fra</i>	tsũnk·xatsuxt, tsũnk·x-
<i>Dru</i>	tchõ ^{khátsxõ} t
<i>Jac</i>	DJúk'haDJúxt; tcúk'hacúxt
<i>Harr</i>	tʃó't̚' .xaddsò·xt', tsú'k' .xatsòxt

It appears from Frachtenberg's data that the word 'four' in isolation includes the collective suffix /cux̩t/, since when forming the multiplicative 'fourth' only the first syllable is used as a stem. The initial consonant is clearly /c/. The vowel must be [u] if we assume that [o] and [u] like their front counterparts do not contrast, though the examples of [u] in the sources outnumber [o] significantly anyway. The length of the vowel is not so clear: only Frachtenberg, Drucker, and Harrington ever show it long. The nasality is also inconsistent. Milhau, Dorsey, and Frachtenberg show a following nasal consonant; Sapir and Harrington (in one form) show the vowel nasalized; Drucker and Jacobs show no nasality at all. As a sort of compromise I assume a nasalized vowel. As for length, I have somewhat arbitrarily taken the vowel to be long, influenced by a vague notion that the nasal stop in some transcriptions may actually correspond to length (though Frachtenberg gives both, and Jacobs neither). Several sources give a palatalized [k̩˘] next, or a [k] followed by a short [i]. Harrington's second form has a plain [k], but it corresponds to a lateral affricate in the first form; since Frachtenberg documents many examples of an alternation between [k̩˘] and [t̚'], I am not reluctant to assume palatalization. Only Jacobs and Harrington show glottalization, but in cases like this I am inclined to give more weight to the presence of glottalization than to its absence. Jacobs (1935) writes that the glottalization is very weak and 'an alien auditor is often sorely troubled to distinguish between [ejectives and nonejectives] in rapid speech'. It seems to me more prudent to assume that some sources missed the glottalization than to assume that the others thought they heard it when it was not actually present. This is also generally my attitude toward nasalization in vowels, which both Frachtenberg and Jacobs describe as very weak and difficult to perceive. The next segment is sometimes given as [h] rather than [x̩], but this is a reduction found in several examples in Frachtenberg's texts (e.g. /x̩am/ occurring as [ham]) so I take the uvular fricative to be underlying. Harrington explicitly states that both the back fricatives in this word are velar, not uvular, but this is at variance with the other sources and I would need more evidence to override them. Thus I posit /c̥u·k̩˘ʎ/ as the stem for 'four'. Morphological alternations suggest that the next vowel is epenthetic, so I will ignore it here. The next segment is clearly another /c/, the vowel /u/, followed by /x̩/ and /t/. The length of this /u/ is again unclear, but I am going with Frachtenberg in keeping it short since he attests the suffix in many other words as well. The complete form is /c̥u·k̩˘ʎ-cux̩t/.

(5) ‘five’: /su·t’á·ʔst/

<i>Mil</i>	tsóot-hatz
<i>Dor</i>	cú-t’ăct’
<i>Sap</i>	s·ūt!ă ^e tst
<i>Fra</i>	sūdă ^a st, sūtă ^a st
<i>Dru</i>	sū’tahst
<i>Jac</i>	cu’t’á’tst, cu(’)t’á(’)tct; cu(’)t’á(’)tst
<i>Harr</i>	so’t’ă’ts’t’

Aside from the unexpected affricate in Milhau’s transcription, and again ignoring the [s] - [š] difference, all sources agree on initial /s/. The following vowel is clearly /u/, probably long. As in ‘four’ Frachtenberg and others seem to have missed the glottalization of /t/, but in this case there is corroboration also from Sapir and even Dorsey. The next vowel is again clearly /a/, though the length is a little less certain. Even though he seems sometimes to mark too many vowels long, I am inclined to give greater credence to Frachtenberg since ‘five’ is an important number in Alsea mythology and occurs frequently in the texts. In addition, taking the /a/ to be long would follow Jacobs and Harrington at least in keeping the length of the two vowels in this word equal. Most sources agree that the stress is on the second syllable. As for the last cluster of consonants, there are several possibilities. Half the sources - Sapir, Jacobs, and Harrington - give [ct], while two others give some indication of a sound before the final [st]: Frachtenberg’s raised ^a and Drucker’s *h*. Frachtenberg’s raised vowels are of uncertain significance; he defines them as ‘resonance and epenthetic vowels’. It may be that they represent a preceding glottal stop or simply an extra-long vowel. In some cases high raised vowels seem to represent coarticulation, i.e. ⁱ for palatalization and ^u for labialization; for example, *uk^u* ‘up, away’ probably is [uk^w], though the phonemic status of the rounding is another issue. In a word such as *tsă^umE* ‘very’, there is reason to believe that it is glottalization of some kind. Frachtenberg records a shorter form *tsa^e* as well, which corresponds to Jacobs’ *DJá*’ and Harrington’s *tšá*’; the longer form may thus be /ca(·)ʔma/. Returning to ‘five’, these other facts suggest that here may be a glottal stop before the final [st]. Sapir, Jacobs, and Harrington all show a glottal stop and a [t]. The latter two often write glottal stops before other (supralaryngeal) stops, and I am generally inclined to discount these as nonphonemic since they even occur in English (see section 4) and Jacobs often puts them in parentheses. In this case, however, Sapir also has the glottal stop and Frachtenberg and Drucker have some indication of something there as well. These facts suggest to me that there may be a glottal stop before the final [st], and that the [t] which is included by several sources is nonphonemic or even illusory, i.e. not even present as a separate articulation. Note that Frachtenberg (1918) reports a difference in pronunciation between his consultants which could be relevant here: William Smith pronounces a word like *pūtstEx* ‘blood’ with a three-consonant cluster, while Tom Jackson consistently reduces such *tst* clusters to *st*, and says *pūstEx*. However, both of them seem to say ‘five’ in the same way, so it is unlikely that the alternation in the sources reflects the same type of variation. For these reasons I have concluded that the best guess is /su·t’á·ʔst/.

(6) ‘six’: /ʔaq’áyst/

<i>Mil</i>	klick-í-es-ter
<i>Dor</i>	çlûk’-k’áict’
<i>Sap</i>	Lqaist
<i>Fra</i>	ʔaqáist
<i>Dru</i>	Lq’hai:st
<i>Jac</i>	ʔəq’áict; ʔaq’áict
<i>Harr</i>	ʔa’K’âyšt’

The initial segment in (6) is certainly /ʔ/. Most sources include a short vowel next, though some have nothing; one might wish to compromise and assume a schwa, but this requires the addition of a new phoneme to the inventory whose existence is not strongly motivated. In cases like this I will try to pick the best justified short vowel as underlying, preferring to make somewhat arbitrary decisions in the cases of individual words rather than complicating the phonemics unnecessarily. In ‘six’ the best choice appears to be /a/, since several sources give it. Consequently we must assume that in Sapir’s and Drucker’s forms the vowel was, say, devoiced and perhaps lost in that environment. The alternative is to assume no underlying vowel and epenthesis in the other sources, but this seems less well motivated since a [ʔq] cluster is found initially in many words in Frachtenberg’s vocabulary, with no indication of epenthesis there. The uvular stop appears to be glottalized although Sapir and Frachtenberg apparently missed it. The diphthong may be long but since only two sources give it that way I will assume it to be short. The final two consonants are uncontroversial, yielding /ʔaq’áyst/.

(7) ‘ten’: /sáwt’ist/

<i>Mil</i>	psow-er-tés-ter
<i>Dor</i>	cá-u-t’ ict’
<i>Sap</i>	cáutEst
<i>Fra</i>	sáūtist
<i>Dru</i>	sautust’
<i>Jac</i>	cáuD.cD, cáut’.cD
<i>Harr</i>	sá·wt’išt’

The word for ‘ten’ appears to be based on the same root as ‘five’ (meaning ‘drop’), with the /u:/ corresponding to a diphthong under a widespread but not well understood process; here it may be due to the stress. It is unclear whether the diphthong is long or not, since only Frachtenberg and Harrington write it long. Note, though, that Harrington writes it short in the word for ninety: *xanîwá’ làsk^yè sáwt’istik^y’âm*. When more is known about the alternation between long vowels and diphthongs, we may be able to use that evidence to say what we would expect here. The discussion in Jacobs (1935) suggests that long vowels alternate with short diphthongs, so I will assume /aw/ here, agreeing with the majority of the sources; we will see later that Frachtenberg often has a long vowel when the other sources argue together for a short vowel. (In the case of (5), however, the same alternation is evidence that Frachtenberg’s long *ū* is correct.) The second vowel in the word is given many ways in the different sources, and Jacobs has none at all; as with ‘six’ I will avoid schwa and choose the most frequently written vowel, which is /i/. Thus the posited form is /sáwt’ist/.

Having discussed a range of problems encountered with the numbers, I will now consider some of these issues in more detail.

4. Glottalization

As seen in (5), (6), and (7), Frachtenberg often omits glottalization where the other sources include it. In some examples all others show ejectives, clearly outnumbering Frachtenberg:

(8) ‘almost’: /há·yḵ’/

Dor haink’q’
Fra hai^hk·
Jac háik̤’, hái^hk̤’
Harr hḡ·yḵ^ʔ’

(9) ‘hand’: /tá·mt’am/

Dor tǎm’t’ûm-, támt’ûm
Sap dǎmt!ûm
Fra tǎmt_{EM}
Dru damt’um
Jac Dá·mt’əm
Harr ḡ·mt’àm , dá·mt’àm , tú·mt’àm

In (8) there is some doubt as to the length of the diphthong. I have decided on long since Frachtenberg has the benefit of frequent exposure to the word, and Harrington’s legendary ear agrees. In (9) the vowel of the second syllable is probably /a/ based on the range of transcriptions, though the meaning of Drucker’s *u* is unclear; I take the *û* of Dorsey and Sapir to mean the vowel of English ‘up’. This also fits with a possible historical reduplication of an original /t’a·m/, where the unstressed syllable was shortened and the first ejective deglottalized in a dissimilation process reminiscent of Grassman’s Law in Greek and Sanskrit.

Given the reported weakness of the ejectives, I am inclined to accept the glottalization even where the other sources are not quite so unanimous:

(10) ‘day, sun’: /pí·ck’um/
 ‘summer’: /pí·ck’umsk/

Mil péech-ko; peetz-kúm-ski ‘summer’
Dor pí·tck’û ‘day, sun’, pí·tck’ûm ‘sun’
Fra pîtskum ‘day, sun’; pîtskumsk· ‘summer’
Dru p’î:tck’um, p’îtsk[’]um
Jac Bí·tck’um ‘day, sun’; p’î·tcGumck̤ ‘summer’
Harr bí·tsk’òm ‘day, sun’, pí·tšk’òm, pí·tʃk’òm; bí·tsk’omšk^ʔ ‘summer’

Milhau can hardly be said to have ‘missed’ the glottalization when he did not even have a symbol to represent it. In general his transcriptions will be given little weight here.

(11) ‘be sick’: /ʔq’al’í·t-, ʔq’al’t-/

Dor çk’ùllít-
Sap ʔqalét-
Fra Lqalt-, Lqald-, Lqalít-; cf. Lqalhîsxam, Lqaldîyáís ‘sickness, disease’
Dru ʔqulisxám ‘disease object’
Jac ʔq’alí·D-
Harr ʔk’al’diyáys ‘sickness’; ʔk’ál’lí·sxam, ʔk’ál’lí·sxám ‘pain’

In this case Sapir also missed the glottalization of the uvular, as he did in (4), (6), and (7) above. Aside from taking the /q/ to be an ejective, I have interpreted the data to mean that the /l/ is glottalized. If in fact Alsea has the glottalized /m’/ given in ‘one’ above, then we would expect other resonants to have glottalized counterparts as well. Harrington explicitly marks it for the /l/, and Frachtenberg’s inclusion

of an *h* in the same position in ‘sickness’ suggests that more than a plain /l/ is involved. In addition, Dorsey’s use of two *l*’s in a language that apparently disallows geminates is further evidence of something unusual. Note that the two phonemic forms given correspond to the long and short forms of the verbal root; the first has been called ‘aorist’ or ‘augmented’, but their respective functions have not been clearly demonstrated. This pair exhibits the common pattern where the short root is simply missing the long stressed vowel of the long root.

Another word which may have a glottalized /l/ is ‘man’. This possibility encourages an interpretation which relates ‘man’ (also ‘strong’) to ‘be sick’ above, though the historical development of this connection is not clear:⁹

(12) ‘man’: /q’á·l’t/

<i>Mil</i>	kckáh-el-tay
<i>Dor</i>	k’alt
<i>Sap</i>	k!ālt
<i>Fra</i>	qāalt
<i>Dru</i>	q’a ^a lt’
<i>Jac</i>	q’á ⁿ lt, q’á·lt
<i>Harr</i>	κ’â·lt’

Milhau, Frachtenberg, and Drucker seem to have heard either two syllables or something about the /l/ which they attempted to represent in different ways; note that Drucker marks both a weak vowel before the /l/ and an ejective after it. Since few of the sources have any clear way of transcribing a glottalized resonant, I am inclined to lend considerable credence to instances where several sources may have tried to convey this unaccustomed sound. Thus I will assume /l’/. In general, as here, it will be very difficult to be certain about whether a glottalized resonant is present or not, so these assumptions must be regarded as quite tentative.

Drucker missed the glottalization in (4), (5), (7), and (11), and in the following as well:

(13) ‘head’: /ʔú·ḳ’/

<i>Dor</i>	çlú-k’ı̣
<i>Sap</i>	Lōk ^y !I, ʔōk ^y !I
<i>Fra</i>	Lōk·, ʔōk·
<i>Dru</i>	Lōq ^h
<i>Jac</i>	ʔú·ḳ’
<i>Harr</i>	ʔó·k ^y ’ _I , ʔó·k ^y ’

Note that Drucker even has a different place of articulation; he may have misheard the glottalization as aspiration. Otherwise the phonemic form of this word is fairly straightforward.

One important gap in Frachtenberg’s transcription is that he does not write a glottal stop intervocally. It appears from comparisons with Jacobs and Harrington that whenever Frachtenberg has two vowels adjacent without a glide between them, then we can assume a glottal stop.

⁹ If true this would mean that the initial /ʔ/ of ‘be sick’ is probably the common transitivity/intensive prefix.

(14) ‘all right’: /k̥aʔáysa/

Fra k·eáisa
Jac Ga'áica
Harr k̥ʔa'â·ysa

(15) ‘bucket’: /p'uʔú·ya/
‘full’: /p'uʔú·t/

Fra puñya^e ‘bucket’; puñt ‘full’
Dru p!õ^oyá
Jac p'u'ú'ya
Harr pu'ú·t

Jacobs and Harrington put a glottal stop where Frachtenberg just has two adjacent vowels; in (15) even Drucker’s raised vowel suggests something separates it from the preceding one. Fortunately Frachtenberg makes a distinction between sequences such as *au* and *a(u)w*. The former does not imply a glide and in a word such as *hauã* ‘what?’ a glottal stop almost certainly follows it, so the phonemic form appears to be /hawʔá·/. In *hauwít* ‘young’, however, the glide suggests the absence of a glottal stop, so underlying /hawí·t/. Compare also the two forms of the root ‘grow’, *hauq* and *hawa·q*, where the ‘allograph’ *u* is used when a consonant follows and *w* when a vowel follows. There are many other examples of this nature, supporting the position that vowel sequences which are not listed by Frachtenberg as possible diphthongs are in fact separated by a glottal stop, while glide-vowel sequences are truly adjacent.

In both of these cases there is some doubt about whether the initial stop is an ejective. As mentioned above I am inclined to give more weight to the sources which include the glottalization. In (14) the most skilled transcriber, Harrington, is the only one who writes an ejective, but since it has already been demonstrated that Frachtenberg often misses the glottalization only Jacobs’ omission is surprising. This word is on the tapes that I have listened to; its sounds as though it might be an ejective, but it is not clear. In (15), clearly from Frachtenberg’s root *puu-* ‘be full’, Harrington omits glottalization but both Drucker and Jacobs include it, so I am going with the majority and retaining it, even though this means assuming that Harrington missed it. It is conceivable, I suppose, that ‘bucket’ has /p̥/ and ‘full’ has /p/, but this assumption is not well motivated and I reject it, preferring to keep the root consistent. Note that Jacobs’ transcription suggests that the /y/ might be glottalized (supported perhaps by the final glottal stop in Frachtenberg), but it is hard to tell, so I am tentatively not including it. If the apparent suffix /ya/ is found in other words then it may be possible to check the glottalization there; so far I have found none.

Another example where Frachtenberg seems to have represented intervocalic glottal stop by a simple sequence of vowels is in the transitive irrealis verb suffix /-aʔa/. Frachtenberg writes simply *-aa*; Jacobs includes a glottal stop: *-a(?)a*. The parentheses seem to indicate that the stop is weak.

There is also the issue of glottal stops written before other (supralaryngeal) stops. Primarily this is found in Jacobs and Harrington, and to a small extent in Frachtenberg. Take (5) for example: Jacobs and Harrington write glottal stops after each vowel, though Jacobs encloses them in parentheses in some transcriptions, suggesting they are weak. In one case I decided, on the basis of other sources, that the glottal stop was real; in the other I ignored it. This is because in certain cases I believe these glottal stops to be nonphonemic and comparable to the effect obtained in English when the airflow is stopped at the glottis simultaneous with the closure in the oral cavity (Kahn 1980). Other examples are Harrington in (4), (6), and (10). In

general I will tend to ignore these glottal stops unless they are attested in several sources, because they are just too pervasive in Jacobs and especially Harrington for them to be always phonemic. When confirmed by others, such as Frachtenberg and Sapir, I am more likely to consider them contrastive.

One final note on glottal stop: Harrington always includes a glottal stop at the beginning of a word which otherwise would begin with a vowel, for example *'itšáyʃ* 'house' and *'ángì* 'tomorrow'. None of the other sources do this, presumably since in English the presence of a glottal stop here is natural and nonphonemic. It seems then that all Alsea words starting with a vowel are, at least optionally, begun with a glottal stop. Whether this stop is underlying or (optionally) inserted by rule is not clear, though roots such as /aya·n/ 'cry' would fit the CVCV·C pattern perfectly if there were an underlying initial /ʔ/. There is also evidence from prefixes that there is a glottal stop present at the beginning of roots. Frachtenberg's *LEĪLax* '(we) refused him' consists of transitivizing /ʔ-/ , completive /-x/, and the root that Frachtenberg gives as *īL-* 'refuse'. Since we have already shown that sequences of two vowels imply a glottal stop, it seems most reasonable to posit /ʔi·ʔ/ for the root; this also explains the epenthetic schwa. Further, while Jacobs does not give word-initial glottal stops, he does give a glottal stop at the beginning of the interrogative clitic *'a*, which is present whether the preceding word ends in a vowel or a consonant. It seems correct to say that words and clitics must begin with a consonant. It is also apparent from Frachtenberg's texts that when a vowel-initial suffix is added to a vowel-final stem, then either the first vowel is deleted or a glide is inserted. All of this together suggests that in Alsea every syllable must have an onset. This fact, plus the prefix and root-pattern data above, lead me to conclude that vowel-initial words actually begin with a phonemic glottal stop.

5. Vowels

We now turn to looking specifically at the patterns in vowels. The following illustrates the point mentioned earlier that Frachtenberg's long vowels are sometimes countered by short vowels in the other sources:

(16) 'elk': /núns/

<i>Mil</i>	nuntsh
<i>Dor</i>	nũntc'
<i>Fra</i>	nũns
<i>Dru</i>	nũ'ns
<i>Jac</i>	núnc
<i>Harr</i>	nóns

In this case it seems wholly justified to assume a short vowel, especially since Harrington describes the vowel as 'real short'.

The verb 'run' is another example of the nonphonemic status of mid vowels; the [o] in some sources reflects underlying /u/ as given in the other sources:

(17) ‘run’: /kumú·k^w-, kumk^w-/

<i>Mil</i>	kóom-quah
<i>Sap</i>	kōmók ^w -
<i>Fra</i>	kumūk ^w -, kumk ^w -; also Lkúm ^w kukwaut ‘race, running’, mEkumkū ^{et} ‘runner’
<i>Jac</i>	Gu’mú·Gw-, GumGw-
<i>Harr</i>	komók‘dowit’ ‘racetrack’, †gó·gomgwâ·wt ‘race’, magomgú‘t ‘runner’

Jacobs’ first transcription suggests that the /m/ may be glottalized, but since he omits this glottalization from the second form, and no one else notes it, I will not include it.

Note that the pair of roots participates in the same pattern as ‘be sick’ above. Examination of the common root structures reveals that there is generally just one consonant after the long stressed vowel, suggesting that [kw] constitutes a single phoneme /k^w/. The inconsistencies in vowel lengths have been resolved in favor of those given by Frachtenberg and Jacobs based, again, on the common root pattern CVCV·C. Other roots which seem to have a final labialized consonant include /simi·x^w/ ‘lie alongside’ and /silu·q^w/ ‘be cold’.

I have tentatively decided to treat diphthongs as sequences of a vowel plus a glide, based largely on root structures where the glide seems to function as a consonant rather than part of a vowel. Examples include /ʔaya·n/, /ʔayn/ ‘cry’ and /ʔawi·ʔ/, /ʔawʔ/ ‘be near’. It may be necessary with further evidence to posit unitary diphthong phonemes, but for now the simplest inventory can be maintained by assuming them to be vowel plus glide.

Although both Frachtenberg and Jacobs describe it as very weak and difficult to perceive, it is clear from the various sources that nasalization of vowels is possible. For example, in /há·ykʔ/ in (8) above everyone gives some mark of the nasalization. Another example where nasalization is well attested:

(18) ‘chest’: /ʔk^wá·ʔ/

<i>Dor</i>	tlqkwá-ǎ-mük
<i>Sap</i>	Lkwā ^{ne}
<i>Fra</i>	ʔkwā ⁿ
<i>Dru</i>	Lkwá ^{ʔə}
<i>Jac</i>	†Gwá ⁿ
<i>Harr</i>	†kwá ^ʔ , †kw÷·â·

It seems best to include a final glottal stop, since it is given in half the sources. The uvular in Harrington’s first word is countered by the second, which has a velar like the other sources. Recall the Dorsey’s *q* stands for a fricative, and here is part of an attempt to transcribe [ʔ]. Nasalization also occurs on the high vowels, as in /q^wsĭ·cʔ/ ‘head’ and /múhü·/ ‘now’.

6. Sibilants

The following words will serve as further examples of the lack of contrast between [s] and [š].

(19) ‘my’: /sin/

<i>Mil</i>	sin
<i>Dor</i>	cĭn
<i>Sap</i>	s·En, s·ĭn, sĭn
<i>Fra</i>	sin
<i>Jac</i>	cin, cən
<i>Harr</i>	sĭn, sen, sən, sən

(20) ‘younger brother’: /mú·cik/

<i>Mil</i>	móon-sk
<i>Dor</i>	mŭ·tcĭk, mútçĭkiau
<i>Farr</i>	mōótcĭk
<i>Fra</i>	mŭtsik·
<i>Dru</i>	motcik, mō:tcĭk
<i>Jac</i>	mú·tcik
<i>Harr</i>	mó·tsik ^y , mó·tʃik ^y

(21) ‘house’: /ʔicáys/

<i>Mil</i>	it-chús
<i>Dor</i>	i·tçáic
<i>Sap</i>	ĭdj·éc·
<i>Fra</i>	ĭtsáis, aĭtsáis
<i>Dru</i>	etcáis
<i>Jac</i>	iDJáic
<i>Harr</i>	ʔitʃáyʃ, ʔidzáyʃ

The /i/ in ‘house’ may be long, but Frachtenberg’s long vowels are to be distrusted and he is supported only by Sapir; the others have just a short vowel.

7. Laterals

It appears that there is no phonemic distinction between the lateral affricate and fricative. According to Frachtenberg (1918), Farrand recorded a distinction between an inclusive plural clitic -‘L and exclusive -ʃ, but no other sources, including Frachtenberg, support this fact. Frachtenberg shows frequent alternation in the same word between ʃ and L, while Jacobs and Harrington record only ʃ. I have followed the latter practice and assume all instances of L to be /ʃ/. It may be that Farrand’s consultant U.S. Grant made such a distinction which was not made by the others due either to dialect or age, but it seems more likely to me that Farrand simply made an error. He was not the best phonetician, since he did not even distinguish between [k] and [q]. The lateral ejective is consistently transcribed as L! by Frachtenberg, however, so I will assume that it was in fact an affricate /ʃʰ/.

8. Back Consonants

I am not entirely satisfied with the inclusion of a palatal series in the phoneme inventory, but it seems the only possible solution at the present time. Phonetically, it is very well attested in the sources. Most examples of [k̟] occur next to a segment which could be said to palatalize a phonemic /k/, such as the glide in /há·y_{k̟}/ ‘almost’. There are other examples where it would be harder to find such an environment, such as /ʰú·k̟/ ‘head’ and /k̟·aʔáysa/ ‘all right’. In addition, there is the future clitic /k̟/ which retains its palatal character regardless of what it attaches to, and there is no persuasive evidence that it is actually underlying /ky/ or something similar. So for now I will assume that palatalization is phonemic, though it may be possible to motivate an analysis where all instances of [k̟] are from

11. Proposed Phoneme Inventory

The following table presents the inventory of phonemes that I have arrived at in this paper. It must be regarded as tentative, subject to future verification or adjustment.

Vowels

short	long	short nasal	long nasal
i u	i· u·	ĩ ɥ	ĩ· ɥ·
a	a·	ǎ	ǎ·

Consonants

	labial	alveolar	lateral	palatal	velar	uvular	glottal	
stop	p	t		ḵ	k	k ^w	q	q ^w ?
ejective	p'	t'		ḵ'	k'	k' ^w	q'	q' ^w
affricate		c						
ejective		c'	ʃ'					
fricative		s	ʃ	ç	x	x ^w	χ	χ ^w h
resonant	m	n	l					
glott.	m'	n'	l'					
glide	w			y				

In the row label ‘resonants’ I have grouped the nasals and the lateral /l/. I have found no clear example of /n'/ but have included it on the assumption that it probably exists /m'/ does. It is less clear that there are glottalized glides, so I have excluded them pending future research.

12. Conclusion

This paper has explored some of the major issues which must be tackled in order to bring some order to the varying transcriptions that exist in Aalsea. Many of the decisions reached are well-founded, but others are based on more speculation than evidence. Further work is necessary to fine-tune the analysis, especially with regard to the palatal and velar series, the glottal stop, and the glottalized resonants. Overall, however, the results presented here should be of use in achieving a more precise picture of Aalsea, its grammar, and its place in the Northwest.

13. Bibliography

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14. Locations of Unpublished Alsea Materials

(excluding sources given in the bibliography)

Hale: unknown; partial list given in Gatschet (1879).

Milhau: National Anthropological Archive (NAA), Smithsonian Institution (manuscript 955a).
Copy also at Lincoln County Historical Society Archive.

Dorsey: NAA (Powell schedules: Alsea 4800:391, Yaquina 4800:393; first draft of schedules and comparison of speakers 4800:392).

Farrand: NAA (field notes 2516).

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Drucker: NAA (field notes 4516:78, vol. 4)

Jacobs: University of Washington Archives (slip files 53,54,55,56; paper on Alsea phonemes 101-2; kinship 101-3; annotated copy of Frachtenberg's grammar 101-5,6). Microfilm and paper copy of slip files also at archives of Survey of California and Other Indian Languages, University of California, Berkeley.

Harrington: original notes and recordings at NAA; microfilm of notes available from Kraus International Publications, Route 100, Millwood, NY 10546 (mainly reel 021, also 023, 024); tape copies of recordings 548, 551, 584 available at NAA and also archives of Survey of California and Other Indian Languages, University of California, Berkeley.