

## The structure of the Alsea verb root

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Alsea, an extinct language of the Oregon coast, exhibits alternations in the CV structure of the verb stem which are reminiscent of the templatic systems found in other native languages of the West such as Yokuts and Miwok. These alternations have been divided into several types by Frachtenberg (1918), obscuring the essential unitary nature of the stem changes. This paper describes the nature of the alternations, considers the best analysis that accounts for the data, and discusses possible implications for the comparative study of Penutian.

### 1. Background

Alsea has generally been classified as a member of the Coast Oregon branch of the Penutian phylum, though Penutian is a controversial hypothesis (Silverstein 1979) and the relationship of Alsea to the other members of the Coast Oregon branch is itself unclear (Buckley 1987). Still, it is interesting to note that the templatic verbal systems described for Yawelmani Yokuts and Sierra Miwok come from California Penutian languages (see section 8). It may be that the similarities in the verbal systems can eventually be used as further evidence in judging the relationships among these languages.

Because Alsea became extinct in the early 1950's, the data are limited to what was recorded before that time. The sources used here are mainly Frachtenberg (1917, 1918, 1920) and Jacobs (1935), with limited data also from Harrington (1942). These records are in phonetic transcription, and the analysis below is based on a phonemicization of these transcriptions as described in Buckley (1988).<sup>1</sup> There are three phonemic vowels in Alsea — /i,a,u/ — which can be nasalized or long. The high vowels lower to /e,o/ next to a uvular due to a rule spreading the feature [-high]; but in the representations below, this and other examples of allophonic variation will be ignored and nonphonemic segments will be omitted except when forms are given which illustrate the operation of epenthesis (see section 4)

### 2. Frachtenberg's Classification

In this section I give the facts of the alternations by way of Frachtenberg's description. I use the term 'root' to refer to a lexical entry which takes two forms: the 'short stem' and the 'long stem'. I use the long stem to represent the root, since I consider it the more basic form, but the root is actually a more abstract notion which subsumes both stems. Frachtenberg (1918) classifies the stem alternations into a number of types. The following examples are in an adaptation of Frachtenberg's phonetic transcription; since he vaguely treats the root vowel as being inserted, the short ('present') form is given first, and the long ('aorist') second.

**2.1. Short vowel <—> Long vowel.** A large group of roots have a short vowel alternating with a long vowel, often of different quality, in the same position:

|     |     |      |        |
|-----|-----|------|--------|
| (1) | miḱ | ma·ḱ | 'join' |
|     | çim | ca·m | 'try'  |
|     | qan | qi·n | 'die'  |

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<sup>1</sup> The major change here is that fronted [kʲ] is no longer considered to be phonemically distinct from /k/. Basically, [kʲ] is found before /i/ and [k] before /u/. Before /a/ both variants are found with no distinctive function. Similarly, instances of [xʲ] belong to the velar fricative phoneme /x/.

I treat the short vowels here as epenthetic (see section 4), so that the contrast is actually between a long vowel — which I call the root vowel — and none.

**2.2. Long vowel <—> Glide and /a/.** A smaller number of roots have a long high vowel in the short stem alternating with the corresponding glide and the vowel /a/, long or short, in the long stem:

|     |      |      |          |
|-----|------|------|----------|
| (2) | i·c  | ya·c | ‘live’   |
|     | u·st | wast | ‘follow’ |

These cases will turn out to be verbs with root vowel /a(·)/ and a glide which vocalizes in the short form when the root vowel is absent.

**2.3. Vowel-vowel <—> Vowel-glide-vowel.** Here the long stem has two vowels separated by a glide, and the short stem has a diphthong (written as two vowels) composed of the first vowel and an offglide corresponding to the glide in the long stem.

|     |     |       |            |
|-----|-----|-------|------------|
| (3) | au‡ | awi·‡ | ‘approach’ |
|     | ain | aya·n | ‘cry’      |

These verbs are simple cases of presence or absence of the root vowel (as I suggested for (1) above); the only catch is that in the short form the semivowel segment serves as an offglide, while in the long form it is a syllable onset. Frachtenberg’s transcription of the segment as a vowel or glide may reflect a slight difference in pronunciation in these positions, but the two can clearly be identified as the same phonemic element.

**2.4. Consonant-consonant <—> Consonant-vowel-consonant.** This type is actually the simplest one, to which all others can be reduced: the long stem has a root vowel which is missing in the short stem.

|     |     |       |                    |
|-----|-----|-------|--------------------|
| (4) | tp  | ta·p  | ‘jump, fly’        |
|     | squ | si·qu | ‘stand (together)’ |

The consonants adjacent to the root vowel are obstruents. This category represents the basic alternation, without the complications of an adjacent glide or sonorant. Bruce Hayes has suggested that there may be voiceless epenthetic vowels between these obstruents corresponding to those found next to sonorants in (1), but since Frachtenberg wrote voiceless vowels in other circumstances it is difficult to argue for this position. It would, however, simplify the nature of epenthesis.

**2.5. Consonant-/u/ <—> /u·/-consonant.** Here the long stem has the root vowel /u·/; this is missing in the short stem, but in citations Frachtenberg gives a short /u/ at the end of the short stem.

|     |        |         |         |
|-----|--------|---------|---------|
| (5) | p‡u    | pu·‡    | ‘stand’ |
|     | ‡pilsu | ‡palu·s | ‘swim’  |

This final /u/ is really just Frachtenberg’s way of indicating that the /uy/ form of the inchoative is used with this verb. In other words, this category is the same as the preceding one except that the root vowel is /u·/. Apparently Frachtenberg felt that the difference between /iy/ and /ay/ was not as great as between them and /uy/ and so separated out only the latter into a different group. We will see below that the form of the inchoative is derived from the root vowel.

**2.6. Other types.** Frachtenberg gives four more minor types. The first has suppletive short and long stems:

(6) ai ya·x 'go'

Such alternations must be suppletive in any analysis. A second type involves glides in a new way:

(7) yu·x yuwi·x 'disappear'

The medial glide is simply a transition between the vowels and does not have separate phonemic status; it is inserted when the root vowel is present adjacent to another vowel. The third type includes two idiosyncratic pairs where /ai/ alternates with /a·/:

(8) ain a·n 'cry'  
hain ha·n 'see'

The long stem has a long vowel, the short stem has a diphthong. Both of these verbs also have other long stems which follow the pattern in (3): *aya·n*, *haya·n*. I do not know whether there is any difference in their use.

For reasons that are unclear, Frachtenberg includes roots which actually fit another category:

(9) qal qi·l 'hand'

This pair, for example, belongs under (1). Frachtenberg also gives some forms with reduplication, which are discussed below in section 7.

### 3. A Unified View

It appears that, except of course for the suppletive forms (e.g. *ʔay/ya·x* 'go'), all the verb stem alternations can be grouped under one generalization: in the short form the root vowel is missing, while in the long form it is present. This generalization will be explored in more detail in the following sections.

**3.1. Length of the Root Vowel.** My phonemicization of the verb forms used for this analysis is based on a comparison of the transcriptions by Frachtenberg and Jacobs. Although Frachtenberg recorded the greatest amount of data, his skill as a transcriber was not as good as Jacobs'. In particular, Frachtenberg often records inconsistent vowel lengths (Buckley 1988). When forms for a given verb are attested by both researchers, I have generally given much greater weight to what Jacobs has recorded. In many cases they are in complete agreement that the root vowel is long; in others Frachtenberg writes multiple forms with the same vowel long or short, while Jacobs has it only long, or else Frachtenberg has it only short while Jacobs has it only long. In all these cases I have assumed a long vowel for my analysis.

There are other cases where Frachtenberg has a short vowel and no form is attested by Jacobs, and a few others where Jacobs also shows a short vowel. I would like to assume that the root vowel is long in such cases, but since there is no evidence beyond the consistency of the pattern I have retained the short forms in the list in the Appendix, on which this analysis is based. For example:

(10) hayak<sup>w</sup> hayk<sup>w</sup> 'be in the middle'  
tlih tlh 'sweep'  
tax tx 'think'

The small number of verbs with short root vowels are assumed to belong to a different morphological class.

Though I have generally not marked it here, the stress most often falls on the root vowel in the long stem and on a suffix — such as the inchoative — in the short stem: *tá·p-al*, *tp-áy*. This stress pattern is not completely consistent, however, so it does not seem possible to derive the stem alternations from the location of stress. Dale Kinkade has suggested that it may be possible to predict long vowels on the basis of stress; while this is a promising idea, there are exceptions which I am unable to explain and I must retain phonemic vowel length for the time being.

**3.2. Position of the Root Vowel.** In the majority of the forms it appears that the position of the root vowel in the long stem can be predicted on the basis of the final consonants of the root:

- (11) a. The root vowel is never initial or final in the root, so if there are only two consonants then the vowel comes between them: *wi·l* ‘come’; *ʔu·p* ‘rub’; *ka·m* ‘dodge’; *ma·x* ‘paddle’. It follows also that no root consists of less than two consonants.
- b. In roots of more than two consonants, if the penultimate consonant is a sonorant then the root vowel follows it: *ʔlu·x* ‘fear’; *cmi·x* ‘work’; *x·nu·t* ‘obtain’; *ʔwa·h* ‘climb’.
- c. If the penultimate consonant is an obstruent then the root vowel precedes it: *pla·tq’<sup>w</sup>* ‘sit’; *pa·qn* ‘touch’; *ti·q’l* ‘undress’.

Although (a) is apparently never violated, there are a number of exceptions to the other two principles. Some roots violate (b) — e.g. *pu·lh* ‘bite’, *q’u·lc* ‘challenge’, *ta·mn* ‘be sorry’ — but these could be explained in terms of the alternation described in section 6. The exceptions to (c), however — such as *c̣x’a·s* ‘be bushy’, *tka·s* ‘break’, *cxa·p* ‘fight’ — are more problematic. A few can be eliminated as exceptions if morpheme breaks are taken into account — e.g. *pkw·c* ‘gather (wood)’ from *p-* ‘intentional’ and *kw·c* ‘wood’ — but for many of the forms this type of analysis can not be motivated. It appears, at least for the present, that the position of the root vowel must be supplied lexically — or minimally, roots which violate the principles in (11) must be marked as exceptions.

**3.3. Echo Vowels.** The short form of the stem is characterized by the absence of the root vowel, but when the inchoative *-Vy* (or inchoative-transitive-irrealis *-V?V*) is added to the stem, the quality of the root vowel is realized in the vowel of the suffix.

| (12) <i>Long stem</i> | <i>Short stem with inchoative</i> | <i>Gloss</i> |
|-----------------------|-----------------------------------|--------------|
| ka·c̣                 | ḳc-ay                            | ‘wear’       |
| pi·t                  | pt-iy                             | ‘give, pay’  |
| pu·ʔ                  | pʔ-uy                             | ‘stand up’   |

Further examples can be seen below. I will call these ‘echo vowels’ even though the segment which they copy is not present in the surface form. Note that the sequence /iy/ is pronounced [i·].

**3.4. Selection of the Stem.** A cursory examination of the available texts suggests that the short form of the root is selected when the inchoative *-Vy* or the fused inchoative-transitive-irrealis suffix *-V?V* is added:

|            |                       |
|------------|-----------------------|
| (13) tp-ay | ‘jumped’ <sup>2</sup> |
| xm-iy      | ‘turned back’         |
| ʔp-uʔu     | ‘will rub it’         |

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<sup>2</sup> Some of these inflected forms are simplified in order to illustrate the point as directly as possible.

Under this analysis the long form of the root is found when one of these suffixes is not present, such as when the durative *-al* is added:

- (14) ta·p-al           ‘is jumping’  
 xi·m-al           ‘is turning back’  
 ʔu·p-al           ‘is rubbing’

Most of the time this analysis would yield the right results; there are instances, however, where both generalizations are violated. Sometimes the short form is found without the inchoative:

- (15) ʔay-ḫ           ‘Go!’

The two roots are also attested in the same environment (though the difference in meaning, if any, is unclear):

- (16) ʔalk-u·-t       ‘Leave him alone!’  
 ʔala·k-u·-t       (same)

In addition, there are instances where the inchoative can be found with the long form of the root:

- (17) ya·s-aw-ḡ-ay                   ‘said repeatedly’  
 say-DUR-ITER-INCH

It seems from (19) that the suffix closest to the root (the durative in this case) selects the form of the stem. But the durative can also be found with the short stem:

- (18) qlq<sup>w</sup>-al-ay                   ‘circled’ (long stem *qlu·q<sup>w</sup>*)  
 circle-DUR-INCH

Given these examples and those in (16) it is clear that the affixes do not straightforwardly determine the form of the stem. Frachtenberg describes the stems in the following terms:

- (19) A vocalic change in the verbal stem may also take place, regardless of the nature of the suffix, whenever it is desired to express an action of long duration or frequent occurrence. This gives rise to the presence of double forms of verbal stems, of which the original form may be called the present stem, while the other, amplified by means of a vocalic change, would be best termed the aorist stem. (1918: 309)

Although the use of the terms ‘present’ and ‘aorist’ ignores the emphasis in Alsea on aspect rather than tense, and Frachtenberg does not demonstrate in any clear fashion that the roots in fact have these uses, still he is probably on the right track and I will assume that the two forms of the root reflect aspectual differences. Certain suffixes (such as the imperative *-t* in (46)) are consistent with both stems and do not select either; others (such as the durative and inchoative) because of their semantics are normally used with a particular stem, but can also be found with the other stem under some circumstances.

In general I will continue to use the more neutral terms ‘short’ and ‘long’ rather than ‘present’ and ‘aorist’, since more research is necessary to determine more precisely the aspectual values of the different stems.

#### 4. Epenthetic Vowels

In the phonemicization of the Alsea verbs given above the first vowels of the root have in many cases been eliminated in favor of a rule of epenthesis which inserts them to resolve unsyllabified

consonants. An analysis which relegates many surface vowels to epenthetic status can be motivated on a number of bases, as described below.

**4.1. Predictability.** The presence and quality of the epenthetic vowels is predictable on the basis of the adjacent consonants. The syllable structure of Alsea does not allow syllable-internal clusters of an obstruent and a sonorant, nor of more than three obstruents. Thus when an unsyllabifiable sequence exists the rule of epenthesis will insert a vowel to permit syllabification (a more detailed discussion appears below). Since the occurrence of these vowels is predictable it is best to treat them as inserted by rule.

**4.2. Alternations in Ordering.** In some roots which have a sonorant as their penultimate consonant, there is attested variation in the ordering of the sonorant and the root vowel:

|      |          |         |               |
|------|----------|---------|---------------|
| (20) | tu·m̩s̩- | tmu·s̩- | 'open (door)' |
|      | sa·n̩q̩- | sna·q̩- | 'be bad'      |

Because initial obstruent-sonorant clusters are not syllabifiable, an epenthetic vowel appears in the second member of each pair:

|      |           |
|------|-----------|
| (21) | [timu·s̩] |
|      | [sana·q̩] |

These alternations will be discussed more thoroughly in section 6. The point here is that an additional rule would be needed in order to eliminate the first vowel in the forms where epenthesis is not required:

|      |         |    |         |
|------|---------|----|---------|
| (22) | timu·s̩ | —> | timu·s̩ |
|      | tiu·ms̩ | —> | tu·ms̩  |

A rule of elision is otherwise unattested in Alsea and would in fact lead to problems in other forms where two vowels come together and neither is lost (instead, a transitional glide is inserted). Removing the vowel from the underlying form simplifies the analysis.

**4.3. Epenthesis in the Root Vowel Position.** In many roots, especially those consisting of just two consonants, the short form of the stem has a short vowel where the long stem has the long root vowel. For example:

|      |        |           |         |
|------|--------|-----------|---------|
| (23) | ç̩a·m̩ | ç̩im, cam | 'try'   |
|      | q̩i·n̩ | q̩an      | 'die'   |
|      | ka·m̩  | kim       | 'dodge' |

If the short vowel is underlying then the two types of stem must be assigned different vowels, which is different from the vowel of the long stem (whose quality, unlike that in the short stem, is unpredictable). But if the short vowel is epenthetic then phonemically the short stem will simply be the long stem without the root vowel, and the epenthetic vowel will be inserted later. This analysis also explains why roots of two obstruents (e.g. *ta·p-*, *tp-* 'jump') do not require a special vowel for the short stem: they are syllabifiable as is and do not induce epenthesis (unless there are actually voiceless vowels here, a possibility mentioned in section 2.4).

**4.4. The Areal Factor.** A less powerful but still consistent piece of evidence is that long strings of phonemic consonants which must then be resolved by epenthesis are typical of the Northwest Coast language area (Hoard 1978). Therefore it is to be expected that Alsea would have a similar system.

**4.5. Some Real Vowels.** In the limited examples given so far, the root vowel has been the only phonemic vowel in the stem. It should be noted, however, that longer verb stems include other vowels which are clearly phonemic and not inserted by epenthesis. For example:

- |      |  |   |                    |
|------|--|---|--------------------|
| (24) | h <sub>u</sub> ·y <sub>u</sub> ·k <sup>w</sup> - | h <sub>u</sub> ·y <sub>k</sub> <sup>w</sup> - | ‘tie hair in knot’ |
|      | cu·la·q <sub>n</sub> -                           | cu·l <sub>q</sub> n-                          | ‘pack’             |
|      | ck <sup>w</sup> a·na·t-                          | ck <sup>w</sup> a·nt-                         | ‘bend down’        |

In all cases the vowel which disappears is the last one, so we can define the root vowel as the final vowel of the long stem.

**4.3. The Rule.** As mentioned above, the quality of the inserted vowel is to a large extent predictable on the basis of the adjacent consonants. Generally speaking, after /q/ and its ejective counterpart as well as the glottal /h/ and /ʔ/, the epenthetic vowel is [a]; after coronals and velars it is [i]; and after a bilabial or labialized consonant it is [u]. This result might be achieved by spreading place features from the consonant to an underspecified epenthetic vowel. On the other hand, in some cases there is considerable variation in the quality of the vowel. For instance, the short stem of the root *ca·m* ‘try’ is attested in the following forms: *cim*, *cam*, *cəm*, *cm*. It appears that the epenthetic vowel is rather indistinct in nature and need not even appear in more rapid speech. It may be that no phonological features are assigned to the vowel, and that its quality is determined by interpolation between the phonetic targets of the adjacent segments. At any rate, it is clear that these vowels are in fact epenthetic and not present in the underlying representations of the roots. The rule of epenthesis consists of inserting a vowel slot after an unsyllabified consonant; as just discussed, the quality of the vowel is determined by the adjacent consonants. Examples:

- |      |                      |    |                       |                |
|------|----------------------|----|-----------------------|----------------|
| (25) | /t <sub>mu</sub> ·s/ | —> | [t <sub>i</sub> mu·s] | ‘close (door)’ |
|      | /q <sub>l</sub> p/   | —> | [q <sub>a</sub> lp]   | ‘roll’         |
|      | /k <sup>w</sup> l/   | —> | [k <sup>w</sup> ul]   | ‘reach’        |

When the unsyllabified consonant is a glide /y,w/, it simply vocalizes to /i,u/. For example, the long stem *ya·c* ‘live’ becomes *ic* (rather than \**yəc*). In these cases there is no independent epenthetic vowel.

The rule must apply across word boundaries as well, since it is needed before the enclitic /ks/ that occurs after the first stressed word of a noun phrase:

- (26) k<sub>i</sub>lu·=ks  
water=to  
‘to the water’

- (27) ʔəyá·cit=i<sub>k</sub>s  
place=to  
‘to a place’

- (28) xám-t=i<sub>k</sub>s    ʔəyá·cit  
one-ADJ=to    place  
‘to one place’

The placement of the clitic makes crucial reference to syntactic information and so epenthesis must be postlexical in addition to lexical.

## 5. Analysis

In this section I discuss why a metathesis analysis is problematic and then consider an account in terms of autosegmental spreading.



**5.2. Templates.** Many of the same arguments against a metathesis analysis also hold against a templatic analysis. One might be tempted to assume templates because of the parallelism between roots such as those in (13) and (14). In effect, one could incorporate the metathesis into the templates. For example:

|      |      |                |                 |                |
|------|------|----------------|-----------------|----------------|
| (33) |      | ‘jump’         | ‘turn back’     | ‘rub’          |
|      | CCV  | <b>tpa-y</b>   | <b>xmi-y</b>    | <b>ʔpu-ʔu</b>  |
|      | CVVC | <b>ta·p-al</b> | <b>x̣i·m-al</b> | <b>ʔu·p-al</b> |

Under this analysis, the short stem would have the shape CCV, the long stem CVVC. These templates work only for two-consonant roots, however, and as we have seen roots can have various phonological shapes. The template would also have to incorporate a consonant-only suffix such as in (31). And again, most crucially, forms as in (32c) where the root vowel is missing in the short stem but not seen as an echo vowel in a suffix would require a different set of templates.

**5.3. Root Vowel Copying and Deletion.** For an attempt at a formal analysis in autosegmental phonology, see Buckley (1989); here I will give only the outlines of an analysis. We need to account for the following facts: the verb has two stems, with and without the root vowel; the root vowel is copied over any consonants to create an echo vowel in the inchoative suffix; the creation of the echo vowel is blocked by an intervening suffix which contains a vowel; and when the echo vowel is blocked, the default vowel of the suffix is /a/.

The first issue to be dealt with is whether the short or long stem is basic. If it is the short stem, then a morphological rule must insert a long vowel to create the long stem. Since the position of the vowel cannot be completely predicted, at this time an insertion analysis must be rejected. Thus the long stem is basic, and there is a morphological rule which creates the ‘present’ stem by deleting the root vowel of the long stem. Before it is deleted, however, the root vowel must be copied to the inchoative suffix. Therefore there are two rules, one which copies the root vowel and one which deletes it. As an example consider the derivation of *cḷx̣<sup>w</sup>uy-ṇx̣* ‘scared him’:

|      |                     |                                    |
|------|---------------------|------------------------------------|
| (34) | Underlying Form     | <i>cḷu·x̣<sup>w</sup>-Vy-ṇx̣</i> |
|      | Root Vowel Copying  | <i>cḷu·x̣<sup>w</sup>-uy-ṇx̣</i> |
|      | Root Vowel Deletion | <i>cḷx̣<sup>w</sup>-uy-ṇx̣</i>   |

When a vowel intervenes, the Copying rule cannot apply, so a default /a/ is assigned:

|      |                     |   |
|------|---------------------|---|
| (35) | Underlying Form     | <i>p-cḷu·x̣<sup>w</sup>-cu·s-Vy-ṇx̣</i> |
|      | Root Vowel Copying  | —   |
|      | Root Vowel Deletion | <i>p-cḷx̣<sup>w</sup>-cu·s-Vy-ṇx̣</i>   |
|      | Default Vowel       | <i>p-cḷx̣<sup>w</sup>-cu·s-ay-ṇx̣</i>   |

Notice that Copying does not apply even though the preceding syllable /cu·s/ has the same vowel that would normally be copied from the root; it only operates then the first vowel to the left of the inchoative is the root vowel.

**5.4. Exceptional Verbs.** There are at least three verbs which do not have the expected echo vowel: *nu·nu·s / nu·ns* ‘eat’; *ku·yu·c / ku·yc* ‘dry’; and *ki·hi·ks / ki·hks* ‘turn over’ all take the default -ay suffix. Since all three have the pattern CV·CV·C(C) where both vowels are identical, it may be possible to derive the lack of spreading from the phonology: for example, perhaps the two vowels are linked to the same features and Spreading only applies to singly linked feature complexes, or the features must be floating in order to spread (i.e. Spreading follows Root Vowel Deletion). But given forms like *ʔi·li·t / ʔi·lt* ‘talk’ and *hulu·ḳ / huḷḳ* ‘be loose’ which do spread as expected, I am forced for now to assume that the verbs are simply irregular.

## 6. Variable Sonorant Orderings

In section 3.2 above it was stated that when the penultimate consonant of the root is a sonorant (including a glide which may sometimes surface as a high vowel), the normal position of the root vowel in the long stem is after that consonant. As also mentioned, there are exceptions to this generalization where the opposite order obtains. In some cases it seems clear that the difference is due to the morphological context. For example, the root *tmu:s* ‘close (door)’:

- (36) *tmu:s-x*                    ‘it’s closed’  
*tu:ms-a*                        ‘a door’

The verbal suffix *-x* selects the sonorant-vowel ordering, and the nominalizer *-a* selects vowel-sonorant. A similar pair:

- (37) *m-knu:h<sup>w</sup>-i:x*            ‘he dug’  
*ku:nh<sup>w</sup>-a*                       ‘a hole’

Note that roots lacking sonorants do not exhibit this alternation:

- (38) *ʔqu:x<sup>w</sup>-a*                    ‘a bet’  
 \**ʔu:q<sup>w</sup>-a*

Other examples:

- (39) *tnu:h-aw*                      ‘he gets enough to eat’  
*tu:n(h)-st-x*                      ‘he was sated’<sup>3</sup>

Here the verbal *-aw* also selects sonorant-vowel, which the adverbial *-st* selects vowel-sonorant. The following *-x* is apparently blocked from selecting sonorant-vowel because it is not adjacent to the stem.

- (40) *ʔmi:st-aw*                      ‘it was so’  
*ʔi:mst-a*                              ‘thus’

- (41) *sna:q<sup>ˀ</sup>-aw*                    ‘it is bad’  
*sa:nq-a*                               ‘badly’

These pairs show the same *-aw* as in (39) and an adverbial use of nominal-*a* from (36).

The forms which are attested only in the vowel-sonorant order seem to be due simply to chance gaps in the data. For example, I have not found instances of *q<sup>ˀ</sup>u:lc* ‘challenge’ with the common completive suffix *-x* which selects sonorant-vowel; it occurs in the sources with the prohibitive *-a*:

- (42) *x=ʔiya*    *q<sup>ˀ</sup>u:lc-a*                      ‘don’t challenge him’  
 you=not    challenge-PROH

This same suffix demonstrably selects the vowel-sonorant order in verbs for which the alternation is attested (cf. 36):<sup>4</sup>

<sup>3</sup> The /h/ is deleted by rule next to a fricative.

<sup>4</sup> Since it has the same phonological shape and selects the same stem, it is conceivable that the prohibitive suffix is the same as, or related to, the nominal or (more likely) adverbial *-a* illustrated above.

- (43)  $\dot{x}$ = $\dot{t}$ iya tu.ms-a 'don't close it'  
 you=not close-PROH

It seems safe to assume that if verbs such as 'challenge' were attested with a suffix like *-aw* or *-x*, it would occur in the form  $\dot{q}'lu.c$ . Although I have not verified this type of correlation with every such root, I am going to assume that they are due to similar gaps in the attested data.

## 7. Reduplication

There are several types of reduplication attested in Alesa, two of which are relevant to stem alternations.

**7.1. Complete Reduplication.** There are a few nominal forms which consist of two identical sequences, i.e. complete reduplication:

- (44)  $\dot{t}u\cdot\dot{x}$ - $\dot{t}u\cdot\dot{x}$  'bark'  
 $\dot{t}pa\dot{x}$ - $\dot{t}pa\dot{x}$  'shoulder blade'  
 $\dot{x}^w i\cdot\dot{x}^w i$  'paddle'  
 hulu·-hulu· 'halibut'  
 plu·h-plu·h 'hair'

Generally there is no related form which is unreduplicated, and the process at any rate is not particularly interesting since it simply copies the entire stem. This type will not be pursued here.

**7.2. Type A Partial Reduplication.** The first example of partial reduplication I will label type A. It consists of copying the first onset and nucleus of the stem and prefixing it:

- (45) hayc- hay-hayc- 'cross'  
 pxi·lcu·s- pxi·-pxi·lcu·s- 'ask'  
 $\dot{t}qu\cdot x^w$ -  $\dot{t}qu\cdot$ - $\dot{t}qu\cdot x^w$ - 'bet'

This reduplication is found with verb roots which do not participate in the root vowel alternations described above. The plain form is used as the short stem (e.g. with the inchoative) and the reduplicated form is used as the long stem (e.g. with the completive *-x*). For example:

- (46) pxi·lcu·s-**ay**-n $\dot{x}$  'he asked him'  
 ask-INCH-him
- (47) pxi·-pxi·lcu·s-**x**-s $\dot{x}$  '(they) asked each other'  
 REDUP-ask-COMP-REFL

The inchoative in these cases always takes the default *-ay* form. It appears that the Copying rule is restricted to the same class of verbs that the vowel Deletion rule applies to.

**7.3. Type B Partial Reduplication.** The second kind of partial reduplication (type B) copies the same part of the stem — the onset and nucleus of the first syllable — but here the vowel of the stem disappears. Type B is primarily associated with a suffix *-aw* which may be related to the durative encountered above; it is generally used in the formation of nouns and infinitives, especially for games:

- |      |   |   |
|------|---|---|
| (48) | q̇a·lp<br>qa·-q̇lp-aw   | ‘roll’<br>‘ball’                                    |
| (49) | pu·nh <sup>w</sup><br>pu·-pnh <sup>w</sup> -aw                    | ‘push aside’<br>‘ball’ <sup>5</sup>                 |
| (50) | xi·lt<br>xi·-x̄lt-aw  | ‘throw grace-sticks’<br>‘play game of grace-sticks’ |
| (51) | c̄x <sup>w</sup> a·t<br>c̄x <sup>w</sup> a·-c̄x <sup>w</sup> t-aw | ‘fight’<br>‘wrestle’                                |
| (52) | pa·s̄x<br>pa·-ps̄x-aw   | (not attested)<br>‘play cat’s cradle’               |

Not all instances of type B reduplication involve *-aw*:

- |      |                      |                          |
|------|----------------------|--------------------------|
| (53) | ci·k̄<br>ci·-ck̄     | ‘shoot’<br>‘arrow’       |
| (54) | ki·st<br>ki·-kst-ḡan | ‘leave’<br>‘inheritance’ |

It is clear, however, that the reduplication in these cases is the same.

In type A, a rule of reduplication copies the root vowel and onset and prefixes it to the stem. In type B the same rule applies, but then the rule of Deletion also applies and eliminates the original vowel of the stem. Since the deletion applies only to the stem, the copied vowel in the prefix is left intact. The difference between these two types is accounted for by the rule already needed to describe the difference between short and long stems.

## 8. Comparative Perspective

Although the relationship of Alsea to other languages has never been demonstrated conclusively (Buckley 1988), it is interesting to compare the root patterns described here for Alsea with similar patterns in other languages that have been classified as Penutian. The two languages that have been grouped with Alsea as Coast Oregon Penutian are Siuslaw and Coos; both show evidence of similar stem alternations. While further study is needed to better understand them, one important difference from Alsea is that they appear to involve just the vowel /a/. In Siuslaw, the longer stem (in the second column) marks ergativity in the noun and intensive/durative aspect in the verb (Frachtenberg 1922a):

### (55) *Siuslaw Nouns*

|         |          |           |
|---------|----------|-----------|
| hi·č    | hyač     | ‘person’  |
| haymu·t | hayamu·t | ‘all’     |
| umɬi·   | umaɬi·   | ‘thunder’ |

---

<sup>5</sup> The ball referred to is one used in the game of shinny, similar to field hockey; presumably the action of pushing the ball with a stick explains the derivation. The connection of ‘ball’ to ‘roll’ in (48) is obvious; this is actually the name for a shinny ball in the Yaquina dialect.

(56) *Siuslaw Verbs*

|       |                    |           |
|-------|--------------------|-----------|
| ci·λ- | cy <sup>a</sup> λ- | ‘shoot’   |
| anχ-  | anaχ-              | ‘give up’ |
| ayq-  | ayaq-              | ‘leave’   |

In the Hanis dialect of Coos, the longer stem marks an active, transitive, or durative verb (Frachtenberg 1922b):

(57) *Hanis Coos*

|                      |                        |          |
|----------------------|------------------------|----------|
| tk <sup>w</sup> i·λ- | tk <sup>w</sup> i·yaλ- | ‘follow’ |
| činλ-                | činaλ-                 | ‘reach’  |
| sto·q-               | sto·waq-               | ‘stand’  |

Neither language is currently well described, but when these similarities in structure are better understood they may present a source of further evidence for genetic relationship.

Further afield, two California Penutian languages have been given templatic analyses in the phonological literature: Yawelmani Yokuts and Sierra Miwok. In these languages the form of the verb stem is determined by the suffix:

(58) *Yawelmani* (Newman 1944, Archangeli 1983)

|        |  |                                      |
|--------|--|--------------------------------------|
| CVCC   | <b>lu</b> k <sup>i</sup> l-ut            | ‘was buried’                         |
| CVCVVC | wsiil <b>lu</b> k <sup>oo</sup> l-uwsool | ‘cemetery’ ( <i>uu</i> → <i>oo</i> ) |

(59) *Sierra Miwok* (Freeland 1951, Broadbent 1964, Smith 1985)

|        |                        |                    |
|--------|------------------------|--------------------|
| CVCCV  | <b>hal</b> ki-         | ‘hunt’             |
| CVVCVC | <b>haal</b> ik-tee-ny- | ‘hunt along trail’ |

These are examples of the ‘inner stem change’ given by Sapir (1929) as one of the characteristics of Penutian. Although I have argued that the alternations in Alsea are not best analyzed as templatic, it is entirely conceivable that the two systems could be historically related. Morphological evidence of this nature may shed light on the possible relationships within the Penutian hypothesis.

## 9. Conclusion

I have argued for a small set of rules which combine to produce the various forms of verb stems found in Alsea: Root Vowel Copying, Deletion, and Epenthesis. The advantage of this approach is that it makes for a simpler and more coherent analysis which points out similarities in the seemingly diverse processes of short-long stem alternation and reduplication. This description of the verb root makes possible better comparisons with similar alternations in other Penutian languages, which can serve as a further source of evidence for — or against — the Penutian hypothesis.

## References

- Archangeli, Diana. 1983. The root CV-template as a property of the affix: evidence from Yawelmani. *Natural Language and Linguistic Theory* 1.347-384.
- Broadbent, S. M. 1964. *The Southern Sierra Miwok Language*. UCPL 38.
- Buckley, Eugene. 1987. Coast Oregon Penutian: a lexical comparison. Scott DeLancey and Russell S. Tomlin (eds), *Proceedings of the Third Annual Meeting of the Pacific Linguistics Conference* (Eugene, November 13-15). Department of Linguistics, Univ. of Oregon.
- \_\_\_\_\_. 1988. Reconstructing the Sounds of Alsea. Scott DeLancey (ed), *Papers from the 1988 Hokan-Penutian Languages Workshop* (Eugene, June 16-18). University of Oregon Papers in Linguistics: Publications of the Center for Amerindian Linguistics and Ethnography 1.
- \_\_\_\_\_. 1989. Alsea Root Structure. Ms., UC Berkeley.
- Frachtenberg, Leo J. 1917. Myths of the Alsea Indians of Northwestern Oregon. *International Journal of American Linguistics* 1.64-75.
- \_\_\_\_\_. 1918. Yakonan (Alsea). Unpublished typescript with handwritten additions and corrections. Philadelphia: American Philosophical Society Library, Franz Boas Collection.
- \_\_\_\_\_. 1920. *Alsea Texts and Myths*. Washington: Bureau of American Ethnology, Bulletin 67.
- \_\_\_\_\_. 1922a. Siuslawan (Lower Umpqua). Franz Boas (ed), *Handbook of American Indian Languages*, Part 2. BAE Bulletin 40.
- \_\_\_\_\_. 1922b. Coos. Franz Boas (ed), *Handbook of American Indian Languages*, Part 2. BAE Bulletin 40.
- Freeland, L. S. 1951. *Language of the Sierra Miwok*. IJAL Memoir 6.
- Harrington, John P. 1942. Manuscript notes. Originals at National Anthropological Archives, Washington, DC; microfilm available from Kraus International Publications, Millwood, NY (mainly reel 021, also 023, 024).
- Hoard, James E. 1978. Syllabification in Northwest Indian Languages. Alan Bell and Joan Bybee Hooper (eds), *Syllables and Segments*. New York: North Holland Publishing.
- Jacobs, Melville. 1935. Manuscript notes. University of Washington Archives (slip files 53,54,55,56; paper on Alsea phonemes 101-2).
- Kenstowicz, Michael, and Charles Kisseberth. 1979. *Generative Phonology: Description and Theory*. Orlando: Academic Press.
- Newman, Stanley. 1944. *Yokuts Language of California*. Viking Fund Publications in Linguistics 2.
- Sapir, Edward. 1929. Central and North American Languages. *Encyclopaedia Britannica*, 14th edition, volume 5, pp. 138-41.
- Silverstein, Michael. 1979. Penutian: an assessment. Lyle Campbell and Marianne Mithun (eds), *The languages of native America: historical and comparative assessment*. Austin: University of Texas Press.
- Smith, Norval. 1985. Spreading, Reduplication and the Default Option in Miwok Nonconcatenative Morphology. Harry van der Hulst and Norval Smith (eds), *Advances in Nonlinear Phonology*. Dordrecht: Foris.

## Appendix: List of Alternating Stems

The following list gives all attested verbs which show alternating short and long forms of the stem. In many cases the forms given are only tentative, based on limited data gathered from the texts. A complete examination of all verbs in the existing corpus is required before we can posit more definitive forms. Epenthetic vowels are omitted where their status is relatively clear, though in some cases suspected epenthetic vowels have been left in pending closer analysis. Where variable sonorant ordering is attested, both forms are given, separated by a slash.

| STEM: LONG   | SHORT                                 | GLOSS            | STEM: LONG                                   | SHORT                              | GLOSS             |
|--|---------------------------------------|------------------|--|------------------------------------|-------------------|
| <i>cah</i>   | <i>ch</i>                             | stab             | <i>haya'h</i>                                | <i>hayh</i>                        | rest              |
| <i>canaʔtq</i>   | <i>canʔtq</i>                         | be lame          | <i>haya'n</i>                                | <i>hay'n</i>                       | see               |
| <i>ca'ct</i>   | <i>cct</i>                            | fish with pole   | <i>ha·k'</i>                                 | <i>hk'</i>                         | smell             |
| <i>ca'l</i>  | <i>cl</i>                             | go out (light)   | <i>ha·lt</i>                                 | <i>hlt</i>                         | watch             |
| <i>ca·m</i>  | <i>cm</i>                             | try              | <i>ha·n</i>                                  | <i>han</i>                         | see               |
| <i>ca·ps</i>   | <i>cps</i>                            | do deliberately  | <i>ha·p</i>                                  | <i>hp</i>                          | open mouth; hide  |
| <i>ca·s</i>  | <i>cs</i>                             | win              | <i>ha·t</i>                                  | <i>hat</i>                         | lift              |
| <i>ci·as / cais</i>  | <i>ci·s</i>                           | divide           | <i>hial</i>                                  | <i>hil</i>                         | miss target       |
| <i>ci·a·q / caiq</i>   | <i>ci·q</i>                           | be hoarse        | <i>hi·k'</i>                                 | <i>hk'</i>                         | touch             |
| <i>ci·k</i>  | <i>ck</i>                             | lie flat         | <i>hla·sn / ha·lsn</i>                       | <i>hlsn</i>                        | take care of      |
| <i>ci·k'</i>   | <i>ck'</i>                            | shoot            | <i>hulu·k'</i>                               | <i>hulk'</i>                       | be loose, not fit |
| <i>ci·k<sup>w</sup></i>  | <i>ck<sup>w</sup></i>                 | dip              | <i>huni·k'</i>                               | <i>hunk'</i>                       | cover head        |
| <i>ci·x<sup>w</sup>t</i>   | <i>c<sup>w</sup>x<sup>w</sup>t</i>    | push             | <i>hu·yu·k<sup>w</sup></i>                   | <i>hu·yk<sup>w</sup></i>           | tie hair in knot  |
| <i>cki·tx</i>  | <i>ckt<sup>x</sup></i>                | put down         | <i>hwalah</i>                                | <i>hwalh</i>                       | shout             |
| <i>cki·ut</i>  | <i>cki·i</i>                          | escape           | <i>ka·(?)</i>                                | <i>k?</i>                          | stop              |
| <i>ck<sup>w</sup>a·hl</i>  | <i>ck<sup>w</sup>(h)l</i>             | walk on stilts   | <i>ka·c'</i>                                 | <i>kc'</i>                         | wear              |
| <i>ck<sup>w</sup>a·nat</i>   | <i>ck<sup>w</sup>a·nt</i>             | bend down        | <i>ka·m</i>                                  | <i>km</i>                          | dodge             |
| <i>clah / calh</i>   | <i>clh</i>                            | sing             | <i>ka·xk</i>                                 | <i>kxk</i>                         | assemble          |
| <i>clna·p</i>  | <i>clnp</i>                           | writhe           | <i>ki·hi·ks</i>                              | <i>ki·hks [+a]</i>                 | turn over         |
| <i>cmi·x</i>   | <i>cm<sup>x</sup></i>                 | work             | <i>ki·qh</i>                                 | <i>kqh</i>                         | be wet            |
| <i>cnu·s</i>   | <i>cns</i>                            | sleep (pl)       | <i>ki·st</i>                                 | <i>kst</i>                         | leave (tr)        |
| <i>cpu·ut / cpu·it</i>   | <i>cpu·t</i>                          | float            | <i>kli·h</i>                                 | <i>klh</i>                         | dance (pl)        |
| <i>cqama·ʔ</i>   | <i>cqamʔ</i>                          | close eyes       | <i>kna·x</i>                                 | <i>kn<sup>x</sup></i>              | dance with (pl)   |
| <i>cqawi·s</i>   | <i>cqaws</i>                          | scream           | <i>kna·x<sup>w</sup></i>                     | <i>kn<sup>x</sup><sup>w</sup></i>  | be angry          |
| <i>cqama·i</i>   | <i>cqami</i>                          | finish           | <i>knu·h / ku·nh</i>                         | <i>knh</i>                         | dig               |
| <i>cq<sup>w</sup>nu·q<sup>w</sup> / cq<sup>w</sup>urnq<sup>w</sup></i> | <i>cq<sup>w</sup>nu·q<sup>w</sup></i> | approach         | <i>ku·yu·c</i>                               | <i>ku·yc [+a]</i>                  | dry               |
| <i>cu·la·qn</i>  | <i>cu·lqn</i>                         | pack             | <i>kaya·xc</i>                               | <i>kayxc</i>                       | be ready          |
| <i>cxap</i>  | <i>c<sup>x</sup>p</i>                 | throw away (pl)  | <i>ka·ʔ</i>                                  | <i>kʔ</i>                          | wade              |
| <i>cx<sup>w</sup>a·t</i>   | <i>c<sup>x</sup><sup>w</sup>t</i>     | fight            | <i>ki·max / ki·yam<sup>x</sup></i>           | <i>ki·m<sup>x</sup></i>            | fasten            |
| <i>cx<sup>w</sup>i·t</i>   | <i>c<sup>x</sup><sup>w</sup>i·t</i>   | tear             | <i>k'lah / k'alh</i>                         | <i>k'lh</i>                        | go out            |
| <i>cʔi·aq / cʔaiq</i>  | <i>cʔi·q</i>                          | be straight      | <i>k'laht</i>                                | <i>k'lht (k'lʔt)</i>               | defecate          |
| <i>cai·ʔ</i>   | <i>ci·ʔ</i>                           | split            | <i>k'l'i·w</i>                               | <i>k'l'w</i>                       | enter canoe (pl)  |
| <i>ca·t</i>  | <i>ct</i>                             | shine            | <i>k<sup>w</sup>ah</i>                       | <i>k<sup>w</sup>h</i>              | copulate          |
| <i>ci·aq / caiq</i>  | <i>ci·q</i>                           | decapitate       | <i>k<sup>w</sup>al</i>                       | <i>k<sup>w</sup>l</i>              | reach             |
| <i>ci·n</i>  | <i>cn</i>                             | tie              | <i>k<sup>w</sup>al'</i>                      | <i>k<sup>w</sup>l'</i>             | gather (pl)       |
| <i>clu·x</i>   | <i>cl<sup>x</sup></i>                 | fear             | <i>k<sup>w</sup>aʔ</i>                       | <i>k<sup>w</sup>ʔ</i>              | scratch           |
| <i>ena·s</i>   | <i>ens</i>                            | be repulsive     | <i>k<sup>w</sup>mu·k<sup>w</sup></i>         | <i>k<sup>w</sup>mk<sup>w</sup></i> | run               |
| <i>cu·as</i>   | <i>cu·s</i>                           | crawl            | <i>k<sup>w</sup>mu·t</i>                     | <i>k<sup>w</sup>mt</i>             | chop off          |
| <i>cu·x</i>  | <i>c<sup>x</sup></i>                  | wash             | <i>k<sup>w</sup>ya·t / k<sup>w</sup>a·yt</i> | <i>k<sup>w</sup>yt</i>             | dance (sg)        |
| <i>c<sup>x</sup><sup>w</sup>a·s</i>                                    | <i>c<sup>x</sup><sup>w</sup>s</i>     | be bushy         | <i>la·tq</i>                                 | <i>iltq</i>                        | do, happen        |
| <i>halaq</i>   | <i>halq</i>                           | take out         | <i>lu·t</i>                                  | <i>iltu</i>                        | frighten          |
| <i>hawa·q</i>  | <i>hawq</i>                           | grow             | <i>ma·lh / mlah</i>                          | <i>mlh</i>                         | lose              |
| <i>hayak<sup>w</sup></i>   | <i>hayk<sup>w</sup></i>               | be in the middle | <i>ma·nt / manat</i>                         | <i>mnt</i>                         | wait              |

|  |                         |                     |  |                            |                     |
|--|-------------------------|---------------------|--|----------------------------|---------------------|
| <i>ma·x</i>                                  | <i>m·x</i>              | paddle              | <i>q<sup>w</sup>·lc</i>                      | <i>q<sup>w</sup>lc</i>     | challenge           |
| <i>mki·n</i>                                 | <i>mkn</i>              | hit with projectile | <i>q<sup>w</sup>nah</i>                      | <i>q<sup>w</sup>nh</i>     | swell               |
| <i>młana·t</i>                               | <i>młant</i>            | hide (tr)           | <i>q<sup>w</sup>·t</i>                       | <i>q<sup>w</sup>t</i>      | drink               |
| <i>nu·nu·s</i>                               | <i>nu·ns</i> [+a]       | eat                 | <i>sa·p</i>                                  | <i>sp</i>                  | dig                 |
| <i>pai·h</i>                                 | <i>pi·h</i>             | be absent           | <i>sar·t</i>                                 | <i>st</i>                  | comb                |
| <i>pawa·k</i>                                | <i>pawk</i>             | suspect             | <i>si·q<sup>w</sup>l</i>                     | <i>sq<sup>w</sup>l</i>     | stand (pl)          |
| <i>pa·k</i>                                  | <i>pk</i>               | put                 | <i>si·t</i>                                  | <i>sł</i>                  | sink                |
| <i>pa·x</i>                                  | <i>px</i>               | be blind            | <i>sla·x<sup>w</sup></i>                     | <i>slx<sup>w</sup></i>     | melt                |
| <i>pa·xi</i>                                 | <i>paxi</i>             | hit with stick      | <i>sli·k<sup>w</sup></i>                     | <i>slk<sup>w</sup></i>     | do (pl)             |
| <i>piui·s·x</i>                              | <i>pius·x</i>           | make noise          | <i>slu·q<sup>w</sup></i>                     | <i>slq<sup>w</sup></i>     | be cold             |
| <i>pi·t</i>                                  | <i>pt</i>               | give, pay           | <i>smi·x<sup>w</sup></i>                     | <i>smx<sup>w</sup></i>     | lie alongside       |
| <i>pi·tq</i>                                 | <i>ptq</i>              | upset               | <i>sna·q<sup>w</sup> / sa·nq<sup>w</sup></i> | <i>snq<sup>w</sup></i>     | be bad              |
| <i>pi·u·t</i>                                | <i>pi·t</i>             | be warm             | <i>sna·q<sup>w</sup>k</i>                    | <i>snq<sup>w</sup>k</i>    | be better           |
| <i>pkur·c</i>                                | <i>pkc</i>              | pick, gather        | <i>sta·q<sup>w</sup></i>                     | <i>stq<sup>w</sup></i>     | kick                |
| <i>pkur·s</i>                                | <i>pk·s</i>             | urinate             | <i>stni·k</i>                                | <i>stnk</i>                | walk under          |
| <i>pla·q</i>                                 | <i>plq</i>              | be rotten           | <i>su·lhk</i>                                | <i>sl(h)k</i>              | dream               |
| <i>plaq<sup>w</sup></i>                      | <i>plq<sup>w</sup></i>  | sit (sg)            | <i>su·pł</i>                                 | <i>spł</i>                 | slide               |
| <i>pnu·h<sup>w</sup> / pu·nh<sup>w</sup></i> | <i>pnh<sup>w</sup></i>  | push aside          | <i>su·p</i>                                  | <i>sp</i>                  | fall                |
| <i>pqayiat·xn</i>                            | <i>pqayit·xn</i>        | watch secretly      | <i>swa·t</i>                                 | <i>swt</i>                 | drop                |
| <i>pu·lh</i>                                 | <i>plh</i>              | bite                | <i>swałt / sawłt</i>                         | <i>su·łt</i>               | be fresh            |
| <i>pu·t</i>                                  | <i>pt</i>               | stick out           | <i>swi·t</i>                                 | <i>swt</i>                 | blow (wind)         |
| <i>pu·t</i>                                  | <i>pt</i>               | stand up            | <i>tahat</i>                                 | <i>taht</i>                | buy                 |
| <i>płit·tq</i>                               | <i>ptq</i>              | lie face down       | <i>taq<sup>w</sup></i>                       | <i>tq<sup>w</sup></i>      | weep (pl)           |
| <i>płaq</i>                                  | <i>płq</i>              | touch               | <i>ta·mq<sup>w</sup> / tmaq<sup>w</sup></i>  | <i>tmq<sup>w</sup></i>     | be quiet            |
| <i>płaqn</i>                                 | <i>płqn</i>             | touch               | <i>ta·p</i>                                  | <i>tp</i>                  | fly                 |
| <i>qawa·x</i>                                | <i>qaw·x</i>            | go up               | <i>ta·sn</i>                                 | <i>tsn</i>                 | point at            |
| <i>qayur·t</i>                               | <i>qayt</i>             | leak                | <i>ta·xt</i>                                 | <i>taxt</i>                | take turns          |
| <i>qayur·t</i>                               | <i>qayłt</i>            | break               | <i>ta·x<sup>w</sup></i>                      | <i>tx<sup>w</sup></i>      | pull                |
| <i>qa(?)</i>                                 | <i>qł?</i>              | enter (sg)          | <i>tiuiłhwn</i>                              | <i>tiuiłhwn</i>            | create              |
| <i>qa·t</i>                                  | <i>qt</i>               | hook                | <i>ti·mi·x<sup>w</sup>m</i>                  | <i>ti·mx<sup>w</sup>m</i>  | make fun of         |
| <i>qi·l</i>                                  | <i>ql</i>               | escape              | <i>ti·q<sup>w</sup>l</i>                     | <i>tq<sup>w</sup>l</i>     | undress             |
| <i>qla·hk</i>                                | <i>qlhk</i>             | run away            | <i>ti·u·x</i>                                | <i>ti·x</i>                | insist              |
| <i>qli·h</i>                                 | <i>qlh</i>              | be tired            | <i>tkali·łc</i>                              | <i>tkalłc</i>              | burn                |
| <i>qlu·k<sup>w</sup></i>                     | <i>qlk<sup>w</sup></i>  | walk in circle      | <i>tka·s</i>                                 | <i>tk·s</i>                | break               |
| <i>qmi·t</i>                                 | <i>qmłt</i>             | be dark             | <i>tlih</i>                                  | <i>tłh</i>                 | sweep               |
| <i>qu·i·x</i>                                | <i>qu·x</i>             | stick up            | <i>tlu·q<sup>w</sup></i>                     | <i>tlq<sup>w</sup></i>     | land close to shore |
| <i>qłai·t</i>                                | <i>qłit</i>             | count               | <i>tlu·q<sup>w</sup></i>                     | <i>tlq<sup>w</sup></i>     | stagger             |
| <i>qłni·p</i>                                | <i>qłnp</i>             | skin                | <i>tmu·s / tu·ms</i>                         | <i>tms</i>                 | close door          |
| <i>qłuit</i>                                 | <i>qłit</i>             | pierce              | <i>tnu·h / tu·nh</i>                         | <i>tnh</i>                 | be sated            |
| <i>qłi·h</i>                                 | <i>qh</i>               | be dark             | <i>tqi·li·k</i>                              | <i>tqi·lk</i>              | call                |
| <i>qayak<sup>w</sup></i>                     | <i>qayk<sup>w</sup></i> | hunt clams          | <i>tq<sup>w</sup>li·k</i>                    | <i>tq<sup>w</sup>lk</i>    | be warm             |
| <i>qayak<sup>w</sup></i>                     | <i>qayk<sup>w</sup></i> | harm                | <i>tq<sup>w</sup>ayaxkl</i>                  | <i>tq<sup>w</sup>ayxkl</i> | lie face up         |
| <i>qa·t</i>                                  | <i>qłt</i>              | wear                | <i>tu·k<sup>w</sup></i>                      | <i>tk<sup>w</sup></i>      | be deaf             |
| <i>qi(?)</i>                                 | <i>q(?)</i>             | be light            | <i>tu·i·h</i>                                | <i>tu·h</i>                | spill               |
| <i>qi·n</i>                                  | <i>qn</i>               | die                 | <i>ıamas</i>                                 | <i>ıams</i>                | agree (pl)          |
| <i>qlap</i>                                  | <i>qlp</i>              | roll                | <i>ıawa·y</i>                                | <i>ıaw·y</i>               | play                |
| <i>qli·x</i>                                 | <i>qlx</i>              | shout               | <i>ıax</i>                                   | <i>ıx</i>                  | think               |
| <i>qli·x<sup>w</sup></i>                     | <i>qlx<sup>w</sup></i>  | hide                | <i>ıayi·x</i>                                | <i>ıay·x</i>               | sharpen             |
| <i>qma·l</i>                                 | <i>qml</i>              | be bashful          | <i>ıa·mn</i>                                 | <i>ımn</i>                 | be sorry            |
| <i>qna·ln</i>                                | <i>qnln</i>             | have nosebleed      | <i>ıma·s</i>                                 | <i>ıms</i>                 | paint               |
| <i>qsaw</i>                                  | <i>qsw</i>              | send                | <i>wqk</i>                                   | <i>wk</i>                  | hang over           |
| <i>q<sup>w</sup>·am</i>                      | <i>q<sup>w</sup>m</i>   | follow              | <i>wa·l</i>                                  | <i>wł</i>                  | spawn               |
| <i>q<sup>w</sup>·l</i>                       | <i>q<sup>w</sup>l</i>   | go upstream         | <i>wa·st</i>                                 | <i>wst</i>                 | follow              |
| <i>q<sup>w</sup>lah</i>                      | <i>q<sup>w</sup>lh</i>  | go upstream         | <i>wa·tx</i>                                 | <i>wtx</i>                 | become              |

|                          |                        |                    |                            |                         |                   |
|--------------------------|------------------------|--------------------|----------------------------|-------------------------|-------------------|
| <i>wi·l</i>              | <i>wl</i>              | come               | <i>ʔi·m</i>                | <i>ʔm</i>               | whirl             |
| <i>xli·t</i>             | <i>xlt</i>             | look for           | <i>ʔlax<sup>w</sup>s</i>   | <i>ʔlx<sup>w</sup>s</i> | rain              |
| <i>xma·s</i>             | <i>xms</i>             | touch              | <i>ʔli·k</i>               | <i>ʔlk</i>              | have pity         |
| <i>xu·lm / xlu·m</i>     | <i>xlm</i>             | travel, move       | <i>ʔma·k<sup>w</sup></i>   | <i>ʔmk<sup>w</sup></i>  | walk back & forth |
| <i>ʔa·k<sup>w</sup></i>  | <i>ʔk<sup>w</sup></i>  | leave canoe        | <i>ʔna·h</i>               | <i>ʔnh</i>              | take the lead     |
| <i>ʔi·lt</i>             | <i>ʔlt</i>             | throw grace-sticks | <i>ʔplu·s</i>              | <i>ʔpls</i>             | swim              |
| <i>ʔi·lʔ</i>             | <i>ʔli</i>             | catch              | <i>ʔqa·t</i>               | <i>ʔqi</i>              | saw               |
| <i>ʔi·m</i>              | <i>ʔm</i>              | turn back          | <i>ʔqayai</i>              | <i>ʔqayt</i>            | cut off           |
| <i>ʔma·knk</i>           | <i>ʔmknk</i>           | do mischief        | <i>ʔql'·i·t / ʔqi'·l't</i> | <i>ʔql't</i>            | be sick           |
| <i>ʔu·q<sup>w</sup></i>  | <i>ʔq<sup>w</sup></i>  | drag               | <i>ʔtaq<sup>w</sup></i>    | <i>ʔtq<sup>w</sup></i>  | burst             |
| <i>ʔʔq·w</i>             | <i>ʔʔw</i>             | growl              | <i>ʔua·h</i>               | <i>ʔuh</i>              | climb             |
| <i>ʔ<sup>w</sup>a·p</i>  | <i>ʔ<sup>w</sup>p</i>  | whistle            | <i>ʔwa·q</i>               | <i>ʔwq</i>              | dry               |
| <i>ʔ<sup>w</sup>i·n</i>  | <i>ʔ<sup>w</sup>n</i>  | break              | <i>ʔu·i·t</i>              | <i>ʔut</i>              | enjoy             |
| <i>ʔ<sup>w</sup>nu·t</i> | <i>ʔ<sup>w</sup>nt</i> | obtain             | <i>ʔup</i>                 | <i>ʔp</i>               | rub               |
| <i>ʔ<sup>w</sup>u·t</i>  | <i>ʔ<sup>w</sup>t</i>  | blow (wind)        | <i>ʔut or ʔuc</i>          | <i>ʔt</i>               | bathe             |
| <i>yah</i>               | <i>yʔ</i>              | say (suppletive?)  | <i>ʔxla·w</i>              | <i>ʔxlw</i>             | come out (air)    |
| <i>ya·c</i>              | <i>ic</i>              | live               | <i>ʔxma·n</i>              | <i>ʔxmn</i>             | kill              |
| <i>ya·cx</i>             | <i>i·cx</i>            | be different       | <i>ʔx<sup>w</sup>a·s</i>   | <i>ʔx<sup>w</sup>s</i>  | tear              |
| <i>ya·la·s</i>           | <i>ya·ls</i>           | return             | <i>ʔala·k</i>              | <i>ʔalk</i>             | leave alone       |
| <i>ya·ʔ</i>              | <i>ʔay</i>             | go (suppletive)    | <i>ʔawi·ʔ</i>              | <i>ʔawʔ</i>             | approach          |
| <i>ya·ʔ</i>              | <i>i·ʔ</i>             | fly (pl)           | <i>ʔaya·c</i>              | <i>ʔayc</i>             | shake head        |
| <i>yu·ik</i>             | <i>yu·k</i>            | approach in canoe  | <i>ʔaya·h</i>              | <i>ʔayh</i>             | wish              |
| <i>yu·i·ʔ</i>            | <i>yu·ʔ, yuʔ</i>       | disappear          | <i>ʔaya·n</i>              | <i>ʔayn</i>             | cry               |
| <i>yu·l</i>              | <i>il</i>              | speak              | <i>ʔaya·t</i>              | <i>ʔayt</i>             | float             |
| <i>ʔawx</i>              | <i>ʔwx</i>             | spread over        | <i>ʔa·ck</i>               | <i>ʔack</i>             | sleep             |
| <i>ʔa·n</i>              | <i>ʔn</i>              | look back          | <i>ʔimi·st / ʔi·mst</i>    | <i>ʔimst</i>            | be thus           |
| <i>ʔa·pt</i>             | <i>ʔpt</i>             | fetch              | <i>ʔi·h</i>                | <i>ʔih</i>              | give              |
| <i>ʔa·q</i>              | <i>ʔq</i>              | cross              | <i>ʔi·li·t</i>             | <i>ʔi·lt</i>            | talk              |
| <i>ʔia·h</i>             | <i>ʔih</i>             | explain            | <i>ʔi·ʔ</i>                | <i>ʔʔ</i>               | say no            |
| <i>ʔi·kn</i>             | <i>ʔkn</i>             | admonish           | <i>ʔu·l</i>                | <i>wl</i>               | drown             |

In addition, I have found one noun which exhibits a similar alternation:

*hu·l'*                      *hl'*                      sister, siblings

The long stem is found in the singular *hu·l'*, the short stem in the plural *hl'·úy-s-uʔu*, which has the form of a deverbal noun: sibling-INCH-NOM-PLUR.