Anticipatory and progressive vowel lowering in Interior Salish, with notes on consonant retraction

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0. INTRODUCTION. Two connected phenomena occur in the Interior Salish languages, one of vowel lowering, and one of consonant retraction. The synchronic trigger for the lowering of a vowel is the presence of a faucal or retracting element in the word. A faucal element in a suffix causes the lowering of the root vowel; a retracted element in the root causes the lowering of the suffix vowel. Some of the languages of the Interior include retracted consonants in their inventories, and these correlate with lowered vowels.

This is the broad outline of the facts, elaboration of which follows in sections 1 and 2. I describe my present understanding of the details of vowel lowering and consonant retraction in each language in sections 3.1-3.8. The paper aims to bring together relevant data from all the languages of the Interior, a collation that should help sort out the connection and sequence of these phenomena, and, once the facts are all in, aid in the search for theoretical explanations.1

1. VOWEL LOWERING. Two such types occur: lowering of the root vowel; and lowering of the suffix vowel. Occasionally more than one vowel in a word may lower; and it may also be the case that vowel lowering occurs across word boundaries.

1.1. LOWERING OF THE ROOT VOWEL. This is long distance lowering: it takes place when some material intervenes between the root vowel and the faucal of the suffix.

1. Ka e → a; i'qče → i'nčq\-

1.2. LOWERING OF THE SUFFIX VOWEL. This is also long distance lowering: it is triggered by some roots, with intervening material between them and the vowel of the suffix.

2. Ka -mi > -m\-

2. Retracted consonants and adjacent vowels. Retracted consonants are reported in four of the languages of the Interior: Lillooet, Thompson, Shuswap, and Columbian. There are some reports that retracted consonants occur in Okanagan too. If there is widespread consonant retraction in the language then it has eluded me.2 Retraction refers to the tongue root. I will reproduce here the brief discussion that Czykowska-Higgins gives of retracted consonants in Columbian, and I make that suffice for my immediate purpose.

The Columbian coronals /c s l l' n/ all have retracted counterparts [ç s l' ñ]. As in Lillooet and Thompson, the unretracted fricative s and affricate c in Columbian are pronounced with tongue blade articulation and resemble [s] and [ç], respectively, while retracted s and ç sound "darkened". In discussing the corresponding sounds in Lillooet, van Eijk (1985) suggests that they sound velarized, and similar to Arabic emphatic coronals. It seems to me that in Columbian the "darkened" timbre of these sounds is due to uvularization rather than velarization... Unretracted I, l', and n sound just like their counterparts in English, while the corresponding retracted 1, l', and ñ are "darkened". Retracted ñ rarely appears in the data and it is still uncertain to what extent /ñ/ is regularly retracted in retracting environments. Similarly, it is unclear whether the other coronal laterals /\, ñ/ and the coronal stops /l, ñ/ ever undergo retraction. Czykowska-Higgins 1990, p. 82.3

3. VOWEL LOWERING IN THE LANGUAGES OF THE INTERIOR.

3.1. COEUR D’ALNE. Cr has both anticipatory (root) vowel lowering, and progressive suffix vowel lowering. These phenomena have been analyzed by several investigators. Here I provide yet another survey of the accounts, intertwined with my own synthesis of the known facts.

3.1.1. ANTICIPATORY LOWERING. According to Reichard there is a regular rule that gives rise to "faucally weak" counterparts of vowels when "before a [post]velar or faucal whether it carries the accent or not" (209, p. 563). This comes close to being a pervasive rule of the language, but not quite. Reichard lists five "exceptions to the rule, [with] the vowel retaining its strength even before a [post]velar or faucal" (210, p. 563):

1I have heard some Okanagan speaker use such doublets as [h\-pon → h\-pon]. In the English of these same speakers the contrast /s/ /ð/ is neutralized, so that, for example, English /s/ and /ð/ are homophonous. Amongst Natives jokes abound that capitalize on this areal feature, one of which, for example, plays on misunderstanding "you’re passionate" for "you’re passing it." I have dismissed these cases of alternation as attributable to this areal feature. Ok lacks the /s/ /ð/ distinction, while English has it; speakers treat the palatalization of /ð/ as a redundant optional feature of /s/. The fact that Ok /s/ has allophones [ç] and [ç], while /s/ is [s], probably plays a role in this, but what it is remains to be seen.

2Keep in mind these uncertainties, especially regarding n, in general, and when reading my comments about the Columbian data.

3I thank the members of my 1998 Salish seminar for interesting and challenging discussions of these topics: Daryl Baldwin, Sandol Bringi, and Matt Hayes.

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3. 'continuative' is never subject to lowering of verification of forms 3 and 4, but based on evidence from comparable forms, concludes that these forms represent an as yet unrecognized process ... or are simply errors in recording (p. 29). In addition, Doak attributes the unexpected high vowels of 5 to "stem repetition" (and not reduplication, which otherwise allows vowel-lowering)4 typical of "relatively new introductions" into the language (p. 30); and shows that -p'p'i (form 6) comes from underlying -γ'p'i (and thus the form does not violate the interdiction against high vowels before faucals).4 Forms in the work of Lawrence Nicodemus can be found that show high vowels cooccurring with faucals. Many of these can be shown to be only apparent contraventions. i(γ) and u(γ) can usually be shown to derive from their non-syllabic counterparts, as

In sum, there are cases, or at least traces, of high vowels occurring in forms with faucals, so that the lowering process is not yet completely phonologized.

3.1.1.1. Root Faucals and Their Effect on (Preceding) Root Vowels. Apart from the long-distance lowering of vowels due to (following) faucals, Doak 1992 proposes the following constraint: "there are no Coeur d'Alene roots that have a high ... vowel occurring before a faucal consonant" (p. 30), a constraint that Fitzgerald echoes: "there are no roots of the shapes *CIF or *CuF, where F represents a faucal consonant" (p. 364). Apparent counterexamples found in the works of Lawrence Nicodemus can be corrected or otherwise explained.7 For example,

- qiq' root, unearth (p. 174) is a typographical error for qiː;
- k'ay'ik'm he has a big head (p. 185) should be corrected to k'ay'ik'ym (i < y);
- yem'eq' to coil suddenly (p. 307) should be corrected to yane', and
- sc'ak'eq'eq'm catechism (p. 240) should be sc'ak'eq'eq'm (u < a).

As I have said, I do not consider this root-internal vowel lowering the same as the suffix-triggered anticipatory vowel lowering because this latter is a long-distance phenomenon, while root-internal vowel lowering is not. However, we need to study these forms because they might give us clues about the chronology and interplay of these two vowel lowering rules, the long-distance one, and the root-internal phonotactic interdiction *IF *uF.

Fitzgerald p. 367-376 discusses roots with faucal consonants in historical perspective.

To review then, the long-distance vowel lowering rule is triggered by a suffixal faucal segment. All preceding stressed and unstressed vowels, high and mid, are subject to it, with the exceptions reported. Of the Interior languages, Cr is the one that comes closest to have phonologized this rule, and as we will see, the other languages that have a similar rule can be ranked by the extent to which this rule operates.

3.1.1.2. Root-internal Vowel Lowering Not Triggered by Faucals. Coeur d'Alene exhibits some instances of root vowel lowering that are not triggered by suffixal faucals. Reichard calls this phenomenon "vocalic

4CVC VCC reduplication is otherwise unknown in the language. See, however, example 53.

5Doak could not elicit any word for 'bowwood', but suggests that "the form is a type: the vowel of -in' normally lowers when it should, and -alq' normally triggers lowering. Unless the stress is incorrect also, I'd expect 'ecen'alaq'" (p.c.).

6See Doak's related discussion, pp. 28-33.

7I thank Ivy Doak and Raymond Brinkman for their help with these and other forms.

8Raymond Brinkman has re-elicited the form and reports that Nicodemus has "chang[e]d his mind about the ... vowel" (p.c.).
distillation ... used primarily for derivation" (246, p. 567). The exact function of this lowering has not been determined by either Reichard or the more recent investigators of the language. Reichard had stated that "there is sufficient evidence to indicate that this process differentiates meanings" (id.), and had listed "a few" (seven) cases:

15. po'us joke  
16. qa'ut be dust  
17. qa'm be damp  
18. qa'f be smooth  
19. qa'c squeeze, push  
20. qa'nt bone

Other examples of vowel alternations or changes are not difficult to find in Nicodemus, and, as Doak suggests, these too have to be sorted out. A few examples should suffice to give an idea of the range of the ablaut. Of some pairs one may be a borrowing, as

21. I'wul'tum dale (142)  
22. lo?ol'm valley (a Spokane word),

Others may be (optional?) variants of one another,

23. u'te?ild like ... (Nii p. 290)  
24. utse?ild like ...

Still others may correlate with some inflectional function,

25. u'tstil? it is theirs (Nii p. 295)  
26. u'tstil? it belongs to him

Or derivational function,

27. p'x? agleam  
28. hsap'ex?tlwes it was all aglow with light (11)

Again, the point of these examples is that these are cases of vowel lowering not triggered by faucals. Are there any cases of vowel lowering where the faucals are incidental to the phenomenon? What is the domain of the long-distance vowel lowering rule? The (phonological) word? A longer constituent?

3.1.1.3. OTHER LONG-DISTANCE VOWEL LOWERING. There are also cases that may not fall into the category of word-internal vowel lowering. One such is the Cr form k"me? (11). This form can be found as "k"me? future" under "Adverbs, Conjunctions, Interjections" of Reichard 1939, p. 103; it is translated as "soon" in the same author's interlinear text (Reichard 1938, p. 698). Doak 1997 lists the form as k"me? "immediate future," "often translated as 'soon'" (p. 186); she writes it as an independent word, and shows that it undergoes affixation as k'uk"me? (and CVO/k"me?-ye?aug/soon-{?}) in Doak 1997, p. 188. Pages 128-133 of Nicodemus are but a list of future forms, 126 such forms, where k"me? alternates with k"me?. Nicodemus puts no word breaks between k"me? and the

(following) verb. Of 38 instances of k"me?, 36 precede a faucal by two segments (the vowel is separated from the faucal by the ?); in the remaining two the faucal follows at a greater distance:

23. k"me? (p. 192) I am going to speak
24. k"me? They are going to walk

Of 88 instances of k"me?, 16 occur preceding a faucal, all at a distance of two or more segments. Here I list five such examples:

25. k"me?kunific we will dance
26. k"me?kunific I will dance, I am going to dance
27. k"me?kuped? you (pl) are going to walk
28. k"me?kunific I am going to speak
29. k"me?numay?quntaf They are going to dine

Note the e/a alternation in the root vowel in 25/26; note the suffixal faucal in 29 (and the absence of a root faucal).

Similar is the behavior of ne? / na? 'maybe' (cf. Ni, pp. 154-157), and that of other forms.

While the examples found in Nicodemus 1975b do not consistently show this, Nicodemus 1975a does call attention to what seems to be a sandhi phenomenon of genuine vowel harmony, "REMEMBER khwe [x'e] before words in e and i, but khwe [x'e] before words in a, o, and u" (p. 10). In sum, I'd like to study in more detail the workings shown in the above cases, before I can be sure I understand the whole story.

3.1.1.4. WORD-INTERNAL VOWEL LOWERING. Here I recapitulate the details that have been discussed, and are well known through the work of Reichard, Sloat, Johnson, Doak, Besell, Fitzgerald, and perhaps others, of the Cr rule that a faucal element in a suffix causes the lowering of root vowel(s). I also add my comments and observations. Schematically the attested changes are:

u → o  
e → a  
i → a  
i → e

Examples of each follow, as provided by Reichard.

3.1.1.4.1. u → o (208, p. 562)
30. pux' ants he blew on it  
31. e-lup it is dried  
32. ec-klis it is curled

Ray Brinkman pointed out this remark to me.
33. ḍuḥan ten ḍuḥan-ṭa-alq" ten poles, trees
34. aṣṣa look for aṣṣa-qa-n-an he deloused
35. us in-ṣa-qa-de-alq" he got food in the wrong throat

Note that in 32 two vowels seem to have been lowered, one of them a prefix vowel. Also two vowels have been lowered in 33, and one of these is a presumably non-phonemic *a* lowered to *e*. Reichard calls examples 34 and 35 "very exceptional" (p. 563, no. 212). With reference to 34, where we see *a* in the form without faucal and *e* in the form with the faucal, Reichard says: "I think this is the stem aṣṣa, look for, which has taken on *e* before *q" (p. 563). Similarly, referring to 35 Reichard says that "*g* is foreign to Coeur d'Alene but the influence of *q" seems to be so strong that *g* is drawn back with the vowels, becoming the velar sonant" (p. 563). I see, however, that the influence of *q" is not strong enough to lower the prefix vowel *i*, and I see further that comparison with the form found in Nicodemus's dictionary, p. 101: ḍuḥan-ṭa-alq" he had a tickle in the throat, shows *i*, not *e*.

3.1.1.4.2. e → a (205, p. 562)
36. ṭaṭ-qa-nts he laid one down ṭaṭ qa-qa-nts it lies on top
37. lēj-qa-nts he stabbed it m̱lēji-ipqa-nts he stabbed her nose
38. eč'k' he said eč'k'ed qa-nts he answered back
39. sēč'ENTS he twisted it m̱iš̱-sēč'-ipqa-nts an crane, what twists nose
40. ṭeŋ' echo ṭeŋ'-o'nts qa-nts naggar, loud talker

Forms 36 and 38 have two lowered vowels. Form 37 has two *p* sequences, one of which is clearly < *y*'. Form 40, which Reichard gives as one of several examples where "*e* part of the complex is affected, but the other is not, or perhaps the stem does not influence the suffix" (p. 566, no. 243), shows a lowered vowel as expected, and a sequence *-qa* which Reichard glosses 'sponge', and which can be inferred as < *-w*'s (see, however, ex 58, where we have *-o*'s).

3.1.1.4.3. i → a, e (206, p. 562)
In this group we see some examples where *i* > a bë佛教 faith AND *i* > e under unclear circumstances:
41. uć'its it is warm qüa-qa-nts it is warm qüa-qa-nts it is warm qa-qua-nts he put moccasins on
42. wiš'-ants he built it a-t-wiš'-alq" warehouse, built on long object ec-wiš-wel there were dwellings
43. qüuçnts he stuck it to it qüuç'-qa-nts he built it qüuç'-qa-nts he built it qüuç'-qa-nts he built it qüuç'-qa-nts he built it qüuç'-qa-nts he built it qüuç'-qa-nts he built it qüuç'-qa-nts he built it qüuç'-qa-nts he built it
44. uć'-ants he wiped it m̱lēji-ipqa-nts an handkerchief tēp'ep'-e'nts he wiped his ears

The last example shows *i* > a bë佛教 faith, then a derived form where *i* is reduplicated as *e*.

Another form, given by Reichard as one of five examples showing that "the faucally weak form of a vowel is used before a [post]velar or faucal whether it carries the accent or not" (p. 563, no. 209)
45. eč'-k'ed qa-nts he changed clothes13

3.1.1.4.4. i → e (207, p. 562). In the group of forms that Reichard gives to show this alternation, we should distinguish some cases of *i* > e faucal, and *e* faucal:
46. cill it is long cill-qa-nts it is tall
47. t'r* END how many t'r*end QA-qa-nts how many poles

In 49, furthermore, we see *i* > a faucal, and *i* > *e* under unclear circumstances.

3.1.1.4.5. MISCELLANEOUS. The remaining four examples where "the faucally weak form of a vowel is used before a [post]velar or faucal whether it carries the accent or not" (p. 563, no. 209) show the following alternations:
50. min rub mēr- k'p-qa-nts fire drill
51. ip bottom a-č'ar-ep-qa-nts band is around head, on jar
52. t'q'it became redhot t'q'it-ep'-el-qa-nts he caused rocks to grow redhot
53. t'q'it he broke into a smile t'q'it-ep'-el-qa-nts he smiled

50 and 51 show *i* > e faucal; 52 shows *i* > a, e under unclear circumstances; 53 shows *i* > e, plus a reduplicative pattern that is not supposed to be found in the language, except in neologisms.

3.1.2. Progressive lowering. A retracting property of some "stems"14 causes the lowering of a suffix vowel as follows:

<table>
<thead>
<tr>
<th>i</th>
<th>u</th>
<th>a</th>
<th>e</th>
</tr>
</thead>
<tbody>
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<td>bë佛教 faith</td>
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13The form scan'a'dal'a a fresh set of clothing, found in Nicodemus ii, p. 100, confirms *i* > a faucal.
14Reichard lists all such she had found. She tried to find what phonological elements contributed to or triggered the lowering, but admitted not having "been able to find a general rule for these" (p. 563).
Reichard lists 27 roots/stems that have such a "progressive influence on the vowels." She notes that the facts are messy, including cases where "even the same stem may sometimes cause the changes, and in other cases it does not" (p. 563). She lists the roots with appropriate examples in sections 215-242. I repeat the examples here, rearranged to suit my purposes. 14

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<td>be astonishing (215)</td>
<td>/pɔs/, paˈsyaʔ</td>
<td></td>
</tr>
<tr>
<td>54.</td>
<td>u &gt; o</td>
<td>pas-paʃ-əl he is timid (-ul habitually)</td>
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<tr>
<td>55.</td>
<td>i &gt; a</td>
<td>paʃ-ə-də-ʃmən I will play a trick on him (-i č deceive)</td>
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<tr>
<td>56.</td>
<td>i &gt; a</td>
<td>s-paʃ-ə-yəa folly, error (-iye? playingly)</td>
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These examples show /pas causing the lowering of u > o and i > a. The last example also shows e > a, and a missing word-final ?.

14 Reichard arranged them by phonological types, believing that some labial element triggers the progressive lowering.

Reichard does not show the base morpheme along with the example, but elsewhere she lists iʔst (-aʔst, -eʔst) as a "nominal suffix" meaning surface of round object, rock (p. 602).

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16 Along with this form Reichard provides two examples that include the same root, but no evidence of vowel lowering:

- tap’-ə-wəʔtənts he welted his horse (enəʔtεʔ horse)
- təp’-ə-iʔst-ants he surface-marked it, made mark on rock

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17 Reichards appends a [ʔ] to the gloss.
mo'ot
74. i > a  hin-mo'ot-âmile' it (chimney?) is smoking (-âmile' inside)

mas masmas - vile-smelling vegetable much liked by the Coeur d'Alene
75. i > a an-mas-mas-âmile' water is full of masmas (-âmile' inside)

'om suck
76. i > a ni'-'om'-âwes-ants he sucked amongst (-âwes together)
77. u > u 'om-'es-an-'oil he sucked his own finger (-'oil reflex.)

x'am
78. i > e x'em-âeti woodpecker, perhaps yellow hammer
79. u > o hin-ta?-q:ln-6ps name of Grizzly, pounded on end of tail

tam scorched
80. u > o tam-aconc' he scorched himself (-'oil reflex.)
81. u > u 'u'un-tam-âwes-us thou burnt eyebrow (-'oil eye)
82. 'u'un-tam-âwes-us thou scorched eyebrow, name of ridicule for Coyote (-'oil together)
83. a-tam-us his face is scorched (-'oil face)
84. i > a a-tam-âwes it exists scorched on the surface -'oil together
85. 'om-tam-âeti/ Scorched Mountain (-âeti ridge)
86. i > e 'om-tam-âeti/ Scorched Mountain (-âeti ridge)

'tam make damp, dampen
87. u > o 'am-fam-yoye? snail, it dampens here and there back and forth (-yoye back and forth)
88. i > e 'am-elg'bes-cên-am he licked his lips (-elg'bes heart [internals?]?)

89. i > a fam-elg'bes-cên-am he licked his lips (-cên mouth)
90. i > a sye-fam-diamx? one who licks people (-diamx? person)

šem go to live with in-laws
91. u > o šem-en-côt-an he went to live with his in-laws (-'oil reflex.)

tal sprinkle fel sprinkle
92. i > e hin-tal-tal-éne?-entam he was ear sprinkled (-'oil ear)
93. i > i hin-tal-tal-éne?-entam
c-tal-tal-éne?-entam each lying one is ear-sprinkled over

nas wet
94. i > e a-č-nas-nas-čent he wets people's eyes (-čent people) (but note -us)

x'em ?
95. i > e x'em-âeti woodpecker, perhaps yellow hammer (-'oil finger, wing)

san' san' tame
96. i > e sz-san'-san'-i-'eti-stus he broke it (horse) -'eti grow

yac' yac' be tight, firm
97. i > a č-yac'-yac'-am-âeti-am hold on tight (-'oil finger)
98. u > o? u-yac'-âeti-p it held firm -up?

co'ot pay from Fr. Espagne
99. co'ot dî'amx? dwarf (-amx? person)

'az' be yellow
100. i > a hin-'az'-'az'-âeti-âwes-an he retired (-âeti bottom?)

k'ar be yellow
101. i > a hin-k'ar-k'ar-âwes-an crosshills -'wes together

11Reichard gives this form as an example of simultaneous progressive and regressive vowel lowering: "One example shows how strong the fauciulizing tendency is for it seems to operate in both directions, progressively and regressively" (p. 563). The root /âti/ 'pound' has vowel [i]; the [a] of hin-ta?-q:ln-âwes might be interpreted as the (unstressed) variant of [i], protected by the [?] (cf. the analogous Cv-Ok phenomenon), but then cases of Ce?, see e.g. #43, also need to be explained. Note the analogous phenomenon in Columbian.
3.2.2. Progressive lowering. Vogt reports that root vowels e and u lower to a and o respectively in the presence of a suffix with a faucal element. In the Morphophonemics section, paragraph 34, he explains that “The postpalatals lower e to a and u to o, but only when separated from the vowel by a consonant” (p. 19). Thus for e → a we have:

121. iq'c'ec warm caq'c'qun his head is warm i.e. he has a hat on
122. rest good s récup moose, i.e. a good robe.

A combination of two suffixes also shows lowering of the first vowel:

-đp → -dp in the combination -đpqés:

123. 'K'c'đem he bites 'K'xǔ4pqás he bites his (an other one.s) head off

For u → o we have

124. iq'él it is dusty inq'qës the road is dusty
125. čopam st'épqás thread
   he twists something into a rope
126. mus four mó(sqá) four days

3.2.2. Progressive lowering. In a section he titles “Vowel Harmony,” Vogt also reports that suffix vowels i and e lower to a, as follows:

In some cases the vowels i and e of a suffix are replaced by a, when the stem itself contains the vowel a. The stem-vowel is usually lost” (19).

For i > a we have a group of examples that contain -ml cont.):
3.4. Low(ered) root vowels. Sh does not have the long distance anticipatory vowel lowering triggered by a suffix, as faunal. It has instead cases of low and lowered root vowels that fit into the system as follows. The vowel inventory includes five stressed vowels, i e a u o, and unstressed a. Of these, i e u are "most frequent and least limited in distribution," while a o (and A) "occur almost exclusively near I f or, less often, near m f (p. 22). Of the last three, A is "very rare." A, Kuipers adds, is "unstable, and is sometimes replaced by a or e, or has a free variant a" (p. 22).

Synchronically the language has oppositions il el ol ul. While Kuipers deduces that

In Shuswap, Proto-Salish *i and *r merged into I, but *r "darkened" a neighboring vowel, *ai *il *ul yielding Sh. el il ul, and *ar *ir *ur yielding Sh. al ol ol (p.22)

he also points out that

The origin of a o in words not containing 1 < *r remains to be determined (p.22).

In sum, Sh has phonotactically and allophonically lowered root vowels; and some phonemic low root vowels of unexplained origin.

3.4.2. Progressive lowering. In sections 1.4 and 4.1 Kuipers reports that a number of roots trigger a parallel lowering of suffix vowels:

In suffixes, e i u are replaced by a e o respectively when there suffixes are combined with certain roots (p. 22). ... Though some roots have all suffixes (in so far as recorded) in darkened form, others may have the darkened form in one and the regular form in another suffix... Sometimes both forms are possible... The "regular" form of the suffix has analogically replaced the "darkened" one in a number of cases (p. 31).

The roots and stems listed by Kuipers are:

\begin{tabular}{ll}
/paf & kI-am \\
/ma? & /a? \\
/c-ml/dle? & xap-quin \\
mIam- & c-ken \\
mle- & xl-xal-t \\
mokl & xl-e^x-m \\
ta? & /a? \\
\end{tabular}

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10Vogt adds that "the completive has an unexplained o: c'mandp it gets tightened" (p. 19).

11Here Vogt adds that "the derived reflexive verb has an unexplained o: tapanancó they applaud" (p. 19).
\text{An example of } e > a \text{ is:}
\begin{align*}
\text{ekst} & > \text{akst} \\
\text{An example of } u > o \text{ is:}
\text{us} & > \text{os} \\
\text{An example of } i > e \text{ is:}
\text{cin} & > \text{cen} \\
\text{i} & > \text{y} \\
\text{u} & > \text{w} \\
\text{e} & > \text{\#} \text{, } \text{h} \\
\text{a} & > \text{e} \\
\text{o} & > \text{\#}
\end{align*}

3.5. THOMPSON. Thompson has some limited anticipatory vowel lowering (not long distance), and progressive vowel lowering. The account Thompson and Thompson give of the vowels of the language, is that these have troublesome characteristics and distribution. They report "primary vowels" /i a u/ and retracted (or lowered) vowels /i, a, o, / . Lowered vowels are "to some extent automatic variants of primary vowels. Allophony involves a complex interplay of free variation and conditioning in terms of surrounding consonants, syllable position, and stress patterns" (p. 11). Vowels "act as homorganic" to consonants as follows:

\begin{align*}
\text{tutane} & > \text{xlap} \\
\text{taxion} & > \text{xlap} \\
\text{s-x-clm-t-os} & > \text{x'el-m} \\
\text{/-cp} & > \text{x'at} \\
\text{c} & > \text{\texttt{s}-x'y-anst} \\
\text{c'i} & > \text{yl-yal-t} \\
\text{*c'i} & > \text{wl-em} \\
\text{stam} & > \text{wl-aps} \\
\text{/-sel} & > \text{wl-ank} \\
\text{nk} & > \text{\texttt{y}el-yal} \\
\text{/-af} & > \text{\texttt{y}elk} \\
\text{c-tac} & > \text{\texttt{y}ank} \\
\text{c-tak} & > \text{\texttt{K}'iso} \\
\text{\texttt{K}i} & > \text{\texttt{X}蓼} \\
\end{align*}

Here \( TT \) provide several near minimal pairs that show contrast between /a/ and lowered /o/,
\begin{itemize}
\item ['mises feel of something
\item ['moces mash something with spoon
\item ['pices put oil and scatter feathers on someone's head
\item ['pieses rub grease on something
\item ['p\texttt{O} cat (also, less commonly, p\texttt{P} cat).
\end{itemize}
and discuss (anticipatory) vowel retraction, which \( TT \) report in the next section.

3.5.1. ANTICIPATORY VOWEL LOWERING. This is limited to the following cases:

\begin{itemize}
\item [/i/ lowering to /i/ . \( TT \) report that this vowel /i/ is "rare, appearing most commonly before /I, /\texttt{P} (< \texttt{P} S*) where it takes the form [e>]" (p. 12).
\item [/i/ lowering to /i/. \( TT \) report that this vowel /i/ is "rare, appearing most commonly before /I, /\texttt{P} (< \texttt{P} S*) where it takes the form [e>]" (p. 12).
\item /a/ lowering to /a/ (a) in stressed close syllables before a uvular obstruent:
\item /\text{\#}/ lowering to /\text{\#}/ (a) in stressed close syllables before a uvular obstruent:
\item /\text{\#}/ lowering to /\text{\#}/ (a) in stressed close syllables before a uvular obstruent:
\end{itemize}

\begin{itemize}
\item [32]The allophony of this vowel is further described as follows:
\item [\text{\texttt{\#}ik}\text{\texttt{\#}} make a sharp, piercing (unmusical) whistle
\item [\text{\texttt{\#}ip}\text{\texttt{\#}} press, squeeze something
\item [\text{\texttt{\#}y\text{\texttt{\#}m\text{\texttt{\#}}} double rainbow (p. 12).
\end{itemize}

With respect to \( \text{\#} \), Thompson and Thompson say that its "status ... is different from that of the other retracted vowels. While it does in some cases supply a retracted counter-part for /\text{\#}/ (as, for example, in the suffix \text{\texttt{\#}ap\text{\texttt{\#}}} INCHOATIVE, which takes the form /\text{\#}ap/ after a retraction root...) it is more often simply a vowel of unexpected timbre. It is a serious practical difficulty to determine whether one is dealing with /\text{\#}/ or, alternatively, with /\text{\#}/ or /\text{\#}/, because in allegro speech it optionally replaces either of those sounds" (p. 21). Thompson and Thompson give the following "near minimal sets"
\begin{itemize}
\item [\text{\texttt{\#}esn}\text{\texttt{\#}k\text{\texttt{\#}}} 'dirty. muddled': \text{\texttt{\#}esm\text{\texttt{\#}}} 'detached'
\item [\text{\texttt{\#}p\text{\texttt{\#}}} 'canoe gains speed': \text{\texttt{\#}p\text{\texttt{\#}}} 'get warm, heated'
\end{itemize}
that in the very recent past all these vowels represented a single phoneme" (p. 16).

"to decide which phoneme [whether a or e] is represented by individual renditions. This of course relates to the fact that in the very recent past all these vowels represented a single phoneme" (p. 16).

Of all vou (except when before y. Here is

3.5.2. PROGRESSIVE VOWEL LOWERING. Th stressed suffixes that follow a retracting root have a retracting vowel, except when before y. Here is TT's account of the process:

After a root containing /l/ or /x/ an immediately following stressed vowel (except /l/) is replaced by its retracted counterpart unless it is in turn followed by /y/ or /x/. (In that syllable postvocalic /l/ is also optionally retracted to /v/; /ç/ would presumably behave similarly, but examples are lacking.)

/less/ us-e-s 'he smears the window', /k[l]a-/ame 'she cuts out a pattern', //lam-mp //pam-pf //pm-dp 'it speeds up', /le['es]am-de-xan > /'es]am-de-xan 'he has feet smeared with dirt'

BUT

/lx[?]a]yam-x/f /lx[?]a]yam-x/ 'earth begins to turn green [with plants growing] (p. 31).

3.6. LILLOOET. van Eijk describes Lillooet as having four retracted consonants and four retracted vowels. Retracted phonemes are symbolized with subscript dots, and are the counterparts of /l, r, c, s; a, i, u, a/. van Eijk explains that "retraction is basically velarization with concomitant tensing" (p. 3). While /a i u a/ are "broadly [e o a]", the retracted counterparts are [æ e ə a]. As van Eijk points out, "a and ı overlap phonetically in [e]" (p. 3). VE says that "in most roots where retraction occurs, it is characteristic of all phonemes that are susceptible to it" (p. 3). There are "certain suffixes" whose (plain) phonemes are replaced by their retracted counterparts "when these follow retracted roots" (p. 3).

3.6.1. ANTICIPATORY VOWEL LOWERING. There seem to be no cases of long-distance anticipatory vowel lowering in the language. However, under the rubric of vowel lowering we might subsume the series of neutralizations between retracted and non-retracted phonemes that VE discusses in 1.8.2. The opposition of retracted and non-retracted vowels is neutralized before uvulars, so that non-retracted vowels before uvulars are like retracted vowels elsewhere. As already stated, this neutralization, or lowering of vowels before uvulars, obtains only in that immediate environment, because when, "as a result of consonant reduplication ... [the plain vowel] is not immediately followed by [a uvular] any more", the "normal variant" of the plain vowel appears.

In the same section VE explains that retracted vowels do not occur adjacent to non-retracted correlates of retracted consonants (/l, r, c, s), nor do plain vowels occur adjacent to retracted consonants, except for /i/ following a retracted consonant followed in turn by a non-retracted correlate of retracted consonants, e. g. /k[?]i/ green, yellow. Other cases of retracted consonants not adjacent to retracted vowels "are rare but do occur, e. g. /styt/ cricket, /c'an/'m-eq/ to get mired, "with the second c not adjacent to V" (p. 9). "With a vowel as such also when they become separated from each other by" any other consonant, e. g. /k[a]/ to bite > /s-k[a]t/ 'to carry in one's mouth. Retracted vowels between non-retracted and non-uvular consonants "retain their retraction also in reduplicated forms, e. g. /s-aq/ to squash it well" (p. 9).

Finally, "there is no *CVQ2 or *QVT (except for [the hapaxesegmen] QaT, in qasm] young, newly hatched fish...). Moreover *QVC does not occur, while other cases of QVC, as qal 'bad,' are rare. Neither do we have *CVQ... Hence, uvulars and retracted phonemes tend to exclude each other" (p. 9).

3.6.2. PROGRESSIVE VOWEL LOWERING. van Eijk lists four types of "retracted roots":

(1) Roots where retraction affects all phonemes that take part in the retraction correlation, e. g., /qal/ bad, /qal/ 'to drip in a string (like syrup)', /t̪a/ 'to cave in.'

(2) Roots where retraction is only partially applied. Here belong a fairly large number of cases Ci..., e. g. /kpil/ 'to pinch, /kipil/ 'curly,' wajik 'sound made by frogs,' mailin-tap 'balsam fir.'
There is at least one case of consonant retraction, where a (neutral) root consonant becomes retracted contiguous to a (following) suffix with retracted elements:

\[ \text{māk} [\cdot ] \text{ṣ} \text{l}s \text{am} \] sticky oil (s-māk'd fish oil)

And there are some cases of s- nominalizer retraction.

3.7. MOSES-COLUMBIAN. Cm has anticipatory vowel lowering, progressive vowel lowering, and consonant retraction. Czaykowska-Higgins 1990 (C2) is a treatment of "two processes, one that involves a "morphophonemic rule spreading tongue root specifications from roots onto suffixes; the other ... a late rule triggered by retracted vowels, coronals, and uvulars which spreads tongue root specifications bi-directionally" (p. 81). Cz groups the Cm data into words where a property of the root causes the lowering of suffix vowels (a morphophonemic rule); and words which contain retracted segments whose retraction feature spreads bidirectionally. Cz concludes that in Cm "Progressive Harmony obligatorily retracts all ... retracted ... segments in the suffixes ... [while] the second rule of retraction ... spreads tongue root specifications both leftward (as in the case of prefixes) and rightward (in the case of epenthetic vowels and segments following uvulars)" (p. 94).

I am not sure I understand the extent to which bidirectional retraction spreads. For example, in (4)a the rubric back consonants is meant to include uvular and pharyngeal elements. Note that reduplicated forms with post-vocalic faucals do not undergo vowel lowering:

\[ \text{pamp} [\cdot ] \text{sī} \text{ṭ} \text{ū} \text{sās} \text{ṭ} \] to run on without being able to stop (sīṭ out of control)

The language also shows cases of lowering of the (first) suffix vowel following a root that is not "retracted"

\[ \text{x} \text{i} \text{ṭ} \text{ā]m} \text{āya} \] (a-ya) see-saw

\[ \text{cā} [\cdot ] \text{ṭ} \text{l}s \text{am} \] to take aim (āl'us eye)

\[ \text{pm} [\cdot ] \text{im} \text{l} \text{a} \text{x} \] to hurry (-āx)

There are cases of roots with retracted material that do not conform to the canons described elsewhere, e.g.,

\[ \text{s-pōj} \] to stick out; s-pōp'la'x to stick out a little bit

There is at least one case of consonant retraction, where a (neutral) root consonant becomes retracted contiguous to a (following) suffix with retracted elements:

\[ \text{māk} [\cdot ] \text{ṣ} \text{l}s \text{am} \] sticky oil (s-māk'd fish oil)

32Cz makes the observation that, while the rubric back consonants is meant to include uvular and pharyngeal segments, the effect of pharyngeals on adjacent vowels is different from that of uvulars: /i/ and /u/ are "slightly lower and more back than normal ... /u/ becomes [a] and [u] is slightly fronted (but only when followed by /t/; /i/; vowels also take on a creaky quality in the environment of pharyngeals)" (p. 82). The effect of pharyngeals on coronal consonants is also peculiar in that "coronal consonants do not become fully retracted when adjacent to pharyngeals, although it may be the case that they retract slightly" (p. 82). This may suggest that coronal consonant retraction is a consequence of lowered vowels—and historically follows vowel lowering.
There is at least one example of an ablauting suffix due to faucal element in subsequent morphological material:

186. -aw' + qn top of head

3.8.1.2. Not all roots participate in the a-lowering process:

187. gic'iq-am squeeze nose
diw wash

188. n+clw +qn +tn head washer
diw wash

189. n+clw +ps +tn bottom washer
diw wash

190. si+sc+lx' +m honeymoon
d'il +t sick

191. kan_qil +qn I have a headache

3.8.2. Here I subsume four cases of /a/ lowering not attributable to faucal elements in the suffix.

3.8.2.1. /a/ as lexically determined variant of /i/. There are cases of lexical variants i → a. Because all cases of /i/ /a/ ablaut in suffixes can be interpreted as root-triggered vowel lowering, these will be treated below, and the only examples given here are of /i/ → /a/ root vowel alternations.

192. kmix → kmax

193. pick'- → pack'

194. unix' → undx'

195. q'fflan → q'fflan

196. km'it → km'mit

3.8.2.2. Many cases of /a/ are not the result of faucal-triggered lowering, but are examples of ablauting pairs /i/ /a/ with unsystematic meaning change:\n
197. q'fic +aix run

198. q'fic +aix run

The same root, as well as other roots, do so ablaut in conjunction with C, diminutive, and other affixation and compounding:

198. q'fic +aix run

sqilx'

38The make-up of this form is unclear.
There is a root that shows /i/ /a/ ablaut with pharyngeal intrusion:

\begin{align*}
n + ci & \rightarrow c + s \quad \text{hold eyes shut} \\
n + e\text{ap} & \rightarrow s \quad \text{wink}
\end{align*}

There is a root that shows the following ablauting plural:

\begin{align*}
q & \rightarrow i + s i t \quad \text{eat} \\
k & \rightarrow \text{we ate}
\end{align*}

This form shows the regular deletion of the stressed vowel in the presence of a strong suffix. The unstressed stem vowel remains, as expected.

This needs further study. Montier (p.c. [reference to paper or article should eventually be available]) reports that in Klallam "one thing that happens is that stressed vowels are lowered before glottal stop: i > e, u > o, and schwa > a. This is not supposed to happen; glottal articulation is supposed to be independent of tongue position. And this doesn't happen before q or back-s, only glottal stop, and perhaps h. And it doesn't happen at all in Sxanich." I should also mention that in Ok one finds such borrowings as k'\text{thia} quarrer, and m(')joló sheep. The intrusion of the pharyngeal (here and in hypocoristic forms) may be the realization of what is perceived as a lower(ed) variety of the Ok /a/; the [a] of the second form reflects the phonetic reality of the French word, while the intruded pharyngeal may reflect the interpretation that [o] is a lowered variety of /a/, triggered by some rule that parallels the pharyngeal movement rule otherwise present in the language.
..."ilx" + t hungry
232. k'u?al + "ilx" we are hungry
   "kip" wipe
233. "apf" + "kip" + s-m wipe eyes
234. s+n + "apf" + "kip" + tnn in feet wiper
235. "apf" + "kip" + sn-m wipe feet
236. "apf" + "kip" + ma?-m wipe ears
   ciw wash (ciw+snt+x you wash it)
237. k+caw + "ilx" wash basin, bar of soap
238. k+caw + "ilx" hand washer

There is at least one form that includes repetitive -a?-
swst drink, swst + m + st-m give someone something to drink
239. sa? + sfx + lik" drink soup
240. sa?nt + m + sqa?xa? water horse

Somewhat more common is inchoative -a?-
q"uc+t fat (see also q"ic+t full)
241. n+q"a?c+mf+nt-m get (someone 1) fat
   sxap aired out, sx+nt+is she aired it out
242. k+sax + lex cool off

3.8.3. Progressive vowel lowering. Here I divide cases that involve pharyngeal intrusion from those that do not.
3.8.3.1. Cases of suffixes with pharyngeal intrusion.
   -ilk" - + -atk"
243. n(;)px·~atk" she fell in the water
   -iw's - + -aw's
244. way mat ik"ut i? Not too far from the crest of the hill. nb25
245. sanpap"swaqan. Cap with beak. nb26
   -(n)cut - + -(n)c"at
246. f1 c"a - 1 f1 c"a?dans c"alnc"at. It's making the sound of rattle, its rattle is rattling. nb26
   c"aw" - y"fapakkn. little male sheep. may93
   -wix" - + -w"axa"
247. lut ksnc"ap\isanwix\mp don't wink
248. lut ksnc"ap\isanwix\dx\mp don't wink at one another sep93

There are also cases of suffixes with a and pharyngeal movement, alternating optionally with pharyngealless (and not lowered) vowel:
249. i? scap\isan dant ak"il? the little stars nb09
   -is - + -as
250. npadant\is he poured it nb09
   -ic'a? - + -ic'a?
251. n+q"y+y+q"y+4dca? Kamloops trout
   and
252. sw\asew\ds baby pheasants nb09
To these examples one can add those in Mattina 1979.

There are also cases of suffixes with a and pharyngeal movement, alternating optionally with pharyngealless (and not lowered) vowel:
253. nc"ap\isanwix\ - nc"ap\isanwix\lx\"m
254. lut aksc"ap\isan\cuit - lut aksc"ap\isan\cuit sep93

3.8.3.2. Progressive vowel lowering without pharyngeal intrusion:
   -ip - + -ap
255. uck\iapom - + uck\iapom
   -wix" - + -w"axa"
256. ctk"onksnswix\alsx - ctk"onksnswix\alsx
   -iw's - + -aw's
257. n+q\wa+t+q\wa+t+iws - n+q\wa+t+q\wa+t+iws 'stuck in the middle' (place name)
258. nc\swaqnams she puts it on top of her head (nb25)
259. nta?q"w\swaqn top of the head appears (nb25)
   -ina? - -dna?
260. c+n+taq+taq+dna? deaf
261. tu\n+ dna? orphan (MT dec93)
   -ica? - -dca?
262. x\nas\\ip\dca? he has a blanket (cf. x\ik"+c'a?+tv hides)
   -ilk" - + -alik"
263. nta?p\mn\il1 (Similk), nta?p\mn\il1 (Pentic) water bugs that make a shell out of sand and other debris, and
crawl around in creek bottoms with their legs sticking out
   Cf. also
264. nq\ay\il1 Okanagan River
   -ikst - -akst

27
Note that in the last form the root pharyngeal remains in the root, and does not migrate.

4. Summary. All the Interior Salish languages have two kinds of vowel lowering as explained. Some of these same languages, namely the northern languages and Columbian, also have consonant retraction, the most significant type of which is the development of a (voiceless) non-palatal alveolar fricative that contrasts with an alveopalatal /s/- and without a parallel development of the affricate counterpart /ʃ/. Such consonant retraction follows the vowel lowering. An original morphophonemic process of progressive vowel lowering might have provided the stimulus for an analogous process of anticipatory vowel lowering. While the evidence points to a set of roots in the proto-language as the trigger for the progressive vowel lowering, I see no such conditioning set of forms or homogeneous environments that trigger the various kinds of anticipatory vowel lowering. Consonant retraction, finally, seems to have been a consequence of vowel lowering, and the languages are undergoing a restructuring of their vowel and consonant systems.

References


