Preliminary Remarks on Lushootseed Syncope

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Salish languages can have pervasive unstressed vowel deletion and reduction. For example, in Spokane (Interior Salish) all unstressed root vowels delete unless they are protected by a pharyngeal or laryngeal segment (Carlton 1972). This paper examines unstressed vowel deletion in Lushootseed (Central Coast Salish), focusing on diminutive stems.²

(1) Lushootseed Syncope

a. kupi coffee kū-kpi a little coffee
b. caq speak (verb) čač-q act of spearing big game on the water

(2) Pre-stressed Position

a. caq(a) speak (verb), jab sačw'-il grass, hay
b. kuq cat kūkipi a little coffee

(3) Post-stressed Position

a. sačw'-il short grass, lawn
b. kuq kitten

(4) Interrogative Pronunciations

a. caq?q act of spearing big game on salt water
b. kuq interrogative kappa a little coffee

Previous works have observed that the post-tonic vowel often syncopates in diminutive stems (Hess 1966 1967; Broselow 1983; Bates 1986). This study focuses on the role that stress plays, claiming that syncope results from unstressed vowels being marked, unstressed a in particular. A central finding is that this approach can also account for reduction, as well as a preference for voiceless segments.

1.1 Metrically Weak Position

A central piece of evidence that lack of stress is the necessary environment for syncope is that it occurs with voiceless and voiced segments.

(2) Post-stressed Position

a. sačw'-il short grass, lawn
b. kuq kitten

1.2 a/Reduction

A second point in favor of analyzing the pattern as a prohibition on unstressed a is that syncope in Lushootseed is related to a-reduction. Several researchers have observed that unstressed a reduces to schwa (Snyder 1968, Hess 1967, and Hilbert 1976; Broselow 1983; Bates 1986). Deletion and reduction are two ways to avoid having an unstressed a.

While a detailed investigation of syncope and reduction outside of reduplication is yet to be conducted, so far, only a/ reduces. An examination of the alternate pronunciations in the Lushootseed Dictionary revealed a pattern in which /a/ reduces most frequently. It can syncope or reduce in post- and pre-stressed position.

(3) Alternate Pronunciations

a. Post-Pressure

sačad sačad star (established star as in the Dipper)

b. Pre-Pressure

qačgʷ=ac ironwood, ocean spray, spiraea

1.3 Segmental Conditions for Reduction

The third point in favor of the *unstressed-a approach is that the array of phonotactic conditions on syncope and reduction can be given a uniform explanation. Both are ways to avoid an unstressed a. It turns out that syncope and reduction are in complementary distribution. Vowel reduction occurs when the resultant sequence of segments would rise in sonority (s/Šagʷ/š/š little mat). Syncope occurs in other contexts with two voiceless obstructions (caqʷa' act of spearing big game on salt water), a voiced segment followed by a voiceless.

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² This paper is an expansion on the analysis of Lushootseed syncope in Urbanczyk (1969) My thinking on the topic has been influenced by discussions with -- Laura Benou, Susan Blake, Henry Davis, Hamida Demirdache, M. Dale Kirkade, John McCarthy, Lisa Selkirk, Pat Shatt, and Rex Wallace -- who are hereby thanked. This work was supported by a SSHRC post-doctoral fellowship.

³ A further interesting feature is that the root vowel reduces in (3b), and not the affix vowel. These are all lexical suffixes used in the derivational morphology of Lushootseed. They mean "ča tree, bush [lexical suffix]", "a/ [lexical linking element]", and "-ap bottom, base, buttocks." Only the last one is found with a reduced alternate.
voiceless one (\(\text{slid}^*\text{thid}^*\text{strid}^*\)), or two voiced consonants (\(\text{sww}^*\text{lis}\) 'Little Frog'). All instances of reduction will be cases where syncope is blocked by applying some phonotactic constraint.

Having noted that syncope and vowel reduction both satisfy a prohibition against unstressed \(a\), the segmental environment is significant because one can predict whether syncope or vowel reduction occurs. Syncope occurs when it can (a), but is blocked if the resulting cluster would rise in sonority (b).

(4) Basic Pattern

<table>
<thead>
<tr>
<th>a</th>
<th>Syncope</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\text{walis})</td>
<td>type of frog (\text{wawlis}) Little Frog</td>
</tr>
<tr>
<td>(\text{pi\text{'isp}i})</td>
<td>cat (\text{pisp}i) (\text{kiten})</td>
</tr>
<tr>
<td>b Reduction</td>
<td>[25 stems]</td>
</tr>
<tr>
<td>(\text{s-tad}^*\text{id})</td>
<td>mat, sleeping mat (\text{s-fad}^*\text{gid}) little mat</td>
</tr>
<tr>
<td>(\text{s-tbec})</td>
<td>slow up, go slower (\text{s-bec}) slowly, softly</td>
</tr>
<tr>
<td>(\text{sa\text{'i}l})</td>
<td>two (\text{sa\text{'i}l}) (\text{two small items})</td>
</tr>
<tr>
<td>(\text{s-tul\text{'i}lak})</td>
<td>creek (\text{s-tul\text{'i}lak})</td>
</tr>
</tbody>
</table>

The following stems highlight the fact that in each case the first consonant of the root is a voiceless obstruent, and the second a voiced obstruent or sonorant. Voiced obstruents are historically derived from sonorants (Hess 1967; Thompson 1979), and pattern with \(\text{f}, \text{l}, \text{w}\) in a number of ways, suggesting that they are more sonorous than the voiceless obstruents. The ill-formed syncopated stems show that the result would be a voiceless obstruent coda followed by a more sonorous onset.

(5) Unattested Syncopated Stems

\(\text{t\text{'ad}^*\text{tad}}\) \(\text{t\text{'i}l}\) \(\text{slowly, softly}^*\) \(\text{t\text{'i}l}^*\) \(\text{t\text{'ad}}\)
\(\text{s\text{'i}l}\) \(\text{small hand}^*\) \(\text{s\text{'i}l}^*\) \(\text{small mat}^*\)

Two observations support the syllabifications above. Roots do not begin with sequences of \(-\text{v}\)\(+\text{v}\) segments, and so it is supposed that there are no rising sonority onsets in Lushootseed (Urbanczyk 1996ab). These clusters must be hetero-syllabic. Further evidence for the syllabic boundaries comes from an examination of medial triconsonantal clusters, in which glottal stop and \(\text{f}\) are the two coda consonants that allow the most clustering.\(^1\)

The markedness of hetero-syllabic clusters with rising sonority has been observed to have phonological effects. A number of researchers have observed that the preferred sequence of heterosyllabic consonants is one which falls in sonority (see Hooper 1976; Murray and Yenneeman 1983; Zec 1988; LaMontagne 1993). Cross-linguistically, codas tend to be more sonorous than onsets. The Syllable Contact Law (SCL), as it has come to be known, has effects in sound change, syllabification, and phonotactic restrictions. In Lushootseed, the SCL is active in blocking syncope from applying. In these cases vowel reduction will satisfy both \(\text{unstressed-A}\) and the SCL.

The following forms, while being irregular from the point of view of stress, show a further condition under which syncope is blocked. Syncope does not occur if it would result in identical adjacent consonants.

(6) Reduced Vowel in Reduplicant

\(\text{g}^*\text{a\text{'id}}\) talk \(\text{g\text{'i}a\text{'id}^*\text{ad}}\) reply
\(\text{k\text{'si}t^*\text{ab}}\) examine \(\text{k\text{'i}g\text{'i}t^*\text{ab}}\) nearsighted
\(\text{ta\text{'i}l}^*\text{tad}\) nephew/niece \(\text{ta\text{'i}l}^*\text{tad}\) little nephew, little niece
\(\text{ta\text{'i}d}\) dance \(\text{ta\text{'id}^*\text{aid}}\) what a mother bird does to attract attention away from her babies

Based on an examination of the corpus contained in The Lushootseed Dictionary (Bates, Hess & Hilbert 1994), Urbanczyk (1995) argues that Lushootseed lacks geminates. Hess (1967: 7) observes: 'Morpheme sequences which would result in clusters of identical stops show reduction to a single stop.' So the reason that the reduplicant has a reduced vowel (rather than a syncope and a homorganic consonant) is that geminates are not in Lushootseed at all. The constraint against adjacent identical elements -- Obligatory Contour Principle (OCP) -- blocks syncope from applying.\(^3\) Reduction of the vowel to schwa serves equally well to obey the constraint against unstressed \(a\).

A further interesting feature of these stems is that they all contain the low vowel \(a\). None of the DIM stems with stress on the root had the vowel \(\text{u}\) or \(\text{a}\). The exceptionality of \(\text{na}\) again is a point of interest worth further investigation. Why can stress shift to \(a\)? The final form, \(\text{la}\)\text{'ad} var. \(\text{ta}\)\text{'ad} dance is a loan from English (Bates, Hess & Hilbert 1994: 217) and so suggests some regularity to the pattern.

A final point regarding the constraint against unstressed \(a\) is that there is statistical evidence showing that, amongst the diminutive stems, \(a\) will reduce and delete more than \(i\). (See the Appendix for the results.) Cross-linguistic evidence shows that a language may only reduce \(a\) in Cupeño only \(a\) reduces when unstressed (Crowhurst 1994). Therefore, a ban on unstressed \(a\) is attested elsewhere.

To summarize, syncope and vowel reduction are driven by a ban on unstressed \(a\). While syncope seems to be sensitive to segmental considerations, these are only important in determining whether syncope or vowel reduction occurs. The environments for syncope and reduction are in complementary distribution, as the following chart indicates.

(7) \([-\text{voice}^*\text{voice}^*]\)\([-\text{voice}^*\text{voice}^*]\)

\([-\text{voice}]\) \(\text{c\text{'a}c\text{'q}}\) \(\text{sv\text{'t}z\text{ig}^*\text{id}}\)
\([+\text{voice}]\) \(\text{li\text{'i}l}\) \(\text{waw\text{'i}l}\)

§ 1.4 A Preference for Stressed \(\text{a}\)

The constraint against unstressed \(a\) can also be obeyed by stressing \(\text{a}\). The regular pattern of stress in Northern Lushootseed is to stress the first full vowel (\(\text{a}\)\(\text{\&}\)b), else on the first schwa (Hess 1977).

(8) a) \(\text{ca\text{'i}l}\) hand \(\text{di\text{'i}l}\) on the other side of

b) \(\text{ba\text{'i}t}\) offspring \(\text{sv\text{'i}z\text{\&}^*t}\) hunting canoe
c) \(\text{je\text{'i}d}\) foot \(\text{di\text{'i}d}\) put on its side

However, closer examination of vowel quality shows a preference for \(\text{a}\) to be stressed. The regular leftmost stress is over-ridden if the first vowel is high \(\text{h}\), \(\text{u}\) and the second is low. In about half of these stems stress falls on \(\text{u}\), even though it is non-initial. The following are examples of each vowel melody (high-high, high-low, low-low, low-low) and the number of lexical entries found with each stress pattern (initial or penultimate).

\(\text{Evidence in favour of a preference for sonorants in the coda, is that over half the medial triconsonantal clusters began with \(\text{t}\) or \(\text{l}\). Assuming that there are no complex onsets in Lushootseed (as in Urbanczyk 1996ab), these medial triconsonantal clusters must be syllabified as \(\text{VUC CV}, \text{with a complex coda. If} \text{t and glottal stop are sonorants, then the majority of complex codas will have falling sonority.}\)

\(\text{The robustness of the OCP as blocker has been observed by McCarthy (1986) where syncope is blocked in a number of languages.}\)
Peninitial Snyder (1968: 5) observes about the low vowel: 'As in the case of the high vowels, this phoneme is usually

(10) Greater duration is an intrinsic feature of low vowels in the languages examined so far. This constraint ensures that a feature which is identified as prominent in a language, will be associated with a peak. The PPP is similar to proposals about the relation between prominence and peaks (Prince 1990; Hayes 1995), as well as the licensing of features in stressed syllables (Sterriade 1994, Selkirk 1994).

A second interesting feature of the (i, u) vowels is that the unstressed i, u do not reduce.

The most similar constraint to PPP is the Weight-to-Stress Principle (Prince 1990), which states, if a syllable is heavy, then it is stressed. This means that if long vowels are prominent in a language then they will be stressed. The coincidence of long vowels and stress is found in the Upriver dialect of Halkomelem where long vowels are always stressed. Galloway (1993: 330) describes stress with diminutive reduplication as follows: 'The vowel in the reduplication gives up its stress only to a root or suffix vowel which is lengthened.' The regular initial stress is as in (a), and the stress on a long vowel is shown in (b).

(11) Weight-to-Stress in Upriver Halkomelem Diminutives (Galloway 1993: 331)

<table>
<thead>
<tr>
<th>a</th>
<th>p'aq'</th>
<th>white</th>
<th>qsl-p'aq'</th>
<th>a little white, whitish</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>t'e</td>
<td>be angry</td>
<td>qsl-t'e</td>
<td>be cranky</td>
</tr>
<tr>
<td></td>
<td>i-yalew</td>
<td>be bad</td>
<td>qsl-i-yalew</td>
<td>be raughty</td>
</tr>
<tr>
<td></td>
<td>jij-p'aq'</td>
<td>be cranky</td>
<td>qsl-jij-p'aq'</td>
<td>be raughty</td>
</tr>
<tr>
<td></td>
<td>sa-m7tab</td>
<td>picking (fruit, leaves)</td>
<td>sa-m7tab</td>
<td>picking a little bit</td>
</tr>
<tr>
<td></td>
<td>s-mtubS</td>
<td>picking (fruit, leaves)</td>
<td>s-mtubS</td>
<td>picking a little bit</td>
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</table>

§ 3 Analysis of Irregular Stems

The first point to make about having irregularities to contend with is that this situation is not unusual for syncope. Syncope can be irregular because of lexical diffusion (Latin). It is also a lexical rule, because it may only co-occur with some specified affix(es). It may also be blocked from applying. There may be a reason why some tokens retain their full vowel status. Before any of these options can be explored, the first question that must be answered is what the prime directive rule is. The irregularities result because some stems have been affected by a rule, and others haven't. If the productive rule is to ban unstressed vowels, then we can explain why a can be unstressed in some stems, and why it synchronizes with the diminutives examined.

There were a handful of stems which seem to have syncopated and non-syncopated forms. Comparison of the meanings of these stems shows that the words with the isolatable diminutive meaning have syncopation and retention of i, u. This seems to indicate that the productive rule is for a.

(12) Syncope and Non-Syncope

<table>
<thead>
<tr>
<th>a</th>
<th>pasted white person (from Rostow)</th>
<th>pagsted</th>
<th>white child, white friend</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>s-tubS man, male</td>
<td>s-tubS</td>
<td>boy</td>
</tr>
<tr>
<td></td>
<td>s-tubS single man (among many women)</td>
<td>s-tubS</td>
<td>single man (among many women)</td>
</tr>
</tbody>
</table>

This seems to indicate that the productive rule is for a to delete. (The last form may be CV-counting people reduplication.)

To account for the failure of a to reduce, I would like to suggest that, like Latin, syncope occurs as an instance of lexical diffusion. So, syncope begins in one part of the lexicon, and is moving its way in to the rest. This lexical diffusion approach means that there is one component of the lexicon in which syncope occurs (more recently) and an older portion of the lexicon in which syncope has not occurred.

A point in favour of having a distinction in the lexicon is that the same segmental environments are found when syncope occurs and when syncope fails. That is to say, unstressed a is found in the same environment as syncopated and reduced a. We find a between voiceless consonants as well as in the rising sonority context.
The interesting feature of syncope here, is that elsewhere in the languages. The following loans are suggestive that a productive part of the language is to syncope the post-tonic (root) vowel with diminutive reduplication.

While van Eijk (1984) analyzes diminutive reduplication as a consonantal suffix, re-analyzing it as prefixing CV-reduplication with concomitant syncope will make it structurally more similar to diminutives in other Salish languages.

Closer examination of morphologically related words may shed light on the problem. The following forms may also shed light on what the productive pattern is.

<table>
<thead>
<tr>
<th>Diminutive Stems</th>
<th>Reduction Environment</th>
</tr>
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<tbody>
<tr>
<td>XaX-</td>
<td>XaXaX-</td>
</tr>
<tr>
<td>laq-</td>
<td>laq-</td>
</tr>
<tr>
<td>(2,3)Xa-</td>
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**§ 4 Summary**

Analyzing syncope as resulting from a constraint banning unstressed /a/ is promising because syncope and reduction are related. A wider set of data are explained than if syncope were sensitive to consonantal environment (i.e., those with voiced consonants would not be explained).

**Appendix:**

Statistical evidence from Urbanczyk (1996a) shows that /a/ reduces more frequently than /e/. This is significant because it means that vowel reductions more than the high vowels. It also shows that the high vowel can remain unstressed. The following charts sort diminutive stems by vowel quality and degree of reduction (syncope -- reduced -- no reduction).

<table>
<thead>
<tr>
<th>Actual and Expected Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Syncope</strong></td>
</tr>
<tr>
<td>/a/</td>
</tr>
<tr>
<td>/u/</td>
</tr>
</tbody>
</table>

Shading indicates that syncope and vowel reduction occur more than expected with /a/ and less than expected with /u/. A chi-squared test shows that vowel quality is statistically significant in determining vowel reduction/syncope. It was significant at \(p < 0.03\) for syncope of /a/ and retention of unstressed /i/. The significance for /a/-reduction and /u/-retention was at \(p < 0.1\).

<table>
<thead>
<tr>
<th>Chi-Square of Unstressed Vowel following DIM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Syncope</strong></td>
</tr>
<tr>
<td>high</td>
</tr>
<tr>
<td>low</td>
</tr>
</tbody>
</table>

1 One caveat is warranted here. With one exception, these figures represent raw data. The form did:\(d\) is recorded as did:\(\~d\) in every source except the Lushootseed Dictionary. I have treated it as a reduced stem.
References
Selkirk, Elisabeth O. 1994. class notes, University of Massachusetts, Amherst.