Ambisyllabicity and Nasalization in Chilcotin
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0. Chilcotin, an Athapaskan language of British Columbia, has six vowel phonemes, three pairs of tense (full) and lax (reduced) vowels. Because of the flattening process conditioned by flat sibilants (\( \tilde{\text{s}} \)) and flat velars (Q, Q'), as described in Cook 1983 and elsewhere, each of these six vowel phonemes is realized phonetically in two (or more) qualities as shown in Table 1. The consonant inventory is given in Table 2.

Table 1

<table>
<thead>
<tr>
<th>Underlying (sharp)</th>
<th>Flattened (next to a flattened consonant)</th>
</tr>
</thead>
<tbody>
<tr>
<td>i - u</td>
<td>2sg - do</td>
</tr>
<tr>
<td>c</td>
<td>2sg - do</td>
</tr>
<tr>
<td>a</td>
<td>a</td>
</tr>
</tbody>
</table>

Table 2

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>d</td>
<td>d</td>
<td>d</td>
<td>d</td>
<td>d</td>
<td>q</td>
<td>G</td>
<td>p</td>
<td>q</td>
<td>q</td>
</tr>
<tr>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>q</td>
<td>k</td>
<td>t</td>
<td>q</td>
<td>q</td>
</tr>
<tr>
<td>(n)</td>
<td>̃</td>
<td>̃</td>
<td>̃</td>
<td>̃</td>
<td>̃</td>
<td>q</td>
<td>x</td>
<td>x</td>
<td>q</td>
<td>q</td>
</tr>
<tr>
<td>m</td>
<td>n</td>
<td>l</td>
<td>z</td>
<td>ȳ</td>
<td>n</td>
<td>y</td>
<td>y</td>
<td>n</td>
<td>N</td>
<td>N</td>
</tr>
</tbody>
</table>

Furthermore, both tense and lax vowels, either sharp or flat, have nasalized counterparts on the phonetic surface, which are phonemically interpreted as a sequence of a vowel followed by \( \text{n} \). The remainder of this paper is concerned about the theoretical status of this interpretation.

1. The allomorphic variations of \( \text{2sg} \) (2sg subject prefix) in verbs illustrate the phonological behaviour of \( \text{n} \) and the process of nasalization. Compare the underlying and surface realizations of this prefix in the following four verbs. The prefixes in these examples include 'adverbial' (adv), 'conjugation marker' (CM), and 'classifier' (C).

(a) \( \text{gē} - \text{nc} - \text{t'ln} \) [\( \text{gēt'ln} \)] 'you do so'
adv - 2sg - do

(b) \( \text{nē} - \text{nc} - \text{čēčē} \) [\( \text{nečēčē} \)] 'you drag it'
adv - 2sg - drag

(c) \( \text{γt} - \text{nc} - \text{bit} \) [\( \text{γtčēčē} \)] 'you are swimming'
CM - 2sg - swim

The underlying form of the subject prefix in question is intact in (a), it is realized by \( \text{n} \) in (b), by \( \text{m} \) in (c), and by the nasalization of the preceding vowel in (d). In order to put the rule of nasalization, exemplified by (1d), into proper context, it is now necessary to comment on other rules that are involved in the allomorphy of the 2sg subject prefix.

The derivations of the forms given in (1) include Metathesis, Reduced Vowel Deletion (RVD), Tensing, Nasal Absorption (NA), and Nasal Assimilation (NAS), all of which are shared by many Athapaskan languages. The relationships of these rules are illustrated by the following derivations (1b,c,d):

Rules

<table>
<thead>
<tr>
<th>(b)</th>
<th>(c)</th>
<th>(d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underlying</td>
<td>nē-nc-čēčē</td>
<td>γt-ne-bi</td>
</tr>
<tr>
<td>Metathesis</td>
<td>nē-nc-čēčē</td>
<td>γt-en-bi</td>
</tr>
<tr>
<td>Tensing/RVR</td>
<td>nē-n-čēčē</td>
<td>γt-1-bi</td>
</tr>
<tr>
<td>NA/NAS</td>
<td>—</td>
<td>γt-1-m-bi</td>
</tr>
<tr>
<td>Other</td>
<td>nēčēčē</td>
<td>γtčēčē</td>
</tr>
</tbody>
</table>

The metathesis rule proposed here has not been well documented for Athapaskan (but see Cook 1986); instead a rule of vowel deletion is proposed for cognate processes (see Rice 1983 and Hargus 1985). A rule of vowel deletion, however, creates a couple of serious problems which will not be discussed here. A reduced vowel deletes next to a full vowel, but two like reduced vowels become a tense vowel, so that Tensing and RV are mutually exclusive, which may be collapsed into a single rule. The nasal assimilation and absorption rules exemplified by (c) and (d) above, are of primary interest here. These two rules are also mutually bleeding.

A cursory examination of the nasalization in the above example suggests that Chilcotin nasalization is different from other cognate processes in Athapaskan (e.g. Slave, Sekani) or from the better-known rule of nasalization exemplified by French (Schane 1973, Foley 1977). One thing to be noted here is that the \( \text{n} \) that is absorbed by the preceding vowel is not syllable final but followed by a syllable-final continuant at the time when Nasal Absorption applies (i.e. \( \text{γt} \rightarrow \text{γt} \)). This fact is further illustrated by the examples below. Compare those in (a) with those in (b):

<table>
<thead>
<tr>
<th>(2)</th>
<th>(a)</th>
<th>(b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>nēčēčē</td>
<td>[( \text{nēčēčē} )] 'your rib'</td>
<td>nēčēčē</td>
</tr>
<tr>
<td>cmn-cvcm</td>
<td>cmn-cvcm</td>
<td>cmn-cvcm</td>
</tr>
<tr>
<td>nēčēčē</td>
<td>[( \text{nēčēčē} )] 'you cry'</td>
<td>nēčēčē</td>
</tr>
<tr>
<td>cmn-cvc</td>
<td>cmn-cvc</td>
<td>cmn-cvc</td>
</tr>
<tr>
<td>nēčēčē</td>
<td>[( \text{nēčēčē} )] 'give it to me'</td>
<td>nēčēčē</td>
</tr>
<tr>
<td>cv-cvcm-cvcm</td>
<td>cv-cvcm-cvcm</td>
<td>cv-cvcm-cvcm</td>
</tr>
</tbody>
</table>

The derivations in (2) are of primary interest here. These two rules are also mutually bleeding.
Since there is no syllable coda represented by n plus a stop in Chilcotin, it is apparent that the Nasal Absorption is triggered by a syllable-final consonant. There are, however, two types of apparent counter-examples to be discussed below.

2. In the phonetic data shown below, nasalized vowels occur where there is no syllable-final consonant.

(1) a. [di] 'dog'
   b. [i] 'long time'
   c. ['ti] 'he's snoring'

If [i] does indeed contrast with [u] as the above data apparently suggests, nasalized vowels should be recognized as phonemes. This would be an undesirable solution considering the rarity of [i] not followed by a consonant, the increase in the phonemic inventory, and the systematic alternation between [i] and [u] in verb paradigms, as illustrated by the data presented in (1). Furthermore, the recognition of nasalized vowel phonemes does not resolve the other problem revealed by (3b), the flattened quality of the second vowel where there is apparently no flat consonant. This leads one to an alternative solution.

What is obviously needed to resolve the problems of nasalization and flattening revealed by the data in (3) is an underlying continuant, and the most reasonable choice is a homorganic glide. With this somewhat less transparent segment, the phonetic data in question receives the following phonemic interpretation.

(4) a. [di] 'dog'
   b. [i] 'long time'
   c. ['ti] 'he's snoring'

It is important to note that the final homorganic glide is independently motivated, at least for (4b). The final ɪ triggers flattening of ꞌa to [a] and also triggers Nasal Absorption so that the underlying ꞌa surfaces as [a]. In other words, the choice of a homorganic glide is not an arbitrary one; it is motivated not only by Flattening, the most salient phonological process of Chilcotin (see Cook 1983 for details), but also by the heavy-light syllable alternation, which is quite common among the Athapaskan languages (see Cook 1977).

Another set of data that shows nasalized vowels not followed by a syllable-final consonant is given below. Note in the following phonemic (not morphophonemic) representations of the data, the syllables in question (which are underscored) are in the canonical shape of CV where the second C is ꞌa.

(5) a. [tɪn] 'you are backpacking'
   b. [dɪn] 'you are singing a love song'
   c. ꞌguꞌun 'it (house) is good'
   d. ꞌxun ꞌun 'how often?'
   e. ꞌtɪn [ ꞌtɪ] 'one'
   f. ꞌse ꞌtseg 'my buck skin'

In these forms, the ꞌa that is the syllable-final C is absorbed by the tautosyllabic vowel. Note, however, that the nasal absorption applies only if the onset of the following syllable is a consonant. It is, of course, possible to state the rule, making reference to this heterosyllabic onset, but then is Chilcotin nasalization so different as to be conditioned by a nontautosyllabic element? This question is answered in the following section.

3. The core syllables of Chilcotin are given in (6), where V is a full Vowel, ꞌa a reduced vowel, and C any consonant.

(6) a. CV: ꞌtu 'water', ꞌsa 'sun', ꞌq ꞌshoe'
   b. CV: ꞌlɪ 'life', ꞌsɪn 'dog', ꞌnɪ 'bird', ꞌs ꞌdress'
   c. CV: ꞌqn ꞌstar', ꞌdz ꞌsnow mountain', ꞌɬ ꞌbaby bottle', ꞌq ꞌshirt'

Two points should be made with respect to these syllable types. First, it is important to distinguish CV from CVC because reduced vowels never occur in open syllables, although there are morphemes of the shape CV, which require a rule of ambisyllabification (see below). I have deliberately left out CVC [CV]C, which is the main concern of this paper.

The noncore syllable types are extremely rare; in fact, examples listed above make up almost an exhaustive list. Furthermore, the membership of the initial clusters is restricted; the first C of the initial CV is always ꞌa or ꞌu, and the second C is not a consonant. The status of the ꞌa-initial cluster is not stable in that the cluster is broken by an epenthetic vowel in an alternative pronunciation. As for (6a), these two forms are the only examples so far recorded. The glides in Chilcotin (and in Athapaskan in general) function like a true consonant (see Cook 1977), while diphthongs are nonexistent or extremely rare. However, ꞌu and ꞌo in the two forms in (6e) may be treated as diphthongs where there is a true syllable-final consonant, i.e.

\[
\begin{array}{c}
\text{CVCC} \\
\end{array}
\]

With this analysis of what appears to be a CVCC syllable type, the only remaining CVCC syllable type is CVC that becomes CV or CV via Nasal Absorption, e.g.

\[
\begin{array}{c}
\text{CVCC} \\
\end{array}
\]
Needless to say, any sequence of a vowel plus \( n \), dominated by a single \( V \) is phonetically interpreted as a nasalized vowel, and \( C \) that no longer dominates any segment is erased by a general convention.

The nasal absorption rule illustrated by the above derivation, however, cannot account for the data presented in (5), simply because the syllables in question all end in \( n \) not followed by a tautosyllabic continuant. This suggests, provided that the Nasal Absorption is a syllable-based rule, that the continuant that follows \( CVn \) is ambisyllabified, at the time when Nasal Absorption applies, by a rule like the following:

\[
\begin{array}{c}
V C \\
\text{[cont]}
\end{array}
\]

The feeding relationship of ambisyllabification and nasalization is illustrated by the following derivation:

\[
\begin{align*}
\text{Ambisyllabification} & \quad \rightarrow \\
\text{Nasal Absorption} & \\
\end{align*}
\]

It may sound somewhat arbitrary at this point, if the rule of ambisyllabification is postulated only to motivate Nasal Absorption as a syllable-based rule. There is, however, another good reason to believe that consonants are ambisyllabic in certain environments regardless of nasal absorption. Recall that the core syllable types include \( CV \), which is distinct from \( CVC \), and there is no \( CV \) type. In other words, reduced vowels \( (\tilde{V}) \) do not occur in open syllables. There are no words ending in \( i, e, \) or \( u \). Then, how can such words as those below be syllabified?

\[
\begin{align*}
(9) & \quad \text{a. } \text{ts'k'el} \quad \text{"it's white"} & \quad (\text{cf. } \text{ts'k'el} \quad \text{"I'm white"}) \\
& \quad \text{b. } \text{ns'zun} \quad \text{"it's good"} & \quad (\text{cf. } \text{ns'zun} \quad \text{"I'm good"}) \\
& \quad \text{c. } \text{y'sbit} \quad \text{"he swam"} & \quad (\text{cf. } \text{y'sbit} \quad \text{"I swam"}) \\
& \quad \text{d. } \text{d'en} \quad \text{"a person"} \\
\end{align*}
\]

These words all appear to have two syllables each of the form \( CV-CVC \), but a native speaker cannot syllabify them in this way. Instead, these words are syllabified as illustrated by the following example in which the second consonant is ambisyllabic.

\[
\begin{align*}
\text{Ambisyllabification} & \quad \rightarrow \\
\end{align*}
\]

The ambisyllabic \( k' \) in \( \text{ts'k'el} \) is longer (in the pronunciation in which the word is syllabified) than the \( k' \) in \( \text{ts'k'el} \) in which it is not ambisyllabic. Because of the lengthening of the ambisyllabic \( k' \), the timing of the two words is identical.

4. The rule of ambisyllabification then can be seen as a means to maintain core syllable types by eliminating \( CVCC \) and \( CV \). In this sense, Chilcotin ambisyllabification is functionally related to the \( a-e \) rule of Chipewyan which has virtually identical syllable types, but quite different vowel systems. It has five full vowels \( (i, e, a, o, u) \) and only one reduced vowel, \( \tilde{e} \). The syllable type \( C \tilde{e} \) is prohibited because \( \tilde{e} \) if syllabification is imposed, but there is no rule of ambisyllabification in Chipewyan.

In short, where a rule of ambisyllabification is independently motivated in Chilcotin, the nasalization rule in Chilcotin is seen not only as a syllable based rule, but also as a rule that changes a noncore syllable type to a core type.

References


