Single URs vs. allomorphy: The case of Babanki coda consonant deletion

Pius W. Akumbu
University of Buea, Cameroon

1. Introduction

The purpose of this paper is to account for a number of phonological alternations that occur on nouns, verbs, deverbal adjectives, and pronouns at the postlexical level in Babanki, a Grassfields Bantu language spoken in Cameroon. The alternation involves the deletion of certain coda consonants between two underlying vowels. This can be illustrated by the deletion of /ŋ/ which is accompanied by the raising of /a/ and /o/ to [o] and [u] respectively (Mutaka & Phubon 2006):

(1) ə̀sáŋ ‘corn’ ə̀sō: ghɔ́mə́ ‘my corn’ /ə̀sáŋ ə̀ ghómə́/
    ə̀sóŋ ‘tooth’ ə̀sū: ghɔ́mə́ ‘my tooth’ /ə̀sóŋ ə̀ ghómə́/
    àkwə́ŋ ‘arms’ àkwə̄: ghɔ́mə́ ‘my arms’ /ə̀kwə́ŋ à ghómə́/

These changes fail to occur if /ŋ/ is not followed by a vowel in the underlying representation (UR), as illustrated in the second example in (2).

(2) ə̀káŋ ‘dishes’ ə̀kó: wìʔ ‘a person’s dishes’ /ə̀káŋ ə́ wìʔ/
    kə̀káŋ ‘dish’ kə̀káŋ ↓ kə́ wìʔ ‘a person’s dish’ /kə̀káŋ kə́ wìʔ/

There are two possible ways to account for these changes, namely, a rule- or constraint-based phonological analysis which starts with an input from which an output is derived, and a precompiled phonology approach in which allomorphs are listed with appropriate frames where they are inserted (Hayes 1990). In the first approach, proposed underlying segmental forms are exactly as they would occur in isolation, for

1 This paper was written during my stay at the University of California, Berkeley as a Fulbright research scholar (Sept. 1, 2015 - May 31, 2016) and I would like to sincerely thank Larry Hyman for his invaluable input at all stages of the life of this paper.
2 Although native speakers of the language prefer to use Kejom when referring both to the language and the two villages where it is spoken, I have chosen Babanki, the administrative name by which the language and the people are widely known.
3 The rest of the data in this paper are drawn from a lexical database of 2000 entries in Filemaker Pro™.
example, [ə̀sáŋ] ‘corn’, [ə̀]⁴ ‘of’, [ghómə́] ‘mine’.⁵ However, a major challenge that emerges is how to capture the conditions that specifically determine the vowel changes. I therefore propose an account positing allomorphs and argue that for every word involved in the alternation, the grammar automatically generates allomorphs marked for specific phonological instantiation frames.

After an introduction to the phonology of Babanki in section 2, I provide an overview of phrasal allomorphy in section 3. In section 4, I illustrate the consonant deletion process using the velar nasal and then move further in section 5 to discuss the different contexts where these coda consonants are deleted. I equally show how vowel raising takes place after velar nasal deletion.

2. Babanki Phonology

According to Akumbu and Fogwe (2012), there are 26 phonemic consonants (Table 1), 8 vowel phonemes (Table 2) and two underlying tones: /H/ and /L/.

Table 1: Consonant Phonemes

<table>
<thead>
<tr>
<th></th>
<th>Bilabial</th>
<th>Labiodental</th>
<th>Alveolar</th>
<th>Postalveolar</th>
<th>Palatal</th>
<th>Velar</th>
<th>Glottal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stops</td>
<td>b</td>
<td>t, d</td>
<td></td>
<td></td>
<td>k, g</td>
<td>?</td>
<td></td>
</tr>
<tr>
<td>Nasals</td>
<td>m</td>
<td>n</td>
<td></td>
<td>ny [ɲ]</td>
<td>η</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fricatives</td>
<td>f, v</td>
<td>s, z</td>
<td>sh [ʃ], zh [ʒ]</td>
<td>gh [ɣ]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Affricates</td>
<td>pf, bv</td>
<td>ts, dz</td>
<td>ch [tʃ], j [dʒ]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liquids</td>
<td>l</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glides</td>
<td>w</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>y [j]</td>
</tr>
</tbody>
</table>

Table 2: Vowel Phonemes

<table>
<thead>
<tr>
<th></th>
<th>Front</th>
<th>Central</th>
<th>Back</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>i</td>
<td>i</td>
<td>u</td>
</tr>
<tr>
<td>Mid</td>
<td>e</td>
<td>Ṝ</td>
<td>o</td>
</tr>
<tr>
<td>Low</td>
<td>a</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

⁴ ə occurs with most noun classes and the class marker itself is suffixed to some roots as ə-ghóm-ə ‘class 5 and 8’, ə-kóm-kə ‘class 7’, ə-shóm-sə ‘class 10’, ətyóm-tō ‘class 13’, ə-fwóm-fə ‘class 19’ while class 1 and 9 are not marked: ə-ghóm. Class 6 alone has à-: à-ghóm-ə.

⁵ The exact tonal representations are more complex than what is generally shown in this paper as phonetic L-H nouns in (1) for example, represent a neutralization of three distinct morphophonemic inputs discussed by Hyman (1979) and Akumbu (in preparation).

⁶ On the surface, Babanki contrasts three level tones, H, M, L, plus a downstepped High (‘H). It also has contrast between a falling (L) and a level low (L˚) tone before pause (Akumbu in preparation).
Syllable structures in Babanki include V, CV, CGV, CVC and CGVC, where G stands for glide. Words in the language mostly consist of a monosyllabic root with a possible V or CV prefix and/or suffix. Stems always begin with a consonant, while the only vowels that can occur at the beginning of a word are the prefixes a- and ø-. Nouns can take a prefix or (in class 10) a suffix while verbs can have a prefix (infinitive) or other suffixes and extensions. All of the consonants in Table 1 can occur stem-initially except /ʔ/, while only the six consonants /m, n, ŋ, f, s, ?/ can occur as codas, as exemplified in (3).

(3) ə̀wúm ‘egg’  
fɔ-nyín⁷ ‘bird’  
jiŋ ‘hunger’  
ɔ-ɔ́čif ‘to advise’  
ɔ-bis ‘to scatter’  
ɔ-ikúʔ ‘to climb’

The following table shows vowels that contrast before each of the above six coda consonants:

<table>
<thead>
<tr>
<th></th>
<th>m</th>
<th>n</th>
<th>ŋ</th>
<th>f</th>
<th>s</th>
<th>?</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>əfwín ‘leg’</td>
<td></td>
<td></td>
<td>ə-bis ‘to scatter’</td>
<td>əbwìʔ ‘hit’</td>
<td></td>
</tr>
<tr>
<td>e⁶</td>
<td>əbèm ‘belly’</td>
<td>əbén ‘dance’</td>
<td></td>
<td>kàfyèf ‘thickness’</td>
<td>əchès ‘pour’</td>
<td>əbèʔ ‘seize’</td>
</tr>
<tr>
<td>a</td>
<td>əbàm ‘heat’</td>
<td>əbàn ‘hate’</td>
<td>əbàŋ ‘scrape’</td>
<td>əwàf ‘frighten’</td>
<td>əbàs ‘cut open’</td>
<td>əbàʔ ‘take off’</td>
</tr>
<tr>
<td>ø</td>
<td>ədàm ‘to grunt’</td>
<td>əlyón ‘slide’</td>
<td>əlyàŋ ‘bamboo’</td>
<td>ədyàf ‘be long’</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i</td>
<td>lím ‘husband’</td>
<td></td>
<td>jiŋ ‘hunger’</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>u</td>
<td>kàtùm ‘odour’</td>
<td></td>
<td></td>
<td>kàntùf ‘stomach’</td>
<td>ə́dús ‘to emit’</td>
<td>ə́lù ‘raffia palm’</td>
</tr>
<tr>
<td>o</td>
<td>ə́kím ‘to clean’</td>
<td>ntùn ‘pot’</td>
<td>ə́tòŋ ‘navel’</td>
<td>əfwòf ‘wind’</td>
<td>əfwòs ‘to fart’</td>
<td>ə́bàʔ ‘to open’</td>
</tr>
<tr>
<td>u</td>
<td>əwúm ‘egg’</td>
<td>wùn ‘tattoo’</td>
<td>ə́bùŋ ‘to melt’</td>
<td>əgùf ‘to drive’</td>
<td>ə́lùs ‘to be blunt’</td>
<td>ə́kúʔ ‘ladder’</td>
</tr>
</tbody>
</table>

3. **Phrasal Allomorphy**

This work draws on phrasal allomorphy developed and argued for by Zwicky 1985, 1987, Pullum and Zwicky 1988 and extended by Hayes (1990). According to Hayes (1990:92), “Phrasal allomorphs may be derived by phonological rule within the lexical phonology, so that whole classes of words will have multiple precompiled allomorphs.” Allomorphy uses the notion of phonological instantiation which “…suggests that words

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⁷ In final position /ŋ/ is realized as yn [ŋ] in the Kejom Ketinguh dialect of Babanki.
⁸ /e/ and /ø/ are realized as [ɛ] and [ɔ] respectively in closed syllables (Mutaka & Chie 2006:75).
appear in syntactic representations in rather abstract form, consisting of a kind of place marker, lacking in phonological content…" (Hayes 1990:91), and filled in post-syntactically with phonemic material. Frames exist in the lexicon of a language and serve as the contexts for the realization of allomorphs. In other words, if the grammar of a language generates more than one allomorph of a word, each of them will have a particular phonological frame where it can be inserted, making it possible to explain those morphological alternations that cannot be insightfully accounted for using phonological rules. A frame for the allomorphs of the indefinite article a/an in English will be as follows:

(4) English Indefinite article
   Allomorphs: [ən, ə]
   [ən] / [ _ V]
   [ə]

Phonological instantiation is governed by the Elsewhere condition (Kiparsky 1973) “…which insures that the most specific insertion context that is applicable in any particular environment takes precedence over more general insertion contexts” (Hayes 1990:92-93).

As I will now describe in considerable detail, the coda consonants /n/ and /ŋ/ are regularly deleted when they occur in intervocalic position, the second vowel being either a suffix, a clitic, or the prefix of a following word. I begin in §3 with /ŋ/ since specific vowel changes accompany its deletion.

4. Deletion of /ŋ/

As stated by Mutaka and Chie (2006), “…when the possessive adjective is used with the nouns ending in ŋ, this ŋ deletes and this is accompanied by vowel raising, namely the vowel a that raises to [ɔ] and the vowel o/ɔ that raises to [u].” They have further stated that the same alternation is observed when these nouns are in an associative (possessive) construction and in certain verbal constructions. I show in (5) that velar nasal deletion with vowel raising is attested in many more contexts than they identified.

(5) a. Noun + Possessive Pronoun
   ãsø: ghómó ‘my corn’ /ãsñ̥ ã ghómó/
   ãsū: ghómó ‘my tooth’ /ãsñ̥ ã ghómó/
b. Noun + Noun
ə̀só: nyàm ‘animal’s corn’ /ə̀sáŋ ə nyàm/
ə̀sú: nyàm ‘animal’s tooth’ /ə̀sóŋ ə nyàm/

c. Noun + Deverbal Adjectives
ə̀sō: kúghó ‘raw corn’ /ə̀sáŋ ə̀ kúghó/
ə̀sū: fíghó ‘new tooth’ /ə̀sóŋ ə̀ fíghó/

d. Noun + Interrogative
ə̀sò: kɔ̀’ ‘which corn’ /ə̀sáŋ ə̀ kò´/
ə̀sù: kɔ̀’ ‘which teeth’ /ə̀sóŋ ə̀ kò´/

e. Noun + ‘a certain’
ə̀sō: tsɛ́: ‘a certain corn’ /ə̀sáŋ ə̀ tsénə́/
ə̀sū: tsɛ́: ‘some teeth’ /ə̀sóŋ ə̀ tsénə́/

f. Noun + All
ə̀sò: tsèm ‘all the corn’ /ə̀sáŋ ə̀ tsèm/
ə̀sù: tsèm ‘all the teeth’ /ə̀sóŋ ə̀ tsèm/

g. Noun + Numeral
ə̀sò: bòv ‘two corn’ /ə̀sáŋ ə̀ bò´/
ə̀sù: táʔ ‘three teeth’ /ə̀sóŋ ə̀ táʔ/

h. Noun + How Many
ə̀sò: shɔ̀ ‘how many corn?’ /ə̀sáŋ ə̀ shɔ̀/
ə̀sù: shɔ̀ ‘How many teeth?’ /ə̀sóŋ ə̀ shɔ̀/

i. Noun + Interrogative ‘who’
ə̀só: ndə̀ ‘whose corn?’ /ə̀sáŋ ə́ ndə̀/
ə̀sú: ndə̀ ‘whose tooth?’ /ə̀sóŋ ə́ ndə̀/

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9 As stated in footnote 8 above, [ɔ] is expected in closed syllables. However, there a few grammatical words in the language where it occurs in open syllables: kò ‘which’, ghò ‘what’ and mbò ‘attention signal’.
Apart from /a/ and /o/, three other vowels, namely /i/, /u/, and /ə/ can occur in the /Vŋ/ sequence in Babanki. As shown below, these vowels do not undergo any change when the velar nasal is deleted:

(6) a. ə̀lyú: nyàm ‘animal’s guitar’ /ə̀lyúŋ ə́ nyàm/
   b. ə̀kwə̄: fí'ghó ‘new arm’ /ə̀kwə́ŋ ə́ fíghó/

In the section that follows, I show that while the velar nasal deletes in Babanki, four other coda consonants also drop in specific contexts. While /ŋ/ deletion is followed by vowel raising under the conditions described in (5.1) below, it is not possible for vowel raising to occur after the deletion of the rest of the coda consonants. Interestingly the bilabial nasal singles out itself to resist deletion making it the only Babanki coda consonant that is not deleted in any circumstance.

5. **Coda Consonant Deletion**

Of the six coda consonants, five can be deleted intervocalically leaving only /m/ unaffected. The different grammatical contexts in which consonant deletion occurs are summarized in Table 4:

<table>
<thead>
<tr>
<th>Coda Consonants</th>
<th>n</th>
<th>ə</th>
<th>f</th>
<th>s</th>
<th>m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noun + Possessive Pronoun</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noun + Noun</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noun + Interrogative</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noun + 'a certain'</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noun + All</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noun + Numeral</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noun + How Many</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noun + Interrogative ‘who’</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The progressive marker is shown without a tone in the underlying form because it seems to be toneless and takes its tone from the verb root, being low with low tone verbs and high with high tone verbs.

11 Mutaka and Chie (2006:75) have identified “…a limited set of data where the alternation is between ɔ and e.” I have noticed that there is individual variation between ə and ɔ in four words əkwə́ŋ ~ əkwɔ́ŋ ‘arm’, əwə́ŋ ~ əwɔ́ŋ ‘market’, kəkwə́ŋ ~ kəkwɔ́ŋ ‘bone’ kəbə́ŋ ~ kəbɔ́ŋ ‘compound’.
As seen, these contexts have been arranged into six groups, which are discussed in turn. The deletion of /ŋ/ with vowel raising and /n/ without vowel raising is presented in (5.1) while in (5.2) instances of exceptional deletion of /n/, /l/, /ʔ/ and /s/ in some words are used to make the case for allomorphy. Cases of /ŋ/ and /n/ deletion without vowel raising are discussed in sections (5.3 - 5.6). Finally, in section (5.7) I present data to show that /m/ is not deleted.

5.1. Group 1: Deletion of /ŋ/ with vowel raising and /n/ without

In group 1, a single + indicates that /ŋ/ and /n/ drop out, while ++ indicate that the deletion of /ŋ/ is accompanied by the raising of /a/ and /o/ to [o] and [u], respectively. These processes occur in the noun phrase when modifiers are added to the noun, as well as in progressive verb forms (cf. (5j) above). /ŋ/ deletion with vowel raising is exemplified in (7) while /n/ deletion is shown in (8).

(7) a. Noun + Possessive Pronoun
   əsō: ghómó  ‘my corn’  /əsāŋ ə̀ ghómà/
   əsū: ghómó  ‘my tooth’    /əsóŋ ə̀ ghómà/

   b. Noun + Noun Possessor
   əsō: nyàm    ‘animal’s corn’   /əsāŋ ə́ nyàm/
   ḗsú: nyàm    ‘animal’s tooth’  /əsóŋ ə́ nyàm/
c. Noun + Interrogative ‘how many?’

àsò: shòʔ 'how many corn?'  /àsán à shòʔ/
àsù: shòʔ 'How many teeth?'  /àsóŋ à shòʔ/

d. Noun + Interrogative ‘whose?’

ə̀só: ndà ‘whose corn?’  /ə̀sán ə́ ndà/
ə̀sú: ndà ‘whose tooth?’  /ə̀sóŋ ə́ ndà/

e. Verb in the Past Progressive

mà yì nsò: ŋkòʔ   'I was drying wood'  /mà yì á N-sàn̪ə̀ ə ŋkòʔ/
mà tə̌ ŋkù: wù   'I was loving you'  /mà tə̀ ə́ N-kòŋ ə wù/

f. Verb in the Future Progressive

mǎ: né nsò: ŋkòʔ   'I will be cutting a stick'  /mà ə́ né̀ N-chwán ə kə́tyí/
mǎ: lú nlɔ́: kə́tyí   'I will be begging a stick'  /mà ə́ lú̀ N-lón ə kə́tyí/

As seen in the following examples, /n/ deletion also occurs, but without vowel raising:

(8) a. Noun + Possessive Pronoun

kə̀bā: kóm     'my fufucorn'   /kə̀bán ə̀ kóm/
kə̀zɔ̀: kóm  'my spear grass'  /kə̀zòn ə̀ kóm/

b. Noun + Noun Possessor

ŋgà: nyàm     'animal’s story'  /ŋgàn ə̀ nyàm
ntɔ̀: nyàm     'pot of meat'   /ntòn ə̀ nyàm/

c. Noun + Deverbal Adjectives

wǎ: byí     ‘bad child’   /wàn ə́ byí/
fǐ: fí     ‘new fon (king)’  /fòn ə́ fí/

d. Verb in the Future Progressive

mǎ né nchwá: kə́tyí   ‘I will be cutting a stick’  /mà ə́ né̀ N-chwán ə kə́tyí/
mǎ lú nlɔ́: kə́tyí   ‘I will be begging a stick’  /mà ə́ lú̀ N-lón ə kə́tyí/

A general observation to be made about (7) and (8) is that the roots lose their nasals when there is a following schwa which can be (i) an associative (possessive) marker (AM), or (ii) a marker of the progressive form of verbs. Contrary to Mutaka and Chie (2006) who argue that vowel raising “…is the result of the association of the floating features [+hi, +ATR, +bk] which constitute the underlying features of the vowel ï
that never surfaces after the ŋ sound”, I propose that vowel raising is conditioned by the [+hi, +bk] features of the velar nasal, which relink to the vowel as part of the ŋ-deletion process. Notice how the [+bk] feature persists and ensures that *a > o [ɔ] instead of a. This synchronic process mirrors a diachronic change that happened in the language. A number of Proto-Grassfields coda consonants have been lost in Babanki and as shown in (9a-b) this was followed by the raising of the open-syllable root vowels, /a/ and /o/ to [ɔ] and [u] respectively.12 It happens then that when ŋ drops out in the contexts above, leaving /a/ and /o/ in open syllables of roots they are also raised in a similar manner.

(9) a. ìkó ‘money’ *káb’
    ósù ‘to stab’ *sòb

  b. ìlò ‘bridge’ *dål’
    zhù ‘snake’ *yól

  c. óchò ‘surpass’ *chà
    bò ‘two’ *bà
    kàmbó ‘madness’ *bá

  d. ìkú ‘forest’ *kò’
    kàvú ‘hand’ *bò’
    mòntú ‘intestines’ *tó’

A traditional input-output account will formalize the following coda consonant deletion rule,

(10) Coda Consonant Deletion

[+cons] → Ø / V ___ # V

but will be unable to formulate one for vowel raising particularly because of the difficulty to be encountered in stating the conditioning environment. To overcome the challenge I propose that the alternations are best explained by allomorphs inserted in specific frames. The data in (7) show that the nouns (a-d) and verbs (e-f) each have an

12 This claim that *a > o and *o > u in open syllables finds support in other Central Ring Grassfields languages e.g. *-fá’ > kà-fó ‘thing’ (cf. Oku kà-fà), *-bò’ > kà-vú ‘hand’ (cf. Oku kà-wó).
allomorph whose velar nasal has been deleted and its vowel has been raised. It is inserted in the following frame.

(11) -sán ‘corn’ -kòn ‘like’
    Allomorphs: [so, saŋ] [ku, kɔŋ]
    [so] / [ _ #ə][Frame 1] [ku] / [ _ #ə][Frame 1]
    [saŋ] [kɔŋ]

The data in (8) show that there is a second allomorph with deletion and no vowel raising which requires a second frame given in (12).

(12) -ŋgan ‘story’ -lon ‘beg’
    Allomorphs: [ŋga, ŋgan] [lɔ, lɔn]
    [ŋga] / [ _ #V][Frame 2] [lɔ] / [ _ #V][Frame 2]
    [ŋgan] [lɔn]

The most specific insertion context of the allomorph that has undergone /ŋ/ deletion and vowel raising takes precedence in Frame 1 (11) while that of deletion without vowel raising does so in Frame 2 (12). Following that, the more general allomorph that has the nasal is then inserted elsewhere (Kiparsky 1973).

The allomorph approach is further justified by the fact that while the nasals obligatorily drop as illustrated above, there are coda consonants whose deletion is not predictable and should best be viewed as allomorphs. I present these cases, represented in group 2, in (5.2).

5.2 Group 2: Deletion in exceptional lexical items

While group 2 confirms that deletion is lexical, it is exceptional in that it contains instances of the deletion of /ŋ/, /ʔ/, /f/ and /s/ only in some lexical items. In the following subsections I present these by coda consonant.

5.2.1 Deletion of /n/

The alveolar nasal exceptionally drops out in the following grammatical words:
(13)  a.  və́wɛ́: zhíː  ‘they are eating’
    və́wénə́  zhí ə
    3p  eat  PROG

    b.  wù  tsíː fėː:  ‘where do you live?’
    wù  tsí ə  fénə́
    2s  live  PROG where

    c.  wù  kūʔə̀ zɛː:  ‘when are you coming up?’
    wù  kūʔ ə  zénə́
    2s  climb  PROG when

    d.  wù  yì  ghɔ́ːm álɛː:  ‘how did you beat?’
    wù  yì  ghɔ́ːm álénə́
    2s  P2  beat  how

5.2.2 Deletion of /ʔ/

The glottal stop is deleted in Babanki in only one deverbal adjective ghóʔ ‘big’ as shown in the following examples.

(14)  a.  nyàmə́  ghɔː:  ‘a big animal’
    nyàm  ə́  ghóʔ ə
    animal  SM  big  PROG

    b.  kə̀tyː  ghɔː:kó  ‘a big stick’
    kə̀tyː  kó  ghóʔ ə  kó
    stick  SM  big  PROG AM

    c.  nyàm  yì  ghóʔ  màː  mbáʔló  ‘an animal grew fat and I sold’
    nyàm  yì  ghóʔ  mà  ə  m-báʔ-ló
    animal  P2  big  1s  SM  N-sell-EXT

    d.  kə̀tyː  tə̀ ghóʔ  mà  kɔ̀ŋ  ‘a stick became big and pleased me’
    kə̀tyː  kó  tə̀  ghóʔ  mà  kəŋ
    stick  SM  P3  big  1s  like

This is an exceptional property of the adjective form only, not of the progressive as the glottal stop is retained in progressive forms.

(15)  nyàmə́  ghóʔə́  ‘the animal is big/the animal is becoming big’
    nyàm  ə́  ghóʔ ə
    animal  SM  big  PROG
5.2.3 Deletion of /f/

Two deverbal adjectives dyə̀f ‘long’ and byíf ‘bad’ obligatorily lose their /f/ as follows:

(16) a. wìʔá dŷː: ‘a tall person’
    wìʔ  á  dyə́f ə
    person  SM  long  PROG

b. kòtyí i'kó dŷː:kó ‘a long stick’
    kòtyí  kó  dyə́f ə  kó
    stick  SM  long  PROG  AM

c. nyàmá i'byí: ‘a bad animal’
    nyàm  á  byíf ə
    animal  SM  bad  PROG

d. víʔi’vá byí: i’vó ‘bad people’
    víʔí  vó  byíf ə  vó
    people  SM  bad  PROG  AM

(17) a. nyàmá chófó ‘wild animal’
    nyàm  á  chóf ə
    animal  SM  wild  PROG

b. kòshí ká i’záfó ‘a wound is hurting’
    kòshí  ká  záf ə
    wound  SM  hurt  PROG

The deletion of /f/ is shown in (16) while (17) shows that other deverbal adjectives do not undergo deletion of their coda /f/ in the same phonological environment.

5.2.4 Deletion of /s/

The voiceless alveolar fricative is deleted only when the first person plural exclusive pronoun yès occurs before /ə/.

(18) a. yès: kù: ‘we are loving’
    yès  á  kòŋ ə
    1p(EXCL)  SM  love  PROG

b. yès: shwó: ‘we are sucking’
    yès  á  shwóŋ ə
    1p(EXCL)  SM  suck  PROG
c. nyàm kó tà kòn yès ‘the animal didn’t like us’
   nyàm ó kò tà kòn yès
   animal SM NEG P3 love 1p(EXCL)

d. yès tà shwòŋ ‘we sucked’
   yès tà shwòŋ
   1p(EXCL) P3 suck

In (18a-b) s drops when the subject pronoun is followed by /ə/ and in (c-d) it does not drop when it occurs finally or is followed by a consonant.

The behavior of group 2 must be accounted for by allomorph selection because deletion takes place only in a few words. For example, yès ‘we’ must be listed with two allomorphs: [yɛ] and [yɛ̀s] and the former will be inserted in Frame 1 as follows:

(19) yes ‘we’
   Allomorphs: [yɛ, yɛ̀s]
   [yɛ] / [ _ #ə][Frame 1]
   yes

In the next two sections I show that when /ŋ/ is deleted in similar contexts like in group 1, vowel raising does not occur. While this is accounted for using Frame 2, it raises doubts about the account of vowel raising shown to accompany /ŋ/ deletion.

5.3. Group 3: Deletion of /ŋ/ and /n/ without vowel raising

Group 3 is made up of contexts where deletion is conditioned by special properties of the stems involved. First, note in (20a) that vowel raising is blocked when the input is /Cwəŋ/ or /Cwŋ/:

(20) a. CwVŋ Sequence in both nouns and verbs
   kəfwā: kóm ‘my animal tract’ /kəfwáŋ ə̀ kóm/
   mbwò: ghóm ‘my maggot’ /mbwóŋ ə̀ ghóm/

   b. Personal and Animal Names
   mànà: ghóm ‘my Menang’ /mànàŋ ə̀ ghóm/
   ngò: ghóm ‘my Ngong’ /ŋgòŋ ə̀ ghóm/

   c. Disyllabic Roots
   kənsāŋsā: kóm ‘my sugarcane’ /kənsáŋsāŋ ə̀ kóm/
   kəŋgòŋgò: kóm ‘my ant’ /kəŋgòŋgòŋ ə̀ kóm/
The failure of the resulting Cwa and Cwo to be raised after /ŋ/ deletion is related to the fact that the sequence [Cwu] is disallowed in the language. The examples in (20b) show that personal names resist raising, presumably to keep the name more faithful to its pronunciation in isolation. The restriction is such that a name should not be changed extensively because if after consonant deletion the vowel is also changed the name will sound too different.\footnote{Surprisingly the name of the supreme God undergoes both \(\eta\) deletion and vowel raising nyìngù: ghóm ‘my God’ /nyìngɔ̀ŋ ə̀ ghóm/. This is probably because it is not possible to confuse this name with any other name in the language.} The disyllabic roots in (20c) are reduplications: In this case, there is a constraint to keep the vowel identical in both the stem and the reduplicant. A personal or animal name or a reduplication can be viewed as a fixed form that cannot be tampered with and so do not contradict the diachronic analysis of vowel raising provided above. The examples in (21) show similar examples involving /CwVn/ stems, which would in any case not have been expected to undergo raising after /n/ deletion:

(21) a. CwVn Sequence in both nouns and verbs

\[
\begin{align*}
\text{ařwā}: & \text{gh̓m̓ə́} & \text{‘my stream’} & /\text{ařwán ŋ̓gh̓m̓ə́}/ \\
\text{mà chwá}: & \text{‘I am cutting’} & /mà chwán-ŋ̓/ \\
\end{align*}
\]

b. Personal Names

\[
\begin{align*}
\text{àbā}: & \text{gh̓m̓} & \text{‘my Abain’} & /\text{àbān ŋ̓gh̓m̓}/ \\
\text{ŋgɔ̄}: & \text{gh̓m̓} & \text{‘my Ngoin’} & /ŋgɔ̄n ŋ̓gh̓m̓/
\end{align*}
\]

c. Disyllabic Roots

\[
\begin{align*}
\text{kɔ̄mbəmbā}: & \text{k̓m̓} & \text{‘my Adam fruit’} & /kɔ̄mbāmbān ŋ̓k̓m̓/ \\
\text{fə̄ŋgwɔ̄bā}: & \text{fw̓m̓} & \text{‘my monitor lizard’} & /fə̄ŋgwɔ̄bān ŋ̓fw̓m̓/
\end{align*}
\]

5.4. Group 4: Deletion of /\(\eta\)/ and /\(n\)/ before /\(a\)/

Group 3 contains a number of morphemes of the shape /\(á\)/. They include the post-nominal demonstrative pronoun á-Ci, the relative clause marker /\(á\)/ which also occurs after the noun, two prepositions: locative/adverbial /\(á\)/, indirect object /\(à\)/, and the yes-no question marker /\(à\)/. It is evident that what they have in common is that the vowel that follows the noun is [a] rather than [ə]. In this case, there is deletion of the nasals without any vowel raising as shown in the following sets of data.
(22) **Noun + Demonstrative Pronoun /á-Gi/¹⁴ the ‘one referred to’**
   a. mbǎ: yì ‘that walking stick’ /mbàŋ á-yì/
   ndɔ̌: yì ‘that potato’ /ndòŋ á-yì/
   b. wǎ: yì ‘that child’ /wàn á-yì /
   fɔ̌: yì ‘that fon (king)’ /fòn á-yì/

(23) **Relative Clauses**
   a. àsā: ghə̄: fə́ŋkə̀ ‘the corn that is falling’   /àsáŋ á ghə́ fə́ŋkə/
   àghɔ̄: ghə̄ fə́ŋkə̀ ‘the spears that are falling’   /àghόŋ á ghə́ fə́ŋkə/  
   b. kǎ: mà pfíʔə́ ‘the monkey that I am eating’ /kàn á mà pfíʔə́/
   ntɔ̌: mà báʔlə̀ ‘the pot that I am selling’  /ntòn á mà báʔlə/  
   c. kə̀tyɔ́m á kə́ fə́ŋkə̀ ‘the calabash that is falling’  /kə̀tyóm á kə́ fə́ŋkə/  
   kə̀tám á mà báʔlə̀ ‘the trap that I am selling’  /kə̀tám á mà báʔlə/  

(24) **Prepositional Phrases**
   a. kú mbà: mò ‘give me a walking stick’ /kú mbàŋ à mò/
   mà yì tə́m ághɔ́: kə́ bə́ŋ  ‘I shot spears outside’ /mà yì tə́m ághόŋ á kə́bə́ŋ/  
   b. kú nà: mò  ‘give me happiness’ /kú nàn à mò/ 
   mà kə̂: pfèʔə̀ ntɔ̀: wù  ‘I want to cook for you’  /mà kə́ŋ ə pfèʔə̀ ntòn à wù/  

(25) **Locative and adverbial Phrases**
   a. fá: shə̀ ‘remain here’ /fáŋ á shə̀/  
   tsɔ́: ŋkàyn ‘steal well’ /tsóŋ á ŋkàyn/  
   b. bá: shə̀ ‘nail here’ /bán á shə̀/  
   sɔ́: ŋkàyn ‘fight well’ /són á ŋkàyn/  

(26) **Indirect Object**
   a. kú: sâ: mò  ‘give me corn’ /kú ə̀sáŋ à mò/  
   kú ndɔ: mò  ‘give me potato’ /kú ndòŋ à mò/  
   b. kú nà: mò  ‘give me happiness’ /kú nàn à mò/  
   kú ntɔ: mò  ‘give me a pot’ /kú ntòn à mò/  

¹⁴ The consonant depends on the noun class of the modified noun. It is [y] for classes 1, 3, 5, 6, and 9; [v] for classes 2 and 8; [m] for class 6a; [k] for class 7; [ʃ] for class 10; [t] for class 13; and [f] for class 19.
(27) Yes-No Questions

a. wù tə̀ vì nə̀ mbà: ‘Did you come with a stick?’ /wù tə̀ vì nə̀ mbàŋ à/
mà kú: ndɔ̀: ‘Should I give potato?’ /mà kú ndòŋ à/

b. wù tə̀ vì nə̀ wà: ‘Did you come with a child?’ /wù tə̀ vì nə̀ wàn ́ à/
mà kú: ntɔ̀: ‘Should I give a pot?’ /mà kú ntòn à/

Vowel raising fails to apply here because of the complex nature of the structures in which it occurs. Note that the demonstrative pronoun in (22) is the only one that has the á-Ci bimorphemic structure, the others being CV(C) as can be seen in (28).

(28) Demonstrative Pronouns

mbàŋ yɛ̀n ‘this stick (near speaker)’
fɔ̀n yì ‘that fon (near listener, far from speaker/listener)’
nyàm áyì ‘that animal (the ‘one referred to’)

The rest of the constructions that make up group 4 are considered to have a real boundary between them and therefore are postlexical, disallowing raising which is a lexical process.

5.5 Group 5: Deletion of /ŋ/ and /n/ in major argument relations

Group 5 contains instances of deletion between a subject and its agreement marker, between a verb and its object, and in serial verbs.

(29) a1. Subject Pro(noun) + Agreement
ghə̌: vìə̀  ‘you are coming’
ghə̀ŋ ə́  vì ə
2p SM come PROG

a2. tsɔ̌: vìə̀  ‘a thief is coming’
tsɔ̀ŋ ə́  vì ə
thief SM come PROG

b1. kǎ: fə́ŋkə̀  ‘a monkey is falling’
kàn ə́  fə́ŋ-kə
monkey SM fall-EXT

b2. ntɔ̌: fə́ŋkə̀  ‘a pot is falling’
ntòn ə́  fə́ŋ-kə
pot SM fall-EXT
(30)  

a. Immediate Future Tense

ə̀sá: fwè ‘the corn will rot’ /ə̀sàŋ á fwè/
ndọ̀: fwè ‘the potato will rot’ /ndòŋ á fwè/

b. kà: kùm ‘a monkey will touch’ /kàn á kùm/
ntọ̀: bòŋ ‘the pot will be nice’ /ntòn á bòŋ/

(31)  

a. Verb + Object

mà kā: kā: ə́sā̃ ‘I want to fry corn’ /mà kāŋ ə kāŋ ə̀sāŋ/
kọ̄: mō  ‘love me’ /kōŋə mō/

b. mà kā: tí: ə́lēm ‘I want to cut yams’ /mà kāŋ ə tī ŋə̀lēm/
lọ̄: ə́wān ‘beg him’ /lōŋə wān/

(32)  

a Serial Verbs

kā: pfīʔ ‘fry and chew’ /kāŋ ə̀ pfīʔ/
bọ̄: pfīʔ ‘pick and chew’ /bōŋə pfīʔ/
bọ̄: kā: pfīʔ ‘pick, fry and chew’ /bōŋə kāŋ ə pfīʔ/

b. chwā: pfīʔə́ ‘cutting and chewing’ /chwān ə̀ pfīʔə́/
lọ̄: pfīʔə́ ‘begging and chewing’ /lōŋə pfīʔə́/
chwā: lọ̄: pfīʔə́ ‘cutting, begging and chewing’ /chwān ə̀ lōŋə pfīʔə́/

The nasals are deleted as expected but vowel raising does not occur with ŋ-deletion even when the nasals are followed by schwa. Like group, this further shows that vowel raising can be predicted by a consistent difference in syntactic structure. How can one explain raising in ə̀sú: nyām ‘animal’s tooth’ from /ə̀sōŋ ə́ nyām/ but not in tsọ̄: vī ‘a thief is coming’ from /tsōŋ ə́ vī ə/ with identical phonological composition? In the case of ‘noun of noun’ and ‘noun of me’ (cf. 5) expressing ownership, the schwa goes onto the preceding noun as a clitic whereas in arguments (29-32) there is a major boundary between the verb and the argument of the clause. This relationship is expressed in the former allowing raising and the latter prohibiting it.

5.6 Group 6: Deletion of /ŋ/ and /n/ in the imperative

Group 6 contains imperative forms with their unique behavior captured by the following data.

15 The immediate future is the only one in Babanki marked by [a]. The tense markers in the language are immediate past [lī], hordienal past [yī], distant past [tā], remote past [N], present tense [ə], immediate future [á], hordienal future [nē’] and remote future [lū’].
(33) a. sà: ŋkòʔ ‘dry wood’ /sàŋ ˊ ŋkòʔ/
bà: wiʔ ‘hate someone’ /bàn ˊ wiʔ/

b. kàfό wiʔ ‘beckon someone’ /kàf ˊ wiʔ/
kòsó ntòn ‘take off pot’ /kòs ˊ ntòn/

c. táŋ viʔí ‘count people’ /táŋ ˊ viʔí/
bèn kàbèn ‘come in’ /bèn ˊ kàbèn/

d. wáf kòmbò ‘carry a bag’ /wáf ˋ kòmbò/
tòf nàntò ‘become very wise’ /tòf ˋ nàntò/

The schwa that is after the nasals in low-toned verbs (33a) is epenthetic, inserted to take the imperative high tone and avoid a rising tone in closed syllables, as in (33b). High-toned verbs do not require the schwa since the imperative high tone merges with that of the root (33c-d). It seems that raising is blocked in order to maintain the distinction between progressive and imperative forms, which are derived as follows:

(34) a. sàŋ ˊ ŋkòʔ → sàŋ ó ŋkòʔ → sàó ŋkòʔ → sà: ŋkòʔ ‘dry wood’

b. táŋ ˊ viʔí → táŋ viʔí ‘count people’

5.7 No deletion of /m/

I have mentioned that /m/ is the only coda consonant in Babanki that is not deleted under any circumstance. The data below confirm that it fails to drop in similar contexts where the other coda consonants are deleted.

(35) a. Noun + Possessives
òghámó nyàm ‘animal’s mat’ /òghàm ə nyàm/
jòmò ghóm ‘my dream’ /jòm ə ghóm /

b. Progressive
nyàmó tsámo ‘an animal is chewing’ /nyàm ə tsám-ə/
kòfó i’ká fwámo:i’kó ‘a nice thing’ /kòfó `ká fwóm ø ká/

c. Deverbal adjective
nyàmó lú nyímò ‘an animal will become green’ /nyàm ə lú nyím ø/
kàtyí ıká tó nyímò ‘a stick became green’ /kàtyí `ká tó ø nyím ø/

d. imperative
bàmó ŋkòʔ ‘heat wood’ /bàm ˋ ŋkòʔ/
kòm kòlànŋ ‘clean a cocoyam’ /kòm ˋ kòlànŋ /
6 Conclusion

In this study, I have shown that there are many contexts in Babanki where five of the six coda consonants are deleted in intervocalic position. The deletion of /ŋ/ is accompanied by the raising of /a/ and /o/ to [o] and [u] respectively. It has also been shown that the raising process happened diachronically in the language when these two vowels were in open syllables of roots. It has been argued that these morphophonological processes cannot be captured by phonological rules, and a solution that lists allomorphs with appropriate frames where they are inserted has been proposed. The study has therefore provided support for precompiled phrasal phonology (Hayes 1990) in which allomorphs are listed with appropriate frames where they are inserted.

References


