A grammar of Mundabli : a Bantoid (Yemne-Kimbi) language of Cameroon

Voll, R.M.; Voll R.M.

CHAPTER 3

Morphophonology and phrasal phonology

In order to look at morpheme structure constraints, morphemes are subdivided into lexical stems, affixes and function words. Given the general lack of segmental morphology, the number of morphophonological alternations in Mundabli is comparatively small. However, morphophonological alternations may not only apply within words (§3.3) but also across word boundaries (§3.4). The remainder of this chapter deals with various aspects of morphophonology and phrasal phonology. Section 3.1 describes the phonological structure of morphemes, §3.2 deals with the interaction of morphology and tonal phonology, §3.3 deals with phonological alternations which apply when morphemes combine to form words, and §3.4 deals with phonological processes which work across word boundaries.

3.1 Morpheme structure constraints

Phonotactic patterns of words depend on their morphological structure. In order to describe them adequately, it is not enough to refer to phonological domains, such as the foot or the syllable. One has to refer to morphemes, morpheme types and type-specific morpheme structure constraints.[1] A comparison of the different morpheme types in Mundabli shows that lexical roots, affixes and function words are subject to different morpheme structure constraints, i.e. each of the three has a specific phonological make-up and specific phonotactics. Thus, while e.g. NC and CG clusters are frequently attested in stem-initial position (§3.1.1), they are completely absent from affixes (§3.1.2)

and function words (§3.1.3). This section describes the phonological structure of the three in turn.

3.1.1 Structure of lexical roots

The great majority of lexical roots are monosyllabic. The structure of nominal and verbal roots is nearly identical, although the two show different tonal behaviour (see §3.2). Root-syllables follow the template (N)C(G)V(S), where N represents a nasal homorganic with C, C representing any consonant, G represents a glide, and S represents a syllable-final sonorant (**m**, **n**, **ŋ** or **l**). Root syllables always have an onset and they may have a coda, too. Morpheme structure constraints applying to lexical roots may affect the root-initial onset (§3.1.1.1), the root-final coda (§3.1.1.2) or the core vowel (§3.1.1.3).

3.1.1.1 Root-initial position

All consonants are attested in root-initial position, either on their own, as in the examples in Table 3.1, or in combination with a homorganic nasal, a glide or both. In fact, tautomorphemic consonant clusters are restricted to root-initial position. They are not attested in affixes or function words.

Table 3.1 contains examples of nominal and verbal stems beginning with the different consonants. Verbs are given in their perfective form unless marked otherwise. Table 3.2 contains some examples of root-initial (N)CG sequences. For exhaustive lists of root-initial CG and NC sequences with examples, see §2.2.3 and §2.2.4, respectively.

Whereas nominal and verbal stems are otherwise identical in structure, initial NC sequences are restricted to nominal stems. Verbs never start in a tautomorphemic NC sequence. A few examples of nouns starting in an NC(G) sequence are provided in Table 3.3.

[1]The term ‘morpheme structure constraints’ is inspired by Booij (2011), but is used here in the literal sense, i.e. to refer to constraints on the phonological structure of morphemes.

consonants	examples	gloss
t	**tàn**	‘fly’
k	**kấ**	‘fry’
kp	**kpā**	‘shoe’
b	**bá**	‘sheath’
d	**dấn**	‘rhizome’
g	**gấ**	‘be(come) fat’
gb	**gbàn**	‘in-law’
f	**fá**	‘cut hair’
s	**sấ**	‘defecate’
ʃ	**ʃàn**	‘grass’
ts	**tsà**	‘mud’
tʃ	**tʃàŋ**	‘cackle’
dz	**dzān**	‘mosquito’
dʒ	**dʒàn**	‘connect’
m	**mấn**	‘name’
n	**nàn**	‘wear’
ɲ	**ɲà**	‘hurt’
ŋ	**ŋà**	‘boast’
l	**là**	‘announce’
y	**yà**	‘intestines’
w	**wá**	‘saw’ (n.)

Table 3.1: Stem-initial consonants

examples	gloss
dzwɔ̀ŋ	‘garden egg’
kwɔ̀ŋ	‘snore’
fyàŋ	‘canine’
kyēn	‘soul’
dʒwăn	‘star’

Table 3.2: Examples of stem-initial CG sequences

examples	gloss
mfɔ̀	‘slave’
mbɔ̀ŋ	‘cow’
ndām	‘tear(s)’ (n.)
ŋkăŋ	‘oath’
ŋkwīn	‘mountain’
ŋgyâ	‘traditional shelf’
ŋgwɛ̄n	‘elephant grass’
ŋmgbɛ̀	‘upper grinding stone’

Table 3.3: Examples of stem-initial NC(G) sequences

3.1.1.2 Root-final coda position

Tautomorphemic closed syllables are only found in lexical roots. All coda consonants, i.e., the nasals **m**, **n** and **ŋ** and the lateral glide **l** are attested in root-final position. Examples of lexical roots consisting of a closed syllable are **màl** 'slide' (v.), **bɔ̀m** 'antelope', **dʒwǎn** 'star' and **mbɔ̀ŋ** 'cow'. For more examples of closed syllable roots, see §2.2.1.4 and the comprehensive list of CVl roots in Table 2.14.

3.1.1.3 Root-vowels

The range of vowels attested in lexical roots exceeds the range attested in prefixes and function words. All attested vowels and vowel combinations can be found in roots. For restrictions on the co-occurrence of root-vowels with the different coda consonants, see §2.4.3. For examples of lexical roots with all attested vowels, see §2.3.1. Pharyngealized vowels are restricted to lexical items.

3.1.2 Structure of affixes

Mundabli has almost exclusively prefixes. Only the infinitive marker can be realized either as prefix **N-** or as circumfix **N-…-n**, depending on the structure of the verb (see §3.1.2.3 for details). Prefixes may consist of a consonant or of a CV syllable. Only the Class 6 and Class 18 prefixes have the shape CVN (for details, see §3.1.2.1). In the current section, affixes are subdivided into syllabic and non-syllabic prefixes. Special sections are devoted to the infinitive marker **N-…(-n)** and the clitical first person singular preverbal pronoun **N=**.

3.1.2.1 CV(N)- prefixes

Prefixes of the shape **CV(N)-** include noun class markers, such as the Class 19 prefix **fì-** in **fìdʒǐ** 'little dog' or the Class 6 prefix **mùN-** in **mùŋgī** 'a little bit of water'.[2] Concord markers on adjectives and numerals also have the shape **CV(N)-** (see §4.2 for an overview).

CV(N)- Prefixes always have simple onsets. The following consonants are attested initially in prefixes: **b**, **f**, **k**, **m**, **w**, **y**. Thus, the range of initial consonants attested in prefixes is much smaller than the range for lexical roots.

The range of vowels attested in prefixes is also more restricted than that in lexical roots. Not only are pharyngealized vowels completely absent from prefixes, but the range of simple vowels attested in prefixes is also very restricted. Only the vowels **i**, **u**, **ɔ** and **ə** are attested.

The prefix-final nasal which is only found in Class 6 and 18 prefixes is integrated into the onset of the first root syllable upon prefixation.

[2] Compare **ŋgī** 'water' without diminutive.

3.1.2.2 Non-syllabic prefixes

CV noun class prefixes drop their vowels when they are prefixed to vowel initial roots, such as the demonstrative roots **-ɛn** 'this' and **-ɔ** 'that' or non-first person pronouns. Examples are **níŋ k-ɔ́** 'that thing' (CL7), **gbɔ̄ w-én** (CL3) 'this house' and **wān w-ɔ̄** 'that child' (CL1). The concord prefix also bears a specific tone which determines the tone of the resulting demonstrative/determiner. A more detailed discussion of consonantal concord prefixes is found in §5.2. Table 3.4 gives an overview of consonantal prefixes.

noun class	prefix	proximal demonstratives
1	**ù̀w-**	**wɛ̄n**
2/8	**b-**	**bɛ́n**
3(/5)	**w-**	**wɛ́n**
4/10	**y-**	**yɛ́n**
(6/)7	**k-**	**kɛ́n**
8/2	**b-**	**bɛ́n**
9	**ỳ-**	**yɛ̄n**
19	**f-**	**fɛ́n**
6a/18a	**m-**	**mɛ́n**

Table 3.4: Consonantal agreement in demonstratives

The consonants of these consonantal prefixes are the same as those of **CV**-shaped concord prefixes.

3.1.2.3 The infinitive marker N-...-n/ N-

Apart from its specific tone pattern, the infinitive is characterized by a nasal infinitive affix which is realized either as a homorganic prefix **N-** or as a circumfix **N-...-n**. The vowel quality of the stem syllable and the presence vs. absence of a stem-final coda determine the shape of the affix. The criteria which condition the preference of the prefix over the circumfix are the same as those which condition ablaut in imperfective verb stems, see §3.3.5. The resulting imperfective stems usually do not meet the criteria for the use of the circumfix and instead take the homorganic prefix in the infinitive. Infinitives based on verbs of tone class B and C are realized with a ML falling tone, while verbs of class A are realized with a low tone (L), no matter whether the infinitive is based on the perfective or on the imperfective stem form.

In principle, both perfective and imperfective stem forms can serve as a base for the infinitive. However, the distinction between perfective and imperfective only surfaces in verbs which undergo ablaut in the imperfective. For all other verbs, the purely tonal distinction between perfective and imperfective is neutralized in the infinitive for which the tone pattern depends only on the tone class of the verb which forms its base, not on its aspectual form.

Regarding the criteria which determine the choice between prefix and circumfix, the circumfix is only used with verb stems which end in **i**, **ɨ**, **u**, **ə** or **ɔ** or in one of the sequences **wo** or **ye**, as exemplified by the infinitive forms in Table 3.5. It is never used with closed syllable stems. The lower case letters behind the translations in this and the following table represent the three verb tone classes (A, B and C) (see §2.1.3).

perfective	infinitive	gloss
yǐ	**ɲ-yì̀-n**	'eat' (b)
kpǐ	**ŋm-kpɨ̀-n**	'die' (b)
ku	**ŋ-kù-n**	'clap' (a)
kwó	**ŋ-kwɔ̀-n**	'enter' (c)
myé	**m-myɛ̀-n**	'lick' (c)
tʃyé	**ɲ-tʃyɛ̀-n**	'know' (c)
tsɨ́	**n-tsɨ̀-n**	'copulate' (c)
yə́	**ɲ-yə̀-n**	'climb' (c)
də̀	**n-də̀-n**	'see' (a)
yì̀	**ɲ-yì-n**	'bury' (a)
tsɔ̀	**n-tsɔ̀-n**	'show' (a)
sɔ̀	**n-sɔ̀-n**	'split' (a)

Table 3.5: Infinitives with the infinitive circumfix

In all other cases, including imperfective stems with ablaut, the prefixal form of the infinitive marker is used. More specifically, this is the case when the root consists of a closed syllable or the root syllable ends in a vowel or in a vowel sequence other than the ones listed above. This includes stems ending in **ɪ**, **ʊ**, **e**, **ɛ**, **a**, **ɒ**, **o** without a preceding **w**, or **e** without a preceding **y** and the few perfective stems which contain pharyngealized vowels. For a representative list of infinitive forms with the prefixal form of the infinitive marker, see Table 3.6; infinitives based on perfective open syllable stems are found above the dashed line, infinitives based on imperfective open syllable stems are found below the first dashed line, and those based on closed syllable stems are found below the second dashed line.

3.1.2.4 The first person singular preverbal clitic **N=**

The first person singular preverbal pronoun is a homorganic nasal **N=** which is phonologically attached to the left edge of the first element of the verbal core (see Chapter 8 for a definition of the verbal core), i.e. usually a TAM marker or the verb itself. The clitic is usually not syllabic except for specific exceptional cases in which it is syllabic and bears a superhigh tone (cf. §6.1.1).

perfective	infinitive	gloss
bǐ	**m-bǐ**	‘exit’ (b)
kʊ̀	**ŋ-kʊ̀**	‘cry’ (a)
kǎ	**ŋ-kà**	‘fry’ (b)
dzě	**n-dzè**	‘say’ (b)
yó	**ɲ-yɔ̀**	‘run’ (c)
fə̰̀	**m-fə̰̀**	‘tell’ (a)
lṳ̀	**n-lṳ̀**	‘bark’ (a)
kyɛ́	**ŋ-kyɛ̀**	‘look’ (c)
yḭ́	**ɲ-yḭ̀**	‘eat’ (b)
mṵ́	**m-mṵ̀**	‘drink’ (b)
màl	**m-màl**	‘slide’ (a)
yàm	**ɲ-yàm**	‘yawn’ (a)
bɔ́m	**m-bɔ̀m**	‘agree’ (c)
kóŋ	**ŋ-kʊ̀ŋ**	‘hunt’ (c)

Table 3.6: Infinitives with a prefix

3.1.3 Structure of functional items

Functional items include TAM markers, negation markers, clause linking particles, and others. They commonly consist of a single syllable, and rarely of two. The structure of function words differs from that of lexical roots in several regards. For example, neither complex onsets nor closed syllables – both common in lexical roots – are attested in functional items. This section contains a detailed description of structural constraints on function words.

3.1.3.1 Initial position in function words

Unlike lexical roots, function words may lack an onset. This is the case for words of the segmental shape **a** (including the second person preverbal pronoun **à**, the preverbal negative marker **ā**, the clause-final polar question marker **à**, a variant of the hesternal past marker **à**∼**nà**, the comitative marker **ā** and the adverbializer **á**), the locative particle **ǐ**, and a few bisyllabic items, namely the conjunction **āmì** and the particles **áná** ‘like that’ and **áká** ‘like’.

Function words may have onsets, too, but they only allow simple onsets. They never start in an NC or CG sequence. Furthermore, the range of consonants attested in the initial onset is much smaller in function words than it is in lexical stems. Many consonants (e.g., **g**, **ts**, **s**) are not attested in the onset of functional items. Table 3.7 contains an exhaustive list of initial consonants attested in functional items with examples. For a comprehensive list of functional items, see the Lists of affixes, clitics and particles at the beginning of this book.

onset	example	gloss	gloss
d	**dɨ́**	F1	hodiernal future
f	**fə̃**	P1	hodiernal past
k	**kə̀**	P3	distant past
m	**mɨ̄**	CONSEC	consecutive, 'and (then)', clausal conjunction for P3, F1 and F2
n	**nà** ∼ **à**	P2	hesternal past
t	**tə́**	VER.FOC	verum focus
w	**wɔ̄**	NEG	negative particle, follows the verbal core, generally co-occurs with preverbal negation marker **ā**
y	**yɛ̄**	COMP	complementizer, precedes quotations and complement clauses

Table 3.7: Initial consonants in function words

3.1.3.2 Lack of codas in function words

Syllables in function words are always open. Function words typically consist of one open syllable (e.g., the distal past marker **kə̀** or the comitative preposition **ā**) or rarely two (e.g., the conjunctions **āmɨ̀** 'and' and **ákā** 'like').

3.1.3.3 Vowels in function words

The most striking thing regarding vowels in function words is the fact that pharyngealized vowels are completely absent from function words. The range of non-pharyngealized vowels found in functional items is also smaller than that found in lexical roots. Only the vowels **ɨ**, **ɔ**, **ə**, **a** and **ɛ** are attested. The lack of pharyngealized vowels has an interesting parallel in the lack of closed syllables in function words. It may have implications for the phonological status of pharyngealized vowels (see §2.3.3.2 for a detailed discussion of pharyngealized vowels).

3.2 Morphotonology

While nouns and verbs are identical in most cases regarding their segmental shape – both usually being monosyllabic – they behave quite differently as regards their tonal setup. This section contains descriptions of the tonal behavior of nouns and verbs.

3.2.1 Noun tone patterns

Monosyllabic noun stems, which account for the great majority of nouns, may bear any of the eight single and contour tones. While more complex tonal

patterns are attested in bisyllabic noun stems, this is probably due to their morphological complexity, since have are usually arisen from historical compounds.

Nouns usually retain the same tone in all contexts. The tone of a noun is generally not influenced by adjacent elements or prosodic boundaries. However, M and ML nouns are only distinguished in utterance-final position and before a low tone (see below).

3.2.1.1 Tone of segmental noun class prefixes

While the nouns of most noun classes do not have segmental prefixes, a few classes, namely Class 2, 19 and 18, have retained their prefixes. All these segmental noun class prefixes (i.e., **bə̀-** CL2, **fì-** CL19 and **mù-** CL18) carry a low tone, which does not affect the tone of the root. Low tone spread (see §3.4.2) from the prefix to a superhigh root does not apply.

3.2.1.2 Tone in monosyllabic nouns of genders other than Gender 9/10

The respective singular and plural forms of nouns belonging to genders other than Gender 9/10, including their tones, are identical, apart from a few exceptions. They bear one of the tones shown in Table 3.8.

utterance-final	non-final	example	gloss	gender	number of lexemes
L	L	**ŋkɔ̀**	‘fist(s)’	7/8	39
LH	LH	**ŋkə̌n**	‘oath(s)’	7/8	22
M	M	**mbūŋ**	‘river(s)’	1/2	83
ML	M	**bɨ̂**	‘fish(es)’	3/7a	43
H	H	**bá**	‘sheath(s)’	7/8	34
HL	HL	**dʒû**	‘word(s)’	1/2	7 (mainly loans)
HM	HM	**fɔ̋**	‘cap(s)’	7/8	10
S	S	**yí̋**	‘eye(s)’	3/7a	21

Table 3.8: Tones of nouns belonging to genders other than Class 9/10 in utterance-final vs. non-final position

As Table 3.8 shows, the distinction between M and ML falling nouns is neutralized in non-final position, where both are realized with a level mid tone (M).

The HL and the HM falling tones are not as frequent as the other tones. The HL falling tone is only attested in three nouns which are not obviously borrowed (**sê** ‘house front’, **ŋgyâ** ‘traditional shelf’ and **dʒû** ‘word’). The other nouns with a HL contour tone are all borrowings from Cameroon Pidgin or English, such as **gâŋ** ‘gown’, **kɔ̂** ‘cup’ or **dzîŋ** ‘zinc, corrugated iron sheet’.

The HM falling tone is also less frequent than the other tones, but the attested cases are native nouns (of Gender 1/2 and 7/8). Examples are **fő** 'cap' and **we̋** 'bark'.

There are a few exceptional nouns which belong to genders other than Gender 9/10 and which show different tones in their singular and plural forms; see Table 3.9. One noun of Gender 1/2 and three nouns of Gender 3/7a have a mid tone in the singular and a high tone in the plural. They are the only nouns which show this singular-plural tone change. All of them also involve singular-plural stem alternation.

singular	gloss	plural	gloss
wān	'child' (CL1)	**ɲwɔ́m**	'children' (CL2)
fɔ̄	'head' (CL3)	**fá**	'heads' (CL7a)
ɲū	'farm' (CL3)	**ɲwɛ́**	'farms' (CL7a)
tʃyē	'stone' (CL3)	**tɛ́**	'stones' (CL7a)

Table 3.9: Mid tone singular, high tone plural nouns

Furthermore, there are three words (two of Gender 1/2 and one of Gender 3/10) which have a low tone in the singular and a mid-low falling tone in the plural. They are listed in Table 3.10. Again, all these nouns also are subject to a singular-plural stem alternation. The same singular-plural tonal alternation is common in Gender 9/10 nouns, see section 3.2.1.4 for details. Interestingly, all these nouns also have a stem alternation. Some other Gender 1/2 and Gender 7/8 nouns exhibit less systematic tonal alternations, see Table 3.11.

singular	gloss	plural	gloss
mɔ̀	'person' (CL1)	**mbɛ̂**	'people' (CL2)
gbàn	'in-law' (CL1)	**gbwɔ̀m**	'in-laws' (CL2)
ndɔ̀n	'branch' (CL3)	**ndàn**	'branches' (CL10)

Table 3.10: Low singular, mid-low plural nouns

The singular-plural tonal alternation attested in the first two nouns, **mbɛ̌** and **ntɛ̌** (both nouns translate roughly as 'twin'), with a rising tone in the singular (Class 1) and a superhigh tone in the plural (Class 2), is also attested in Gender 9/10 nouns. However, the other two nouns, **kpə̀** 'wife', which has a ML falling tone in the singular (Class 2) and a mid tone in the plural (Class 2), and **syàŋ** 'squirrel, sp.' with a low tone in the singular (Class 7) and a mid tone in the plural (Class 8) are the only nouns showing these tonal alternations.

singular	gloss	plural	gloss
mbě	'twin' (CL1)	**mbḗ**	'twins' (CL2)
ntě	'twin' (CL1)	**ntḗ**	'twins' (CL2)
kpə̀	'wife' (CL1)	**kpə̄**	'wives' (CL2)
syàŋ	'squirrel, sp.' (CL7)	**syāŋ**	'squirrels, sp.' (CL8)

Table 3.11: Other tonal stem changes in non-Gender 9/10 nouns

3.2.1.3 Tone of polysyllabic nouns of Genders other than Gender 9/10

There are only a few bisyllabic nouns. The majority of these belong to Gender 1/2, Gender 7/8 or Gender 9/10. However, this may be accidental and the distribution may just reflect the relation of the quantity of lexical items assigned to these Genders (see §4.3). Table 3.12 contains examples of all tone patterns attested in nouns of Gender 1/2 and Gender 7/8, which generally have identical tone patterns in singular and plural forms. Gender 9/10 nouns will be treated separately in §3.2.1.4.

SG/PL tone	example		gloss	gender
	SG	PL		
L.L	**dìdə̀m**	**dìdə̀m**	'chest'	7/8
L.LH	**kpə̀kə̌**	**kpə̀kə̌**	'papaya'	1/2
M.M	**kūkwā**	**kūkwā**	'raffia fruit'	7/8
H.H	**kúkú**	**kúkú**	'butterfly'	7/8
S.S	**mbű́ntshā́**	**mbű́ntshā́**	'fishing net'	1/2
H.L	**fúfù**	**fúfù**	'beans, sp.'	7/8
M.L	**tɔ̄tɔ̀**	**tɔ̄tɔ̀**	'pepper'	1/2
L.M	**kàkwə̄l**	**kàkwə̄l**	'toad'	7/8
L.H	**tʃìtʃɛ́**	**tʃìtʃɛ́**	'grandparent'	1/2
L.HL	**dʒàkâ**	**dʒàkâ**	'donkey'	1/2
LH.L	**ndzə̌ndzà**	**ndzə̌ndzà**	'worm'	7/8
LH.M	**nǐŋlə̄**	**nǐŋlə̄**	'evening'	1/2
LH.H	**nə̌ná**	**nə̌ná**	'pineapple'	7/8
M.ML	**bwākɛ̀**	**bwākɛ̀**	'fingernail'	7/8
M.H	**gɔ̄ŋláŋ**	**gɔ̄ŋláŋ**	'dragon fly'	7/8
M.S	**ŋmgbīŋgbḯŋ**	**ŋmgbīŋŋmgbḯŋ**	'millipede'	7/8
S.L	**lítà**	**lítà**	'bottle'	1/2
S.M	**lɔ̋kɔ̄**	**lɔ̋kɔ̄**	'cassava'	7/8
S.H	**kpű́kpǫ́**	**kpű́kpǫ́**	'woodpecker'	7/8
L.ML	**ndzòkɛ̀**	**ndzòkɛ̀**	'knuckle'	1/2

Table 3.12: Tonal patterns of bisyllabic nouns (in isolation)

The nouns above the dashed line in Table 3.12 have tonal patterns which are commonly attested in monosyllabic stems. The tone patterns of the nouns below the dashed line, on the other hand, differ from those found in monosyllabic stems. The reason for this is probably that they are partly historically derived from compounds and partly results of reduplication. Some are also loanwords, such as **nǎná** 'pineapple' and **lítà** 'bottle'.

The number of nouns with more than two syllables is too small to make any generalizations. There are only a handful of trisyllabic nouns which are not or at least not obviously compounds: **ʃùkúrù** 'school' (CL1/2), **tʃìkàlə** 'strainer' (CL7/8), **kùŋkōlōŋ** 'tortoise' (CL7/8), and **tấkèdā** 'paper, letter, school' (CL1/2). While the origin of **tʃìkàlə** and **kùŋkōlōŋ** is unclear, **ʃùkúrù** and **tấkèdā** are borrowings.

3.2.1.4 Tone in Gender 9/10 nouns

Unlike nouns of other genders, Gender 9/10 nouns show a tonal singular-plural alternation. This alternation concerns both monosyllabic and bisyllabic words.

Monosyllabic Gender 9/10 nouns Class 9 (singular) and 10 (plural) nouns are distinguished from each other only by their tones. The tone of a Class 9 noun is usually lower relative to that of the corresponding Class 10 noun.

However, about a third of the Gender 9/10 nouns have a M tone in singular and plural (see Table 3.13). Table 3.13 shows the singular-plural tonal alternations of monosyllabic Gender 9/10 nouns.

tone CL9 (SG)	tone CL10 (PL)	CL9 example	CL10 example	gloss	number of lexemes
L	ML	**kù**	**kǔ**	'rope/s'	25
LH	S	**tsǒ**	**tsṓ**	'baboon/s'	24
M	M	**kū**	**kū**	'ratmole/s'	24
H	H	**dzáŋ**	**dzáŋ**	'sugar cane/s'	1
LH	ML	**tsǎŋ**	**tsàŋ**	'palm kernel/s'	1

Table 3.13: Tones of Gender 9/10 nouns (in isolation)

The rightmost column shows how many lexemes with a given singular-plural tonal opposition are attested. Cases with stem alternation (see this section, below) are not counted.

The tonal patterns shown above the dashed line in Table 3.13 are attested frequently. The patterns below the line are exceptional, and are attested only once. The first noun below the dashed line, **dzáŋ** 'sugar cane', bears a high tone, which is not common in nouns of Gender 9/10. Unlike other Gender 9/10 nouns, it bears the same tone in singular (Class 9) and plural (Class

10). It has possibly only recently been reinterpreted as belonging to Gender 9/10. The other exceptional noun shows an irregular tone change. While the singular (Class 9) LH rising tone of **tsǎŋ** 'palm kernel' is regularly attested in Class 9 nouns, we would expect the plural to bear a superhigh tone rather than a ML falling tone (compare the regular tone change shown in the second row in Table 3.13). For a Class 10 (plural) noun with ML falling tone like **tsə̀ŋ** 'palm kernels', on the other hand, we would expect the corresponding Class 9 (singular) noun to bear a low tone (as in the regular tone change shown in the first row. Finally, there is one noun, not included in the table, namely 'ankle' which shows a regular form with a superhigh tone in the plural (Class 10, **ʃyā́**) but which has two tonal variants, **ʃyǎ** and **ʃyá** in the singular (Class 9). While the first variant has a LH rising tone as expected, the other tone pattern, with a H tone is irregular.

Two Gender 9/10 nouns (which are not included in the numbers given in the table) show stem alternation. The word for 'meat' is suppletive and has two different unrelated forms in the singular (Class 9: **ɲàm**) and the plural (Class 10: **sɔ̀**). The word for 'road' or 'path' also has two different forms, but in this case, they are related: **dʒī** (SG/CL9) and **dzɛ̂** (PL/CL10). These two nouns also show tonal alternations: the singular stem for 'meat' has a L tone and the plural stem has a ML falling tone, i.e. it has one of the common patterns found above the dashed line in Table 3.13. The singular (Class 9) stem for 'road' has a M tone and the plural (Class 10) stem a ML falling tone. This change does not match the common Class 9/10 tonal alternations.

Polysyllabic Gender 9/10 nouns The number of bisyllabic Gender 9/10 stems is extremely small. I know of only three bisyllabic Gender 9/10 stems which seem to be neither compounds nor loanwords. Their tonal patterns (see Table 3.14) are variations on the frequent tonal patterns of monosyllabic Gender 9/10 stems shown above the dashed line in Table 3.13.

tone CL9 (SG)	tone CL10 (PL)	CL9 example	CL10 example	gloss	number of lexemes
L.L	M.ML	**tàmà**	**tāmà**	'lion'	2
L.LH	S.S	**làmbǔ**	**lā́mbū́**	'orange'	1

Table 3.14: Tonal patterns of bisyllabic nouns of Gender 9/10 (in isolation)

The same pattern is either squeezed onto the second syllable or stretched out across two syllables. The third pattern which is commonly attested in monosyllabic Gender 9/10 nouns, in which both singular and plural bear a mid tone (see Table 3.14), is absent from bisyllabic Gender 9/10 nouns. However, this is probably just due to the small number of bisyllabic words.

There is one more bisyllabic Gender 9/10 word, **sìsyǎŋ** 'spider', which does not appear to be a compound synchronically. While the singular tone is L.LH,

there are two variants of the plural. It may either be interpreted as a Class 10 compound noun (**sīsyáŋ**) with the tonal pattern M.S,[3] or as a monomorphemic Class 8 noun (**sìsyǎŋ**), with the same tonal pattern as the singular form, L.LH.

Words consisting of more than two syllables are rare. I know of only two trisyllabic Gender 9/10 nouns: **sàbílì** 'soap' (loan; from Hausa *sàbulù* ∼ *sàbulì*) and **ʃɨŋkələ̄∼sɨŋkələ̄** 'termite, sp.'. Their tonal patterns, L.H.L and M.M.M, respectively, are the same in singular and plural.

3.2.2 Verb tone patterns

3.2.2.1 Verb tone classes

Verbs are practically always monosyllabic. They can be subdivided into three verb tone classes (A, B and C). All verbs of a given tone class have the same tone pattern in a given context. The tone pattern changes systematically, depending on tense, aspect and other factors. Table 3.15 contains examples of all three verb tone classes. The tonal patterns in the table are representative of perfective verbs in P0 tense in utterance-final and non-final position.

verb tone class	final tone pattern	example	non-final tone pattern	example	gloss
A	ML	**ʃî**	L	**ʃì**	'descend'
B	LH	**mǔ**	S	**mū**	'take'
C	H	**kóŋ**	H	**kóŋ**	'hunt'

Table 3.15: Verb tone classes with examples of perfective present tense verbs in utterance-final and non-final position

While the distinction between verb tone classes can be neutralized in certain cases, e.g. in the infinitive verb form where verbs of Class A carry a low tone while those of Class B and C carry a mid-low falling tone (see §8.4.1), the constitution of the tone classes never changes. Verb tone patterns are not affected by adjacent words but, in some cases, tonal patterns depend on the syntactic position, with different tone patterns in utterance-final vs. non-final position.

3.2.2.2 Final vs. non-final verb tone patterns

As shown in Table 3.15, the tone pattern of a verb in non-final position (compare examples in (1)) is often different from its tone pattern in utterance-final

[3] In this case, the sequence is probably best analyzed as compound consisting of two stems, which results in the tonal patterns L-LH in the singular (Class 9) and M(L)-S in the plural (Class 10).

position (see examples in (2)), irrespective of the type of part of speech element following the verb (i.e. whether it is an object, an adverbial phrase, etc.) and of its tonal pattern.

(1) a. bī nàm ɲū
1PL work(a) CL3/7a.farm
◇'We have (just) tilled the field.'

b. bī kấ ʃī
1PL fry(b) CL9.chicken
◇'We have (just) fried a chicken.'

c. bī kyɛ́ mɔ̀
1PL look(c) CL1.man
◇'We have (just) watched a man.'

(2) a. bī nàm
1PL work(a)
◇'We have (just) worked.'

b. bī kǎ
1PL fry(b)
◇'We have (just) fried [something].'

c. bī kyɛ́
1PL look(c)
◇'We have (just) looked [at something].'

The distinction of final and non-final tone patterns is not only attested in the P0 tense. It permeates nearly all TAM forms which distinguish at least two tone patterns and in which the verb can occur in final position. This excludes e.g. the future tenses, in which the tone class distinctions are completely neutralized, and most negative forms, as the latter involve postverbal negative markers, so that the verb cannot occur in utterance-final position. In the imperative, there is no tonal distinction between final and non-final verbs, either.

The different tone patterns of final vs. non-final verbs cannot be explained by utterance-final phonetic effects such as final lowering or the like. For instance, Class B verbs, which bear a superhigh tone (S) in non-final position, have a LH rising tone in final position. This cannot be due to the influence of a low boundary tone at the end. Instead, it looks as if the rise might be caused by a low tone (L) preceding the superhigh-toned verb (recall that a superhigh tone is usually realized as LH rising when it follows a low tone, see §3.4.2 for details).

Furthermore, a word bearing a mid-low falling tone (ML) in utterance-final position would be expected to bear a level mid (M) tone in non-final position, not a low tone (L) as in (1a), because a phonological rule causes non-final mid

tones, e.g. in nouns, to be realized as ML falling tones in utterance-final position (see §2.1.2). The opposition of final vs. non-final tone patterns has parallels with the conjoint-disjoint opposition mainly reported to exist in Bantu languages, but also in some other Niger-Congo languages. Although I am not aware of another language in which the conjoint-disjoint opposition is represented by a purely tonal contrast, having stripped down its morphology to a minimum, it would not be too surprising if Mundabli synchronically realized former segmental marking of conjoint vs. disjoint verb forms with a purely tonal distinction. However, following up on this hypothesis requires further investigation.

The tonal patterns of final and non-final verbs in the various TAM forms are described in Chapter 8.

3.2.2.3 Perfective vs. imperfective verb tone patterns

Another tonal opposition in verbs is the tonal difference between perfective and imperfective verb forms. The verb tone patterns of perfective and imperfective verbs in utterance-final and non-final position are shown in Table 3.16.

verb tone class	perfective (final)	perfective (non-final)	imperfective (final)	imperfective (non-final)
A	ML	L	ML	M
B	LH	S	H	H
C	H	H	H	H

Table 3.16: Perfective/imperfective tone patterns

Imperfective verbs do not generally show an opposition between final vs. non-final tone patterns. Only Class A verbs are pronounced differently in final vs. non-final position. However, this is due to a regular phonological process. If a word is realized with a ML falling tone in final position, it is always realized with a M tone in non-final position, see §2.1.2. Thus, there is no tonal distinction between final and non-final verbs in the imperfective. The tonal distinction between Class B and C verbs is completely neutralized in the imperfective.

3.2.2.4 Tone sandhi in verb sequences

Imperative verbs of Class A are subject to tone sandhi,[4] a phonological process by which lexical tones exhibit contextually determined alternations, when

[4] My choice of the term 'sandhi', which is more commonly associated with Sinitic languages, is influenced by Lovegren's (2013) description of a comparable phenomenon in Missong (a dialect of Mungbam), (Lovegren 2013: p.91, footnote 10).

they occur in non-initial position in a verb sequence. Declarative verbs are not subject to tone sandhi – at least not in the present/immediate past tense (P0); see §9.3 for more on the tonal realization of declaratives in verb sequences.

The tone pattern of an imperative Class A verb changes from LH to M whenever it occurs in non-initial position in a sequence of verbs, irrespective of the tone class of the preceding verb. Examples of Class A verbs preceded by another Class A verb, a Class B verb and by a Class C verb, respectively, are given in (3)-(5).

(3) yɛ̄ gǎn bɔ̄ŋ ʃū wān nɛ̌ w-ɔ̄
COMP go(a) call(a) come(b) CL1.child CL1.mother.2POSS CL1-DET

'[She said]: go and call your sister!'

(4) tʃū ʃī mɨ́ŋ gbə̀
come(b) go_down(a) 1.SG.PP house.LOC

◇'Come down to my house!'

(5) kyɛ́ yá gān f-ɔ́ ywʉ́, fì-yấn
look(c) go_up(c) go(a) PROX-DET CL1/2.hanging_dryer CL19-leaf
dzú dɨ́ fɨ́n, ā mū ʃī
certain be(b) there 2SG take(a) go_down(a)

'Look up at the hanging dryer! There is a certain leaf. You should take it down.'

In a sequence of three or more Class A verbs, not only the second verb in the sequence but all subsequent verbs take a mid tone, i.e. the altered tone pattern, as in (6).

(6) gǎn bɔ̄ŋ ʃī ɲùngfù
go(a) call(a) go_down(a) N.

◇'Go and call down to Nyungfu!'

The tone sandhi patterns described here resemble those attested by Lovegren (2013: pp.91-93) for Missong,[5] but they differ from the latter in several regards. In Missong, "[s]et A verbs in their irrealis form (a category which includes imperatives, remote past, and some types of subordinate clauses [...]) undergo a tone change which is triggered by an immediately preceding verb" Lovegren (2013: p.91). Thus, in Missong, just as in Mundabli, tone sandhi is

[5]Note that Missong is the only one among the Mungbam dialects which has tone sandhi in verb sequences.

attested in imperatives, but not in perfective declaratives in P0 tense,[6] and in both, only Class A verbs are subject to tone sandhi.[7]

The main difference however, is that whereas imperative Class A verbs in Mundabli always take the sandhi tone when they occur in non-initial position, in Missong sandhi tone is only triggered by preceding Class A and Class C verbs.[8] Further, whereas in Mundabli all non-initial verbs in a sequence of three or more verbs are realized with sandhi tone, in Missong only every other verb in a sequence of Class A verbs is realized with sandhi tone. Finally, while the process of tone sandhi underlies similar rules in Missong and in Mundabli, the tonal patterns in the two languages differ from each other. In Missong, irrealis Class A verbs take a mid tone in initial position, whereas in sandhi context, they take a superhigh tone. In Mundabli on the other hand, initial imperative Class A verbs take a LH rising tone when not subject to sandhi, but a mid tone in sandhi context.

Future research on tone in verb sequences may lead to a more revealing analysis of the Mundabli verb tone system in the style of Lovegren's analysis of the Mungbam system. Furthermore, the parallels between sandhi tone in Missong and in Mundabli in combination with the individual differences call for a comparative study.

3.3 Morphophonological alternations

This section deals with phonological processes which apply at morpheme boundaries. Due to the low degree of segmental morphology, the number of morphophonological alternations is restricted.

3.3.1 Place assimilation of nasals in NC sequences

While morpheme-internal NC sequences are only attested in nominal stems, there are several contexts in which an NC sequence arises when morphemes are conjoined to form words. In word-internal NC sequences,[9] whether tautomorphemic or not, the nasal assimilates in its place of articulation to the following consonant. It does not play a role whether the nasal is syllabic or not. However, place assimilation is not attested across word boundaries, except for a few exceptional lexically determined cases. Nominal stems contain-

[6] Whereas it is possible that Mundabli, just like Missong, also has an irrealis category and that *all* irrealis verbs are subject to tone sandhi, more research is needed in order to verify this.

[7] The tone classes in Mungbam and Mundabli widely coincide regarding labels and constellation, i.e., the constellations of the tone classes in the two varieties roughly coincide, with cognate verbs forming roughly the same sets. Verb tone classes in Mundabli and in Mungbam (Lovegren 2013) which contain cognate verbs are assigned the same labels in the two languages.

[8] To be precise, imperfective Class B verbs also trigger sandhi in Missong (Lovegren 2013: 92). It is unclear whether imperfective verbs also trigger sandhi in Mundabli.

[9] This concept requires some explanation. The term "word" here refers to the phonological word. It is meant to include sequences of the first person singular preverbal proclitic **N=** plus its phonological host.

ing NC sequences are treated in §2.2.4. The current chapter only deals with polymorphemic NC sequences. Such polymorphemic NC sequences arise in the following contexts:

1. The prefixal part (**N-**) of the infinitive marker, which is realized either as a circumfix **N-…-n** or as a prefix **N-** (in combination with a specific tonal pattern), forms part of a word-initial poly-morphemic NC-sequence.

2. The preverbal form of the first person singular (1SG) pronoun **N=** is procliticized to the left edge of the verbal core,[10] creating a polymorphemic NC sequence at the beginning of the verb or a preceding tense/aspect marker.

3. When the first stem of a nominal compound ends in a nasal, the result can be a polymorphemic NC sequence at the stem-boundary.

4. NC sequences arise between words when a word ending in a nasal is followed by another word which starts in a consonant, e.g. between a subject noun and a following TAM marker, between two verbs in a serial verb construction or between a verb and its object.

The prefixal part **N-** of the infinitive marker, which is realized either as circumfix **N-…-n** or as prefix **N-** on the verb stem, is a non-syllabic homorganic nasal. Its place of assimilation adapts to that of the initial consonant of the verb root it attaches to, see Table 3.17.

m-bì-n	‘to exit’
m-bù̀-n	‘to give birth’
m-fô	‘to blow’
ŋ-kù-n	‘to clap’
ɲ-yì̀-n	‘to eat’
ɲ-ʃì-n	‘to descend’
ŋm-kpɨ̀-n	‘to die’
ŋm-gbù-n	‘to fall’

Table 3.17: Homorganic nasals in infinitive verb forms

The examples in Table 3.17 are all based on the perfective stem form, although the infinitive can be derived from both the perfective and the imperfective stem form. For more on the infinitive verb form, see §8.4.1.

Another case of a tautomorphemic NC sequence arises when the first person singular preverbal pronoun **N=** is phonologically attached to whatever stands at the left edge of the verbal core, i.e. the verb itself or a preceding TAM marker. Example (7) contains three instances of the first person singular

[10] See Chapter 8 for more on the structure of the verbal complex.

preverbal pronoun in bold face, each articulated at a different place of articulation which is in each case identical with that of the following consonant, i.e. the initial consonant of the verb or TAM marker it is attached to.

(7) **n**=dǐ f-án, ā **ɲ**=tʃyé wɔ̄ nə̄ **ŋ**=kə̄
1SG=be(b) PROX-here NEG 1SG=know(c) NEG SUBORD 1SG=??
lə̄ ná
do(a) as

'I am here, I don't know what I can do.'

The clitic **N**= is usually not syllabic. Only in certain contexts can it be syllabic and bear a high tone (see sections §2.2.4 and §6.1.1 for details).

Another context in which nasal consonant sequences arise is when the first stem of a compound noun ends in a nasal and the second starts in an obstruent. In this case, the nasal is not integrated into the first syllable of the second stem. It remains a coda nasal and retains its place of articulation rather than assimilating to the following consonant. Examples are **wān-bwé** 'baby' and **wān-kpé** 'girl'.

Finally, nasal consonant sequences arise at the intersection of two words where one word ends in a nasal and a subsequent one starts in an obstruent. In general, there is no assimilation in this context. Thus, in examples (8a) and (8b) the nasals in NC sequences arising at word boundaries are not affected. The subject nominal **wān** in 8a and 8b is followed by the tense marker **kə̀** P3 and the verb **bɔ́m** 'agree', respectively. In both cases, the stem-final nasal of the subject nominal retains its place of articulation and does not adapt to the initial consonant of the following word.

(8) a. mɨ̄ wān kə̀ tʃíā lɛ́
1SG CL1.child P3 long_ago get_lost(a)

'My child got lost long ago.'

b. sèsǎŋ bɔ̄m
CL9.spider agree(c)

'The spider agreed.'

However, there are certain cases of lexicalized singular-plural stem alternations in which the stem-final nasal changes so that it is identical in place of articulation with the initial consonant of the corresponding concord marker both in the singular and in the plural. Table 3.18 shows three of the seven Gender 7/8 nouns which show-singular plural stem alternations.

However, this alternation is not due to a synchronic phonological process, but is rather lexicalized. It is restricted to a few stems and occurs irrespective of the presence or absence of the subsequent determiner. In most nouns of this gender, the final nasal does not change and thus differs in place from the

nɨ́ŋ (kɔ́)	'(that) thing'	**ndʒɔ́m (bɔ́)**	'(those) things'
tʃʊ́ŋ (kɔ́)	'(that) ear'	**tʃɔ̃m (bɔ́)**	'(those) ears'
ndzɪ̄ŋ (kɔ́)	'(that) house fly'	**ndzə̄m (bɔ́)**	'(those) house flies'

Table 3.18: Historical nasal assimilation across word boundaries in Gender 7/8 nouns

initial consonant of the concord prefix in the singular, the plural or both, see Table 3.19.

mfʊ̌ŋ (kɔ́)	'(that) coco yam'	**mfɛ̌n (bɔ́)**	'(those) coco yams'
ɲwà̰n (kɔ́)	'(that) bird'	**ɲwə̰̀m (bɔ́)**	'(those) birds'
swō̰m (kɔ́)	'(that) palm nut'	**ʃwō̰m (bɔ́)**	'(those) palm nuts'

Table 3.19: Lack of nasal assimilation in Gender 7/8 nouns

3.3.2 Initial consonant mutation in Gender 3/10 nouns

A handful of Gender 3/10 nouns undergo stem-intial consonant mutation, i.e. the initial consonant alternates between a labial-velar plosive in the singular (Class 3) and an alveolar affricate in the plural (Class 10). The alternation is described in more detail in §4.3.6). Table 3.20 shows examples of Gender 3/10 stems which exhibit this kind of consonant mutation.

Class 3	Class 10	gloss
kpān	**tswān**	'tree, firewood, drum'
kpɛ̀	**tsɛ̀**	'pot'
gbɔ̀	**dzɔ̀**	'house'
gbɪ̀	**dzɪ̀**	'rope'
gbɪ̀ŋ	**dzɪ̀ŋ**	'root'

Table 3.20: Examples of Gender 3/10 consonant mutation (taken over from §4.3.6)

3.3.3 Consonant mutation in the numerals 'two' and 'three'

There is a palatalization process in numerals which is similar to the one found in Gender 3/10 nouns (see §3.3.2 and §4.3.6 for details), except that numerals bear concord prefixes while nouns have lost the historical prefixes which are likely to have originally caused the palatalization process. See Kießling

(2010b) for a description and analysis of comparable processes in some other Yemne-Kimbi languages[11] and other Southern Bantoid languages.

The stem-initial consonant in the numerals **mfye** 'two' and **ntɔ** 'three' (citation forms) is palatalized when the stem is preceded by a concord prefix of the segmental shape **yi-**, i.e. the Class 4 prefix **yi-** and the Class 10 prefix **yi-**. Prefixes of the segmental shape **ki-**, such as the Class 7 prefix **ki-** do not cause palatalization. When the numeral roots **-fye** 'two' and **-tɔ** 'three' are preceded by a prefix of the shape **yi-**, they are realized as **ʃye** and **tsɔ**, respectively, as in **dʒɨ́ yíʃyé** 'two dogs' and **dʒʉ́ yítsɔ́** 'three goats'.

Examples (9) and (10) show the realization of the numeral root 'two' after the Class 2 prefix **bə̃-** and after the Class 10 prefix **yí-**, respectively.

(9) bə̃́ kə dɪ̄ bə̃́-fyé, wān mɔ̀nɔ̄ wù-mwɔ̀ āmɨ̀ wān
CL2 P3 be(b) CL2-two CL1.child CL1.man CL1-one and CL1.child
kpé wù-mwɔ̀
CL1.woman CL1-one

'They were two, one boy and one girl.'

(10) dʒī dā̋ā́ yí-ʃyé à kə̄ lə̄
CL9.path be(b):ADVLZ CL10-two 2SG COND make(a).COND
ŋkə̀
CL6.corn_beer

'There are two ways of making corn beer:'

Table 3.21 gives an overview of the stem changes in numerals which are triggered by concord prefixes.

gender	concords	'one'	'two'	'three'	'four'
1/2	ẁ-/b-	**wù-mwɔ̀**	**bə̃́-fyé**	**bə̃́-tɔ́**	**bɔ́-ǹdē**
3/10	w-/y-	**wʉ́-mwɔ́**	**yí-ʃyé**	**yí-tsɔ́**	**yí-ǹdē**
3/7a	w-/k-	**wʉ́-mwɔ́**	**kí-fyé**	**kí-tɔ́**	**kí-ǹdē**
7/8	k-/b-	**kí-mó̱**	**bí-fyé**	**bí-tɔ́**	**bí-ǹdē**
9/10	ỳ-/y-	**yì-mwɔ̀**	**yí-ʃyé**	**yí-tsɔ́**	**yí-ǹdē**
19/18	f-/m-	**fɪ́-mwɔ́**	**mʉ́m-fyé**	**mʉ́n-tɔ́**	**mʉ́-ǹdē**

Table 3.21: Agreement in numerals (adopted from §7.1.5)

[11] As the article was written before the term Yemne-Kimbi was introduced, Kießling (2010b) refers to them as Beboid languages.

3.3.4 Pharyngealization in the numeral 'one'

Table 3.21 shows that the stem of the numeral **mwɔ** 'one' may also change to **mo̱** in the presence of a preceding concord marker. Unlike in the case of the numerals 'two' and 'three', the change in the numeral 'one' is triggered by the Class 7 prefix **ki-**. Thus, 'one goat' (CL9) is referred to as **dʒǔ yì-mwɔ̀** but 'one thing' (CL7) is **nɨ́ŋ kǐ́-mó̱**. Note that the numeral 'one' is **mak** in the related variety Mufu. This is especially relevant as Mundabli words which end in pharyngealized vowels commonly have Mufu cognates ending in velar stops.

3.3.5 Ablaut in perfective vs. imperfective verbal stems

Verb stems can occur in the perfective or in the imperfective form. Even infinitives can take either of the two as their base (see §8.4.1). The opposition between perfective and imperfective verb roots is encoded by different tone patterns on the one hand, and ablaut on the other. The same tone changes apply to all verbs belonging to the same verb tone class, irrespective of their segmental shape. Ablaut is restricted to certain open syllable stems. It commonly (but not always) involves an alternation between a plain and a pharyngealized vowel (see §2.3.3.2 for more on pharyngealized vowels). This section deals only with ablaut. The tonal changes involved in the perfective/imperfective opposition are discussed in §3.2.2.3.

Ablaut never occurs in closed syllables, and among open syllable roots, it is restricted to syllables containing the following vowels: **i**, **ɨ**, **u**, **ə**, **ɔ**, and the sequences **wo** and **ye**. Other stems (i.e., syllables containing **ɪ**, **ʊ**, **e**, **ɛ**, **a**, **ɒ**, **o** without preceding **w**, or **e** without preceding **y** and the few verbs which contain pharyngealized vowels in the perfective) do not alternate. Table 3.22 shows examples of verbs which do not undergo stem changes and whose segmental shape is thus identical in the perfective and imperfective.

The verb forms in Tables 3.22-3.25 were elicited by asking for the form of the verb in the frames *we have X-ed* and *we are X-ing*, with the indicated verb tones being the tones in sentence-final position.

Of the verb stems which show alternation in perfective vs. imperfective forms, those with the vowels **i**, **ɨ** and **u** and those with the sequences **wo** and **ye** are fully predictable. The basic vowels **i**, **ɨ**, **u** and the sequence **wo** in the perfective form alternate with their pharyngealized equivalents **i̱**, **ɨ̱**, **u̱** and **wo̱** in the imperfective form. The sequence **ye** in perfective verb stems alternates with the sequence **yæ** in their imperfective equivalents. Examples of such regular perfective/imperfective alternations involving pharyngealization are given in Table 3.23.

I have no explanation as to why the sequences **wo** and **ye** in perfective stems alternate with **wo̱** and **yæ**, respectively, in imperfective stems, but stems containing only the vowels **o** and **e** without preceding **w** and **y**, respectively, do not undergo ablaut (see Table 3.22).

perfective	imperfective	gloss
bɔ́m	**bɔ́m**	‘agree’ (c)
kŏŋ	**kóŋ**	‘kneel’ (b)
bán	**bán**	‘twist’ (c)
wɛ̀n	**wɛ̀n**	‘peel’ (a)
yɪ̀l	**yɪ̀l**	‘tickle’ (a)
dzě	**dzé**	‘speak’ (b)
fŏ	**fó**	‘blow’ (b)
kʊ̀	**kʊ̀**	‘cry’ (a)
wɛ́	**wɛ́**	‘argue’ (c)
wí	**wí**	‘whistle’ (c)
fo̰	**fo̰**	‘tell, report’ (a)
fʊ̰	**fʊ̰**	‘lie, deceive’ (a)

Table 3.22: Perfective vs. imperfective stems without ablaut

perfective	imperfective	gloss
bɪ̀	**bɪ̰**	‘exit’ (a)
yĭ	**yɪ́**	‘eat’ (b)
kpɨ̆	**kpɨ́**	‘die’ (a)
tsɨ̆	**tsɨ́**	‘spit’ (b)
kù	**kʊ̰**	‘clap’ (a)
bú	**bʊ́**	‘give birth’ (c)
gwɔ̀	**gwɔ̰**	‘grind’ (a)
kwó	**kwɔ́**	‘enter’ (c)
byě	**byɛ́**	‘crack peanuts’ (b)
dʒyɛ̂	**dʒyæ̀**	‘cook’ (a)

Table 3.23: Regular ablaut in perfective/imperfective stems

More irregular cases of ablaut involve the vowels **ɔ** and **ə** in perfective stems. As Table 3.24 shows, the vowel **ɔ** in open syllable perfective stems usually corresponds to the sequence **ya** in imperfective stems. In the verb **yɔ̀** ‘throw’ it alternates with the sequence **wa** instead. However, two cases are attested in which **ɔ** alternates with the pharyngealized vowel **o̰** (see examples below the dashed line in Table 3.24).

The vowel **ə** in perfective stems does not always correspond to the same vowel in imperfective stems, either. Sometimes it corresponds to the vowel **a** (see examples above the first dashed line in Table 3.25), sometimes it corresponds to the sequence **ya** (just like perfective **ɔ**), and in two cases it corresponds with the vowel **æ** in the imperfective (see examples below the second dashed line in Table 3.25).

If one summarizes all attested ablaut patterns, one finds the patterns shown

perfective	imperfective	gloss
fɔ̀	**fyà**	‘carve’ (a)
lɔ̀	**lyà**	‘go to the bush’ (a)
sɔ̌	**syá**	‘swim’ (b)
tɔ̌	**tyá**	‘sting’ (b)
yɔ̀	**ywà**	‘throw’ (a)
kɔ̌	**kọ́**	‘catch’ (b)
tsɔ̀	**tsọ̀**	‘show’ (a)

Table 3.24: Ablaut with **ɔ** in perfective stems

perfective	imperfective	gloss
kpə̀	**kpà**	‘burn’ (a)
gbə̀	**gbà**	‘cut’ (a)
yə́	**yá**	‘climb’ (c)
tsə̌	**tsá**	‘pass’ (b)
də̀	**dyà**	‘see’ (a)
fə̃	**fyá**	‘give’ (b)
lə̀	**là**	‘do, make’ (a)
ɲə̀	**ɲà**	‘leave’ (a)

Table 3.25: Ablaut with **ə** in perfective stems

in Table 3.26. While in some cases the alternation is very systematic, in others the alternation is not completely predictable.

Table 3.26 covers only vowel alternations in open syllable stems. Perfective vowels which show no alternation in perfective vs. imperfective open syllable stems are shown above the first dashed line in Table 3.26, vowels which show a one-to-one correspondence with different (often pharyngealized) vowels in the imperfective are shown in between the two dashed lines, and vowels in the perfective form which have several correspondents in the imperfective are given below the second dashed line.

Although imperfective aspect is not encoded by a segmental affix, one can say that perfective verbs are morphologically unmarked, as is typical for Bantu languages (Nurse 2007: 164), containing plain “unmarked” vowels, while imperfective verb stems are more marked, often containing pharyngealized “marked” vowels. Pharyngealized vowels are marked both typologically and in the language itself. Apart from imperfective verb forms, they only occur in a few lexical stems. Furthermore, a comparison of Mundabli with related varieties suggests that synchronic pharyngealized vowels have their historical origin in CVk(V) sequences and eventually replaced the final velar stops.

Historically, the pharyngealized vowels probably arose simultaneously with the loss of an imperfective verb suffix cognate with the common Bantu marker

perfective	imperfective
ɪ	ɪ
ʊ	ʊ
e	e
o	o
ɛ	ɛ
a	a
ɒ	ɒ
ʉ̈	ʉ̈
ö̞	ö̞
ï̞	ï̞
i	ï̞
ɨ	ɨ̞̈
u	ʉ̈
ye	yæ
wo	wö̞
ɔ	ɔ/ɔ̞̈/ya/a?
ə	ɛ/ya/a

Table 3.26: Overview of perfective/imperfective ablaut patterns

–a(ŋ)g-a (IPFV) (Nurse and Philippson 2006). In the neighboring dialect Mufu, the imperfective form of an open-syllable verb is formed by suffixing **-k** (or sometimes [-ɣ] or [-ʔ]) to the verb stem.

3.4 Phrasal phonology

While the major domain for morphophonological alternations are words, morphophonological alternations can sometimes be observed when words are joined to form phrases or clauses. This section deals with vowel elision (§3.4.1) and low tone spread (§3.4.2), both processes which apply across word boundaries.

3.4.1 Vowel elision across word boundaries

Vowel elision is the only segmental phonological process which applies across rather than within word boundaries. Depending on its vowel quality, the final vowel of a word may be elided when it is followed by a functional word of the segmental shape **a** (i.e. the second person preverbal pronoun **à**, the preverbal negative marker **ā**, the clause-final polar question marker **à**, a variant of the hesternal past marker **à**, the comitative marker **ā** and the adverbializer **á̋**), in order to avoid vowel hiatus. The few other attested onsetless words, namely the locative preposition **ɨ́**, the conjunction **āmɨ̀** and the particles **áná** ‘like that’

and **ā́ká** 'like' do not cause elision. This elision process is only attested in fast speech. When the same sequence is pronounced carefully, the vowel is not elided. Furthermore, the process is restricted to certain vowels. Only the vowels **ɨ**, **ɔ** and **ə** undergo elision when they precede an element of the shape **a**. Other vowels are not affected.

At least in some cases compensatory lengthening makes up for the loss of the vowel. Examples (11) - (13) show the elision of different vowels before **a**. In example (11), the vowel **ɨ** of the copula verb **dɨ́** 'be' is elided before the comitative marker **ā**. Example (12) shows the elision of the final vowel **ɔ** of the relative pronoun **bɔ́** before the comitative marker **ā**. The final vowel of the conditional marker **kə** also frequently gets elided when it precedes the second person singular preverbal pronoun **à**, as shown in example (13).

(11) wān wū bɔ́m yɛ̄ n=dā́ā mɔ̀nō
CL1.child CL1;3SG.POSS accept(c) COMP 1SG-COP.COM CL1.male

'Her child confirmed: I do have a husband.'

(12) à də ndʒɔ́m bī fɨ́ b-áā wà
2SG see(a) CL8.things CL8 pass(b) CL8-DET.COM 2SG

'You have seen the things that have happened to you, ...'

(13) káà mū ʃú gɛ̄ w-ɔ́ à mɨ̄
COND.2SG take(a) come(b) CL3/7a.maize CL3-DET 2SG CONSEC
kpè wŭ ŋgī mī sɨ́ yí-ʃyɛ́
soak(a) CL3 CL6.water in CL9/10.day CL10-two

'When you take the corn and soak it in water for two days, ...'

As pointed out above, vowels other than **ɨ**, **ə** or **ɔ** are not elided. E.g., in (14), the final vowel **u** of **tʃu** 'come' does not merge with the comitative marker **ā**.

(14) wù tʃú ā mbɨ́, bɔ́ mú
CL1 come(b) COM CL6.palm_wine CL2 drink(b)

'He brought wine [and] they drank.'

3.4.2 Low tone spread

A low tone causes a following superhigh tone to be realized as a LH rising tone. This happens, e.g. when a low tone subject pronoun like e.g., the third person singular (Class 1) pronoun **wù** 'he/she', precedes a superhigh verb of the tonal class B, as in example (15b).

(15) a. bə́ tʃʉ́ f-ání
CL2 come(b) PROX-this_way

'They have come here.'

b. wù tʃʉ̌ f-ání
CL1 come(b) PROX-this_way

'He has come here.'

When it is preceded by a low tone pronoun like the third person singular (Class 1) pronoun **wù** 'he/she', as in example (15b), the verb is realized with a rising tone (see 15b). When preceded by a non-low subject pronoun, the verb is realized with a superhigh tone (see 15a), unless is stands in utterance-final position.

However, low tone spread does not always apply when a low tone precedes a superhigh tone. It does not apply e.g. between a prefix and the nominal root it attaches to, between two nominal roots in nominal compounds or between two nominal roots in associative constructions. Superhigh nominal roots are not realized with a rising tone after low tone prefixes such as the Class 2 prefix **bà-**, as e.g. in **bà-nǐ́** 'mothers'. Nominal stems which usually bear a superhigh tone also retain their superhigh tone in the diminutive, which is formed by adding the low-toned Class 19 prefix **fì-** to the stem. This can be seen in the following examples: **fì-ŋkáŋ** 'a bit of salt', **fì-ŋkɛ́** 'little spoon' and **fì-tsáŋ** 'little stick' (rather than ***fì-ŋkǎŋ**, ***fì-ŋkě** and ***fì-tsǎŋ**). Furthermore, a superhigh root is not affected by a preceding low tone within a possessive construction or a nominal compound based on one, as in **dzɔ̀-yǐ́** 'eyelid', **bɔ̀ nǐ́** 'the mother's bag' and **bɔ̀ ŋkíŋ** 'my bag' (CL7).