Tonal Variation in the Tense System of Mundabli, Western Beboid (Bantoid, Cameroon)

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INTRODUCTION

This article treats tonal variation in the tense system of Mundabli, a language of the Western Beboid group. Mundabli, though related to the highly agglutinative Bantu languages, is primarily isolating. In this article, I describe the tonal system of Mundabli, particularly pertaining to the manifestation of tone in the tense system. The present article is based on data collected during two fieldtrips to Cameroon in 2008 and 2009 and should be seen as a primary step towards the analysis of tonal variation[1].

1. BACKGROUND

In this section, I provide some basic information on Mundabli before talking about tone and how it is manifested in the tense system in the following sections. More general information will be followed by a brief description of the overall linguistic structure and of the phonology in particular. The aim of this section is to provide some information on this little known language and to ease the understanding of the facts and examples provided in later sections.

1.1 Geographical and genealogical information

Mundabli (also known as *ɲɔ ndʒan* (endonym), Mundabili or Ndabile) is spoken by no more than a few hundred people in the village Mundabli in Lower Fungom in the Northwest province of Cameroon. Ethnologue (Lewis 2009) lists it together with two closely related varieties (Bu and Mufu) under the name Bu [boe]. However, Bu is sufficiently different to be considered a different language. Although Mufu is mutually intelligible with Mundabli, the two differ considerably and are considered different languages by their speakers. Mundabli belongs to the Western Beboid languages, a group of languages that has received very little attention in the past. While some work has been done on Eastern Beboid languages (e.g. Hyman 1981), only a few wordlists, a survey (Hamm et al. 2002) and several presentation handouts (Good 2005 and Good and Lovegren 2009) are available for Western Beboid languages. The definition of Beboid (and Western Beboid in particular) is still geographic rather than genealogical. Though Beboid is currently classified with Southern Bantoid, 'no publication has ever presented evidence for the group in terms of shared innovations' (Good and Lovegren, 2009). The Western Beboid languages look very much like the related and neighboring Grassfields languages

which are famous for their complicated tonal systems, only that Western Beboid morphology is even more eroded than that of most Grassfields languages. In fact, of the Beboid languages, Mundabli seems to be the one with the most reduced morphology.

1.2 Language structure

Before giving a short introduction to the phonology of Mundabli in 1.3, I will provide some information on the overall structure of the language. Mundabli has a noun-class system, but prefixes on the noun have widely been lost. There is no subject or object agreement in the verb. Instead, noun-class agreement is widely restricted to the domain of the noun phrase. A noun class and number opposition is in certain cases expressed by consonant mutations[2] or by tonal changes (see 3.3.2). As mentioned above, Mundabli is rather isolating and grammatical distinctions are expressed through free particles and purely tonal rather than segmental affixes. The basic word order in Mundabli is SVO (although it varies depending on information structure)[3]. There is evidence in favor of four tone levels, but work on the underlying tonal system is still in progress.

1.3 Phonological preliminaries

In order to ease the understanding of the examples given in later sections, in what follows I provide some basic facts about syllables and the segmental phonology of Mundabli.

1.3.1 Syllable structure

Concerning syllable structure, one has to make a distinction between lexical and non-lexical items. Lexical items (in most cases monosyllabic roots) allow consonant combinations (whether these are analyzed as clusters or as complex consonants) in the onset. Syllables are often closed, but only by sonorants. The syllable pattern can be summarized as below:

$$(N)C(G)V(S)^4$$

For better illustration see the examples of lexical items with the various syllable patterns in Figure 1.

CV:	bɔ[1]	'bag'	CVS:	bɔm[1]	'antelope'

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[2] For instance, singular vs. plural opposition in class 3 and 4 is usually expressed by consonant mutations, e.g. *kpe²¹* 'pot (cl.3)' vs. *tse²¹* 'pots (cl.4)' (see Kießling (2010) for an interesting discussion of this phenomenon).

[3] Word order within the NP is Noun + Possessive Pronoun + Determiner + Adjective + Numeral; in possessive constructions, it is generally Possessum + Possessor (with interesting exceptions).

[4] C = consonant, V = vowel, G = glide, N = nasal, S = sonorant (only nasals and the liquid *l)*

NCV:	ŋgi²	'water'	NCVS:	ŋkʊŋ¹³	'chief'
CGV:	fje¹³	'learn!'	CGVS:	bwɛl²¹	'calabash (spec.)'
NCGV:	ŋgwe²	'ant (spec.)'	NCGVS:	ŋgwɛn²	'elephant grass'

Figure 1: Examples for syllable patterns of lexical items

Non-lexical items, bound or unbound, are usually monosyllabic, as well. They almost never have complex onsets and usually consist of open syllables. Unlike a lexical item, a non-lexical item may start with a vowel or even consist of a vowel or a syllabic nasal only. The following syllable patterns are possible for non-lexical items:

(C)V   and   N

Examples for these patterns are given in Figure 2 below:

CV:	dɯ⁴	F1 'near future' (later today)
V:	a¹	question marker
N:	N¹-	1SG marker (cliticized to the verb phrase)

Figure 2: Examples for syllable patterns of non-lexical items

The first person proclitic *N-* is attached to the first element of the verb phrase. It adapts in place of articulation to the following consonant and carries its own tone.

1.3.2 The consonant system

Table 1 shows the phonemic consonant inventory of Mundabli.

		Labial	Alveolar	Palatal	Velar	Labiovelar
Plosives	**vcl**		t		k	kp
	vcd	b	d		g	gb
Fricatives		f	s	ʃ		
Affricates	**vcl**		ts	tʃ		
	vcd		dz	dʒ		
Nasals		m	n	ɲ	ŋ	
Approximants			l	j		w

Table 1: The consonant inventory

There are five places of articulation. The voiced labial /b/ does not have a voiceless counterpart which seems to be an areal phenomenon (Maddieson 2008b). Furthermore, Mundabli has labiovelar stops. I have not listed prenasalization, labialization and palatalization in the chart as it is not sure whether these should really be analyzed as distinct consonants as opposed to complex sequences. The sequences have been listed in the section on syllable patterns, and I shall not discuss the issue further as it is not relevant to the current topic.

1.3.3 The vowel system

The vowel system of Mundabli is typologically large following the criteria for vowel quality inventories given in Maddieson (2008a). Mundabli has ten 'plain' vowels. They are listed in Figure 3 below.

i		ɯ		u
	ɪ		ʊ	
e				o
	ɛ	ə	ɔ	
		a	ɒ	

Figure 3: The 'simple' vowels

In addition to the plain vowels listed above, there is a set of pharyngealized vowels which occur mainly in the imperfective form of verbs, but also in a few nouns and in the perfective form of some verbs[5]. Vowel length seems to be distinctive only in very few words. Having explained some of the preliminaries, in the following section I will introduce the tonal system.

2. THE TONAL INVENTORY AND LOW TONE SPREAD

As already mentioned in section 1, the relative lack of segmental morphological complexity in Mundabli is compensated by a complicated tonal system. In the following sections I will describe this system.

2.1 The tonal inventory

Mundabli has four tone levels (at least phonetically): **1 = low, 2 = mid, 3 = high** and **4 = super high**[6]. Figure 4 contains examples of the different level tones from various word classes:

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[5] Mundabli is the only language in the Lower Fungom area which has pharyngealized vowels, though similar phenomena have been reported for various languages in the wider region. In Mundabli, these vowels usually correspond to final stops (/k/ and /ʔ/) in cognates in the closest variety Mufu.

[6] Tones are written as superscript after the syllable.

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1 = low		2 = mid	
sɔ^1	'meat'	ʃi^2	'chicken'
ʃi^1	'go down' (P0[7]; not sentence-final)	kpan^2	'tree'
wu^1	's/he'	bɪ^2	'we'

3 = high		4 = super high	
kpe^3	'woman'	ji^4	'eye'
ba^3	'sheath'	nɪ^4	'mother'
ʃɪ^3	'rub' (P0; sentence-final or not)	ʃi^4	'spend the day at home' (P0; not sentence-final)

Figure 4: Examples of the four level tones

Some of these level tones can be combined to form contour tones. There are four contour tones - three falling tones: 21, 32 and 31 (rare) and one rising tone: 13. Examples of the existing combinations of level tones to form contours are provided in Figure 5.

21 falling		31 falling	
bi^{21}	'fish'	se^{31}	'part of house near entrance' (very rare!)
kpe^{21}	'pot'		
ʃi^{21}	'go down' (P0; sentence-final)		

32 falling		13 rising	
fo^{32}	'cap'	ti^{13}	'father'
we^{32}	'bark (of tree)'	dʒu^{13}	'goat'
kaa^{32}	'F2-marker'	ʃi^{13}	'spend the day at home' (P0; sentence-final)

Figure 5: Examples of contour tones

Looking at the overview of possible contour tones in Table 2, it becomes evident that:

(a)   not all possible combinations occur as contours,

(b)   there is only one rising tone: 13 (in most cases as a result of morphological

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[7] P0 = immediate past or just accomplished and relevant to present; P1 = earlier today; P2 = yesterday or a few days ago; P3 = a long time ago (from yesterday on); F1 = later today; F2 = future after today; for details see section 4.

complexity – see section 2.2) and

(c) the super high tone 4 never occurs as part of a contour tone (at least phonetically).

	1	2	3	4
1	■	-	13	-
2	21	■	-	-
3	31	32	■	-
4	-	-	-	■

Table 2: Possible combinations of level tones

If there really are four underlying level tones, the absence of the super high tone 4 from contours may suggest that the super high tone 4 is a more recent innovation. Before proceeding to the discussion of tone in verbs and in the tense system, in the following subsection, I will introduce Low tone spread, a basic tonal rule that commonly applies in the examples provided below.

2.2 Low tone spread

If a low tone 1 is followed by a super high tone 4, the low tone spreads to the following syllable and creates a rising tone 13. Low tone spread usually works across word boundaries and applies e.g. between subject and auxiliary or subject and verb respectively, as well as between auxiliary and verb. It does not apply between possessum and possessor in possessive constructions or between verb and object. Note that, at least phonetically, the level at which the rise ends is 3, not 4.

$$CV^1 + CV^4 \rightarrow CV^1\,CV^{13}$$

This process does not apply when a low tone 1 is followed by a high tone 3. In the following example, the low tone spreads from the 3rd person subject pronoun wu^1 to the F1-marker du^4, resulting in [du^{13}]:

bɔ⁴ dɯ⁴ kwe³	'they will return from the bush (later today)'
br² dɯ⁴ kwe³	'we will return from the bush (later today)'
wu¹ dɯ¹³ kwe³	's/he will return from the bush (later today)'

The rule will play a role for the tonal behavior of verbs in the various tenses, because it interacts with the tone patterns of the verb classes which will be described in the following section and the effect of tense on these patterns which will be discussed in section 5 and 6.

3. VERB TONE CLASSES

Every verb in Mundabli falls into one of three tone groups that I call 'Low' (A), 'Super high' (B) and 'High' (C). These labels represent the tones of imperfective verbs of the three respective groups in non-final position. Below, I present one verb of each group in the P0 tense, preceded by the subject pronoun br^2 (1PL) and

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followed by an object[8].

'Low' A:	1	br̩^{2} **kpe^{1}** gɛ^{21}	'we have (just) soaked corn' (P0)
'Super high' B:	4	br̩^{2} **ka^{4}** ʃi^{2}	'we have (just) fried a chicken' (P0)
'High' C:	3	br̩^{2} **kje^{3}** mɔ^{1}	'we have (just) watched a man' (P0)

The tonal pattern is the same whether the verb is followed by an object or an adverbial phrase. Also the tone pattern of the object or adverbial phrase does not influence the tone of the verb it follows. When the verb stands in sentence-final position though, its tone pattern looks considerably different. Here are some examples of verbs belonging to the three tone groups in sentence-final position:

'Low' A:	21	br̩^{2} ʃi^{21}	'we have (just) gone down'
'Super high' B:	13	br̩^{2} ʃi^{13}	'we have (just) spent the day at home'
'High' C:	3	br̩^{2} ʃr̩^{3}	'we have (just) rubbed'

For now, it will suffice to show that the position of the verb in the sentence plays a role. The distinction made here between a final verb form when no object or adjunct is present and a different non-final form when the verb is followed by an object or an adjunct resembles the opposition between "conjoint" and "disjoint" verb forms as discussed in (Güldemann 2003). I do not want to discuss this issue further in this place, but I will come back to it in section 6.

Before I show in section 5 how the tone patterns of sentence-final and non-final verbs of the three tone classes differ in the various tenses, section 4 gives an overview of the semantics of the tense system and the segmental tense markers.

4. THE TENSE SYSTEM

Mundabli has various past and future tenses. Together with variation in aspect and modality, these form a complex TMA system. Distinctions in tense and aspect are not expressed by (segmental) verbal affixes but instead by TMA markers that precede the verb, tonal changes in the verb and stem alternation. The latter is restricted to imperfective aspect[9] and will not be discussed here. Thus, tense is marked by tense markers and tonal changes in the verb. In most cases, a combination of these strategies is applied. Table 3 below gives an overview of the tense system. I use Hyman's (1981) features: FUT = future, TOD = today and NEAR = near to differentiate between the 6 tenses that are distinguished in Mundabli.

	FUT	TOD	NEAR	pattern	semantics
P0	-	+	+	S ∅ V (O)	present, immediate past or action just accomplished and relevant to present

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[8] The word order in all given examples is: SBJ - tense marker - V - OBJ.

[9] Numerous verb stems alternate between a plain vowel in the perfective and a pharyngealized vowel in the imperfective. Data from the neighboring variety Mufu suggest that the pharyngealized vowel evolved diachronically from an IPFV-marker *-k* suffixed to the verb (probably a cognate of the common Bantu marker *–a(ŋ)g-a* (IPFV) (Nurse and Phillipson 2006)).

P1	-	+	-	S fə^3 V (O)	earlier today
P2	-	-	+	S na^1/a^1 V (O)	yesterday (or a few days ago)
P3	-	-	-	S kə^1 V (O)	a long time ago (from yesterday on)
F1	+	+	+/-	S dɯ^4 V (O)	later today
F2	+	-	+/-	S kaa^{32} V (O)	tomorrow or later

Table 3: The tense system

There are two future tenses and four non-future tenses. The various tenses differ in their temporal distance from the present. I prefer the term P0 rather than present, because (a) P0 does not always semantically represent present tense and (b) grouping it with the past tenses better reflects the different behavior of the future vs. the non-future tenses. Unlike the other tenses, P0 has a Ø-marker and is semantically present if the verb stands in the imperfective, but if the verb is used in the (unmarked) perfective aspect it has either an immediate past meaning or represents an action just accomplished and relevant to the present. As Table 3 shows, each of the tenses has its own segmental marker that precedes the verb (except for P0 which has a Ø-marker). But tense is also expressed by tonal changes in the verb. In the following section, I describe how the tone patterns of verbs belonging to the three tone classes depend on the tense they occur in.

5. VERB TONE AND TENSE

As mentioned in section 3, every verb in Mundabli belongs to one of three tone classes: 'Low' (A), 'Super high' (B) and 'High' (C). The tone patterns of verbs of all three classes differ depending on their tense and on their position in the sentence, i.e. whether they are in sentence-final position or not. In this section I will discuss the tonal patterns of the three tone classes for each tense separately[10] before giving an overview in Table 4 and discussing the overall picture and its implications in section 6.

5.1 P0: Immediate Past [-FUT, +TOD, +NEAR]

This pattern was shown in section 3 above but, for the sake of exposition, I will repeat it here. P0 stands for the present or immediate past tense. It is often used when an action just accomplished is relevant to the present. Verbs in P0 have a Ø-marker for tense and are realized with the following tone patterns[11].

A 'Low'

S V:	bɪ^2 **kpe^{21}**	'we have (just) soaked'
S V + OBJ:	bɪ^2 **kpe^1** gɛ^{21}	'we have (just) soaked corn'

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[10] I will restrict myself to the discussion of positive affirmative perfective main clauses with monosyllabic verbs.

[11] The pattern of all examples in this section is: PRO (tense marker) V (OBJ).

B 'Super high'

S V:	bɪ² **ji¹³**	'we have (just) eaten'
S V + OBJ:	bɪ² **ji⁴** dzɛ¹	'we have (just) eaten an elephant'

C 'High'

S V(+ OBJ):	bɪ² **te³**	'we have (just) discussed'

As we have seen in section 3, the tone pattern of the verb in final position in the sentence differs from the tone pattern in non-final position. When the 3SG pronoun *wu¹* is in subject position, in group B 'Super high', the low tone 1 spreads forward resulting in a rising tone on the verb. The effect of this can only be seen if there is an object or other element following the verb, as in the following example:

wu¹ **ji¹³** dzɛ¹   's/he has (just) eaten an elephant'

The verb then has a rising tone 13 instead of the super high tone 4. Where the verb is final, it has a rising tone 13 anyway, so that the low tone of the pronoun has no apparent effect.

5.2   P1: Far Past, Today [-FUT, + TOD,-NEAR]

This tense is used to describe events that happened earlier on the same day of the utterance. It utilizes the auxiliary *fə*. The tone pattern of the verb in this tense is exactly the same as in P0, only that here, in addition, the tone of the auxiliary *fə* changes. As can be seen in the examples given below, the tone of this marker alternates between a high tone 3 if the verb is in sentence-final position and a super high tone 4 if it is in non-final position[12].

A 'Low'

S V:	bɪ² **fə³** kpe²¹	'we soaked (earlier today)'
S V + OBJ:	bɪ² **fə⁴** kpe¹ gɛ²¹	'we soaked corn (earlier today)'

B 'Super high'

S V:	bɪ² **fə³** ji¹³	'we ate (earlier today)'
S V + OBJ:	bɪ² **fə⁴** ji⁴ dzɛ¹	'we ate an elephant (earlier today)'

C 'High'

S V:	bɪ² **fə³** ʃɪ³	'we rubbed (earlier today)'
S V + OBJ:	bɪ² **fə⁴** ʃɪ³ dzɛ¹	'we rubbed an elephant [with oil] (earlier today)'

Only if the verb is non-sentence-final the low tone 1 of a low-toned subject spreads rightwards, as described in section 2.2, resulting in a rising tone 13 on the tense

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[12] In the examples in this section, the tense marker is highlighted, not the verb like in most other examples.

marker as shown in the following example.

wu^1 **fə^3** kpe^{21} 's/he soaked (sth.) (earlier today)'

wu^1 **fə^{13}** kpe^1 gɛ^{21} 's/he soaked corn (earlier today)'

As in the examples with a 1PL subject, the P1 marker *fə* carries a high tone 3 when the verb stands in final position.

5.3 P2: Near Past, before Today [-FUT,-TOD,+NEAR]

This tense utilizes the auxiliary *a^1/na^1*. The choice between *a^1* and *na^1* seems to be completely free. The tone pattern of the verb is almost the same as in P0 and in P1 above (including changes in connection with an object or adverb). The tone of the tense marker *a^1/na^1* does not change.

A 'Low'

S V: br^2 a^1 kpe^{21} 'we soaked (yesterday or a few days ago)'

S V + OBJ: br^2 a^1 kpe^1 gɛ^{21} 'we soaked corn (yesterday or a few days ago)'

B 'Super high'

S V: br^2 a^1 ji^{13} 'we ate (yesterday or a few days ago)'

S V + OBJ: br^2 a^1 ji^{13} dzɛ^1 'we ate an elephant (yesterday or a few days ago)'

C 'High'

S V: br^2 a^1 te^3 'we discussed (yesterday or a few days ago)'

The surface tone pattern of the verb here differs from those given for P0 and P1 above only in one instance: in group B 'Super high', the verb in non-final position does not carry a super high tone 4, but a Rising tone 13. This can be easily explained as an effect of Low tone spread from the preceding tense marker. The underlying tone of the verb is still a super high tone 4.

5.4 P3: Far Past, before Today [-FUT,-TOD,-NEAR]

The remote past tense utilizes the auxiliary *kə^1*. The tone pattern differs in some aspects noticeably from those of P0, P1 and P2.

A 'Low'

S V: br^2 kə^1 **kpe^{21}**   'we soaked (a long time ago)'

S V + OBJ: br^2 kə^1 **kpe^{13}** gɛ^{21} 'we soaked corn (a long time ago)'

B 'Super high'

S V: br^2 kə^1 **ji^{13}**   'we ate (a long time ago)'

S V + OBJ: br^2 kə^1 **ji^2** dzɛ^1 'we ate an elephant (a long time ago)'

C 'High'

> S V: bɪ² kə¹ **te³**   'we discussed (a long time ago)'

When the verb is in sentence-final position, the tone is the same as in all other past tenses. But this tense differs considerably from the preceding ones regarding the tonal pattern of the verb when it is not in sentence-final position. In group A 'Low' the tone of a verb followed by an object is not, as we might expect, low 1 as in the other past tenses, but the verb has a rising tone 13. Also the tone pattern of non-final verbs of group B 'Super high' differs from the other past tenses. While Super high verbs carry a super high tone 4 in the other past tenses, in P3 they are realized with a mid tone 2. Final verbs of group A 'Low' are realized with a falling tone 21 like in the other past tenses.

5.5   F1: Future, Today [+FUT, +TOD]

This tense utilizes the auxiliary *dɯ⁴*. In both future tenses (whether the verb is sentence-final or not) the distinction between the three tone groups is neutralized and the tone of the verb is always high 3. As there is no difference in tonal pattern depending on whether the verb is final or not, the examples without an object will suffice to illustrate the pattern.

A 'Low'

> S V: bɪ² dɯ⁴ **kpe³**   'we will soak (today)'

B 'Super high'

> S V: bɪ² dɯ⁴ **ji³**   'we will eat (today)'

C 'High'

> S V: bɪ² dɯ⁴ **te³**   'we will discuss (today)'

As predicted by Low tone spread (section 3.3.2), the tone of the marker dɯ⁴ changes to 13 if preceded by a low tone subject like the 3SG pronoun *wu¹*:

> wu¹ dɯ¹³ ji³   's/he will eat (today)'

The picture looks similar in the remote future tense F2.

5.6   F2: Future, after Today [+FUT,-TOD]

This tense utilizes the auxiliary *kaa³²*, a rare instance of a long vowel. Like in F1, the tone of the verb is the same in all tone groups no matter whether something follows the verb or not. The tone of the marker *kaa³²* always remains the same, as does that of the verb.

A 'Low'

> S V: bɪ² kaa³² **kpe³**   'we will soak (later than today)'

B 'Super high'

S V: brɪ² kaa³² **ji³**   'we will eat (later than today)'

C 'High'

S V: brɪ² kaa³² **te³**   'we will discuss (later than today)'

Thus, in both future tenses the verbs of all three groups show an identical tone pattern. After having laid out the tonal realization of verbs in final and non-final position in the sentence in all tenses, section 6 will summarize the findings and discuss their implications.

6. SUMMARY AND CONCLUSIONS

This section summarizes the findings and discusses possible motivations of the tonal patterns described above. As I pointed out in section 2.1, not all possible combinations of the four level tones are attested in contours. In fact, the super high tone 4 never forms part of a contour. A possible explanation for this could be that the super high tone is a more recent innovation and is thus not as fully integrated in the tone system as other level tones.

In section 3 I have shown that each verb belongs to one of three verb tone classes and that the surface pattern of a verb depends not only on its tone class and tense but also on the position it occupies in the sentence, i.e. in particular whether it stands in sentence-final position or not. Not only the tonal pattern of the verb, also that of the tense marker preceding it depends in some instances on the position of the verb in the sentence (see section 5).

As suggested in section 3, the distinction between two different tonal verb forms in sentence final vs. non-final position resembles the distinction between "conjoint" (used for term focus) and "disjoint" (used for predication focus) verb forms as discussed in Güldemann (2003). According to Güldemann (2003) the choice between "conjoint" and "disjoint" verb forms depends among other criteria on the occurrence of an explicit object or an adjunct following the verb. Although in most cases the two verb forms have different segmental realizations, in Mundabli, with its mostly monosyllabic verbs, the difference between the two verb forms may well be a tonal one. More research is necessary to determine whether there really is a connection between the different tonal realizations of verbs in final vs. non-final position in Mundabli and the "conjoint/disjoint" distinction as reported e.g. for Zulu (Güldemann 2003).

Table 4 gives an overview of the tonal patterns of verbs of the three tone groups for all tenses in sentence-final and non-sentence-final position as presented in section 5. The numbers given in parentheses represent the number of items in the list of verbs this article is based on.

Tense	A: 'Low' (n = 169)		B: 'Super high' (n = 99)		C: 'High' (n = 80)	Pattern
	S V	S V + Obj /Adv	S V	S V + Obj /Adv	SV (+ Adj/Obj)	

P0	21	1	13	4	3	S $\varnothing$ V (O)
P1	21	1	13	4	3	S fə$^{3/4}$ V (O)
P2	21	1	13	13	3	S na^1/a^1 V (O)
P3	21	13	13	2	3	S kə^1 V (O)
F1	3	3	3	3	3	S dɯ^4 V (O)
F2	3	3	3	3	3	S kaa^{32} V (O)

Table 4: Overview of surface tones in the different tenses

Table 4 shows that in the future tenses (as mentioned in sections 5.5 and 5.6), the tone of a verb is always the same, no matter whether F1 or F2 is used or which tone class it belongs to. The underlying tone of the verb seems to be completely overridden by the future verb tone pattern, resulting in a high tone 3 in verbs of all three tone groups. In the non-future tenses the picture looks different. When the verb is in sentence-final position, the tone pattern of each of the three tone classes remains the same across all non-future tenses. The tone patterns of Low and Super high verbs in sentence-final position though, vary depending on their tense. As suggested in sections 5.1 to 5.3, all three verb tone patterns in non-final position are underlyingly the same for P0, P1 and P2 and the surface rising tone found in Super high verbs in P2 is due to spreading of the low tone of the preceding auxiliary as discussed in section 5.3. Thus, among the non-future tenses it is ultimately only in P3 that the tone patterns really differ from those of the other tenses and this only if the verb is not in final position in the sentence.

Looking at the overall picture given in Table 4, we see that, was it not for P3 which has different verb tone patterns from the other non-future tenses, there would be a distinction only in future vs. non-future. In fact, if one looks only at verb-final sentences, this is indeed the case. Thus, except for P3 it does not seem to be a certain tense that causes a tone pattern to occur, but the pattern seems to be determined by a grammatical category of a higher level, i.e. future vs. non-future. Furthermore, the tone pattern of the future tenses differs in its character from the patterns observed in the non-future tenses. Whereas distinctions in the non-future tenses seem to be due to morphological alternation, with P3 differing from the other non-future tenses and final verbs differing from non-final verbs, the future tone pattern completely overrides the underlying tones of the root resulting in a complete neutralization of verb tone groups in the future tenses.

More research is needed to determine whether the difference between verbs in sentence-final and non-final position is related to a distinction between term focus and predication focus as discussed in (Güldemann 2003), as has been suggested earlier in this section. At this point, I assume that the tonal changes described in section 5 and summarized in Table 4 are due to purely morphological alternation, but future research should lead to a more detailed analysis of the variation of tone patterns in future vs. non-future tenses on the one hand and in the different past tenses on the other.

Abbreviations

adv	adverb	NP	noun phrase	SG	singular
cl.	noun class	OBJ	object	TMA	tense/mood/aspect
F1-2	future tenses	P0-3	non-future tenses	V	verb
FUT	future	PL	plural	vcd	voiced
IPFV	imperfective	PRO	pronoun	vcl	voiceless
N	noun	PROGR	progressive	VP	verb phrase

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