Mwani verb tone

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Abstract

This paper describes the verb tone system of Mwani as spoken on Ibo Island, Mozambique. It shows that tone is not lexically distinctive with verbs. Instead one of three melodic patterns is assigned based on inflectional criteria. The melodic H tones interact with underlying H tones of subject prefixes and macro-stem initial prefixes (i.e., object prefixes or the distal marker **-k<u>a</u>-**) but not with other prefixal H tones.

Keywords: Mwani, verb tone, melodic H tones, Meeussen's Rule, Reverse Meeussen's Rule, 'no initial H' restriction, limitative macro-stem, derivational stem, minimality effects, clitics

1. Language background

Mwani (**kimwáani**) is a Bantu language spoken in Cabo Delgado, the northernmost coastal province of Mozambique. Mwani speakers live along the coast between Pemba in the south and Moçimboa da Praia in the north, and on the islands of the Querimba archipelago of which the most famous and most populous one is Ibo. Mwani is also spoken north of Moçimboa da Praia up to Palma but the majority language in this coastal strip is Makwe (Devos 2008). Estimates of the number of Mwani speakers range from 20,000 up to 100,000 speakers (see Petzell (2002: 88) for an overview). The most important contact languages are, from south to north, Makhuwa (P31, Esaka variant), Makonde (P31, Shiyanga variant (Leach 2010)) and Makwe (P31). Mwani speakers may be competent in Portuguese, Makhuwa and Swahili next to Mwani but, as also observed by Schadeberg (1994: 240), bilingualism with Makonde is not common. Still, Mwani is known to share lexical, phonological and morphological features with both Swahili and Makonde (Nurse 1984/1985; Möhlig 1986; Nurse & Hinnebusch 1993; Schadeberg 1994).

The Swahili/Makonde language intertwinement is of such a degree that differing views on the classification of Mwani exist. First, Nurse 1984/1985 and Nurse & Hinnebusch 1993 consider Mwani to be a member of the Sabaki languages (which is a subgroup of North-East Coast Bantu (NECB)), albeit heavily influenced by zone P languages. However, its classification within Sabaki is less clear. The lack of shared innovations with any member of Sabaki makes it difficult for Nurse 1984/1985 and Nurse & Hinnebusch 1993 to decide if Mwani is a southern Swahili dialect or a separate member of the Sabaki group. Second, Schadeberg (1994, 1997) indicates that the intense contact situations from which Mwani and other so-called Swahili languages of Mozambique (Koti (Schadeberg & Mucanheia 2000), Makwe (Devos 2008) and Shangaji) resulted, defy traditional (tree) models of language classification (cf. Güldemann 1992 for a similar view on Swahili languages). Schadeberg (1994: 242-243) takes it as his working hypothesis that "the majority of the first speakers of KiMwani were native speakers of ChiMakonde who decided to join the world of Uswahili." The language shift was not perfect and interrupted by the arrival of the Portuguese at the Mozambican coast which helped to disconnect the Mozambican coastline from the Swahili world and to intensify contact with the languages of the interior. Whereas the other Swahili languages of Mozambique are still in close contact with their non-Swahili source languages (i.e., Makonde for Makwe and Makhuwa for Koti and Shangaji), this is not the case for Mwani. In order to further our insights into the history of Mwani we need detailed descriptive data.

This paper aims at describing the verb tone system of the Mwani variant spoken on Ibo island. Almost all data are based on elicitation sessions wih two language consultants: Rabia Iacine Iancubo and Nadia Ibraimo. Prosodic differences exist between the southern (including the Ibo variant) and the northern Mwani variants (cf. Floor 2000 and field notes). We aim to describe them in a follow-up paper. Section 2 characterizes the Mwani tone system highlighting its main features. Section 3 gives an overview of the Mwani verb structure. The melodic tone system is fully discussed and exemplified in Section 4.

2. Mwani tone

The mora is the tone bearing unit in Mwani. It can be either high (/H/) or toneless (/Ø/). Tone assignment rules and phonological tone rules in Mwani only refer to /H/. Moreover, an important restriction on the distribution of tones in Mwani, i.e., no initial /H/ (Section 2.4), only concerns /H/. These facts, which are discussed more elaborately in the following sections, point towards a tone system with privative H (cf. Hyman 2001 and references therein). The absence of contour tones on short vowels is in line with such an analysis. Surface contours are found on long vowels and are analysed as combinations of /H/ and /Ø/. (1) illustrates all four possible combinations with verb forms containing the vowel-initial stem **-ijiwirira** 'understand'.

(1) HH: **nikwííjiwiríra**/**ni-kú-[ijiwirír-a**/
'I understand'
ØØ: **aaweejiwiríre**/**a-a-[wa-ijiwirír-e**/
's/he has not understood them'
ØH: **kwiíjíwiríra**/**ku-[íjiwirír-a**/
'to understand'
HØ: **ukáwéejiwiríra**/**u-ká-[wa-ijiwirír-a**/
'you should go and understand them'

The following subsections give a characterization of the Mwani tone system (Section 2.1) and sum up other tonological facts about the language. More or less regular tone processes are summarized in Section 2.2. Section 2.3 describes a tonally motivated process of penultimate vowel lengthening and phrasal tone is discussed in Section 2.4.

2.1. Mwani tone system

Mwani has been described as a pitch-accent language (Philippson 1989, 1992, 1993) mainly because of the prosodic properties of its nouns. Mwani nouns share three properties which are typically considered accentual (Downing 2004, 2011): culminativity, obligatoriness and demarcativeness. There are no entirely low nouns (cf. obligatoriness). Instead the majority of nouns have a single H tone which surfaces on the penultimate (PU, cf. (2a)) or antepenultimate (APU, cf. (2b)) mora (cf. culiminativity & demarcativeness).

(2) a) nouns with PU H tone

saámba	'leaf'
nkóno[1]	'arm, hand'
kitumíshi	'servant'
likotombwíro	'porridge of cassava and cowpeas'

1. Notwithstanding a few exceptions, all word-initial nasals are syllabic in Mwani.

b) nouns with APU H tone

úuku	'chicken'
nfúuko	'lazy peron'
kifíniko	'lid'
kirerázingi	'snapper (fish)'

Mwani verbs, however, are less accent-like. All low verb forms are attested (cf. (3) and contra obligatoriness) and a verb stem can have two prominence peaks (cf. (4) and contra culminativity).

(3) **ni-[zungunukir-a** 'I turned around towards'[2]
(4) **ku-[zúngúnukirís-a** 'to make turn around towards'

In line with Hyman (2009), we do not consider pitch-accent to be a useful prosodic type. Rather, we prefer to think of Mwani as having an "intermediate" tone system which "freely picks-and-chooses properties from the tone and stress prototypes" (Hyman 2009: 2013). In the remainder of this paper we concentrate on a description of the characteristics of the Mwani (verb) tone system rather than on its typological classification.

One core property of the Mwani tone system, reminiscent of what have been referred to as 'restricted' (Voorhoeve 1973) and 'reduced' (Schadeberg 1973) tone systems, is the limited role played by lexical tone. As shown in (2), Mwani nouns have only two major tone types which appear to be more or less evenly distributed. Out of a total of 1640 di- and tri-syllabic nouns, for example, exactly half have the PU pattern, whereas the other half have the APU pattern. With longer nouns the APU pattern is more frequent and some deviating tonal patterns, possibly due to underlying compound structures, are attested.[3]

Verbs only have one (lexical) tone type. As is typical for the area (Ecuwabo being a notable exception (Kisseberth & Guérois 2014) and see Odden (1989) and Marlo (2013) for overviews), Mwani has not retained a lexical contrast between H toned and L toned verb roots. As shown by the Infinitives in (5) tonal alternations are not the result of an inherited lexical tonal contrast but depend on the phonological shape of the verb.

(5)	CV stem	**kuúgwa**	'to fall'	< CB ***-gù-** (Bastin *et al.* 2002)
		kuúrya	'to eat'	< CB ***-dí-** (Bastin *et al.* 2002)
	VCV stem	**kuúza**	'to sell'	< CB ***-gùd-** (Bastin *et al.* 2002)
		kwiíta	'to call'	< CB ***-jít-** (Bastin *et al.* 2002)

2. As noted by Philippson (1993: 256) H assignment patterns in Mwani are restricted entirely to word-level (cf. Section 2.4).

3. Counts are based on Sebastian Floor's unpublished Mwani wordlist for which Thilo Schadeberg created a searchable filemaker database. I am very grateful to both for letting me use it.

CVC stem	**kulíma**	'to cultivate'	< CB ***-dìm-** (Bastin *et al.* 2002)
	kutúma	'to send, to use'	< CB ***-dúm-** (Bastin *et al.* 2002)
VCVC stem	**kwiipíka**	'to cook'	< CB ***-yìpɪk-** (Bastin *et al.* 2002)
	kwiingíra	'to enter'	< CB ***-yíngɪd-** (Bastin *et al.* 2002)
CVCVC stem	**kusómola**	'to pull out'	< CB ***-còmʊd-** (Bastin *et al.* 2002)
	kusákula	'to look for'	< CB ***-cákʊd-** (Bastin *et al.* 2002)

Tonal alternations also arise when a verb stem with the same phonological shape (CVCVCVCVCV stem in (6)) is used in different tenses.[4]

(6) a) **ka-[zungunukir-a** 's/he turned around towards' (Perfective, no melodic H)

b) **[zungunukir-á** 'turn around towards!' (Imperative, U melodic H)

c) **a-[ki-zungunukír-a** 'if/and s/he turns around towards' (Situative, PU melodic H)

In a way, the absence of lexical tonal contrasts on verb roots is belied by the complexity of Mwani's 'grammatical tone' (term used by e.g. Guthrie 1948: 50; Harries 1958: 286). Mwani has what Odden (1989) refers to as a 'predictable tone system' in which the "location of H [tones] is predictable by reference to the phonological shape of the verb and the morphological (tense-aspect) category of the verb" (Odden 1989: 227). Tone alternations, like the ones in (6), correlating primarily with tense specifications are common in Bantu languages (Odden & Bickmore 2014: 3). As the tones are assigned in a non-agglutinative way, i.e., to domains transcending the individual morphemes, the patterns have been referred to as 'epimorphic tone schemes' (Meeussen 1962: 65; Meeussen 1971; Schadeberg 2002) or still 'melodic H tones' (Odden & Bickmore 2014: 3), the term used in this paper.

Tense specifications determine whether a melodic H tone is absent (no melodic H, cf. (6a)) or whether it targets the ultimate (U melodic H, cf. (6b)) or penultimate mora (PU melodic H, cf. (6c)) of the verb form. Moreover, they also determine whether subject prefixes are underlyingly H or toneless. Melodic H tones interact with underlying H tones of subject prefixes and macro-stem initial prefixes (i.e., object prefixes or distal **-ká-**) but not with other prefixal H tones (Section 2.2). Because of this interaction we refer to melodic H tones as well as underlying H tones of subject prefixes and macro-stem initial prefixes as 'inflectional H tones'.

4. Following Schadeberg (2003: 151) we use the term 'tense' not as a grammaticalized reference to time, but rather to refer to verbal construction that can be defined as a combination of prefixes and suffixes that mark tense-aspect-mood-polarity and clause type.

Mwani verbs and nouns thus display quite different tonal behaviour. Whereas verbs have one out of three (inflectional) tone melodies (no H, PU H or U H) and no lexical tonal contrast, nouns have one out of two (lexical) tone melodies (PU H or APU H), the only shared melody being the PU one. However, many verb forms do have a surface H tone on the APU mora. As will be explained more fully in Section 2.2 and exemplified in Section 4.1, we attribute this APU H tone to unbounded shift from a H toned subject prefix or macro-stem initial prefix. The Perfective, for example, does not assign melodic H tones, as seen in (7a). When an object prefix is added, its underlying H tone shifts to the APU mora, as in (7b).

(7) a) **ni-[zungunukir-a** 'I have turned around towards'
b) **ni-[wa̲-zungunúkir-a** 'I have turned around towards them'

This raises the possibility that the nouns with the APU pattern are in fact underlyingly toneless and acquire a default H that links to the antepenult. Historically, however, such an analysis is hard to reconcile with the observation that Common Bantu disyllabic noun stems with *HH or *LH tones recurrently correspond to Mwani nouns with the APU pattern (cf. (8a-b)), whereas Common Bantu disyllabic noun stems with *LL or *HL tones tend to correspond to Mwani nouns with the PU pattern (cf. (8c-d)).

(8) a) APU < *HH

mbéeyu	'seed'	< ***-bégú**	(Bastin *et al.* 2002)
úuku	'chicken'	< ***-kúkú**	(Bastin *et al.* 2002)
nsáawi	'witch'	< ***-cábí**	(Bastin *et al.* 2002)

b) APU < *LH

mpáaka	'cat'	< ***-pàká**	(Bastin *et al.* 2002)
nyúumba	'house'	< ***-jùmbá**	(Bastin *et al.* 2002)
nsáana	'day(light)'	< ***-càná**	(Bastin *et al.* 2002)

c) PU < *LL

nnyéni	'guest'	< ***-gèni**	(Bastin *et al.* 2002)
njía	'path'	< ***-jìdà**	(Bastin *et al.* 2002)
muúlu	'leg, foot'	< ***gòdò**	(Bastin *et al.* 2002)

d) PU < *HL

nkóno	'arm, hand'	< ***kónò**	(Bastin *et al.* 2002)
mbuúzi	'goat'	< ***búdì**	(Bastin *et al.* 2002)
nvúla	'rain'	< ***búdà**	(Bastin *et al.* 2002)

Further comparisons between noun and verb tone await a full study of the Mwani nominal tone system.

2.2. Mwani tone processes

A number of tone processes, all more or less restricted in use, are attested in Mwani. They are previewed in this section and fully exemplified in Section 4.

As is common in zone P languages (Odden 2003 and Kisseberth & Guérois 2014 for Makhuwa), H spreads one mora to the right in Mwani. Binary spread cannot target the penultimate or ultimate mora. As a result, it is restricted to (non-inflectional) prefixal H tones (but see Section 4.1.1 for a possible exception). In (9), the H tone of the emphatic imperative marker **ngá-** spreads one mora to the right.

(9) **ngá- [zúngunukir-á** ‘turn around towards, then’

Meeussen’s Rule (MR) has a very limited role in Mwani, deleting H immediately after H. A H tone resulting from binary spread does not cause deletion of an immediately following (underlying) H tone. The Non-Past, for example, has a PU melodic H tone. It is deleted when immediately preceded by the H tone of the infinitival marker **-kú-**, as in (10a). Note that in (10a) binary spread cannot apply to the H tone of the infinitival marker as it targets the PU. In (10b) the H tone of the infinitival marker does not immediately precede the melodic PU H and thus does not cause its deletion. Binary spread does apply but doubled H tones never prompt MR.[5]

(10) a) **akwíita** /**a-ku- [it-a**/ ‘s/he calls’
b) **akwíípíka** /**a-ku- [ipik-a**/ ‘s/he cooks’

There is a very restricted rule of bounded H tone shift which moves the H tone of the infinitival prefix **-kú-** one mora to the right if it is not preceded or followed by a subject or an object prefix, respectively. In (11a) the H tone of the infinitival prefix is not ‘stabilized’ by an object prefix and shifts to the following mora where it is subject to binary spread. The presence of an object prefix in (11b) blocks bounded shift of the H tone of the infinitival prefix. It remains in situ, triggers the deletion of the underlying H tone of the object prefix through MR, and spreads to the object prefix.

(11) a) **ku- [zúngúnukír-a** ‘to turn around towards’
b) **kú- [wá-zungunukir-a** ‘to turn around towards them’

Mwani has two more tone rules which reveal a particular interaction between melodic H tones and H tones of subject and macro-stem initial prefixes (i.e., object prefixes or distal **-ká-**), an interaction which does not hold between melodic H tones and other prefixal H tones: i.e., Reverse Meeussen’s Rule (RMR) and unbounded H tone shift.

Reverse Meeussen’s Rule (RMR) deletes the H tones of macro-stem initial prefixes and subject prefixes in the presence of a melodic H tone. When no melodic H tone is assigned, a H toned object prefix deletes the H tone of the subject prefix. Some clitics likewise appear to trigger the deletion of inflectional H tones but the data are yet unclear (see section 4). In (12) the PU melodic H tone deletes the underlying H tone of the object prefix **-wá-**.

5. We prefer not to split up merged vowels in the examples. When vowel coalescence conceals morphological boundaries, the morphological structure is given between ‘/ /’.

(12) **ni-ki-[wa-zungunukír-a** ‘if/as/and I turn around towards them’

Unbounded H tone shift, which is commonly observed across Bantu languages (see Marlo & Odden, forthcoming), moves H tones of subject and object prefixes (and in the absence thereof, of the distal marker **-ká-**) to the antepenult if the tense in question does not have a melodic H tone. In the presence of a melodic H tone underlying H tones of subject and macro-stem initial prefixes are deleted through RMR. Unbounded shift of the H tone of the object prefix **-wá-** is illustrated in (7b). Unbounded shift of the H tone of a subject prefix is shown in (13). Subject prefixes of negative tenses are always underlyingly H in Mwani (Section 3.1.2). In the absence of melodic H tones they shift to the antepenult, as seen (13).

(13) **a-si-[zungunúkir-e** ‘s/he should not turn around towards’

To capture this interaction between melodic H tones and the H tones of the subject and macro-stem initial prefixes, we refer to them jointly as ‘inflectional H tones’. RMR and unbounded H tone shift are triggered by inflectional H tones, whereas MR, binary spread and bounded H tone shift are triggered by non-inflectional H tones (but see Section 4.1.1 for a possible exception).

2.3. Mwani penultimate lengthening and ‘no initial H’

2.3.1. ‘no initial H’ with nouns

Mwani does not have lexically long vowels. It also does not have automatic penultimate lengthening at the end of a phonological phrase. Long vowels can be derived as a result of hiatus resolution, as illustrated in (1). With C(G) roots and enclitic stems minimality effects trigger a process of vocalic augmentation which feeds lengthening (cf. Sections 3.2.1 & 3.2.2). In addition, some surface long vowels in penultimate position arise for tonal reasons. Mwani has a process of penultimate vowel lengthening which allows lexical H tones (in the case of nouns) and inflectional H tones (in the case of verbs) to reach their target position and, if possible, avoids domain-initial H tones. We refer to this dispreference for domain-initial H tones as the ‘no initial H’ restriction.

In the case of nouns the relevant domain is the word. As was explained before, the majority of Mwani nouns have one out of two tonal patterns: 1) H on the penultimate mora, 2) H on the antepenultimate mora (cf. (2)). When the penultimate pattern combines with a disyllabic noun, we would expect the H tone to fall on the word-initial mora. Instead, and in order to comply with ‘no initial H’, the penult is lengthened and the H tone falls on the second mora of the word-initial syllable (14a). The ‘no initial H’ restriction is most clearly observed with disyllabic nouns which take a zero nominal prefix in the singular and a canonical CV nominal prefix in the plural (14b). In the singular penultimate lengthening prevents an initial H tone but in the plural the presence of the nominal prefix (**ma-**) resolves the restriction and hence penultimate lengthening does not apply.[6]

6. The avoidance of H tones in noun-initial position was already noticed by Philippson (1993: 256).

(14) a) **aáta** ‘head cloth to carry things’
b) **weére**/**mawére** ‘breast(s)’
saázo/**masázo** ‘shark(s), k.o.’

When the antepenultimate pattern combines with a disyllabic noun, penultimate lengthening ensures the assignment of the H tone (15a) within the word but cannot satisfy the ‘no initial H restriction’. With trisyllabic nouns, penultimate lengthening prevents a H tone from surfacing on the word-initial mora (15b). The ‘no initial H’ restriction is most clearly observed with trisyllabic nouns which take a zero nominal prefix and a CV nominal prefix in the singular and plural, respectively (15c).

(15) a) **áata** ‘cinnamon fruit’
b) **nfúuko**/**wafúuko** ‘lazy person(s)’
c) **kongóolo**/**makóngolo** ‘bone(s)’
lulúumi/**malúlumi** ‘tongues’

2.3.2. ‘no initial H’ with verbs

Just like nouns, verbs show a dispreference for domain-initial H tones. With verbs the domain within which this dispreference holds is the macro-stem, rather than the word. The macro-stem consists of the stem with or without a preceding object prefix or limitative (either distal **-ká-** or situative **-ki-**). Penultimate lengthening avoids macro-stem initial H tones, if possible, and allows inflectional H tones to reach their target position. We illustrate this tonally conditioned penultimate lengthening with simple macro-stems, macro-stems including an object prefix, and macro-stems including the distal limitative **-ká-**.

The Negative Subjunctive does not assign melodic H tones. The H tone of the subject prefix shifts to the antepenult. Tonally motivated penultimate lengthening applies in (16a, b). In (16a) it accommodates the antepenultimate H tone within the macro-stem and in (16b) it prevents the antepenultimate H tone from falling on the first mora of the macro-stem, thus satisfying the ‘no initial H’ restriction. The form in (16c) is long enough to accommodate the antepenultimate H tone in a position following the macro-stem initial mora and hence penultimate lengthening does not apply.

(16) Negative Subjunctive without object prefix
a) **u-si-[kóore** ‘do not hold! / you should not hold’
b) **u-si-[sakúure** ‘you should not look for’
c) **u-si-[perékere** ‘you should not send’

When an object prefix is included, it causes deletion of the H tone of the subject prefix through RMR. The H tone of the object prefix then shifts to APU mora. The antepenultimate lengthening in (17a) avoids a domain-initial H tone. In (17b) the antepenult is not in macro-stem initial position and penultimate lengthening does not apply.

(17) Negative Subjunctive with object prefix of class 2 **-wa-**

a) **u-si-[wa-kóor-e** ‘do not hold them! / you should not hold them’
b) **u-si-[wa-sákur-e** ‘you should not look for them’

The Distal Subjunctive does not have melodic H tones. In the absence of an object prefix, the distal marker is part of the macro-stem and its underlying H tone shifts to the antepenult. Its inclusion in the macro-stem explains the PU lengthening in (18a) but the absence thereof in (18b). If the distal marker were outside of the macro-stem domain we would expect penultimate lengthening to apply in (18b) just as in (16b).

(18) a) **u-[ka-kóor-e** ‘you should go and hold’
b) **u-[ka-sákur-e** ‘you should go and look for’

In Section 2.3.1 it is shown that the ‘no initial H tone’ restriction also causes penultimate lengthening with disyllabic nouns assigning a PU lexical H tone. With verbs PU melodic H tones do not trigger penultimate lengthening in order to avoid domain-initial H tones because 1) PU H tones do not occur in domain-initial position through the presence of either the situative limitative **-ki-** or the perfective final **-ire**, as shown in (19) and (20), respectively and 2) the PU H tone is deleted by an immediately preceding H tone (i.e., through MR), as in the Non-Past form in (21). Non-Past forms with consonant-initial stems have a floating H tone which docks on the subject prefix. It is this H tone which deletes the PU H tone in (21).

(19) **a-[ki-kóla** ‘if/as/and s/he holds’
(20) **a-ti-[kor-íre** ‘we have not held’
(21) **á-[kol-a/a-H-[kol-a/** ‘s/he holds’

The only candidate is the short root **-p-** ‘give’ but as will be explained in Section 3.2.1 its obligatory object prefix resists lengthening (of any kind).

(22) **a-ki-[wá-p-a** ‘if/as/and s/he gives them’
NOT **a-ki-[waá-p-a**

2.4. Phrasal tone

As noted by Philippson (1993: 248-258) Mwani differs considerably from Sabaki languages like Comorian and Mijikenda “insofar as its H assignment patterns are restricted entirely to word-level”. Mwani lacks patterns of phrasal H tone shifting. Still, some tonal alternations correlating with the syntactic context are attested but they mostly concern nouns. Nouns lose their lexical H tone when modified by a possessive pronoun (cf. (23)), when used predicatively (cf. (25)), when following a negative form of ‘to be’ or ‘to have’ (cf. (26) and (27)) or when taking the interrogative enclitic =**Vni** ‘which, what’ (cf. (29)).[7]

Within the noun phrase, nouns lose their lexical H tone when modified by a possessive pronoun, as shown for nouns with the PU and the APU pattern in (23a)

7. ‘**V**’ represents a vowel which assimilates completely to the preceding vowel.

and (23b), respectively. Other nominal modifiers do not cause the lexical H tone to be deleted, as illustrated in (24a-b) for adjectives and in (24c-d) for numerals.

(23) a) **visusi vyáake** ‘its neighbourhoods’
(cf. **visúsi** (PU) ‘neighbourhoods’)
b) **nzuruku wéetu** ‘our money’ (cf. **nzúruku** (APU) ‘money’)

(24) a) **iínswi mmwísi** ‘a raw fish’ (cf. **iínswi** (PU) ‘fish’)
b) **papáaya riwísi** ‘an unripe papaya’ (cf. **papáaya** (APU) ‘papaya’)
c) **waánu kéenda** ‘nine persons’ (cf. **waánu** (PU) ‘persons’)
d) **uláamba mmoóji** ‘one baobab fruit’
(cf. **uláamba** (APU) ‘baobab fruit’)

Predicatively used nouns also lose their lexical H tone, as shown in (25a) and (25b) for nouns with the APU and the PU pattern, respectively.

(25) a) **éya makono** ‘these are arms’ (cf. **makóno** (PU) ‘arms’)
b) **éyu nfuuko** ‘this is a lazy person’ (cf. **nfúuko** (APU) ‘lazy person’)[8]

Nouns following negative forms of **-wa** ‘be’ or **-na** ‘have’ are likewise subject to lowering, as illustrated in (26) and (27), respectively. Both nouns with the PU and the APU pattern lose their lexical H tone. Affirmative forms of ‘to be’ and ‘to have’ do not cause lowering of the following noun, as can be seen in (28).

(26) a) **íye aákííwa mpusu** ‘that one was not skinny’
(cf. **mpúsu** (PU) ‘skinny person’)
b) **aapó makongolo** ‘there are no bones’
(cf. **makóngolo** (APU) ‘bones’)

(27) a) **muúnu íre aaná makono** ‘that person does not have arms’
(cf. **makóno** (PU) ‘arms’)
b) **siiná ngalaawa** ‘I do not have a sailing boat’
(cf. **ngaláawa** (APU) ‘sailing boat’)

(28) a) **ómi naa fíisi** ‘I am a hyena’ (cf. **fíisi** (APU) ‘hyena’)
b) **iínswíyu kaná tafáuti** ‘this fish has a problem’
(cf. **tafáuti** (APU) ‘problem’)

Finally, the interrogative enclitic =**Vni** ‘which, what’ deletes the lexical H tone of the host noun. It causes lengthening of the final vowel of the noun which surfaces with a rising contour. As can be seen in (30), demonstrative suffixes (PPx or PPx-**o**) do not have a lowering effect. When they attach to a noun, its lexical H tone is retained and its final vowel becomes H toned.

(29) a) **nfukoóni?** ‘which bag?’ (cf. **nfúko** (PU) ‘bag’)
b) **ngalaawaáni**? ‘which sailing boat?’ (cf. **ngaláawa** (APU) ‘sailing boat’)

8. Interestingly, the tonally motivated lengthening is preserved after deletion of the H tone.

(30) a) **nkónóu** 'that arm' (cf. **nkóno** (PU) 'arm')
b) **ngaláawái** 'this sailing boat' (cf. **ngaláawa** (APU) 'sailing boat')

Interrogative, demonstrative and plural addressee marking enclitics attach to verb forms (see Section 3.1.10) and induce varying tonal changes. As these tonal changes tend to correlate with the melodic tone system, they are further discussed and exemplified in Section 4.

3. Mwani verb structure

Publications containing data on Mwani verb structure include Johnston 1919, Nurse 1984/1985, Philippson 1989, Nurse & Hinnebusch 1993, Schadeberg 1997, Floor 2000, Sitoe & Ngunga 2000 and Petzell 2002. A recurrent observation is that Mwani has relatively little (segmental) verbal morphology. Table 1 gives the basic structure of Mwani inflected verb forms and lists all the morphemes (except for the subject prefixes (SP) and object prefixes (OP), for which see Sections 3.1.2 & 3.1.6, respectively, and demonstrative post-finals, for which see Section 3.1.10) involved in the formation of Mwani tenses. Morphemes listed in one and the same column do not co-occur.

inflected verb form									
prefixes						stem			
				[macro-stem					
pre-initial marker	SP	post-initial negative marker	tense marker	limitative	OP	verb base	pre-final	final suffix	post-finals
a **sá** PPx-**a** **ngá-**	**…**	**si**	**H** **kú**	**ki** **ká**	**…**	**…**	**ang**	**a** **ire** **e**	**-ni**

Table 1. Mwani verb structure and verb slots

The following section briefly discusses the morphemes of each slot. Enclitics taking verbal hosts are in Section 3.1.10 together with the post-finals. Section 3.2 is dedicated to minimality effects and the derivational stem domain.

3.1. Verb slots

3.1.1. Pre-initial markers

There are four different pre-initial markers. Pre-initial **a-** is used for standard negation, as illustrated in (31a). A special fused form (**si-**) exists in the first person singular (31b). The antepenultimate H tones in (31) are the result of unbounded shift of the H tone of the (fused) subject prefix.

(31) a) **a-u̲-[sakúul-a** ‘you do not want, you do not look for’
b) **si̲-[sakúul-a** ‘I do not want, I do not look for’

Relative negative forms take pre-initial **sá-**, as seen in (32a). Note that the underlying H tone of the subject prefix **-wa̲-** is subject to unbounded shift to the APU mora after which binary spread applies to the H tone of the negative relative marker.

(32) **waánu** **sá̲-wá̲-[sowéer-a …**
2.person NEG.REL-SP2-speak-PRS
‘people who do not speak …’

Affirmative non-subject relative forms mark reference to the antecedent through the pre-initial PPx**-a-** (33).

(33) **kiínu** **ca-ni̲-[sakúul-a** **ndi …**
7.thing REL7-SP1SG-look.for-PRS COP
‘what I am looking for is …’

The negative relative pre-initial **sá-** cannot co-occur with the pre-initial PPx**-a-**. Negative non-subject relatives either do not include a reference to the antecedent, as is the case in (34), or they make use of the auxiliary verb **-towa** ‘lack’, as seen in (35).[9]

(34) **ka-fika** **wákati** **sá̲-ní̲-ki-n-rind-í̲r-a**
$SP_2$1-arrive.PFV 11.time NEG.REL-SP1SG-PST.SIT-OP1-wait-APPL-FV
‘S/He arrived when I did not expect her/him’

(35) **cakúurya** **ca-ni-tó** **ku-sákul-a** **ndi …**
7.food REL7-SP1SG-lack 15-look.for-INF COP
‘Food that I do not want is …’

The pre-initial **ngá-** is used with imperative forms to mark insistence, as illustrated in (36). In (36a) binary spread does not apply as it targets the PU. With longer verb stems it does apply, as seen in (36b).

(36) a) **ngá̲-[law-á̲**
EMPH-leave-IMP
‘leave, then!’
b) **ngá̲-[sákul-á̲**
EMPH-search-IMP
‘search, then’

3.1.2. Subject prefixes

Mwani has two series of subject prefixes (see Table 2). Segmentally, the two series only differ from each other in the second and third person (/class 1) singular

9. The auxiliary verb **-towa** is shortened to **-to**.

(i.e., 2sg: **u/ku**; class 1: **a/ka**). However, their tonal specifications are quite different. Whereas subject prefixes of the first series are either toneless or H toned for all participants and classes, the second series subject prefixes are toneless with singular participants and class 1 and H toned elsewhere. The choice between both series of subject prefixes, as well as the choice between the toneless and H toned variants of Series 1, is tense-dependent. Series 2 is attested in two tenses only: the Perfective and the Remote Past. All other tenses make use of the first series with H toned variants being restricted to negative and relative tenses.

	series 1	series 2
1sg	**ni-/ní-**	**ni-**
2sg	**u-/ú-**	**ku-**
1pl	**ti-/tí-**	**tí-**
2pl	**mu-/mú-**	**mú-**
1	**a-/á-**	**ka**
2	**wa-/wá-**	**wá-**
3,14	**u-/ú-**	**ú-**
4	**i-/í-**	**í-**
5,11	**ri-/rí**	**rí-**
6	**(y)a-/(y)á-**	**(y)á-**
7	**ki-/kí-**	**kí-**
8	**vi-/ví-**	**ví-**
9	**i-/í-**	**í-**
10	**zi-/zí-**	**zí-**
15	**ku-/kú-**	**kú-**
16	**pa-/pá**	**pá-**
17	**ku-/kú**	**kú-**
18	**mu-/mú**	**mú-**

Table 2. Mwani subject prefixes (SP)

Melodic H tones or underlying H tones of object prefixes cause the deletion of an underlying subject prefix H tone through RMR. In the absence of other inflectional H tones, subject prefix H tones shift to the antepenult.

3.1.3. The post-initial marker

The post-initial negative marker **-si-** is used in the Negative Subjunctive only. An example is given in (37). The underlying H tone of the subject prefix shifts to the APU mora.

(37) **u-si-[zungúnuk-e** 'do not turn around!/you should not turn around'

3.1.4. Tense markers

All Mwani past tenses surface with a H toned subject marker. We assume that this H tone derives from the North East Coast Bantu (remote) past marker ***-á-** (for which see Nurse & Hinnebusch 1993: 366-367). The segmental part of the past marker is lost in Mwani leaving only a H tone which links to the subject prefix. The Past Situative in (38) differs from the Present Situative in (39) by the presence of a H tone on the subject prefix which is subject to binary spreading.[10] As the H tone is not contributed by the subject prefix itself, it is not affected by RMR and does not shift to the antepenult in the absence of a melodic H tone (40).

(38)	**á- [kí-kól-a /a-H-ki-kól-a/**	's/he was holding'
	á- [kí-sakúl-a	's/he was looking for'
	á- [kí-zungunúk-a	's/he was turning around'
	á- [kí-zungunukír-a	's/he was turning around towards'
	á- [kí-zungunukirís-a	's/he was causing to'
(39)	**a- [ki-kól-a**	'if, when, and s/he holds'
	a- [ki-sakúl-a	'if, when, and s/he looks for'

In the remote past tenses the segmental part of the North East Coast Bantu past tense marker ***-á-** is not lost without a trace but contributes a mora. The subject prefix in these tenses does not only surface with a H tone but is also lengthened, as can be seen in the affirmative Remote Past forms in (40). Binary spread targets the second mora of the lengthened vowel.

(40)	**níí- [kol-a /ni-H- [kol-a/**	'I held'
	níí- [sakul-a	'I looked for'
	níí- [zungunuk-a	'I turned around'

The H toned infinitival marker (-)**kú-** marks Non-Past forms with vowel-initial macro-stems (i.e., the stem including the object prefix) (41a) as well as Infinitives (41b). The Mwani Non-past is probably historically derived from a complex construction consisting of an auxiliary followed by an Infinitive. As is the case in related Bantu languages (cf. Marten 2002: 94), the infinitival marker is maintained before vowel-initial (irrespective of the number of morae) stems while it disappears, at least segmentally, before consonant-initial stems. Its omission does not include the H tone which links to the subject prefix and is subject to binary spread, as seen in (41c), (41d) and (41e), respectively featuring forms with consonant-initial stems, consonant-initial stems preceded by an object prefix and vowel-initial stems preceded by an object prefix (i.e., all consonant-initial macro-stems).

(41) a)	**ni-kóówér-a /ni-kú- [owér-a/**	'I swim'
b)	**kú- [wá-sakúl-a**	'to look for them'

10. The subject prefix vowels to which the floating (Remote) Past H tones eventually link are not underlined in the examples as they are not contributing the H tone. The same applies to subject prefix vowels to which the floating H tone originating from the infinitival marker links (cf. 43 c-e).

c) **ní-[sákúl-a** ‘I look for’
d) **ní-[wá-sakúl-a** ‘I look for them’
e) **ní-[wóolót-a** /**ni-H-[wa-olot-a**/ ‘I show them’

The underlying H tone of the infinitival marker is subject to bounded shift when not preceded or followed by a subject prefix or object prefix, respectively.

3.1.5. Limitatives

A special position, referred to as the ‘limitative’ slot by Meeussen (1967: 109), exists between the tense marker slot and the object prefix slot. It is filled either by distal **-ká-** (43) or by situative **-ki-** (42).[11] In the absence of an object prefix, the limitatives are part of the macro-stem. There are two reasons for proposing such a ‘limitative macro-stem’. First, it is the domain to which ‘no initial H applies’. If situative **-ki-** in (42) were not part of the macro-stem, we would expect penultimate lengthening to apply in order to avoid a domain-initial H tone. Second, the H tone of distal **-ká-** shifts to the antepenult in the absence of an object prefix, as in (43a), but remains in situ in the presence thereof (43b).[12] As will be further exemplified in Section 4.2, the Distal Subjunctive with object prefix has a different tonal pattern from other Subjunctive forms. In (43b) the presence of a PU melodic H tone causes deletion of the H tone of the object prefix. The surface H tone on the object prefix is the result of binary spread of the H tone of the distal marker.

(42) **ni-[ki-kól-a** ‘if/as/and I take’
NOT **ni-ki-[koól-a**

(43) a) **u-[ka-sákur-e** ‘(you should) go and look for!’
b) **u-ká-[wá-sakúr-e** ‘(you should) go and look for them!’

3.1.6. Object prefixes

Object prefixes exist for participants and third person (classes 1/2) only (see Table 3). The reflexive object prefix is **-rí-**. Verb forms cannot take more than one object prefix. Object marking in Mwani patterns with a number of P20 and P30 languages (see Marlo 2015 for an overview). Second person plural objects are expressed by a combination of the second person singular object prefix and the plural addressee clitic (**=Vni**).

11. Situative **-ki-** has a wide usage range in Mwani as described by Floor (2002).

12. Ebarb (2016), in his study of Kabarasi verb tone, refers to exactly this extended macro-stem as the “limitative stem”. He argues it to be a morpho-phonological domain in its own right because of the unique way it interacts with certain tone rules in the language.

1sg	**-ní-**
2sg	**-kú-**
1	**-mú-**
1pl	**-tí-**
2pl	**-kú … =Vni**
2	**-wá-**

Table 3. Mwani object prefixes (OP)

Object prefixes are H toned in Mwani. Their underlying H tone is deleted in the presence of a melodic H tone through RMR. In the absence of melodic H tones it shifts to the APU.

3.1.7. Verb base

The verb base is the lexical core of the verb form. It consists of a verb root followed by one or more verbal extensions and is also commonly referred to as the derivational stem (Downing 1999 and references therein). We reserve the latter term for the domain in which minimality effects hold. As explained in Section 3.2.1 the derivational stem does not fully coincide with the verb base. The canonical shape of the root is CVC. There are a number of roots of the shape C(G) (involving reflexes of Common Bantu *CV roots) which through minimality effects can be augmented with an initial vowel (see 3.2.1).

More or less productive extensions include the applicative **-ir-**, the passive **-iw-**, the causative **-is**(**h**)**-** (and variants), the stative **-ik-**, the associative **-an-** and the separatives **-uk-** and **-ul-**. High vowels of verbal extensions are lowered to mid vowels following an asymmetric form of vowel harmony. The high front vowel **i** becomes **e** after [**e o**], whereas the high back vowel **u** becomes **o** after [**o**] only.

3.1.8. The pre-final marker

The pre-final habitual marker **-ang-** only co-occurs with the (affirmative and negative) Non-Past and repetitive Past Situative in the Mwani variant spoken on Ibo. Examples with the Non-Past and the Past Situative are given in (44) and (45), respectively.

(44) **á-[fyóm-ánga** ‘s/he always reads a lot’

(45) **ní-[kí-sinzir-ánga** ‘I was always falling asleep’

In the coastal area facing the Querimba archipelago, i.e., the Kisanga variant, the pre-final can also combine with Imperatives and Subjunctives to express modal nuances, as seen in (46).

(46) a) **u-[low-e** ‘fish (with line)! / you should fish!’
b) **u-[low-ang-e** ‘you may fish (with line)’

The semantics of **-ang-** in Mwani are in need of further study but its input is clearly more inflectional than derivational, hence its assignment to the pre-final slot rather than to the verb base. As it can combine, at least in some variants, with the subjunctive final **-e**, we analyse it as a separate morpheme rather than as a complex final (i.e., **-anga**).

3.1.9. Final suffixes

Next to the default final **-a**, Mwani has the Perfective final **-ire**/**-e** and the Subjunctive final **-e**, illustrated in (47) and (48), respectively. The Perfective final **-ire** is used in negative and relative tenses only. The long Perfective final is used with non-extended verbal bases, as seen in (47a). Extended verbal bases take **-e**, whether the extension is a productive derivational suffix, like the causative suffix **-is-** in (47b), or a lexicalized extension, like the separative **-uk-** (47c). This alternation between a long and a short Perfective final can be considered a simplified version of what is generally referred to as ‘imbrication’ (Bastin 1983) in Bantu studies. As observed by Nurse & Hinnebusch (1993: 372-373) such simplifications are common in NECB languages.

(47) a) **si-[fyom-íre** ‘I have not read’
b) **si-[fyom-ís-e** ‘I have not taught’
c) **si-[lamúk-e** ‘I have not got up’

(48) **u-[fyom-e** ‘(you should) read!’

3.1.10. Post-finals and enclitics

Plural addressee marking, demonstrative and interrogative post-finals and enclitics are known to attach to verbs. They induce tonal changes. If these tonal changes co-vary with inflectional tones, they are more fully discussed in Section 4. Enclitics induce lengthening of the verb-final vowel. We suggest that enclitics have a stem-initial vowel whose presence is triggered by minimality effects, for which see Section 3.2.2.

The morpho-syntactic status of the plural addressee marker depends on its particular function. It is used either with Imperatives to mark that more than one person is being addressed or in combination with a second person singular object prefix to refer to a second person plural object. When used with Imperatives, it is prosodically part of the verb and receives the U melodic H tone, as seen in (49). In this particular use we analyse it as a post-final suffix rather than as an enclitic.

(49) **[pereker-a-ní** ‘send (you pl.)!’
[perek-á ‘send!’

When co-occurring with a second person singular object prefix, it always causes lengthening of the final vowel of the verb which surfaces with a falling contour (i.e., HØ), as seen in (50). The form without the enclitic is given for comparison. It causes tonal changes which co-vary with the melodic pattern involved. Moreover, with tenses which do not assign melodic H tones, two diverging patterns arise, for which see Section 4.1.1.

(50) **á- [kú-perekeráani /a-H- [ku-perekera = Vni**
's/he is sending [it] to you (pl.)'
á- [kú-perekér-a
's/he is sending it to you'

Demonstrative post-finals of the speaker-proximal (PPx-**a**) and the addressee-proximal (PPx-**o**) series attach to verbs as well as to other word categories (cf Section 2.4 for examples with nouns). Just as the plural addressee marker it appears to have a dual morphosyntactic status. Unlike the latter, however, it behaves like a post-final suffix with most verb forms and like an enclitic with imperative forms. As a post-final it causes the final vowel of the verb form to become H toned but does not induce other tonal changes, as seen with the Situative and Perfective forms in (51) and (52), respectively. Demonstrative post-finals, unlike the plural addressee post-final, are not prosodically part of the verb. As an enclitic it causes lengthening of the final vowel of the verb which surfaces with a falling contour, as seen with the Imperative forms in (53).

(51) **a- [ki-perék-á-ci** 'if/as/and s/he sends this'
a- [ki-perék-a 'if/as/and s/he sends'

(52) **wa- [peréek-á-ci** 'they have sent this'
wa- [peréek-a 'they have sent'

(53) **perekáaci /perek-a = Vci/** 'send this'
[perek-á 'send'

The interrogative enclitics =**Vni** 'why, what' and -**Vpi** 'where' (short forms of **kináni** 'why, what' and **ndépi** 'where', respectively) can attach to the (affirmative and negative) Non-Past, and Past Situative. Examples of the Negative Non-Past and the Past Situative are given in (54) and (55), respectively. Other tenses only combine with the full interrogatives. The enclitics always cause lengthening of the final vowel of the verb which surfaces with a rising contour and they delete inflectional H tones. The Negative Non-Past does not assign melodic H tones. The H tone of the (fused) subject prefix normally shifts to the antepenult. It is deleted in the presence of an interrogative enclitic, as seen in (54). As is the case with nouns (Section 2.4) the prosodically motivated lengthening is maintained. The Past Situative has a PU melodic H tone as well as a (floating) past H tone which docks on the subject prefix and is subject to binary spread. As can be seen in (55), the melodic H tone is deleted but the (non-inflectional) prefixal H tone is retained.

(54) **si- [koolaáni /si- [kol-a = Vni/** 'what am I not holding?'
si- [kóol-a kináni 'what am I not holding?'

(55) **á-[kí-sakulaáni /a-[ki-sakul-a=Vni/** ‘I was looking for what?’
á-[kí-sakúl-a kináni ‘I was looking for what?’

3.2. Mwani stem domains and minimality effects

With verbs two processes of vocalic augmentation are attested which hold within different domains: i.e., the (limitative) macro-stem and the derivational stem. They can be attributed to the ‘no initial H tone’ restriction (cf. Section 2.3) and to minimality effects, respectively. We discuss minimality effects and the derivational stem in 3.2.1. Section 3.2.2 briefly discusses minimality effects in other parts of the grammar.

3.2.1. The derivational stem and minimality effects

Floor’s unpublished Mwani wordlist contains 10 C(G) roots.[13] They are reflexes of Common Bantu *CV roots (Bastin *et al.* 2002). These short roots sometimes behave as if they were vowel-initial (i.e., VC(G)), for which see (56b)). The long vowels in (56a) can only be explained by the presence of a stem-initial vowel. Recall that Mwani does not have automatic penultimate lengthening at the end of a phonological phrase. The Perfective with a class 1 subject prefix is underlyingly toneless, so the lengthening cannot be tonally motivated. (cf. ‘no initial H’, Sections 2.3.2).

(56) a) C(G) root: **kaarya /ka-[Vrya/** ‘s/he has eaten’
kaaja /ka-[Vja/ ‘s/he has come’
b) VC root: **keemba /ka-[imb-a/** ‘s/he sang, s/he has sung’

Non-Past forms also testify to the presence of an initial vowel. They take the infinitival marker **-kú-** with vowel-initial (macro-) stems (cf. (57b) and Section 3.1.4). As can be seen in (57a), short roots also take the infinitival marker. It could be argued that the infinitival marker surfaces not only with vowel-initial stems but also with monosyllabic stems. However, this does not explain the penultimate lengthening in (57a). Meeussen’s Rule deletes the melodic PU H tone after the H tone of the infinitival marker. Consequently, the penultimate lengthening cannot be tonally motivated but must be ascribed to vowel hiatus resolution.

(57) a) C(G)V stem: **akúurya /a-ku-[Vry-a/** ‘s/he eats’
akúuja /a-ku-[Vj-a/ ‘s/he comes’
b) VCV stem: **akwíita /a-ku-[it-a/** ‘s/he calls’

The vowel involved in root augmentation is unspecified and fully assimilates to the vowel of the preceding prefix. In the absence of prefixal material, the default vowel [**i**] appears (cf. Downing 1999), as can be seen with the Imperatives in (58). When the emphatic pre-initial marker **ngá-** is added, the stem-initial vowel again fully assimilates to the vowel of the prefix (59a). As can be seen in (59b) merger of /**a**/ and /**i**/ results in [**ee]** in Mwani.

13. The defective verbs **-ri** ‘be’ and **-na** ‘have’ are not included. They cannot be parsed into a root and a final vowel suffix and are not subject to minimality effects.

(58) **[iry-á** ‘eat!’
[ij-á ‘come!’
[inyw-á ‘drink!’

(59) a) **ngáaryá** /**nga-[Vry-a**/ ‘eat, then!’
ngáajá /**nga-[Vj-a**/ ‘come, then!’
ngáanywá /**nga-[Vnyw-a**/ ‘drink, then!’
b) **ngéembá** /**nga-[imb-a**/ ‘sing, then!’

Short root augmentation can be attributed to minimality effects (Downing 1999, Hyman *et. al.* 2008). In Mwani it serves to avoid non-moraic derivational stems. The derivational stem domain includes any (?) extension except for the associative. It should be noted here that we do not have examples with the separative extensions as they, for semantic reasons, do not combine with short roots. When causative **-is-**, applicative **-ir-**, passive **-iw-** or stative **-ik-** derivational extensions are added, the initial vowel is omitted and the vowel of the preceding prefix remains short, as seen with derived forms of the verb **-rya** ‘eat’ (60a-d).[14]

(60) a) **ka-[(ris)-a** ‘s/he has made eat’
b) **ka-[(rir)-a ~ ka-[(riry)-a** ‘s/he has eaten for’
c) **ka-[(riw)-a** ‘s/he has been eaten’
d) **ka-[(rik)-a** ‘s/he has been eaten’

The extended short roots pattern with CVC roots, an example of which is given in (61).

(61) **ka-[kola** ‘s/he has held’

The extended Non-Past forms in (62) clearly illustrate the absence of the initial vowel as the infinitival marker **-kú-** which only occurs before vowel-initial stems is dropped. The extended short roots again pattern with CVC roots (cf. (63a)) rather than with VC roots (cf. (57b)).

(62) a) **á-[(ris)-a** ‘s/he makes eat’
b) **á-[(rir)-a ~ á-[(riry)a** ‘s/he eats for’
c) **á-[(riw)-a** ‘s/he is eaten’
d) **á-[(rik)-a** ‘s/he is edible’

(63) a) **á-[kola** ‘s/he holds’

Surprisingly, the addition of the associative derivational extension **-an-** does not fulfil the minimality condition, as seen in (64a-b). Root augmentation applies inducing lengthening of the vowel of the preceding subject prefix **wa-** and infinitival marker **-kú-**, respectively. The presence of the latter already points at an initial vowel. Short roots extended with the associative thus pattern with VCVC roots, as seen in (65).

14. In examples (60), (62) and (64) the extended derivational stem is marked between parentheses.

(64) **waaryáana /wa- [(Vry)-an-a/** ‘they have eaten each other’[15]
wakúúryána /wa-kú- [(Vry)-an-a/ ‘they eat each other’

(65) **weepíika /wa- [ipik-a/** ‘they have cooked’
wakwíípíka /wa-ku- [ipik-a/ ‘they cook’

We suggest that the associative is treated more as an inflectional than as a derivational suffix. Inflectional suffixes like the pre-final **-ang-**, the perfective final **-ire**, the subjunctive final **-e** and the default final **-a** are all outside of the derivational stem domain and as a consequence root augmentation applies whenever one of these inflectional suffixes is added to a short root, as seen in (66). The verb forms in (66) pattern with VC roots, as shown in (67) featuring the verb **-uka** ‘go’.

(66) a) **akúúryánga /a-ku- [(Vry)-ang-a/** ‘s/he always eats’
b) **siiríre ~ siirírye /si- [(Vry)-ire/** ‘I have not eaten’
c) **uurye /u- [(Vry)-e/** ‘you should eat’
d) **kuúfwa /ku- [Vfw-a/** ‘to die’

(67) a) **akúúkánga /a-ku- [uk-ang-a/** ‘s/he always goes’
b) **suukíre /si- [uk-ire/** ‘I have not gone’
c) **uuke /u-uk-e/** ‘you should go’
d) **kuúka /ku- [uk-a/** ‘to go’

In Makwe the associative **-an-** and the pluractional **-ang-** (used for derivational as well as inflectional purposes in this language) show a relationship to the root unlike other derivational suffixes (Devos 2008: 246). Short roots have a regular as well as a deviant (with a falling contour in the penultimate syllable) tonal pattern in some tenses, as seen in (68a). As soon as a derivational extension is added only the regular tonal pattern prevails (cf. (68b)). However, with the associative and the pluractional (cf. the habitual pre-final in Mwani) **-ang-** extensions both tonal patterns are available (cf. (68c)).[16]

(68) a) **unkúúpa /unkúupa** ‘the tree bears fruit’
b) **unkupééla** ‘the tree bears fruit [at a certain height]’
c) **tinkupáána /tinkupáana** ‘we are giving each other’
inkupáánga /inkupáanga ‘the trees are bearing a lot of fruit’

The co-occurrence of a short root and an object prefix does not resolve the minimality condition. The lengthening of the vowel of the object prefixes in (69) witnesses to the presence of an initial vowel. The short roots in (69) pattern with VC roots, for which see (70). Note also that consonant-initial stems normally take the homorganic syllabic nasal allomorph of the class 1 object prefix, as seen in (71).

15. Note that ‘to eat someone’ is used to express ‘beating someone in a game’.
16. Marlo (2002), in a very detailed study of CV-root expansion in Luyia languages, shows how some verb suffixes trigger root expansion (in Luyia languages to the right of the root rather than to the left), while others do not. The reciprocal **-an-** and the Imperfect **-Vŋg-** also pattern together in triggering root expansion. However, in Luyia they are not the only suffixes triggering root expansion.

(69) **kúmúúrya /ku- [mu-(Vry)-a/** ‘to eat him/her’
kúwáárya /ku- [wa-(Vry)-a/ ‘to eat them’

(70) **kúmwííta /ku- [mu-it-a/** ‘to call her/him’
kúwééta /ku- [wa-it-a/ ‘to call them’

(71) **kú- [ń-kól-a** ‘to hold her/him’

With one short root the addition of an object prefix does resolve the minimality condition, i.e. the root **-p-** of the verb ‘to give, to bear fruit’.[17] When **-pa** expresses ‘give something to someone’, an object prefix referring to the goal is obligatory and the root is not augmented with an initial vowel suggesting that the object prefix is considered part of the derivational stem domain. As can be seen in (72), the object prefixes remain monomoraic, contrary to the object prefixes preceding the short root **-ry-** of the verb ‘to eat’ in (69). The surface tonal pattern is also very different because the PU melodic H tone is deleted through MR.

(72) **kú- [(m-p)-a** ‘to give her/him’
kú- [(wa-p)-a ‘to give them’

When **-pa** expresses ‘bear fruit’, an object prefix is never included and root augmentation applies to fulfil the minimality condition. As can be seen in (73a), the infinitival prefix occurs in the Non-Past.

(73) **ikúupa /i-ku- [(Vp)-a/** ‘they [the trees] are giving fruit’

Remarkably, the vowel of the obligatory object prefix (i.e., in the case of **-pa** ‘give’) can never be long. It resists penultimate lengthening to accommodate an antepenultimate H tone (cf. Section 2.4.2). The Perfective in (74) does not have melodic H tones. The H tone of the object prefix shifts to APU position and we would expect PU lengthening to apply. However, the vowel of the object prefix remains short and the H tone surfaces in PU position.

(74) **ni- [wá-pa** ‘I have given them’

Before turning to minimality effects outside of verbal inflection, we shortly discuss minimality effects and reduplication. It should be noted, however, that we do not have sufficient data to fully discuss reduplication with Mwani verbs and our informants only hesitantly gave forms with short roots. Reduplication in Mwani involves copying the stem without the prefixes, as can be seen in (75).

(75) **á- [kí-kolakola** ‘s/he was holding’

When short C(G) roots are reduplicated, the stem including the initial vowel is copied. The minimality condition thus also requires reduplicated roots to consist of at least one mora. Vowel coalescence does not apply between both parts of the reduplicated verb form. Consequently, the default vowel [i] surfaces, as seen in (76).

17. A similar polysemy is attested in at least some Makonde variants (Kraal 2005, Devos 2008).

(76) **kaaryairya píiya /ka-Vry-a-iry-a/** ‘s/he has eaten everything’

3.2.2. Minimality effects outside of verbal inflection?

One naturally wonders whether minimality effects are also attested in other parts of Mwani grammar. With verbs the minimality condition was spelled out as avoiding non-moraic derivational stems (not including the associative derivational extension, the habitual pre-final and the final suffixes). Other word categories do not readily allow parsing within the stem but there is some evidence for a bimoraic minimality effect avoiding monomoraic stems. Reflexes of Common Bantu monomoraic stems in class 1 or class 3 always take the CV allomorph [**mu-**] (cf. (77a)), which also co-occurs with vowel-initial stems (cf. (77b)), instead of the homorganic moraic nasal allomorph attested before consonant-initial stems, as seen in (77c).

(77) a) **muúti** ‘tree’ < CB ***tí** ‘tree, stick’ (Bastin *et al.* 2002)
muúto ‘river’ < NECB ***to** ‘river’
(Nurse & Hinnebusch 1993: 622)
b) **mu-úlu/ma-úlu** ‘leg/legs’
c) **n-kóno** ‘arm, hand’

A comparison with Imperatives taking a class 1 object prefix is revealing (78).

(78) a) **muuryé / [mu-Vry-e/** ‘eat her/him’
b) **muulayé / [mu-ulay-e/** ‘kill her/him’
c) [**n-kor-é** ‘hold her/him’

The corresponding form with the root **-p-** ‘give’ (79) shows that monosyllabic stems do not automatically take the CV allomorph. Rather, it is the presence of an initial vowel which triggers the choice for the CV allomorph in (77a-b) and (78a-b). The nouns **muúti** and **muúto** in (77a) can thus best be analysed as **mu-Vti** and **mu-Vto**, respectively.

(79) **m- [p-é** ‘give her/him’

One could thus argue that a bimoraic minimality effect triggers monomoraic stems to be augmented with an initial vowel which assimilates completely to the preceding prefixal vowel. This would then imply that with nouns with monosyllabic stems the penultimate lengthening is triggered by a bimoraic minimality condition which resolves the ‘no initial H’ restriction.

Another case of vocalic augmentation which could be ascribed to minimality effects is attested with enclitics. As discussed in Section 2.4 and Section 3.1.10 enclitics always cause lengthening of the final vowel of their host. One could argue that enclitics, contrary to suffixes, are true stems and thus are subject to the bimoraic minimality condition which triggers the addition of an initial vowel. The enclitics are therefore rendered as follows: =**Vni** (plural addressee enclitic), =**Vpi** (‘where’), =**Vni** (what, which), =**VPPx-a** and =**VPPx-o** (demonstrative enclitics of series 1 & 2, respectively).

4. Mwani tenses and Melodic H tones

Mwani tenses can be grouped according to the melodic pattern they select. A first group of tenses does not assign melodic H tones. A second group selects a PU melodic H tone. Finally, a third group assigns an U melodic H tone. The Distal Subjunctive is the only tense which occurs in two groups depending on whether it includes an object prefix (PU melodic H) or not (no melodic H). The fact that (Distal) Subjunctive tenses in Mwani are divided over two melodic patterns is remarkable but not uncommon in Bantu languages, as noted by Odden & Bickmore (2014: 11). The following three subsections look at each of the three melodic patterns in turn. Table 4 groups all the (simplex) tenses following the melodic pattern they select and gives the morphological structure of each tense. Prefixal H tones are marked on the prefixes themselves, or as a separate morpheme (-H-) in the case of floating H tones. H tones associated with subject prefixes and object prefixes are left unmarked (but see Section 3.1.2 and 3.1.6). At the end of each subsection a table is given enumerating all the tenses with the melodic pattern in question. For each tense one or more examples with the verb **-zungunukira** 'turn around towards' (shortened to 'turn a. t.' in the translations) are presented. If a tense selects a second series subject prefix, two forms are given: one with an underlyingly toneless subject prefix (1sg **-ni-**) and one with an underlyingly H toned subject prefix (class 2 **-wa-**). For each tense, except for the Distal Subjunctive, forms with and without an object prefix are included.

no melodic H	
Perfective	SP_2-(OP)-VB-**a**
Relative Perfective	(PPx-**a**)-SP-(OP)-VB-**ire**
Subjunctive	SP-(OP)-VB-**e**
Distal Subjunctive w/o OP	SP-**ká**-VB-**e**
Negative Subjunctive	SP-**si**-(OP)-VB-**e**
Negative Non-Past	**a**-SP-(OP)-VB-**a**
Relative Non-Past	(PPx-**a**)-SP-(OP)-VB-**a**
Negative Relative Non-Past	**sá**-SP-(OP)-VB-**a**
Remote Past	SP_2-H-(OP)-VB-**a**
Negative Remote Past	**a**-SP-H-(OP)-VB-**ire**
Relative Remote Past	(PPx-**a**)-SP-H-(OP)-VB-**ire**
Negative Relative Remote Past	**sá**-SP-H-(OP)-VB-**ire**
penultimate melodic H	
Situative	SP-**ki**-(OP)-VB-**a**
Negative Perfective	**a**-SP-(OP)-VB-**ire**

no melodic H	
Negative Relative Perfective	**sá**-SP-(OP)-VB-**ire**
Past Situative	SP-H-**ki**-(OP)-VB-**a**
Negative Past Situative	**a**-SP-H-**ki**-(OP)-VB-**a**
Relative Past Situative	(PPx-**a**)-SP-H-**ki**-(OP)-VB-**a**
Negative Relative Past Situative	**sá**-SP-H-**ki**-(OP)-VB-**a**
Non-Past	SP-H/**kú**-(OP)-VB-**a**
Infinitive	**kú**-(OP)-VB-**a**
Distal Subjunctive with OP	SP-**ká**-OP-VB-**a**
ultimate melodic H	
Imperative	VB-**a**
Imperative with OP	OP-VB-**e**
Distal Imperative	**ká**-(OP)-VB-**e**
Emphatic Imperative	**ngá**-(OP)-VB-**e**

Table 4. Mwani tenses

4.1. No melodic H tones

The tenses in Table 5 do not assign melodic H tones. The antepenultimate H tones in the second column are due to unbounded shift from a subject or a macro-stem initial prefix. We first look at tenses which do not have non-inflectional H tones (in Table 5 they are separated from tenses which do include non-inflectional H tones by a bold line). Full paradigms of the Perfective which takes series 2 subject prefixes are given in (80) to (85). We start with examples with the toneless subject prefix **ni-** (1sg). Objectless forms with consonant- and vowel-initial stems are shown in (80a) and (80b), respectively. No H tones are assigned. All surface long vowels are due to vowel coalescence.

(80) a) consonant-initial stems

ni-[kol-a	'I have taken'
ni-[sakul-a	'I have looked for'
ni-[zungunuk-a	'I have turned around'
ni-[zungunukir-a	'I have turned around towards'
ni-[zungunukiris-a	'I have caused to turn around towards'

b) vowel-initial stems

niirya /**ni-[Vry-a**/	'I have eaten'
niimba /**ni-[imb-a**/	'I have sung'
noowera /**ni-[ower-a**/	'I have swum'
naakikisha /**ni-[akikish-a**/	'I have confirmed / made sure'
niijiwirira /**ni-[ijiwirir-a**/	'I have understood'

Forms with the class 2 object prefix **-wa-** before consonant- and vowel-initial stems are listed in (81) and (82), respectively. The object prefix contributes an antepenultimate H tone, as seen in (81b-e) and (82a-e). As mentioned in Section 3.2.1, the vowel of the (obligatory) object prefix of the verb **-pa** 'give' can never be long and hence the antepenultimate H tone surfaces in penultimate position. In (81b) penultimate lengthening prevents the antepenultimate H tone from surfacing in macro-stem initial position. In (82a-b) the long penult (caused by vowel coalescence) cannot be lengthened again and the H tone surfaces in macro-stem initial position.

(81) consonant-initial stems

a)	**ni-[wá-p-a**	'I have given them'
b)	**ni-[wa-kóol-a**	'I have taken them'
c)	**ni-[wa-sákul-a**	'I have looked for them'
d)	**ni-[wa-peréker-a**	'I have sent them'
e)	**ni-[wa-zungunúkir-a**	'I have turned around towards them'

(82) vowel-initial stems

a)	**niwáarya** /**ni-[wa-Vry-a**/	'I have eaten them'
b)	**niwéeta** /**ni-[wa-it-a**/	'I have called them'
c)	**niwóólota** /**ni-[wa-olot-a**/	'I have shown them'
d)	**niweepíkira** /**ni-[wa-ipikir-a**/	'I have cooked for them'
e)	**niweejiwiríra** /**ni-[wa-ijiwirir-a**/	'I have understood them'

Examples of objectless Perfectives with the H toned subject prefix **wa-** are given in (83) and (84). The H tone of the subject marker shifts to the antepenultimate mora. Tonally motivated penultimate lengthening applies in (83a-b) and (84c). In (83a) it ensures assignment of the antepenultimate H tone within the macro-stem. In (83b) and (84c) is satisfies the 'no initial H' restriction. The disyllabic vowel-initial stems in (84a-b) show that the domain of assignment for the shifted H tone is the macro-stem. The H tone cannot surface on the first mora of the long penult as it belongs to the subject prefix.

(83) consonant-initial stem

a)	**wa-[kóol-a**	'they have taken'
b)	**wa-[sakúul-a**	'they have looked for'
c)	**wa-[zungúnuk-a**	'they have turned around'
d)	**wa-[zungunúkir-a**	'they have turned around towards'
e)	**wa-[zungunukíris-a**	'they have caused to turn around towards'

(84) vowel-initial stem

a)	**waárya /wa-[Vrya/**	'they have eaten'
b)	**weémba /wa-[imba/**	'they have sung'
c)	**woowéera /wa-[owera/**	'they have swum'
d)	**waakíkisha /wa-[akikisha/**	'they have confirmed'
e)	**weejiwírira /wa-[ijiwirira/**	'they have understood'

If both the H toned subject prefix **wa-** and the H toned object prefix **-wa-** are present, RMR deletes the H tone of the SP and the same tonal patterns as in (81) and (82) are found, as can be seen in (85a-b).

(85) a) before consonant-initial stem

wa-[wá-p-a	'they have given them'
wa-[wa-kóol-a	'they have taken them'
wa-[wa-sákul-a	'they have looked for them'
wa-[wa-zungúnuk-a	'they have turned them around'
wa-[wa-zungunúkir-a	'they have turned around towards them'

b) before vowel-initial stem

wawáarya /wa-[wa-Vrya/	'they have eaten them'
wawéeta /wa-[wa-ita/	'they have called them'
wawoólota /wa-[wa-olota/	'they have shown them'
waweepíkira /wa-[wa-ipikira/	'they have cooked for them'
waweejiwiríra /wa-[wa-ijiwirira/	'they have understood them'

Subjunctives without an object prefix have the same tonal patters as the Perfectives in (80). Subjunctives with an object prefix or the distal marker **-ka-** have the same tonal patterns as the Perfectives in (81) and (82). The H tone of the macro-stem initial prefix shifts to the APU mora. The Negative Subjunctive patterns with the Perfectives in (85). They always take the H toned variant of the series 1 subject prefixes, which triggers unbounded shift. The same is true for the Negative Non-Past and the Relative Non-Past which both take the H toned variant of the series 1 subject prefixes.

We now turn to tenses which do have non-inflectional H tones. The Negative Relative Non-Past has a H toned pre-initial negative marker and always takes the H toned variant of the series 1 subject prefixes. Objectless forms with consonant- and vowel- initial stems are given in (86) and (87), respectively. The underlying H tone of the subject prefix is subject to unbounded shift after which binary spread applies to the H tone of the pre-initial marker. Unbounded shift takes precedence over MR, if not the underlying H tone of the subject prefix would be deleted. As explained in Section 2.2, doubled H tones do not induce MR (cf. the forms with three successive H tones in (86a) and (87a&b)). Penultimate lengthening applies in (86a) to allow the subject prefix H tone to reach its target position and in (86b) and (87c) to avoid a macro-stem initial H tone. In (87a) and (87b) the stem-initial vowel induces penultimate lengthening and the subject prefix H tone shifts to the first mora within the macro-stem, i.e. the PU.

(86) consonant-initial stems

a) **sá-ní-[kóol-a** ‘when I do not hold’
b) **sá-ní-[sakúul-a** ‘when I do not look for’
c) **sá-ní-[zungúnuk-a** ‘when I do not turn around’
d) **sá-ní-[zungunúkir-a** ‘when I do not turn around towards’

(87) vowel-initial stems

a) **sáníírya** /**sa-ni-[Vry-a**/ ‘when I do not eat’
b) **sánííta** /**sa-ni-[it-a**/ ‘when I do not hold’
c) **sánóowéera** /**sa-ni-[ower-a**/ ‘when I do not swim’
d) **sánáakíkisha** /**sa-ni-[akikish-a**/ ‘when I have confirmed’
e) **sáníijiwírira** /**sa-ni-[ijiwirir-a**/ ‘when I have understood’

Forms with object prefixes show basically the same tonal patterns, as seen in Table 5. This time, however, RMR deletes the H tone of the subject prefix and it is the H tone of the object prefix which shifts to the APU.

As explained in Section 3.1.4 traces of a North East Coast Bantu past tense marker cause the subject prefix of remote past tenses to surface with a H toned and lengthened vowel. The second mora is high through binary spread. In the Negative Relative Remote Past the H toned pre-initial causes deletion of the remote past H tone. Negative Relative Remote Past tenses with an object prefix have four successive underlying H tones (including a floating one). The H tone of the object prefix causes deletion of the H tone of the subject prefix through RMR. The floating remote past H tone docks onto the subject prefix but is deleted through MR. In fact, only the pre-initial underlying H tone is retained in the prefixal domain. Forms with consonant- and vowel-initial stems are given in (88) and (89), respectively. Penultimate lengthening to avoid a macro-stem initial H tone applies in (88a) only.

(88) consonant-initial stems

a) **sá-níi-[wa-p-éere** /**sa-ni-H-[wa-pere**/ ‘when I did not give them’
b) **sá-níi-[wa-kór-ire** ‘when I did not hold them’
c) **sá-níi-[wa-sákur-e** ‘when I did not look for them’
d) **sá-níi-[wa-zungúnuk-e**
‘when I did not turn them around’
e) **sá-níi-[wa-zungunúkir-e**
‘when I did not turn around towards them’

(89) vowel-initial stems

a) **sáníiwaárire** /**sa-ni-H-[wa-Vry-ire**/ ‘when I did not eat them’
b) **sáníiweétire** /**sa-ni-H-[wa-it-ire**/ ‘when I did not call them’
c) **sáníiwoólote** /**sa-ni-H-[wa-olot-e**/ ‘when I did not show them’
d) **sáníiweepíkire** /**sa-ni-H-[wa-ipikir-e**/
‘when I did not cook for them’
e) **sáníiweejiwírira** /**sa-ni-H-[wa-ijiwirir-e**/
‘when I did not understand them’

4.1.1. No melodic H pattern and enclitics

The plural addressee enclitic always combines with the second person singular object prefix **-kṵ-**. In the absence of a melodic H tone the underlying H tone of the object prefix should shift to the APU mora. However, in combination with the enclitic two patterns arise: one with bounded shift to the stem-initial mora and one with unbounded shift to the APU mora. With the Perfective, the Relative Perfective, the Negative Non-Past and the Relative Negative Non-Past, the H tone of the object prefix is subject to bounded rather than to unbounded shift (i.e. just as with the homophonous infinitival prefix). It surfaces on the first mora of the stem and is subject to binary spread. Perfective forms with consonant-initial stems of varying length are given in (90). Forms with only the second person singular object prefix are given in (91) for comparison. That bounded shift rather than unbounded shift is involved is obvious with the forms in (90d) and (90e) only. The forms in (90a) to (90c) could be said to involve unbounded shift to the APU mora, the enclitic not being part of the prosodic word.

(90) a) **ni-[kṵ-páani /ni-[kṵ-p-a=Vni/**
'I have given you (pl)'
b) **ni-[kṵ-kóóláani /ni-[kṵ-kol-a=Vni**
'I have held you (pl)'
c) **ni-[kṵ-sákúláani /ni-[kṵ-sakul-a=Vni**
'I have looked for you (pl)'
d) **ni-[kṵ-pérékeráani /ni-[kṵ-pereker-a=Vni/**
'I have sent to you (pl)'
e) **ni-[kṵ-zúngúnukiráani /ni-[kṵ-zúngúnukir-a=Vni/**
'I have turned around t. you (pl)'

(91) a) **ni-[kú-p-a** 'I have given you (sg)'
b) **ni-[kṵ-kóol-a** 'I have held you (sg)'
c) **ni-[kṵ-sákul-a** 'I have looked for you (sg)'
d) **ni-[kṵ-peréker-a** 'I have sent to you (sg)'
e) **ni-[kṵ-zungunúkir-a** 'I have turned around t. you (sg)'

Examples with **-zungunukira** are given for the Relative Perfective, the Negative Non-Past and the Relative Non-Past in (92), (93) and (94), respectively. Forms without the plural addressee enclitic are given for comparison.

(92) **wa-[kṵ-zúngúnukiréeni** 'they who have turned around towards you (pl)'
wa-[kṵ-zungunúkire 'they who have turned around towards you (sg)'

(93) **a-wa-[kṵ-zúngúnukiráani** 'they do not turn around towards you (pl)'
a-wa-[kṵ-zungunúkira 'they do not turn around towards you (sg)'

(94) **wa-[ku-zúngúnukiráani** 'they who turn around towards you (pl)'
wa-[ku-zungunúkira 'they who turn around towards you (sg)'

With all other tenses in Table 5 the more regular pattern of unbounded shift to the APU mora is attested. As can be seen in (95) the shifted H tone is subject to binary spread, suggesting that doubling applies within a domain bigger than the prosodic word, i.e. including the enclitic.[18] Note that this would be the only context in which binary spread applies to an inflectional H tone. Subjunctive forms with consonant-initial stems of varying length are given in (95). Forms without the plural addressee marker follow in (96).

(95)	**wa-[ku-péeni**	'they should give you (pl)'
	wa-[ku-kóóréeni	'they should hold you (pl)'
	wa-[ku-sákúréeni	'they should look for you (pl)'
	wa-[ku-perékéréeni	'they should send to you (pl)'
	wa-[ku-zungunúkíréeni	'they should turn around towards you (pl)'
(96)	**wa-[kú-p-e**	'they should give you (sg)'
	wa-[ku-kóor-e	'they should hold you (sg)'
	wa-[ku-sákur-e	'they should look for you (sg)'
	wa-[ku-peréker-e	'they should send you (sg)'
	wa-[ku-zungunúkir-e	'they should turn around towards you (sg)'

Examples with **-zungunukira** are given for the Negative Subjunctive, the Negative Relative Non-Past, the Remote Past, the Negative Remote Past, the Relative Remote Past and the Negative Relative Remote Past in (97), (98), (99), (100), (101), and (102), respectively. Forms without the plural addressee enclitic are again given for comparison.

(97)	**wa-si-[ku-zungunúkíréeni**	'they should not turn around towards you (pl)'
	wa-si-[ku-zunguúkire	'they should not turn around towards you (sg)'
(98)	**sá-wá-[ku-zungunúkíráani**	'when they do not turn around towards you (pl)'
	sá-wá-[ku-zungunúkira	'when they do not turn around towards you (sg)'

18. Some more data suggest that binary spread in Mwani applies within (phonological) phrases rather than within words, i.e., it is blocked when it targets the penultimate or ultimate mora of the (phonological) phrase rather than the prosodic word. The Non-Past prefixal H tone, for example, doubles when the verb is followed by an object, as in (1) but remains single when the verb is followed by a subject, as in (2). Phrasing thus appears to be sensitive to syntactic information. A verb and a following object phrase together but a verb and a following subject phrase separately. Still, more research is needed to establish what exactly constitutes a phonological phrase in Mwani.

(1) **ú-sák-a** **mafuluwéela** (cf. **ú-[sak-a** in isolation)
SP$_{2SG}$-want-PRS 6-maize
'You want maize'

(2) **ví-law-a** **vifúlu** **kámbá** **viwiíri**
8-leave-PRS 8-coconut.shell like 8-two
'Two coconut shells come out'

(99) **níí-[ku-zungunúkíráani** ‘I turned around towards you (pl)’
níí-[ku-zungunúkira ‘I turned around towards you (sg)’

(100) **a-wáá-[ku-zungunúkíréeni** ‘they did not turn around towards you (pl)’
a-wáá-[ku-zungunúkire ‘they did not turn around towards you (sg)’

(101) **wáá-[ku-zungunúkíréeni** ‘they who turned around towards you (pl)’
wáá-[ku-zungunúkire ‘they who turned around towards you (sg)’

(102) **sá-wáa-[ku-zungunúkíréeni** ‘when they did not turn around towards you (pl)’
sá-wáa-[ku-zungunúkire ‘when they did not turn around towards you (sg)’

The above data remain very puzzling. It is unclear why in some tenses unbounded shift applies and in others bounded shift. It might also be the case that Mwani, at least the Ibo variant, originally had a fourth melodic pattern involving a stem-initial H tone. The latter pattern at one point or another merged with the no melodic H tone pattern, except in the presence of a plural addressee enclitic. Future research into the tonal properties of the verb in other Mwani varieties might shed some light on this problem.

Of all the tenses in Table 5 only the Negative Non-Past can combine with the interrogative enclitics **=Vni** ‘what’ and **=Vpi** ‘where’. The underlying H tone of the (fused) subject prefix, which is subject to unbounded shift to the APU mora, is deleted in the presence of an interrogative enclitic, as can be seen in (103). The penultimate lengthening associated with the APU H tone is retained, as seen in (103b & c). Forms without the interrogative enclitic follow in (104), for comparison.

(103) a) **siiryaáni /si-Vry-a=Vni/** ‘I do not eat what?’
b) **si-[koolaáni** ‘I do not hold what?’
c) **si-[sakuulaáni** ‘I do not look for what?’
d) **si-[zungunukaáni** ‘I do not turn around what?’
e) **si-[zungunukiraáni** ‘I do not turn around towards what?’

(104) a) **siírya** ‘I do not eat’
b) **si-[kóol-a** ‘I do not hold’
c) **si-[sakúul-a** ‘I do not look for’
d) **si-[zungúnuk-a** ‘I do not turn around’
e) **si-[zungunúkir-a** ‘I do not turn around towards’

As mentioned in Section 3.1.10 demonstrative post-finals cause the final vowel of the verb to become H toned but otherwise do not trigger tonal changes. Examples of Perfectives (with and without inflectional H tones) combining with a demonstrative post-final are given in (105).

(105) a) **ni-[sakulá-ci** ‘I have looked for this’
ni-[sakul-a ‘I have looked for’

b) **wa̲-[ti̲-perékerá-ci** ‘they have sent us this’
wa̲-[ti̲-peréker-a ‘they have sent us’

Demonstratives attaching to affirmative Subjunctives behave like enclitics. Just as with Imperatives (Section 4.3.1 and (106b)), they cause lengthening of the final vowel of the verb which surfaces with a falling contour, as seen in (106a). The functional similarity between Subjunctives and Imperatives could be the reason for them patterning together like this.

(106) a) **u-[koréeci /u-[kor-e=Vci/** ‘you should hold this’
u-[sakuréeci ‘you should look for this’
mu-[zungunukiréepa ‘you (pl) should turn around towards here’
b) **[koráaci / [kor-a=Vci** ‘hold this’

In sum, enclitics do not trigger coherent tonal changes when they attach to tenses without melodic H tones. The interrogative enclitics cause deletion of inflectional H tones, whereas the plural addressee enclitic appears to preserve them. The tonal pattern of Subjunctives combining with demonstrative enclitics could well be a copy of the tonal pattern of Imperatives taking demonstrative enclitics.

Perfective SP_2-[(OP)-VB-**a**	w 1sg SP: **ni-[zungunukira** ‘I have turned around towards’ w cl. 2 SP: **wa̲-[zungunúkira** ‘they have turned a. t.’ w OP: **ni-[wa̲-zungunúkira** ‘I have turned a. t. them’
Relative Perfective (PPx-**a**)-SP-[(OP)-VB-**ire**	w/o OP: **ca-ni̲-[zungunúkir-e** ‘what I have turned a. t.’ w OP: **wa̲-ni-[wa̲-zungunúkir-e** ‘whom I have turned a. t.’
Subjunctive SP-[(OP)-VB-**e**	w/o OP: **ni-[zungunukir-e** ‘that I turn a. t.’ w OP: **ni-[wa̲-zungunúkir-e** ‘that I turn a. t. them’
Distal Subjunctive w/o OP SP-[**ka**-VB-**e**	w/o OP: **ni-[ka̲-zungunúkir-e** ‘that I go and turn a. t. them’
Negative Subjunctive SP-**si**-[(OP)-VB-**e**	w/o OP: **a-wa̲-[zungunúkira** ‘they do not turn a. t.’ w OP: **a-wa̲-[wa̲-zungunúkira** ‘they do not turn a. t. them’
Negative Non-Past **a**-SP-[(OP)-VB-**a**	w/o OP: **a-wa̲-[zungunúkira** ‘they do not turn a. t.’ w OP: **a-wa̲-[wa̲-zungunúkira** ‘they do not turn a. t. them’
Relative Non-Past (PPx-**a**)-SP-[(OP)-VB-**a**	w/o OP: **ca-ni̲-[zungunúkira** ‘what I turn a. t.’ w OP: **wa-ni̲-[wa̲-zungunúkira** ‘whom I turn a. t.’
Negative Relative Non-Past **sá**-SP-[(OP)-VB-**a**	w/o OP: **sá̲-wá̲-[zungunúkira** ‘they who do not turn a. t.’ w OP: **sá̲-ní̲-[wa̲-zungunúkira** ‘when I do not t. a. t. them’

Remote Past SP_2-H-[(OP)-VB-**a**	w 1sg SP: **níí-[zungunukira** 'I turned around towards' w cl. 2 SP: **wáá-[zungunúkira** 'they turned a. t.' w OP: **níí-[wa-zungunúkira** 'I turned a. t. them'
Negative Remote Past **a**-SP-H-[(OP)-VB-**ire**	w/o OP: **a-wáá-[zungunúkir-e** 'they did not turn a. t.' w OP: **a-wáá-[wa-zungunúkir-e** 'they did not t. a. t. them'
Relative Remote Past (PPx-**a**)-SP-H-[(OP)-VB-**ire**	w/o OP: **ca-níí-[zungunúkir-e** 'what I turned a. t.' w OP: **wa-níí-[wa-zungunúkir-e** 'whom I turned a. t.'
Negative Relative Remote Past **sá**-SP-H-[(OP)-VB-**ire**	w/o OP: **sá-wáa-[zungunúkir-e** 'they who did not t. a. t.' w OP: **sá-níi-[wa-zungunúkir-e** 'when I do not t. a. t. them'

Table 5. Mwani tenses without melodic H tones

4.2. PU melody

The tenses in Table 6 all assign a melodic H tone to the PU mora of the macro-stem. This melodic H tone triggers RMR which deletes any underlying H tone linked to a subject prefix or a macro-stem initial prefix. The H tone of the distal marker **-ka-** is not deleted because, in the presence of an object prefix, it falls outside of the macro-stem domain. The examples given in the third column of Table 6 thus do not show tonal variation between forms with and without an object prefix and between affirmative (with a toneless subject prefix) and negative and/or relative forms (with an H toned subject prefix). Tonally motivated penultimate lengthening does not apply because the PU melodic H tone 1) does not occur in macro-stem initial position or 2) is deleted through MR triggered by a non-inflectional H tone.

The Situative and the Negative Perfective have the simplest tonal patterns. A melodic H tone is assigned to the penultimate mora of the macro-stem and its presence causes the deletion of the H tone of the reference prefixes (object prefix in the case of the Situative and subject prefix and object prefix in the case of the Negative Perfective). Situative forms with and without an object prefix are given in (107) and (108), respectively. The limitative **-ki-** is part of the macro-stem and the 'no initial H' restriction thus does not cause penultimate lengthening in (107a, i.e., **ni-[ki-kóla** and NOT **ni-ki-[koóla**).

(107)a) consonant-initial stem

ni-[ki-kól-a	'if/as/and I take'
ni-[ki-sakúl-a	'if I look for'
ni-[ki-zungunúk-a	'if I turn around'
ni-[ki-zungunukír-a	'if I turn around towards'

b) vowel-initial stem

ni-[kiírya /**ni-[ki-Vry-a**/	'if I eat'
ni-[kiíta /**ni-[ki-it-a**/	'if I call'

ni-[koolóta /ni-[ki-olot-a/ ‘if I show’
ni-[kaakikísha /ni-ki-akikish-a/ ‘if I confirm’
ni-[kiijiwiríra /ni-ki-ijiwirir-a/ ‘if I understand’

(108) a) consonant-initial stem
ni-[ki-wá-p-a ‘if I give them’
ni-[ki-wa-kól-a ‘if I take them’
ni-[ki-wa-sakúl-a ‘if I look for them’
ni-[ki-wa-zungunúk-a ‘if I turn them around’
ni-[ki-wa-zungunukír-a ‘if I turn around towards them’

b) vowel-initial stem
ni-[ki-waárya /ni-[ki-wa-Vry-a/ ‘if I eat them’
ni-[ki-weéta /ni-[ki-wa-it-a/ ‘if I call them’
ni-[ki-woolóta /ni-[ki-wa-olot-a/ ‘if I show them’
ni-[ki-weepikíra /ni-[ki-wa-ipikir-a/ ‘if I cook for them’
ni-[ki-weejiwiríra /ni-[ki-wa-ijiwirir-a/ ‘if I understand them’

All the other tenses in Table 6 include a non-inflectional H tone belonging to a tense marker (past -H- or non-past -H-/**-kú-**), the limitative marker **-ka-**, or the relative pre-initial negative marker (**-sá-**). When the relative pre-initial and the past H tone co-occur MR causes the deletion of the latter. Full paradigms of the Non-Past, the Infinitive, the Distal Subjunctive with object prefix and the Negative Relative Past Situative are given.

Non-Past forms with a vowel-initial macro-stem take the infinitival marker **-kú-**. Its H tone remains in situ as it is always preceded by a subject prefix. Bounded shift only applies in the absence of reference markers. In (109a-b) the H tone of the infinitival marker triggers MR which deletes the PU melodic H tone. Binary spread of the prefixal H tone does not apply as it targets the PU mora. With the longer stems in (109c-d) binary spread applies regularly.

(109) vowel-initial stems
a) **ni-kúurya /ni-ku-[Vry-a/** ‘I eat’
b) **ni-kwíita /ni-ku-[it-a/** ‘I call’
c) **ni-kóówéra /ni-ku-[ower-a/** ‘I swim’
d) **ni-káákikísha /ni-ku-[akikish-a/** ‘I confirm’
e) **ni-kwííjiwiríra /ni-ku-[ijiwirir-a/** ‘I understand’

Consonant-initial macro-stems do not take **-kú-**. Still, its H tone is retained and docks on the subject prefix. Examples with and without an object prefix are given in (110) and (111), respectively. In (110a) and (111a) the PU melodic H tone is deleted through MR. Binary spread cannot apply as it targets the PU mora.

(110) consonant-initial stems
a) **ní-[kol-a** ‘I take’
b) **ní-[sákúl-a** ‘I look for’
c) **ní-[zúngunúk-a** ‘I turn around’
d) **ní-[zúngunukír-a** ‘I turn around towards’

(111) consonant-initial stems and OP

a)	**ní-[wa-p-a**	'I give them'
b)	**ní-[wá-kól-a**	'I take them'
c)	**ní-[wá-sakúl-a**	'I look for them'
d)	**ní-[wá-zungunúk-a**	'I turn them around'
e)	**ní-[wá-zungunukír-a**	'I turn around towards them'

Examples with an object prefix and a vowel-initial stem are given in (112). The non-past H tone and the PU melodic H tone are present with all forms and binary spread can always apply.

(112) vowel-initial stem and OP

a)	**ní-[wáárya /ni-H-[wa-Vry-a/**	'I (b)eat them'
b)	**ní-[wééta /ni-H-[wa-it-a/**	'I call them'
c)	**ní-[wóolóta /ni-H-[wa-olot-a/**	'I show them'
d)	**ní-[wéepikíra /ni-H-[wa-ipikir-a/**	'I cook for them'
e)	**ní-[wéejiwiríra /ni-H-[wa-ijiwirir-a/**	'I understand them'

Paradigms of Infinitival forms with and without object prefixes and before consonant- and vowel-initial stems of varying lengths are presented in (113) to (116). The H tone of the infinitival marker shifts to the following mora, i.e., the stem-initial mora, in the absence of an object prefix. In (113a) it shifts to the PU mora and apparently deletes the PU melodic H tone. If the H tone in (113a) were a melodic tone, we would expect the no initial H restriction to cause penultimate lengthening. In the (113b) shifted prefixal H tone causes deletion of the PU melodic H tone through MR.

(113) a)	**ku-[kól-a**	'to take'
b)	**ku-[sákul-a**	'to look for'
c)	**ku-[zúngúnúk-a**	'to turn around'
d)	**ku-[zúngúnukír-a**	'to turn around towards'
e)	**ku-[zúngúnukirís-a**	'to cause to turn around towards'

Objectless Infinitives with vowel-initial stems are presented in (114). In (114a-b) the shifted prefixal H tone causes deletion of the PU melodic H tone. The tonal pattern of Infinitives with trimoraic vowel-initial stems is idiosyncratic. We would expect the shifted prefixal H tone to cause the deletion of the adjacent penultimate H tone, as happens in (113b). However, after coalescence Meeussen's Rule appears to be reversed and it is the penultimate H tone which causes deletion of the shifted prefixal H tone (NOT **koólota**).[19]

(114) a)	**kuúrya /ku-[Vry-a/**	'to eat'
b)	**kwiíta /ku-[it-a/**	'to call'
c)	**koolóta /ku-[olot-a/**	'to show'

19. Note that Mwani does not have a restriction against rising contours in pre-penultimate position which are not supported by another H tone in the word (e.g., **niwoólota** 'I showed them', **caáinswi** 'fisherman').

d) **kwiípíkíra /ku-[ipikir-a/** ‘to cook for’
e) **kwiíjíwiríra /ku-[ijiwirir-a/** ‘to understand’

When an object prefix is added, unbounded shift does not apply and the infinitival prefix retains its H tone. Forms with consonant- and vowel-initial stems are given in (115) and (116), respectively. In (115a) the prefixal H tone triggers MR to delete the immediately following PU melodic H tone. With all other forms both the prefixal and the melodic H tone surface and binary spread applies to the former. The same is true for all the forms with vowel-initial stems in (116).

(115) a) **kú-[wa-p-a** ‘to give them’
b) **kú-[wá-kól-a** ‘to take them’
c) **kú-[wá-sakúl-a** ‘to look for them’
d) **kú-[wá-perekér-a** ‘to send to them’
e) **kú-[wá-zungunukír-a** ‘to turn around towards them’

(116) a) **kú-[wáárya /ku-[wa-Vry-a/** ‘to (b)eat them’
b) **kú-[wééta /ku-[wa-it-a/** ‘to call them’
c) **kú-[wóolóta /ku-[wa-olot-a** ‘to show them’
d) **kú-[wéepikíra /ku-[wa-ipikir-a** ‘to cook for them’
e) **kú-[wéejiwiríra /ku-[wa-ijiwirir-a** ‘to understand them’

When the Distal Subjunctive includes an object prefix, the distal marker **-ká-** falls outside of the macro-stem domain and behaves like a non-inflectional H tone. It is not affected by RMR or by unbounded shift but remains in situ and doubles if the following mora comes before the penultimate mora. Forms with consonant- and vowel-initial stems are given in (117) and (118), respectively. In (117a) the H tone of the distal marker causes the deletion of the immediately following PU melodic H tone through MR.

(117) a) **u-ká-[wa-p-e** ‘you should go and give them’
b) **u-ká-[wá-kór-e** ‘you should go and hold them’
c) **u-ká-[wá-sakúr-e** ‘you should go and look for them’
d) **u-ká-[wá-perek-ér-e** ‘you should go and send to them’
e) **u-ká-[wá-zungunuk-ír-e** ‘you should go and turn around towards them’

(118) a) **ukáwááry-e /u-ka-[wa-Vry-e/** ‘you should go and eat them’
b) **ukáwéét-e /u-ka-[wa-it-e/** ‘… and call them’
c) **ukáwéejíw-e /u-ka-[wa-ijiw-e/** ‘… and know them’
d) **ukáwóoperéz-e /u-ka-[wa-operez-e/** ‘… and take care of them’
e) **ukáwéejiwirír-e /u-ka-[wa-ijiwirir-e/** ‘… and recognize them’

The Negative Relative Past Situative (potentially) has 4 underlying H tones in its prefixal domain: a H toned pre-initial negative marker **-sá-**, a H toned subject prefix, the floating H tone of the past tense marker and a H toned object prefix. The H tones of the reference prefixes are deleted through RMR because of the presence of a PU melodic H tone. The floating H tone of the past tense marker links to the

subject prefix but then deletes through the presence of the pre-initial H tone. In sum, only the pre-initial H tone surfaces and doubles on the following subject prefix. Objectless forms with consonant- and vowel-initial stems are given in (119a) and (119b), respectively.

(119) a) consonant-initial stems
sá-ní- [ki-kól-a /sa-ni-H- [ki-kol-a/ 'when I was not holding'
sá-ní- [ki-sakúl-a 'when I was not looking for'
sá-ní- [ki-zungunúk-a 'when I was not turning around'
sá-ní- [ki-zungunukír-a 'when I was not turning around towards'

b) vowel-initial stems
sá-ní- [kiíry-a /sa-ni-H- [ki-Vry-a/ 'when I was not eating'
sá-ní- [kiít-a /sa-ni-H- [ki-it-a/ 'when I was not calling'
sá-ní- [koolót-a /sa-ni-H- [ki-olot-a/ 'when I was not showing'
sá-ní- [kaakikísh-a /sa-ni-H- [ki-akikish-a
'when I was not confirming'
sá-ní- [kiijiwiríra /sa-ni-H- [ki-ijiwirir-a/
'when I was not understanding'

Forms with object prefixes show the same tonal pattern, as seen in (120a-b).

(120) a) consonant-initial stem
sá-ní-ki- [wá-p-a /sa-ni-H-ki- [wa-p-a/ 'when I was not giving them'
sá-ní-ki- [wa-kól-a 'when I was not holding them'
sá-ní-ki- [wa-sakúl-a 'when I was not looking for them'
sá-ní-ki- [wa-zungunúk-a 'when I was not turning them around'
sá-ní-ki- [wa-zungunukír-a
'when I was not turning around towards them'

b) vowel-initial stems
sáníkiwaárya /sa-ni-H-ki- [wa-Vry-a/
'when I was not eating them'
sánikiweéta /sa-ni-H-ki- [wa-it-a/
'when I was not calling them'
sánikiwoolóta /sa-ni-H-ki- [wa-olot-a/
'when I was not showing them'
sánikiweepikíra /sa-ni-H-ki- [wa-ipikir-a/
'when I was not cooking for them'
sánikiweejiwiríra /sa-ni-H-ki- [wa-ijiwirir-a/
'when I was not understanding them'

4.2.1. PU melody and enclitics

The plural addressee enclitic =**Vni** causes deletion of the PU melodic H tone (121). Non-inflectional H tones are retained. Examples of Past Situatives, Infinitives and Non-Pasts combining with the plural addressee enclitic are given in (121), (122) and

(123) respectively. Forms with the second person singular object prefix but without the enclitic are given for comparison. In each case the enclitic causes deletion of the PU melodic H tone. The past H tone (which docks onto the subject prefix and is subject to binary spread) and the H tone of the infinitival prefix are retained, as can be seen in (121) and (122), respectively.

(121) **ní-kí-[ku-zungunukiráani** ‘I was turning around towards you (pl)’
ní-kí-[ku-zungunukír-a ‘I was turning around towards you (sg)’

(122) **kú-[kú-sakuláani** ‘to look for you (pl)’
kú-[kú-sakúl-a ‘to look for you (sg)’

(123) **á-[kú-sakuláani** ‘s/he is looking for you (pl)’
á-[kú-sakúl-a ‘s/he is looking for you (sg)’

As was shown in Section 3.1.10, the interrogative enclitics **=Vpi** ‘where’ and **=Vpi** ‘what’ combine with a restricted number of tenses only. Tenses with a PU melody which can take the interrogative enclitics are the Past Situative and the Non-Past. The interrogative enclitics cause deletion of the PU melodic H tone. The non-inflectional past H tone is retained with the Past Situative, as seen in (124 a&b) and (55).

(124) a) **ákíiryaáni /a-[ki-Vry-a=Vni/**
‘s/he was eating what?’
ákíírya kináni
‘s/he was eating what?’
b) **á-[kí-zungunukiraáni**
‘if/as/and s/he was turning around towards what?’
á-[kí-zungunukír-a kináni
‘s/he was turning around towards what?’

Interestingly, the infinitival prefix that occurs before vowel-initial stems in the Non-past is deleted in the presence of an interrogative enclitic, as can be seen in (125). The examples with consonant-initial macro-stems in (126) show that its floating H tone is deleted too.

(125) **ookaápi /a-[uka]=pi/** ‘where is s/he going?’
akúuka /a-ku-[uka/ndépi ‘where is s/he going’

(126) a) **u-[sakulaáni /u-[sakul-a=Vni/**
‘what are you looking for?’
ú-[sákúl-a kináni
‘what are you looking for?’
b) **u-[zungunukiraápi /u-[zungunukir-a=Vpi/**
‘where are you turning around to?’
ú-[zúngunukír-a ndépi
‘where are you turning around to?’

The (affirmative) Non-Past apparently has a long and a short form, i.e., a form with and without the (segmental or suprasegmental) tense marker. Only the latter form can combine with interrogative enclitics.[20] As seen in (123), the plural addressee enclitic selects the long form.

Demonstratives behave like post-finals when combining with tenses selecting the PU melody. They cause the final vowel of the verb to become H toned but do not induce other tonal changes (cf. Section 3.1.10). Examples of Infinitives combining with the locative demonstrative **-pa** are given in (127). Forms without the demonstrative follow in (128).

(127) **kuúryápa /ku- [Vry-a-pa/** 'to eat here'
ku- [kól-á-pa 'to hold here'
ku- [sákul-á-pa 'to look for here'
ku- [zúngúnúk-á-pa 'to turn around here'
ku- [zúngúnukír-á-pa 'to turn around towards here'

(128) **kuúrya** 'to eat'
ku- [kól-a 'to hold'
ku- [sákul-a 'to look for'
ku- [zúngúnúk-a 'to turn around'
ku- [zúngúnukír-a 'to turn around towards'

In sum, enclitics combining with tenses taking the PU melody induce coherent tonal changes: they delete the PU melodic H tone. Non-inflectional H tones are preserved.

Situative SP-[**ki**-(OP)-VB-**a**	w/o OP: **ni- [ki-zungunukíra** 'if/as/and I turn a.t.' w OP: **ni-ki- [wa-zungunukíra** 'if/as/and I turn a.t. them'
Negative Perfective **a**-SP-[(OP)-VB-**ire**	w/o OP: **a-wa- [zungunukír-e** 'they have not turned a.t.' w OP: **a-wa- [wa-zungunukír-e** 'they have not turned a.t. them'
Neg. Rel. Perfective **sá**-SP-[(OP)-VB-**ire**	w/o OP: **sá-ní- [zungunukír-e** 'when I have not turned a.t.' w OP: **sá-ní- [wa-zungunukír-e** 'when I have not t. a.t. them'
Past Situative SP-H-[**ki**-(OP)-VB-**a**	w/o OP: **ní- [kí-zungunukíra** 'I was turning a.t.' w OP: **ní-kí- [wa-zungunukíra** 'I was turning a.t. them'
Negative Past Situative **a**-SP-H-[**ki**-(OP)-VB-**a**	w/o OP: **a-wá- [kí-zungunukíra** 'I was not turning a.t.' w OP: **a-wá- [kí-wa-zungunukíra** 'I was not turning a.t. them'

20. This could well be a vestige of a former conjoint/disjoint alternation (for which see Van der Wal & Hyman 2017).

Situative SP-[**ki**-(OP)-VB-**a**	w/o OP: **ni-[ki-zungunukíra** 'if/as/and I turn a.t.' w OP: **ni-ki-[wa-zungunukíra** 'if/as/and I turn a.t. them'
Relative Past Situative (PP$_x$**a**)-SP-H-[**ki**-(OP)-VB-**a**	w/o OP: **pa-ní-[kí-zungunukíra** 'where I was turning a.t.' w OP: **vya-ní-kí-[wa-zungunukíra** 'why I was turning them a.t.'
Neg. Rel. Past Situative **sá**-SP-H-[**ki**-(OP)-VB-**a**	w/o OP: **sá-ní-[ki-zungunukíra** 'when I was not turning a.t.' w OP: **sá-ní-ki-[wa-zungunukíra** 'when I was not turning a.t. them'
Non-Past SP-H/**kú**-[(OP)-VB-**a**	w/o OP: **ní-[zúngunukíra** 'I turn around towards' w OP: **ní-[wá-zungunukíra** 'I turn around towards them'
Infinitive **kú**-(OP)-VB-**a**	w/o OP: **ku-[zúngúnukíra** 'to turn around towards' w OP: **kú-[wá-zungunukíra** 'to turn around towards them'
Distal Subjunctive with OP SP-**ká**-OP-VB-**a**	**u-ká-[wá-zungunukíre** 'you should go turn a.t. them'

Table 6. Mwani tenses with a PU melodic H tone

4.3. U melody

All Imperative forms have a melodic H tone on the ultimate mora (cf. Table 8). H tones of macro-stem initial prefixes are deleted through RMR. Imperatives with an object prefix and objectless Distal Imperatives are given in (129) and (130), respectively.

(129) consonant-initial stems

[wa-p-é	'give them'
[wa-twar-é	'take them'
[wa-sakur-é	'look for them'
[wa-zungunuk-é	'turn them around'
[wa-zungunukir-é	'turn around towards them'

vowel-initial stems

[waaryé /**wa-Vry-e**/	'eat them'
[weeté /**wa-it-e**/	'call them'
[wooloté /**wa-olot-e**/	'show them'
[weepikiré /**wa-ipikir-e**/	'cook for them'
[weejiwiriré /**wa-ijiwirir-e**/	'understand them'

(130) consonant-initial stems

[ka-kor-é	'go and take'
[ka-sakur-é	'go and look for'
[ka-zungunuk-é	'go and turn around'
[ka-zungunukir-é	'go and turn around towards'

vowel-initial stems

[kaary-é / [ka-Vry-e/	'go and eat'
[keemb-é / [ka-imb-e/	'go and sing'
[koolot-é / [ka-olot-e/	'go and show'
[keejiwirir-é / [ka-ijiwirir-e/	'go and understand'

Distal Imperatives with an object prefix are somewhat idiosyncratic. We would expect the distal marker to be outside of the macro-stem domain and hence to retain its underlying H tone. However, Distal Imperatives including an object prefix have exactly the same tonal patterns as their objectless counterparts in (130), as can be seen in (131).

(131)

ka- [wa-p-é	'go and give them
ka- [wa-kor-é	'go and hold them'
ka- [wa-sakur-é	'go and look for them'
ka- [wa-zungunuk-é	'go and turn them around'
ka- [wa-zungunukir-é	'go and turn around towards them'

We suggest that the Imperative melody (a single U H tone) is assigned to the whole prosodic word, encompassing the macro-stem, a preceding distal marker and a following plural addressee marker (cf. Section 3.1.10). The emphatic pre-initial is not part of the prosodic word. Contrary to the distal marker, it retains its underlying H tone which is subject to binary spread if the following mora precedes the penultimate mora, as seen in (132). Objectless forms with consonant- and vowel-initial stems are given in (132a) and (132b), respectively. Forms including the class 2 object prefix **-wa-** before consonant and vowel-initial stems are given in (133a) and (133b), respectively.

(132) a) consonant-initial stems

ngá- [kol-á	'hold, then'
ngá- [sákul-á	'search, then'
ngá- [zúngunuk-á	'turn around, then'
ngá- [zúngunukir-á	'turn around towards, then'

b) vowel-initial stems

ngáaryá /nga- [Vry-a/	'eat, then'
ngéetá /nga- [it-a/	'call, then'
ngéépiká /nga- [ipik-a/	'cook, then'
ngáákikishá /nga- [akikish-a/	'confirm, then'
ngééjiwirirá /nga- [ijiwirir-a/	'understand, then'

(133) a) consonant-initial stems

ngá- [wa-p-á	‘give them, then’
ngá- [wá-kol-á	‘hold them, then’
ngá- [wá-sakul-á	‘look for them, then’
ngá- [wá-zungunuk-á	‘turn them around, then’
ngá- [wá-zungunukir-á	‘turn around towards them, then’

b) vowel-initial stems

ngáwáaryá /nga- [wa-Vry-a/	‘eat them, then’
ngáwéetá /nga- [wa-it-a/	‘call them, then’
ngáwóolotá /nga- [wa-olot-a/	‘show them, then’
ngáwéepikirá /nga- [wa-ipikir-a/	‘cook them, then’
ngáwéejiwirirá /nga- [wa-ijiwirir-a/	‘understand them, then’

4.3.1. U melody and enclitics

Interrogative enclitics do not combine with Imperatives. When the plural addressee marker combines with an Imperative, it behaves like a post-final and receives the U melodic H tone, as can be seen in (134). Forms without the plural addressee follow in (135).

(134)

[iry-a-ní	‘eat (you pl)’
[twal-a-ní	‘take (you pl)’
[sakul-a-ní	‘search (you pl)’
[zungunuk-a-ní	‘turn around (you pl)’

(135)

[iry-á	‘eat’
[twal-á	‘take’
[sakul-á	‘search’
[zungunuk-á	‘trun around’

Demonstratives behave like enclitics when combining with Imperatives. They cause lengthening of the final vowel which surfaces with a falling contour, as seen in 136. This pattern appears to have spread to (affirmative) Subjunctives (Section 4.1.1)

(136)

[iryáapa /iry-a = Vpa/	‘eat, here’
[koláapa	‘hold, here’
[sakuláapa	‘search, here’
[zungunukáapa	‘turn around, here’

Imperative [VB-**a**	**[zungunukirá** ‘turn around towards!’
Imperative with OP [OP-VB-**e**	**[wa-zungunukir-é** ‘go turn around towards them!’
Distal Imperative **[ka-**(OP)-VB-**e**	w/o OP: **[ka-zungunukir-é** ‘go turn around towards!’ w OP: **ka-[wa-zungunukir-é** ‘go turn around towards them!’
Emphatic Imperative **nga-**[(OP)-VB-**e**	w/o OP: **ngá-[zúngunukir-á** ‘turn around towards, then!’ w OP: **ngá-[wá-zungunukir-á** ‘turn around towards them, then!’

Table 7. Mwani tenses with an U melodic H tone

5. Summary and further research

This paper has shown that Mwani verb forms take one out three melodic patterns (no melodic H, PU melodic H, U melodic H) based on inflectional criteria. The melodic patterns interact with other inflectional H tones, i.e. underlying H tones of subject prefixes and macro-stem initial prefixes (either an object prefix or the distal marker). In the presence of a melodic H tone, all other inflectional H tones are deleted through Reverse Meeussen’s Rule. When no melodic H tone is assigned, prefixal inflectional H tones are subject to unbounded shift to the APU mora. Other prefixal H tones are not affected by Reverse Meeussen’s Rule and are never subject to unbounded shift. Instead, they may trigger Meeussen’s Rule and the infinitival marker is subject to bounded shift in the absence of reference markers. Binary spread is almost exclusively attested with non-inflectional prefixal H tones but this might well be due to a restriction which prevents binary spread from targeting any mora following the APU one. More research is needed to ascertain whether binary spread applies within the phonological word or the phonological phrase. The addition of the plural addressee enclitic to verb forms assigning the no melodic H pattern unexpectedly reveals two diverging tonal patterns. More research is needed to find out whether this is indicative of the former presence of yet another melodic pattern.

The paper has also shown that Mwani has an across-the-board restriction on the distribution of H tones: domain-initial H tones are dispreferred. Penultimate lengthening applies to avoid domain-initial H tones. In the case of nouns the relevant domain is the word. In the case of verbs, however, it is the (limitative) macro-stem, i.e., the stem including either an object prefix or a limitative marker (situative **-ki-** or distal **-ka-**). Another case of moraic augmentation is triggered by minimality effects. Non-moraic derivational stems are augmented with an initial vowel. Interestingly, the derivational stem does not include the associative extension. With nouns the minimality effect appears to concern monomoraic stems.

Abbreviations

[	left edge of the macro-stem
APPL	applicative
APU	antepenultimate
CB	Common Bantu
COP	copula
DEM	demonstrative
EMPH	emphatic prefix
IMP	imperative
INF	infinitive
MS1	macro-stem initial
NEG	negative marker
OP	object prefix
PRS	non-past
PU	penultimate
PFV	perfective
PST	past
PP	pronominal prefix of class x
REL	relative prefix
SBJV	subjunctive
SG	singular
SIT	situative
SP	subject prefix
SP_2	subject prefix second series
U	ultimate

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Résumé

Cet article décrit le système tonal verbal du mwani tel qu'il est parlé sur l'île d'Ibo, au Mozambique. Il montre que le ton ne distingue pas les verbes d'un point de vue lexical, mais que, par contre, un parmi trois profils mélodiques leur est assigné sur base de critères flexionnels. Les tons H mélodiques interagissent avec les tons H sous-jacents des préfixes sujets et des préfixes initiaux des macro-thèmes (tels les préfixes objets ou le marqueur distal **-ka-**), mais pas avec d'autres tons H préfixaux.