

Ministry of Scientific Research and Innovation

# Tone in the Saari Noun phrase exemplified with nouns from gender 7/8

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B.P. 1299, Yaoundé, Cameroon  
2012

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## ***List of Abbreviations***

1SG	First person singular
AM	Associative Marker
AC	Adjectival Concord
adj.	Adjective
c	Noun class
OCP	Obligatory Contour Principle

## ***List of Diacritics***

↓	Downstep
H	High tone
L	Low tone
L°	Non-falling Low tone
M	Mid tone
M1	Lower mid tone (surface tone)
M2	Higher mid tone (surface tone)
<sup>H</sup>	Floating High tone
<sup>L</sup>	Floating Low tone
(L)	Optional Low boundary tone
∨	Low tone
∨´	Non falling Low tone
∨̄	Mid tone
∨́	High tone
∨̃	Low-High rising tone
∨̂	Low-Mid rising tone
∨̇	Mid-High rising tone
∨̆	High-Low falling tone
∨̅	Mid-Low falling tone
∨̄̇	High-Mid falling tone
∨̃̂ or ∨̃̇	Low-High-Low rising-falling tone

- morpheme break  
# boundary  
~ free variation

## ***Acknowledgements***

I wish to thank all those who have helped and supported me, so that I was able to work in Cameroon. And I wish to thank everybody who supported me in my work on the field. I wish to thank Dr. Constance Kutsch Lojenga for giving me an introduction to tone, and for showing me how to involve people. I wish to thank Dr. Keith Snider who has helped me to see that it boils down to melodies instead of tones, for his help on working with unanalyzed data, and giving me new ideas for what to look for in the language. Dr. Robert Hedinger and Dr. Stephen Anderson for helping me as linguistic consultants with advice for my research, and with my database and paper.

I wish to thank my colleagues and friends in Misaje, who make life beautiful. I wish to thank all Besaa people who have encouraged me, and who helped me to feel at home and get to know the culture. I especially wish to thank Nformi Wilson, Ngariwa Lawrence, Nyanda Nelson, and Ndongo Joseph, for the countless hours spent helping me to get the data needed for tone analysis of the Saari language.

## 1 Introduction

This paper focuses on tone description for the Saari language spoken by the Besaa people between Nkambe and Misaje in the Donga Mantung division of the North West Region of Cameroon. The language is spoken by approximately 7000 people in Akweto (including Bakinchine, and Bansobi) and Kamine (including Mbissa, Bridge Five, and China). Apart from Saari, the Besaa people also speak Cameroon Pidgin English and other neighboring languages. Schooling in these communities is in English.

The Ethnologue (Lewis 2009) provides the following descriptions of the location and classification: North West Region, Donga-Mantung Division, Misaje Subdivision, both sides of the Ring Road between Nkambe and Misaje; Mbissa, Kamine, and Akweto villages. Niger-Congo, Atlantic-Congo, Volta-Congo, Benue-Congo, Bantoid, Southern, Beoid, Eastern. Alternate names for the language are Akweto, Nsari, Pesaa, Sali.

The main objective of this work is to give an account of tone in such a way that will help in understanding the complexity of tonal phenomena in the language. Saari has three basic tonemes: high /H/, mid /M/, and low /L/. The Mid tone can surface as a higher mid [M2] and a lower mid [M1]. The lower mid is in some cases a downstepped M, and in other cases a M that is lowered after a Low tone; see paragraph 1.4.1 for the difference between the two. The low tone is falling before a pause. There is a non-falling low tone, which will be written as L°.

Phonetic examples in this paper only give the tonal phonetics (i.e. the surface tone); the segments are written according to the orthography.

Grammatical terms are not very specific: there is no grammar sketch yet, and no discourse analysis has been done, and for this paper the focus was on tone. So the gloss of for instance bírú ‘the’ may be inaccurate.

### 1.1 Previous research in the language

The most recent linguistic field research was a phonology sketch done by Julius A. Eyoh (2007). In this sketch there is mention of three level tones and six contour tones. Richards (1991) mentions four level tones and eight contour tones.

The current orthography of Saari is based on the draft orthography proposal of Eyoh and Hedinger (2006).

Other research into the Saari language has been done by Jean-Marie Hombert (1980), who studied the noun classes of the Beoid languages (including Saari).

### 1.2 Method of research

The main language assistants and language informants have been Wilson Nformi and Lawrence Ngariwa. Other language informants were Joseph Ndongo, Nelson Nyanda, Boniface Nkenda, Victor Mboro and Innocent Kimbi. Lawrence Ngariwa is originally from Bansobi (Akweto), and he is living in Kamine. Wilson Nformi has been living in Yaoundé for linguistic studies. Both his father and mother are from Bakinchine. Because of different varieties of the language as spoken by the language informants the choice was made to use only the tone data that was collected from NFORMI Wilson for this paper.

The 1700 words of the “SIL comparative African wordlist” (Roberts and Snider, 2006), as elicited by Julius A. Eyoh, was used as the base of data. For all words the surface tone data has been gathered, using four level tones instead of three level tones. All tones of the words have been collected in 2011 and 2012, and word collocations have been collected in 2012.

The actual number of words collected for this work was 193 basic nouns in gender 7/8, about 400 nouns from other noun classes, and 360 verbs.

First the words were grouped according to part of speech, word form and, in case of nouns, according to noun class. Then the possible tonal patterns for words in isolation were checked. For some classes of nouns there seemed to be at least four level surface tones. Later the melody of all the nouns were checked again, using four tone levels instead of three.



### 1.3 Phonology

The phonology is described in Julius A. Eyoh (2007). Below a summary is given:

Consonants:

	Bilabial	Labio-dental	Alveolar	Palatal	Velar	Labio-velar	Glottal
<b>VI Stops</b>	p		t		k	kp	
<b>Vd Stops</b>	b		d		g	gb	
<b>VI Affricates</b>			ts	tʃ			
<b>Vd Affricates</b>			dz	dʒ			
<b>VI Fricatives</b>		f	s	ʃ			h
<b>Nasals</b>	m		n	ɲ	ŋ		
<b>Lateral</b>			l				
<b>Flap</b>			r				
<b>Approximants</b>				j		w	

Prenasalization: All consonants except for the h and the r can be prenasalized.

Consonants can be palatalized or labialized, sometimes in combination with prenasalization.

Vowels

	Front	Central	Back
High	i		u
Mid high	e		o
Mid low	ɛ		ɔ
Low		a	

There are 7 long and 7 short vowels, and vowels are nasalized when followed by a nasal.

In this paper the orthography as proposed by EYOH and HEDINGER (2011) will be used, meaning that

ch stands for [ tʃ ], j for [ dʒ ], and y for [ j ].

Contrary to what is presented in the phonology, I found that [r] is an allophone of [l], with personal variation between the intervocalic [l] and [r]. It will still be written as r.

Phonetic examples in this paper only give phonetic tone (i.e., the surface tone).

## 1.4 Tone

Tone in Saari is used for lexical and grammatical functions. The melodies of words in isolation consist of three tonemes /H/, /M/ and/or /L/. Mid tone /M/ has two realizations, a Higher mid [M2] and a Lower mid [M1], depending on the surrounding tones, see section 1.4.1. Low tone /L/ at the end of an utterance is falling. There is also a non-falling low tone, [L°]. [L] and [L°] start at the same level, [L°] is underlyingly /L<sup>H</sup>/ (Low followed by a floating High tone).

Marking will be done as follows:

underlying tone	marking	surface tone	marking (pitch contours)
/H/	é	[H]	$\left[ \begin{array}{c} - \\ - \end{array} \right]$ $\left[ \begin{array}{c} - \\ - \end{array} \right]$
/M/	ē	[M2]	$\left[ \begin{array}{c} - \\ - \end{array} \right]$ $\left[ \begin{array}{c} - \\ - \end{array} \right]$
		[M1]	$\left[ \begin{array}{c} - \\ - \end{array} \right]$ $\left[ \begin{array}{c} - \\ - \end{array} \right]$
/L/	è	[L]	$\left[ \begin{array}{c} - \\ \backslash \end{array} \right]$ $\left[ \begin{array}{c} - \\ \backslash \end{array} \right]$
/L <sup>H</sup> /	è´	[L°]	$\left[ \begin{array}{c} - \\ - \end{array} \right]$ $\left[ \begin{array}{c} - \\ - \end{array} \right]$ or $\left[ \begin{array}{c} - \\ - \end{array} \right]$

The pitch contours with the small brackets will be used if the pitch distinctions can easily be seen. Where more levels are needed, the contours with the large brackets are used.

If the underlying melody of a word hasn't been analysed yet, only the surface tone is described:

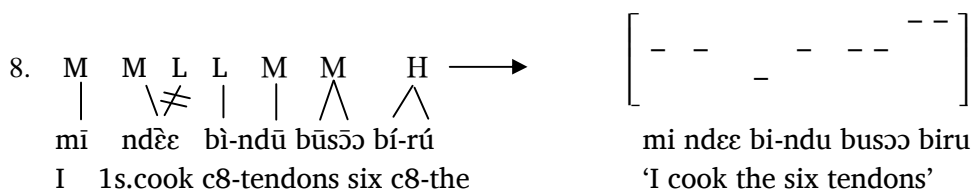
1.	$\left[ \begin{array}{c} - \\ \backslash \end{array} \right]$	$\left[ \begin{array}{c} - \\ - \end{array} \right]$	$\left[ \begin{array}{c} - \\ / \end{array} \right]$	$\left[ \begin{array}{c} - \\ - \end{array} \right]$	$\left[ \begin{array}{c} - \\ - \end{array} \right]$
	nyiij c9.toe	nyiij c9.rooster	nyiij c9.bee	nyiij c10.toes,bees	nyiij c10.roosters

A floating tone will be given as a superscript <sup>H</sup> or <sup>L</sup>.

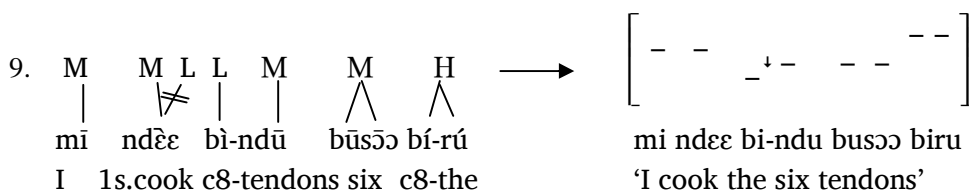
The tones and melodies on morphemes and words will be written as in the next example:

2.	$\begin{array}{c} L \\   \\ ki- \\ c8- \end{array}$	$\begin{array}{c} L \\ / \backslash \\ n\grave{a}nd\grave{e} \\ \text{hoof} \end{array}$	$\begin{array}{c} L \\ / \backslash \backslash \\ ki- n\grave{a}nd\grave{e} \\ \text{'hoof'} \end{array}$
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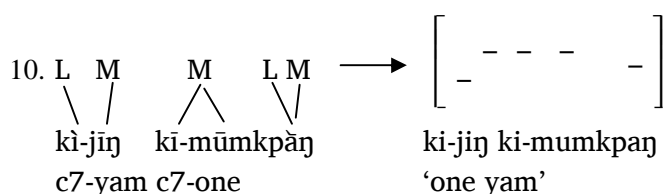


This raising seems to be optional, for my language assistant has free variation between example 8, in which the Mid tone is raised before the High tone, and example 9, in which there is a real downstep. In his opinion example 8 is the better way to say it.

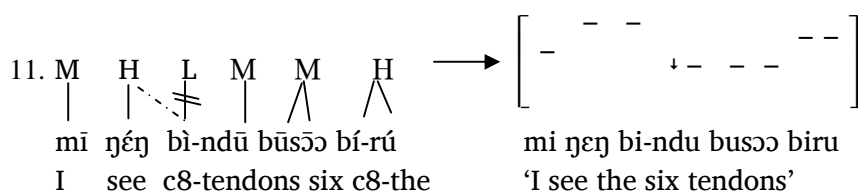


This needs more research, with data from more people.

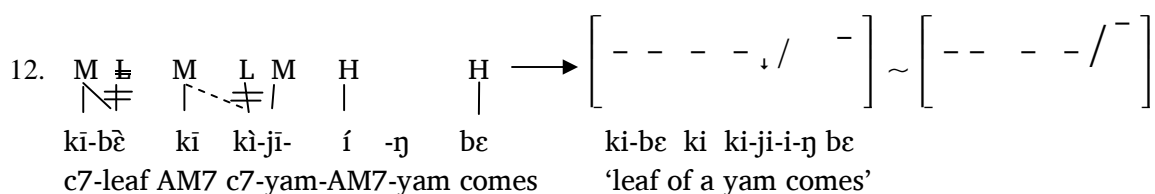
The lower Mid is also raised back to its normal /M/ level before another /LM/ - or at least sometimes. This has not been investigated yet. Example 10 shows that the surface tone of ki-jij 'yam', which normally would be [L-M1] unless it is followed by a High tone, is raised to [M2] level. This needs more investigation.



If the Low tone of a noun-prefix in gender 7/8 is set floating because of H-tone spreading onto the prefix, then there is a mandatory downstep:



If the Low tone of a noun-prefix in gender 7/8 is set floating because of M-tone spreading onto the prefix, then there is optional downstep in the few examples I have:



This needs more investigation.



#### **1.4.4 Prenasalized consonants**

There are no syllabic nasals in Saari. The pitch on prenasalized consonants is predictable. The nasal of prenasalized consonants will be realized with the pitch of the preceding syllable. When the prenasalized consonant is at the start of the word the nasal takes the pitch of the final syllable of the preceding word. After pause the pitch on the nasal will be that of a low tone. This is raised to [M1]-level if the underlying melody of the word starts with a H or M tone. Because the pitch on the nasal part of prenasalised consonants is predictable, it will not be marked in this paper.

#### **1.4.5 Tonal phenomena in Saari**

The different tonal phenomena discussed in this paper are rightward tone spreading (tone rules III, V, XI, XII, and XIII), contour simplification with even Low-tone deletion (tone rules IV and X) grounding of floating H tones (tone rules VI, VII, VIII and IX), optional downstep in certain environments (section 1.4.1 and examples 38, 39, 96, 118 and 119) and obligatory non-automatic downstep (section 1.4.1).

## 2 Tone in nouns of gender 7/8

In this section we shall discuss the tone in nouns of gender 7/8 in isolation. In Saari, like in the other Beoid languages, there is a noun class system. The classes pair up in singular and plural classes commonly referred to as genders. Gender 7/8 has its singular in class 7 and its plural in class 8. Nouns in class 7 have a prefix *ki-*, and nouns in class 8 have a prefix *bi-*.

First we take a look at the syllable structure of noun roots. Then the melodies of simple nouns of gender 7/8 are described, followed by those of three morphologically complex nouns.

### 2.1 Syllable structure of noun roots

Saari noun roots have the following syllable patterns; monosyllabic (N)C(G)V(V)(N) in which G is a glide [j] or [w]. Stated differently: there is at least a CV in the syllable, the vowel can be long or short, there can be a final nasal (always /ŋ/), the consonant can be prenasalized, and the consonant can be palatalized or labialised (followed by a glide).

Disyllabic patterns: (N)C(G)V(V).(N)CV. The first syllable is as above but without the final nasal, and the second syllable is (N)CV. However, NCGVV.NCV is not found in the data.

In Saari there are some words with trisyllabic roots. Since they are rare, and probably complex or compound, they are not considered in this paper. All consonants can occur in the onset position but the coda consonants are only velar nasals.

One root starting with a vowel has been found:

àsêe ‘juju type’

It is not common to have a heavy syllable as second syllable, almost all words that have been found are (suspect) reduplications:

$\left[ \begin{array}{c} - \\ / \backslash \end{array} \right]$		$\left[ \begin{array}{c} - \\ / \backslash \end{array} \right]$	
ki-njiinjii	‘shadow’	taantaa	‘fireplace’

$\left[ \begin{array}{c} / \backslash \\ \end{array} \right]$		$\left[ \begin{array}{c} - \\ / \backslash \end{array} \right]$	
sheeshee	‘hiccough’	mbambaa	‘namesake’

The next two words are not reduplications:

$\left[ \begin{array}{c} - \\ / \backslash \end{array} \right]$		$\left[ \begin{array}{c} / \backslash \\ \end{array} \right]$	sōsí	‘cooking stone’	fokpɔŋ <sup>2</sup>
	‘harmattan’				

<sup>2</sup> This may be a compound or a loanword, in Limbum the word for wind is fū (Fransen, 1995).

The following syllable pattern has only been attested once:

CCV.CV brikà´ ‘papaya’<sup>3</sup>

Having a labialised or palatalized consonant (Cy or Cw) in the second syllable is very rare, the three occurrences are all in class 1 and are listed here:

CV.CGV: kákwe´ ‘owl’, lòkwè´ ‘sweet potatoe’, kpábyé ‘iguana’

## 2.2 Tone patterns and syllable structure in simple nouns in gender 7/8

In this paragraph I will first give an overview of the common tone patterns that are found in words with monosyllabic and disyllabic noun roots.

An overview of all attested tonal melodies, grouped by syllable pattern, is found in appendix 2. Since there are many syllable patterns with only few words, the fact that a melody does not occur for a certain syllable pattern, doesn’t mean that the melody is not possible.

In many languages there are more possible melodies on heavy syllables (CVN, CVV, CVVN) than on light syllables (CV). In Saari all common tone patterns occur on (N)CV. The words with heavy syllables and melodies that do not occur on words with light syllables are probably complex or compound. Looking at the data of gender 7/8 the only melody that may not be possible on light syllables is a rise-fall.

In one of the other genders, 19/25, there is a word with a /LHL/ melody on CV:

fí‘mǔ̀ [H M1M2L]  $\left[ \begin{array}{c} - \\ \nearrow \end{array} \right]$  ‘cat’

The prefix of both classes of this gender have the same tone as of gender 7/8, with this instance of a High toned prefix being an exception.

### 2.2.1 Tone on the prefix

When looking at the surface tones for words in classes 7 and 8, it is obvious that there are two main tones on the prefix: [L] when the surface tone on the root starts with [L] or [M1], and [M2] when the surface tone on the root starts with [M2] or [H]. For instance:

[L-L L°]	$\left[ \begin{array}{c} - \\ - - - \end{array} \right]$	bì-tsùbì´	‘soups’
[M2-M2 M2]	$\left[ \begin{array}{c} - \\ - - - \end{array} \right]$	bī-mfīmū	‘lips, beaks’
[M2-H H]	$\left[ \begin{array}{c} - \\ - - - \end{array} \right]$	bī-mfímú	‘he-goats’

Hombert (1980) states that for the Beoid languages the prefix for gender 7/8 probably is Low toned, which is raised to a Mid before a Mid or High tone. In his examples there is no evidence of a lower Mid tone [M1]. So what to do with the next melody?

[L-M1]	$\left[ \begin{array}{c} - \\ - - \end{array} \right]$	bījīŋ	‘yams’
--------	--	-------	--------

<sup>3</sup> This is not [bìrikà] but [brikà]. This is probably a loan word. In Limbum, a neighbouring Mbam-Nkam language, the word for papaya is birkáá (Fransen, 1995). In other Beoid languages: bilika.

<sup>4</sup> Loanword? In Limbum: kárkwī (Fransen, 1995).



In paragraph 1.4.1 we have seen that [M1] can be a /M/ that is lowered after a Low tone. Therefore a surface melody [L-M1] can be underlyingly for instance /L-M/ or /L-LM/. If we take the melody /L-LM/ as the underlying melody, than the rule that the Low tone prefix is raised to a Mid tone before a root that starts with a Mid tone would still hold, for in this melody the root would start with a Low tone.

Though the hypothesis stated above is plausible, there are some problems with it. If in these two noun classes the Low tone prefix works in that way, we would expect all Low tone prefixes for other noun classes to work in the same way. For most classes this holds true. For noun class 2 however there seem to be several exceptions. Plurals in noun class 2 have their singulars in noun class 1, a noun class with a segmentless prefix (whether it is toneless or a floating tone is still to be determined). Almost all nouns in class 1 have a surface melody that starts with a [L] or [M1] tone. The corresponding plural normally has a prefix that has a [L] tone. For instance:

cl.1	tone	cl.2	tone	gloss
ndɔɔŋ	[M1]	bɛ-ndɔɔŋ	[L-M1]	‘throat’
ke	[L°]	bɛ-ke	[L-L°]	‘bowl’

Some exceptions are with words that refer to humans:

cl.1	tone	cl.2	tone	gloss
kwi	[L°]	bɛ-tsi	[M2-HL]	‘sorcerer’
mfwa	[L]	bɛ-mfa	[M2-M2L]	‘slave’
wi	[L]	bɛ-niiŋ	[M2-M2L]	‘person’
ŋwan	[M1]	bɔɔŋ	[M1]	‘child’

Since the plurals are irregular, also concerning their segments, it is not strange that there would be for instance a /M-/ tone prefix or that the underlying melody of the plural root is different.

Other exceptions are:

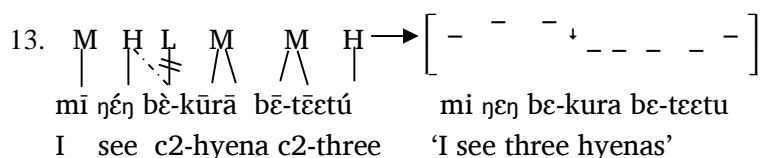
kakwe	[H H]	bɛ-kakwe	[L-H H]	‘owl’
kpabie	[H H]	bɛ-kpabie	[L-H H]	‘iguana’
kaŋ	[HL]	bɛ-kaŋ	[L-HL]	‘camp’
ntuŋ	[M2]	bɛ-ntuŋ	[L-M1]	‘den, hole, lair’
mbaka	[M2 L]	bɛ-mbaka	[L-M1 L]	‘sword’
kura	[M2 M2]	bɛ-kura	[L-M1 M1]	‘hyena’

These are the only words in noun class 1 with melodies that start with a [M2] or [H] tone, that have a plural. And in all these cases the prefix in class 2, the plural, is not raised to [M2] level. One would expect that the same rule that holds for the prefix of noun classes 7 and 8 would also hold for the prefix of noun class 2 – if indeed the prefix is Low toned in both cases. The fact that the prefix of noun class 2 can be Low toned even before a High toned root, seems to suggest that this is a real Low toned prefix, while for noun class 7 and 8 something else is happening. Maybe the prefix of noun classes 7 and 8 is actually toneless, getting its tone from the root: L when the melody of the root starts with a Low and M when it starts with a Mid or

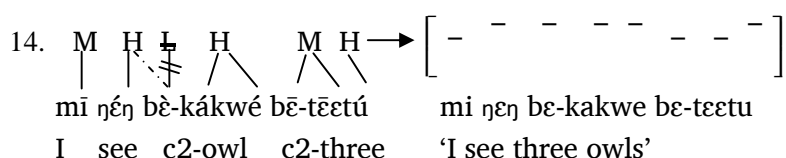
High tone.<sup>5</sup> Or it has a Mid tone which becomes Low before a root melody starting with a Low tone.<sup>6</sup>

Since at this moment the underlying melodies of the roots and prefixes of noun classes 1 and 2 have not been analyzed, further study is needed.

One interesting fact about the prefix tone of noun class 2 is, that normally delinking a Low tone from a prefix like in the next example will give downstep.



When delinking the Low tone before a High tone in class 2 this does not give downstep!!



At this moment we stick to the hypothesis of Hombert concerning the Low-toned prefix of noun class 7 and 8 (which also holds for all the other noun genders with both singular and plural having CV- prefixes), but it is possible that in the future a different analysis will be given.

There are reasons to believe that the raising of the tone of the prefix to a Mid tone is a historic rule. I assume that the word melody /L-LM/ has over time developed into /L-M/ and /L-LM/. The first melody has a Low tone on the prefix while the tone on the root is Mid. At the end of section 2.2.2 about melodies on the noun roots we will discuss the melodies /L-M/ and /L-LM/. There is no evidence anymore that the Mid tone of the prefix has been a Low tone, it behaves as a Mid tone. High tone spreading onto a Mid toned prefix is for instance impossible, while it would occur on Low toned prefixes. In the paper the prefix will be given with its current Low or Mid tone.

Examples for the common melodies on simple nouns of class 7 and 8 are given below. In the next paragraph we will look at the underlying melodies of the roots, and explain why this particular melody is plausible as underlying melody. Here the focus is on the combination of root and prefix.

The first column gives the tone of the prefix and of the root, and the combination of those two melodies in the word. This is on the assumption that the prefix is underlyingly /L-/ , and raised to Mid before a root that starts with a /M/ or /H/ tone. The second column gives the surface melody of the word, and finally for each common melody one example of a word with a disyllabic root is given.

<sup>5</sup> But how would the prefix get a Mid tone when the first tone of the root-melody is High? Does the prefix have a Low register?

<sup>6</sup> Less likely, but in paragraph 3.2.1.3 we do see a Low tone spreading rightward onto a High-toned prefix.

Historic melody	Underlying melody	Surface melody	Example	Gloss
/L-/ + /LH/	→ /L-L <sup>H</sup> /	[L-L L°]	bìtsùbì´	‘soups’
/L-/ + /LM/	→ /L-M/	[L-M1 M1]	bìntūtū	‘herds, crowds’
/L-/ + /LM/	→ /L-LM/	[L-L M1]	bìgòŋū	‘right hands’
/L-/ + /L/	→ /L-L/	[L-L L]	bìntàsì	‘senseless persons’
/L-/ + /H/	→ /M-H/	[M2-H H]	bìmfímú	‘he-goats’
(/L-/ + /HM/ → /M-HM/ <sup>7</sup> )		[M2-H M2]	bífómū	‘carpenter bees’
/L-/ + /HL/	→ /M-HL/	[M2-H HL]	bífásû	‘wooden tongs’
/L-/ + /MH/	→ /M-MH/	[M2-M2 H] ~ [M2-M2 HL]	bìmfēnjú	‘cockroaches’
/L-/ + /M/	→ /M-M/	[M2-M2 M2]	bìmfimū	‘lips, beaks’
/L-/ + /ML/	→ /M-ML/	[M2-M2 M2L]	bìkūnū	‘rats’

With tones Low, Mid and High there are of course the possibilities /L/, /M/, /H/ for the melody of the noun root, and six possible melodies that are made up of a combination of two tonemes: /LH/, /LM/, /HM/, /HL/, /MH/, /ML/. Of these combinations of tones only /HM/ is not common in gender 7/8. In the section 2.2.2.5 we will discuss the melody /L-/ + /LM/ and its surface melodies.

There are seven exceptions to the above mentioned rule for the prefix tone, words where the tone on the prefix is High:

$\left[ \begin{array}{c} - \\ - \\ - \end{array} \right]$	kíkòbè´ ‘beetle’	$\left[ \begin{array}{c} - \\ - \end{array} \right]$	kítèè´ <sup>8</sup> ‘testicle’	$\left[ \begin{array}{c} - \\ - \end{array} \right]$	kí´kō ‘mosquito species’
$\left[ \begin{array}{c} - \\ \backslash \end{array} \right]$	kí´ŋkàaŋ <sup>9</sup> ‘old thing/person’	$\left[ \begin{array}{c} - \\ \backslash \end{array} \right]$	kí´kūŋ ‘horse’	$\left[ \begin{array}{c} - \\ \backslash \end{array} \right]$	kí´ŋkāŋ ‘a species of sweet bush fruit’

<sup>7</sup> Not very common, but it does occur.

<sup>8</sup> Melody unclear, strange behavior in tone frames.

<sup>9</sup> Melody may be /H-<sup>l</sup>MHL/, but behaves sometimes different than the other two words with the /H-<sup>l</sup>MHL/ melody.

$$\begin{bmatrix} - \\ - \end{bmatrix}$$

bímū 'some things'

Four of the melodies in these words include a downstep, only kíkóbè 'beetle' and bímū 'some things' do not have a downstep in the melody of the word. Kítèè sometimes has a downstep, sometimes not.

An example where there is no downstep in the word is example 15. The High tone of the second word is at the same level as the High prefix of the first word.

15.  $\begin{array}{cccc} \text{H} & \text{M} & \text{H} & \text{L} \\ | & | & | & | \\ \text{bí-mū} & \text{bí} & \text{jìibii} & \\ \text{c8-things} & \text{c8} & \text{dark} & \end{array} \rightarrow \begin{bmatrix} - & - & - & - \\ - & & & \backslash \end{bmatrix}$   
 bi-mu bi jiiibii  
 'dark things'

In example 16 there is downstep after the prefix bí-, and the rest of the sentence is lowered.

16.  $\begin{array}{cccc} \text{H} & \text{L} & \text{M} & \text{H} & \text{L} \\ | & / & | & | & | \\ \text{bí}^{\text{H}}\text{kō} & \text{bí} & \text{jìibii} & & \\ \text{c8-mosq.} & \text{c8} & \text{dark} & & \end{array} \rightarrow \begin{bmatrix} - & - & - & - \\ - & & & \backslash \end{bmatrix}$   
 bikō bi jiiibii  
 'dark mosquitoes'

Example 17 shows downstep for bitee 'testicles' (the exact location of the downstep has not been determined), and example 18 shows there is no downstep in the same word. The handful of gender 7/8 nouns that have downstep in the context of example 17 all have a High tone prefix. Except for bitee 'testicles' they would also have a downstep in the equivalent of example 18. It is not clear what is happening here.

17.  $\begin{array}{cccc} \text{H} & \text{L} & \text{H} & \text{H} & \text{L} \\ | & | & | & | & | \\ \text{bí}^{\text{H}}\text{tèè} & \text{bí} & \text{jìibii} & & \\ \text{c8-testicles} & \text{c8} & \text{dark} & & \end{array} \rightarrow \begin{bmatrix} - & - & - & - \\ - & & & \backslash \end{bmatrix}$   
 bitee bi jiiibii  
 'dark testicles'

18.  $\begin{array}{cccc} \text{H} & \text{L} & \text{H} & \text{H} \\ | & | & | & | \\ \text{bí}^{\text{H}}\text{tèè} & \text{bí} & \text{rú} & \\ \text{c8-testicles} & \text{c8.the} & & \end{array} \rightarrow \begin{bmatrix} - & - & - & - \\ - & & & \backslash \end{bmatrix}$   
 bitee biru  
 'the testicles'

Looking at the complexity of the tone patterns of the seven words with High prefix, some of these words must be complex or compound. Probably all are part of a subclass, getting a high toned prefix, setting a Low tone floating in four or five of the seven words.

### 2.2.2 Tone on the root

In many languages the number of melodies that are attested on heavy syllables is larger than that for light syllables. Or the way an underlying melody surfaces for a heavy syllable is different from the way it surfaces on a light syllable. In Saari there is no difference in possible

tone patterns, or in how underlying melodies surface, depending on the syllable pattern CV/CVV/CVN/CVVN. (See appendix 2 for an overview.)

In the previous paragraph we have presented the common melodies on nouns of gender 7/8. In this paragraph we will see that the distribution of those melodies depends on the number of syllables and whether the root starts with or without a prenasalized consonant. We will call these four different make-ups of the root that have an influence on the melody *syllable profiles*. In this we follow Snider (2012).

When comparing roots with these four different syllable profiles, we will see a difference in possible melodies. There are some gaps, and two are very distinctive (one syllable profile does not have any word with a given melody, and all the other syllable profiles do have several words with that melody):

1. Monosyllabic roots starting with a prenasalized consonant do hardly have the melody /M/ (the only occurrence is a singular form that could be a derived form)
2. Disyllabic roots starting with a prenasalized consonant do not have melody /LH/

Other observations:

- Monosyllabic roots that start with a prenasalized consonant have more often melodies that start with a Low tone than monosyllabic roots that don't start with a prenasalized consonant.
- There are more root melodies starting with a Low or Mid tone than with a High tone.
- The /M-MH/ melody has free variation of surface melodies utterance finally. (After the next table I will demonstrate that the underlying melody of the word does end in a High tone.)

For example:

/M-MH/	$\left[ \begin{array}{c} - \\ - \end{array} \right]$	~	$\left[ \begin{array}{c} - \\ - \backslash \end{array} \right]$
kī-wǎ	ki-wa		ki-wa
c7-mouth#			
/M-MH/	$\left[ \begin{array}{c} - - \\ - - \end{array} \right]$	~	$\left[ \begin{array}{c} - - \\ - - \backslash \end{array} \right]$
bī-bēnú	bi-benu		bi-benu
c8-arms#			

In the table below only common melodies are mentioned. The complexity of the uncommon tone patterns are probably due to complex or compound noun stems, and therefore those uncommon tone patterns are not included here.

The first column gives the proposed underlying tone pattern. There are four columns for the different syllable profiles, two for monosyllabic noun roots and two for disyllabic noun roots. The first monosyllabic and the first disyllabic column have words of which the stem does not start with a prenasalized consonant. The second mono- and disyllabic columns have words of which the stem does start with a prenasalized consonant. For each melody one example is given of a word with that syllable profile. The column before that has a number that stands for the number of words that fit in that cell (same melody, same syllable profile).

underlying melody		CV(V)(N)		NCV(V)(N)		CV(V).(N)CV		NCV(V).(N)CV
/L-L <sup>H</sup> /	5	[ - - ] biya years	4	[ - - ] bingɔ curves	5	[ - - - ] bitsubi soups		GAP?
/L-LM/					3	[ - - - ] bigɔŋu right hands		
/L-M/	2	[ - - ] bijiŋ yams	5	[ - - ] bindu tendons			2	[ - - - ] bintutu crowds, herds
/L-L/	3	[ - \ ] biyɔ elephants	11	[ - \ ] bindu ducks	3	[ - - \ ] bibere senseless persons	6	[ - - \ ] bintasi traps
/M-H/	7	[ - - ] biga mats			1	[ - - ] bitinti waists	1	[ - - ] bimfimu he-goats
/M-HM/	1	[ - \ ] bifaa mahogany trees			2	[ - - ] bifomu carpenter bees		
/M-HL/	1	[ - \ ] bigoo doorway covers	1	[ - \ ] bimbaa umbrellas	6	[ - \ ] bifasu wooden tongs		

underlying melody		CV(V)(N)		NCV(V)(N)		CV(V).(N)CV		NCV(V).(N)CV
/M-MH/ <sup>10</sup>	6	$\begin{bmatrix} - & - \\ - & \backslash \end{bmatrix}$ biwa <sup>11</sup> mouths	2	$\begin{bmatrix} - & - \\ - & \backslash \end{bmatrix}$ bintɔŋ ears	6	$\begin{bmatrix} - & - & - \\ - & - & \backslash \end{bmatrix}$ bibenu <sup>12</sup> arms	1	$\begin{bmatrix} - & - & - \\ - & - & \backslash \end{bmatrix}$ bimfenju cockroaches
/M-M/	17	$\begin{bmatrix} - & - \\ - & - \end{bmatrix}$ biti trees, planks	1	$\begin{bmatrix} - & - \\ - & - \end{bmatrix}$ kintsi taste, odour	6	$\begin{bmatrix} - & - & - \\ - & - & - \end{bmatrix}$ bibeŋu calabashes	8	$\begin{bmatrix} - & - & - \\ - & - & - \end{bmatrix}$ bimfimu lips, beaks
/M-ML/	9	$\begin{bmatrix} - & \backslash \\ - & \backslash \end{bmatrix}$ bibe leaves	4	$\begin{bmatrix} - & \backslash \\ - & \backslash \end{bmatrix}$ binsɔ bulls	4	$\begin{bmatrix} - & - & \backslash \\ - & - & \backslash \end{bmatrix}$ bikunu rats	3	$\begin{bmatrix} - & - & \backslash \\ - & - & \backslash \end{bmatrix}$ bintomu heifers

Table 1: Common melodies for gender 7/8

### 2.2.2.1 The /L-L/, /M-H/, /M-M/ and /M-HM/ melodies

It is not hard to see how the underlying melodies /L-L/, /M-H/, /M-M/ and /M-HM/ surface the way they do. For the other melodies the reason for choosing this underlying melody will be explained.

### 2.2.2.2 The /M-HL/ melody

/M-HL/ : the High tone is spreading onto the final syllable, as shown in the next example:

$\begin{matrix} M & H & L \\ | & | & | \\ b\bar{i} & f\bar{a} & s\bar{u} \end{matrix} \rightarrow \begin{bmatrix} - & - & \backslash \\ - & - & \backslash \end{bmatrix}$   
 bi-fasu 'wooden tongs'

<sup>10</sup> Free variation between the two surface melodies for words at the end of an utterance. When followed by another morpheme only the first of the two surface melodies is used.

<sup>11</sup> kíkɔ́ 'cough' only  $\begin{bmatrix} - & \backslash \\ - & \backslash \end{bmatrix}$

<sup>12</sup> kījīb́é 'darkness' only  $\begin{bmatrix} - & - \\ - & - \end{bmatrix}$  and 'burial rite' only  $\begin{bmatrix} - & \backslash \\ - & \backslash \end{bmatrix}$ . Same underlying melody, personal variation?

kībōb́é 'scorpion' only  $\begin{bmatrix} - & - \\ - & - \end{bmatrix}$  and 'tarantula' only  $\begin{bmatrix} - & \backslash \\ - & \backslash \end{bmatrix}$ . Word for tarantula not commonly used by Language assistant. Same underlying melody, personal variation?



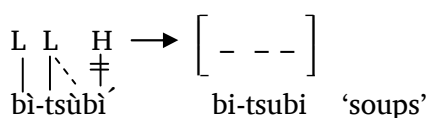


In paragraph 3.2.1.1 we will see that a final M- or H-tone of the word before the specifier *byèè'* 'those (mentioned before)' spreads onto the word *byèè'*, giving a HL or ML fall. In the above example it is therefore obvious that the final tone of the melody of *bi-ntõŋ* is H and not L.

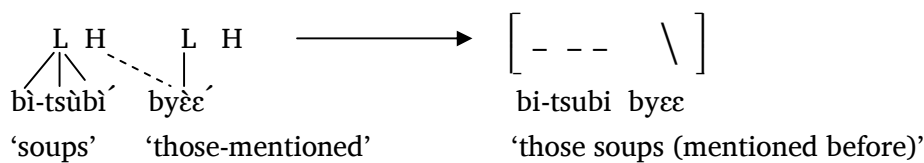
It is clear that the underlying melody of the noun has not become /M-H/, with the Mid tone of the root having no effect at all. For there is still a difference in behaviour between nouns with the underlying melody /M-H/ and those with melody /M-MH/.

#### 2.2.2.4 The /L-LH/ melody

/L-LH/ : It seems that this is a Low toned root, but the Low tone does not fall at the end of an utterance. What happens is that the Low spreads right, and delinks the High tone, setting it afloat. Here the floating High tone prevents the Low from falling. This is shown in the next example.



That there really is a floating High tone can be seen in context. For instance in the next example where the floating High tone will ground to the following specifier (discussed in paragraph 3.2.1.1):



#### 2.2.2.5 The /L-LM/ and /L-M/ melody

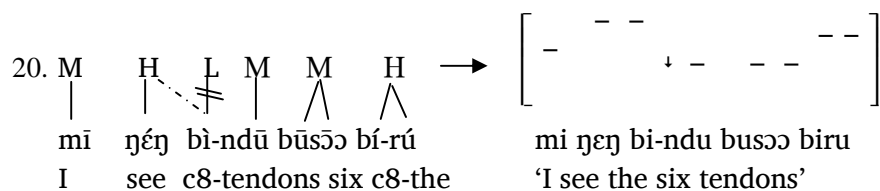
/L-LM/ and /L-M/ : There are two different surface melodies for words with disyllabic roots, that could underlyingly have the melody /L-/ + /LM/: [L-L M] and [L-M M]. Looking at the other melodies and the possibilities if underlying root melodies would only consist of 2 tones, we expect the underlying melody /L-/ + /LM/. So probably at least one of these surface melodies is underlyingly /L-/ + /LM/. The other one may be the surface melody of a noun with a complex or compound stem, with underlyingly for instance /L-L-M/ or /L-M-M/ as melody. Immediately below the words with the two different surface melodies [L-L M1] and [L-M1 M1] are given. They split up in words with roots starting with and without a prenasalized consonant.

Surface melody	[L-L M1]	[L-M1 M1]
	kìbàbā 'wild cat'	kìntütū 'crowd, heap, herd'
	kìgòŋē 'right hand'	kìmbūunē 'grass at top of thatched roof'
	kìkòmā 'silk-cotton tree'	

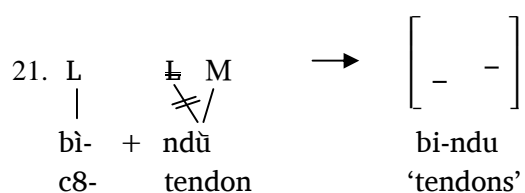
We assume that these melodies are all historically /L-LM/. The melodies [L-M1] and [L-M1 M1] seem to be in transition, in paragraph 1.4.1 about the lower mid [M1] tone we discussed the free variation between downstep and no downstep when the Low tone is on the prefix (as for instance in isolation).

In words with monosyllabic roots the melody /L-/ + /LM/ surfaces as [L-M1]. The Low tone is not linked to the root anymore, which surfaces when the Low tone is de-linked from the prefix: that gives obligatory downstep.

If the underlying melody on lexical level would be /L-LM/, and the Low tone is still connected to the root, then de-linking the Low from the prefix shouldn't give the mandatory downstep. Therefore the Low tone is not linked to the root. We repeat an earlier example with the word *bìndū* 'tendons' with this obligatory downstep:



When the word was formed, and the prefix and root came together, the Low tone of the root merged with the Low tone of the prefix, and the Low tone was de-linked from the root:



/L-/ + /LM/ became /L-M/ lexically for monosyllabic noun roots.

### 3 Tone in noun phrases

In this section we will first look at the noun class system. Then specifiers, adjuncts and associative constructions will be described: what are the segments with their tones, and how do the tones on the nouns behave in these constructions.

#### 3.1 The noun class system

In Saari there is a noun class system. The classes pair up in singular and plural classes commonly referred to as genders. In the following table the different classes with their prefix and adjectival concord are given, plus the common class pairing.

Just like in noun class 7 and 8, the Low tone of prefixes is raised to Mid before a root that starts with a Mid or a High tone. In class 2 there are some exceptions to this rule.

Each class has its own concord markers, used when a noun of that class is head noun in a noun phrase or subject of a verb. For instance the adjectival concord, which is used in noun phrases with adjectives referring to the head noun. Examples of noun phrases with adjectival concord marker are:

Ø-nyìrì	wú wàŋ	a light parrot
c1-parrot	c1 light	
bè-nyìrì	bé gàa	red parrots
c2-parrots	c2 red	
bí	yí tíi	a black goat
c9-goat	c9 black	
bí	yí tíi	black goats
c10-goats	c10 black	

We will come back to this in the section about adjectives, 3.3.1.

Class	Prefix	Adj. Concd	Example	Gloss	Class	Prefix	Adj. Concd	Example	Gloss
1	Ø-	wú	kákwé	owl	2	bè-	bé	bèkákwé	owls
3	Cw-	wú	gwé	chin	4	Ø-	yí	gé	chins
5	Ø-	chí	núnú	knee	6	(final Vowel deletion)	yí	núnŋ	knees
5a	chì- <sup>13</sup>		chitá	fishbone					
6a	(mè)N-	mé	mfwé mēnjāŋ	sand castor oil					
7	kì-	kí	kífó kìŋkèrè kìmfimē	hat cripple lip,beak	8a 8a 8b	bì- bì- -u <sup>14</sup>	bí	bífó bìŋkèrè bìmfimū	hats cripples lips,beaks

<sup>13</sup> Class 5 consists of nouns with no prefix. Class 5a consists of a few nouns with the prefix chi-, most of which don't have a plural, like chibā 'eczema'. The two words with a plural are chitá 'fishbone' - its plural mēntá is in class 25 - and chikùu 'squirrel', plural mùchikùu is in class 26. It is questionable if chi- is a prefix in chikùu, if it is not a prefix than this is the only noun in the data of which low tone on the first syllable gets raised after a Mid or High tone. (This doesn't happen in class 1 and 9, and all other classes only have words starting with a Mid or High tone.) More research is needed here.

Class	Prefix	Adj. Concd	Example	Gloss	Class	Prefix	Adj. Concd	Example	Gloss
9		yí	dzè	road	10		yí	dzé	roads
14	bù-	bú	būshí	face	25	mèn-	mé	mēshí	faces
19	fí-	fí	fíníŋ	bird	26	mù-	mú	mūnínŋ	birds

Table 2. Saari noun class prefixes<sup>15</sup> and adjectival concord

The table will give the common gender pairings in one row. So a noun in class 1 takes its plural in class 2. Class 6a consists of mass nouns without a plural.

At this time it seems that class 6a has the same concords as plural class 25. We keep them separate, because class 6a consists of mass nouns while class 25 consists of plurals.

## 3.2 Noun and specifiers

This section describes nouns with determiners, demonstratives and possessives. With these there is more tone spreading than with the other modifiers that are described in the next sections.

### 3.2.1 Determiners and demonstratives

There are several determiners and demonstratives for noun classes 7 and 8:

class 7    class 8

$\left[ \begin{array}{c} - \\ - \end{array} \right]$      $\left[ \begin{array}{c} - \\ - \end{array} \right]$   
kírú    bírú    ‘the’

$\left[ \begin{array}{c} - \\ - \backslash \end{array} \right]$      $\left[ \begin{array}{c} - \\ - \backslash \end{array} \right]$   
kínî    bínî    ‘this/these’

$\left[ \begin{array}{c} \wedge \\ \backslash \end{array} \right]$      $\left[ \begin{array}{c} \wedge \\ \backslash \end{array} \right]$   
kě̀̀    byě̀̀    <sup>16</sup> ‘that/those, they can be seen’

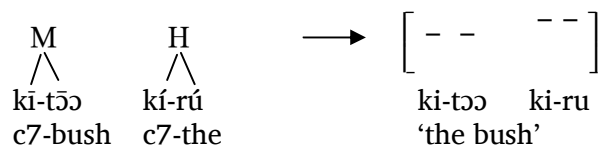
$\left[ \begin{array}{c} - \\ - \end{array} \right]$      $\left[ \begin{array}{c} - \\ - \end{array} \right]$   
kè̀̀    byè̀̀    ‘that/those, mentioned earlier (anaphoric)’

<sup>14</sup> Plurals with disyllabic roots in class 8b have the last vowel from their singular changed to u. For instance kīgɔ̀̀né / bīgɔ̀̀nú ‘hut’, kíkò̀̀mā / bìkò̀̀mū ‘silk-cotton tree’. Class 8b contains almost all nouns from class 7 ending in -ɛ, two nouns ending in -a, and one ending in -ɔ. Class 8a, where the last vowel of the plural is the same as in the singular, has two nouns ending in -ɛ, two ending in -a, none ending in -ɔ, and all nouns ending in other vowels. For all pairs of gender 7/8 see appendix 1.

<sup>15</sup> Low tone of prefixes are raised to Mid before a stem with a melody that starts with a Mid or High tone, there are some exceptions in noun class 2.

<sup>16</sup> Due to time-constraints this still needs checking for downstep in the word.

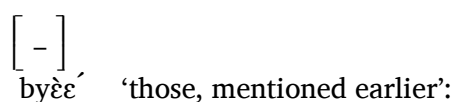
The specifier follows the noun it specifies, as in the next example:



In the next paragraphs we will discuss these different specifiers.

### 3.2.1.1 Anaphoric specifier, 'those mentioned earlier'

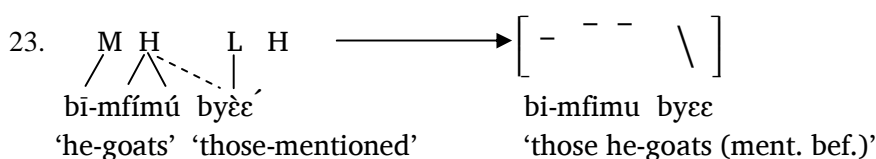
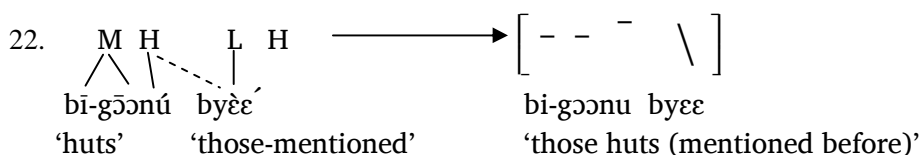
Saari has an anaphoric specifier, meaning the one or those that were mentioned earlier. The surface melody of the anaphoric specifier is influenced greatly by the last tone of the preceding word. The tonal behavior is the same for both genders (7 and 8), examples will be given for gender 8.



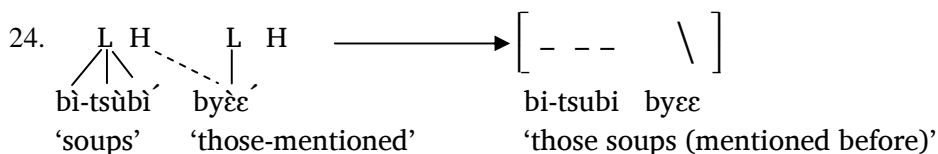
We will first look at words with a melody ending in a High tone:

underlying melody noun	surface melody noun	noun	gloss
/L-L <sup>H</sup> /	$\left[ - - - \right]$	bìtsùbì'	'soups'
/M-MH/	$\left[ - - \right] \sim \left[ - \backslash \right]$	bìwá	'mouths'
/M-H/	$\left[ - - - \right]$	bimfímú	'he-goats'

The last tone, therefore the High tone, of the noun will spread onto the anaphoric specifier.



If the last tone of the noun is a floating High, the floating tone grounds onto the anaphoric specifier.

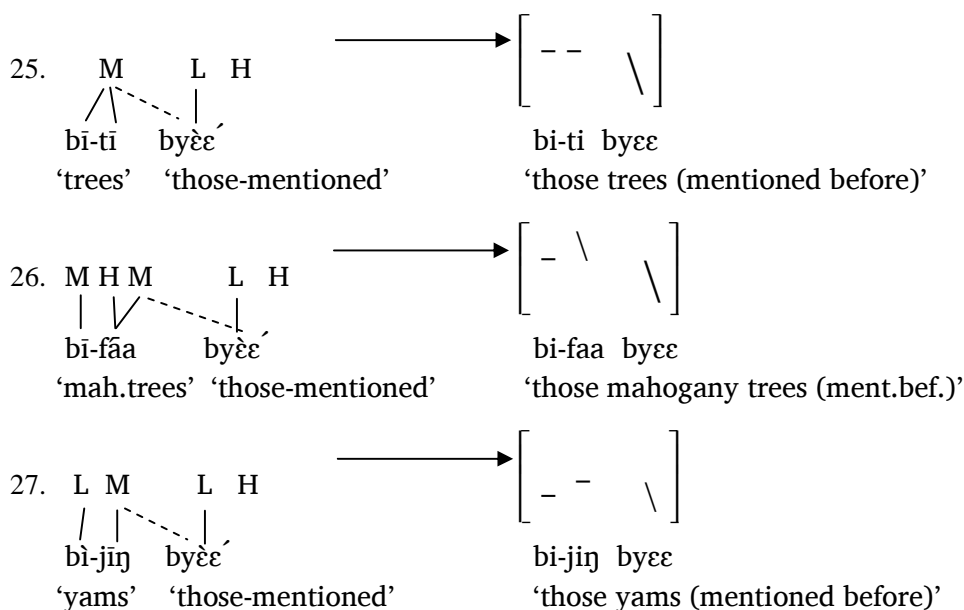


In paragraph 3.2.1.4 we will look more specifically at grounding rules for floating High tones.

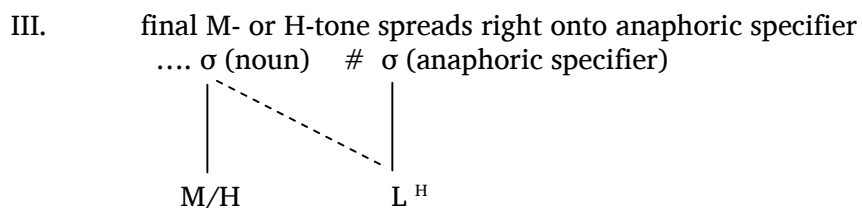
We will now look at words with a melody ending in a Mid tone:

underlying melody	surface melody	noun	gloss
/M-M/	[ - - ]	bī-tī	'trees, planks'
/M-HM/	[ - \ ]	bī-fāa	'mahogany trees'
/L-M/	[ - - ]	bī-jīŋ	'yams'

The final Mid tone of the melody of the noun spreads rightward:



In the last example, the Mid tone of the melody /L-M/ is lowered after the Low tone before it. The right-spreading of the final Mid and High tone of the noun onto the anaphoric specifier is stated in the following tone rule:

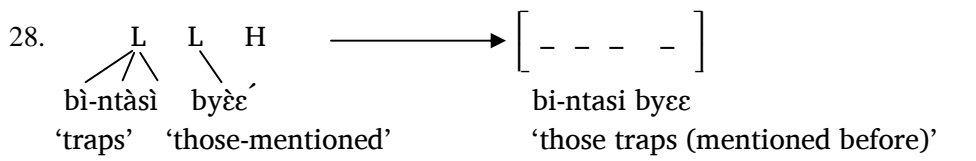
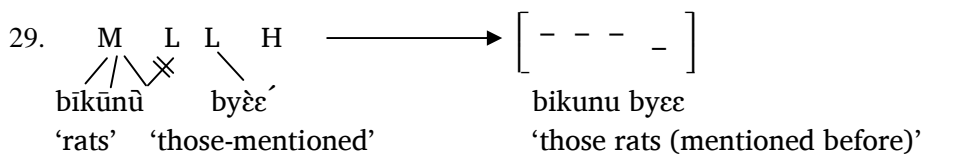
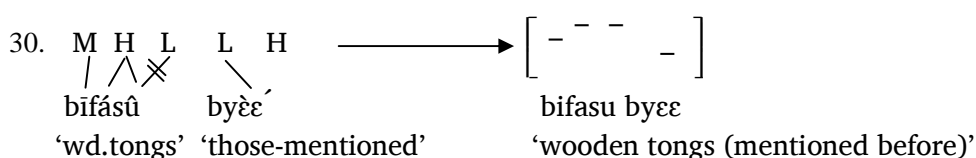


And finally we will look at words with a melody ending in a Low tone:

underlying melody noun	surface melody noun	noun	gloss
/L-L/	[ - - \ ]	bìntàsì	'traps'
/M-ML/	[ - - \ ]	bìkūnū	'rats'
/M-HL/	[ - - \ ]	bífásû	'wooden tongs'

Saari has contour simplification, meaning that if the melody of the noun ends in a ML or HL fall at the final syllable, than the Low de-links from the noun root: the fall on the final syllable has become a level tone.

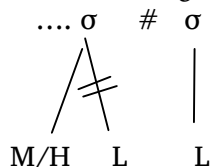
The fall at the end of the /L-L/ melody of b̀nt̀s̀ 'traps' has disappeared, because Low tones fall only utterance final. The Low tone of bỳè 'doesn't fall because it is followed by a floating High tone.

28. 
  
b̀nt̀s̀ bỳè
   
'traps' 'those-mentioned'
   
bi-ntasi bye
   
'those traps (mentioned before)'
29. 
  
b̀k̀ǹ bỳè
   
'rats' 'those-mentioned'
   
bikunu bye
   
'those rats (mentioned before)'
30. 
  
b̀f̀s̀ bỳè
   
'wd.tongs' 'those-mentioned'
   
bifasu bye
   
'wooden tongs (mentioned before)'

A tone rule for the contour simplification as seen in examples 29 and 30 above:

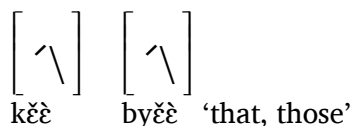
Contour simplification on final syllable of the word, if the next word starts with a Low tone:

IV. L-tone of falling tone on final syllable de-links and merges with following L-tone



### 3.2.1.2 Demonstrative ‘those (can be seen)’:

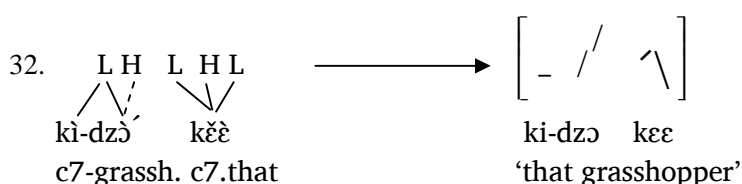
This demonstrative has the underlying melody /LHL/.



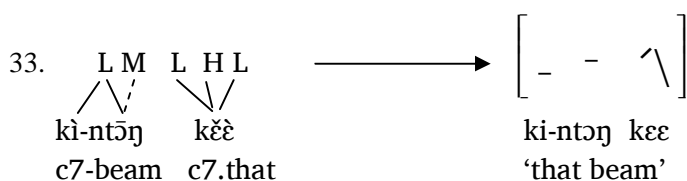
Because of contour simplification (see above) the final Low of kě̀̀̀ or byě̀̀̀ will be deleted when the word is not utterance final, as in the next example. We see that the underlying melody of byě̀̀̀ ‘those’ has a High tone before the final Low tone.



The underlying melody of kέε and byě̀̀̀  $\left[ \begin{array}{c} \wedge \\ \backslash \end{array} \right]$  ‘that, those’ starts with a Low, and not with a Mid tone – even though the surface melody does not show this Low tone. We can also see that it starts with a Low tone when it is preceded by a noun with melody /L-L<sup>H</sup>/, trapping the floating High tone between two Low tones. The floating High tone will ground to the left, at the end of the noun. In paragraph 3.2.1.4 the tone rules for grounding of floating High tones will be discussed.



The level of the Mid tone for nouns with the melody /LM/ will stay at the Lower Mid level, as [L-M1]. The Mid stays lowered, because it is followed by a Low tone.



### 3.2.1.3 Demonstrative ‘these’ and specifier or article ‘the’

The demonstrative kínî/bínî ‘this, these’ and the article kírú/bírú ‘the’ behave the same. They both have a High toned prefix, that can be lowered to a Low tone if the preceding noun ends in a Low tone. This lowering is optional. In other words, a final low tone on the noun spreads optionally to the right, delinking the High tone of the prefix. Examples are given below, examples 34, 35, 36 and 37.

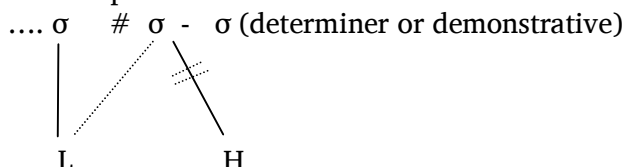
The dotted lines indicate that the spreading or de-linking is optional. However, if the Low tone spreads than the High tone does de-link.



34.  $\longrightarrow$   $\left[ \begin{array}{cc} - & - \\ - & - \end{array} \right] \sim \left[ \begin{array}{cc} - & - \\ - & - \end{array} \right]$   
 bi-ndooŋ bí-rú      bi-ndooŋ bi-ru      bi-ndooŋ bi-ru  
 c8-kites      c8-the      c8-kites c8-the      c8-kites c8-the
35.  $\longrightarrow$   $\left[ \begin{array}{cc} - & - \\ - & - \end{array} \right] \sim \left[ \begin{array}{cc} - & - \\ - & - \end{array} \right]$   
 kì-ndooŋ kí-ní      ki-ndooŋ ki-ni      ki-ndooŋ ki-ni  
 c7-kite      c7-this      c7-kite c7-this      c7-kite c7-this
36.  $\longrightarrow$   $\left[ \begin{array}{cc} - & - \\ - & - \end{array} \right] \sim \left[ \begin{array}{cc} - & - \\ - & - \end{array} \right]$   
 bì-bè bí-rú      bi-be bi-ru      bi-be bi-ru  
 c8-leaves      c8-the      c8-leaves c8- the      c8-leaves c8- the
37.  $\longrightarrow$   $\left[ \begin{array}{cc} - & - \\ - & - \end{array} \right] \sim \left[ \begin{array}{cc} - & - \\ - & - \end{array} \right]$   
 bī-fású bí-ní      bi-fasu bi-ni      bi-fasu bi-ni  
 c8-w.tongs      c8-these      c8-w.tongs c8-these      c8-w.tongs c8-these

Optional Tone rule:

- V. L-tone spreads right onto H-prefixed determiner or demonstrative, de-linking the High tone of the prefix.

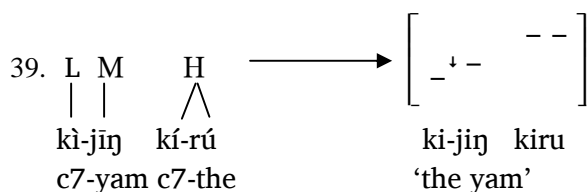


While a final Low tone on a noun can influence the (High) tone of the prefix of the determiner or demonstrative, a final Mid tone does not have any influence. The High tone of the prefix however can have an influence on the level (pitch) of the final Mid tone. If the Mid tone of the noun is a lowered Mid tone [M1], because the preceding tone is a Low tone, the High tone of the prefix may raise the level of the Mid tone back to [M2], the normal level of Mid.

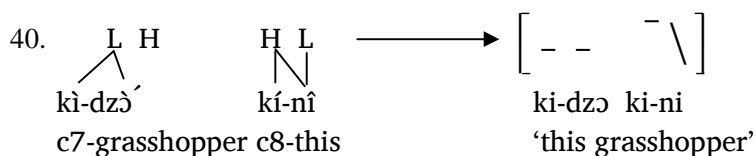
For instance the word kì-jìŋ ‘yam’ [L-M1]  $\left[ \begin{array}{cc} - & - \end{array} \right]$ . In the next example the lowered Mid tone is raised:

38.  $\longrightarrow$   $\left[ \begin{array}{cc} - & - \\ - & - \end{array} \right]$   
 kì-jìŋ kí-rú      kì-jìŋ kuru  
 c7-yam c7-the      ‘the yam’

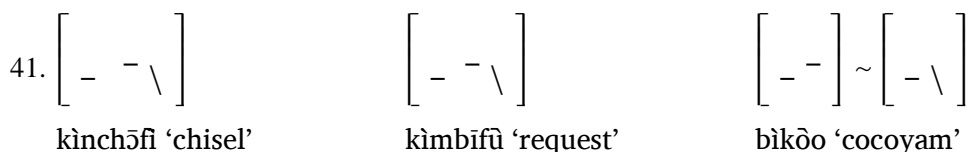
As stated in 1.4.1 this raising seems to be optional, in free variation with a downstep like in example 39.



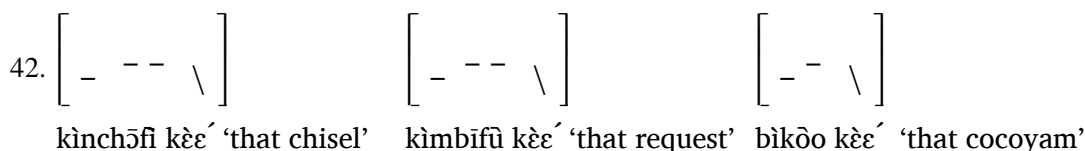
For noun melodies ending in a (floating) High tone, the High tone will merge with the High tone of the determiner or demonstrative.



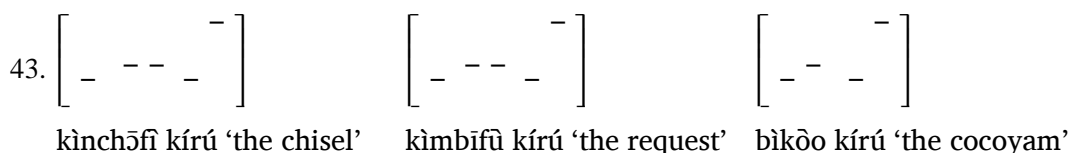
We have seen different rules for the demonstratives and specifiers, with a final Low tone on the noun spreading onto the (H-toned) prefix of the demonstrative kínî ‘this’ or kírú ‘the’ optionally, and a final Mid or High tone of the noun spreading onto the anaphoric specifier kèè´ ‘those’. There are some words that don’t behave according to our expectations, and therefore I don’t know what the underlying tone of the final syllable is. The tone marks on this syllable may not represent the underlying melody correctly. This concerns the following nouns:



A combination with the anaphoric specifier kèè´ ‘that’ will give a [M1L] fall on the specifier, indicating Mid spreading from the noun (see the next example). To start the specifier kèè´ ‘that’ with a Low tone is wrong in this combination. This all would mean that the final tone of the noun melody is a Mid tone.

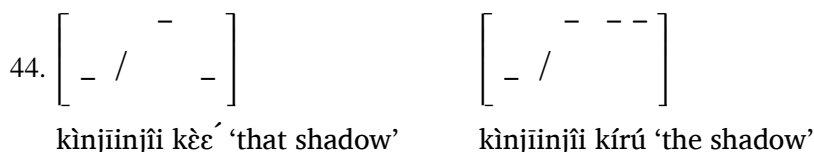


However, if the noun is followed by kínî or kírú there is Low-tone spreading from the noun onto the High toned prefix (optional). This indicates that the noun melody is ending in a Low tone.



It is not clear what the reason for this tonal behaviour is.

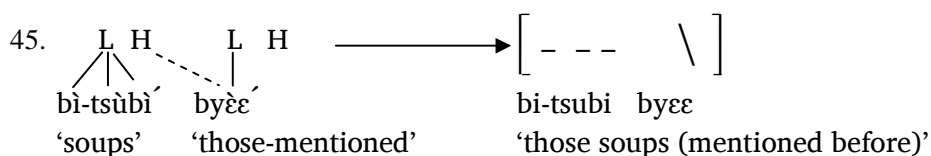
The word kìnjīnjī ‘shadow’ is the opposite, because with the anaphoric specifier kèè´ ‘that’ there is no Mid or High tone spreading, indicating a final Low tone. With kínî or kírú there is no Low-tone spreading from the noun onto the High toned prefix. This indicates that the noun melody is not ending in a Low tone.



With the possessive pronouns we will see that they behave differently before the demonstratives as well.

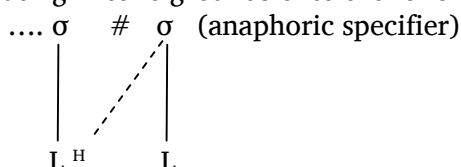
### 3.2.1.4 Grounding rules for floating High tones

The preferred direction of grounding for a floating High at the end of a word is to the right. It will ground to the right if there is the anaphoric specifier, like in example 45:

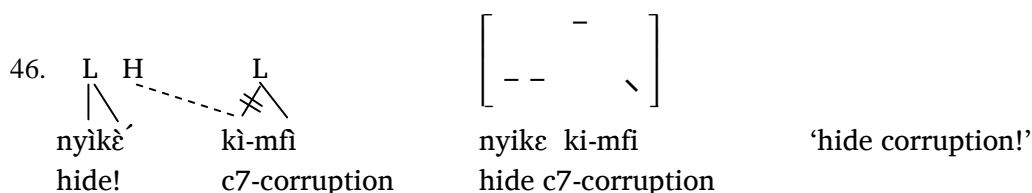


This gives us the following tone rule:

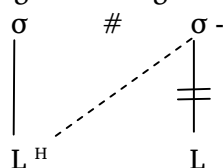
VI. Floating H-tone grounds onto the following anaphoric specifier



It also will ground to the right if there is a Low toned prefix to dock onto, like in the next example. Here the floating High tone is part of the melody of an imperative form of a Low tone verb, melody  $L^H$ .

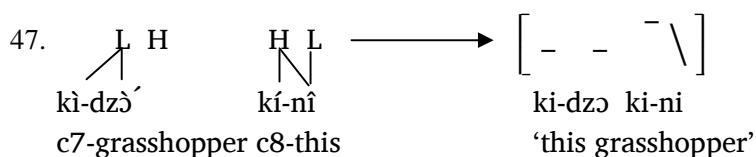


VII. Docking of floating H-tone of  $L^H$  melody when followed by a Low toned prefix



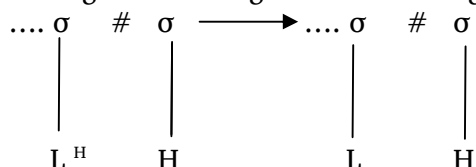
The environments above are the same situations where High tone spreading to the right would occur, if the High tone would not be floating.

If there is a High tone to the right of the floating High tone, the floating High tone will dock to the right and the two High tones will merge, like in example 47:



This gives us the following tone rule:

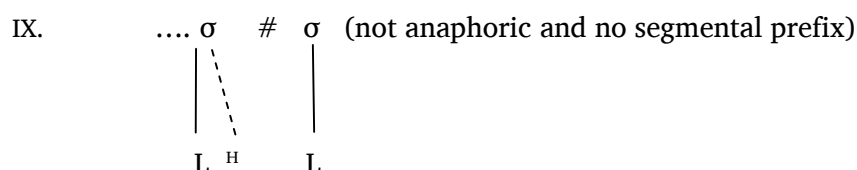
VIII. Floating H-tone merges with following H-tone



If it can not merge to the right or ground to the right, and it is between two Low tones, it will ground to the left on the last syllable of the noun, giving a LH-rise on that syllable, see example 48 below.



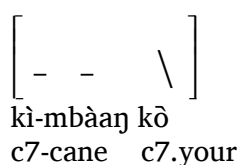
Floating H-tone docks on the previous L-toned syllable when followed by a word of which the melody starts with a Low tone, and the word does not have a segmental prefix and is not the anaphoric specifier.



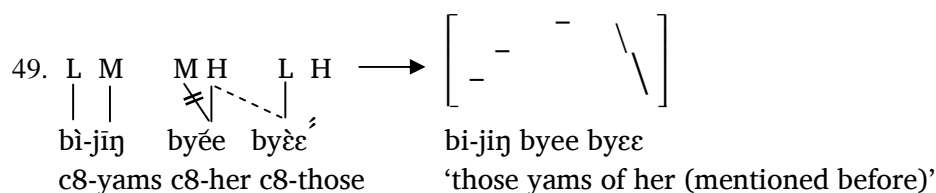
This ends the tone rules for the grounding of floating High tones.

### 3.2.2 Possessives

A noun with a possessive pronoun has the structure N + Poss, with the possessor following the possessed noun:



All the melodies of the possessive pronouns for gender 7/8 start with a Mid tone. Only the plural persons have a prefix *kī-/bī-*, the singular persons have just *k-/by-*, however the Mid tone is still there at the start of the word. The final tones of the possessive pronouns have been checked by adding the anaphoric specifier *kèé/byèé* 'that/those' to the right. If the melody of the possessive pronoun ends with a Mid or High tone, this tone spreads onto the anaphoric specifier, like in the next example.



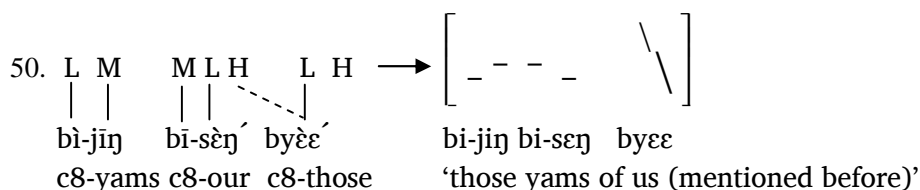
The possessive pronouns for gender 7/8 are given in the next table, after the table we will discuss the underlying melodies.

noun class	my	your (sg.)	his/her	our	your (pl.)	their
surface tone	[ \ ]	[ \ ]	[ \ ]	[ - \ ] ~ [ - ]	[ - \ ] ~ [ - ]	[ - \ ]
7	kɛ̃ŋ /ML/ or /M/	kɔ̃ /ML/or /M/	kɛ́e /MH/	kisɛ̃ŋ /M-L <sup>H</sup> /	kinɛ́e /M-L <sup>H</sup> /	kibɛ́e /M-HL/
8	byɛ̃ŋ /ML/ or /M/	byɔ̃ /ML/ or /M/	byɛ́e /MH/	bisɛ̃ŋ /M-L <sup>H</sup> /	binɛ́e /M-L <sup>H</sup> /	bibɛ́e /M-HL/

Table 3. Possessive pronouns gender 7/8

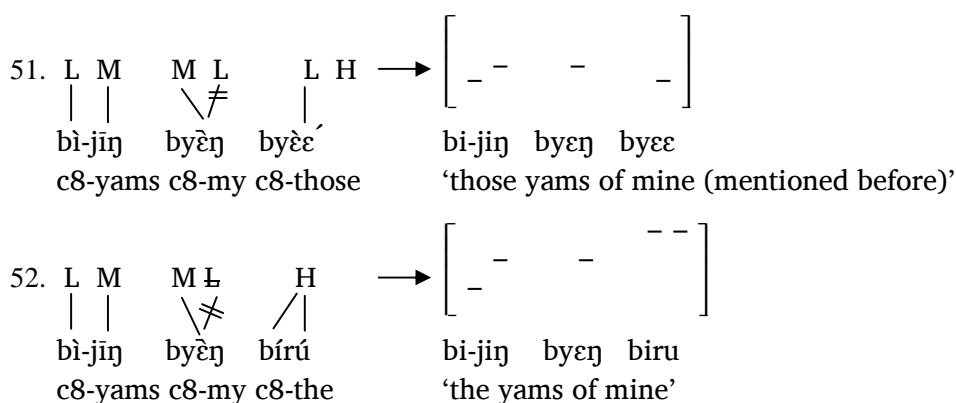
The melody for ‘their’ is straightforward.

The possessive pronouns *kisɛ̃ŋ* / *bisɛ̃ŋ* ‘our’ and *kinɛ́e* / *binɛ́e* ‘your (pl.)’ have two different surface melodies. When it is followed by the anaphoric specifier *byɛ́e* ‘those’ we can see that a High tone spreads from the possessive pronoun onto the anaphoric specifier (see example 50). At this time it is not clear why there is a surface melody ending in a Low tone, and I will not attempt to explain the presence or absence of the final Low tone



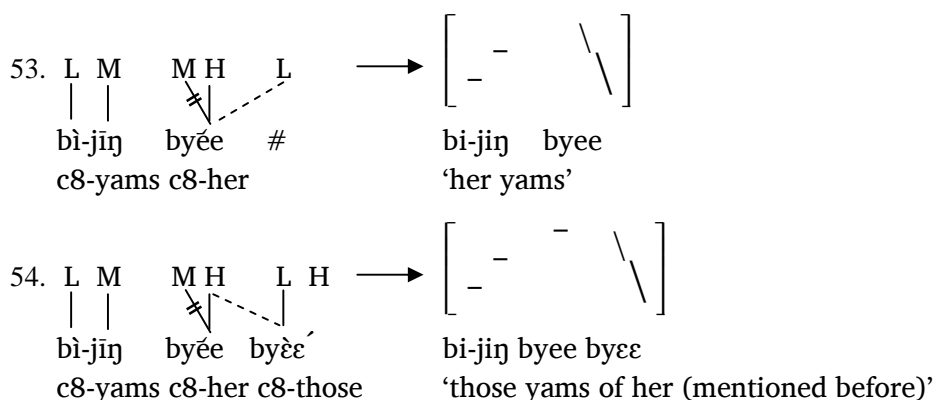
The underlying melody of the monosyllabic pronouns *kɛ̃ŋ/byɛ̃ŋ* ‘my’ and *kɔ̃/byɔ̃* ‘your’ seems to be straightforward. There is no Mid or High tone spreading from the possessive pronoun onto the next word, indicating a Low tone as final tone of the melody, see the next example. However, with the article *bírú* ‘the’ after it, the tone on the prefix will not become a Low tone, which normally indicates that there is no final Low tone, see example 52<sup>17</sup>.

<sup>17</sup> In example 52 we even see that the High tone after the Mid tone –that was [M1] in example 51 - raises the Mid tone again to [M2] level. This is what we have seen in for instance example 38. But the interesting thing is that in this case we suspect a Low tone after the Mid tone. So if there was a Low tone between the Mid and High tone it is completely deleted via contour simplification (tone rule X).



At this moment it is not clear why there is no Low tone spreading from the possessive onto the word *bírú* ‘the’. This needs more investigation. For now we assume that the melody ends in a Low, since the right spread of tones onto the anaphoric specifier happens always, and the right spread of a Low tone on the article *bírú* only happens optionally.<sup>18</sup>

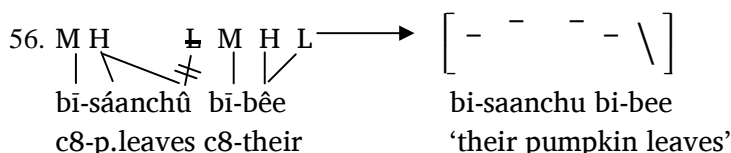
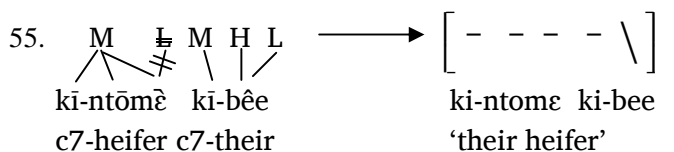
The underlying melody for *kée/byée* ‘his/her’ ends in a High tone, which spreads rightward as in example 54 below. The final Low tone is only inserted in utterance final position, as we have seen with the /MH/ melody of the nouns (see section 2.2.2.3). This is demonstrated in example 53 below. The difference with the nouns is, that this insertion of the Low tone is not optional.



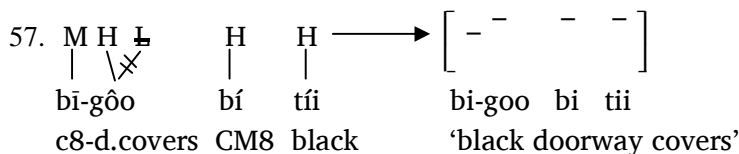
Because all the other possessive pronouns start with a Mid tone, it is likely that there is a Mid toned prefix, and the melody of this word would start with a Mid tone as well. With the nouns of gender 7/8 we have seen that if the melody of the noun root ends in /MH/, then there is free variation between a [H] and a [HL] utterance finally. There is no free variation in the melody of *kée* and *byée* ‘his, her’ utterance finally, the melody always ends in [HL]. However, with the underlying melody ending in a /H/, probably starting with a /M/, and [HL] being a valid variant of the melody /MH/ utterance finally we assume that /MH/ is the actual underlying melody of the word. The difference in behaviour, giving no free variation, may result from the fact that there is only one syllable here, including the prefix.

<sup>18</sup> For reference: in examples 43 and 44 we saw some nouns where the melodies behaved differently in the frames than expected.

In the combination N + Poss. we can clearly see contour simplification, where HL and ML at the final syllable of the noun become H and M when they are not utterance final. Examples:

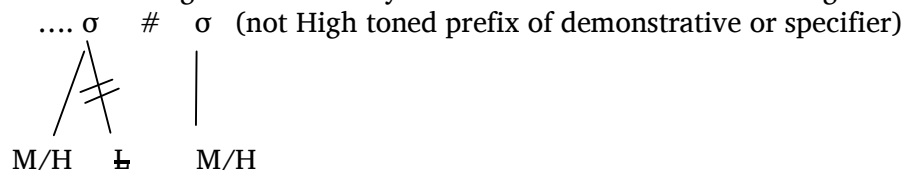


If the Low tone only was de-linked and set afloat, we would expect the Low tone between two Mid tones to have some effect, for instance downstep. But even when contour simplification would happen between two High tones, the Low tone would not have any effect. We give example 62 of the paragraph about adjectives to show this.



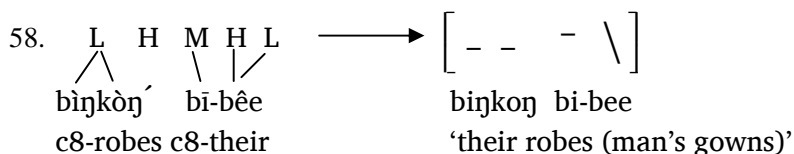
Therefore we state that it is deleted instead of being set afloat. Tone rule:

- X. L-tone of falling tone on final syllable is deleted before a following M or H tone.



This tone rule is similar to rule IV, where the Low tone would de-link and merge with a following Low tone.

A floating High tone at the end of a noun will not surface when the noun is followed by a Mid tone. It will not ground. It either is deleted or stays floating with no effect.



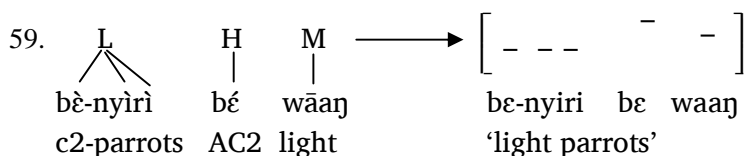
### 3.3 Noun and adjuncts

In this paragraph I will describe the combination of nouns with adjectives and nouns with numerals.

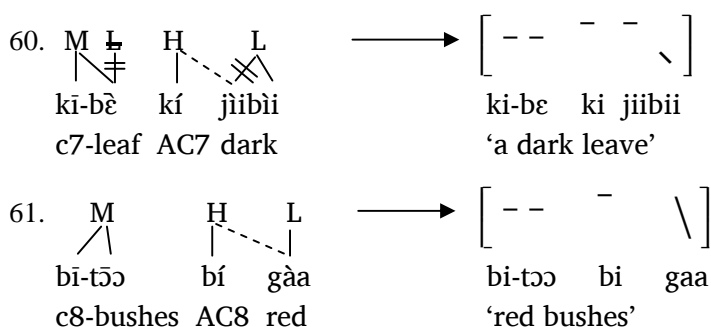
### 3.3.1 Adjectives

In Noni (also an Eastern Beoid language) most adjectives are derived from verbs (Hyman, 1981), and only one true adjective is found. In Saari more data needs to be gathered in order to establish whether there are true adjectives.

Noun phrases with adjectives that are derived from verbs have the form: Noun AC Adjective, in which AC is the adjectival concord marker, and AC follows the class of the head noun. This is clear in examples 59, 60 and 61:

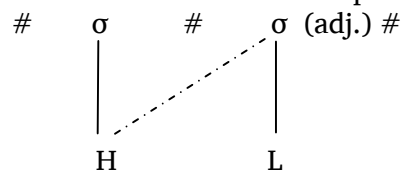


At this point it is good to state that the AC may be a prefix or a particle, no study has been done into that area. In examples 60 and 61 there is tone spreading from the adjectival concord marker rightwards onto the adjective: the High tone spreads one syllable rightward, de-linking the Low tone of the first syllable if the adjective is polysyllabic. In example 60 we also see contour simplification on the noun (as discussed earlier with tone rule X in the previous paragraph).

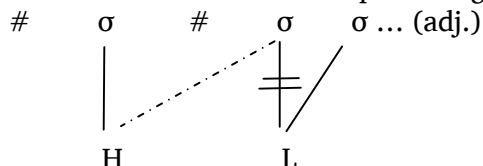


This gives the next tone rules:

- XI. H-tone of Concord marker spreads rightward onto adjective



- XII. H-tone of Concord marker spreads rightward onto adjective and delinks L-tone

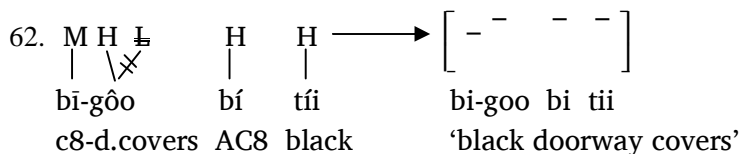


Let us go back to examples 60 and 61, but this time looking at the tones of the nouns. The surface tone of the noun phrase is the same, for the noun with underlying /M-M/ and underlying /M-ML/ melody the surface melody in this context is [M2-M2], with the same



impact on the tones of the following words. Here we see clearly what was already stated in the previous paragraph: the final Low tone of the noun in example 60 is de-linked and deleted.

An example of Low tone deletion between two High tones is given in example 62.

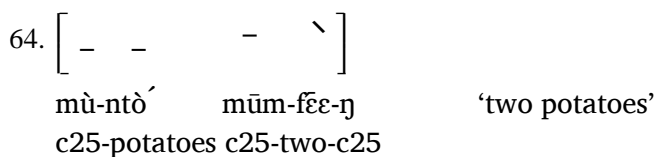
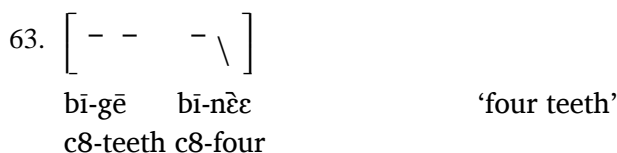


For the tone rule we refer to rule X of the previous paragraph.

### 3.3.2 Quantifiers

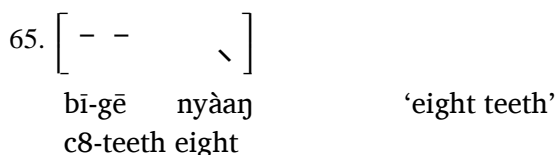
In this section we will look at nouns with the quantifiers 'many' and 'all' and nouns with numbers.

For the numbers 1 up to 5 there is a class marker on the number, at least a prefix, and sometimes a suffix as well. The class markers for gender 7/8 are *kī-* and *bī-*.

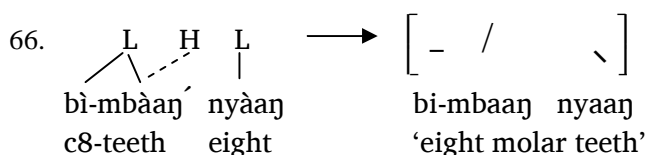


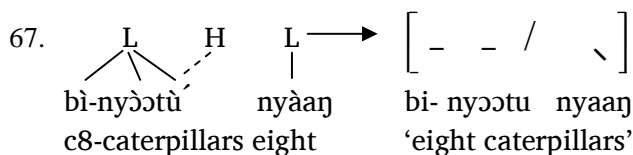
We will give examples of all five numbers later.

For numbers 6 and higher the noun is followed straight by the number.

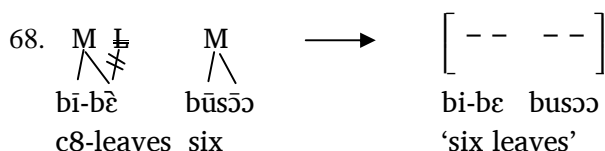


The next examples will show some tone phenomena we covered earlier in this paper. Examples 66 and 67 show grounding of the floating High tone to the left when it is between two Low tones, and it cannot ground to the right (see tone rule IX). It is not possible for the floating High tone to ground on the Low toned numeral.





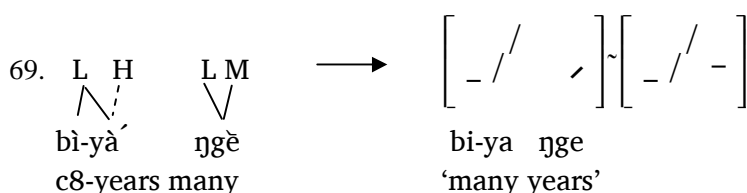
Example 68 shows tone rule X: the word-final Low tone is deleted before a Mid tone.



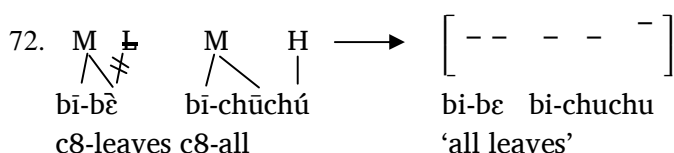
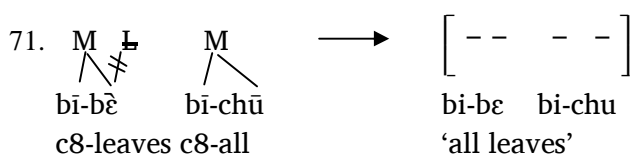
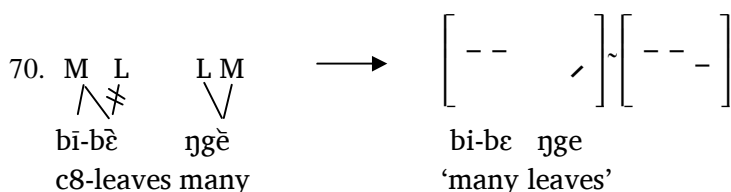
### 3.3.2.1 Non specific quantifiers

Some quantifiers behave the same as the higher numbers, there is no class marker.  $\eta\grave{\text{g}}\grave{\text{e}}$  [ , ] or [ - ] 'many' and  $\text{n}\acute{\text{i}}\eta$  'few' fall into this category. The word  $\text{ch}\acute{\text{u}}$  or  $\text{ch}\acute{\text{u}}\text{ch}\acute{\text{u}}$  'all' does use a class marker.

The word  $\eta\grave{\text{g}}\grave{\text{e}}$  'many' in example 69 can take either of the two mentioned surface tones, it is free variation. The underlying melody is /LM/. The starting Low tone shows itself very clearly when the quantifier is preceded by a word with a  $L^H$  melody, like in the next example. The Low tone on  $\eta\grave{\text{g}}\grave{\text{e}}$  forces the floating High before it to dock on the previous syllable.

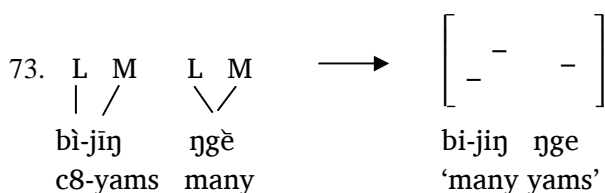


Other examples, with contour simplification on the final syllable of the first word, are given below. The Mid tone of  $\eta\grave{\text{g}}\grave{\text{e}}$  is a lower Mid because it is following a Low tone.



There is one tone combination that gives a different surface pattern than expected: /L-M/ with /LM/ does not give [L M1 LM1] but [L M2 LM1]. For unknown reasons the Mid tone of the first /LM/ melody is raised again to [M2] level. See example 73. We will see later in example

80 that there the combination /LMLM/ also has surface tones [LM2LM1]. This needs more investigation, if this is something happening wherever /LM/ and /LM/ come together.

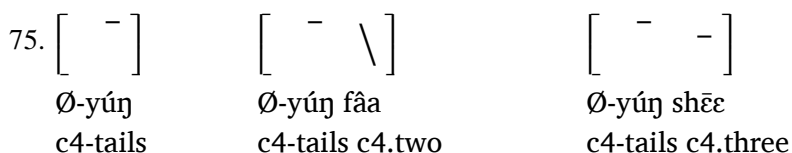
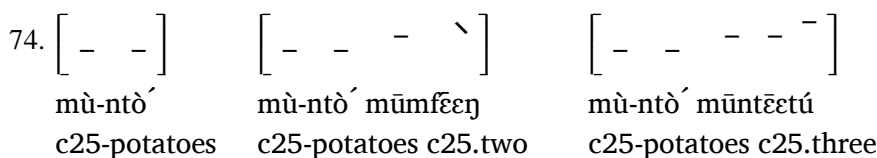


### 3.3.2.2 Numerals one to five

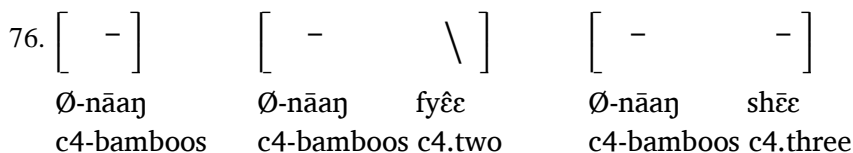
The numbers one to five in isolation are as follows:

$[ \quad - ]$	$[ \quad - ]$	$[ \quad - ]$	$[ \quad \backslash ]$	$[ \quad \backslash ]$
mkpāŋ 'one'	fée 'two'	tēε 'three'	nēε 'four'	tĩŋ 'five' <sup>19</sup>

When looking at the numbers two to five as they modify nouns of different noun classes, it shows that numbers have different forms depending on the word class or even on the specific word they count. Examples are given for numbers 'two' and 'three' in examples 74-77 below. There are class agreement prefixes and suffixes. We will not go into the underlying prefixes, we just are showing the differences here and then discuss noun classes 7 and 8.



For noun class 4 the numbers may vary according to the noun they modify. This needs further investigation. Some examples are given below.



<sup>19</sup> Underlying melody of [HL] can be /MH/ with Low tone inserted utterance finally after the High or /HL/

77. $\left[ \begin{array}{c} - \\ - \end{array} \right]$	$\left[ \begin{array}{c} - \\ - \quad \backslash \end{array} \right]$	$\left[ \begin{array}{c} - \\ - \quad - \end{array} \right]$
Ø-téɛŋ	Ø-téɛŋ fâa	Ø-téɛŋ shĕɛ
c4-latrines	c4-latrines c4.two	c4-latrines c4.three

It is clear that some of the numbers take class markers, and in class 4 the vowel of the number can be different from one noun to the next, which as mentioned above needs more research.

We will describe what we found for gender 7 (number ‘one’) and 8 (higher numbers).

We start with the number mkpāŋ ‘one’. For every noun class the number ‘one’ is mūmkpāŋ, preceded by an agreement marker. It is possible that mumkpaŋ is a long form, and Saari only uses the final syllable in isolation.<sup>20</sup> The surface tone for mkpāŋ is [M2], the higher Mid. When the whole word is used as in example 78, the surface tone is [M1] due to downstep (see example 79, a following H is lowered too). It is not clear what the origin is of the floating Low tone that is giving the downstep.

78. $\begin{array}{c} M \quad \text{H} \quad M \quad L \quad M \\ \diagdown \quad \diagup \quad \diagdown \quad \diagup \\ \text{kī-bĕ} \quad \text{kī-mū}^+ \text{mkpāŋ} \end{array}$	→ $\left[ \begin{array}{c} - - - - - \\ - \end{array} \right]$	
kī-bĕ kī-mū <sup>+</sup> mkpāŋ	ki-bɛ ki-mumkpaŋ	‘one leaf’
c7-leaf c7-one		

79. $\begin{array}{c} M \quad \text{H} \quad M \quad L \quad M \quad H \\ \diagdown \quad \diagup \quad \diagdown \quad \diagup \quad \diagdown \quad \diagup \\ \text{kī-bĕ} \quad \text{kī-mū}^+ \text{mkpāŋ} \quad \text{kí-rú} \end{array}$	→ $\left[ \begin{array}{c} - - - - - \\ - \quad - \quad - \quad - \quad - \end{array} \right]$	
kī-bĕ kī-mū <sup>+</sup> mkpāŋ kí-rú	ki-bɛ ki-mumkpaŋ ki-ru	‘the one leaf’
c7-leaf c7-one c7-the		

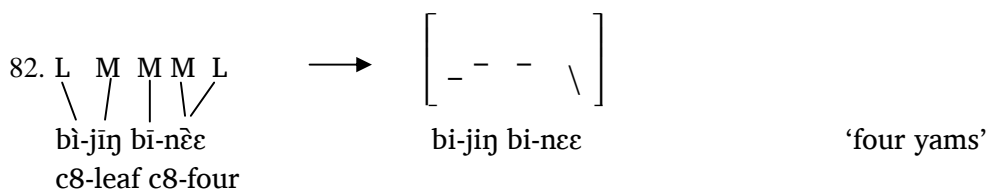
Example 80 shows that the surface tone of kī-jīŋ ‘yam’, which normally would be [L-M1] unless it is followed by a High tone, is raised to [M2] level. This was seen before, when /LM/ and /LM/ came together (we have seen this in example 73).

80. $\begin{array}{c} L \quad M \quad M \quad L \quad M \\ \diagdown \quad \diagup \quad \diagdown \quad \diagup \\ \text{kī-jīŋ} \quad \text{kī-mū}^+ \text{mkpāŋ} \end{array}$	→ $\left[ \begin{array}{c} - - - - - \\ - \end{array} \right]$	
kī-jīŋ kī-mū <sup>+</sup> mkpāŋ	ki-jij ki-mumkpaŋ	‘one yam’
c7-yam c7-one		

Examples with the numbers féɛ ‘two’ and nĕɛ ‘four’ are given below, the prefix is bī- in both cases, the suffix is a Mid tone for ‘two’, and nothing is changing for ‘four’. I did not check if there is a floating tone at the end of the phrase.

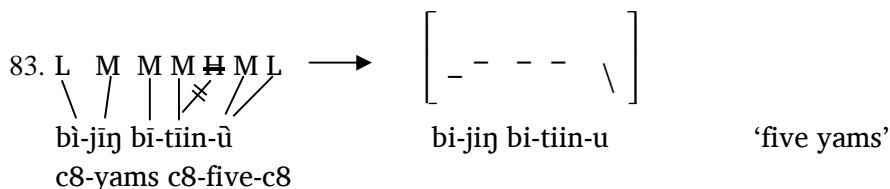
81. $\begin{array}{c} L \quad M \quad M \quad H \quad M \\ \diagdown \quad \diagup \quad \diagdown \quad \diagup \quad \text{---} \\ \text{bī-jīŋ} \quad \text{bī-fĕɛ-} \end{array}$	→ $\left[ \begin{array}{c} - - - \backslash \\ - \end{array} \right]$	
bī-jīŋ bī-fĕɛ-	bi-jij bi-fɛɛ	‘two yams’
c8-leaf c8-two-c8		

<sup>20</sup> According to Tabah, 2012, the number ‘1’ is mū in Chung, another Beboid language.



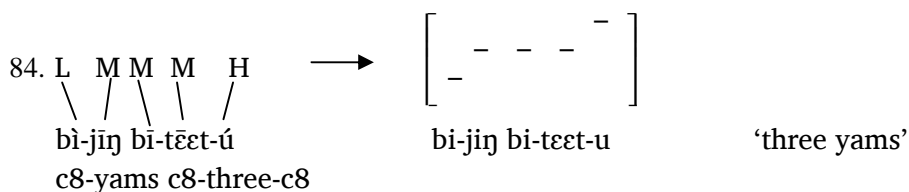
Numbers tɛɛ ‘three’ and tiŋ [HL] ‘five’ have the same prefix bì-, and they have a suffix. The suffix of ‘five’ is -u, and there is vowel lengthening: tiŋ becomes bitiinù. The underlying tone for tiŋ [HL] ‘five’ is /MH/, with an inserted Low tone utterance finally (tone rule I). The Mid tone is deleted because it is a monosyllabic root (tone rule II, see 1.4.3 for the surface melodies of /MH/). The melody of tíŋ ‘five’ together with the suffix becomes bitiinù. Probably /MH/ and /ML/ gives /MH-ML/, in which the High tone between the two Mid tones is deleted, giving /M-ML/ (see example 83).

The place of articulation of the nasal is different when it is syllable finally or between vowels. The root /tin/ becomes /tiŋ/ when it is not followed by a suffix, since /n/ is not allowed syllable finally and /ŋ/ is allowed. We see the same change of the nasal when nouns lose their final vowel in gender 5/6, for instance class 5 tɛnɛ ‘pot’, class 6 tɛŋ ‘pots’.



The word tɛɛ ‘three’ has as root /tɛɛt/, which becomes /tɛɛ/ in isolation, for the /t/ is not allowed syllable finally. Followed by the agreement suffix -ú this will give bì-tɛɛt-ú.

The next example shows the number ‘three’ with the word for ‘yams’.



An overview of the numbers with their lexemes in isolation and when modifying a noun of gender 7/8 is given in the table below. The third column gives the different morphemes, and the final column the resulting word.

Numeral	in isolation	nr. with noun, morphemes	nr. with noun, resulting word
‘one’	mkpāŋ	kī- + mū + `mkpāŋ	kīmū`mkpāŋ
‘two’	fɛɛ	bī- + fɛɛ + -	bīfɛɛ
‘three’	tɛɛ	bī- + tɛɛt + -ú	bītɛɛtú
‘four’	nɛɛ	bī- + nɛɛ	bīnɛɛ
‘five’	tíŋ	bī- + tɪin + -ù	bītɪinù

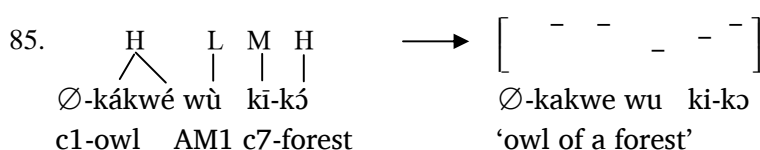
Table 4: numbers for noun class 7 and 8

### 3.4 Associative constructions

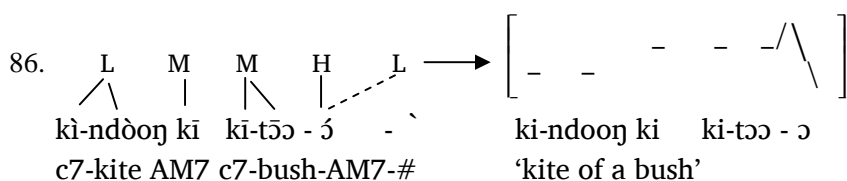
In this section the associative construction will be discussed. First the structure of the construction will be demonstrated for different noun classes. The first subsection will investigate the underlying melody of the final clitic. The next subsection will demonstrate that it is indeed a clitic and not a suffix. Then the Mid-tone spreading from the associative marker onto the second noun will be demonstrated, and finally the interaction between the melody of the final noun and the clitic will be discussed.

Associative Noun Phrases in Saari have the structure: NP1 AM NP2 (-V( )), in which the Associative Marker “AM” follows the class of the head noun of NP1. For some classes there is a clitic at the end of the second noun phrase, which lengthens the vowel of the final syllable.<sup>21</sup>

In the next example the head noun belongs to noun class 1, there is no vowel lengthening.



Example 86 demonstrates an associative phrase with the head noun belonging to noun class 7. This example is repeated and discussed after table 5 below. The vowel of the second noun is lengthened, and a High tone is attached. The Low tone after the clitic is a boundary tone.

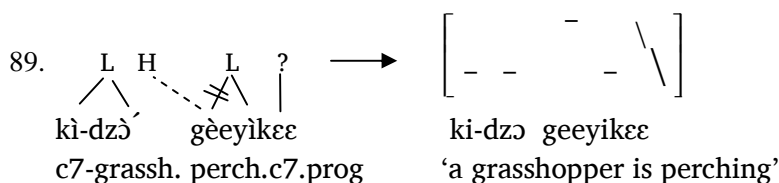


In the table below the different associative markers per noun class are listed, together with the adjectival concord marker of that class. The associative marker is only used in the associative construction, adjectival concord markers are used between nouns and adjectives. We see that the -V clitic is not used with the Associative marker wu or yi, no matter what the tone on this associative marker is. These (wu and yi) are the only associative markers that can have a Mid tone or a Low tone – depending on the noun class. All the other associative markers have a Mid tone.

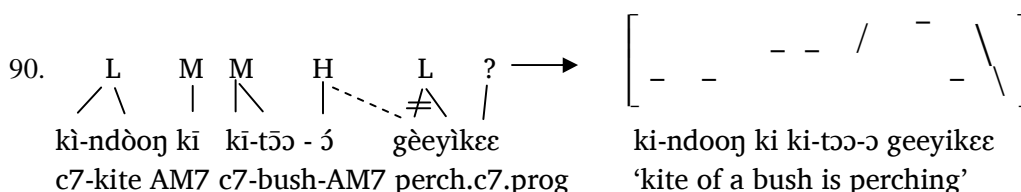
Class	Associative marker	Adjectival Concord	Class	Associative marker	Adjectival Concord
1	wù	wú	2	bē -V( ̣)	bé
3	wū	wú	4	yī	yí
5	chī -V( ̣)	chí	6	yī	yí
6a	mē -V( ̣)	mé			

<sup>21</sup> Other Beboid languages will have a particle CV after the second noun phrase, instead of vowel lengthening.



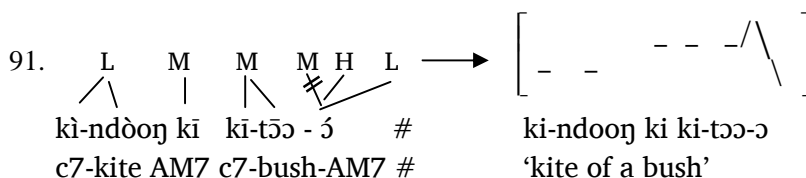


By putting this verb after the associative phrase, a final High tone will spread onto the verb. We saw a [HL] surface tone at the end of the associative phrases utterance final, as in example 87 with a noun with /M-M/ melody, and now we can see that the melody ends with a High tone, see example 90.



Since the high tone spreads, we assume that the Low tone from example 87 is not part of the clitic -V́, and for now we assume it is a boundary tone.

Another explanation of the falling tone utterance finally is a /MH/ melody on the clitic -V. When we looked at the melodies of the noun roots, we saw that /MH/ at the end of the melody would surface as [HL] or [H], with free variation between the two surface melodies utterance finally. In the case of the associative construction the only surface melody is [HL]. In the next example the surface tones on the second noun are first of all the Mid tone of the noun, then the /MH/ melody of the associative marker, surfacing as [HL].



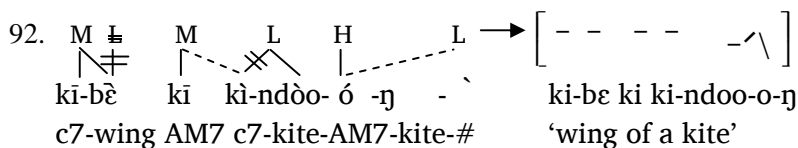
At this moment it is not certain which of the two analyses is the right one, we will continue writing it as if the tone on the clitic is High, with a Low boundary tone.

### 3.4.2 The associative clitic, lengthening vowels in closed syllables

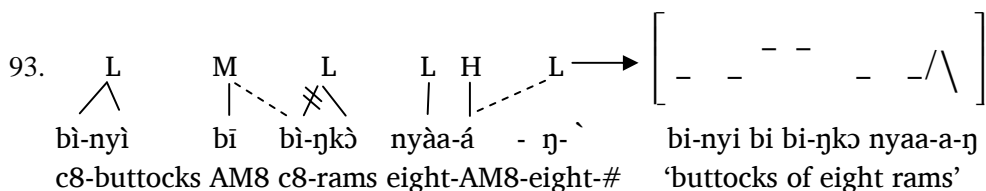
The associative markers of gender 7/8 are a marker kī/bī between the two noun phrases, and -V́ at the end of the noun phrase. If the final syllable is a closed syllable, and therefore ending with ŋ, which is the only consonant that is allowed syllable finally, the final nasal will come after the extra vowel.

The next example of an associative phrase has an NP2 with a closed syllable at the end. The final Low tone of N1 kībɛ̃ is de-linked and deleted, via contour simplification in non-utterance final position (see tone rule X earlier). The Mid tone of the associative marker kī spreads unto the Low-toned prefix of the following noun. The surface tones on the second noun are first of all the raised prefix tone, then the Low root tone, then the High tone of the associative marker and finally the Low boundary tone. Because the High tone is between two Low tones, it only reaches the Mid level.



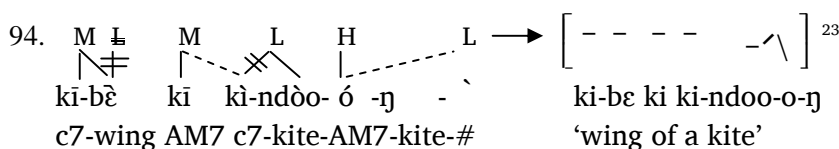


The next example will show that the second part of the associative marker, the  $-\acute{V}$ , comes at the end of the second noun phrase, and not at the end of the noun. Therefore it is a clitic and not a suffix.

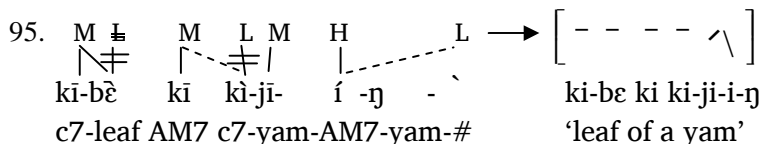


### 3.4.3 Tone spreading from Associative Marker

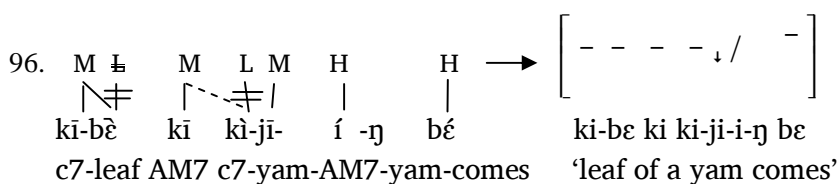
As we have seen before the Mid tone of the associative marker will spread onto a Low toned prefix of a following noun, delinking the Low tone. This is shown in example 94 below:



In case the root of the following noun does not start with a Low tone, the Low tone is set afloat, causing downstep in some environments. See the next example:



In the above example there is no downstep, in the example below there is optional downstep. I cannot explain this.



The tone rule for this Mid-tone spreading is:

- XIII. M-tone of associative marker spreads rightward onto Low toned prefix of the following word and delinks L-tone



<sup>23</sup> The High tone between two Low tone only reaches the Mid-level.

In order to be able to compare it with what happened with the adjectival concord marker, I will repeat what happened there. The tone of the adjectival concord marker spreads onto the first syllable of the adjective, delinking the tone if the adjective has more than one syllable. It is similar, but in this case the tone spreads onto a prefix, always delinking the Low tone.

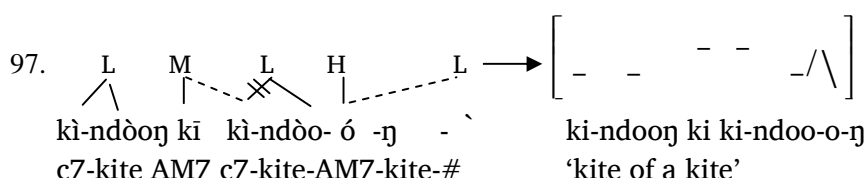
### 3.4.4 Interaction between melody of noun with melody of clitic

We will now look at the way the tone of the noun of the second noun phrase interacts with the tone of the clitic  $-\acute{V}$ . The nouns are grouped together according to the last tone of NP 2.

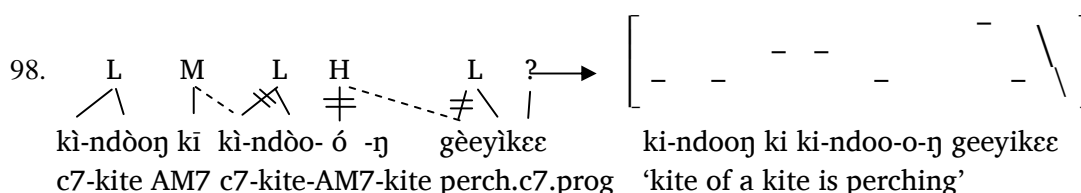
#### 3.4.4.1 Melodies ending in a Low tone: /L-L/, /M-HL/, and /M-ML/

First we look at the way a final Low tone of NP2 interacts with the tone of the clitic  $-\acute{V}$ .

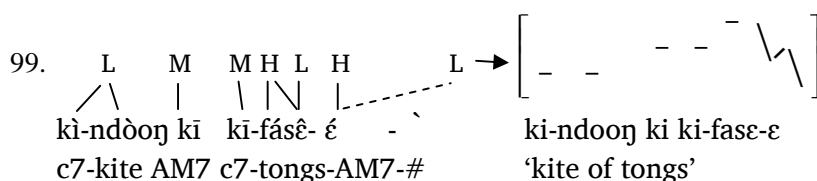
We already have seen nouns with /L-L/ melody, but will repeat this melody in the next example.



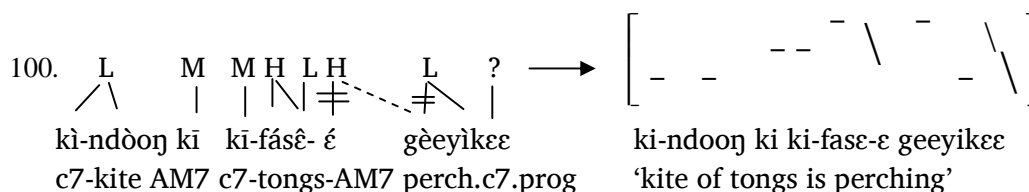
When the associative phrase is followed by the progressive form of the verb 'to perch', the High tone of the associative clitic spreads onto the first syllable of the verb. As shown in the following example, the High tone also de-links from the noun. So in effect the High tone moves to the first syllable of the verb.



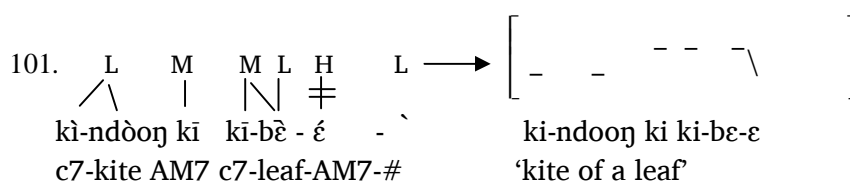
The next example has a noun with melody /M-HL/ as second noun. The /-H-L/ melody is attached at the end, giving /HL-H-L/ on the final syllable. It is realized as a fall with a small rise in between, the first fall doesn't fall all the way to the Low tone, and the rise between the two Low tones only reaches the Mid tone. /LHL/ normally surfaces as [M1M2L], therefore this melody is not very surprising, though the writer is surprised by the complexity of the surface melody.



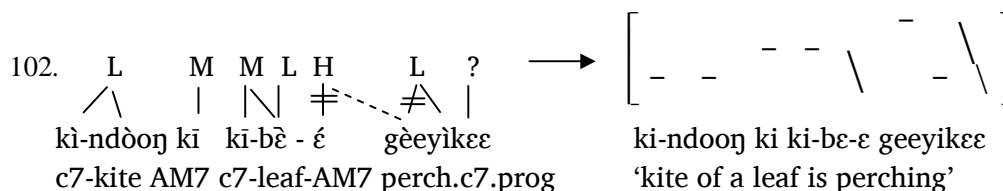
When the associative phrase is followed by the progressive form of the verb 'to perch', the High tone of the associative clitic moves onto the first syllable of the verb. Like in example 98 where the final noun had a /L-L/ melody, the High tone spreads to the right and de-links from the noun.



The next example has a noun with melody /M-ML/ as second noun. Here the tones /-H-L/ (of AM7 and the boundary tone) are left floating, however the Low of ML doesn't fall as Low as usual, the following floating High seems to prevent the fall. The Low boundary tone does not seem to have any effect. There is no leveling of the contour tone at the end of the noun. Either the morpheme boundary between the noun and the clitic prevents the contour simplification, or the following High tone prevents it.



When followed by the verb 'is perching' (see the next example) the High tone of the associative clitic moves onto the verb. The interesting fact is that in this case there is no contour simplification on the final syllable of the noun: the [ML] fall at the final syllable of the noun is not leveled into a [M] tone, just like the [HL] in the /M-HL/ melody above.

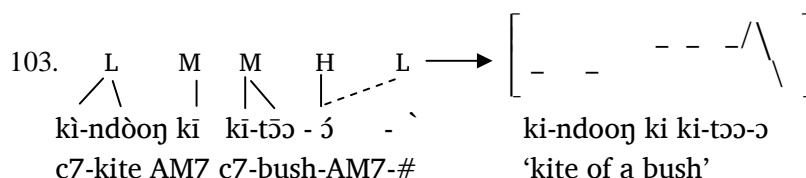


So for the nouns ending in a Low tone the High tone of the clitic spreads rightward onto the verb, de-linking from the clitic.

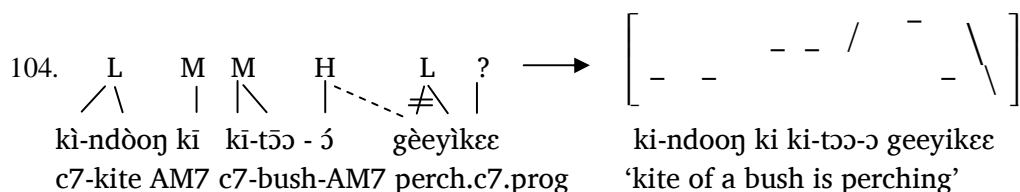
### 3.4.4.2 Melodies ending in a Mid tone: /M-M/, /L-M/, and /M-HM/

Now we will look at what happens with nouns that have a melody ending in a Mid tone.

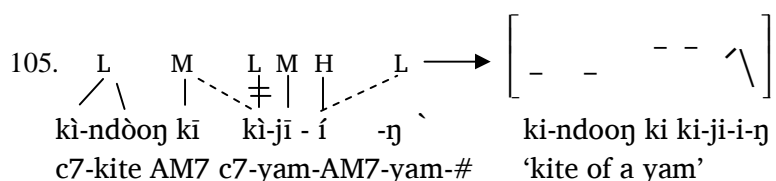
We start with the simplest melody, /M-M/. We have seen this example before (examples 87 and 90), but we repeat it here. In utterance final position the H and L are grounded on the final syllable, giving a /MHL/ melody that is fully realized.



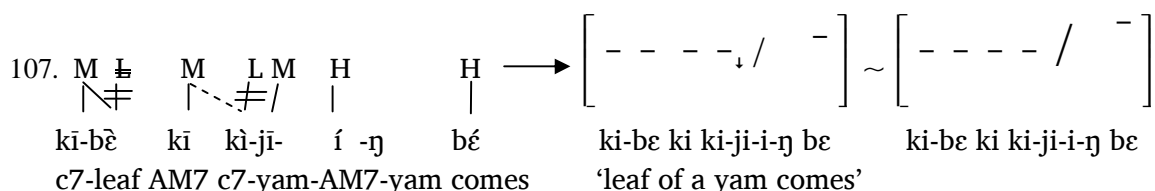
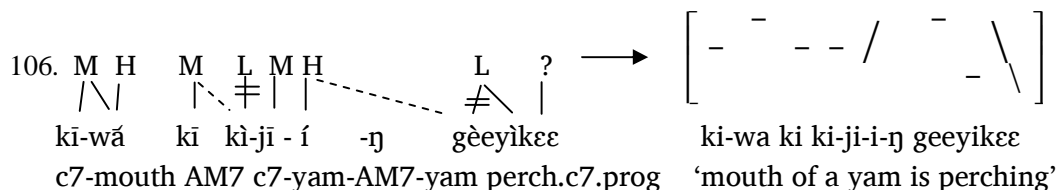
When the noun phrase is followed by the verb, the High tone will spread to the verb. With the nouns ending in a Low tone, the High tone of the clitic would spread and de-link from the noun (section 3.4.4.1). With the nouns ending in a Mid tone the High stays linked to the noun as well.



For the next melody, /L-M/, the Mid tone of the associative marker spreads onto the prefix of the second noun, de-linking the Low tone (see example 105). The –H of the clitic has the height that would be expected for a High between two Lows in the same syllable. So it is either Lowered because of downstep, or the Low is connected to the syllable (we have stated earlier that /L-M/ historically was /L-LM/).

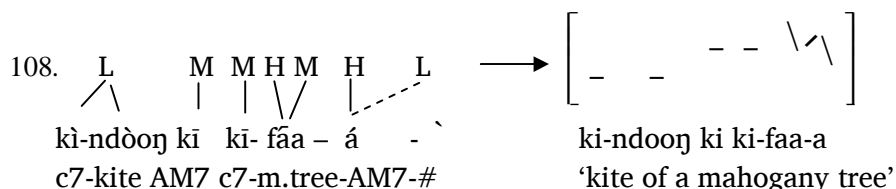


Example 106 shows no downstep (following High is at the same level). The Low of the prefix was de-linked, but the tone on the root of the noun starts lower than Mid. So the Low tone may still be connected to the root. Example 107 shows optional downstep.

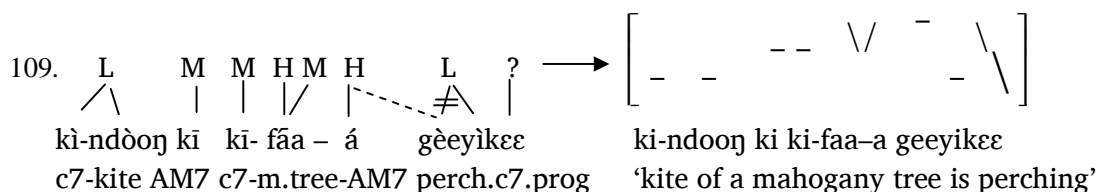


Tone spreading onto nouns with /L-M/ melody needs more investigation, at this moment this cannot be explained.

The third and final melody ending in a Mid tone is /M-HM/. Utterance final the /HM/ combines with the /-H-L/ and results in a complex contour.



When the noun phrase is followed by the verb, the High tone will spread to the verb.

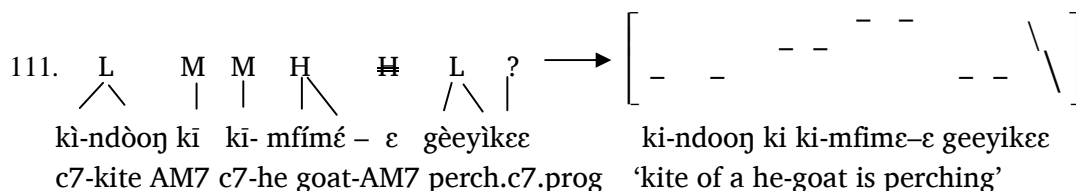
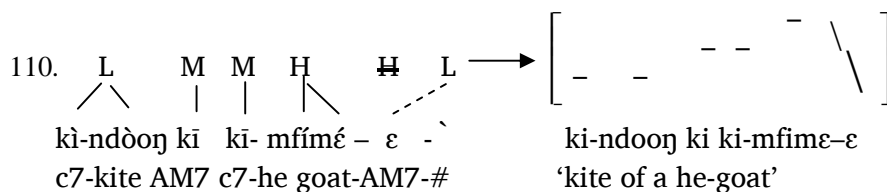


So for the nouns ending in a Mid tone the High tone of the clitic is spreading rightward onto the verb.

### 3.4.4.3 Melodies ending in a High tone: /M-H/, /L-LH/, and /M-MH/

For nouns ending in a High tone there is no High spreading onto the next verb at all. Let us look at the examples for nouns ending in a High tone, to start with the /M-H/ melody.

We will give both the utterance final associative phrase in example 110 and the phrase before a verb in example 111. In example 110 we see that compared to the underlying noun melody only a final Low tone has been added, giving a [HL] fall at the final syllable. In example 111 we see that there is no spreading of a High tone onto the verb. Either the associative phrase is ending in a Low tone, or the High tone cannot spread. If there were a High tone on the clitic, it would spread, just like in all the examples above. So there is no High tone on the clitic at the time the High tone spreading would occur. We will discuss this after the examples.

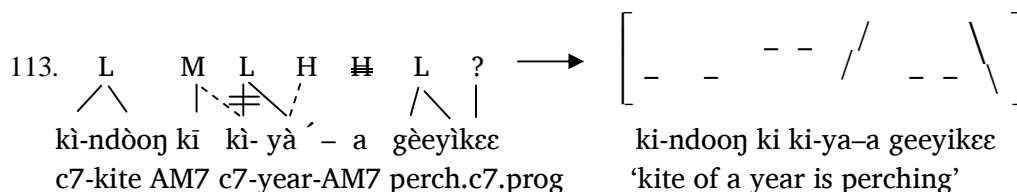
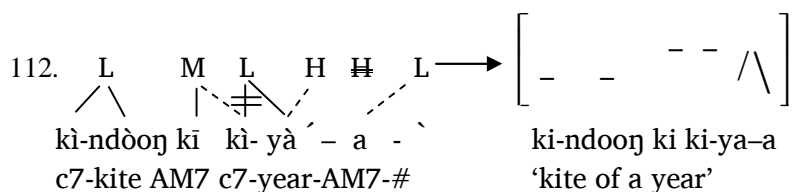


As stated above there is no High tone on the clitic at the time the High tone spreading would occur. We assume that the High tone of the clitic is deleted because it is following a High tone, which is not allowed according to the Obligatory Contour Principle.<sup>24</sup> The High tone of the noun root in that case obviously cannot spread over the two morpheme breaks – one before and one after the clitic.

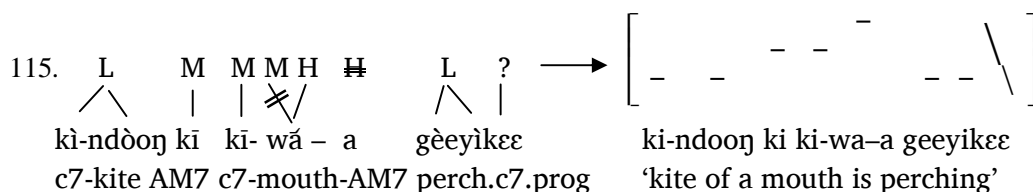
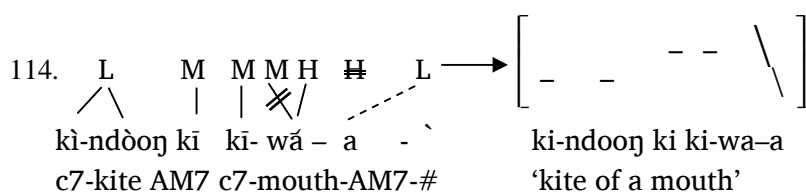
For completeness we will also give the last two melodies ending in a High tone: /L-LH/ and /M-MH/.

/L-LH/: The floating High tone at the end of the noun is grounded to the left on the noun root when followed by the clitic. The High in /LHL/ as usual does only reach the Mid tone level.

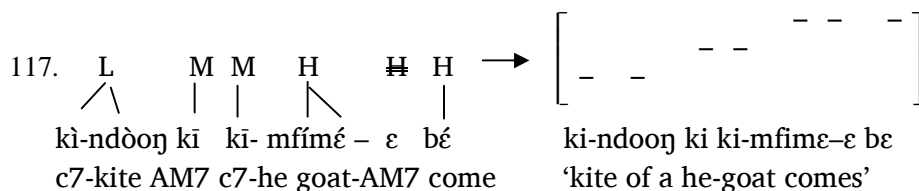
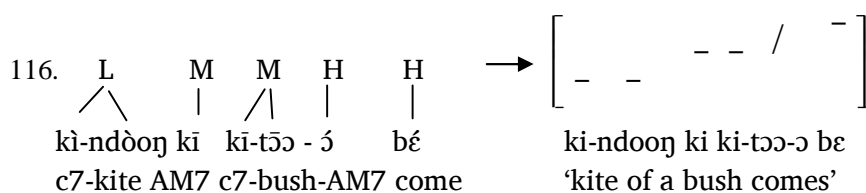
<sup>24</sup> Languages can resolve OCP-violations in different ways. For instance merger of the two like tones, deletion of one of the tones, or inserting another tone. In most cases in this paper we assumed merger of the two tones, but it is possible that there are more environments where one of the two like tones is deleted. This needs more investigation.



/M-MH/: As with the other two melodies ending in a High tone, the High tone is not spreading.



There is one more context that gave some interesting data, including an unexpected downstep. If the verb *bé* 'come' is put after different associative phrases, it will be at the normal level after associative phrases in which the second noun root ends in a Mid tone (example 116) and a High tone (example 117), but when the second noun root ends in a Low tone, the verb *bé* is downstepped (examples 118 and 119). This downstep seems to be optional as well, but hasn't been fully investigated.



118.  $\begin{array}{ccccccc} & L & & M & & M & H & L & H & & H \\ & / \backslash & & | & & \backslash & / & \backslash & / & & | \\ k\grave{i}-nd\grave{o}o\eta & k\bar{i} & & k\bar{i}-f\acute{a}s\acute{e}-\acute{\epsilon} & & & & & & & b\acute{e} \\ c7-kite & AM7 & & c7-tongs-AM7 & & & & & & & come \end{array} \rightarrow \left[ \begin{array}{ccccccc} & & & & & - & - & - & - & & - \\ & & & & & & & & & & \downarrow \\ & & & & & & & & & & \end{array} \right]$
- $k\grave{i}-nd\grave{o}o\eta$   $k\bar{i}$   $k\bar{i}-f\acute{a}s\acute{e}-\acute{\epsilon}$   $b\acute{e}$   $k\bar{i}-nd\grave{o}o\eta$   $k\bar{i}$   $k\bar{i}-f\acute{a}s\acute{e}-\acute{\epsilon}$   $b\acute{e}$   
 c7-kite AM7 c7-tongs-AM7 come 'kite of tongs comes'
119.  $\begin{array}{ccccccc} & L & & M & & L & & H & & H \\ & / \backslash & & \uparrow & & \backslash & & \neq & & | \\ k\grave{i}-nd\grave{o}o\eta & k\bar{i} & & k\bar{i}-nd\grave{o}o-\acute{o} & & -\eta & & & & b\acute{e} \\ c7-kite & AM7 & & c7-kite-AM7 & & kite & & & & come \end{array} \rightarrow \left[ \begin{array}{ccccccc} & & & & & - & - & & & & - \\ & & & & & & & & & & \downarrow \\ & & & & & & & & & & \end{array} \right]$
- $k\grave{i}-nd\grave{o}o\eta$   $k\bar{i}$   $k\bar{i}-nd\grave{o}o-\acute{o}$   $-\eta$   $b\acute{e}$   $k\bar{i}-nd\grave{o}o\eta$   $k\bar{i}$   $k\bar{i}-nd\grave{o}o-\acute{o}-\eta$   $b\acute{e}$   
 c7-kite AM7 c7-kite-AM7-kite come 'kite of a kite comes'

## 4 Conclusion

The tone of Saari is complex. As such, the goal of this paper has been to provide only a preliminary study of tone and its behavior in noun gender 7/8. It shows the large number of melodies even on basic words, which will help in deciding on a tone orthography. This study gives a basis for the study of tone in the other noun classes, and for the study of tone on verbs. Areas that need more research are firstly tone in derived and compound nouns, in order to gain better insight into the behaviour of tones at morpheme breaks. Then downstep and the lowered Mid tones, what are the exact causes for these, and when is there optional downstep? And finally falling tones at the end of utterances. In some cases the Low tone is not part of the melody of the words, therefore the question is whether the behaviour comes from the melody /MH/ that can surface as a [HL] fall, or if there are boundary tones or floating (grammatical) tones?

And since this paper is based on the speech of one person, and there is a lot of variety in speech, it would be good to study speech of different people and different varieties of the language.

This study has given a small insight into the richness of the Saari tone.



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**Appendix 1 Wordlist of nouns in gender 7/8**

gloss	lexeme	plural	underlying melody	surface tone	surface tone
belongings (things)		bie	ML	M2L	[ \ ]
some (things)		bimu	H-M	H-M2	[ - ]
mud		bintsangu	M-M M	M2-M2 M2	[ --- ]
inheritance		bishere	M-M M	M2-M2 M2	[ --- ]
wound, sore	kibaa	bibaa	M-M	M2-M2	[ -- ]
wild cat	kibaba	bibaba	L-L M	L-L M1	[ -- - ]
piece	kibache	bibachu	M-M H	M2-M2 HL ~ M2-M2 H	[ -- \ ] ~ [ -- - ]
palm (of hand)	kibo	bibo	M-H	M2-H	[ - - ]
leaf, blade of grass	kibe	bibe	M-ML	M2-M2L	[ - \ ]
wing	kibe	bibe	M-ML	M2-M2L	[ - \ ]
arm	kibene	bibenu	M-M H	M2-M2 HL ~ M2-M2 H	[ -- \ ] ~ [ -- - ]
calabash	kibeŋe	bibeŋu	M-M M	M2-M2 M2	[ --- ]
senseless person	kibere	bibere	L-L L	L-L L	[ -- \ ]
scorpion	kibobe	bibobu	M-M H	M2-M2 H	[ -- - ]
tarantula? Not well known	kibobe	bibobu	M-M H	M2-M2 HL	[ -- \ ]
dust	kiboŋ		L-M	L-M1	[ - - ]
sky	kiboo		M-M	M2-M2	[ -- ]

gloss	lexeme	plural	underlying melody	surface tone	surface tone
waste, gabbage	kichɔchɔ	bichɔchu	L-L L	L-L L	[ -- \ ]
foundation	kichiye	bichiyu	L-L HL	L-L HL	[ -- \ ]
gum of teeth	kide	bide	M-MH	M2-H ~ M2-HL	[ - - ] ~ [ - \ ]
foot	kidentine	bidentine	M-H M H	M2-H M2 H ~ M2-H M2 HL	[ - - - ] ~ [ - - \ ]
caterpillar	kidoo	bidoo	M-ML	M2-M2L	[ - \ ]
grasshopper	kidzɔ	bidzɔ	L-L <sup>H</sup>	L-L <sup>o</sup>	[ -- ]
river basin	kidzɔŋ	bidzɔŋ	M-ML	M2-M2L	[ - \ ]
mushroom	kidzire	bidziru	M-H L	M2-H L	[ - - \ ]
low area flooded in rainy season	kidzɔŋ	bidzɔŋ	M-ML	M2-M2L	[ - \ ]
mahogany tree	kifaa	bifaa	M-HM	M2-HM2	[ - \ ]
shell (of groundnut)	kifaate	bifaatu	M-M L	M2-M2 L	[ -- \ ]
fish-scale	kifabe	bifabu	M-M L <sup>H</sup>	M2-M2 L <sup>o</sup>	[ -- - ]
tongs: v-shaped wooden/bamboo instrument for holding (hot) objects	kifase	bifasu	M-H HL	M2-H HL	[ - - \ ]
hat	kifɔ	bifɔ	M-MH	M2-H ~ M2-HL	[ - - ] ~ [ - \ ]
bread	kifɔŋgi	bifɔŋgi	L-L L	L-L L	[ -- \ ]
vision, dream	kifiee	bifiee	M-M	M2-M2	[ -- ]
brush	kifiiŋ	bifiiŋ	M-ML	M2-M2L	[ - \ ]

gloss	lexeme	plural	underlying melody	surface tone	surface tone
goiter	kifobe	bifobu	M-M L <sup>H</sup>	M2-M2 L°	[ - - ]
capita bee	kifoma	bifomu	M-H M	M2-H M2	[ - - ]
lung	kifufu	bifufu	L-L L <sup>H</sup>	L-L L°	[ - - - ]
mat	kiga	biga	M-H	M2-H	[ - ]
tip of thatch roof	kigɔ		L-L	L-L	[ - \ ]
certain bird of prey	kigɔ	bigɔ	M-M	M2-M2	[ - - ]
hut	kigɔɔne	bigɔɔnu	M-M H	M2-M2 HL ~ M2-M2 H	[ - - \ ] ~ [ - - ]
right hand	kigɔɔne	bigɔɔnu	L-L M	L-L M1	[ - - - ]
tooth, cowrie shell	kige	bige	M-M	M2-M2	[ - - ]
porcupine	kige	bige	M-M	M2-M2	[ - - ]
bark (of tree)	kigire	bigiru	M-M ML	M2-M2 M2L	[ - - \ ]
door, doorway cover	kigoo	bigoo	M-HL	M2-HL	[ - \ ]
owl	kiguɔ	biguɔ	M-ML	M2-M2L	[ - \ ]
boil	kigwanyɛ	bigwanyu	M-H HL	M2-H HL	[ - - \ ]
darkness	kijibe	bijibu	M-M H	M2-M2 H	[ - - ]
traditional rite at burial of strong man, tying root to him and child	kijibe	bijibu	M-M H	M2-M2 HL	[ - - \ ]
cow disease, kind of animal	kijine	bijinu	M-M ML	M2-M2 M2L	[ - - \ ]

gloss	lexeme	plural	underlying melody	surface tone	surface tone
yam	kijiŋ	bijiŋ	L-M	L-M1	[ - - ]
fly	kijiŋ	bijiŋ	M-ML	M2-M2L	[ - \ ]
charcoal	kika	bika	M-MH	M2-H ~ M2-HL	[ - - ] ~ [ - \ ]
leg	kikaa	bikaa	M-M	M2-M2	[ - - ]
crab	kikame	bikamu	M-M M	M2-M2 M2	[ - - - ]
swarm	kikaŋ	bikaŋ	M-H	M2-H	[ - - ]
beeswax, bee-bread	kikaŋ	bikaŋ	M-M	M2-M2	[ - - ]
wheel, a round thing	kikase	bikasu	M-M ML	M2-M2 M2L	[ - - \ ]
mosquito species	kikɔ	bikɔ	H- <sup>L</sup> M	H-M1	[ - - ]
forest	kikɔ	bikɔ	M-H	M2-H	[ - - ]
cough	kikɔɔ	bikɔɔ	M-MH	M2-HL	[ - \ ]
beetle	kikɔɔbe	bikɔɔbu	H-H L H	H-H L°	[ - - - ]
shell (of egg or turtle)	kikɔme	bikɔmu	M-M L <sup>H</sup>	M2-M2 L°	[ - - - ]
ulcer (leg)	kikɔti	bikɔti	L-L L <sup>H</sup>	L-L L°	[ - - - ]
corn cob	kikiŋ	bikiŋ	M-ML	M2-M2L	[ - \ ]
silk-cotton tree, kapok tree	kikoma	bikomu	L-L M	L-L M1	[ - - - ]
cocoyam	kikoo	bikoo	L-M or L-ML?	L-M1 ~ L-M1L	[ - - ] ~ [ - \ ]

gloss	lexeme	plural	underlying melody	surface tone	surface tone
head	kikoo	bikoo	M-M	M2-M2	[ -- ]
gravel	kikoosɛ	bikooshu	M-H HL	M2-H HL	[ - - \ ]
shoe, sandal	kikpɔ	bikpɔ	M-M	M2-M2	[ -- ]
beehive	kiku	biku	L-L <sup>H</sup>	L-L°	[ -- ]
rat	kikunɛ	bikunu	M-M ML	M2-M2 M2L	[ -- \ ]
horse	kikuŋ	bikuŋ	H- <sup>L</sup> MHL?	H-M1M2L	[ - \ ]
weather	kikuŋ		L-L <sup>H</sup>	L-L°	[ -- ]
cloud	kikuŋ		M-M	M2-M2	[ -- ]
midrib of palm-frond	kikuuche	bikuuchu	M-M M	M2-M2 M2	[ --- ]
type of juju song	kila	bila	L-L	L-L	[ - \ ]
rainbow	kila	bila	M-M	M2-M2	[ -- ]
cheek	kilaanje	bilaanju	M-H HL	M2-H HL	[ - - \ ]
kilowe, quarter of Bissa	kilɔwe			L-L M2L	[ -- \ ]
ant (big black smelling type)	kilebe	bilebu	M-H M	M2-H M2	[ - - - ]
dragonfly	kileele	bileele	M-M M	M2-M2 M2	[ --- ]
bat	kileme	bilemu	M-M H	M2-M2 HL ~M2-M2 H	[ -- \ ] ~ [ - - - ]
umbrella	kimbaa	bimbaa	M-HL	M2-HL	[ - \ ]
molar tooth	kimbaaŋ	bimbaaŋ	L-L <sup>H</sup>	L-L°	[ -- ]

gloss	lexeme	plural	underlying melody	surface tone	surface tone
walking stick, cane	kimbaaŋ	bimbaaŋ	L-L	L-L	[ - \ ]
juju house	kimbaaŋ	bimbaaŋ	M-ML	M2-M2L	[ - \ ]
rock (large)	kimbaŋ	bimbaŋ	L-M	L-M1	[ - - ]
blessing	kimbɔɔŋe	bimbɔɔnu	L-L HL	L-L M2L	[ - - \ ]
side (of something)	kimbe	bimbe	L-L	L-L	[ - \ ]
plague	kimbee		L-M	L-M1	[ - - ]
bell	kimbeeneɛ	bimbeenu	M-M M	M2-M2 M2	[ - - - ]
talking drum	kimbi	bimbi	L-L	L-L	[ - \ ]
request	kimbifu		L-M M or L-M ML?	L-M1 M1L	[ - - \ ]
horn (musical instrument)	kimbuu	bimbuu	L-M	L-M1	[ - - ]
grass at the tip of thatch roof	kimbuune	bimbuunu	L-M M	L-M1 M1	[ - - - ]
footprint (human)	kimɔ	bimɔ	M-H	M2-H	[ - - ]
lock	kimfa	bimfa	L-L <sup>H</sup>	L-L°	[ - - ]
nasal mucus, snot	kimfende	bimfendu	L-L HL	L-L M2L	[ - - \ ]
cockroach	kimfenje	bimfenju	M-M H	M2-M2 HL ~ M2-M2 H	[ - - \ ] ~ [ - - - ]
corruption	kimfi		L-L	L-L	[ - \ ]
diarrhea	kimfiaane		M-M M	M2-M2 M2	[ - - - ]
gossip	kimfie	bimfie	L-L <sup>H</sup>	L-L°	[ - - ]

gloss	lexeme	plural	underlying melody	surface tone	surface tone
he-goat, billy-goat	kimfime	bimfimu	M-H H	M2-H H	[ - - ]
beak, bill, lip	kimfime	bimfimu	M-M M	M2-M2 M2	[ - - - ]
neck	kimi	bimi	M-M	M2-M2	[ - - ]
maggot (in rotten meat)	kimuune	bimuunu	M-H HL	M2-H HL	[ - - \ ]
pineapple	kinana	binana	L-L LH	L-L LH	[ - - / ]
hoof	kinande	binandu	L-L L <sup>H</sup>	L-L L	[ - - - ]
rattle (musical instrument)	kincho	bincho	L-L	L-L	[ - \ ]
log, stump	kinchii <sub>ŋ</sub>	binchii <sub>ŋ</sub>	L-L	L-L	[ - \ ]
stalk of plantain or banana tree	kinchi <sub>ŋ</sub>	binchi <sub>ŋ</sub>	L-M	L-M1	[ - - ]
chisel	kinchofi	binchofi	L-M M or L-M ML?	L-M1 M1L	[ - - \ ]
crest (of bird)	kinchuchu	binchuchu	L-L L	L-L L	[ - - \ ]
kite	kindoo <sub>ŋ</sub>	bindoo <sub>ŋ</sub>	L-L	L-L	[ - \ ]
duck	kindu	bindu	L-L	L-L	[ - \ ]
tendon	kindu	bindu	L-M	L-M1	[ - - ]
pool	kindundu	bindundu	L-L L	L-L L	[ - - \ ]
red monkey	kindzaandzo	bindzaandzo	L-LM ML	L-LM1 M1L	[ - / \ ]
urine	kindzendze	bindzendzu	M-M ML	M2-M2 M2L	[ - - \ ]
relative (by blood)	kini	bini	L-L <sup>H</sup>	L-L <sup>o</sup>	[ - - ]



gloss	lexeme	plural	underlying melody	surface tone	surface tone
shadow	kinjiinjii	binjiinjii	L-M HL?	L-M1 M2L	[ - - \ ]
regime (of bananas)	kinjiŋ	binjiŋ	L-L	L-L	[ - \ ]
wandering gene (some gene that pushes a man to wander)	kinjiŋ		L-M	L-M1	[ - - ]
dirt, soil	kinjire		M-M M	M2-M2 M2	[ - - - ]
steer	kinsɔ	binsɔ	L-L	L-L	[ - \ ]
bull	kinsɔ	binsɔ	M-ML	M2-M2L	[ - \ ]
lie (falsehood)	kinseɛ	binseɛ	L-L <sup>H</sup>	L-L°	[ - - ]
bed	kintaa	bintaa	L-LM	L-LM1L ~ L-M1L ~ L-M2	[ - \ ] ~ [ - - ]
trap	kintasi	bintasi	L-L L	L-L L	[ - - \ ]
beam, rafter	kintɔŋ	bintɔŋ	L-M	L-M1	[ - - ]
lizard	kintee	bintee	M-ML	M2-M2L	[ - \ ]
middle	kintikinti	bintikinti	L-L LH L <sup>H</sup>	L-L LH L°	[ - - / - ]
chair, stool	kintinte	bintintu	M-M M	M2-M2 M2	[ - - - ]
heifer	kintome	bintomu	M-M ML	M2-M2 M2L	[ - - \ ]
ear	kintoŋ	bintoŋ	M-MH	M2-H ~ M2-HL	[ - - ] ~ [ - \ ]
marsh	kintsanɛ	bintsangu	M-M M	M2-M2 M2	[ - - - ]
taste	kintsi		M-M	M2-M2	[ - - ]

gloss	lexeme	plural	underlying melody	surface tone	surface tone
odour, smell	kintsi	bintsi	M-M	M2-M2	[ -- ]
point, place	kintsii	bintsii	L-LHL?	L-M1M2L	[ - \ ]
crowd, heap, herd, flock	kintutu	bintutu	L-M M	L-M1 M1	[ - - - ]
caterpillar species	kinyɔɔtɛ	binyɔɔtu	L-L L <sup>H</sup>	L-L L°	[ - - - ]
buttock	kinyi	binyi	L-L	L-L	[ - \ ]
stem, stalk (of maize, millet, etc.)	kiŋgaŋine	biŋgaŋine	M-H M H	M2-H M2 H ~ M2-H M2 HL	[ - - - ] ~ [ - - \ ]
bend, crook, curve	kiŋgɔ	biŋgɔ	L-L <sup>H</sup>	L-L°	[ - - ]
hem	kiŋgɔbɛ	biŋgɔbu	M-M ML	M2-M2 M2L	[ - - \ ]
ant species (common around compounds)	kiŋgɔɔnɛ	biŋgɔɔnu	M-M M	M2-M2 M2	[ - - - ]
reputation of s.o.	kiŋge		L-L	L-L	[ - \ ]
bend, crook, curve	kiŋguŋ	biŋguŋ	L-M	L-M1	[ - - ]
old thing/person	kiŋkaaŋ	biŋkaaŋ	H- <sup>L</sup> ML / H- <sup>L</sup> MHL?	H-M1L	[ - \ ]
a species of sweet bush fruit	kiŋkaŋ	biŋkaŋ	H- <sup>L</sup> MHL?	H-M1M2L	[ - \ ]
ram	kiŋkɔ	biŋkɔ	L-L	L-L	[ - \ ]
iron	kiŋkɔŋ	biŋkɔŋ	M-MH	M2-H ~ M2-HL	[ - - ] ~ [ - \ ]
Kinkoshi, quarter of Kamine	kiŋkɔshi			L-L L°	[ - - - ]
piece	kiŋke	biŋke	L-M	L-M1	[ - - ]

gloss	lexeme	plural	underlying melody	surface tone	surface tone
fingernail	kiŋkerɛ	biŋkeru	M-M L <sup>H</sup>	M2-M2 L°	[ -- ]
cripple	kiŋkerɛ	biŋkere	L-L L	L-L L	[ -- \ ]
knot	kiŋkiŋ	biŋkiŋ	L-L	L-L	[ - \ ]
bone	kiŋkomfe	biŋkomfu	M-M M	M2-M2 M2	[ --- ]
robe (man's gown)	kiŋkoŋ	biŋkoŋ	L-L <sup>H</sup>	L-L°	[ -- ]
storm	kiŋkuŋgu	biŋkuŋgu	L-L L	L-L L	[ -- \ ]
wave	kiŋkuŋku		M-M HL	M2-M2 HL	[ -- \ ]
gossip	kiŋkween	biŋkween	L-M?	L-M1M2	[ - / ]
toad	kiŋkwene	biŋkwenu	M-HM H	M2-HM2 HL	[ - \ ]
book	kiŋwaati	biŋwaati	L-L L	L-L L	[ -- \ ]
pumpkinleaf	kisaanche	bisaanchu	M-H HL	M2-H HL	[ - \ ]
used by a juju for dancing	kisaŋ	bisaŋ	M-H	M2-H	[ - ]
palm tree	kisɔŋ	bisɔŋ	M-M	M2-M2	[ -- ]
bush, grass	kitɔɔ	bitɔɔ	M-M	M2-M2	[ -- ]
testicle	kitee	bitee	H-L H?	H-L°	[ - ]
tumor	kiteŋ	biteŋ	M-M	M2-M2	[ -- ]
tree, plank	kiti	biti	M-M	M2-M2	[ -- ]
waist	kitinti	bitinti	M-H H	M2-H H	[ - ]

gloss	lexeme	plural	underlying melody	surface tone	surface tone
clan, village	kiton	biton	M-H	M2-H	[ - - ]
pit, hole	kitoo	bitoo	M-MH	M2-HL ~ M2-H	[ - \ ] [ - - ]
comb, thorn	kitsee	bitsee	M-ML	M2-M2L	[ - \ ]
soup, broth	kitsubi	bitsubi	L-L L <sup>H</sup>	L-L L <sup>°</sup>	[ - - - ]
small of back (lower back)	kitu	bitu	L-L <sup>H</sup>	L-L <sup>°</sup>	[ - - ]
iron, cup	kitu	bitu	M-M	M2-M2	[ - - ]
pestle, pounding stick	kitune	bitunu	M-M M	M2-M2 M2	[ - - - ]
mouth	kiwa	biwa	M-MH	M2-H ~ M2-HL	[ - - ] ~ [ - \ ]
weaver-bird	kiwara	biwara	L-L H	L-L H	[ - - - ]
year	kiya	biya	L-L <sup>H</sup>	L-L <sup>°</sup>	[ - - ]
heat, steam	kiya	biya	M-M	M2-M2	[ - - ]
elephant	kiyo	biyo	L-L	L-L	[ - \ ]
ghost (visible apparition)	kiyii	biyii	L-M	L-M1	[ - - ]

## Appendix 2 Melodies of nouns in gender 7/8 by syllable type

Nouns in class 8 (or class 7 if a plural is not possible), apparently not compound or complex.

In the first column the proposed underlying melody is given, with the prefix already raised to Mid tone before a Mid or High tone. When the melody is in italics, there are doubts about it. The last tone of the melody is certain, but sometimes the exact identity of the other tones has not been ascertained.

Each column displays a different syllable pattern. The figures give the number of words with that syllable pattern and melody.

### Monosyllabic words :

underlying melody	CGV		CGVN		CGVV		CGVVN	
/M-ML/	1	[ \ ] bie belongings						

### Disyllabic words, monosyllabic roots:

Roots not starting with a prenasalized consonant

underlying melody	CV		CVN		CVV		CVVN	
/L-L <sup>H</sup> /	5	[ - - ] biya years	1	[ - - ] kikuŋ weather				
/L-LM/			2	[ - - ] bijiŋ yams	1	[ - - ] biyii ghosts		
/L-M/ or /L-ML/					1	[ - - ] ~ [ - \ ] bikoo cocoyams		

underlying melody	CV		CVN		CVV		CVVN	
/L-L/	3	[ - \ ] biyɔ elephants						
/M-MH/	4	[ - - ] ~ [ - \ ] biwa <sup>25</sup> mouths			1	[ - - ] ~ [ - \ ] bitoo <sup>26</sup> holes		
/M-H/	4	[ - - ] bimɔ human footprints	3	[ - - ] bikaŋ swarms				
/M-MH/					1	[ - \ ] kikɔɔ coughs		
/M-HL/					1	[ - \ ] bigoo doorway covers		
/M-M/	9	[ - - ] biti trees, planks	4	[ - - ] bikaŋ beeswax	5	[ - - ] bitɔɔ bushes		
/M-ML/	1	[ - \ ] bibe leaves	5	[ - \ ] bijiŋ flies	2	[ - \ ] bitɕɛ combs	1	[ - \ ] bifiŋ brushes

<sup>25</sup> free variation between the two melodies

<sup>26</sup> free variation between the two melodies

underlying melody	CV		CVN		CVV		CVVN	
/M-HM/					1	$\left[ \begin{array}{c} - \\ - \ \backslash \end{array} \right]$ bifa mahogany trees		
/H-M/	1	$\left[ \begin{array}{c} - \\ - \end{array} \right]$ bim some things						
/H- <sup>h</sup> M/	1	$\left[ \begin{array}{c} - \\ - \end{array} \right]$ bik mosquito species						
/H- <sup>h</sup> MHL/ or /H- <sup>h</sup> LHL/			1	$\left[ \begin{array}{c} - \\ \wedge \end{array} \right]$ bik horses				
/H-L <sup>h</sup> / or /H- <sup>h</sup> L <sup>h</sup> /					1	$\left[ \begin{array}{c} - \\ - \end{array} \right]$ bite testicles		

## Disyllabic words, monosyllabic roots:

## Roots starting with a prenasalized consonant

underlying melody	NCV		NCVN		NCVV		NCVVN	
/L-L <sup>H</sup> /	2	[ - - ] biŋgɔ curves	1	[ - - ] biŋkoŋ traditional robes	1	[ - - ] binseɛ lies	1	[ - - ] bimbaaŋ molar teeth
/L-M/	2	[ - - ] bindu tendons	5	[ - - ] bimbaŋ rocks	2	[ - - ] bimbuu horns (music)		
/L-L/	8	[ - \ ] bindu ducks	2	[ - \ ] biŋkiŋ knots			3	[ - \ ] bimbaaŋ walking sticks
/M-MH/			2	[ - - ] ~ [ - \ ] bintoŋ <sup>27</sup> ears				
/M-HL/					1	[ - \ ] bimbaa umbrellas		
/M-M/			1	[ - - ] kintsi taste, odour				
/M-ML/	1	[ - \ ] binsɔ bulls			1	[ - \ ] bintee lizzards	1	[ - \ ] bimbaaŋ juju houses

<sup>27</sup> free variation between the two melodies.



underlying melody	NCV		NCVN		NCVV		NCVVN	
/H- <sup>1</sup> MHL/ or /H- <sup>1</sup> LHL/			1	[ <sup>-</sup> ^ ] biŋkaŋ a species of sweet bush fruit				
/H- <sup>1</sup> LML/ or /H- <sup>1</sup> LHL/							1	[ <sup>-</sup> \ ] biŋkaaŋ old things/old people
/L-LHL/					1	[ <sup>-</sup> ^ ] bintsii places		
/L-LM/ ?					1	[ <sup>-</sup> ^ ] ~ [ <sup>-</sup> - ] bintaa <sup>28</sup> beds		

underlying melody	NCGV							
/L-L <sup>H</sup> /		[ <sup>-</sup> - ] biŋgwa sickle						
	CGV		CGVN		CGVV		CGVVN	
/M-M/					1	[ <sup>-</sup> - ] bifyee dreams		

<sup>28</sup> free variation between the two melodies.

## Disyllabic roots:

## Roots not starting with a prenasalized consonant

underlying melody		CV.CV		CV.NCV		CVV.CV		CVV.NCV
/L-L <sup>H</sup> /	4	[ --- ] bitsubi soups	1	[ --- ] binandu hooves	1	[ --- ] binyɔɔtu caterpillars		
/L-LM/	3	[ --- ] bigɔɔɔ <sup>29</sup> right hands						
/L-L/	2	[ -- \ ] bibere senseless persons					1	[ -- \ ] bifɔɔŋgi breads
/L-LH/ compound?	1	[ -- ] biwara weaver birds						
/L-LHL/	1	[ -- \ ] bichiyu foundations						
/M-MH/	3	[ -- ] [ -- \ ] bibenu arms			1	[ -- ] [ -- \ ] bigɔɔnu huts		

<sup>29</sup> The other two words: bibaba 'wild cats' and bikomu 'silk-kapok tree'

underlying melody		CV.CV	CV.NCV	CVV.CV	CVV.NCV
/M-MH/	2	[ -- ] bibobu <sup>30</sup> scorpions			
/M-MH/	2	[ -- \ ] bibobu <sup>31</sup> tarantulas			
/M-M/	4	[ --- ] bibɛɟu calabashes		2 [ --- ] bikuuchu midribs of palm frond	
/M-ML/	4	[ -- \ ] bikunu rats			
/M-ML/				1 [ -- \ ] bifaatu shells of groundnuts	
/M-MLH/	2	[ -- - ] bifobu goiters			
/M-HM/	2	[ - - ] bifomu carpenter bees			

<sup>30</sup> There seem to be minimal pairs with the same underlying melody for the word, but in isolation one is pronounced with a falling tone: kibōbē [kibōbē] ‘scorpion’ and kibōbē [kibōbê] ‘tarantula’, and kijībē [kidzībē] ‘darkness’ and kijībē [kidzībê] ‘traditional rite at burial (performed at night)’. They may be the same words, with different pronunciation, collected from different people.

<sup>31</sup> See previous footnote.

underlying melody	CV.CV		CV.NCV		CVV.CV		CVV.NCV	
/M-HL/	1	[ - - \ ] bifasu wooden tongs			2	[ - - \ ] bimuunu maggots	2	[ - - \ ] bilaanju cheeks
/M-HL/ ?	1	[ - - \ ] bidziru mushroom						
/M-H/			1	[ - - - ] bitinti waists				
/H-HLH/					1	[ - - - ] bikɔɔbu beetles		

underlying melody	CGV.CV							
/M-HL/	1	[ - - \ ] bigwanyu boils						

**Disyllabic roots:****Root starting with prenasalized consonant**

underlying melody	NCV.CV		NCV.NCV		NCVV.CV		NCVV.NCV	

underlying melody	NCV.CV		NCV.NCV		NCVV.CV		NCVV.NCV	
/L-L/	3	[ - - \ ] bintasi traps	2	[ - - \ ] biḱuṅgu storms	1	[ - - \ ] biḱwaati <sup>32</sup> books		
/L-M/	1	[ - - - ] bintutu crowds, herds			1	[ - - - ] bimbuunu tip of thatched roofs		
/M-M/	2	[ - - - ] bimfimu lips, beaks	4	[ - - - ] bintintu chairs	2	[ - - - ] bimbeenu bells		
/M-H/	1	[ - - - ] bimfimu he-goats						
/M-MH/			1	[ - - - ] [ - - \ ] bimfenju <sup>33</sup> cockroaches				
/M-ML/	2	[ - - \ ] bintomu heifers	1	[ - - \ ] bindzɛndzu urines				
/M-MLH/	1	[ - - - ] biḱkeru fingernails						

<sup>32</sup> loanword<sup>33</sup> Free variation between the two melodies

underlying melody	NCV.CV		NCV.NCV		NCVV.CV		NCVV.NCV	
/L-LM/ or /L-LML/	2	$\left[ \begin{array}{c} - \\ - \\ \backslash \end{array} \right]$ binchɔfi chisels						
/L-LML/							1	$\left[ \begin{array}{c} - \\ - \\ \backslash \end{array} \right]$ bindzaandzo red monkeys
/L-LHL/			1	$\left[ \begin{array}{c} - \\ - \\ \backslash \end{array} \right]$ bimfendu snot		1	$\left[ \begin{array}{c} - \\ - \\ \backslash \end{array} \right]$ bimbɔɔnu blessings	
/L-LMHL/							1	$\left[ \begin{array}{c} - \\ - \\ \backslash \end{array} \right]$ binjiinjii shadow
underlying melody	NCwV.CV							
/M-HMH/	1	$\left[ \begin{array}{c} - \\ \backslash \\ \backslash \end{array} \right]$ biŋkwenu toads, frogs						