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Mjikenda Tonology

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Abstract

This dissertation presents the tone system of Mijikenda, a group of nine closely related Bantu dialects spoken in coastal Kenya. Mijikenda has a complex tonology which is built from simple elements. For example, high tones shift to the right in an unbounded manner within the phonological phrase. This often means that a high tone will be heard on a different *word* than that on which it originates. An example (in slightly simplified notation; \acute{V} means surface high tone, \underline{V} marks the underlying location) is *kazungu a-ka-m-piga tšáro* ‘and Kazungu hit Charo’, where a high tone which is underlyingly on the final vowel of *kazungu* is heard two words away, on *tšáro*. This behavior is complicated due to the effect of a class of consonants called *depressors*—typically voiced obstruents—which interact with tonal processes in various ways, either blocking or restricting the mobility of high tones. As an example, compare the Giriyama *a-na-rí-rě:ha* ‘I’m giving back [cl.5]’ with *a-ná-ga-rě:ha* ‘I’m giving back [cl.6]’: It is the depressor consonant on the class 6 object prefix *ga-* that causes the high tone to surface where it does and not as **a-na-gá-rě:ha*.

All Mijikenda dialects further possess a large number of cases where a high tone can be proven to exist in a word, and yet is not pronounced when the word is in phrase-final position; the existence of such “hidden tones” is inferred from their interaction with other tones. Compare, for example, the two names *go:na* and *tšo:me*: both appear to be toneless in isolation, but compare the sentences *gona a-ka-m-piga tšo:me* ‘and Gona hit Chome’ with *tšome a-ka-m-piga gö:na* ‘and Chome hit Gona’. When a word with a “hidden” high tone like *tšo:me* is

not at the end of a phonological phrase, the high tone is free to surface.

Furthermore, in most Mijikenda dialects a high tone will spread rightward from its surface location, thus masking in many cases the surface locations of any following high tone and challenging analysis. Compare the word *yu-ná-kálanǵi:ra* ‘(s)he’s frying for’ in the speech of one of the Kambe speakers, with the same word in Duruma, *yu-na-kálanǵi:ra*. In the Kambe data we can clearly see the two high tones, whereas spreading (or “plateau”) masks this fact in Duruma.

The combination of these basic tonal phenomena, together with some features seen only in one or two of the dialects, make Mijikenda a useful test case for any approach to tone.

The bulk of this work consists of a descriptive treatment of the rich tonal phenomena in Mijikenda. This is done within the well-known autosegmental framework, and in a rule-based model. The final chapter discusses the applicability of a different approach to the representation of tone, namely the domain abstraction, to the facts of Mijikenda tone, especially within Optimality Theory.

Acknowledgements

Oh, yes, the *acknowledgements*. I think not. I did it. I did it all, by myself.

Olin Shivers, *Scsh Reference Manual*

I cannot thank my supervisor, Charles Kisseberth, nearly enough. Apart from the fact that this work could never have been written were it not for Chuck—all of the data discussed in these pages is his, and he was uncommonly selfless in giving me unrestricted access to all of his materials—he has truly been an inspiration and a model for what I think a linguist should be. The depth and breadth of his knowledge never ceased to amaze me, as did his intelligence and sheer enthusiasm about the material.

Another source of inspiration has been Outi Bat-El, without whose support I would probably have given up on this work a long time ago. Thank you.

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Glossary

\underline{V}	Underlying high tone
\acute{V}	High
\grave{V}	Low
\tilde{V}	Rising
\hat{V}	Falling
$\text{ˆ}V$	Downstep
() , [] , { }	High Tone Domain
~~~~	Low Register (Depressor) Domain
[ ]	Metrical foot (§8.4.2.3 only)
EXT	(Verbal) Extension
H	High tone
L	Low tone
OCP	Obligatory Contour Principle
ODT	Optimal Domains Theory
OP	Object Prefix
NSP	Negative Subject Prefix
SP	Subject Prefix
TBU	Tone-Bearing Unit
TM	Tense-Aspect Marker
VS	Verb Stem





## *Chapter 1*

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# Introduction

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Writing is easy. All you do is stare at a blank sheet of paper until drops of blood form on your forehead.

---

Gene Fowler

## 1.1 Language Background

Mijikenda is a family of nine closely-related Bantu languages spoken in coastal Kenya and Tanzania, E72–E73 in Guthrie’s (1971) classification and later revisions (Maho, 2009). These are, with some alternative spellings in parentheses: Chonyi, Digo, Duruma, Giryama, Jiβana (Dzihana, Jibana), Kambe, Kauma, Raβai (Rabai, Rahai) and Riβe (Ribe, Rihe). Mijikenda, in turn, is part of the Sabaki family, whose most prominent member is Swahili.

Mijikenda has a complex tone system, which is rendered quite opaque by the interplay of several tonal processes, among which are the high mobility of high tones (a high tone is often heard on a different word than its word of origin), consonant-tone interaction (depressor consonants, unique to Mijikenda among Northeastern Bantu languages) and many cases of “hidden tones”—tones that are not pronounced in certain phonological environments, and yet are evident through their interaction with other tones.

This dissertation presents a description and analysis of Mijikenda tone.

## 1.2 Data Sources

The data on which this study is based were not collected by me. The work presented here depends almost entirely on tape recordings collected in the 1980s and 1990s by Charles Kisseberth and kindly provided for my use. I have also made occasional use of missionary recordings found on the “Global Recordings Network” website (<http://globalrecordings.net>).

The recordings themselves are varied. For all dialects, a questionnaire developed by Prof. Kisseberth specifically for Mijikenda has been collected, which elicits nouns and verbs of different tonal characteristics in different constructions, i.e., the verbs in various tenses and nouns in different tonal environments. For some dialects, there are also recordings of short phrases of free text (elicited for example by “make up a sentence with the word so-and-so”) and for a small number of dialects I also have some recordings of free narratives; this last type of data is not addressed here.

An important note about the recordings is that the names and social backgrounds of most of the speakers have either not been noted or were lost. What this means is that for some dialects I have recordings of as many as three different speakers, whose speech differs significantly (both tonally and morphologically). Since I have no way of telling whether this is a matter of age, level of education or a problem of identification, I have noted with indices the different speakers where relevant; so, for example, I have data from three Raβai speakers which I have labelled Raβai₁, Raβai₂ and Raβai₃. Where multiple speakers of a certain dialect agree in their tone systems there is no indication of speaker. This is the case in Giryama, the largest and (as seen in data discussed here, at least) most tonally stable of the Mijikenda dialects.

The table below shows a breakdown of the amount of recorded data this work is based on. Recordings not used here (narratives, missionary texts) are not included.

Dialect	Length	Type	
Chonyi ₁	4.5 hours	Questionnaire	
Chonyi ₂	2 hours	Questionnaire	
<i>Total Chonyi</i>	<i>6.5 hours</i>		
Digo ₁	4.5 hours	Various	Data used by Kisseberth (1984)
Digo ₂	3.5 hours	Questionnaire	Marked "Southern Digo"
Digo ₃	3 hours	Questionnaire	Marked "Northern Digo"
Digo ₄	1.5 hours	Questionnaire	
Digo ₅	2.5 hours	Questionnaire	
<i>Total Digo</i>	<i>15 hours</i>		
Duruma ₁	5 hours	Questionnaire	
Duruma ₂	1.5 hours	Questionnaire	
Duruma ₃	4 hours	Questionnaire	
<i>Total Duruma</i>	<i>10.5 hours</i>		
Giryama	29.5 hours	Various	Multiple speakers
Giryama	5 hours	Short phrases	
<i>Total Giryama</i>	<i>34.5 hours</i>		
Jiɓana	1.5 hours	Questionnaire	
Kambe ₁	2 hours	Questionnaire	
Kambe ₂	1 hour	Questionnaire	
<i>Total Kambe</i>	<i>3 hours</i>		
Kauma	3 hours	Questionnaire	Two speakers
Raɓai ₁	4 hours	Questionnaire	
Raɓai ₂	1.5 hours	Questionnaire	
Raɓai ₃	1.5 hours	Questionnaire	
<i>Total Raɓai</i>	<i>7 hours</i>		
Riɓe ₁	4 hours	Questionnaire	
Riɓe ₂	3 hours	Questionnaire	
<i>Total Riɓe</i>	<i>7 hours</i>		
<b>Total Mijikenda</b>	<b>88 hours</b>		

### **1.2.1 Limitations**

There are obvious limitations to working with this type of data. One, which I have mentioned above, is that I have no way of telling whether differences between speakers are actual dialectal differences or not. Similarly, it is often risky to base generalizations on data elicited on a single occasion from a single speaker, which may have simply been the result of a momentary lapse in attention. Finally, and most importantly, I have no way to answer questions which the original elicitation was not designed for. Due to all of these, the present work is not as complete or conclusive as one might have hoped it to be. Nevertheless, I believe that the data at my disposal have allowed me to discover quite a bit about the workings of Mijikenda tone. More delicate questions, for example phrasing, focus or the subgrouping of the Mijikenda dialects on tonal grounds, will have to be the subject of future research.

### **1.2.2 Language vs. Dialect**

The question of whether Mijikenda is a language family or a single language with (possibly) nine dialects may be, according to one's point of view, a crucial one or a question of no importance. Digo certainly appears to be different enough from the rest of Mijikenda to justify being called a separate language; this may also be true for Duruma. This point lies beyond the scope of the current work, and so I have as a matter of convention, referred all members of Mijikenda as "dialects" throughout the work.

## **1.3 Goals**

The goals of the present work are twofold: my primary motivation is to provide an accessible (and hopefully durable) description of the tonology of Mijikenda. To this end, I have chosen not to base the description on Optimality Theory (Prince and Smolensky, 1993) or any of its variants. Optimality Theory is constantly being revised and enhanced, which makes it something of a moving target; descriptive works based on the cutting edge of phonological research often tend to be less accessible to linguists whose primary interest is not the specific

theory being used (let alone when the theory changes, as theories inevitably do), thus diminishing their descriptive and documentary value.

Because of this, I have tried to base the descriptive part of this work on what I consider the tonological equivalent of “basic linguistic theory” (Dixon (1965) and much subsequent work)—an autosegmental, rule-based framework. The second part of this work discusses the issues raised by Mijikenda to every theory of tone, and the ability of Optimal Domains Theory to cope with them.

## 1.4 Previous work

The Mijikenda and their language are far from obscure. In the second half of the nineteenth century, missionaries working in East Africa have published word lists, dictionaries and even grammars of Mijikenda, sometimes referring to it as a dialect of Swahili. Notable among these are the works of Krapf (1850a,b) and Taylor (1891). Taylor’s work is especially notable for its phonetic detail, something which later works like that of Deed (1964) are lacking in.

Moving to modern linguistic research, interest in Mijikenda reappeared in the 1970’s. The main linguistic focus in published works on Mijikenda has been comparative and historical, see for example Hinnebusch (1973, 1999); Möhlig (1992); Nurse and Walsh (1992) and the highly informative volume on Sabaki by Nurse and Hinnebusch (1993). Another publication which has proved extremely useful to the present work is Mwalonya et al. (2004), a Digo dictionary and grammatical sketch.

However, most of these works pay little or no attention to tone. An important exception is in the works of Philippson (1991, 1993, 1998), which treat diachronic and synchronic tone in Northeastern Bantu languages, including Mijikenda. Nevertheless, Philippson, working within a larger and comparative scope, has naturally not been able to treat Mijikenda in all its detail. As for works dealing specifically with Mijikenda tonology, I am aware of only three: Kisseberth (1984) on Digo, a chapter in Lax (1996) which touches briefly on some tonal properties of the Giryama verbal system, and the precursor to the present work, my own M.A. thesis on Giryama, Volk (2007). Apart from these, several publications with a more theoretical focus such as Cassimjee and Kisseberth

(1992, 1998); Kisseberth and Volk (2007) have dealt with some specific tonal phenomena in Mijikenda.

Given the richness and complexity of Mijikenda tone, I believe that a work covering the whole range of phenomena would be invaluable to phonological theory in general.

## 1.5 Structure

As indicated above, the present work is divided into two major parts: a descriptive study of Mijikenda tone and a theoretical discussion thereof. The descriptive part is not organized by dialect nor by grammatical category, but by tonal phenomena: since virtually any grammatical construction in any dialect of Mijikenda involves the interplay of many tonal processes, I hope that this organization has made it possible to approach the subject in a progressive way. Such a choice inevitably means that data from the different dialects is presented whenever relevant. To complement this, then, and for the benefit of the reader who is already familiar with Bantu tonology, I have followed the thematic presentation of the data with a review of the facts, grouped by dialect and grammatical construction, in chapter 7.

## 1.6 Morphophonological Preliminaries

### 1.6.1 Phonological Outline

Mijikenda has a 5-vowel system ([i e a o u]). Vowel length is not contrastive.

As for consonants, the nature of the data—cassette tapes dating back twenty or thirty years, often recorded in less-than-ideal conditions—has made it virtually impossible to give precise phonetic details, for example to determine whether what sounds like a voiced bilabial fricative  $\beta$  is not actually the labiodental approximant  $\upsilon$  (see discussion below). Similarly, there are very few cases in which I have been able to tell the dental stops  $\underset{\text{̣}}{\text{t}}$  and  $\underset{\text{̣}}{\text{d}}$  from the alveolar counterparts  $\text{t}$  and  $\text{d}$  with any certainty.

For this reason, the table below—which is based on the one given by Kutsch Lojenga (2001)—should be taken more as a rough guide to the consonantal inventory of Mijikenda. The transcription is almost completely IPA, with the common Africanist exception of using *y* for the palatal glide and not a vowel.

		Bilabial	Labiodental	Dental	Alveolar	Alveolar	Palatal	Velar	Labial-Velar	Glottal
Stops/Affricates	vl.unasp.	p		t̪	t	ts	tʃ	k	k̠p̠	ʔ
	vl.asp.	p ^h		t̪ ^h	t ^h	ts ^h	tʃ ^h	k ^h	k̠p̠ ^h	
	vd.	b		d̪	d	dz	dʒ	g	ɡ̠b̠	
	prenas.	mb		nd̪	nd	ndz	ɲdʒ	ŋg	ŋ̠m̠ɡ̠b̠	
Fricatives	vl.		f		s		ʃ			h
	vd.	β	v	ð	z		ʒ			ɦ
Nasals		m			n	ɲ	ŋ		ŋ̠m̠	
Liquids					l, r					
Glides							y		w	

Table 1.2: Mijikenda consonants

**Aspiration** All of the voiceless stops and affricates have aspirated counterparts, i.e., p^h, t̪^h, t^h, k^h, ts^h, tʃ^h and k̠p̠^h. This aspiration is much more pronounced in some dialects than others. Digo seems to have completely lost the distinction.

**Prenasalized stops** All of the voiced stops and affricates have prenasalized counterparts, i.e., mb, nd, ŋg, ndz, ɲdʒ and ŋ̠m̠ɡ̠b̠. For a discussion of their status as prenasalized stops (as opposed to homorganic nasal+obstruent sequences) see Kutsch Lojenga (2001), but note the evidence provided by their tonal behavior: voiced oral obstruents like b are tonal depressors (roughly speaking, they can be said to be associated with low tone; see chapter 3), whereas prenasalized obstruents like mb are not.

**The voiced palatal fricative** The phoneme ʒ is unique to Giriyama, and corresponds to vy in other dialects. Consider, for example, Giriyama ku-ʒāla ‘to give

birth’, which in the other dialects is *ku-vyāla* or *ku-vyála*.

**The voiced bilabial fricative** All Mijikenda dialects have a phoneme which is transcribed here  $\beta$ , following Kisseberth (1984). Taylor (1891) gives the following description of this sound: “This is pronounced by approaching the lips as though to form *b*, and then pronouncing a *W*, at the same time making a very slight contact of the lips through which the soft muffled sound gently issues.” [p.xi], from which it may appear to be a fricative. However, in a paper dealing primarily with this phoneme in Giriyama, Kutsch Lojenga (2001) concludes that it is in fact the labiodental approximant  $v$ . This may or may not be true for all Mijikenda dialects; what is clear, however, is that there are two  $v$ -like sounds in all of Mijikenda which differ in terms of their tonal behavior (“depressorhood”).

**Breathy voice** Taylor (1891) describes a set of Giriyama breathy voiced nasals  $\text{ṁ}$  and  $\text{ṅ}$ . As Kutsch Lojenga (2001) notes, these are found only in the words  $\text{ṁāma}$  ‘mother’ and  $\text{ṅane}$  ‘eight’, of which only  $\text{ṁāma}$  appears in the Giriyama recordings. Kutsch Lojenga also mentions the existence of a Giriyama ideophone with a breathy-voiced  $\eta$ , namely  $\eta\text{ɔɔ}$  (a gloss is not given).

**Nasalized Vowels** Throughout Mijikenda, a vowel adjacent to the consonant [h] becomes nasalized, for example in the Duruma word *kī-hī* ‘chair’.¹ Nasalization is more pronounced in some dialects than in others, and in Digo even appears in words where the original [h] has been lost, e.g., *ku-rōā* ‘to dream’, which is *ku-lōha* in all other dialects. For the sake of simplicity, nasalization is not indicated in this work.

**Phrase-Level Stress** The penultimate syllable of the phonological phrase is always lengthened.

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¹As a reviewer helpfully notes, this intriguing process of “rhinoglottophilia”—the connection between nasality and glottal articulation (Matissoff, 1975)—is mostly encountered on the vowel following the glottal, whereas in Mijikenda it appears to operate in both directions.



## 1.6.2 Morphological Outline

The morphology of Mijikenda is typical of Bantu languages and very close to that of Standard Swahili. The recordings discussed here do not cover the entire range of affixes and inflectional possibilities, and so the following outline is based in part on those given by Lax (1996), Nicolle (2004) and Nurse (2008).

### 1.6.2.1 Nouns

As usual in Bantu languages, every noun falls into one of several “classes”. Noun classes are distinguished by the prefix of the noun and by various affixes on modifiers and verbs. Noun class prefixes are virtually identical across Mijikenda, with the notable exception of Giriyama which has *ki-* in class 7 stems and *3-* in vowel-initial class 8 stems, where the other dialects have *tʃi-* and *vy-*, respectively. Table 1.3, adapted from Lax (1996), shows the different noun class prefixes with their respective verbal affixes: subject prefix (SP) and object prefix (OP). Note that since I do not have systematic data on noun classes and agreement, there may be some inaccuracies in the table, especially in regard to Digo; according to Nicolle (2004), for example, classes 12 and 13 have been lost in Digo. As the table also shows, one of the functions of noun class is the singular/plural distinction. So, for instance, the plural of a class 1 noun is the corresponding class 2 noun, the plural of class 3 is class 4, of class 5 is class 6, etc. Not all pairings are as orderly as that: for example, class 10 acts as the plural of classes 9 and many nouns in class 11.

### 1.6.2.2 Verbs

The verbal morphology of Mijikenda is, again, typically Bantu, consisting of a verb stem to which multiple inflectional and derivational affixes are attached. Nurse (2008) gives the following structure for the Giriyama verb, which applies equally well to the rest of Mijikenda. (The notation has been adapted slightly, to correspond to the one used in this work).

- (1) (Pre-SP) – (N)SP – TM – (REL) – (OP) – Root – (EXT) – FV – (Post-FV)  
 – Pre-SP: *niku* ‘HABITUAL’, *na* ‘HORTATIVE’

Class	Prefix	SP	OP * Examples
1	mu-/m-/ŋm-	a-/w-/yu-	mu th u 'person', ngmana 'child'
2	a-	ma-/m-	at ^h u 'people', ana 'children'
3	mu-/m-/ŋm	u-/w-	muhi 'tree', ngmezi 'moon', mangga 'cassava'
4	mi-/my-	i-/y-	mihhi 'trees', myezi 'moon', myanga 'cassavas'
5	dzi-/-	ri-/r-	dzitso 'eye', dzina 'name', bādi 'herd'
6	ma-	ga-/g-	matso 'eyes', madzina 'names', mabādi 'herds'
7	ki-/tʃi-/tʃi-	ki-/tʃi-/tʃi-	kini/tʃihhi 'chair', tʃombo 'boat'
8	vi-/vy-/ʒ-	vi-/vy-/ʒ-	vihi 'chairs', vyombo/zombo 'boats'
9	N-/-	i-/y-	pumba 'house', tsi 'land'
10	N-/-	zi-/z-	pumba 'stories', K ^h ombe 'claws'
11	lu-/lw-/li-/ri-	lu-/lw-	lugbe 'rope, lu-kombe 'claw', ringu 'big cloud'
12	ka-	ka-/k-	ka-nundu 'small bat'
13/14	u-/w-	u-/w-	wira 'song', ulozi 'marriage'
15	ku-/kp-	ku-/kp-	ku-piga 'to hit'
16	ha-/p ^h a-	ha-/h-	hat ^h u/p ^h at ^h u 'place'
17	ku-/kp-	ku-/kp-	ku th u 'place'
18	mu-/m-/ŋm-	mu-/m-/ŋm-	mwahali 'inside place' (Nicolle, 2004)

Table 1.3: Mijikenda Noun Classes

- (N)SP: (Negative) Subject Prefix. Negative SPs are formed by prepending k^ha- to the normal class SP, except for the first person singular NSP which is si-.
- TM: Tense/aspect marker, e.g., dza-/dzi- for the perfect tense, nda- for the future tense, etc.
- REL: Relative marker; formed from the class marker + -o. (This work does not cover relative verbs).
- Root: The verb root, taken here without the final vowel which is prototypically -a, e.g. for ku-piga ‘to hit’, the root is -pig-.
- EXT: “Verb Extension” is the traditional Bantuist name for a class of derivational affixes, such as benefactive, reciprocal etc. A Verb can include more than one extension.
- FV: Final Vowel. Normally determined from the tense, but verbs with a non-default final vowel may maintain it in some constructions. FV also includes the suffix -ire used only in the negative past tense.
- Post-FV: Another REL, the plural imperative suffix -ni, etc.

The root, together with any extensions, is usually referred to as the *stem*. The stem plus any object prefix is called the *macrostem*; the macrostem is a meaningful unit in many Bantu languages, and plays an important role in Mijikenda tonology.

Throughout this work, whenever I discuss data from a certain tense, I shall present the relevant morphological structure.

### 1.6.3 Stem Length

It is common in the Bantu literature to see the term “verb root” refer to the stem without its final vowel. This is primarily due to the fact that the final vowel is in most cases determined by the tense: compare ku-pig-a ‘to hit’, mu-pig-e ‘hit him/her!’ and si-píg-ire ‘I did not hit’. Thus, Kisseberth (1984) refers to -pig- as a “monosyllabic verb stem” [p.117].

Note, however, that there are also several verbs such as *ku-subūtu* ‘to dare’ or *ku-zīdi* ‘to surpass’ with non-default final vowel. These verbs maintain their final vowels in some of the tenses. For this reason, throughout this work verb stems are considered to include their final vowel: for example, the stem of *ku-piga* is the bisyllabic *-piga*. This is not to be taken as any statement about the morphology; it is merely a matter of convenience.

On another note, in Mijikenda tonology we often see different behavior for verbs and nouns with bisyllabic (in the sense used here) or shorter stems as opposed to trisyllabic or longer. For this reason, when I refer here to “polysyllabic stems”, I mean “trisyllabic or longer”: *ku-piga* ‘to hit’ is bisyllabic, *ku-kalāŋga* ‘to fry’ polysyllabic.

## 1.7 Tone: An Overview

Below is a very brief overview of the major tonal phenomena of Mijikenda dealt with in this study. Naturally, the actual analyses and motivation for these claims are presented in the following chapters; for a detailed overview, see chapter 7.

**Underlying Tones** The underlying opposition is of high vs. toneless. Verb stems may have an underlying high tone on the initial TBU, yielding two tonal types; for noun stems, a combination of a high tone on the initial and penultimate or final TBU is possible, yielding six tonal types.

**High Tone Shift** An underlying high tone shifts to the right within the phonological phrase:

- The last (or only) high tone in a phrase shifts to the penult, e.g., Giryama *a-na-mala ku-gula ŋgũ:wo* ‘(s)he wants to buy clothes’.
- A non-final high tone surfaces on the TBU before the underlying location of the next high tone (Kambe₂ *yú-ná-kalā:ŋga* ‘(s)he’s frying’ or on the said TBU (Giryama *a-na-kalāŋga*). This latter case is called *Overlap*, and the conditions for it vary between dialects, and depend primarily on the length of the stem and the presence or absence of an object prefix.

**Hidden High Tones** The final TBU in a phonological phrase is never pronounced high; this, combined with the fact that High Tone Shift operates from left to right, means that a high tone which is underlyingly on the final TBU in a phrase is not pronounced, e.g., *tsi* ‘land’ (not **tsi*).

**Grammatical Tones** Certain verb tenses, most notably the negative tenses, are associative with “grammatical tone”—tone patterns that override the stem tone in most cases. A simple example is the imperative, which appears to be toneless unless followed by a suffix or another word. There is often a trace of the original stem tone on bisyllabic stems in such cases.

**Depressors** A class of consonants—primarily voiced obstruents—can restrict high tone shift. Compare the Giriyama *a-na-rí-rě:ha* ‘I’m giving back [cl.5]’ with *a-ná-ga-rě:ha* ‘I’m giving back [cl.6]’ (not **a-na-gá-rě:ha* ‘I’m giving back [cl.6]’).

**Plateau** In all Mijikenda dialects except Giriyama and Kambe₂, all TBUs following a surface high tone up to the penult or the first depressor are also pronounced high. Compare the Giriyama *a-na-kálanǵi:ra* ‘(s)he’s frying for’ with the same word in Chonyi₁, *a-na-kálanǵi:ra*.

**Downstep** When there are two adjacent surface high tones, most Mijikenda dialects have a downstep; however, this only happens on the penult.

**Fission** In Riße and Kauma (and to a much lesser degree in Digo), every TBU preceding a depressor in the wake of High Tone Shift is also pronounced high. Compare the Riße₂ phrase with a single underlying high tone *a-na-píga má-bumbũ:mbu* ‘(s)he’s beating drums’ with *ni-na-piga ma-bumbumbu* ‘I’m beating drums’.

The transcriptions are often influenced by phonological considerations (see especially the discussion in §2.7.1); see appendix B for representative pitch traces. In relation to pitch traces, I can only agree with Hyman (2010) who writes that “[t]he problem with looking at the f₀ properties of tones too early is the tendency to interpret them literally” [p.202]. As Pike (1948) writes, “the danger can be avoided if the investigator uses such [instrumental] data to describe the tonal

variants but for publication of grammatical and phonetic studies uses a written transcription which records only the significant tone units" [p.44].

## Chapter 2

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# High Tone Shift and Plateau

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“Death of my soul!” he exclaimed. “Why, how did you get here?”

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Charles Dickens, *Little Dorrit*

This chapter presents the two basic tonal processes of Mijikenda tonology: High Tone Shift and Plateau. These can be (very generally) summarized as follows:

- The underlying opposition is that of high vs. toneless (rather than high vs. low); nevertheless, as a matter of convention I shall follow the example of Kisseberth (1984) and refer to toneless verb stems as Low.¹
- All high tones shift to the right as far as possible, i.e., up to the underlying location of the next high tone or the penult. Dialects differ in the exact surface location.
- In most Mijikenda dialects, a high tone will spread to the right after surfacing.

The data in this chapter are taken mostly from the present tense.

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¹In the sense of Clements (2001, 2003), then, low tone is not “activated” in Mijikenda phonology. I am indebted to a reviewer of the present work for bringing this point to my attention.

## 2.1 High and Low Verb Stems

Tonally, every verb stem in Mijikenda can be classified as either High or Low. This is readily seen in the infinitive, as the Giryama data in (2) show. The underlined vowels indicate the underlying location or “sponsors” of surface high tones; evidence in justification of these underlying locations will be discussed at a later stage.

(2) Giryama: Low and High verb stems in the infinitive.

Low Verbs		High Verbs	
ku-βa:na	‘to mark, brand’	ku-nē:na	‘to speak’
ku-gu:la	‘to buy’	ku-bā:nda	‘to break’
ku-dege:za	‘to slacken’	ku- <u>de</u> de:dza	‘to persevere’
ku-hamba:la	‘to crawl’	ku-h <u>ah</u> i:ka	‘to vomit’
ku-bagari:ka	‘to fade, wither’	ku-b <u>in</u> ingĩ:za	‘to cover’
ku-marigi:za	‘to finish’	ku-f <u>i</u> nikĩ:ra	‘to cover’
ku-marigizi:ka	‘to come to an end’	ku-k <u>u</u> luhirĩ:ka	‘to be trustworthy’
ku-oŋgola-oŋgo:la	‘to soothe’	ku-de <u>ng</u> erekē:ra	‘to go round’

The state of affairs in (2) is clear: in the infinitive, High verb stems are pronounced with a rising intonation on the (lengthened) penultimate syllable. Note that vowel length is not contrastive in Mijikenda: the penultimate vowel in a phrase is always predictably long.

Here are the basic points I shall argue for:

- High verb stems supply a single high tone, which is associated (in the underlying representation) with the first stem mora; as indicated above, this is marked by underlining the relevant vowel, e.g., ku-dengerekē:ra. This high tone then shifts to the right, surfacing as it does on the penult.
- Low verb stems are underlyingly toneless. While it would be possible to analyze these as having an actual Low tone, the extreme mobility of high tones in Mijikenda and the fact that these hypothetical Low tones show no effect on the tone system leads me to this choice.



### 2.1.1 The Penult

The penultimate syllable of a phrase enjoys special status in Mijikenda. It is the locus of phrase-level stress (realized by vowel length alone) and it is also the most prominent position for the expression of high tones, as we shall see repeatedly. Now, these two facts may clearly be related; there have been several analyses of Bantu tone systems in which tone is said to be attracted to prosodically prominent positions (Odden, 2001; Hyman, 2009). At this stage we have not seen enough of the tone system of Mijikenda to say whether high tones are better described as attracted to the penult or not, but there is one point that requires our attention. This is the fact that, as we have seen in Giriyama, a single high tone will surface as a *rising* tone on the penult.

If we examine the situation at the moraic level, a natural analysis suggests itself. Consider a form like ku-kaḷaŋgĩ:ra ‘to fry for’. If we spell out the moras of the lengthened vowel we get ku-kaḷaŋgĩra. This allows us to say, simply, that a single high tone is heard on the penultimate *mora*. Such an analysis saves us the need to “deal” with a contour tone.

Now, there is nothing wrong with this view in itself. It is, in fact, the view adopted in Volk (2007). The situation becomes more problematic when we look at the different dialects and see that in some of them the penult is pronounced not with a rising but a level high tone (or possibly with a very slight rise in careful speech). Facts such as these have been partially responsible for some authors’ decision to transcribe the phonetically rising tone in Giriyama as a level high tone, i.e., ku-kaḷaŋgĩra for what is transcribed in this work as ku-kaḷaŋgĩ:ra; this is the approach taken by Philippson (1991) and by Cassimjee and Kisseberth (1992, 1998). See also the pitch traces in appendix B.

Whatever the transcription method, one thing is clear: the pronunciation of the penult *in such cases* is completely predictable, being a rising tone in some dialects and a level high tone in others. I have opted to transcribe the rising tone whenever it is heard, primarily since I consider it worthwhile to preserve phonetic detail which may prove important in future analyses. There are also cases, which we shall come across shortly, in which the penult surfaces with a different tonal shape; in other words, in any Mijikenda dialect we find contrasting

pitch contours on the penult.

## 2.2 Present Tense: Low Stems

Consider now the present tense forms of Low verb stems in (3) below. The verbs are the same ones as in (2). The present tense marker is -na-.

(3) Giryama: Low verb stems in the present tense.

Infinitive	Present 1sg.	Present 3sg.
ku-βa:na	ni-na-βa:na	<u>a</u> -na-βǎ:na
ku-gu:la	ni-na-gu:la	<u>a</u> -na-gǔ:la
ku-dege:za	ni-na-dege:za	<u>a</u> -na-degě:za
ku-hamba:la	ni-na-hamba:la	<u>a</u> -na-hambǎ:la
ku-bagari:ka	ni-na-bagari:ka	<u>a</u> -na-bagarĩ:ka
ku-marigi:za	ni-na-marigi:za	<u>a</u> -na-marigĩ:za
ku-marigizi:ka	ni-na-marigizi:ka	<u>a</u> -na-marigizi:ka
ku-ɔŋgola-ɔŋgo:la	ni-na-ɔŋgola-ɔŋgo:la	<u>a</u> -na-ɔŋgola-ɔŋgǔ:la

As we can see, the first person present tense forms are tonally identical to the infinitive, with no surface tone. The third person forms, however, behave like the infinitive forms of *High* verb stems, in that they surface with a rising penult. Since the only difference between a form such as ni-na-ɔŋgola-ɔŋgo:la and a-na-ɔŋgola-ɔŋgǔ:la is the subject prefix, the natural conclusion is that the third person subject prefix a- is the “sponsor” of the high tone. In the surface form, then, the high tone has shifted to the right, surfacing on the penult. This supplies us with the first real evidence of High Tone Shift in Mijikenda.

### 2.2.1 The Scope of High Tone Shift

At this point it would be profitable to take an advance peek at one of the more striking features of Mijikenda tonology, namely just how far High Tone Shift can go. The data below cannot be fully discussed until we see more of the system, but contrasting the two columns in (4)—one without an underlying high tone and the other with a single high tone—will demonstrate the point.

## (4) Giryama: Mobility of high tone from 3sg. subject prefix:

1sg. 'I (am) ...'	3sg. '(S)he (is) ...'	
ni-na-tsanga	<u>a</u> -na-tsã:nga	'... splitting'
ni-na-tsanga ma-gogo	<u>a</u> -na-tsanga ma-gõ:go	'... splitting logs'
ni-na-gula	<u>a</u> -na-gũ:la	'... buying'
ni-na-gula nguwo	<u>a</u> -na-gula ngũ:wo	'... buying clothes'
ni-na-mala	<u>a</u> -na-mã:la	'... want(s)'
ni-na-mala ku-gula	<u>a</u> -na-mala ku-gũ:la	'... want(s) to buy'
ni-na-mala ku-gula nguwo	<u>a</u> -na-mala ku-gula ngũ:wo	'... want(s) to buy clothes'

## (5) Giryama: Mobility of High verb stem tone onto an object:

ku-bã:nda	'to break'
ku-bãnda mi-vũ:re	'to break wooden bowls'
ku-hě:ga	'to entrap'
ku-hega mu-hã:mbo	'to set a trap'

## (6) Giryama: Mobility of high tone from a preposed object:

*No high tones in the phrase:*

ni-na-m-riha tʃa:ro	'I am repaying (a debt to) Charo'
tʃaro ni-na-m-ri:ha	'Charo, I am repaying [him]'
yeri ni-na-m-tsagu:la	'Yeri, I choose [him]'

*A high tone shifts from a noun:*

kazungu ni-na-m-rĩ:ha	'Kazungu, I am repaying [him]'
tʃome ni-na-m-tsagũ:la	'Chome, I choose [him]'
ni-na-m-gurira tʃilyalya ngũ:wo	'I am buying clothes for Chilyalya' (Chonyi)
tʃilyalya ni-na-m-gurira ngũ:wo	'Chilyalya, I am buying clothes for' (Chonyi)

The examples in (4) show us that the process of High Shift operates well beyond the scope of the word; contrast for example *ni-na-mala ku-gula ngu:wo* 'I want to buy clothes' with *a-na-mala ku-gula ngũ:wo* '(s)he wants to buy clothes'; the only difference is in the subject prefix, hence the surface high tone must be contributed by the prefix *a-*, and yet it is only heard at a distance of two words. The examples in (5) show that the high tone of High verb stems shifts in exactly the same way: the high tone from the stem of *ku-bã:nda* shifts onto the

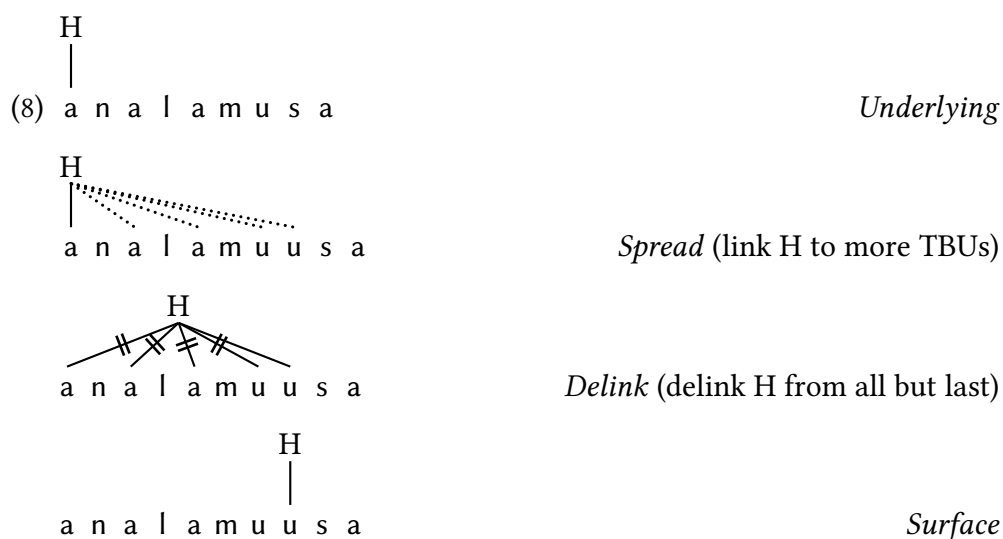
noun in ku-banda mi-vũ:re. Finally, the data in (6) demonstrate the mobility of high tones originating from a noun onto a verb and beyond it; while I cannot at present justify the choice of underlying high tone on the final vowels of *kazungu* and *tʃome* as opposed to some other location on the noun—this is covered in the discussion of nominal tonology in chapter 4—it is clear that these words are the sources of the high tones heard on the penult of the following verb (*tʃome ni-na-m-tsagũ:la*), and even on the noun following the verb (*tʃilyalya ni-na-m-gurira ngũ:wo*).

It is worth noting that the data in (6), in which a high tone shifts from a preposed object, are quite unusual in Bantu tone, where there is normally a phonological phrase boundary between the noun and the verb in such cases. As we shall see in chapter 6, this only occurs under specific conditions in Mijikenda (when the high tone is associated underlyingly to final vowel of the noun), and in that sense is not the rule but the exception, even in Mijikenda.

Although there is much more to be said about tonal phrases in Mijikenda, the following should be clear by now: a single underlying high tone in a phrase shifts rightward to the penult. This applies equally to high tones originating on a subject prefix (4), a verb stem (5) and a noun (6).

In the autosegmental approach to the representation of tone (Goldsmith, 1976), High Tone Shift is described thus: In the underlying representation, a high tone is associated with the third person subject prefix. In the surface form, this tone is associated with the penult (7). According to one's choice of analysis, the derivation may or may not proceed through an intermediate stage in which the high tone is linked to all intervening tone-bearing units, i.e., High Tone Spread followed by Delinking (8).





In the descriptive part of this work I shall use autosegmental diagrams, mainly as an illustration and to help clarify the points being made. Later I discuss the applicability of the domain abstraction (Kisseberth, 1994; Cassimjee and Kisseberth, 1998) to Mijikenda tone. Within an autosegmental view, however, we shall see that the Mijikenda facts support a decomposition of High Tone Shift into High Tone Spread followed by Delinking; in fact, Odden (2001) claims that this is universally the case.

The natural question would now be: what happens to High verb stems in the present tense with third-person prefix—in other words, what happens when we have multiple underlying high tones in a single phrase? Let us now examine one such case.

### 2.3 Present Tense: High Stems (Kambe₂)

We begin our exploration of High verb stems in the present tense with a pattern that happens to be quite marginal within Mijikenda—in fact, only one of the two Kambe speakers recorded by Kisseberth (referred to hereafter as Kambe₂) shows this pattern. Nevertheless, it is a good place to start, since it reveals much about the principles underlying the system.

- (9) Kambe₂ High verb stems in the present tense (note: the rise on the penult in these verbs is very slight and might equally as well have been transcribed as a level high):

Infinitive	Present 1sg.	Present 3sg.	
ku-lǎ:la	ni-na-lǎ:la	y <u>u</u> -ná-lá:la	‘sleep’
ku-rě:ha	ni-na-rě:ha	y <u>u</u> -ná-ré:ha	‘give back’
ku-rĩ:sa	ni-na-rĩ:sa	y <u>u</u> -ná-rí:sa	‘feed’
ku-hĩrĩ:ka	ni-na-hĩrĩ:ka	y <u>u</u> -ná-hĩrĩ:ka	‘send, take along’
ku-kalǎ:ŋga	ni-na-kalǎ:ŋga	y <u>u</u> -ná-kalǎ:ŋga	‘fry’
ku-kalǎŋgĩ:ra	ni-na-kalǎŋgĩ:ra	y <u>u</u> -ná-kalǎŋgĩ:ra	‘fry for’
ku-tsunḡurĩ:ra	ni-na-tsunḡurĩ:ra	y <u>u</u> -ná-tsunḡurĩ:ra	‘peep’

In the first person forms we find no great surprise: since the first person subject prefix *ni-* has no high tone to contribute to the word, we are left with the single High from the stem, which surfaces on the penult.

But the third-person forms reveal something new. Recall that in these verbs there are two underlying high tones: one which we have argued to be on the subject prefix (*yu-* in Kambe), and another on the first stem mora. And in these verbs we clearly see two surface high tones. The stem high tone has shifted to the penult as usual, while the high tone from the subject prefix is heard on the tense marker *-na*². Now, there are two plausible explanations for this fact: either the high tone from the subject prefix surfaces on the tense marker due to this morpheme being somehow prominent (along the lines of the “attract-to-penult” analysis), or it simply shifts as far as possible up to the next high tone (the one on the stem).

To choose between the two types of argument, let us consider verbs which include an object prefix. At this point it is worth noting that object prefix in the present tense are toneless in all Mijikenda dialects but Digo.

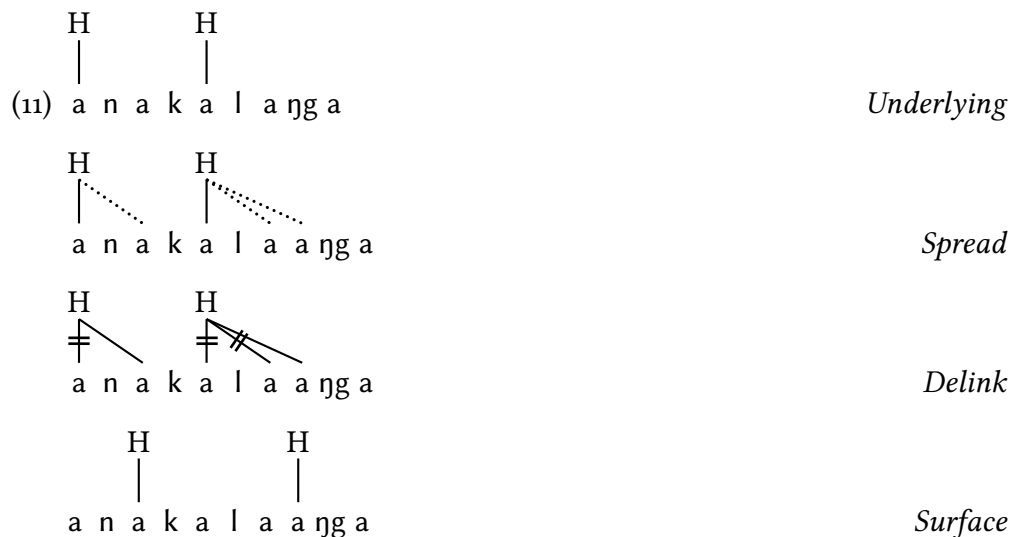
²It would also be possible to analyze this differently, with the prefix high tone surfacing on the penult whilst the stem high tone shifts to the left; since all tonal processes in Mijikenda can be analyzed consistently as operating from left to right, I shall not pursue this line of analysis further.

- (10) Kambe₂ High verbs in the present tense with an object prefix (here again, the rise on the penult is very slight):

ku-rě:ha    yu-na-ní-ré:ha    '(s)he is giving me back'  
 ku-hĩrĩ:ka    yu-na-ní-hĩrĩ:ka    '(s)he is taking me along'  
 ku-sĩkĩ:ra    yu-na-ní-sĩkĩ:ra    '(s)he remembers me'

As the data in (10) show, the high tone from the subject prefix will advance to the object prefix when there is one. Taken together with the data in (9), this means that the high tone from subject prefix always surfaces on the *pre-stem* mora (when the verb stem is high-toned). When we consider that the stem-initial mora is also the underlying location of the lexical high tone, the situation becomes quite clear: the high tone from the subject prefix shifts to the right up to the mora before the stem high tone. As we shall see throughout Mijikenda, this is generally the case: other things being equal, a high tone will shift up to the underlying location of the next high tone.

In autosegmental terms, this is quite easy to derive: in the spreading stage, every high tone spreads onto all toneless TBUs to its right, stopping before the next high tone:



## 2.4 Giriyama: Overlap

Having seen the simplest type of tonal interaction in Mijikenda, we now move on to one that offers another complication. Below are some Giriyama High verb stems in the present tense:

(12) Giriyama High stems in the present tense, with and without an OP³:

ku-tǎ:la	<u>a</u> -na-tǎ:la	<u>a</u> -na-kí-tǎ:la	‘count’
ku-fĩ:t̃sa	<u>a</u> -na-fĩ:t̃sa	<u>a</u> -na-rí-fĩ:t̃sa	‘hide’
ku-rê:ha	<u>a</u> -na-rê:ha	<u>a</u> -na-rí-rê:ha	‘give back’
ku-hĩrĩ:ka	<u>a</u> -na-hĩrĩ:ka	<u>a</u> -na-mú-hĩrĩ:ka	‘send, take along’
ku-kalǎ:ŋga	<u>a</u> -na-kalǎ:ŋga	<u>a</u> -na-í-kalǎ:ŋga	‘fry’
ku-kalangĩ:ra	<u>a</u> -na-kalangĩ:ra	<u>a</u> -na-kú-kalangĩ:ra	‘fry for’

In Giriyama, unlike Kambe₂, the high tone from the third person subject prefix does not always surface before the stem. The generalization here is quite different, as a matter of fact: the high tone from the subject prefix surfaces on the first stem mora in the absence of an object prefix, and on the object prefix when one is available.

How do we explain this? The first thing to note is that the stem, taken together with the object prefix, is a well-known morphophonological entity in Bantu languages, commonly referred to as the *macrostem*. In other words, we can say that in these Giriyama verbs, the subject prefix high tone is always heard on the first mora of the macrostem. Note that in bisyllabic stems, this results in two high tones being pronounced on a single (bimoraic) vowel: a verb like a-na-pǎ:ta is more precisely transcribed a-na-pǎ[↓]áta, where the first mora of the long vowel receives the high tone from the subject prefix, and the second mora has the (downstepped—see below) stem high.

### 2.4.1 Downstep and Falling Tones

There is another phenomenon visible here, namely that of *downstep*. Basically, what this means is that when two high tones surface on adjacent TBUs, the second one is pronounced at a slightly lower pitch than the first. This phenomenon

³More on the phonetic reality behind these transcriptions in §2.7.1.



is in fact quite common in Mijikenda, and we will return to it in more detail later on. For now, what we need to keep in mind is this: a high tone pronounced on the penult is pronounced at a lower pitch than the one preceding it. As discussed above, we can get the shape of bisyllabic stems like  $\underline{a}$ -na-pâ:ta as the result of downstep between the two moras of the penult:  $\underline{a}$ -na-pâ'áta. Note that the high tone heard on the first mora is the one from the subject prefix, whilst the downstepped high on the second mora is that of the stem.

Again, a more detailed overview of the different tonal shapes in Mijikenda will be presented later on, once we have seen more of the relevant data. Note specifically that downstep is described as being restricted to the penult. When we encounter some of the more complex cases like the past tense (§3.9.1), we will see that this corresponds to a general tendency to avoid a high tone (resulting from Plateau) on the penult.⁴

### 2.4.2 Overlap

The Giryama data presented above differ in one crucial aspect from what we've seen in Kambe₂. In the forms with an object prefix, Giryama behaves identically to Kambe₂, with the high tone from the subject prefix surfacing before the stem. When there is no object prefix, however, we see the first occurrence of (apparent) *overlap*: compare Kambe₂  $y\underline{u}$ -ná-kálǎnga with Giryama  $\underline{a}$ -na-kálǎnga '(s)he's frying'. The choice of terminology will become more meaningful when we discuss Optimal Domains Theory in chapter 8; for now, I shall simply use the term "overlap" when a high tone surfaces on a TBU which is the underlying location of another high tone. Figuratively speaking, the high tone from the subject prefix "trespasses" the domain of the stem high tone.

In our formulation of the spreading step, we have seen high tones spread onto all toneless TBUs, but here the actual phonetic shape has the subject prefix H on a previously occupied TBU. Should we modify High Tone Spread in Giryama to allow the high tone to spread onto the stem? This does not seem

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⁴As a reviewer notes, the falling tone diacritic [ $\hat{v}$ :] is actually ambiguous between a H!H ( $\hat{v}+\hat{v}$ ) and a HL ( $\hat{v}\hat{v}$ ) sequence, although phonetically there doesn't appear to be a noticeable difference between the two in Mijikenda. In cases where it is not clear which type of fall is meant, I will specify it; in the present chapter, however, all falls are H!H sequences.

desirable, primarily since such a formulation would probably be quite cumbersome (recall that overlap in *Giryama* happens only in the absence of an object prefix). Instead, let us add another step between spreading and delinking, that allows a high tone to spread onto an occupied TBU under certain conditions: in *Giryama*, the condition is “no object prefix”; *Kambe₂* simply doesn’t have this step. In the next chapter, we will see cases where an intermediate step must come between spreading and overlap.



### 2.4.3 Competing Motivations

This section makes use of OT-like constraints; these constraints are meant as illustrations to the point, and do not necessarily correspond to the actual constraints used later in the OT analysis.

Whichever way we construct our analysis, the difference between *Kambe₂* and *Giryama* still needs to be explained: why does the high tone from the subject prefix stop before the stem in *Kambe₂* (a-ná-kalá:nga) and on the stem in *Giryama* (a-na-kalá:nga)?

The pattern, which will become clearer as we broaden our survey of the *Mijikenda* facts, suggests that in *Giryama* the first mora of the macrostem has special importance; one might say that it is prominent enough to incur domain overlap. In OT-style argumentation, we would say that HIGH MACROSTEM—a

hypothetical constraint requiring that the first mora of any macrostem be pronounced high—outranks NO OVERLAP in *Giryama*, making *a-na-ká:lá:nga* a better output candidate than *a-ná-ká:lá:nga*⁵.

It should be noted, of course, that HIGH MACROSTEM is not an all-powerful force in *Giryama*. Specifically, it never outranks the constraint driving High Shift to the penult (exactly what that constraint might be is of no importance now; in chapter 8 I argue that it is a constraint requiring all TBUs to be associated with a high tone). We see this in cases where there is only one underlying high tone. This is why we get *a-na-ongola-ongõ:la* and *ni-na-ká:lá:nga*; if HIGH MACROSTEM were to outrank HIGH SHIFT, we would get **a-na-óngola-ongo:la* and **ni-na-ká:lá:nga*.

Let us review what we have seen so far of *Mijikenda* tonology:

- High tones shift as far to the right as possible, i.e., up to the underlying location of the next high tone or the penult.
- In *Giryama*, a high tone will shift one further step onto the first mora of a high-toned stem when there is no object prefix.

## 2.5 Chonyi: Stem Length and Plateau

### 2.5.1 Trisyllabic Stems

Like *Kambe*₂, *Giryama* is not the most typical *Mijikenda* dialect in terms of the conditions for overlap. Let us now consider the facts of *Chonyi*, which comes much closer to what might be called the *Mijikenda* “norm”. We begin with trisyllabic stems (note that *Chonyi*₁ and *Chonyi*₂ differ in the shape of the 3sg. subject prefix⁶, but the conditions for overlap are the same in both):

⁵In my MA thesis on *Giryama* (Volk, 2007), I took a different approach. By themselves, the *Giryama* facts suggest an analysis in which the high tone is not attracted to the macrostem, but rather “repelled” from the tense marker *-na-*; put differently, High Shift must advance beyond the tense marker, and that is the force driving overlap. In a broader view of *Mijikenda*, however, this analysis becomes less convincing, and I will not pursue it here.

⁶The different shapes of the 3sg. subject prefix, *yú-* vs. *a-* are by no means a feature of *Chonyi* alone. This variation is seen in almost all *Mijikenda* dialects, and may be a generational difference.

## (14) Trisyllabic High stems in Chonyi:

Infinitive	3sg.	3sg. with OP		
ku-tɛŋgê:za	y <u>u</u> -na-tɛŋgê:za	y <u>u</u> -na-tʃi-tɛŋgê:za	‘repair’	(Chonyi ₁ )
ku-kálâ:ŋga	y <u>u</u> -na-kálâ:ŋga	y <u>u</u> -na-tʃi-kálâ:ŋga	‘fry’	(Chonyi ₁ )
ku-hírî:ka	<u>a</u> -na-hírî:ka	<u>a</u> -na-ni-hírî:ka	‘send’	(Chonyi ₂ )
ku-síkî:ra	<u>a</u> -na-síkî:ra	<u>a</u> -na-ni-síkî:ra	‘hear’	(Chonyi ₂ )
ku-tʃímbî:ra	<u>a</u> -na-tʃímbî:ra		‘run away’	(Chonyi ₁ )
ku-kámû:la	<u>a</u> -na-kámû:la		‘squeeze’	(Chonyi ₁ )

Note first that, as in Giriyama, Chonyi has overlap in the OP-less forms, e.g., a-na-kálâ:ŋga. Unlike Giriyama, however, there is overlap even when an object prefix is present, as in yu-na-tʃi-kálâ:ŋga (not *yu-na-tʃí-kálâ:ŋga). It is not difficult to expand the argument made for Giriyama so as to cover Chonyi as well: all we need to say is that in Chonyi it is the stem proper, and not the macrostem, which attracts high tones. Again in OT phrasing, we would say that the constraint overriding No OVERLAP in Chonyi is HIGH STEM rather than HIGH MACROSTEM (independent motivation for both of these forces will be seen when we examine data from other dialects.)

One point remains unexplained in the data above, and that is the fact that the penult has a fall: we get yu-na-tɛŋgê:za rather than *yu-na-tɛŋgê:za (or possibly *yu-na-tɛŋg[↓]é:za). This is best seen as an instance of a more general “plateau” or spreading phenomenon which we shall soon encounter, when we look at longer stems in §2.5.3. Before we turn to that, however, let us consider the behavior of bisyllabic stems in Chonyi.

### 2.5.2 Bisyllabic Stems

Recall that in Giriyama, overlap can occur on bisyllabic stems, leading to two tones being pronounced on a single vowel (a-na-pâ:ta). This is not the case in Chonyi:⁷

⁷The falling tone on the penult in these data may appear to be the result of overlap. As in the case of trisyllabic stems above, I claim that it is in fact the result of other tonal processes. For now, the crucial thing to note is that the high tone from the SP surfaces on the pre-stem TBU.

(15) Chonyi bisyllabic High stems in the present tense:

Infinitive	3sg.	3sg. with OP		
ku-hǎ:dza	y <u>u</u> -ná-hâ:dza	y <u>u</u> -na-rí-hâ:dza	‘name’	(Chonyi ₁ )
ku-lǎ:vya	y <u>u</u> -ná-lâ:vya	y <u>u</u> -na-tjí-lâ:vya	‘give’	(Chonyi ₁ )
ku-tǎ:la	y <u>u</u> -ná-tâ:la	y <u>u</u> -na-βaí-tâ:la	‘count’	(Chonyi ₁ )
ku-rê:ha	<u>a</u> -ná-rê:ha	<u>a</u> -na-ní-rê:ha	‘give back’	(Chonyi ₂ )

As this shows, High Tone Shift is barred from overlapping on bisyllabic stems in Chonyi. This is due to a very common tendency in tone languages to avoid multiply-linked tones and/or contour tones. Again in OT terms, this would mean that the constraint against such forms, call it NO MULTI-LINK, outranks the constraint driving overlap—HIGH STEM in the case of Chonyi.⁸

So much for bisyllabic and trisyllabic High stems in Chonyi. What about longer stems?

### 2.5.3 Quadrisyllabic Stems: Plateau

Consider the following Chonyi data:

(16) Quadrisyllabic High stems in Chonyi:

y <u>u</u> -na-ǎngálâ:la	‘(s)he is astonished’	(Chonyi ₁ )
y <u>u</u> -na-pépérû:fa	‘(s)he is waving (tr.)’	(Chonyi ₁ )
<u>a</u> -na-kálangî:ra	‘(s)he is frying for’	(Chonyi ₂ )
<u>a</u> -na-tsúngúrí:ra	‘(s)he is peeping’	(Chonyi ₂ )
y <u>u</u> -na-ri-téngénê:za	‘(s)he is making [cl.5]’	(Chonyi ₁ )
y <u>u</u> -na-βa-kálangî:ra	‘(s)he is frying for them’	(Chonyi ₁ )

In these forms, high tones are pronounced on the stem-initial mora and on the penult. But unlike the data we’ve seen from Kambe₂ and Giryama, the second stem mora is also pronounced high. This is a phenomenon usually referred to as “Plateauing”—a levelling effect wherein a TBU situated between two surface high tones also becomes high (HOH → HHH).

⁸Note that NO MULTI-LINK may also be phrased as an OCP constraint: “no adjacent high tones *within a single syllable*.”

Now, additional data which we shall only be able to address at a later stage actually suggests a slightly different view of this phenomenon. What is happening here, I claim, is a second step of High Tone Spread: a surface high tone (the stem-initial high coming from the subject prefix, in this case) will spread to the right in Chonyi as far as possible. The high tone on the penult does not spread onto the ultima due to the independent ban on phrase-final high tones.

As far as the data we've seen so far goes, the difference in formulations may appear quite meaningless, since the two environments (being after a pre-penult surface high tone vs. being between two surface high tones) have always coincided so far. For the time being, let us simply choose the spreading analysis arbitrarily; when we've seen depressor consonants it will become clear that Plateau does not always reach the next surface high.

Another fact which hasn't been explained so far is the falling tone heard on the penult in these verbs (as well as in the trisyllabic forms encountered earlier). This, I claim, is the result of Plateau advancing onto the (vacant) first mora of the penult, producing a surface form as in (17) and (18) and below. Since the first and second moras of the penult are associated with different high tones, we get a downstep, i.e., a contour tone.

(17) y u n a t e ŋ e e z a (yu-na-t_eŋ_ez_a)

(18) y u n a r i t e ŋ e n e e z a (yu-na-ri-t_eŋ_en_ez_a)

Let us now review what we have so far:

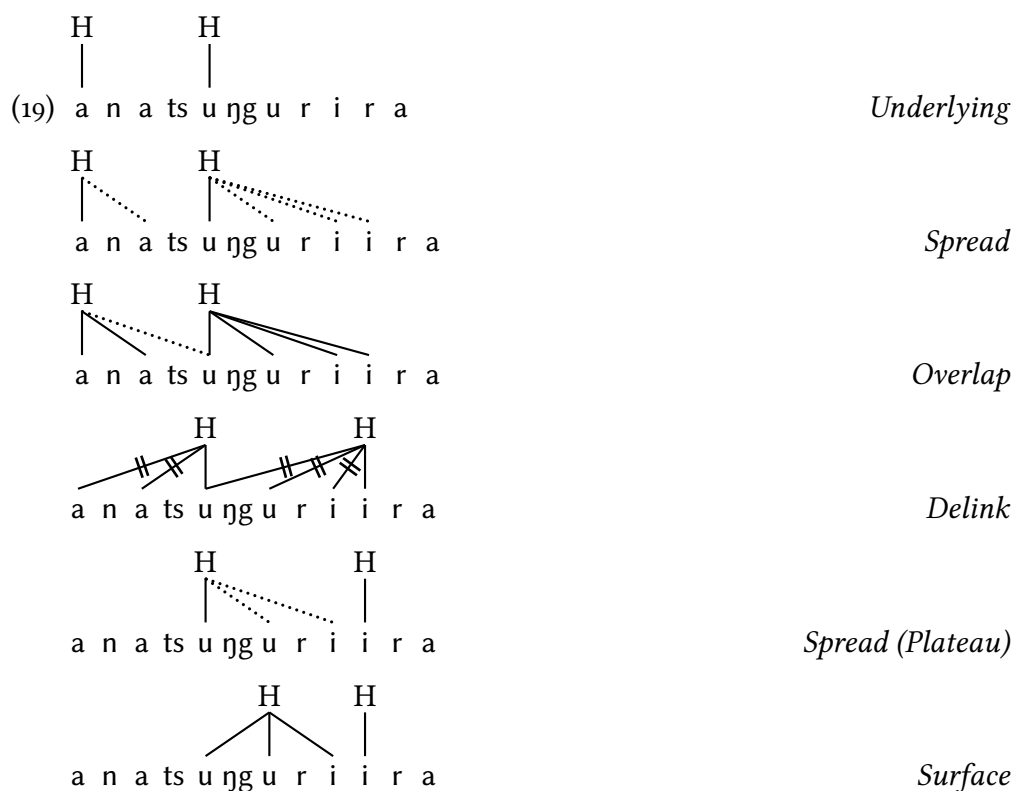
- High tones shift⁹ as far to the right as possible, i.e., up to the underlying location of the next high tone or the penult.
- In Giryama and Chonyi, a high tone will shift one further step onto the first mora of a certain morphological element (stem/macrostem).

⁹In terms of the derivation being developed here, this shifting is analyzed as spreading followed by delinking.

- In Chonyi, furthermore, overlap is blocked when it would lead to multiply-linked tones, i.e., on bisyllabic stems.
- Another effect seen in Chonyi is Plateauing: a surface high tone will spread to the right, up to the next surface high; just like High Tone Shift, this process will not spread onto the final mora.

### 2.5.4 The Plateau Step

Adding spreading/plateauing is, again, quite straightforward: all we need is an additional High Tone Spread step to follow Delinking.



## 2.6 Duruma: Competing Motivations

So far we have seen two factors which determine whether or not overlap occurs in Mijikenda: stem length and the relevant “target” (stem-initial as in Chonyi or macrostem-initial as in Giryama). Consider now the following Duruma data:

(20) Duruma₁ polysyllabic High stems in the present tense:

Infinitive	3sg.	3sg. with OP	Gloss
ku-hírí:ka	y <u>u</u> -na-hírí:ka	y <u>u</u> -na-ni-hírí:ka	‘(s)he is taking me along’
ku-síkí:ra	y <u>u</u> -na-síkí:ra	y <u>u</u> -na-ni-síkí:ra	‘(s)he remembers me’
ku-tɛŋgě:za	y <u>u</u> -na-tɛŋgě:za	y <u>u</u> -na-tʃi-eɛŋgě:za	‘(s)he is repairing [cl.7]’
ku-kálá:ŋga	y <u>u</u> -na-kálá:ŋga	y <u>u</u> -na-ri-kálá:ŋga	‘(s)he is frying [cl.5]’
ku-káŋgĩ:ra	y <u>u</u> -na-káŋgĩ:ra	y <u>u</u> -na-ku-káŋgĩ:ra	‘(s)he is frying for you’

(21) Duruma₁ bisyllabic High stems in the present tense:

Infinitive	3sg.	3sg. with OP	Gloss
ku-hǎ:dza	y <u>u</u> -na-há:dza	y <u>u</u> -na-rí-há:dza	‘(s)he is sweeping [cl.5]’
ku-rě:ha	y <u>u</u> -na-rě:ha	y <u>u</u> -na-ní-rě:ha	‘(s)he is bringing me’

Examining first the long stems, Duruma appears similar to Chonyi: the target of overlap is clearly the stem itself, as exemplified by words like yu-na-ku-káŋgĩ:ra. We also see here plateauing as in Chonyi, although there is no fall (downstep) on the penult. But the short stems change the picture. We see that overlap occurs on short stems as in Giryama, e.g., yu-na-há:dza, but only when there is no object prefix, e.g., yu-na-tʃí-há:dza.

A table will help to see the pattern:

	Short Stem	Long Stem
<b>With OP</b>	No overlap    y <u>u</u> -na-tʃí-há:dza	Overlap        y <u>u</u> -na-ku-káŋgĩ:ra
<b>Without OP</b>	Overlap        y <u>u</u> -na-há:dza	Overlap        y <u>u</u> -na-kálá:ŋga

Table 2.4: Overlap in Duruma

Forms like yu-na-ku-káŋgĩ:ra clearly demonstrate that overlap happens on the stem proper in Duruma (as opposed to the macrostem), and forms like yu-na-há:dza show us that overlap can occur on short stems. But there is no overlap on yu-na-tʃí-há:dza. This seems to indicate that in Duruma both HIGH STEM and HIGH MACROSTEM are active: HIGH MACROSTEM is strong enough to induce overlap on bisyllabic stems, whereas HIGH STEM is not. This sort of competition, of course, is a very natural thing to represent with an OT ranking such as HIGH MACROSTEM ≫ NO MULTI-LINK ≫ HIGH STEM ≫ NO OVERLAP; the actual constraints and rankings are discussed in some detail in chapter 8.



## 2.7 Semi-Plateau in Giryama

As indicated above, Plateauing exists in all Mijikenda dialects except Giryama and Kambe₂. As a matter of fact, Giryama comes very close to Plateauing. In Kambe₂, a TBU following a surface high tone is pronounced fully low again. In contrast, in Giryama a surface high tone will be followed by a TBU pronounced in a slightly lower pitch, then another decline, and so on. This downward slope is very gentle, and sometimes almost indistinguishable from an actual plateau. But it is clear enough to make it impossible to treat it as a plateau. Furthermore, given sufficient distance between two surface high tones, the “extension pitch” can indeed drop below the pitch of the next high tone and even all the way back to the speaker’s basic pitch, whereas in dialects that have actual Plateau this can never happen.

As a matter of fact, this has been attested for other Bantu tone systems. In his discussion of the Nguni languages, Rycroft (1980) refers to it as *Assimilation*: “One or more L tones standing between H tones [...] may be realized at roughly the same high pitch as the preceding H tone [...]” [p.8]; see also Cassimjee and Kisseberth (2001), p. 342, which discuss the proper way to transcribe these “assimilated” TBUs.

Phonetically, actual Plateau and Assimilation are very close. One can see in both phenomena the presumed phonetic motivation between High Spread, namely the tendency to keep the pitch high once it got there. Nevertheless, within the existing phonological framework for tone it is impossible to treat both in the same manner. I shall continue to transcribe Giryama as before, i.e., without marking “extension pitch”.

### 2.7.1 Assimilation and Transcription

While phonologically preferable, this transcription strategy necessarily distances the transcription from the phonological facts. Whereas in the rest of the dialects, the phonetic facts can be more or less directly read from the transcription, in Giryama this is not as straightforward. Consider a form like a-na-ká-lǎ:ŋga, where one high tone is heard on the first stem mora and another on the second mora of the penult. This transcription indicates a rising contour tone on the

penult, where in reality Assimilation results in a raised pitch on the first mora of the penult. The phonetic result, then, might be more accurately represented as  $\underline{a}$ -na-ká|^lá:ŋga.¹⁰ Similarly for longer stems like  $\underline{a}$ -na-ká|^lánǵi:ra, which would more accurately be rendered  $\underline{a}$ -na-ká|^lánǵi:ra. Nevertheless, the more phonetically accurate transcription is phonologically misleading, as it obscures the actual locations of the “real” high tones (on my analysis, at least) and so we shall not follow it. When we get to depressor consonants in chapter 3, the reasons for this will become even more apparent.

For the time being, the table below compares the Giryama pitch patterns with my transcription (see also the pitch traces in appendix B. The translation from the transcription to the actual pronunciation is straightforward once the facts of Assimilation are taken into account.

(22) Giryama pitch patterns.

ni-na-kalǎ:ŋga	[ ··· ˩ . ]	‘I’m frying’
$\underline{a}$ -na-kálǎ:ŋga	[ ·· ˩ - . ]	‘(s)he’s frying’
$\underline{a}$ -na-ká  ^l ánǵi:ra	[ ·· ˩ - . ]	‘(s)he’s frying for’

## 2.8 Raβai: Deep Overlap

Some of the Mijikenda dialects exhibit an additional phenomenon, illustrated here with data from Raβai₁. the SP high tone appears to reach the penult, even when there is a stem high tone:

(23) Deep Overlap in Raβai₁:

Infinitive	1sg.	3sg.	3sg. + OP	
ku-fí:t̥sa	na-fí:t̥sa	y <u>u</u> -na-fí:t̥sa	y <u>u</u> -na-t̥fi-fí:t̥sa	‘hide’
ku-hǎ:dza	na-hǎ:dza	y <u>u</u> -na-hǎ:dza	y <u>u</u> -na-ri-hǎ:dza	‘name’
ku-lǎ:vya	na-lǎ:vya	y <u>u</u> -na-lǎ:vya	y <u>u</u> -na-t̥fi-lǎ:vya	‘give’
ku-tǎ:la	na-tǎ:la	y <u>u</u> -na-tǎ:la	y <u>u</u> -na-ri-tǎ:la	‘count’

¹⁰As a reviewer points out,  $\underline{a}$ -na-ká|^láánǵa is easily derived from  $\underline{a}$ -na-ká|^láánǵa through an additional step of right-to-left spreading.

(Deep Overlap in Ra $\beta$ ai₁, continued)

Infinitive	1sg.	3sg.	3sg. + OP	
ku-tengě:za	na-tengě:za	y <u>u</u> -na-tengě:za	y <u>u</u> -na-tfi-tengě:za	‘repair’
ku-kalā:ŋga	na-kalā:ŋga	y <u>u</u> -na-kalā:ŋga	y <u>u</u> -na-tfi-kalā:ŋga	‘fry’
ku-kalangĩ:ra	na-kalangĩ:ra	y <u>u</u> -na-kalangĩ:ra	y <u>u</u> -na-mu-kalangĩ:ra	‘fry for’
ku- $\beta$ a $\beta$ i:ka	na- $\beta$ a $\beta$ i:ka	y <u>u</u> -na- $\beta$ a $\beta$ i:ka	N/A	‘vomit’
ku-tfiimbĩ:ra	na-tfiimbĩ:ra	y <u>u</u> -na-tfiimbĩ:ra	N/A	‘flee’

Looking first at bisyllabic stems, the situation seems pretty straightforward: there is overlap on all stems in Ra $\beta$ ai₁, including bisyllabic stems, for example yu-na-ri-tá:la. Note that a single high tone in this dialect is heard as a rising tone on the penult, whereas two high tones surface as a level high tone; where in other dialects such a structure triggers downstep (between the two moras), in Ra $\beta$ ai it does not.

In the polysyllabic stems, however, something unexpected happens: whereas we would normally expect overlap on the first stem TBU, e.g., *yu-na-ká:la:ŋga, we actually hear both high tones on the penult, resulting in yu-na-kalā:ŋga. Note that this is clearly a form with two high tones, since it contrasts with the single high tone pronounced as a rising tone in words such as na-kalā:ŋga or yu-na-sukumĩ:za.

What to make of this? At first this appears reminiscent of Shingazidja (Casimjee and Kisseberth, 1998), where a high tone is heard “on the mora in front of every even-numbered underlined vowel” [p.120]. However, as I have indicated, this is not quite the case here, for two reasons: the first was that the shape of the surface H shows that there are indeed two high tones in the surface form. The second piece of evidence, related to depressor consonants, will be presented in the next chapter.

Within the analysis being developed in this part of the work, the Ra $\beta$ ai facts can be derived by having an extra delinking step after Plateau. In other words, where Plateau can be described as “post-shift spread”, Ra $\beta$ ai₁ would have “post-shift shift”. This analysis won’t be pursued here further, primarily since chapter 8 presents a domains-based analysis, which sheds some additional light on the motivation behind this “Deep Overlap”.

Note that Digo has a limited version of Deep Overlap, only seen on trisyllabic stems and in specific tenses; more on this in §5.2.4.

## 2.9 More Reasons to Overlap: The Perfect

Although the present tense paradigm exhibits many of the tonological properties of Mijikenda, it does not cover everything. The perfect tense paradigm offers another crucial piece of evidence.

Tonally, the main difference between the perfect and the present is that the perfect tense marker (*-dza* or *-dzi* in all Mijikenda dialects but Digo, where it is the unrelated *-ka*) contributes an additional high tone.

Consider first the behavior of Low stems in the Giriyama perfect:

(24) Low stems in the perfect tense (Giriyama):

Infinitive	1sg.	3sg.	
ku-βan:a	ni-dz̄a-βǎ:na	á-dz̄a-βǎ:na	‘brand’
ku-fik:a	ni-dz̄a-fí:ka	á-dz̄a-fí:ka	‘arrive’
ku-βaβa:ta	ni-dz̄a-βaβǎ:ta	á-dz̄a-βaβǎ:ta	‘grope after in the dark’
ku-peke:t̄sa	ni-dz̄a-pekē:t̄sa	á-dz̄a-pekē:t̄sa	‘awl’
ku-βaya-βa:ya	ni-dz̄a-βaya-βǎ:ya	á-dz̄a-βaya-βǎ:ya	‘babble’
ku-hat ^h ami:ra	ni-dz̄a-hat ^h amĩ:ra	á-dz̄a-hat ^h amĩ:ra	‘drink out of a large container’

The first-person forms show a simple case of High Tone Shift: the high tone from the tense marker *-dz̄a* shifts to the right and surfaces on the (second mora of the) penult. The third-person forms, in which the subject prefix contributes a second high tone, are also unsurprising, given what we know: blocked by the underlying location of the tense marker tone, the high tone from the subject prefix has nowhere to advance to and surfaces *in situ*: *á-dz̄a-fí:ka*. Note that there is no overlap on the tense marker high tone, as there is nothing to drive overlap (overlap only occurs on the stem or macrostem).

The more interesting evidence comes from High verbs in the perfect tense, where, among other things, we encounter the first case of a word with three high tones. (The downstep on the tense marker *-dz̄^lá-* will be dealt with later).

(25) High stems in the Giryama perfect tense:

ni-dzá-tǎ:la	ni-dza-kí-tǎ:la	á-dz ^l á-tǎ:la	á-dza-kí-tǎ:la	‘count’
ni-dzá-lǎ:za	ni-dza-kí-lǎ:za	á-dz ^l á-lǎ:za	á-dza-kí-lǎ:za	‘give’
ni-dzá-kalǎ:nga	ni-dza-kí-kalǎ:nga	á-dza-kalǎ:nga	á-dza-kí-kalǎ:nga	‘fry’
ni-dzá-tenǵe:za	ni-dza-kí-tenǵe:za	á-dza-tenǵe:za	á-dza-kí-tenǵe:za	‘repair’

The only case of overlap is seen in a very restricted environment: only on polysyllabic stems, only when there is no object prefix, and only when the subject prefix is high. A table will help illustrate this point.

(26) Overlap in the Giryama perfect:

		Bisyllabic Stem	Polysyllabic Stem
Low SP	No OP	No overlap	No overlap
Low SP	OP	No overlap	No overlap
High SP	No OP	No overlap	Overlap
High SP	OP	No overlap	No overlap

So what do these facts tell us? First of all, the observation that overlap never occurs on forms with an object prefix is consistent with the Giryama present tense data—we see that the target of High Shift is the first mora of the macrostem (as opposed to the stem proper in other dialects), and so no overlap is expected in these verbs. But the fact that, in verbs which lack an object prefix, overlap depends on a high *subject prefix*, reveals something new. Consider the difference between ni-dzá-kalǎ:nga and á-dza-kalǎ:nga. Why do we not get the expected *á-dz^lá-kalǎ:nga? The answer seems to be that *á-dz^lá-kalǎ:nga contains an undesired sequence of two consecutive high tones, or in other words a violation of the Obligatory Contour Principle (OCP).¹¹ It appears that in the Giryama perfect tense, the OCP is strong enough to lead to “OCP-Induced Overlap”, but

¹¹On one (quite common) line of analysis, the downstep on *á-dz^lá-kalǎ:nga means that there is no OCP violation—see for example the discussion in Odden (1986). I personally do not consider this to be the case in Mijikenda, but even under such an analysis my argument can be saved; I would then say that the problem with *á-dz^lá-kalǎ:nga is that it has a downstepped high tone on a depressed syllable (depressors are discussed in chapter 3), in a sense “the worst of the worst” (Prince and Smolensky, 1993).

not strong enough to result in overlap on bisyllabic stems (compare  $\acute{a}$ -dz^l $\acute{a}$ -tāla, where overlap would yield * $\acute{a}$ -dza-tāla).

To summarize, we have seen the following factors come into play in the choice of overlap across Mijikenda:

- The target: Whether High Shift is “aiming at” the first mora of the macro-stem or the stem proper (i.e., what is the normal pattern in the dialect).
- Stem length: More accurately, some dialects disallow overlap that would result in two high tones surfacing on a single vowel.
- The OCP: As exemplified in the Giryama perfect tense, overlap may occur to alleviate an undesired sequence of two consecutive surface high tones.

With one additional factor, namely depressor consonants, these parameters cover the typology of overlap across Mijikenda. I shall present a typological overview of the dialects shortly, after we have seen a little of what sets Digo apart from the other dialects.

## 2.10 Digo

Let us now touch briefly on two basic differences between Digo and all other Mijikenda dialects. There is much more to be said about Digo, which we shall only be able to address when we have seen nominal tonology in chapter 4.

### 2.10.1 The Penult in Digo

Where in other dialects a single high tone will surface on the penult (either as a rising tone or as a level high tone), in most subdialects of Digo it takes the shape of a slight rise on the penult and a marked fall on the final vowel. In other words, the peak of the high tone shifts from the penult to the final vowel.

(27) Digo forms with a single underlying high tone (Kisseberth, 1984):

ku-ar $\ddot{u}$ :kâ	‘to begin, start’
ku-b $\ddot{o}$ m $\ddot{o}$ :râ	‘to demolish’

(Digo, *continued*)

ku-sindĩ:kâ ‘to shut the door’

ku-gɔŋgomè:â ‘to hammer’

ku-furukũ:tâ ‘to move restlessly’

ku-yakinĩ:fâ ‘to confirm’

a-na-togǒ:râ ‘(s)he is praising’

a-na-vugũ:râ ‘(s)he is untying’

a-na-βukũ:sâ ‘(s)he is shelling corn’

a-na-ramũ:kâ ‘(s)he is waking up’

Phonetically, as is hinted above, this seems to be a case of peak delay—similar to what Myers (1998) describes for Chichewa, where “the F0 peak for a high-toned syllable usually is not attained until early in the next syllable”. From the phonological point of view, however, there are several ways to look at the Digo facts:

- Kisseberth (1984) transcribes the tonal shape as above, with a rise-fall sequence.
- Philippson (1993), on the other hand, writes these as a simple high tone on the final vowel, e.g., ku-karaŋá for what is phonetically ku-karã:ŋgâ. Philippson goes on to write that “Digo has undergone a shift by one syllable to the right, as compared with Giryama” [p.253]. However, I believe that a more detailed look at the facts (specifically depressor effects, which Philippson acknowledges but doesn’t address) makes the “high ultima” approach the more complicated one.
- A mirror image of Philippson’s account might be to analyse the high tone in Digo as associated with the penult, just like in the other Mijikenda dialects, i.e., transcribe ku-karaŋga for what is phonetically ku-karã:ŋgâ. The rise-fall sequence would then be a phonetic peak delay effect. This would make my analysis much simpler (since all dialects would be the same), but it hides some phonologically relevant depressor effects (see §3.3).

I shall continue to transcribe the Digo facts as I have done here (ku-karã:ŋgâ etc.). As for analysis, we might say at this stage High Tone Shift reaches the ultima in Digo. This is obviously a very sketchy solution, but much more data needs to be seen before we can fully consider the position of Digo within Mijikenda tonology.

### 2.10.2 High-Toned Object Prefixes

Another feature unique to Digo within Mijikenda is the preservation of a high tone on some object prefixes (all but the singular human prefixes). The data below exemplify this:

(28) A Low stem with OPs in the infinitive (Digo₁):

ku-ni-vuguri:ra	‘to untie for me’
ku-ku-vuguri:ra	‘to untie for you’
ku-mu-vuguri:ra	‘to untie for him/her’
ku- <u>u</u> -vugurĩ:râ	‘to untie for us’
ku- <u>a</u> -vugurĩ:râ	‘to untie for them’

(29) Low verbs with OPs in the present tense (Digo₄):

ni-na-ku-vugu:la	‘I am untying you’
ni-na- <u>a</u> -vugũ:lâ	‘I am untying him/her’
ni-na-ku-seŋgere:ra	‘I am approaching you’
ni-na- <u>a</u> -seŋgerẽ:râ	‘I am untying him/her’

As we can see, a single high tone from the object prefix will shift as usual to the end of the phrase. Let us now consider the interaction of this high tone with the one from a subject prefix, comparing it with the behavior of high toned verbs. The following datasets show that High verb stems, High verb stems with high-toned OPs, and Low verb stems with high-toned OPs all behave the same.

(30) Digo₁ High verb stems without OPs:

ni-na- <u>ã</u> :râ	‘I am taking’
ni-na- <u>β</u> ẽ:hâ	‘I am sifting grain’
ni-na- <u>βaβ</u> ã:sâ	‘I am groping in the dark’



(Digo₁, continued)

ni-na-tf _i mbĩ:râ	‘I am going away’
ni-na-tf _e kě:tfâ	‘I am sifting’
ni-na-kalã:ngâ	‘I am frying’
ni-na-kalãngĩ:râ	‘I am frying for’
<u>a</u> -na-á:râ	‘(s)he is taking’
<u>a</u> -na-βé:hâ	‘(s)he is sifting grain’
<u>a</u> -na-βáβá:sâ	‘(s)he is groping in the dark’
<u>a</u> -na-tf _i mbĩ:râ	‘(s)he is going away’
<u>a</u> -na-tf _e kě:tfâ	‘(s)he is sifting’
<u>a</u> -na-kálá:ngâ	‘(s)he is frying’
<u>a</u> -na-kálãngĩ:râ	‘(s)he is frying for’

(31) High verb stems with toneless OPs:

n-na-ku-kalãngĩ:râ	‘I am frying for you’	Digo ₃
na-ku-hĩrĩ:kâ	‘I am taking you along’	Digo ₂
ni-na-ku-sĩkĩ:râ	‘I hear you’	Digo ₄
ni-na-ku-βĩrĩ:kâ	‘I am sending you’	Digo ₄
<u>a</u> -na-ku-kálãngĩ:râ	‘(s)he is frying for you’	Digo ₃
<u>a</u> -na-ni-sĩkĩ:râ	‘(s)he hears me’	Digo ₄
<u>a</u> -na-ni-βĩrĩ:kâ	‘(s)he is sending me’	Digo ₄
<u>a</u> -na-kú-hĩrĩ:kâ	‘(s)he is taking you along’	Digo ₂
<u>a</u> -na-mú-púpú:tâ	‘(s)he is beating him/her’	Digo ₁

(32) High verb stems with high OPs:

na-i-rě:â	‘I am bringing [cl.9]’	Digo ₂
n-na-tf _i -tf _i mbĩ:râ	‘I am fleeing [cl.7]’	Digo ₃
n-na-tf _i -kalã:ngâ	‘I am frying [cl.7]’	Digo ₃
na- <u>a</u> -hĩrĩ:kâ	‘I am taking them along’	Digo ₂
ni-na- <u>a</u> -βĩrĩ:kâ	‘I am sending them’	Digo ₄

(Digo, continued)

<u>a</u> -na-tfí-kálá:ngâ	‘(s)he is frying [cl.7]’	Digo ₃
<u>a</u> -na-tfí-tfímbí:râ	‘(s)he is fleeing [cl.7]’	Digo ₃
<u>a</u> -na-i-ré:â	‘(s)he is bringing [cl.9]’	Digo ₂
<u>a</u> -na-a-hírí:kâ	‘(s)he is taking them along’	Digo ₂
<u>a</u> -na-a-síkí:râ	‘(s)he hears them’	Digo ₄
<u>a</u> -na-a-βírí:kâ	‘(s)he is sending them’	Digo ₄
<u>a</u> -na-á-púpú:tâ	‘(s)he is beating them’	Digo ₁

(33) Low verb stems with high OPs:

ku-i-tsũ:nâ	‘to clean [cl.9] with fingers and lick them’	Digo ₅
ni-na-i-yũ:lâ	‘I am peeling [cl.9]’	Digo ₅
ni-na-a-kã:tâ	‘I am cutting them’	Digo ₅
ni-na-a-lamũ:sâ	‘I am greening them’	Digo ₅
n-na-tfí-tsukl:lâ	‘I am carrying [cl.7]’	Digo ₃
na-a-senđerë:râ	‘I am approaching him/her’	Digo ₂
<u>a</u> -na-u-rímí:râ	‘(s)he is cultivating for us’	Digo ₁
<u>a</u> -na-a-néndéké:râ	‘(s)he is visiting them’	Digo ₁
y <u>u</u> -na-i-yú:lâ	‘(s)he is peeling [cl.9]’	Digo ₅
y <u>u</u> -na-a-ká:tâ	‘(s)he is cutting them’	Digo ₅
<u>a</u> -na-rí-tsúkl:lâ	‘I am carrying [cl.5]’	Digo ₃
y <u>u</u> -na-a-lámú:sâ	‘(s)he is greening them’	Digo ₅
<u>a</u> -na-a-sénđeré:râ	‘(s)he am approaching him/her’	Digo ₂

As these data show, verbs with a high-toned object prefix in Digo behave like High verb stems. In the case of a High verb stem coupled with a high-toned object prefix (32), we hear a single surface high tone where the underlying representation has two (n-na-tfí-kálá:ngâ and not *n-na-tfí-kálá:ngâ); this would involve the fusing of the underlying high tones or the deletion of one of them, a subject which we return to in more detail later on.

As for the conditions of overlap, the data discussed here are insufficient to decide their exact formulation. What is clearly evident is that overlap occurs

on short and long stems in the absence of an object prefix (30). When there is an object prefix, however, I have too few examples to reach any conclusions.

One thing to note is that overlap usually seems to reach the stem after vowel-initial object prefixes, e.g., a-n-i-réha (Digo₂). This may be the effect of a well-known tendency against pronouncing a high tone on an onsetless syllable—see Downing (1998) for a discussion. Alternatively, as Kisseberth (1984) writes, the high tone may simply be less noticeable on the prefix: “When an object prefix consists of just a vowel, then a high tone on this prefix is not phonetically very prominent when the following vowel is also high toned.” [p.180, footnote 9].

Given these data, then, the best that can be said is that, as regards High Tone Shift, overlap always occurs on the macrostem in Digo, whereas overlap on the stem proper (when different from the macrostem) seems to occur in some cases which I do not have enough data to characterize. We shall return to Digo in more detail when we have covered some more of the relevant tonal phenomena.

## 2.11 Typological Overview So Far

### 2.11.1 The Generalizations

To summarize, here are the properties of Mijikenda tone we’ve seen so far:

- The last high tone in a phrase shifts to the penult. Example: ku-kalā:ŋga (Chonyi).
- Every non-final high tone shifts up to the underlying location (the sponsor) of the next High. The basic surface position is the TBU preceding the next sponsor, e.g., a-ná-kalā:ŋga (Kambe₂). Dialects differ in the conditions under which a tone will surface on the sponsor TBU (resulting in apparent domain overlap), e.g., a-na-kál^lá:ŋga (Giryama). The following factors determine Overlap:
  - The morphological position: overlap usually occurs only on the first mora of the stem (in Giryama: the macrostem).

- Stem length: in many cases, overlap is prevented when it would lead to two surface Highs on a single vowel; contrast, in Chonyi₂, a-na-ká-lâ:ŋga (overlap on a trisyllabic stem) with a-ná-lâ:la (no overlap on a bisyllabic stem).
- The OCP: Overlap may occur in environments that would otherwise have an undesirable sequence of surface high tones: contrast, in the Giryama perfect, ni-dzá-kalá:ŋga with á-dza-kál[↓]á:ŋga, not *á-dz[↓]á-kalá:ŋga; exactly why á-dz[↓]á is a worse sequence of Highs than kál[↓]á will be discussed once we have seen depressors.
- Plateau: In most dialects, all (non-final) moras following a surface high tone are pronounced high as well, which in the data we’ve seen leads to a plateau effect, e.g., yu-na-téngénéz[↓]éra (Chonyi₁).
- Deep Overlap: If one views Plateauing as “post-shift spread”, then Deep Overlap can be defined as “post-shift shift”: where some dialects have plateaus, others pronounce the high tone only on the last TBU of the expected plateau, e.g., Raβai₁ yu-nda-chimbiríra (future tense).
- Downstep: In most dialects, a high tone pronounced on the penult is pronounced at a lower pitch than the high tone preceding it. When there are two high tones on the bimoraic penult, we get a falling tone. If the preceding high tone is earlier than the penult—either due to a lack of overlap or as a result of Plateau–Downstep combines with Plateau to form a fall, as in Chonyi₁ a-na-ní-rê:ha. In some dialects, like Riβe₂, this is simplified to a downstepped level tone, e.g., a-na-ku-káláŋg[↓]í:ra.

### 2.11.2 The Different Dialects

Let us now consider all the different Mijikenda dialects along the parameters seen so far.

Table 2.14 on page 46 shows the details of overlap, plateau and downstep across the different dialects. Note that certain key elements are still missing from this overview, most notably depressor effects and a “neutralized High”

verb type found only in Digo and Duruma. Also note that the Raβai₃ data given in this table are from the (tonally similar) future tense, since I do not have the present tense recordings for this dialect.

Here is a summary of the different tonal behaviors, according to the parameters mentioned above:

#### 2.11.2.1 Overlap

- Kambe₂: No overlap, in any environment.
- Giryama: Overlap always seen on the macrostem. In other words: overlap if and only if there is no object prefix.
- Chonyi, Jiβana, Riβe, possibly Kambe₁: Overlap on the stem proper, but never on bisyllabic stems.
- Duruma, Kauma, Raβai₂: Always overlap on the macrostem, overlap on the stem proper only for trisyllabic or longer stems.
- Possibly Kambe₁: Always overlap on the stem.
- Raβai₁, Raβai₃: Deep overlap—the subject prefix high tone reaches the penult.

#### 2.11.2.2 Plateau

Plateau is seen in all dialects, with the exception of Kambe₂ and Giryama. In Giryama the pitch after a high TBU continues at a raised level, dropping gradually.

#### 2.11.2.3 Downstep

There seems to be some variation in the degree and nature of downstep, even in the speech of a single speaker. This apparently depends on the rate of speech. In any case, here are my findings.

In Digo₁, Digo₂, Digo₄, Digo₅, Kambe, Kauma and Raβai₁ there is no downstep. The other dialects all have downstep as a fall on the penult, although for

Dialect	Single H	$\underline{a}$ -na-cv	$\underline{a}$ -na-cv-cv	$\underline{a}$ -na-cv-cv-cv	$\underline{a}$ -na-cv-cv-cv-cv	$\underline{a}$ -na-(cv) ² -cv-cv-cv...
Chonyi ₁	ku-kalá:ngga	$\underline{a}$ -ná-é̃:ha	$\underline{a}$ -na-ní-é̃:ha	$\underline{a}$ -na-síkí:ra	$\underline{a}$ -na-ní-síkí:ra	$\underline{a}$ -na-tsunúgúrí:ra
Chonyi ₂	ku-tjimbí:ra	yú-ná-sô:ma	yú-na-ri-tâ:la	yú-na-tjimbí:ra	yú-na-ní-síkí:ra	yú-na-βa-kálá:nggí:ra
Digo ₁	ku-hà:rà	$\underline{a}$ -na-hà:ra	—	$\underline{a}$ -na-tjimbí:ra	$\underline{a}$ -na-ní-méga:ra	$\underline{a}$ -na-kúmúkí:ra
Digo ₂	ku-kará:ngga	$\underline{a}$ -na-né:ma	—	$\underline{a}$ -na-tjimbí:ra	$\underline{a}$ -na-kú-kará:ngga	$\underline{a}$ -na-ku-kárá:nggí:ra
Digo ₃	ku-tjírà	$\underline{a}$ -na-hâ:la	—	$\underline{a}$ -na-tjírà	—	$\underline{a}$ -na-ku-kálá:nggí:ra
Digo ₄	ku-kalangír:rà	$\underline{a}$ -na-lâ:la	$\underline{a}$ -na-ní-ré:ha	$\underline{a}$ -na-βírí:ka	$\underline{a}$ -na-ní-síkí:ra	$\underline{a}$ -na-tsunúgúrí:ra
Digo ₅	ku-hâ:la	yú-na-hâ:la	—	yú-na-tjimbí:ra	—	—
Duruma ₁	ku-βaβí:ka	yú-na-βyé:ra	yú-na-tjí-há:dza	yú-na-tjimbí:ra	yú-na-tjí-kálá:ngga	yú-na-ku-kálá:nggí:ra
Duruma ₂	ku-kalá:ngga	yú-na-ré:ha	yú-na-ri-ré:la	yú-na-kalá:ngga	yú-na-ní-hírí:ka	yú-na-kálá:nggí:ra
Duruma ₃	ku-βaβí:ka	yú-na-lâ:la	yú-na-á-tó:sa	yú-na-tjimbí:ra	—	—
Giryama	ku-hahí:ka	$\underline{a}$ -na-jô:ma	$\underline{a}$ -na-kí-fítisa	$\underline{a}$ -na-tjimbí:ra	$\underline{a}$ -na-mú-hírí:ka	$\underline{a}$ -na-kú-kalangír:ra
Jibana	ku-síkí:ra	yú-ná-rí:sa	yú-na-ní-ré:ha	yú-na-hírí:ka	yú-na-ní-síkí:ra	yú-na-kálá:nggí:ra
Kambe ₁	ku-kalá:ngga	$\underline{a}$ -ná-sô:ma~ $\underline{a}$ -na-ri:ha	$\underline{a}$ -na-ri-fítisa~ $\underline{a}$ -na-ri-fítisa	$\underline{a}$ -na-tjimbí:ra	$\underline{a}$ -na-zi-kalá:ngga	$\underline{a}$ -na-ku-kálá:nggí:ra
Kambe ₂	ku-kalá:ngga	yú-ná-rí:sa	yú-na-ní-ré:ha	yú-ná-kalá:ngga	yú-na-ní-síkí:ra	yú-ná-kalá:nggí:ra
Kauma	ku-kalá:ngga	wá-pá:ta	wá-ní-ré:ha	wá-hírí:ka	wá-ní-hírí:ka	wá-kálá:nggí:ra
Rabai ₁	ku-βaβí:ka	yú-na-sô:ma	yú-na-tjí-fítisa	yú-na-tjimbí:ra	yú-na-zi-kalá:ngga	yú-na-ku-kalánggí:ra
Rabai ₂	ni-na-tsunúgúrí:ra	$\underline{a}$ -na-lâ:la	$\underline{a}$ -na-ní-ré:ha	$\underline{a}$ -na-hírí:ka	$\underline{a}$ -na-ní-hírí:ka	$\underline{a}$ -na-kálá:nggí:ra
Rabai ₃	ni-nda-kalá:ngga	$\underline{a}$ -nda-lâ:la	$\underline{a}$ -nda-ri-pá:ta	$\underline{a}$ -nda-kalá:ngga	$\underline{a}$ -nda-zi-kalá:ngga	$\underline{a}$ -nda-tsunúgúrí:ra
Ribe ₁	ku-kalá:ngga	wá-rí:sa	wá-βá-ré:ha	wá-hírí:ka	wá-ní-síkí:ra	—
Ribe ₂	ku-tjimbí:ra	$\underline{a}$ -na-lâ:la	$\underline{a}$ -na-ri-pá:ta	$\underline{a}$ -na-síkí:ra	$\underline{a}$ -na-tjí-kalá:ngga	$\underline{a}$ -na-ku-kalánggí:ra

Table 2.14: Present tense, not including depressors and neutralized tones; overlap in bold.

some speakers it is more pronounced after a Plateau. In *Giryama*, Assimilation results in phonetic (but not phonological) downstep—see §2.7.1.

In the next chapter I discuss a factor that invariably causes downstep, namely depressor consonants.

### 2.11.3 A Simple Derivation

To close this first chapter, here are the steps required for a simple autosegmental derivation of the facts seen so far.

**Spread** Spread high tones rightward onto all toneless TBUs.

**Overlap** Expand high tones an additional step to reach a “prominent” TBU; the conditions for Overlap vary from dialect to dialect.

**Delink** Delink high tones from all but the rightmost TBUs.

**Plateau** In all dialects but *Giryama* and *Kambe*₂, repeat the Spread step.

**Deep Overlap** In *Raβai*₁ and *Raβai*₃, repeat the delinking step.





## Chapter 3

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# Depressors

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Celerity should always be contempered by cunctation.

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Thomas Browne, *Pseudodoxia Epidemica*

Having seen the basic facts of tone mobility in the previous chapter, we now turn our attention to the second major phenomenon of Mijikenda tonology: depressor consonants.

Broadly speaking, the term *depressor* refers to a set of consonants (typically voiced obstruents) which interact with tonal processes; For recent treatments, see for example Bradshaw (1999); Lee (2008); Tang (2008). As I will show, the two major effects of depressors in Mijikenda are the restriction of High Shift and the blocking of Plateau.

The exact set of depressor consonants varies from language to language. In Mijikenda, the set of depressors is almost identical to the set of non-prenasalized voiced obstruents (b, d, g, dz,  $\text{g}\text{b}$  etc. but not mb, nd...), not including  $\beta$ . The exact set of depressors is discussed in some length below, but first let us consider the tonal effects of these consonants.

### 3.1 Lowered Pitch

Before addressing the tonological properties of depressor consonants, i.e., their interaction with the tonal processes in Mijikenda, there is one basic fact which

must be mentioned, and that is that a vowel immediately following a depressor consonant will be pronounced at a lower pitch than otherwise; these vowels are said to be *depressed*. This is most noticeable with high tones: high tones are pronounced lower on depressed TBUs than on non-depressed TBUs, and normally surface as a rise. In a run of low-toned TBUs the effect is usually imperceptible, but in a H-L sequence like *tátà* the drop in pitch is much more pronounced when the low TBU is depressed (*tádà*). An immediate consequence of this is that a high tone on a depressed TBU is always downstepped (unless it is the first high tone in a phrase, of course).

The above effect has been documented for many languages, including English (House and Fairbanks, 1953) and is quite automatic in Mijikenda. It does, however, provide the motivation underlying the tonological phenomena discussed in this chapter.

### 3.2 Restriction of High Shift

The first tonological depressor effect, which is seen in all Mijikenda dialects, is exemplified below:

#### (34) Depressors preventing Overlap (Giryama):

*(Depressors preventing Overlap in Giryama, continued)*

*Non-depressed High stem:*

ku-β̥ũ:ðya	<u>a</u> -na-β̥ũ:ðya	‘despise’
ku-f̥i:t̥sa	<u>a</u> -na-f̥i:t̥sa	‘hide’
ku-β̥aβ̥ũ:ka	<u>a</u> -na-β̥áβ̥ũ:ka	‘search around in the grass’
ku-f̥uṭ̥ã:ma	<u>a</u> -na-f̥uṭ̥ã:ma	‘squat’
ku-β̥aβ̥uk̥i:ra	<u>a</u> -na-β̥áβ̥uk̥i:ra	‘be searchable’
ku-t̥ʃ̥ĩmbir̥i:ra	<u>a</u> -na-t̥ʃ̥ĩmbir̥i:ra	‘flee to’

*Depressed High stem:*

ku-b̥ã:nda	<u>a</u> -ná-b̥ã:nda	‘break’
ku-d̥õ:na	<u>a</u> -ná-d̥õ:na	‘engrave’
ku-b̥amb̥ã:nda	<u>a</u> -ná-b̥amb̥ã:nda	‘break up’
ku-d̥aŋg̥ũ:la	<u>a</u> -ná-d̥aŋg̥ũ:la	‘persevere’

ku-b <b>á</b> mbahũ:la	<u>a</u> -ná-b <b>á</b> mbahũ:la	‘wrench apart’
ku-d <b>ę</b> ngerě:ka	<u>a</u> -ná-d <b>ę</b> ngerě:ka	‘turn round’
ku-g <b>á</b> mbahĩ:za	<u>a</u> -ná-g <b>á</b> mbahĩ:za	‘squeeze’
ku-d <b>ę</b> ngerekě:ra	<u>a</u> -ná-d <b>ę</b> ngerekě:ra	‘go round’
ku- <b>g</b> be <b>g</b> belě:ka	<u>a</u> -ná- <b>g</b> be <b>g</b> belě:ka	‘fall with resounding noise’

Compare, for example, the verbs a-na-tfímbirĩ:ra ‘(s)he is fleeing to’ and a-ná-b**á**mbahũ:la ‘(s)he is wrenching apart’. In a-na-tfímbirĩ:ra we see the familiar behavior, with the high tone from the subject prefix surfacing on the first stem mora. We would have expected the same in the other verb, namely *a-na-b**á**mbahũ:la, but instead High Shift is restricted and the first high tone surfaces before the stem.

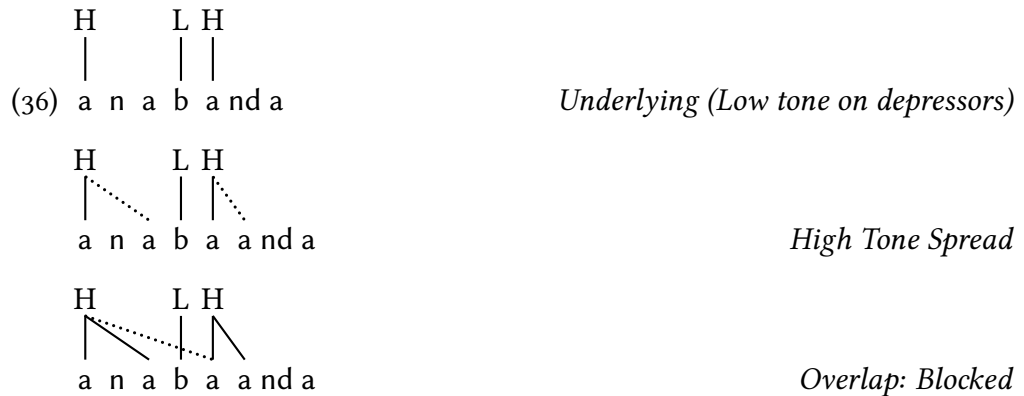
The same is true for cases where we would not expect overlap, as when an object prefix is present (35).

(35) Depressors restricting High tone shift:

<u>a</u> -na-rí-rě:ha	<u>a</u> -ná-ga-rě:ha	Giryama
<u>a</u> -na-kí-fĩ:t̥sa	<u>a</u> -ná-vi-fĩ:t̥sa	Giryama
y <u>u</u> -na-tfí-b <b>ǎ</b> :nda	y <u>u</u> -ná-vi-b <b>ǎ</b> :nda	Duruma ₁
y <u>u</u> -na-rí-h <b>ǎ</b> :dza	y <u>u</u> -ná-vi-h <b>ǎ</b> :dza	Duruma ₁
<u>a</u> -na-tfí-s <b>ǒ</b> :ma	<u>a</u> -ná-vi-s <b>ǒ</b> :ma	Kauma
<u>a</u> -na-í-k <b>á</b> l <b>ǎ</b> :ŋga	<u>a</u> -ná-zi-k <b>á</b> l <b>ǎ</b> :ŋga	Giryama
y <u>u</u> -na-tfí-b <b>ĩ</b> nikĩ:za	y <u>u</u> -ná-vi-b <b>ĩ</b> nikĩ:za	Duruma ₁
y <u>u</u> -na-ní-h <b>ĩ</b> rĩ:ka	y <u>u</u> -ná-ga-h <b>ĩ</b> rĩ:ka	Kambe ₂

The dialects differ in phonetic detail, as we’ve already seen, but the pattern is always the same: when the TBU which would otherwise have been the target of High Tone Shift is depressed, High Tone Shift is restricted.

Now, there is a natural-seeming explanation for this phenomenon, which however does not work straightforwardly with the Mijikenda data: given the fact that voicing has been shown cross-linguistically to correspond with lowered pitch, we might try to assign a low tone to every depressor; Spreading and Overlap would then be blocked simply by the familiar ban on “crossing association lines”:



However, evidence—some of which we have already seen—shows that things can not be that simple in Mijikenda. Consider the following data (depressor consonants are shown here in boldface).

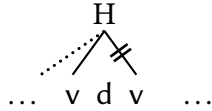
(37) High Tone Shift crossing depressors:

<u>y</u> na-galú:za	‘(s)he is changing’	Jiḽana
<u>y</u> na- <b>big</b> ǎ:na	‘(s)he is fighting’	Chonyi ₁
ku- <b>bab</b> adú:râ	‘to force something apart’	Digo ₁
<u>a</u> na- <b>bab</b> ayũ:ka	‘(s)he is raving’	Giryama
<u>a</u> na-zazigiri:ka	‘(s)he is willing to play’	Giryama

In the second part of this work I show how Optimal Domains Theory offers an elegant derivation of this and other depressor effects in Mijikenda. For the rule-based autosegmental derivation developed here, however, I shall follow a rule-ordering approach similar to that in Cassimjee and Kisseberth (1992) and Hyman and Mathangwane (1998): Low Insertion must come after the initial High Spread and Overlap¹ (otherwise, for example, a depressed object prefix would prevent overlap in cases like the Chonyi yna-**vi**-kálâ:ŋga). Low Insertion would be followed by a step of Final High Delinking, which delinks a multiply-linked high tone from its final TBU in case a depressor is there. Final High Delinking may be formulated schematically as in (38); more on the properties of this step below.

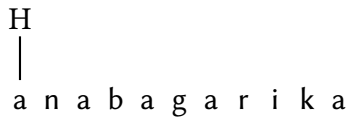
¹Bradshaw (1999) offers a different analysis, where certain tonal processes—High Tone Shift in our case—are not sensitive to depression (which Bradshaw equates with voicing), whereas others—Plateau in Mijikenda—are sensitive to it. For our present discussion the difference between the approaches is not important.

(38) Final High Delinking (v = any TBU, d = a depressor consonant):



Let us see what the derivation looks like. The first thing to note is that Low Insertion must take place on a separate “tier”, otherwise we violate “no crossing of association lines” by inserting the low tone. Only later can we merge the two tonal tiers (“Tier Conflation”):

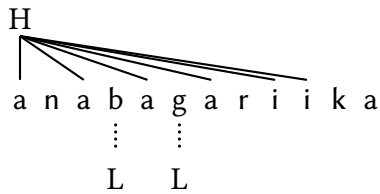
(39) Derivation of a-na-bagarĩ:ka:



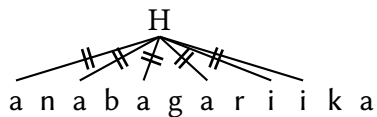
*Underlying*



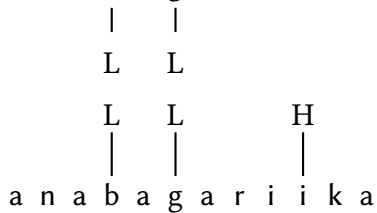
*Spread*



*Low Insertion (in separate tier)*



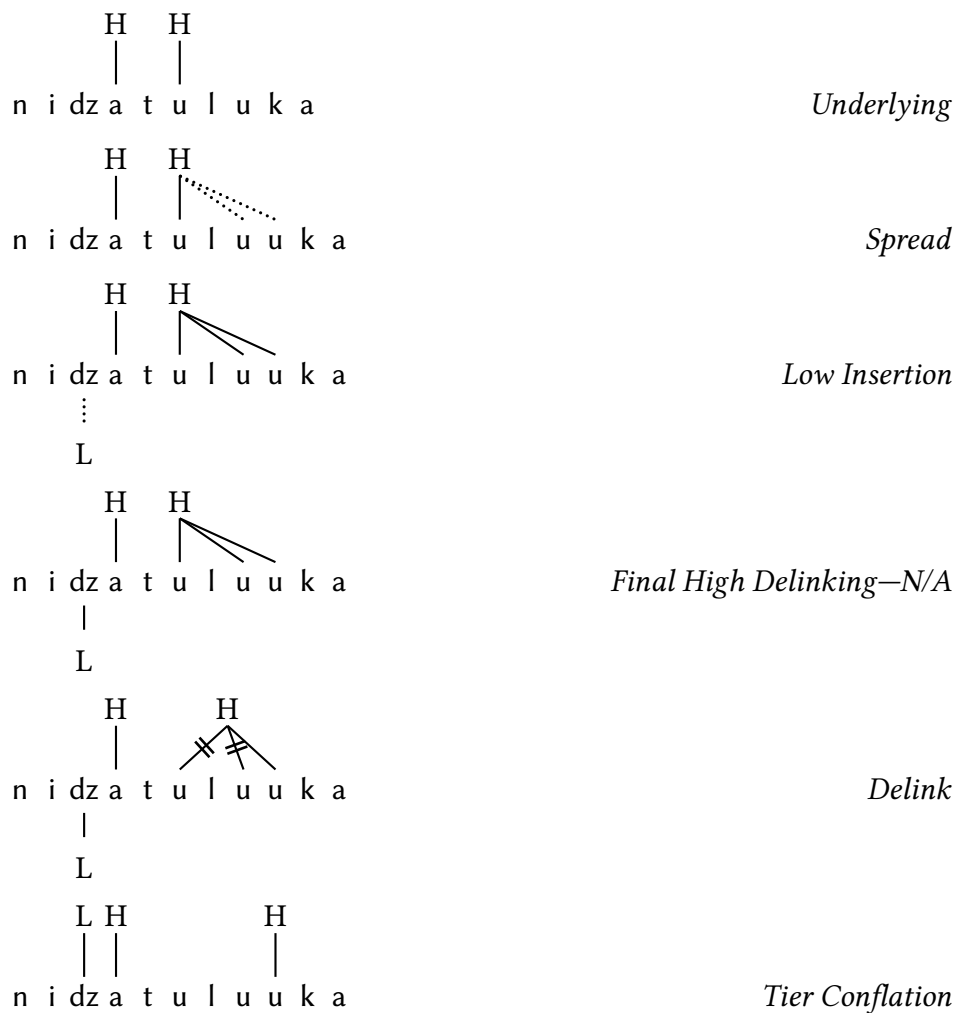
*Delink*



*Tier Conflation*

Next, observe that Low Insertion and Final High Delinking must come before Delink, otherwise the high tone on the depressed TM -dza- would either be deleted completely (*ni-dza-tulũ:ka) or retracted (*ní-dza-tulũ:ka).

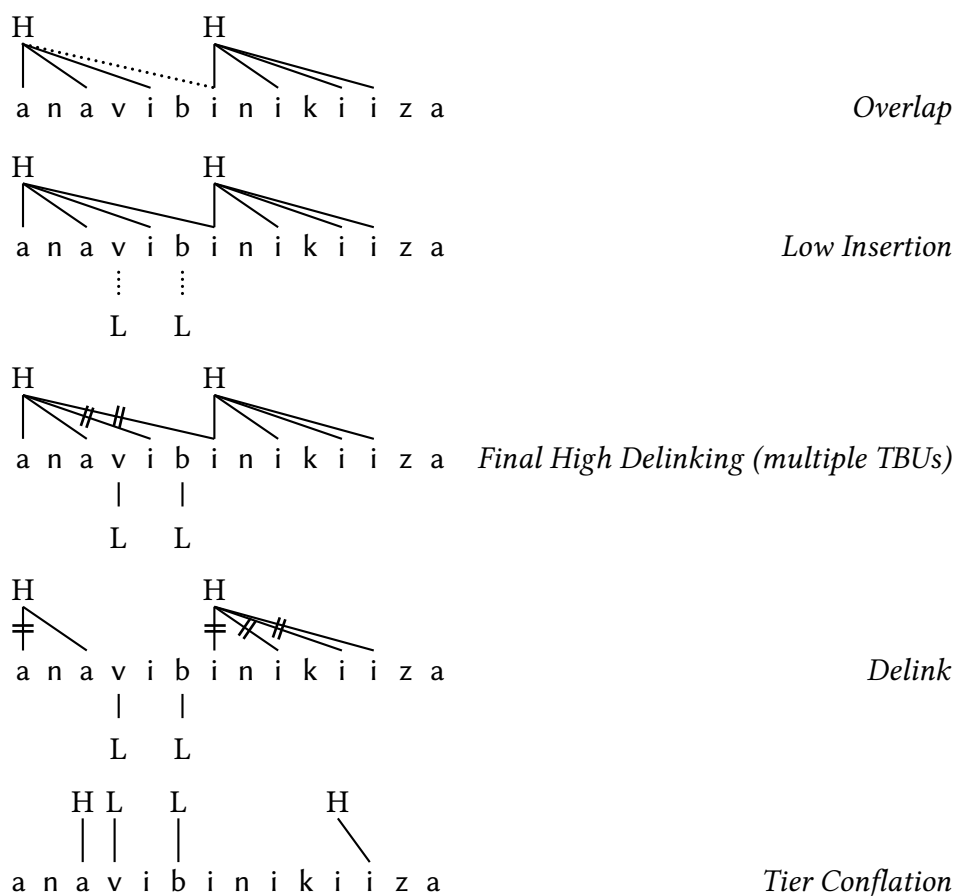
(40) Derivation of ni-dzá-tulũ:ka:



Next, cases like the Duruma₁ a-ná-vi-bĩnikĩ:za show us that Final High Delinking actually delinks as many TBUs as possible. In other words, High Tone Shift can be restricted by more than one step.

(41) Derivation of a-ná-vi-bĩnikĩ:za:





An additional thing to note is that a shifted high tone may surface on the penult, even when the penult is depressed. Now, the fact that the penultimate vowel in a phrase is invariably bimoraic again offers itself here: in a word like the Giryama *a-na-barabã:ta* (i.e., *a-na-barabaáta*), the high tone does not surface on the mora immediately adjacent to the depressor consonant and so may be “spared” the depressor effect. This means that Final High Delinking does not have the environment to operate.

This type of analysis becomes slightly more problematic for the dialects that have a level high tone on the penult (and for phrase-medial penults, which we have not seen yet), and so let us leave the discussion where it stands for the time being. Whatever the final analysis may prove to be, the most succinct generalization seems to be this: High Shift is restricted when the target TBU is depressed and the high tone is not the last one in a phrase.

### 3.3 Depressors and the Penult in Digo

Recall from §2.10 that where in other Mijikenda dialects a single High surfaces as a rising or level high tone on the penult, Digo has a rise-fall intonation, e.g., a-na-rĩ:βâ '(s)he is paying'. Since in Digo the High is heard on the final vowel, Digo becomes sensitive to the onset of the ultima:

- (42) Final depressors in Digo₁; some of these appear in Kisseberth (1984), being based on the same recordings.

*No depressors:*

ku- <u>a</u> rũ:kâ	'to begin, start'
ku-b <u>o</u> mō:râ	'to demolish'
ku-i <u>i</u> ndĩ:kâ	'to shut the door'
ku-g <u>o</u> ŋgomě:â	'to hammer'
ku-f <u>u</u> rukũ:tâ	'to move restlessly'
ku-y <u>a</u> kinĩ:fâ	'to confirm'

*Final syllable depressed:*

ku-s <u>u</u> ndurĩ:za	'to place in reserve'
ku-f <u>u</u> kĩ:za	'to apply heat'
ku-k <u>o</u> ró:ga	'to stir'
ku-k <u>u</u> rú:ga	'to smoothen by rubbing'
ku-s <u>i</u> rĩ:ga	'to rub'
ku-t <u>a</u> pirĩ:za	'to drive off predators'

*Final syllable and penult depressed:*

ku-g <u>a</u> ra-gã:za	?
<u>a</u> -na-gũ:za	'(s)he is selling'
<u>a</u> -na-marigĩ:za	'(s)he is finishing'

Note that, as in all dialects, a depressor on the penult will not limit High Shift from surfacing there, even if the final vowel is depressed, e.g., the verb ku-guza 'to sell' gives us a-na-gũ:za and not *a-ná-gu:za.



### 3.4 Blocking of Plateau

In the dialects that have Plateau, depressors affect the tone system in an additional way, namely by blocking Plateau.

Consider the following data, in which I've marked Plateau with parentheses. Most of these examples are from tenses which we haven't seen yet—the important thing is to observe the scope of Plateau:

(43) Depressors blocking Plateau (parentheses mark the scope of Plateau):

a-na-(tʃí-máří)gĩ:za	'(s)he is finishing [cl.7]'	Digo ₄
k ^h a-a-(séngé-ré-rá) dǎ:t ^h e	'(s)he isn't approaching the valley'	Digo ₅
(né-ándíká) barú:wa	'I wrote a letter'	Chonyi ₁
ku-dzi-(gúrí rá)-guri:ra	'to ??'	Duruma ₁

In all of these examples we see Plateau proceeding rightward from the surface high tone, only to stop before the first depressor. Note that depressors have the same effect on Assimilation in Giryama as they do on full-fledged High Spread in the other dialects; this is only to be expected.

As for analysis: to incorporate the blocking of Plateau into our analysis, all we need to do is order Plateau after Tier Conflation; at that stage, then, depressors would operate as straightforward blockers due to the same ban on the crossing of association lines. This type of analysis is provided by Hyman and Mathangwane (1998) for Ikalanga, a Southern Bantu language.

(44) Depressors blocking Plateau:

$\begin{array}{cccccccc} & H & & & H & & & & \\ &   & & &   & & & & \\ a & n & a & h & e & g & a & g & o & r & y & o & \eta & m & e \end{array}$	<i>Underlying</i>
$\begin{array}{cccccccc} & H & & L & L & & & & H & & & & \\ &   & &   &   & & & &   & & & & \\ a & n & a & h & e & g & a & g & o & r & y & o & \eta & m & e \end{array}$	<i>High Tone Shift, Low Insertion</i>
$\begin{array}{cccccccc} & H & & L & L & & & & H & & & & \\ &   & \dots &   &   & & & &   & & & & \\ a & n & a & h & e & g & a & g & o & r & y & o & \eta & m & e \end{array}$	<i>Plateau</i>

### 3.5 Tonal Fission

Now we move on to a rather unusual type of depressor effect called tonal “fission” (Cassimjee and Kisseberth, 1992). In a nutshell, tonal fission refers to a situation where a single underlying tone is heard on multiple *non-adjacent* TBUs—specifically, a high tone will be heard before every depressor it “passes over” during High Shift. Within Mijikenda, this is only seen with any regularity in Riḃe, Kauma and, in a much more restricted manner, Digo. Fission has also been mentioned in the Southern Bantu languages Siswati (Cassimjee and Kisseberth, 1992) and Ikalanga (Hyman and Mathangwane, 1998).

Compare, in the data below, cases of fission with cases that don’t have it—either in dialects that don’t display fission or in the absence of depressor consonants.

#### (45) Examples of Fission

In Riḃe₁:

ku-súbũ:tu	cf. ku-subũ:tu (Chonyi ₁ )	‘to dare’
ku-galá-gã:la	cf. ku-gala-gã:la (Chonyi ₁ )	‘to writhe’
w-á-zi-pĩ:ga	cf. w-a-ni-pĩ:ga	‘(s)he is hitting [cl.10]/me’
w-á-zi-fúgũ:la	cf. n-a-zi-fugu:la	‘(s)he/I is/am untying [cl.10]’

In Riḃe₂:

a-ndá-ga-fúgũ:la	cf. ni-nda-ga-fugu:la	
a-na-mala ku-gula ŋgũ:wo	cf. ni-na-mala ku-gula ŋgu:wo	‘(s)he/I want(s) to buy clothes’
a-na-píga má-bumbũ:mbu	cf. ni-na-piga ma-bumbumbu	‘(s)he/I is/am beating drums’
a-na-sága má-gondolõ:we	cf. ni-na-saga ma-gondolo:we	

Fission is especially striking in the phrasal data from Riḃe₂. Compare a-na-píga má-bumbũ:mbu ‘(s)he is beating drums’ with ni-na-piga ma-bumbumbu ‘I am beating drums’: clearly, in the 3sg. form there is only one underlying high

tone, and yet it is heard in three different places: one is the penult, the target of High Tone Shift, but two more places are on TBUs which precede depressors.

### 3.5.1 Properties of Fission

The facts of tonal fission, though uncommon from a typological point of view, are not hard to generalize: a high tone is heard before every depressor on its “way” to the target location. Nevertheless, there are a few points to consider.

#### 3.5.1.1 Scope of Fission

The first thing to note about tonal fission is that these “spurious” surface high tones are only heard in the span of High Shift. In other words, in dialects that have fission we only observe it between depressors which lie between a high tone’s underlying location and its target.

In one sense, this claim is almost trivial: naturally one wouldn’t expect surface high tones to pop up in phrases that have no underlying Highs. But the true implication of this is slightly more subtle and will prove useful in our exploration of Mijikenda tone: high tone fission allows us to demonstrate the underlying location of tones when no other evidence is available.

Recall, for example, the very first point made in chapter 2: although in the infinitive forms of High verb stems we invariably hear the high tone on the penultimate vowel, I have claimed that this high tone originates on the stem-initial mora. Evidence from overlap in the present tense has supported this claim to some extent. But consider now the following data:

(46) Fission on the stem-initial mora of High verbs (Kauma):

ku-hégǔ:la ‘to remove a pot from the fire’  
ku-súbǔ:tu ‘to dare’

(47) No spurious high tones on the infinitive marker (Kauma):

ku-dǔ:ŋga (*kú-dǔ:ŋga) ‘to pierce’  
ku-dǎŋǎ:na (*kú-dǎŋǎ:na) ‘to be perplexed’  
ku-gǎlá-gǎ:la (*kú-gǎlá-gǎ:la) ‘to writhe’

(48) No spurious high tones on an OP (Ri $\beta$ e₂):

ni-na-tfi-bǎ:nda (*ni-na-tfí-bǎ:nda) ‘I am breaking [cl.7]’  
 ni-na-ri-binikĩ:za (*ni-na-rí-binikĩ:za) ‘I am covering [cl.5]’

The fact that we hear the extra high tones in words like ku-súbũ:tu and ku-galá-gǎ:la is a clear indication that the high tone starts life at an earlier location than the penult. Another key piece of evidence is in those High verb stems that start with a depressor. Note that in words like ku-dũ:nga, ku-galũ:za and ku-galá-gǎ:la, the prefix ku- is never the target of fission. This proves to us that High Shift covers only the stem, and not the entire word.

Again, in the infinitive forms this result is little more than trivial, but this type of argumentation proves invaluable when we get to the more opaque phenomena of Mijikenda tonology. To give a taste of things to come, consider the imperative forms below:

(49) Fission in the imperative (Ri $\beta$ e₁):

*No depressors:*

la:la ‘sleep!’  
 ri:sa ‘feed!’  
 kala:nga ‘fry!’  
 hiri:ka ‘send!’

*Depressors:*

galá-gala ‘writhe!’  
 hégu:la ‘remove a pot from the fire!’  
 súbu:tu ‘dare!’  
 galũ:za ‘change!’

The depressor-less verbs like kala:nga ‘fry!’ exhibit the common form of the imperative in Mijikenda, where no surface high tone is audible. Yet, when the stem contains depressors, as in hégu:la ‘remove a pot from the fire!’ or galá-gala ‘writhe!’, a high tone is heard, thus proving the existence of an underlying high tone. Exactly where that tone comes from, and why it is not normally heard, will be dealt with in chapter 4.

### 3.5.1.2 No Spurious Highs on Depressed TBUs

There is another point regarding tonal fission which needs to be mentioned at this stage. Again, this fact is hardly surprising: fission will never cause “spurious” high tones to surface on depressed TBUs.

(50) No spurious high tone on depressed TBU:

$\acute{a}$ -dzi-vi-gũ:la      (* $\acute{a}$ -dzi-ví-gũ:la)      ‘(s)he has bought [cl.8]’  
 $\beta\grave{a}$ -ndá-ga-zumbũ:la      (* $\beta\grave{a}$ -ndá-g¹á-zumbũ:la)      ‘they will seek [cl.6]’

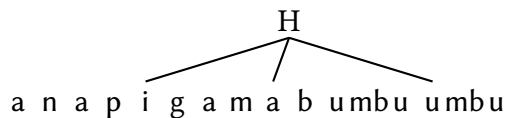
As a generalization, there is nothing much to say about this: it is very natural, given the general association of depressors with lowered pitch to expect that high tones will only be pronounced on a depressed TBU when no other choice is available. In terms of analysis, however, this fact will prove of some interest.

### 3.5.2 Deriving Fission

The phenomenon of fission provides a non-trivial challenge to any theory of tone. The second part of this work discusses in detail one alternative to the derivation of these results, but let us for now see what the problems raised by fission are.

Ideally, we would want our surface form to reflect the intuition that the different surface high tones are related to a single underlying high tone (“sponsor”). In autosegmental notation, this would look as following:

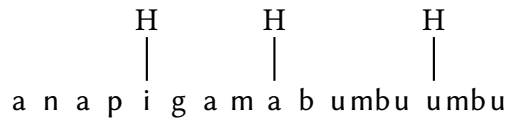
(51) Invalid autosegment representation of Fission in  $\grave{a}$ -na-píga má-bumbũ:mbu:



However, such representations are diallowed in autosegmental phonology, since they violate one of the basic well-formedness constraints, namely the *adjacency constraint* (Goldsmith, 1976). In other words, if we are to work within

the autosegmental framework, we have no choice but to derive different three distinct surface high tones from a single underlying tone:

(52) Valid autosegment representation of a-na-píga má-bumbũ:mbu:



This is in fact the derivation provided by Cassimjee and Kisseberth (1992): in their analysis, “tier conflation” occurs before high tone delinking in the relevant dialects, breaking up the high tone into multiple spans. Delinking then operates as usual, leaving only the rightmost TBU in each of these spans.

In chapter 8 I present an alternative, domains-based analysis which allows us to directly represent the intuitive link between a single underlying high and multiple non-consecutive high TBUs.

### 3.5.3 Limited Fission

Tonal fission, as described above, is a highly opaque process and seems indeed to be losing ground in some of the dialects. While Riβe₁ and Kauma exemplify fission in all environments, other speakers seem to have it only in limited morphophonological environments.

#### 3.5.3.1 Limited Fission in Riβe₂

In many respects, the tonology of Riβe₂ is identical to that of Riβe₁: spurious Hith tones can occur in any position in the word, as the following examples show:

(53) Fission in Riβe₂:

*Spurious H on an object prefix:*

<u>a</u> -na-tʃí-gũ:la	‘(s)he is buying [cl.7]’
<u>a</u> -na-kú-gurĩ:ra	‘(s)he is buying for you’
<u>a</u> -na-tʃí-dʒĩ:ta	‘(s)he is cooking [cl.7]’

*Spurious H on the tense marker:*

<u>a</u> -ná-vi-lõ:ga	‘(s)he is bewitching [cl.8]’
<u>a</u> -ná-ga-tsõ:la	‘(s)he is picking up [cl.10]’
<u>a</u> -ná-ga-tsukũ:la	‘(s)he is carrying [cl.10]’
<u>a</u> -ná-vi-gũ:la	‘(s)he is buying [cl.8]’
<u>a</u> -ná-vi-dzẽ:ŋga	‘(s)he is filling [cl.8]’

*Spurious H inside the stem:*

<u>a</u> -na-βa-ságĩ:ra	‘(s)he is grinding for them’
<u>a</u> -na-tfí-b <u>and</u> á-bã:nda	??

However, there is an intriguing difference in this dialect: fission is only active in forms with an object prefix.

(54) No fission in Riβe₂ verbs without an OP:

<u>a</u> -na-gũ:la	‘(s)he is buying’	(* <u>a</u> -ná-gũ:la)
<u>a</u> -na-dzĩ:ta	‘(s)he is cooking’	(* <u>a</u> -ná-dzĩ:ta)
<u>a</u> -na-gõ:mba	‘(s)he is saying’	(* <u>a</u> -ná-gõ:mba)
<u>a</u> -na-zĩ:ka	‘(s)he is burying’	(* <u>a</u> -ná-zĩ:ka)
<u>a</u> -ná-b <u>and</u> a-bã:nda	??	(* <u>a</u> -ná-b <u>and</u> á-bã:nda)

Note that this does not depend on the expected locus for the spurious high tones; as we have seen above, once an object prefix exists, spurious high tones can appear just as readily inside the stem or on the tense marker. Compare, for example, the stem-internal spurious high tone on a-na-tfí-bandá-bã:nda with the lack of Fission a-ná-banda-bã:nda (note: the pre-stem high tone is not Fission, but simply failure to overlap due to the depressed stem). There is nothing different in the phonological environment of the first [nda] between the two verbs, and yet Fission only acts when there is an object prefix.

This type of dependence seems to be purely morphosyntactic, as the phonological environments for fission are identical in both cases. In terms of derivation, I see no better choice than to restrict the application of fission to these morphological environments. I shall not have much to add about this restriction, other than to note it.

### 3.5.3.2 Limited Fission in Digo₁

Digo shows another, much more limited case of fission. Spurious high tones appear before depressor consonants, but only on word penults:

(55) Limited Fission in Digo₁ (Kisseberth, 1984); all the nouns are toneless:

*Spurious H before a depressed verb ultima:*

ni-na- <u>á</u> dza mǔ:-tû	‘I’m mentioning someone’	(*ni-na- <u>á</u> dza mǔ:-tû)
<u>a</u> -na-píga gǔ:mâ	‘(s)he’s beating a drum’	(* <u>a</u> -na-piga gǔ:mâ)
<u>a</u> -na-ragíza kalǎ:mû	‘(s)he’s ordering a pen’	* <u>a</u> -na-ragiza kalǎ:mû)

*No spurious H before other depressors:*

ni-na- <u>e</u> zeka bã:bdâ	‘I’m thatching a shed’	(*ni-na- <u>e</u> zeká bã:ndâ)
<u>a</u> -na-dzíta mǎ:ŋgâ	‘(s)he’s cooking cassava’	(* <u>a</u> -ná-dzíta mǎ:ŋgâ)

Like the case of fission in Riße₂ above, this process has a very limited scope. It is, in a sense, simpler to derive this type of fission, since we have a clearly defined phonological environment in which fission occurs (namely, the penult). Nevertheless, this is not the whole picture yet, and I shall discuss it further in §4.3.3, when we have seen nominal tonology and the subject of “hidden” high tones.

## 3.6 Depressors and Deep Overlap

Depressors add a certain perspective to the phenomenon referred to here as “Deep Overlap”. Recall the following facts, repeated here from section 2.8:

(56) Deep Overlap in Raβai₁:

Infinitive	1sg.	3sg.	3sg. + OP	
ku-fí:t̥sa	na-fí:t̥sa	y <u>u</u> -na-fí:t̥sa	y <u>u</u> -na-tf̥i-fí:t̥sa	‘hide’
ku-hǎ:dza	na-hǎ:dza	y <u>u</u> -na-hǎ:dza	y <u>u</u> -na-ri-hǎ:dza	‘name’
ku-lǎ:vya	na-lǎ:vya	y <u>u</u> -na-lǎ:vya	y <u>u</u> -na-tf̥i-lǎ:vya	‘give’
ku-tǎ:la	na-tǎ:la	y <u>u</u> -na-tǎ:la	y <u>u</u> -na-ri-tǎ:la	‘count’
ku-tenǰě:za	na-tenǰě:za	y <u>u</u> -na-tenǰé:za	y <u>u</u> -na-tf̥i-tenǰé:za	‘repair’



(Deep Overlap in Raβai₁, continued)

Infinitive	1sg.	3sg.	3sg. + OP	
ku-kalā:ŋga	na-kalā:ŋga	y _u -na-kalā:ŋga	y _u -na-tf _i -kalā:ŋga	‘fry’
ku-kalangī:ra	na-kalangī:ra	y _u -na-kalangī:ra	y _u -na-mu-kalangī:ra	‘fry for’
ku-βaβi:ka	na-βaβi:ka	y _u -na-βaβi:ka	N/A	‘vomit’
ku-tf _i mbi:ra	na-tf _i mbi:ra	y _u -na-tf _i mbi:ra	N/A	‘flee’

When we first encountered Deep Overlap, I chose to describe it as a two-step process: the first tone was said first to shift to the stem (or macro-stem) and from there to shift further to the penult. This is, of course, not the only view possible. For example, one could have High Shift in Raβai₁ proceed from right to left: first the stem High would shift to the penult, and after that the subject prefix High will follow and shift as far to the right as possible. However, depressors supply us with crucial evidence to rule out this approach. What we see is that depressors can block the second stage of shifting:

(57) No Deep Overlap on depressed stems (only depressor-initial stems recorded):

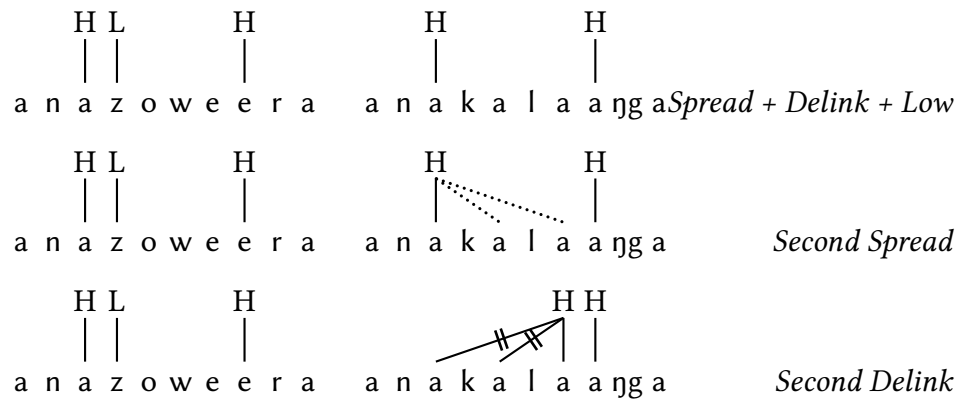
a-ná-bedū:la	(*a-na-bedú:la)	‘(s)he is turning’
a-ná-zowě:ra	(*a-na-zowé:ra)	‘(s)he is accustomed’
a-ná-bambahú:la	(*a-na-bambahú:la)	‘(s)he is separating’
a-ná-gala-gǎ:la	(*a-na-gila-gá:la)	‘(s)he is writhing’
a-ná-zuŋgulú:ka	(*a-na-zuŋgulú:ka)	‘(s)he is going round’
a-ná-b _i nikizǎ:na	(*a-na-b _i nikizá:na)	

As we can clearly see, a depressor consonant on the stem blocks Deep Overlap altogether. This fits in rather nicely with the rule ordering approach. Deep overlap would then simply be another case of High Shift which takes place after the insertion of Low tones for depressors:

(58) Derivation of a-ná-zowě:ra vs. a-na-kalā:ŋga:

H	H	H	H	
a	n	a	z	o
w	e	r	a	
				a
a	n	a	k	a
l	a	ŋ	g	a

*Underlying*



In the second part of this work we shall see how an domain-based analysis can shed new light on these facts, without necessitating a sequential derivation.

### 3.7 Depressors Before Overlap

There is another depressor-related effect which lends itself naturally to a sequential derivation. Consider the following data from Duruma:

(59) Depress before Overlap in Duruma₁:

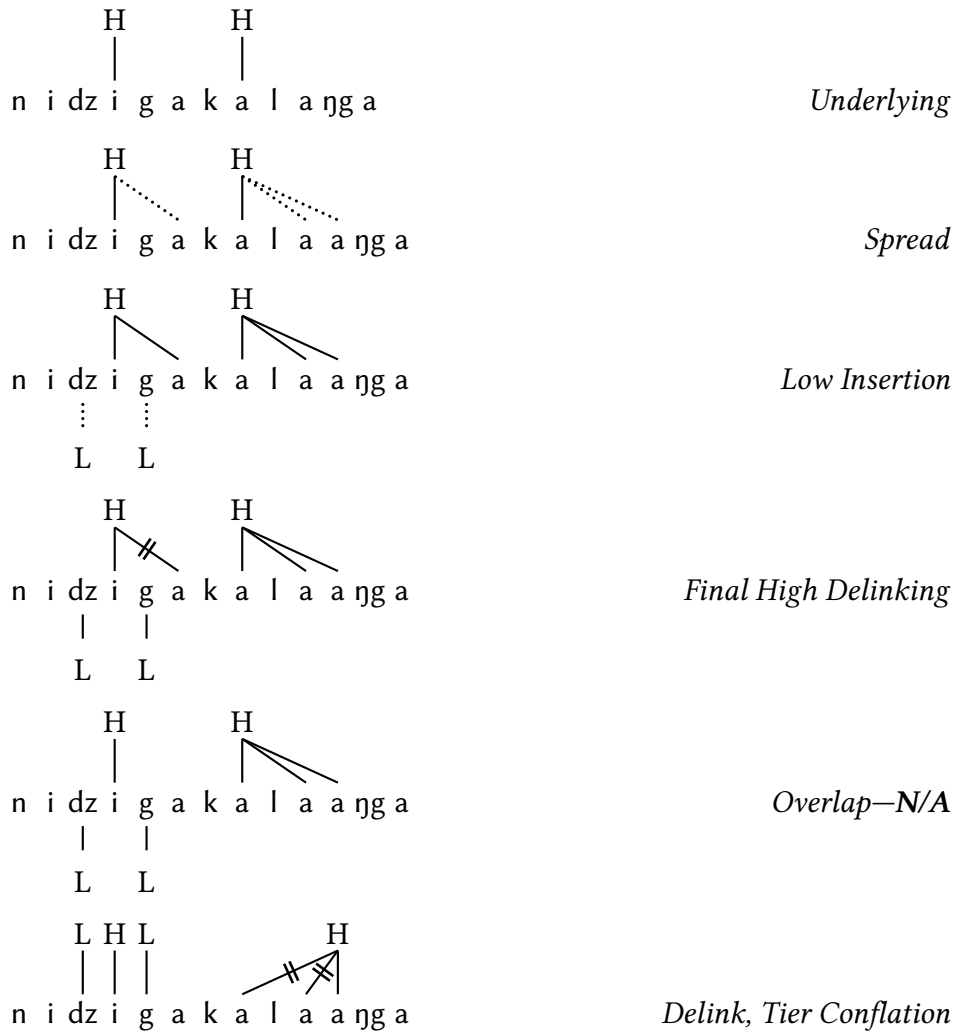
<i>Non-depressed OP</i>	<i>Depressed OP</i>	
ni-dzi-ri-ká _l á:nga	ni-dz _í -ga-ka _l ǎ:nga	‘I have fried [cl.5/6]’
ni-dzi-tf _i -hég _ũ :la	ni-dz _í -vi-heg _ũ :la	‘I have removed [cl.7/8] from the fire’
y _u -na-mu-kúlúg _í :ra	y _u -ná-vi-kulug _í :ra	‘(s)he is making porridge for me/with [cl.8]’

Looking first at the depressor-less data, it appears that in this environment there is overlap on the stem. In other words, we would say that the target of High Shift from the tense marker in ni-dzi-ri-ká_lá:nga is the stem-initial ka. As such, we would not expect intervening depressors to make a difference, since depressors do not affect High Shift—compare, for example, ni-dzi-zumb_ũ:la in the same dialect, where the tense marker High freely shifts a depressor.

Given that, we would expect this shift to pass over a depressed object prefix, yielding *ni-dzi-ga-ká_lá:nga. Instead, we find ni-dz_í-ga-ka_lǎ:nga. How do we explain this?

Again, the most natural view seems to be a sequential one: High Shift first advances to the pre-stem position and only then optionally overlaps. In most dialects, Low Insertion operates after High Shift has reached its ultimate target; but in Duruma it is “sandwiched” before Overlap, allowing Overlap to occur only in cases where the pre-stem position was available. A sample derivation is shown in (60) below: since Low Insertion (and Final High Delinking) have already operated, yielding the intermediate form *ni-dzí-ga-kálá:ŋga*, there is no environment for Overlap to apply, since the high tone from the prefix has not reached the pre-stem TBU.

(60) Depression before Overlap: Duruma₁ *ni-dzí-ga-kálá:ŋga*.



Here again, I will offer an OT-based account of these facts in the second part of this work.

### 3.8 Some Unusual Depressors

The link between voicing and lowered pitch is so wide-spread that some authors have taken it to be automatic, sometimes even considering [+voice] and [Low] to be a single feature—see for example Bradshaw (1999) and the discussion of such “single source” theories in Downing (2009). On the other hand, some data seems to require a much more abstract link, and in fact cases of depression which are motivated by reasons other than voicing (for example, by certain morphological factors) have been discussed; see for example Rycroft (1980). Below are some Mijikenda data which supports this view.

#### 3.8.1 Depressors and Voicing

The first thing to note is that the set of depressors is not the same in all languages. As a very basic example, the class of depressors in Nguni languages includes prenasalized stops (mb, nd, ŋg) whereas in Mijikenda it does not (cf. Casimjee and Kisseberth (1992)). Furthermore, cases have been documented where non-voiced consonants can act as depressors (Downing and Gick, 2001). This is also the case in Mijikenda.

First of all, the voiced bilabial fricative β is never a depressor in Mijikenda:

(61) β does not limit (Deep) Overlap:

<u>a</u> -na-β _u :ðya	‘(s)he despises’	(* <u>a</u> -ná-β _u :ðya)	Giryama
<u>a</u> -na-β _a β _u :ka	‘(s)he is searching in the grass’	(* <u>a</u> -ná-β _a β _u :ka)	Giryama
<u>a</u> -na-β _e :hâ	‘(s)he is sifting grain’	(* <u>a</u> -ná-β _e :hâ)	Digo ₁
<u>a</u> -na-β _i ri:kâ	‘(s)he is sending’	(* <u>a</u> -ná-β _i ri:kâ)	Digo ₄
<u>a</u> -na-β _i :sa	‘(s)he is avoiding’	(* <u>a</u> -ná-β _i :sa)	Kauma
<u>a</u> -na-β _y e:ra	‘(s)he is sweeping’	(* <u>a</u> -ná-β _y e:ra)	Kauma
<u>yu</u> -na-β _a β _i :ka	‘(s)he is vomiting’	(* <u>yu</u> -ná-β _a β _i :ka)	Raβai ₁

Kutsch Lojenga (2001) documents the two v-like sounds in Giriyama (v and β), describing what is here marked β as a labiodental approximant and transcribing it v. The data at my disposal makes it impossible for me to ascertain the exact phonetic properties of this consonant; it is, however, clearly some voiced labial consonant which is not a depressor.

However, the more interesting cases of non-automatic relation between voicing and depression are seen in other cases. As it turns out, several consonants in Giriyama have two variants: in Giriyama, at least, there are depressor and non-depressor variants of [h], [ð] and [f].

(62) Depressor and non-depressor [h] in Giriyama:

Non-depressor		Depressor	
<u>a</u> -na-hâ:la	‘take’	<u>a</u> -ná-hǔ:la	‘dish up food’
<u>a</u> -na-hóhō:la	‘bend’	<u>a</u> -ná-hohō:sa	‘pervert’
<u>a</u> -na-háhí:sa	‘cause to vomit’	<u>a</u> -ná-hendzē:za	‘consent’

(63) Depressor and non-depressor [f] in Giriyama:

Non-depressor		Depressor	
<u>a</u> -na-fwâ:ha	‘be fitting’	<u>a</u> -ná-fǐ:tsa	‘hide’
<u>a</u> -na-fútã:ma	‘squat’	<u>a</u> -ná-fufũ:la	‘revive’
<u>a</u> -na-fwéðeðe:ka	‘be ashamed’	<u>a</u> -ná-fīnikī:ra	‘cover’

(64) Depressor and non-depressor [ð] in Giriyama:

Non-depressor		Depressor	
N/A		<u>a</u> -ná-ðǎ:a	‘fasten string around calabash’
<u>a</u> -na-ðéðe:dza	‘coax’	<u>a</u> -ná-ðai:wa	pass. of ku-ðǎ:a
<u>a</u> -na-ðúnǔ:ka	‘become contused’	<u>a</u> -ná-ðyǒ:ma	‘speak with foreign accent’

Lax (1996) mentions breathy variants of f and h; these may be the depressor f and h, although if the phonetic distinction exists it is inaudible in my data. Kutsch Lojenga (2001) also reports that “there is no trace of a breathy /f/ or /z/”. Even allowing for breathy-voiced f and h, we are still left with the non-depressor variant of ð, which to the best of my knowledge has never been discussed in the literature. Note that while the depressor h may very well be the voiced h and

depressor *f* may be pronounced with breathy voice, both depressor and non-depressor *ð* are clearly voiced.

There may turn out to be a consistent phonetic basis for depression in Mijikenda; as it seems now, however, this is not simply the feature [+voice]. Future phonetic investigation will need to determine what, if anything, it is.

If there is indeed no phonetic difference, this would be another instance of what Rycroft (1980) describes in the following words: “In certain Swati words, depression after a *non*-depressor consonant is an inherent feature of the lexical item.”

### 3.8.2 Depressors and Morphology

Rycroft (1980) further describes cases where certain affixes act as depressed, even when there is no depressor consonant. Mijikenda offers a mirror image of this situation, where depressor consonants lose their “depressorhood” in certain affixes.

#### 3.8.2.1 Depressed Object Prefixes

The first such case is that of depressed object prefixes. In most Mijikenda dialects, depressed object prefixes function as depressors for tonal processes. The data below is repeated here from the first discussion of depressors:

(65) Depressed OPs:

<u>a</u> -na-rí-rě:ha	<u>a</u> -ná-ga-rě:ha	Giryama
<u>a</u> -na-kí-fí:t̥sa	<u>a</u> -ná-vi-fí:t̥sa	Giryama
y <u>u</u> -na-tfí-bă:nda	y <u>u</u> -ná-vi-bă:nda	Duruma ₁
y <u>u</u> -na-rí-há:dza	y <u>u</u> -ná-vi-hă:dza	Duruma ₁
<u>a</u> -na-tfí-sô:ma	<u>a</u> -ná-vi-sô:ma	Kauma
<u>a</u> -na-í-ka _l ă:ŋga	<u>a</u> -ná-zi-ka _l ă:ŋga	Giryama
y <u>u</u> -na-tfí-b _ɪ nikĩ:za	y <u>u</u> -ná-vi-b _ɪ nikĩ:za	Duruma ₁
y <u>u</u> -na-ní-hirí:ka	y <u>u</u> -ná-ga-hirí:ka	Kambe ₂

However, the Chonyi₁ speaker treats depressed object prefixes as non-depressed:

(66) Depressed OPs in Chonyi₁:

y <u>u</u> -na-tfí-tâ:la	y <u>u</u> -na-ví-tâ:la	‘count’
y <u>u</u> -na-tfí-hâ:dza	y <u>u</u> -na-ví-hâ:dza	‘name’
y <u>u</u> -na-tfí-lâ:vya	y <u>u</u> -na-ví-lâ:vya	‘give’
y <u>u</u> -na-rí-dũ:ŋga	y <u>u</u> -na-gá-dũ:ŋga	‘pierce’
y <u>u</u> -na-rí-bɪnikĩ:za	y <u>u</u> -na-gá-bɪnikĩ:za	‘cover’

Note that there is evidence that these morphemes do indeed count as depressors for this speaker: depressed object prefixes block High Spread. The following data are from the past tense. We have not yet discussed all the preliminaries required for the past tense, but for now suffice it to say that tonally these verbs have a surface High on the fused subject/tense marker, which spreads as usual up to the first depressor:

(67) Depressed OPs in Chonyi₁ (past tense):

né-tfí-gũ:la	né-vi-gũ:la	‘I bought [cl.7/8]’
né-tfí-galũ:za	né-vi-galũ:za	‘I changed [cl.7/8]’
né-tfí-márigĩ:za	né-vi-marigĩ:za	‘I finished [cl.7/8]’
né-tfí-fúgũ:la	né-vi-fugũ:la	‘I ??-ed [cl.7/8]’
né-rí-sóndzê:za	né-ga-sóndzê:za	‘I ??-ed [cl.5/6]’

## 3.8.2.2 Depressed Tense Markers

The perfect tense marker is *dzi-* or *dza-* in all Mijikenda dialects but Digo. Although this tense marker starts with the depressor *dz*, in some dialects it behaves as if it were non-depressed; recall that Fission never results in a “spurious” high tone appearing on a depressed TBU. For some speakers, they can nevertheless appear on the perfect tense marker. The Riße₂ data in (68) show this in action.

(68) Fission on the perfect tense marker in Riβe₂:

ni-dzi-tfi-tsö:la	ni-dzǐ-vi-tsö:la	‘pick up’
ni-dzi-tfǐ-gǎ:vya	ni-dzǐ-vi-gǎ:vya	‘divide’
ni-dzi-tfǐ-gǔ:la	ni-dzǐ-vi-gǔ:la	‘pick up’
ni-dzi-ri-tsukǔ:la	ni-dzǐ-ga-tsukǔ:la	‘carry’
ni-dzi-tfǐ-kǎlâ:ŋga	ni-dzǐ-ga-kǎlâ:ŋga	‘fry’
ni-dzi-tfǐ-hégǐ:za	ni-dzǐ-vi-hégǐ:za	‘remove from the fire’
ni-dzi-tfǐ-marǐgǐ:za	ni-dzǐ-vi-marǐgǐ:za	‘finish’

Compare, for example, ni-dzi-tfi-tsukǔ:la with ni-dzǐ-vi-tsukǔ:la. In both cases, the verb stem and subject/object prefixes are toneless, and the only underlying High is contributed by the tense marker. When there are no depressors, in ni-dzi-tfi-tsukǔ:la, we hear only one surface High, but when the object prefix is the depressed vi-, we hear an additional high tone, this time *on the depressed tense marker dzǐ-*.

Note that there is no doubt that the tense marker does indeed start with a voiced obstruent (dz): in fact, the exact same morpheme acts as a depressor for Plateau in words like á-dzi-tsö:la or á-dzi-tsukǔ:la which would otherwise have been *á-dzǐ-tsó:la and *á-dzǐ-tsúkú:la.

To sum up, then, the perfect tense marker in Riβe₂ is another case where a depressed affix is systematically treated as non-depressed by a tonal process—in this case, fission.

### 3.9 Two Test Cases

Having seen the properties of High Tone Shift, Plateau and depressor consonants in Mijikenda, let us now discuss two sets of data which exemplify their interaction, namely the past tense and reflexive verbs.



### 3.9.1 The Past Tense

#### 3.9.1.1 Basic Pattern

The past tense² does not appear very complex at first glance, but it does integrate many of the effects we've seen. The tense marker is a single vowel, -a- in most dialects, -e- in some³. Tonally, here as with the present tense, the most convenient place to start is with the Kambe₂ speaker, in whose speech there is no Plateau.

Note: The discussion here does not fully cover Digo and Duruma which have an additional complication. We return to these later.

(69) Kambe₂ past tense, different subject markers:⁴

Infinitive	Past 1sg.	Past 3sg.	
<i>Low stems:</i>			
ku-ri:ma	né-rí:ma	βé-rí:ma	'to cultivate'
ku-ku:na	né-kú:na	βé-kú:na	'to scratch'
ku-tsuku:la	né-tsukũ:la	βé-tsukũ:la	'to carry'
ku-soɲdʒe:ra	né-soɲdʒě:ra	βé-soɲdʒě:ra	'to approach'
ku-bi:ga	né-bĩ:ga	βé-bĩ:ga	'to hit'
ku-gu:la	né-gũ:la	βé-gũ:la	'to buy'
ku-dʒi:t ^h a	né-dʒĩ:t ^h a	βé-dʒĩ:t ^h a	'to cook'
ku-galu:ka	né-galũ:ka	βé-galũ:ka	'to alter'
 <i>High stems:</i>			
ku-rĩ:sa	né-rí:sa	βé-rí:sa	'to feed'
ku-rě:ha	né-ré:ha	βé-ré:ha	'to give back'
ku-hĩrĩ:ka	né-hirĩ:ka	βé-hirĩ:ka	'to send'
ku-kalã:ŋga	né-kalã:ŋga	βé-kalã:ŋga	'to fry'
ku-tsuŋguri:ra	né-tsuŋguri:ra	βé-tsuŋguri:ra	'to peep'

²Nurse (2008), citing Giryama Translation and Literacy Project (1993) which I do not have, notes that this tense “refers to situations before today.” (Appendix 1) Similarly, Lax (1996) calls this the “far past tense”.

³Vowel-vowel sequences are often contracted in Mijikenda, hence the past tense subject/tense marker ne- is likely the result of an historic ni-a-

⁴Note: throughout this section, I shall not transcribe underlying high tones in the past tense forms; a discussion of what I believe to be the underlying representation here follows the data.

(Kambe₂ past tense, continued)

ku-vũ:ndza	né-vũ:ndza	βé-vũ:ndza	‘to break’
ku-vyǎ:la	né-vyǎ:la	βé-vyǎ:la	‘to give birth’
ku-daŋgǎ:na	né-daŋgǎ:na	βé-daŋgǎ:na	‘to be perplexed’
ku-gala-gǎ:la	né-gala-gǎ:la	βé-gala-gǎ:la	‘to writhe’

(70) Kambe₂ past tense with an object marker:

ku-rě:ha	né-ri-rě:ha	‘I gave you back [cl.5]’
ku-lagu:la	né-ku-lagũ:la	‘I treated you medically’
ku-kalǎ:ŋga	né-i-kalǎ:ŋga	‘I fried [cl.9]’
ku-soŋdzerě:ra	né-ku-soŋdzerě:ra	‘I approached you’
ku-bi:ga	né-ku-bĩ:ga	‘I hit you’

(71) Kambe₂ past tense with nominal complements:

βé-dzit ^h a nǎ:ma	‘(s)he cooked meat’
βé-gula nǎ:ma	‘(s)he bought meat’
βé-gula ŋgũ:wo	‘(s)he bought clothes’
βé-kalanga nǎ:ma	‘(s)he fried meat’
βé-soŋdzerera nũ:mba	‘(s)he approached the house’

The first thing to note in the data above is that the lexical tone of the verb stem has been completely lost. The tonal pattern is always the same: a high tone on the subject prefix/tense marker, and another high tone on the penult. In (69) we see that lexical tone and the choice of subject prefix have no effect on the tonal shape of the verb. Example (70) shows us that the first high tone is always heard on the subject prefix, even when an object prefix is present. Finally, (71) shows that the second high tone is indeed on the penult of the entire phrase, and not the verb.

As for depressor effects, there are almost none to speak of—recall that this speaker has no overlap (which a depressed stem would have prevented) and no Plateau (which any depressor would have blocked). There is one depressor effect visible in the case of bisyllabic stems. Compare né-kú:na ‘I scratched’ with

né-gǔ:la ‘I bought’. The stem of ku-gula starts with a depressor, and as a result the pitch drops back to low even when the two high tones are on adjacent TBUs; in né-kú:na there is no depressor between the two high tones and consequently no pitch drop.

Now consider the analysis of these facts. Clearly there are two surface high tones. One of these is heard on the penult, normally the result of High Tone Shift. But the other never advances beyond the subject/tense marker. I claim that one of the tones starts out on the subject marker, and the other on the tense marker, like so: n(i)-á-kalã:ŋga. The tense marker H then both blocks the advance of the subject prefix H, and shifts to the penult.

So much for the simple case of Kambe₂. Giryama behaves identically. Jiβana, as seen in (72) below, adds Plateau, but other than that is equivalent to Kambe₂ and Giryama.

(72) Jiβana past tense:

*No depressors: Plateau between two surface high tones.*

ku-rima	né-ríma	‘cultivate land’
ku-kuna	né-kûna	‘scratch’
ku-lála	né-lâla	‘sleep’
ku-rísa	né-rîsa	‘feed’
ku-tsukula	né-tsúkûla	‘carry’
ku-híríka	né-híríka	‘send’
ku-kalãŋga	né-kálãŋga	‘fry’
ku-kalãŋgîra	né-kálãŋgîra	‘fry for’
ku-tsungurîra	né-tsúŋgúrîra	‘peep’
ku-sopdzétera	né-kú-sópdzérêra	‘approach’
ku-kalãŋgîra	né-kú-kálãŋgîra	‘fry for’

*Initial depressors: Plateau blocked.*

ku-gula	né-gǔla	‘buy’
ku-vyála	né-vyála	‘give birth’
ku-galuza	né-galúza	‘change’
ku-gala-gála	né-gala-gála	‘writhe’

(*Jiḃana past tense, continued*)

*Medial depressors: Plateau advances up to first depressor.*

ku-lagula	né-lágũla	‘treat medically’
ku-hegũla	né-hégũla	‘remove a pot from the fire’
ku-kalãnga	né-zi-kalãnga	‘fry’
ku-redzeza	né-kú-rédzẽza	‘?’

### 3.9.1.2 Lexical Tone

But this is not the whole picture yet. Although in the past tense data above all lexical tone has been lost, in some dialects we can still find traces of it. The Chonyi₁ data below demonstrate this:

(73) Chonyi₁ past tense, High and Low verb stems:

*Low stems:*

ku-ka:ta	né-kâ:ta	‘cut’
ku-ri:ma	né-rî:ma	‘cultivate’
ku-tso:la	né-tsô:la	‘pitch up’
ku-lamu:sa	né-lámû:sa	‘greet’
ku-tsuku:la	né-tsúkû:la	‘carry’

*High stems:*

ku-hĩ:sa	né-hî:sa	‘avoid’
ku-lũ:ŋma	né-lû:ŋma	‘feel sick’
ku-sô:ma	né-sô:ma	‘read’
ku-sáhã:u	né-sáhã:u	‘forget’
ku-tʃĩmbĩ:ra	né-tʃĩmbî:ra	‘go away’
ku-kalãngĩ:ra	né-kálãngî:ra	‘fry for’

(74) Chonyi₁ past tense, non-depressed object prefixes:

*Low stems:*

né-mú-rî:ha	‘I repaid him’
-------------	----------------

(Chonyi₁ past tense, continued)

*High stems:*

né-βá-sî:fu	‘I praised them’
né-tfí-tâ:la	‘I counted [cl.7]’
né-rí-sáhâ:u	‘I forgot [cl.5]’
né-tfí-téngénê:za	‘I made [cl.7]’

(75) Chonyi₁ past tense, depressed object prefixes on bisyllabic stems:

*Low stems:*

né-ga-lö:ga	‘I bewitched [cl.6]’
-------------	----------------------

*High stems:*

né-vi-lâ:vya	‘I gave [cl.7]’
né-vi-tâ:la	‘I counted [cl.7]’
né-ga-hâ:dza	‘I named [cl.6]’

(76) Chonyi₁ past tense, depressed object prefixes on polysyllabic stems:

*Low stems:*

né-vi-rejë:za	‘I loosened [cl.8]’
né-ga-fugũ:la	‘I unfastened [cl.6]’
né-vi-marigĩ:za	‘I finished [cl.8]’

*High stems:*

né-vi-kálâ:ŋga	‘I fried [cl.8]’
né-vi-téngê:za	‘I repaired [cl.8]’
né-ga-hégũ:la	‘I removed [cl.6] from the fire’
né-ga-téngénézê:ra	‘I made [cl.6]’

Observe first that in Chonyi₁ the difference between High and Low verb stems is not maintained when there is no OP (73), nor is it evident when there is a non-depressed OP (74). It is only when the verb stem follows a depressed object prefix, as in (75) and (76), that the difference becomes visible: a Low stem has only a single surface high tone on the penult (né-ga-lö:ga, né-vi-marigĩ:za),

whereas a high stem has a Plateau from the first mora to the penult (né-ga-tén-géné-zě:ra), which on a bisyllabic stem results in a fall (né-vi-tâ:la).

Based on this, we can conclude that in Chonyi₁, unlike Kambe₂ and Jiβana seen above, the tone of the stem is not deleted in the past tense; rather, the two surface tones common to all forms (on the subject/tense marker and on the penult) are added to it. In other words, the past tense form of a High verb stem in Chonyi₁ has three underlying high tones: two on the subject/tense marker and one on the stem-initial mora, e.g., n(i)-é-kú-kálâŋga. When no depressors intervene, we hear these three high tones as one. When a depressed object prefix is present, we get the following surface locations: the first high tone surfaces on the tense marker, the second one on the stem-initial mora and the third one on the penult.

Other dialects which preserve lexical high tones like Chonyi₁ are Kauma and Duruma.

### 3.9.1.3 Digo

As mentioned above, the past tense in Digo and Duruma is slightly different and will be discussed when I reach the peculiarities of those dialects. At this point let us only note a way in which Digo differs slightly from the other dialects, namely the surface location of the first high tone. Consider the following data, keeping in mind that what in other dialects surfaces as a rising penult is heard as a rise-fall sequence in Digo.

(77) Digo₁ past tense, Low and High stems:

<i>Low stems</i>		<i>High stems</i>	
na-tsórâ	‘I picked up’	na-nénâ	‘I spoke’
na-kópâ	‘I borrowed’	na-hárâ	‘I took’
na-tsúkúrâ	‘I carried’	na-túrúkâ	‘I went out’
na-wótférâ	‘I received’	na-púpútâ	‘I beat’
na-tsótsómérâ	‘I stood on tiptoe’	na-fúrukútâ	‘I moved restlessly’
ná-gǎŋâ	‘I divided’	ná-dũngâ	‘I pierced’
ná-gũrâ	‘I bought’	ná-dũngâ	‘I pierced’
ná-dzěŋgâ	‘I built’	ná-vwinĩrâ	‘I sang for’

<i>Low stems</i>		<i>High stems</i>
ná-demurĩrâ	‘I scolded’	ná-garagãrâ ‘I writhed’

Besides the different shape of the penult, the pattern here is quite clear and similar to those we’ve seen in the other dialects, with the following difference: the Plateau in Digo₁ does not start on the subject/tense marker but on the first stem mora. This high tone only surfaces on the subject/tense marker when the stem begins with a depressor consonant. In other words, we see Overlap in the Digo past tense, where none of the other dialects has it.

Now, there are several possible explanations for this difference. Recall the claim that, in the past tense, there are two high tones on the subject/tense marker, e.g., the Giryama n(i)-á-kalaŋgĩra. One could argue that in Digo, the second grammatical high tone is in fact on the second stem mora (something which we shall encounter later on, when discussing grammatical tones), thus allowing Overlap. However, if that were the case we would expect Overlap on the stem even when there is an object prefix, which we do not get:

(78) Digo₂ past tense with OP:

na-mú-róga	‘I bewitched him/her’
na-mú-séŋgéza	‘I approached him/her’
na-rí-tsúkúra	‘I carried [cl.5]’
na-tfí-téŋgénéza	‘I built [cl.7]’
na-tfí-gũra	‘I bought [cl.7]’
na-tfí-dũŋga	‘I pierced [cl.7]’
na-tfí-garũza	‘I changed [cl.7]’
ná-vi-gũra	‘I bought [cl.8]’
ná-vi-dũŋga	‘I pierced [cl.8]’
ná-vi-garũza	‘I changed [cl.8]’

As we can see, Digo does not allow overlap in the past tense after an object prefix, which rules out the V₂ analysis. We can therefore conclude that the difference between Digo and the other dialects in this tense does not lie in the underlying locations of the high tones but in the conditions for overlap: Digo

is the only Mijikenda dialect that allows overlap on the macrostem in the past tense.

We shall come back to the past tense in Digo and Duruma when we discuss Neutralized High verb stems.

#### 3.9.1.4 The Past Tense and Downstep

There is one point to notice in relation to the past tense.

Take a word like the Chonyi₁ *né-tʃí-tâ:la* ‘I counted [cl.7]’. On the present analysis, we hear (at least) three different high tones on this word: one on the subject/tense marker, a second on the object prefix and a third on the stem. If, in our formulation of downstep, we had said that downstep occurs between every two adjacent surface high tones, we would have expected this word to be **né-tʃí-tʰá:la*, and yet this is not the correct form in any Mijikenda dialect; downstep, if it occurs at all, occurs on the penult.

### 3.9.2 Reflexive Verbs

To close the chapter on depressor effects, let us consider reflexive verbs, which further demonstrate the tonal processes we’ve seen.

Reflexive verb stems are derived from normal stems through the addition of the reflexive prefix *dzi-*, which occupies the morphological slot of an object prefix. Morphologically, however, it is not altogether equivalent to the “standard” object prefixes, and semantic reasons seem to indicate that it is a derivational, rather than inflectional, affix: while, say, a class 7 object prefixes added to a verb always means “verb [cl.7]”, the reflexive prefix can change the basic meaning of a verb, thus indicating that a reflexive verb is actually a separate lexical item. Compare, for example, *ku-kelelesi* ‘to sit upon’ with the reflexive *ku-dzi-kelelesi* ‘to sit about idly’ and not ‘to sit upon oneself’ (tones not shown). Also, as we shall see, the original lexical tone of the stem is ignored.

I only have systematic data on reflexive verbs in four of the dialects (Chonyi₁, Duruma₁, Giryama and Riße₂), but the basic tonal facts are quite consistent. The Giryama data in (79) and (80) below show the pattern.



## (79) Giryama reflexives without depressors:

*Low base:*

ku-ku:na ‘to scratch’	ku-dzi-kû:na ‘to scratch oneself’
ku-lî:ka ‘to praise’	ku-dzi-lî:ka ‘to boast’
ku-tsu:ndza ‘to heed’	ku-dzi-tsû:ndza ‘to beware’
ku-hondo:ka ‘to flinch’	ku-dzi-hóndõ:ka ‘to flinch’
ku-rama:za ‘to bestow gifts upon’	ku-dzi-rámã:za ‘to deck oneself out’
ku-tsere:za ‘to abase’	ku-dzi-tsérë:za ‘to humble oneself’

*High base:*

ku-kǔ:ndza ‘to fold’	ku-dzi-kû:ndza ‘to look dejected’
ku-mě:na ‘to hate’	ku-dzi-mê:na ‘to have suicidal mania’
ku-hehě:ra ‘to defend’	ku-dzi-héhě:ra ‘to defend oneself’
ku-kulũ:la ‘to sharpen’	ku-dzi-kúlũ:la ‘to be boastful’
ku-neně:ra ‘to speak for or against’	ku-dzi-néně:ra ‘to speak at random’

## (80) Giryama reflexives with initial depressors:

ku-vu:ɲa ‘to reap’	ku-dzí-vũ:ɲa ‘to be conceited’
ku-vũ:na ‘to emphasize’	ku-dzí-vũ:na ‘to be conceited’
(unattested)	ku-dzí-gõ:a ‘to retch’

The verbs in (79) show us the basic pattern: two surface high tones, one on the first stem mora and the other on the penult. When the stem is bisyllabic, both high tones are heard on the same vowel as a falling tone, e.g. ku-dzi-kûna. The verbs in (80) then show that when the stem begins with a depressor consonant, the first high tone surfaces on the reflexive marker dzi-. Taken together, this tells us that there are two underlying high tones: one on the dzi- and the other on the first stem mora, i.e., ku-dzi-néněra, ku-dzi-kûna and ku-dzí-gõa.

In dialects that have Plateau, the two distinct surface high tones are not as easily discernible as they are in Giryama:

(81) Chonyi₁ reflexives:*No depressors:*

ku-fî:t̥sa ‘to hide’	ku-dzí-fî:t̥sa ‘to hide’
(unattested)	ku-dzi-kú:ra ‘?’
(unattested)	ku-dzi-hám̩bála:za ‘?’

*Initial depressor:*

(unattested)	ku-dzí-gǎ:mba ‘to boast’
(unattested)	ku-dzí-diní:fa ‘?’

*Medial depressor:*

(unattested)	ku-dzi-ŋmága-ŋmá:ga ‘?’
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(82) Riβe₂ reflexives:

ku-fî:t̥sa ‘to hide’	ku-dzi-fî:t̥sa ‘to hide’
ku-guri:ra ‘to buy for’	ku-dzí-gurĩ:ra ‘to buy for oneself’
unattested	ku-dzí-gurirá-gurĩ:ra ‘?’

There are several things to notice about these verbs. In the Chonyi₁ data in (81), we first see that the dialect-specific ban on “multi-linked” tone prevents overlap on short stems like ku-dzí-fî:t̥sa (cf. the Riβe₂ cognate ku-dzi-fî:t̥sa). Furthermore, we see in the Chonyi₁ the effects of Plateau extending rightward from the first surface high up to the penult (ku-dzi-hám̩bála:za) or the first depressor (ku-dzi-ŋmága-ŋmá:ga). Finally, in the Riβe₂ data in (82) we also see a case of tonal fission in ku-dzí-gurirá-gurĩ:ra: the high tone heard on the first ra syllable is there because the syllable following that is depressed (gu); in a dialect without fission we would expect ku-dzí-gurira-gurĩra.

To conclude this survey of the reflexive, consider the following data from Duruma₁.

(83) Duruma₁ reflexives:

ku-ŋa:la ‘to forget’	ku-dzi-ŋâ:la
ku-somě:ra ‘to read for’	ku-dzi-sómé:ra
ku-tsuku:la ‘to carry’	ku-dzi-tsúkú:la

(*Duruma₁ reflexives, continued*)

ku-tsukuli:ra ‘to carry for’	ku-dzi-tsúkúlí:ra
ku-kalɔŋǎ:ra ‘to fry for’	ku-dzi-káláŋgí:ra
ku-vu:ha ‘to pull’	ku-dzi-vú:ha
ku-vuhi:ra ‘to pull for’	ku-dzi-vúhí:ra
ku-dʒɛŋge:ra ‘to fill for’	ku-dzi-dʒéŋgé:ra
ku-gombe:ra ‘to rebuke’	ku-dzi-gómbé:ra
( <i>unattested</i> )	ku-dzi-gúrírá-gurí:ra

The *Duruma₁* reflexives are almost identical to those we’ve seen above. The only difference is that the first surface high tone is invariably heard on the first stem mora, even when there is a depressor there, e.g., ku-dzi-gómbé:ra (not *ku-dzí-gómbé:ra). Note that depressors still have the power to block Plateau in this dialect, as the word ku-dzi-gúrírá-gurí:ra illustrates; otherwise we would have *ku-dzi-gúrírá-gúrí:ra.

As for the analysis of the *Duruma₁* facts, two basic approaches suggest themselves. One would be to say that the dialect ignores the “depressorhood” of stem-initial consonants in reflexive verbs, like we’ve seen for depressed object prefixes in Chonyi. The other approach would modify the underlying representation and have the tones of the reflexive in *Duruma₁* on the first and second stem mora, i.e., ku-dzi-gúrírá-gurí:ra. This way, the first will never be heard on the *dzi*, since that would require shifting to the left. I see no way of deciding between these two approaches on empirical grounds; the second seems preferable, since the first implicitly assumes that underlying representations must be the same throughout Mijikenda, while it is perfectly possible for *Duruma* to have changed this aspect at some point of its historical development.

### 3.10 Summary

Here is a summary of the depressor effects in Mijikenda:

- The set of depressors in Mijikenda is essentially that of voiced obstruents, not including  $\beta$  and prenasalized stops.

- The two basic depressor effects, seen in all Mijikenda dialects, are:
  - The restriction of High Tone Shift: compare Chonyi₁ *yu-na-kámû:la* with *yu-ná-zuᅇgulũ:ka* (depressor preventing overlap) and Giryama *a-na-rí-fĩ:t̩sa* with *a-ná-ga-fĩ:t̩sa*.
  - The blocking of Plateau.
- In Riᅇe and Kauma (and to a lesser degree, Digo) we also see *Fission*: a high tone will surface before every depressor in the scope of High Tone Shift: compare *a-na-píga ma-bumbũ:mbu* with *ni-na-piga ma-bumbu:mbu*.
- Depressor-voicing mismatches:
  - At least in Giryama, there are some stems in which [f] and [h] act as depressors, and others in which [ᅇ] fails to depress.
  - In some dialects (Chonyi₁, Digo₂, Jiᅇana and Raᅇai) depressed OPs like *vi-* and *ga-* do not block High Tone Shift.
  - In Riᅇe₂, furthermore, the depressed perfect tense marker *dzi-* can be the target of fission.

## Chapter 4

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# Hidden Tones I: Lexical

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It is possible, however, that Mr Allworthy saw enough to render him a little uneasy; for we are not always to conclude, that a wise man is not hurt, because he doth not cry out and lament himself, like those of a childish or effeminate temper.

---

Henry Fielding, *The History of Tom Jones, a Foundling*

This chapter introduces the most opaque aspect of Mijikenda tonology: the fact that, in many cases, high tones do not surface at all, although their effect on other tones can be shown. This effect is most evident in nominal tonology, which is where we begin.

### 4.1 Nouns

#### 4.1.1 Overview

In this section I will argue that Mijikenda nouns can be grouped into six tonal types on the basis of two basic parameters:

1. Initial high tone: Whether the noun has an underlying high tone on the initial stem TBU.

2. Final (hidden) high tone: a noun may have an underlying high tone on the ultima or the penult. These high tones, as we shall see, are “hidden” in the sense that they do not surface in phrase-final position.

Combined, then, these parameters give us the six following types:

(84) The six noun types in Mijikenda:

Type	Analysis	Example	
L1	Toneless	mu-ga:nga	‘medicine man’
L2	Hidden final H	mu-ho:h <u>o</u>	‘child’
L3	Hidden penult H	mu- <u>ko</u> :no	‘arm’
H1	Initial H	tʃi-tā:bu	‘book’
H2	Initial H, hidden final H	ki- <u>ko</u> kô:ra	‘elbow’
H3	Initial H, hidden penult H	ma-d <u>e</u> nd <u>e</u> ngu:le	‘swank’

Let us now consider them in detail.

#### 4.1.2 Apparently Low Nouns

In their citation forms, many of the nouns in Mijikenda are apparently low-toned (or toneless). However, when placed in different environments, we soon find out that these seemingly toneless nouns actually fall into three distinct tonal types, referred to here as L1, L2 and L3. The first of these environments is when the noun in question follows a word with a high tone, for example the copula *n̩* (note: most of these words have cognates throughout Mijikenda; the dialects indicated are the ones from which the data are cited):

(85) The three noun types:

##### Type L1:

<i>pa:ma</i>	<i>n̩ pa:ma</i>	‘meat’	Jiβana
<i>baruwa</i>	<i>n̩ baru:wa</i>	‘letter’	Chonyi ₁
<i>tʃ-a:nda</i>	<i>n̩ tʃ-ā:nda</i>	‘smithy’	Giryama
<i>ma-andi:ko</i>	<i>n̩ ma-andī:ko</i>	‘beginning’	Giryama
<i>ki-zazigi:ro</i>	<i>n̩ ki-zazigī:ro</i>	‘plaything’	Giryama
<i>ki-ḡbirirori:ro</i>	<i>n̩ ki-ḡbirirorī:ro</i>	‘pledge of payment’	Giryama

**Type L2:**

tsi	n̄i tsi	‘land’	Giryama
βu:la	n̄i βû:la	‘rain’	Giryama
p ^h a:la	n̄i p ^h â:la	‘gazelle’	Giryama
mu:-βi	n̄i mû:-βi	‘arrow’	Riβe ₂
tʃi:-hi	n̄i tʃi:-hi	‘chair’	Kauma
tʃi-ko:dzo	n̄i tʃi-kô:dz	‘bladder’	Kambe ₁
tʃi-re:mba	n̄i tʃi-rê:mba	‘turban’	Riβe ₂
ma-vuku:hi	n̄i ma-vukû:hi	‘perspiration’	Giryama
u-k ^h uri:ma	n̄i u-k ^h urî:ma	‘agriculture’	Giryama

**Type L3:**

fi:ga	n̄i fi:ga	‘cooking-stone’	Chonyi ₁
fi:si	n̄i fi:si	‘hyaena’	Chonyi ₁
ha:ko	n̄i ha:ko	‘buttock’	Kambe ₁
k ^h u:ni	n̄i k ^h u:ni	‘piece of firewood’	Riβe ₂
ma-fi:si	n̄i máfi:si	‘hyaenas’	Giryama
ma-ha:ko	n̄i má-ha:ko	‘buttocks’	Kambe ₁
lu-ku:ni	n̄i lú-ku:ni	‘firewood’	Riβe ₂
tʃi-ko:mbe	n̄i tʃi-ko:mbe	‘cup’	Jiβana
ka-tswē:tswē	n̄i ká-tswē:tswē	‘pimple’	Giryama
ki-me:ne	n̄i kí-me:ne	‘hatred’	Giryama
u-furu:fu	n̄i u-fúru:fu	‘dryness’	Giryama

(86) Some personal names:

**Type L1:**

go:na	n̄i gǒ:na	tʃa:ro	n̄i tʃǎ:ro
kitsa:o	n̄i ki-tsǎ:o	kata:na	n̄i katǎ:n:a
gara:ma	n̄i garǎ:ma	sani:ta	n̄i sanǐ:ta

**Type L2:**

ka:dzo	n̄i kâ:dzo	ka:tʃe	n̄i kâ:tʃe
ka:nze	n̄i kâ:nze	tʃo:me	n̄i tʃô:me

**Type L3:**

ngumba:o    n̄i ngúmba:o    kazu:ŋgu    n̄i kázu:ŋgu  
 katsendze:re    n̄i katséndze:re

The behavior of type L1 nouns is what we would expect: the high tone from the copula shifts into the noun, surfacing as a rising penult. But in L2 nouns we see the copula High surfacing as a falling penult—something we have only seen in association with two surface high tones—and for L3 nouns we get a high tone on the antepenult, a pattern we haven't encountered so far.

Another environment will help shed light on the situation, namely phrases in which the nouns are not the last element in their tonal phrase. The data below show nouns of the different type in subject and object position, with the toneless verb *a-ka-m-piga* 'and X hit Y' or *a-ka-m-songerera* 'and X approached Y'.

## (87) L1 nouns in subject position:

Object is L1    gona a-ka-m-piga sani:ta  
 Object is L2    gona a-ka-m-piga ka:tʃe  
 Object is L3    gona a-ka-m-piga kazu:ŋgu

## (88) L2 nouns in subject position:

Object is L1    tʃome a-ka-m-piga sanĩ:ta  
 Object is L2    tʃome a-ka-m-piga kâ:nze  
 Object is L3    tʃome a-ka-m-piga kázu:ŋgu

## (89) L3 nouns in subject position:

Object is L1    kazun̄gu a-ka-m-piga tʃã:ro  
 Object is L2    kazun̄gu a-ka-m-piga kâ:dzo  
 Object is L3    kazun̄gu a-ka-m-songerera kávu:mbi

Here, again, L1 subjects behave as expected, contributing no high tone to the phrase. However, when the subject is of type L2 or L3, a high tone appears later in the phrase, and the nouns in object position surface in their "post-H" form. The natural conclusion is that these subjects have a high tone which is



not heard in the citation form. That these nouns are the origin of the high tone becomes even more evident when we consider cases in which the High surfaces on the noun:

(90) L2 nouns before a verb that starts with a high tone:

mu-hohó	↓ <u>á</u> -ná:-rya	‘the child is eating’	Chonyi ₁
mu-hohó	↓ <u>á</u> -ná-lâ:la	‘the child is sleeping’	Chonyi ₁
mu-hohó	yú-ná-síkî:ra	‘the child hears’	Jiβana
mu-hohó	yú-ná-tsúŋgúrî:ra	‘the child is peeping’	Jiβana

(91) L3 nouns before a verb that starts with a high tone:

uyú	rí-dz'í-bambahū:ka	‘the baobab fruit (sg.) has ??’	Kambe ₂
ma-uyú	g'á-dz'í-bambahū:ka	‘the baobab fruit (pl.) have ??’	Kambe ₂

In a phrase like mu-hohó a-ná-lâ:la, the high tone from mu-hoho may not advance beyond the noun, since the next word (cf. a-na-lâ:la) begins with a High sponsor.

The following table summarizes the three different noun types in the three tonal environments: in isolation, following a high tone, and in non-phrase-final position.

	In isolation	Post-H	Pre-TBU
L1	No surface H	Rising penult	No surface H
L2	No surface H	Falling penult	Extra surface H
L3	No surface H	High antepenult	Extra surface H

Table 4.3: Noun types: L1, L2 and L3

In light of the above evidence, then, here is the tonal structure of these nouns:

- L1 nouns are toneless.
- L2 nouns have an underlying high tone on the final vowel, which does not surface in phrase-final position, e.g., mu-hohó ‘child’.

- L3 nouns have an underlying high tone on the penultimate vowel, which does not surface in phrase-final position, e.g., mu-kono ‘hand’ (more on this notation below).

In terms of the observed behavior, the proposed tonal structure yields the required results: the underlying tones stop preceding Highs in the correct locations, and can surface when the noun is not in phrase-final position. The one unanswered question is why don’t these tones surface when the noun is phrase-final.

For L2 nouns like mu-ho:ho ‘child’, where the underlying tone is on the final vowel, an explanation is not hard to come by. Recall that (with the exception of Digo), high tones in Mijikenda are never pronounced on the ultima—High Shift and Plateau never reach the final TBU. It is easy to generalize this to a nonfinality effect (“no phrase-final Highs”) or possibly a boundary low tone attached to the right edge of every phrase. Once we have this principle, we can simply say that it overrides the “right” of the L2 tone to surface. I shall go into the analysis in more detail in the second part of this work, and so for now let us say tentatively that there is a “Final Low” step in the derivation, which turns a high tone linked to the final TBU into a low tone.

L3 nouns like mu-ko:no ‘arm’ are slightly more problematic. We know that preceding High Shift stops on the antepenult, and so we would want to have the L3 high tone underlyingly on the penult, i.e., mu-ko:no. But if that is the case, what is preventing the high tone from surfacing? In other words, why is the citation form of this noun mu-ko:no and not *mu-ko:no? Recall that we have seen many cases of bisyllabic verb stems which have an underlying high tone on the penult, and those high tones do surface, for example in ku-lǎ:la ‘to sleep’.

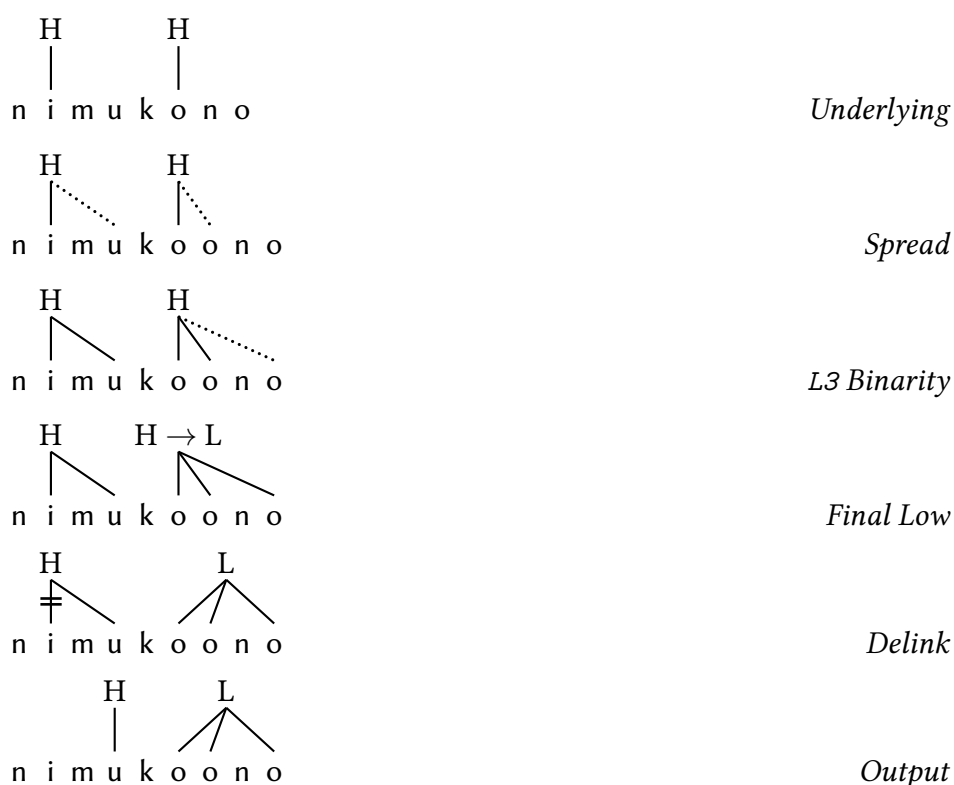
And there is another crucial thing to note about L3 nouns in phrase-final position. Consider again phrases like the Chonyi ni mú-ko:no, and recall that Chonyi has Plateau: a surface high tone will spread to the right. Why doesn’t the high tone spread from the antepenult? In other words, why do we get ni mú-ko:no and not *ni mú-ko:no?

In his analysis of Digo, Kisseberth (1984) analyzes these nouns as being lexically marked for a Neutralization rule that changes H to L. This approach obvi-

ously works, but for reasons related to other phenomena in Mijikenda—namely, the L2/L3 distinction, Fission and grammatical tones, which we will discuss shortly—I shall go with a different formulation, based on what is sketched above for L2.

On this analysis, the high tones of L3-type nouns are still different from “normal” high tones, but they are different in that they are allowed to shift onto the final vowel of the noun; the Final Low stage mentioned above then turns this high tone into a low tone, achieving the desired result. In (92), the L3-specific step allowing the high tone to reach the ultima is labelled “L3 Binararity”, for reasons which are related to the OT analysis in chapter 8; in a nutshell, this means that a hidden penult high tone must advance beyond its syllable of origin.¹

(92) Derivation of *nj mú-ko:no*:



¹An alternative analysis is that L3 nouns actually have *two* underlying high tones, i.e., *mu-ko:no*. While such an analysis would work, and it happens to fit the historical facts (see §4.4), I shall not go into it in detail in the present work. The similarity with “grammatical” high tones (chapter 5) leads me to prefer the single underlying H analysis.

This analysis also takes care of the second point made above. Recall that in L3 nouns, a preceding high tone surfaces on the antepenult and Plateau does not extend onto the penult. In the derivation above, this is solved by rule ordering: since Final Low precedes (High) Delink, we are left with a low tone on the last two syllables, and Plateau cannot advance onto the penult.

While this works, we shall see later that it is in fact the general case in Mijikenda: with or without a penult tone, Plateau never extends onto the penult. In all the cases we've seen so far (e.g., *a-na-kálanjí:ra*), there was always a surface H on the penult, and so this property of Plateau was not apparent. In L3 nouns and in the grammatical tones we shall soon see, this generalization will help us explain some problematic forms.

As for the motivation behind this: it is in not unheard of for High Tone Shift to stop on the antepenult. This is described, for example, in the southern Bantu languages Xhosa (Cassimjee and Kisseberth, 1998; Cassimjee, 1998) and Phuthi (Donnelly, 2009) as “Avoid Prominence”; seemingly paradoxically, the prominence of the penult both attracts High Tone Shift and restricts Plateau in Mijikenda.

We return to this discussion in the domains-based analysis. Let us now continue with the exploration of the different noun types.

### 4.1.3 Nouns that are High in Isolation

The three noun types above do not cover the entire gamut of Mijikenda nouns. There are three noun types which have surface high tones in their citation forms, and these are exemplified in the Giriyama data below (underlying locations of high tones not shown; these are discussed later).

(93) Nouns of type H1:²

ki-β̃:ra	n̩ kí-β̃:ra	‘a shaven patch’
mu-sǎ:ɲa	n̩ mú-sǎ:ɲa	‘blacksmith’
u-pǎ:ti	n̩ ú-pǎ:ti	‘riches’
mu-lomberě:ri	n̩ mú-lomberě:ri	‘mourner’
kari:sa	n̩ kári:sa	(name)
kasitfǎ:na	n̩ kásitfǎ:na	(name)

## (94) Nouns of type H2:

ki-kp̃:ta	n̩ kí-kp̃:ta	‘thorny shrub’
mu-p̃:ra	n̩ mú-p̃:ra	‘ball’
ki-lô:lo	n̩ kí-l̃ô:lo	‘glass’
ka-naŋgu-nâ:ŋgu	n̩ ká-naŋgu-nâ:ŋgu	‘a tiny bird’
ŋmal̃:mu	n̩ ŋmál̃:mu	‘teacher’ (also a person’s name)

## (95) Nouns of type H3:

ri-pála:ta	n̩ rí-p̃ála:ta	‘large stain’
mu-ténde:le	n̩ mú-t̃énde:le	‘children’s game’
ki-rére:ŋg̃ba	n̩ kí-r̃ére:ŋg̃ba	‘type of tree’
ma-dendéŋgu:le	n̩ má-dendéŋgu:le	‘flattery’
ŋgúmba:o	n̩ ŋgúmba:o	(name)
tʃáŋga:wa	n̩ tʃáŋga:wa	(name)

As we can immediately see, the citation forms of H1–H3 nouns correspond to the post-High forms of L1–L3 nouns. Compare tʃi-tǎ:bu ‘book’ (H1) with n̩ tʃi-bǎ:nda ‘it is a shed’ (L1 after a high tone), mu-p̃:ra ‘ball’ (H2) with n̩ mu-hô:ho (L2 after a high tone) and ri-pála:ta ‘large stain’ (H3) with n̩ lú-ku:ni ‘that is firewood’ (L3 after a high tone).

This suggests what the tonal structure of these nouns should be: like the corresponding apparently low nouns, with an additional underlying high tone. This means that nouns of type H2 and H3 have a hidden high tone which is not heard in phrase-final position, a claim which is supported by the following data:

²The discussion in §2.7.1 holds here as well, i.e., what I transcribe as n̩ kí-β̃:ra is phonetically closer to n̩ kí-β̃:ra.

(96) H1 nouns in subject position:

- Object is L1    karísa a-ka-m-piga tʃa:ro  
 Object is L2    karísa a-ka-m-piga ka:nze  
 Object is L3    karísa a-ka-m-piga kazu:ŋgu

(97) H2 nouns in subject position:

- Object is L1    ɸmalímu a-ka-m-songerera tʃã:ro  
 Object is L2    ɸmalímu a-ka-m-songerera fã:nze  
 Object is L3    ɸmalímu a-ka-m-songerera kázu:ŋgu

(98) H3 nouns in subject position:

- Object is L1    ɸgúmbao a-ka-m-songerera tʃã:ro  
 Object is L2    ɸgúmbao a-ka-m-songerera fã:nze  
 Object is L3    ɸgúmbao a-ka-m-songerera kázu:ŋgu

There is one point about the data in (96) which shall be set aside for now, namely that the high tone from H1 nouns does not advance beyond the noun; as it turns out, this is an instance of a more general phenomenon related to phrasing, and high tones never advance beyond L1 nouns as well. This issue is addressed in the discussion phrasal tonology in chapter 6. Other than that, however, the tonal structure of H-type nouns seems clear: an underlying high tone which surfaces in the citation form, and (for types H2 and H3) an additional high tone which surfaces only in non-phrase-final position.

Another issue with the nouns in (94) and (95) (H2 and H3 nouns) is that of downstep. Here we see the two surface high tones clearly demarcated by a downstep—the H3 cases like *n̩ rí-p[↓]ála:ta* are a good example. But consider a phrase like *n̩ mú-p[↓]î:ra* ‘it’s a ball’. Since the overt high tone from the noun surfaces on the first mora of the penult (cf. *mu-pî:ra*), we get a downstepped fall. In autosegmental representation, this is the following:

H	!H	(H)	
		≠	
n	i	m	u
p	i	i	r
a			

(99) *n̩ mú-p[↓]î:ra*      ‘it’s a ball’

Note that, phonetically, these forms could be transcribed differently. Though there is indeed a fall on the penult in these phrases, it is much less marked than the “real” fall we have in words like *mu-pî:ra* (where the fall follows a surface low tone), and so might have plausibly been transcribed as a downstepped level high tone, i.e., *nī mú-p[↓]í:ra*. Since there is a clear (though slight) phonetic fall on the penult, however, the notation used here seems to be both more accurate and truer to the tonal structure.

#### 4.1.3.1 The First High Tone

The above discussion raises an obvious question: what is the underlying location of the first high tone in these nouns? There are several natural candidates for this. The simplest hypothesis would be to have the underlying high tone where it actually surfaces, i.e., on the penult for types H1 and H2 and the antepenult for type H3. On the other hand, we’ve seen how mobile high tones are in Mijikenda, and so another plausible analysis would have the underlying locations of these high tones on the first stem mora, just as we’ve seen for verbs. Such an analysis would be especially desirable for deverbal nouns such as the Giryama *mu-sindikĩ:zo* ‘end’ (from *ku-sindikĩ:za* ‘to finish’) or *u-kumbukĩ:za* ‘memorial’ (from *ku-kumbukĩ:za* ‘to remind’).

Mijikenda happens to offer us an important clue as to the correct analysis, namely the evidence from High Tone Shift. As we’ve seen, a high tone surfaces before or on the underlying location of the next high tone, and so we need only examine the behavior of high tones preceding a noun to see where that noun’s high tone starts out. As we shall see, however, the phenomenon of Overlap makes things slightly less trivial.

First, consider nouns in Giryama. Recall that, for verbs, Giryama has Overlap on the macrostem; this means that a preceding high tone will surface on the first mora of a High verb stem when there is no object prefix (*a-na-kálã:ŋga*, *a-na-fĩ:t̃sa*) and on the object prefix when one is present (*a-na-kí-kalã:ŋga*, *a-na-rí-fĩ:t̃sa*). The situation with H-type nouns is identical, with the noun class prefix taking the place of the verbal object prefix:

(100) Giryama H1 nouns after the copula:

Without class prefix		With class prefix	
n _i tâ:lo	‘number’	n _i má-tă:lo	‘numbers’
n _i kô:be	‘tortoise’	n _i má-kô:be	‘tortoises’
n _i rî:yo	‘heron’	n _i má-rî:yo	‘herons’
n _i síkî:ro	‘ear’	n _i má-síkî:ro	‘ears’
n _i sírî:ɲo	‘trouble’	n _i má-sírî:ɲo	‘troubles’

(101) Giryama H2 nouns after the copula:

Without class prefix		With class prefix	
n _i k ^h úŋg ^l ú:ni	‘bed bug’	n _i kí-ð ^l á:na	‘sap’
n _i fwéh ^l é:ma	‘bush’	n _i má-fwehê:ma	‘bushes’
n _i tfáníkî:tsi	‘greenness’	n _i m-tfɛtɛ:t ^h a	‘fear, panic’

(102) Giryama H3 nouns after the copula:

Without class prefix		With class prefix	
n _i k ^h ólo:wa	‘lunar eclipse’	n _i ká-tféle:le	‘type of bird’

This gives us a strong indication that the first high tone in H-type nouns indeed originates on the first stem mora. Let us now see what happens in a dialect where the conditions on Overlap are different. Recall that in Chonyi, Overlap is on the proper stem (y_u-na-kálâ:ŋga, y_u-na-tʃi-kálâ:ŋga), but not on short stems where Overlap would result in two high tones on the stem-initial syllable (realized as y_u-ná-tá^lála, y_u-na-rí-tá^lála). In light of these facts, the behavior of H-type nouns in Chonyi is easily explained (note especially the fact that there is no Overlap on prefixless bisyllabic stems like ndô:ho, but that Overlap on polysyllabic stems reaches the stem even in the presence of a noun class prefix):

(103) No stem overlap in Chonyi₁ high nouns with bisyllabic stems:

ndô:ho	n _i ndô:ho	??
sũ:ra	n _i sũ:ra	‘feature, likeness’
tʃi-βâ:ra	n _i tʃi-βâ:ra	‘shaven patch’
mi-tʃã:nza	n _i mí-tʃê:nza	??
mu-tʃâ:ŋgu	n _i mú-tʃâ:ŋgu	??
ma-p ^h û:lu	n _i má-p ^h û:lu	??



(104) Stem overlap in Chonyi₁ high nouns with polysyllabic stems:

tʃaróndo:ni	n̩ tʃaróndo:ni	??
tʃi-kahã:na	n̩ tʃi-káhã:na	‘small basket’
tʃi-lalĩ:ro	n̩ tʃi-lálĩ:ro	‘amount of flour to be cooked for supper’
ma-sumurĩ:ro	n̩ ma-súmúrĩ:ro	‘conversation’
tʃi-lobõ:le	n̩ tʃi-lóbõ:le	??
ma-fisĩ:ni	n̩ ma-físĩ:ni	??

Based on this evidence, then, we can conclude that H-type nouns have an underlying high tone on their first stem mora.

#### 4.1.3.2 Fission

Dialects with tonal Fission have the potential to further support the claim that high tones originate on the first stem mora of H-type nouns. Consider the following Riʒe₁ nouns:

(105) No spurious high tone on the class prefix in Riʒe₁:

lu-vumbã:ni	(*lú-vumbã:ni)	‘type of citrus fruit’
tʃi-gugumî:za	(*tʃí-gugumî:za)	‘stammer, stutter’
ma-gurúdũ:mu	(*má-gurúdũ:mu)	‘wheel’
tʃi-birĩ:tj	(*tʃí-birĩ:tj)	‘match’

These nouns provide evidence that the high tone does not start on the noun class prefix. Take a noun like lu-vumbã:ni; if the high tone were to start on the noun class prefix (/lú-vumbani/) we would expect fission to occur, yielding *lú-vumbã:ni. Compare this with Fission that does occur on the stem itself, as in ma-gurúdũ:mu; such data also show that the underlying location of the surface high tone is indeed the first stem mora³.

³Actually, in the case of ma-gurúdũ:mu Fission only proves that the underlying high tone is no later than the *second* stem mora. There are no nouns in my data that prove conclusively that the underlying high tone is indeed on the first mora.

#### 4.1.4 The Six Noun Types

To summarize, then, here are the six basic noun types in Mijikenda, repeated from (84), with their underlying tones shown (for the cv-cvcv notation, see (92) above and the discussion preceding it):

(106) The six noun types in Mijikenda:

Type	Analysis	Example	
L1	Toneless	mu-ga:nga	‘medicine man’
L2	Hidden final H	mu-ho:h <u>o</u>	‘child’
L3	Hidden penult H	mu-ko: <u>no</u>	‘arm’
H1	Initial H	tʃi-tā:bu	‘book’
H2	Initial H, hidden final H	ki-kokô:ra	‘elbow’
H3	Initial H, hidden penult H	ma-d <u>en</u> d <u>en</u> gu:le	‘swank’

#### 4.1.5 Depressors

Depressors operate in nouns in exactly the same way as in verbs. The most direct evidence for this comes from comparing the singular and plural forms of certain nouns:

(107) Class 7/8 nouns where High Tone Shift targets the prefix:

L2	nī kî:hī	nī vi:hī	‘chair/chairs’	Giryama
L3	nī tʃi-tse:ka	nī vi-tse:ka	‘mat/mats’	Chonyi ₂
L3	nī tʃi-ko:dʒo	nī vi-ko:jo	‘bladder/bladders’	Duruma ₁
H1	nī tʃi-tā:bu	nī vi-tā:bu	‘book/books’	Chonyi ₂
H2	nī kī-βī:i	nī vi-βī:i	‘small antelope/s’	Duruma ₁
H3	nī tʃi-duŋgá-du:nga	nī vi-duŋgá-du:nga	‘plant sp.’	Riβe ₂

As pairs like nī tʃi-tā:bu/nī vi-tā:bu show us, in environments where the object prefix should be the target of High Tone Shift, a depressor may restrict the process.

### Depressed Noun Class Prefixes in Chonyi₁

Recall from §3.8.2.1 that, in Chonyi₁, depressed object prefixes do not appear to restrict High Tone Shift as normal depressors would, giving us forms like yu-na-ví-tâ:la (not *yu-ná-vi-tâ:la). The situation in nouns is slightly more complicated.

(108) Class 7/8 nouns in Chonyi₁, type L2:

nī tʃi:-hī	ní vi:-hī	‘chair’
nī tʃi:-tswa	ní vi:-tswa	‘head’
nī tʃi-tse:kā	ní vi-tse:kā	‘plaited mat’
nī tʃi-râ:hū	ní vi-ra:hū	‘sandal’
nī tʃi-lwê:mbe	ní vi-lwe:mbe	‘sandal’

(109) Class 7/8 nouns in Chonyi₁, type L3:

nī tʃí-ko:mbe	nī ví-ko:mbe	‘cup’
nī tʃí-to:βu	nī ví-to:βu	‘navel’
nī tʃí-mbi:ri	nī ví-mbi:ri	‘type of thorn’
nī tʃí-de:mu	nī ví-de:mu	‘small rag’

The generalization here is simple enough: the class 8 prefix *vi-* acts like a depressor in L2 nouns (108) but not in L3 nouns (109)⁴. As for an analysis of this fact, this may be a case of *analogy* between the singular and plural forms. A high tone surfaces on the *ví-* in nī ví-mbi:ri and yu-na-ví-tâ:la because there is a corresponding high tone on the *tʃí-* in nī tʃí-mbi:ri and yu-na-tʃí-tâ:la. One might then ask why we get ní vi-hī and not *nī vî-hī in analogy with nī tʃî-hī. The answer is that this would require an even more marked surface form, namely one with a *falling tone* on a depressor, and so is prevented. There are some additional cases of what appears to be analogy in Mijikenda tonology, which are dealt with at a later stage, e.g., in my discussion of Fission in Digo₁ (§4.3.3).

Before we go on, some words are in order regarding the behavior of nouns with an overt high tone (H1–H3) in Chonyi₁. Here there appears to be some

⁴Note also that in the bisyllabic L2 nouns like nī ví-to:βu we see another case of “depress before overlap” (§3.7).

variation. In most of the cases in the recordings, *vi-* appears to receive a surface high tone, as in *nī ví-tû:ro* ‘they are shoulders’ (H1) and *nī ví-vurí-vu:ri* ‘they are ghosts’ (H3). However, there are also some cases like *nī vi-tá:bu* ‘they are books’ (H1) and *nī vi-kahá:na* ‘they are baskets’ (H1), in which the *vi-* prefix acts as a depressor. There doesn’t appear to be any phonological difference between the two sets of nouns, and so we can conclude that this is, indeed, a matter of variation; in optimality-like terms, sometimes analogy outranks depression and sometimes it doesn’t.

## 4.2 Some Issues of Nominal Tonology

As shown above, depressor effects and overlap behave identically for nouns and verbs, occurring under the same (dialect-specific) conditions. Coupled with the fact that nouns are much more complex tonally (six noun types as opposed to the simple High vs. Low distinction for verb stems), this leads to some tonal interactions we haven’t seen yet. Specifically, in many cases the difference between two noun types can be neutralized, making the distinction difficult or even impossible.

### 4.2.1 Telling L2 from L3

The hardest distinction is between L2 and L3. Although the definition seems clear enough (falling penult vs. high antepenult, post-H), in many cases it is masked by other factors.

#### 4.2.1.1 Depressors

Recall the primary depressor effect in Mijikenda: the restriction of High Tone Shift. Now consider a noun like *tʃi-da:nga* ‘flat brass bracelet or anklet’; after the copula, this noun surfaces as *nī tʃí-da:nga*. This would make it of type L3. However, we might equally correctly have analyzed it as type L2, since the expected form *nī tʃi-dâ:nga* would be ruled out by the stem-initial depressor [d].

In other words: for nouns with a depressed penult it is usually impossible to tell type L2 from L3 given the type of evidence we’ve seen. There are some

isolated cases in which we can make the decision, namely those cases in which the plural form of a noun differs from the singular form in that respect (whether or not the penult is depressed). Such a noun would be *dzi:-tso* ‘eye’ (plural *ma:-tso*). After the copula, the singular surfaces as *ní dzi:-tso* which would make it type L3; but the plural form gives us *nì mâ:-tso* (not **ní ma:-tso*), proving that the noun is in fact of type L2 (assuming the singular and plural stems are tonally the same).

There may be other (phrasal) environments which will help us determine the true tonal structure of such nouns. However, the data at my disposal does not include any systematic evidence of the sort, so I shall refer to such nouns as type L3d or “depressed L3”: these nouns are presumed L3 until proven otherwise.

#### 4.2.1.2 In Giryama

Another source of ambiguity is overlap. Although in most dialects overlap is prevented where it would lead to multiple high tones on a single vowel, it is allowed in some. This is the case in Giryama, where overlap always occurs when there is no prefix, e.g., on a bisyllabic High verb stem as in *a-na-fê:ra* ‘(s)he’s sweeping’, or a bisyllabic stemless H1 noun as in *nì k^hû:ro* ‘it’s a dog’—compare the Chonyi₁ cognates *yu-ná-fê:ra* and *ní kû:ro*.

What this means is that bisyllabic prefixless nouns of types L2 and L3 in Giryama always surface with a falling penult after the copula. Consider a noun like *fi:ga* ‘cooking stone’, which after the copula is *nì fi:ga*. Based just on this evidence, it looks like type L2 (*nì fi:ga*), but it might also be the result of overlap on an L3 noun (*nì fi:ga*). What sort of evidence can tell the two apart?

Such evidence is rare. In some cases the plural form helps us, as in the case of *fi:ga* itself. The plural form of *fi:ga* is *ma-fi:ga*, which after the copula is *nì má-fi:ga*, proving that the noun is in fact of type L3 and not L2.

Another way to disambiguate these cases, albeit not a completely dependable one, is through cognates. The same *fi:ga*, for example, exists in Chonyi, Digo, Jiḃana, Raḃai and Riḃe (and probably throughout Mijikenda). In most dialects, however, overlap is disallowed in this environment and we get *ní fi:ga* (Chonyi, Riḃe), proving that the noun is of type L3. Conversely, the noun

pu:mba surfaces in Giriyama as  $n\grave{u}$ mba after the copula, which means it can be either L2 or L3. Since in dialects that disallow overlap on bisyllabic stems like Chonyi₁ we also get  $n\grave{u}$ mba, this proves the noun to be of type L2, i.e.,  $n\grave{u}mba$ .

It should be noted, however, that while cognates usually agree in noun type, this is by no means always the case. Take for example the noun fu:nda ‘maize porridge’ which is of type H1 ( $f\grave{u}$ :nda) in Giriyama and Kambe, L1 in Duruma (fu:nda;  $n\grave{u}$   $f\grave{u}$ :nda) and L3 in Riβe (fu:nda;  $n\acute{u}$  fu:nda); this sort of thing is rare, but it does occur, making the reliance on cognates a somewhat risky tool.

Nouns for which there is no evidence in the recordings to decide between L2 and L3 are marked as L2/3.

#### 4.2.1.3 In Digo

In Digo it is even more difficult to tell L2 from L3, since overlap on nouns occurs on the stem even when there is an object prefix. As an example, see the data in (110) below.

(110) L2 and L3 in Digo₄:

tʃi-ka:βu	$n\grave{u}$ tʃi-ká:βu	??	cf. Duruma $n\grave{u}$ ki-kâβu	L2
tʃi-re:mba	$n\grave{u}$ tʃi-ré:mba	‘turban’	cf. Giriyama $n\grave{u}$ ki-rê:mba	L2
tʃi-na:nda	$n\grave{u}$ tʃi-ná:nda	‘mus. instrument’	cf. Giriyama $n\grave{u}$ ki-nâ:nda	L2
fu:mo	$n\grave{u}$ fú:mo	‘spear’	cf. Jiβana $n\acute{u}$ fu:mo	L3
ku:ni	$n\grave{u}$ kú:ni	‘firewood’	cf. Riβe $n\acute{u}$ k ^h u:ni	L3
ŋma:na	$n\grave{u}$ ŋmá:na	‘child’	cf. Chonyi $n\acute{u}$ ŋma:na	L3
tʃi-ko:mbe	$n\grave{u}$ tʃi-kó:mbe	‘cup’	cf. Chonyi $n\grave{u}$ tʃí-ko:mbe	L3
m-tʃe:ka	$n\grave{u}$ m-tʃé:ka	‘mat’	cf. Giriyama $n\grave{u}$ kí-tse:ka	L3

From evidence such as this, it would appear that the distinction between L2 and L3 has been completely lost. In fact, this is the conclusion that Kisseberth (1984) reaches, discussing only one type of nouns with hidden high tones. Philippson (1993, 1998) also makes this claim explicit. However, I believe that this is an effect of the conditions on Overlap in Digo, and that the distinction still exists in at least one sub-dialect of Digo. Evidence for this comes from Plateau.

Note that, since the data discussed here was not originally elicited with this type of context in mind, evidence in support of this claim is rather meagre. Nevertheless, where the evidence exists, it shows a clear pattern. Consider the Digo₄ data in (111) below, consisting of a verb in the negative present tense followed by a noun.

(111) Digo₄ Negative Present + Noun: (noun types shown are for cognates in the other dialects)

si-réhá tfí-rê:m̩ba	‘I am not returning the turban’	L2
si-réhá tfí-nâ:nda	‘I am not returning the musical instrument’	L2
si-réhá tfí-kâ:βu	‘I am not returning ?’	L2
si-tsúkúlá tfí-nâ:nda	‘I am not carrying the musical instrument’	L2
si-tsúkúlá tfí-kâ:βu	‘I am not carrying ??’	L2
si-βíríká tfí-rêm:ba	‘I am not sending the turban’	L2
si-βíríká tfí-kâ:βu	‘I am not sending ?’	L2
si-réhá fu:mo	‘I am not returning the spear’	L3
si-réhá tfí-ko:mbe	‘I am not returning the cup’	L3
si-tsúkúlá fu:mo	‘I am not carrying the spear’	L3
si-tsúkúlá ku:ni	‘I am not carrying the firewood’	L3
si-tsúkúlá tfí-ko:mbe	‘I am not carrying the cup’	L3
si-βíríká ŋma:na	‘I am not sending the child’	L3
si-βíríká m-tʃe:ka	‘I am not sending the mat’	L3

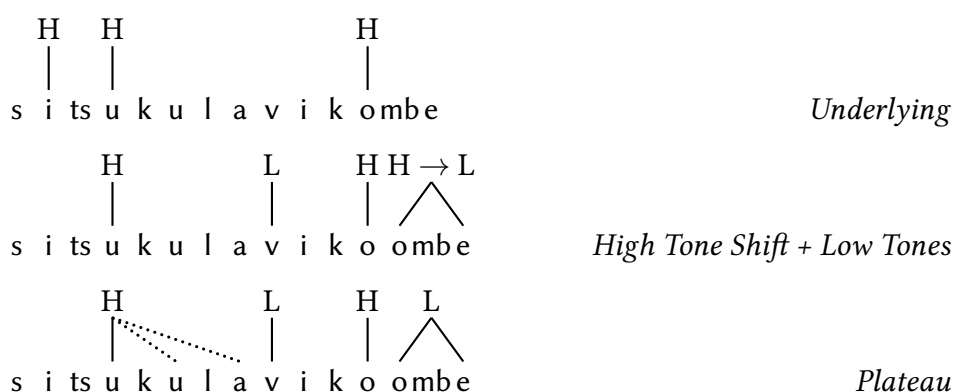
From this, then, it seems that Digo (or at the very least Digo₄) has maintained the L2/L3 distinction, but it can only be seen by its effect on a preceding Plateau; as far as High Tone Shift is concerned, Overlap makes these noun types identical. It is quite likely that Digo is in the process of losing the distinction, and some varieties of Digo may already have lost it, but the evidence shows that we are not completely there yet, as some speakers maintain the difference.

**A Derivational Problem** The above Digo₄ fact, though demonstrating quite clearly that the L2/L3 has not been fully lost in Digo, pose a subtle yet considerable problem to the derivation we’ve been building. Recall that the basic

order has been the following: High Tone Shift (including Overlap), followed by Plateau. In the case at hand—a verb in the negative past followed by a noun—we can convince ourselves that Digo₄ normally has overlap, even on a noun of type L3, with phrases that have depressors, e.g., *si-tsúkúlá vi-kó:mbe* ‘I am not carrying the cups’. The derivation would proceed as in (112) below.

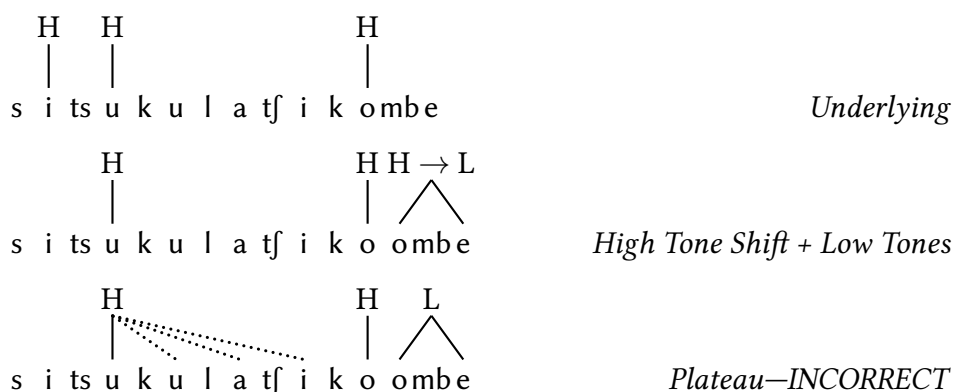
(112) Digo₄ *si-tsúkúlá vi-kó:mbe*: Overlap on L3 noun when a depressor blocks

Plateau:



However, such an ordering predicts the incorrect result for cases like *si-tsúkúlá tǎí-ko:mbe*, where there is no Overlap. (**si-tsúkúlá tǎí-kó:mbe*).

(113) Incorrect prediction for Digo₄ *si-tsúkúlá tǎí-ko:mbe*:



What we need, then, is to restrict Overlap so that it only operates when not preceded by a high tone, i.e., either when it is the first tone in a phrase or when the tone preceding it is a low tone. This solution, however, seems rather ad-hoc. The OT-based analysis in 8 shows a possible motivation.



#### 4.2.1.4 Deep Overlap and the L2/L3 distinction

As we've seen, overlap in Giryama sometimes blurs the distinction between L2 and L3. Consider now those dialects that have "Deep Overlap" (§2.8). Recall that in Raβai₁ two high tones on a word surface both on the penult, as in *yu-na-kálá:ŋga* or *yu-na-káláŋgí:ra* (cf. the Chonyi₁ *yu-na-káláŋgí:ra*), but not when depressors intervene, as in *yu-ná-zuŋgulũ:ka* (not **yu-na-zuŋgulú:ka*).

Now, this state of affairs complicates matters even more than Overlap did in Giryama; for while in Giryama we can always tell L2 from L3 when the noun has a class prefix, this becomes meaningless in the face of Deep Overlap. This means that for nouns like *mu-koba* (*ni mu-kôba*) or *mu-kono* (*ni mu-kôno*) we have no way of telling where the underlying high tone starts. Again, evidence from other dialects can help: for example, in Chonyi we get *ni mu-kôba* and *ni mú-kono*, showing the first noun to be of type L2 and the second of type L3.

#### 4.2.2 Minimal H2 and H3

Recall that nouns of type H2 have a falling penult in their citation form, and H3 a high antepenult; this has been analyzed as the result of two underlying high tones: one on the first stem mora, and another one on the ultima (H2) or penult (H3).

Let us now consider the shortest possible nouns of this type: bisyllabic H2 nouns like the Giryama *ts^hâ:lu* 'small monkey' and trisyllabic H3 nouns like *mí-somo* 'father's younger brother's wife'.

The question is: what happens when such nouns follow the copula? On the one hand, the absence of an object prefix might lead us to expect overlap; on the other, overlap in such a condition would lead to an extremely "crowded" surface form (tonally speaking). There are very few nouns of this type in the data, and here are all of them:

(114) Bisyllabic H2 nouns:

*Overlap:*

<i>ŋmgbî:di</i>	<i>n<u>i</u> ŋmgbî:di</i>	'stump of fowl's tail'	<i>Giryama</i>
<i>ŋmâ:ro</i>	<i>n<u>i</u> ŋmâ:ro</i>	'masc. name'	<i>Giryama</i>

ts^hâ:lu      nĭ ts^hâ:lu      ‘small monkey’      *Giryama*

*No overlap:*

ŋmâ:pdze      nĭ ŋmâ:pdze      ??      *Chonyi₁*

(115) Trisyllabic H3 nouns:

*Overlap:*

<u>k^hólo:wa</u>	nĭ k ^h ólo:wa	‘eclipse of moon’	<i>Giryama</i>
<u>míso:mo</u>	nĭ míso:mo	‘father’s younger brother’s wife’	<i>Giryama</i>
<u>múŋgu:le</u>	nĭ múŋgu:le	‘big smooth caterpillar’	<i>Giryama</i>
<u>ŋmáde:nde</u>	nĭ ŋmáde:nde	‘proper name’	<i>Chonyi₁</i>
<u>ŋmádi:ma</u>	nĭ ŋmádi:ma	??	<i>Chonyi₁</i>
<u>ŋmále:le</u>	nĭ ŋmále:le	??	<i>Riße₂</i>
<u>ŋmámi:mba</u>	nĭ ŋmámi:mba	‘advanced dropsy’	<i>Giryama</i>
<u>ŋmáŋga:la</u>	nĭ ŋmáŋga:la	‘cowbell’	<i>Giryama</i>
<u>ŋmáŋge:ra</u>	nĭ ŋmáŋge:ra	‘a bird’	<i>Giryama</i>
<u>ŋmáŋu:mba</u>	nĭ ŋmáŋu:mba	‘wife’s sister’s husband’	<i>Giryama</i>
<u>ŋgóngo:a</u>	nĭ ŋgóngo:a	‘raven’	<i>Giryama</i>
<u>ŋgúmba:o</u>	nĭ ŋgúmba:o	‘hero’	<i>Giryama</i>
<u>p^házi:a</u>	nĭ p ^h ázi:a	‘curtain’	<i>Chonyi₂, Duruma, Giryama, Kauma</i>
<u>tjáŋga:wa</u>	nĭ tjáŋga:wa	‘masc. name’	<i>Giryama</i>

*No overlap:*

hámbi:ni      nĭ h^lámbi:ni      ‘scorpion’      *Giryama*

*Depressors (never overlap):*

<u>báyo:ya</u>	nĭ b ^l áyo:ya	‘apology’	<i>Giryama</i>
<u>bévya:la</u>	nĭ b ^l évya:la	‘father in law’	<i>Chonyi₁, Jiβana</i>
<u>bíza:la</u>	nĭ b ^l íza:la	‘father in law’	<i>Giryama</i>
<u>ḡbádzu:ra</u>	nĭ ḡb ^l ádzu:ra	‘type of skin disease’	<i>Giryama</i>

Looking at the data above, the generalization seems clear enough: in place of two underlying high tones (one on the copula and the other on the first stem mora) we hear a single surface H, as in nĭ míso:mo; this does not occur when

the stem is depressed, as in ní b'évya:la. Two words in my data do not fit the pattern: In the Giryama hámbi:ni (ní hámbi:ni), the h may in fact be the depressor h̄, whereas for the Chonyi₁ ḡmâ:nje (ní ḡmâ:nje) I have no explanation; in the absence of further cases, I take this to be a speaker error (or variation).

In short, it looks as if one of the two high tones has been deleted. But which one? The key lies in the depressor data: since we can see stem-initial depressors restricting this “fusion”, we can conclude that it is the stem high tone which is deleted, and the high tone from the copula shifts onto the stem. This is a case of the well-known Meeussen’s Rule, which is discussed in greater length later.

As for the motivation behind deleting the lexical tone here, consider the following data, where the preceding high tone originates on a high-toned verb (ku-óna ‘to see’, ku-lumíza ‘to hurt’), and not the copula:

(116) Short nouns after non-copula H:

*Overlap:*

ní ḡmáli:mu (ni-)na-óna ḡmáli:mu *Duruma₂, Kauma, Riβe₂*

*No overlap:*

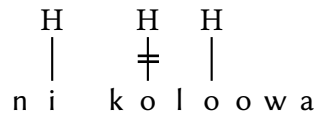
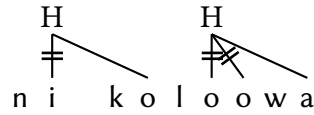
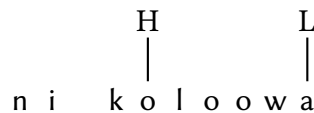
ní p'házi:ya ni-na-óná p'házi:ya *Chonyi₂*  
 ní ḡmâ:ro gona a-k-m-lumíza ḡmâ:ro *Giryama*

These (admittedly scarce) data seem to indicate that, at least in some dialects, overlap on these short nouns occurs only following the copula, and not any high tone. This may be a binarity effect (the requirement that the high tone from the copula shift by at least one TBU)—something which we return to in §8.3.2—but from the data at hand it seems impossible to make a meaningful generalization.

What we can say is this: when bisyllabic H2 nouns and trisyllabic H3 nouns (e.g., ḡmâ:ro and k'hólo:wa) follow the copula ní, the stem-initial high tone is deleted, making way for the H from the copula to shift onto the stem. In other words, we see Meeussen’s Rule in operation:

$$\begin{array}{ccc} \text{H} & \text{H} & \text{H} \\ | & | & | \\ \text{(117) } n & i & k \ o \ l \ o \ w \ a \end{array}$$

*Underlying*

*Meeussen's Rule**Spread + Delink**Final Low*

### 4.2.3 Special Cases

For the sake of completeness, it should be noted that a small number of nouns do not fall neatly into the six tonal types.

#### 4.2.3.1 Possible L4

Nouns of the type referred to here as L3 surface as low in isolation, and a preceding High surfaces on the antepenult (mu-ko:no ‘arm’; n_i mú-kon:o). Now, the prototypical Bantu noun has a bisyllabic stem and a class prefix (cv-cvcv). What this means is that the antepenult is also normally the pre-stem syllable—a position which has been shown to be prosodically prominent in many Bantu languages. A natural question to ask, then, would be: what behavior do we see in nouns that do not fit into the normal template? Do we hear them on the antepenult or on the noun class prefix—which would make them of the hypothetical type L4?

The data seem to indicate that such cases are marginal at best. Out of 23 quadrisyllabic nouns of this type, 13 are clearly of type L3, with the copula High surfacing on the antepenult (mu-tuwi:wa ‘person followed’; n_i mu-túwi:wa). Only three Giryama nouns appear to be genuine L4 nouns: lu-k^hulu:lu ‘noise’ (n_i lú-k^hulu:lu), ki-sali:re ‘unpaid balance of dowry’ (n_i kí-sali:re), and vi-tsuki:zi ‘crossness’ (n_i vi-tsuki:zi); note that in this last example, the expected *n_i ví-tsuki:zi is disallowed due to the depressor on the prefix vi-. There are some additional cases of apparent L4, all of which are problematic for various reasons:

- mu-dzuku:lu ‘grandchild’; n_i mú-dzuku:lu: This is in fact a regular L3 noun, but the depressor dz rules out the expected form *n_i mu-dzúku:lu.
- ki-folo:ŋgo ‘type of insect’; n_i kí-folo:ŋgo: This might be a case of “depressor [f]”, but there is not sufficient evidence to determine this. The same goes for ki-hulu:mba ‘of even thickness’; n_i kí-hulu:mba.
- mi-aki:ra ‘buildings’; n_i mí-aki:re: The problem here is the vowel-initial stem. As we have already seen in Digo object prefixes, there are some cases in Mijikenda where onsetless syllables do not “count” in terms of tonal processes. Other such cases are n_i mí-toe:re ‘way of living’ and n_i mú-kumbu:u ‘belt of cloth’.

To conclude, then, it appears that there is no real L4 class to speak of in Mijikenda.

#### 4.2.3.2 Alternative H1

Just as in nouns of type L3 the underlying high tone seems to be on the penult, one might ask what the underlying location is for H1 nouns. Recall that the normal pattern for these nouns is a rising (or level) penult in isolation, and a preceding High surfaces on the pre-stem TBU (with overlap and the shape of the penult determined as normally in each dialect).

There are, however, some cases of Giryama nouns which appear to behave slightly differently. Recall that in Giryama there is no overlap on the stem when a class prefix is present. This means, for example, that a noun like ki-kaḥă:na ‘small basket’ after the copula becomes n_i kí-kaḥă:na (not *n_i ki-káḥă:na as in some of the other dialects). But in some Giryama H1 nouns we do get overlap after a class prefix, for example in mu-kurŭ:ryo ‘track or noise made by something dragged along the road’; n_i mu-kúrŭ:ryo.

Cases such as these might be analyzed by having the underlying high tone on the second stem mora rather than the first, i.e., mu-kurŭ:ryo; High Shift will then stop before the stem High, as usual. However, a closer scrutiny of the data reveals that another factor might be at play here, related to the elicitation technique. All of these nouns were recorded in a fixed sequence of “singular;

*n*₁ singular; *n*₁ plural”. As it turns out, all but one of the supposed “alternative H1” nouns lack a noun class prefix in the singular and have one in the plural. So, for example, we get the following recording: *fu*₁*r*₁*ǎ*:*ɲ**d**z**e*; *n*₁ *f*₁*u*₁*r*₁*ǎ*:*ɲ**d**z**e*; *n*₁ *m*₁*a*₁*f*₁*u*₁*r*₁*ǎ*:*ɲ**d**z**e* ‘sore caused by the yaws disease’. Compare this with the separately elicited word *m**a*-*f**u**r**ǎ*:*ɲ**d**z**e* ‘the yaws disease’, which after the copula is *n*₁ *m*₁*a*₁-*f**u**r**ǎ*:*ɲ**d**z**e*.⁵

In other words, all of the cases where the High from the copula surfaced on the stem of a type H1 noun appear to be the result of inadvertent priming due to the prefixless form preceding the prefixed one. What this means is that we can analyze all cases of H1 nouns as having their first high tone associated underlyingly with the first stem mora.

#### 4.2.4 Monosyllabic High Verb Stems

As we have seen many times by now, a high tone is never pronounced on the phrase-final vowel. Nouns of type L2 have a high tone underlyingly on the final vowel, and so that tone cannot surface in phrase-final position. The present section explores the phenomenon of monosyllabic verb stems—the verb analogue of L2 nouns.

Consider now the following monosyllabic verbs:

(118) Raβai₁ Monosyllabic verbs in final and non-final position:

*High verbs:*

<i>ku</i> :- <i>ry</i> ₁ <i>a</i> ‘to eat’	<i>ku</i> :- <i>ry</i> ₁ <i>a</i> <i>w</i> ₁ <i>ǎ</i> : <i>ri</i> ‘to eat porridge’	( <i>w</i> ₁ <i>ǎ</i> : <i>ri</i> L1)
<i>ku</i> :- <i>f</i> ₁ <i>a</i> ‘to die’	<i>ku</i> :- <i>f</i> ₁ <i>a</i> <i>r</i> ₁ <i>ǎ</i> : <i>r</i> ₁ <i>o</i> ‘to die today’	( <i>r</i> ₁ <i>ǎ</i> : <i>r</i> ₁ <i>o</i> L2)
<i>ku</i> :- <i>g</i> ₁ <i>b</i> ₁ <i>a</i> ‘to fall’	<i>ku</i> :- <i>g</i> ₁ <i>b</i> ₁ <i>a</i> <i>t</i> ₁ <i>s</i> ₁ <i>i</i> ‘to fall to the ground’	( <i>t</i> ₁ <i>s</i> ₁ <i>i</i> L2)
<i>ku</i> :- <i>n</i> ₁ <i>w</i> ₁ <i>a</i> ‘to drink’	<i>ku</i> :- <i>n</i> ₁ <i>w</i> ₁ <i>a</i> <i>m</i> ₁ <i>ǎ</i> : <i>d</i> ₁ <i>z</i> ₁ <i>i</i> ‘to drink water’	( <i>m</i> ₁ <i>ǎ</i> : <i>d</i> ₁ <i>z</i> ₁ <i>i</i> L2)
<i>ku</i> :- <i>ɲ</i> ₁ <i>a</i> ‘to excrete’	<i>ku</i> :- <i>ɲ</i> ₁ <i>a</i> <i>m</i> ₁ <i>ǎ</i> : <i>β</i> ₁ <i>i</i> ‘to defecate’	( <i>m</i> ₁ <i>ǎ</i> : <i>β</i> ₁ <i>i</i> L2)

*Low verbs:*

<i>ku</i> :- <i>d</i> ₁ <i>z</i> ₁ <i>a</i> ‘to come’	<i>ku</i> :- <i>d</i> ₁ <i>z</i> ₁ <i>a</i> <i>k</i> ₁ <i>ǎ</i> : <i>n</i> ₁ <i>u</i> ‘to come to your place’	( <i>k</i> ₁ <i>ǎ</i> : <i>n</i> ₁ <i>u</i> L2)
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⁵I depart here from the view expressed in Volk (2007), where I analyzed these nouns as having a non-initial underlying high tone; after considering the points I have discussed here, I believe that this view does not hold up.

(119) Raḅai₁ Monosyllabic verbs in the present tense:

*High verbs:*

ku:-ry <u>a</u>	ni-na:-ry <u>a</u>	y <u>u</u> -nâ:-ry <u>a</u>
ku:-f <u>a</u>	ni-na:-f <u>a</u>	y <u>u</u> -nâ:-f <u>a</u>
ku:-g <u>ba</u>	ni-na:-g <u>ba</u>	y <u>u</u> -nâ:-g <u>ba</u>
ku:-n <u>wa</u>	ni-na:-n <u>wa</u>	y <u>u</u> -nâ:-n <u>wa</u>
ku:- <u>pa</u>	ni-na:- <u>pa</u>	y <u>u</u> -nâ:- <u>pa</u>

*Low verbs:*

ku:-dza	ni-na:-dza	y <u>u</u> -nâ:-dza
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The data in (118) prove that these verbs are indeed high-toned: when followed by a noun, the hidden high tone from the verb stem can surface. The data in (119) show that a preceding high tone surfaces as a falling penult, just as it does for L2 nouns.

Before we leave the subject, there is one feature of Giryama which needs to be mentioned: in the present tense third-person forms, Giryama monosyllabic High verbs like ku-rya ‘to eat’ surface with a rising penult and not the expected fall, i.e., a-nâ:-rya rather than *a-nâ:-rya; the lexical high tone is apparently deleted. This does not mean that the verb ku-rya is not high-toned in Giryama, as seen when a noun follows it, e.g., in ku-rya pã:ma ‘to eat meat’ (pã:ma ‘meat’ is of type L1 or toneless) or ni-na-rya myâ:ka ‘I am very aged’, literally ‘I am eating years’ (myâ:ka ‘years’ is of type L2). Within Mijikenda, this peculiarity is unique to Giryama and can be derived in a number of ways, for example as an analogy effect (a falling tone never appears before a non-depressed stem), or a specific environment for the application of Meeussen’s Rule (see below); it is, however, extremely limited in scope and I shall not discuss it further.

#### 4.2.5 The Implications of L3

There is one point of some consequence to note about L3 nouns, and that is the fact that these are exclusively nouns with bisyllabic stems. In other words,

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there are no nouns with hidden tones for which a preceding High surfaces on the preantepenult or earlier; in all nouns that have an underlying high tone earlier than the penult, that high tone is heard in the citation form. Note also that, in contrast with L2 nouns, we can not simply conclude that all nouns with an underlying high tone on the penult are L3: there are many examples of bisyllabic nouns with an overt high tone of type H1 like *něno* ‘word’ or *ki-tǎbu* ‘book’.

As already indicated, the fact that there is a difference between bisyllabic H1 and L3 nouns means that the underlying location of the high tone is not enough, and the “hidden” high tones must be somehow marked as such—marked here by underlining the entire stem, e.g., *k^hǎŋga* ‘guinea fowl’. But the fact that such hidden tones can only start on the penult in nouns (and verbs in some dialects, as we shall see shortly) hints at a more explicit formulation of this. This is the requirement that these tones shift by at least one TBU. When the noun in question is at the end of a tonal phrase, this means that it cannot surface and we get the hidden tone. We shall see more evidence for this in Digo and Duruma in the next section.

### 4.3 Neutralized High in Digo and Duruma

At last we can discuss a phenomenon in the verbal tonology of Digo and Duruma which is quite prominent in those two dialects but absent elsewhere in Mijikenda. This is the verbal equivalent of L3 nouns: bisyllabic verb stems which have a high tone that does not surface in phrase-final position. Just as with nouns, however, these high tones do surface when the verb is not in the phrase-final position, and they are also evident through their interaction with preceding high tones. Following Kisseberth (1984), who first described them in Digo (the variety referred to here as Digo₁), I shall refer to these as “Neutralized High” stems.

First of all, as Kisseberth (1984) shows, it is easy to convince oneself that these stems do in fact carry a high tone (as opposed to Low stems). The simplest method is to place more “tone-bearing matter” after the basic stem—either an object (121) or one or more derivational morpheme commonly referred to as “extensions” in the Bantu literature (122).



(120) Duruma₁ Low, High and Neutralized High verbs in the infinitive:

Low		High		Neutralized High	
ku-ku:na	‘to scratch’	ku-βyě:ra	‘to sweep’	ku-βi:sa	‘to avoid’
ku-lo:ga	‘to bewitch’	ku-hǎ:dza	‘to name’	ku-fu:ga	‘to rear’
ku-o:tfa	‘to burn’	ku-ũ:za	‘to ask’	ku-o:ga	‘to bathe’
ku-gu:la	‘to buy’	ku-vyǎ:la	‘to give birth’	ku-vi:na	‘to dance’

(121) Low, High and Neutralized High verbs with a toneless (L1) object (Digo₁):

*Low stems:*

ku-gura	ŋo:mbe	‘to buy a cow’
ku-henza	mu-ga:ŋga	‘to look for a doctor’
ku-saga	mu-ha:ma	‘to look for a doctor’

*High stems:*

ku-ɔnesa	ɲdʒi:râ	‘to show the way’
ku-afuna	ɲǎ:mâ	‘to chew meat’
ku-anika	ŋgũ:wô	‘to dry clothes in the sun’

*Neutralized High stems: The high tone surfaces on the noun:*

ku-hega	ŋgurũ:wê	‘to trap a pig’
ku-hega	ɲdʒi:yâ	‘to trap a pigeon’
ku-ihâ	mu-gǎ:ŋgâ	‘to call a doctor’

(122) Bisyllabic Duruma₁ verb stems and some of their extensions; these verbs show combinations of the applicative (-ra), causative (-sa) and reciprocal (-na) suffixes as well as reduplication:

*Low stems:*

ku-ri:ma	‘to cultivate’	ku-rimi:ra; ku-rimisa:na
ku-vu:ha	‘to pull’	ku-vuhi:ra; ku-vuhi:sa; ku-vuhira:na; ku-vuhisa:na

*High stems:*

ku-ũ:za	‘to ask’	ku-uzǎ:na; ku-uzirǎ:na; ku-uzna-uzǎ:na
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(*Duruma*₁ verb extensions, continued)

ku-t_o:sa ‘to cut’      ku-t_osě:ra; ku-t_oseră:na; ku-t_oseka-t_osě:ka

*Neutralized High stems: The high tone surfaces on the extensions.*

ku-s_o:ma ‘to read’      ku-s_omě:ra; ku-s_omesă:na; ku-s_omeseră:na

ku-ti:fa ‘to frighten’      ku-tiři:ra; ku-tiři:ka; ku-tiřă:na

ku-t_e:ma ‘to cut’      ku-t_emě:ra; ku-t_emeră:na; ku-t_ema-tě:ma

Although the data above demonstrate that these verb stems have a hidden high tone, they give no indication as to its underlying location, which may be on the penult or the ultima. An underlying final high tone is not very likely for verb stems (since the final vowel is usually determined by the tense and thus not considered part of the stem), but we have seen it occur for monosyllabic stems in §4.2.4 above.

An indication of the correct analysis can be seen in *Duruma*₃ past tense data below. When examining the data, it is useful to keep in mind the general tonal pattern of the Mijikenda past tense from §3.9.1: a surface high tone on the subject/tense marker, Plateau (in the relevant dialects) and a second high tone on the penult. Lexical tone is preserved in some dialects but evident only after a depressed OP.

(123) *Duruma*₃ past tense:

Low	High	Neutralized High
ná-fí:ka	ná-há:dza	ná-βi:sa
ná-lá:t _s a	ná-há:la	ná-a:ta
ná-lí:ka	ná-hé:ga	ná-hu:ma
ná-ló:ga	ná-tó:sa	ná-fi:t _s a

We see that in *Duruma*₃, Low and High verb stems pattern identically: a Plateau extends from the subject/tense marker to the penult. For Neutralized High verbs, however, the pattern is different, and Plateau stops on the antepenult. Recall that this is exactly the pattern we’ve seen for type L3 nouns. The natural conclusion, therefore, is that Neutralized High verb stems have the underlying high tone on their penult. Just as with L3 nouns, we can transcribe

this by underlining the final two syllables, in order to differentiate between this case and ordinary High stems, i.e., n-á-tfí-há:dza (High stem) vs. n-á-tfí-ta:ra (Neutralized High).

Having seen the basic properties of Neutralized High stems—an underlying high tone on the penult which does not surface in phrase-final position—let us now consider how these stems interact with verbal morphology. Since there is much variation between speakers in this respect (for example, no two speakers in the recordings seem to have the exact same behavior for Neutralized High stems in the past tense), I shall present the data not by tense or dialect, but by tonal effect.

Generally speaking, Neutralized High stems differ from other types in two related ways: by inducing a pitch drop and by restricting Overlap.

#### 4.3.1 Pitch Drop

The first, and in a sense the most natural interaction of a Neutralized High verb with a preceding high tone is a drop in pitch. This is easiest to see in cases like the Duruma₃ past tense in (123) above, where Plateau from the subject/tense marker stops on the antepenult.

But things are not always as clearcut as this. In the Duruma₁ present tense, for example, the difference can only be seen in the presence of an object prefix:

(124) Duruma₁ present tense:

High Stem		Neutralized High	
<i>No OP: No difference</i>			
ku-wǎ:la ‘to take’	y <u>u</u> -na-wâ:la	ku- <u>so:ma</u> ‘to read’	y <u>u</u> -na- <u>sô:ma</u>
ku-ĩ:ndza ‘to hunt’	y <u>u</u> -na-î:ndza	ku- <u>fi:t̥sa</u> ‘to hide’	y <u>u</u> -na- <u>f̥i:t̥sa</u>
ku-õ:ya ‘to rest’	y <u>u</u> -na-ô:ya	ku- <u>fu:ma</u> ‘to sew’	y <u>u</u> -na- <u>f̥u:ma</u>
 <i>With OP: Drop on Neutralized High</i>			
ku-hǎ:dza ‘to name’	y <u>u</u> -na-tfí-há:dza	ku- <u>fi:t̥sa</u> ‘to hide’	y <u>u</u> -na-tfí- <u>f̥i:t̥sa</u>
ku-rě:ha ‘to give back’	y <u>u</u> -na-ní-ré:ha	ku- <u>ta:ra</u> ‘to count’	y <u>u</u> -na-rí- <u>ta:ra</u>

As we can see, the pitch drop pattern only appears in forms with an object prefix, e.g., yu-na-tʃí-hádza (no drop on High stem) vs. yu-na-tʃí-fitsa (drop on Neutralized High). In the absence of an object prefix, both types of verb surface with a falling penult. The source of this difference is Overlap. Recall from chapter 2 that in this dialect overlap always occurs on the macrostem, or in other words: the high tone from the subject prefix surfaces on the first stem mora only if there is no OP. What this means is that the fall on the High stem yu-na-wâla is the result of two high tones on a single vowel, whereas the fall on the Neutralized stem yu-na-sôma is the result of pitch drop. One might say that these are in fact two distinct tonal structures. Spelling out the moras of the penult, one would be yu-na-wá[↓]ála and the other yu-na-só[↓]oma. However true such an analysis may be, in the actual phonetic shape of the verb this subtle distinction is lost.

On a side note, observe that this pattern is exactly that seen in Giriyama for bisyllabic prefixless nouns of types H1 (overt high tone on the penult) and L3 (neutralized high tone on the penult) after the copula. Since Giriyama allows Overlap on these stems, both types surface with a falling penult after the copula, e.g., ni fô:ro ‘it is a zebra’ and ni fû:lo ‘it is a bubble’. Thus, Overlap masks the difference between the overt high tone of fô:ro and hidden one of fu:lo.

Another case of pitch drop is that first described by Kisseberth (1984) for Digo₁ in the present tense. Putting depressors aside for now, recall that in this dialect the penult high tone seems to have shifted to the right by one mora: in other words, a single surface high tone, which in other dialects is heard as a rising penult (Giriyama ku-kalãŋga), becomes a rise-fall pattern in Digo₁ (ku-karãŋgâ). With this in mind, consider the following present tense data:

(125) Digo₁ present tense High vs. Neutralized High:

High		Neutralized High		
<u>a</u> -na- <u>β</u> é:hâ	‘sift grain’	<u>a</u> -na- <u>β</u> â:ha	‘get’	( <u>a</u> -na- <u>β</u> âàha)
<u>a</u> -na-ré:hâ	‘give back’	<u>a</u> -na-sô:ma	‘read’	(etc.)
<u>a</u> -na-há:râ	‘take’	<u>a</u> -na-kâ:ma	‘milk’	
<u>a</u> -na-né:nâ	‘speak’	<u>a</u> -na-kâ:na	‘deny’	
<u>a</u> -na-ró:hâ	‘dream’	<u>a</u> -na-rî:si	‘inherit’	

Here, as in the Duruma₁ facts above, we get overlap on the stem. But unlike Duruma₁, the Digo₁ penult/ultima pattern exposes the difference between High and Neutralized High even in this case. For High verb stems there are two surface high tones: the one from the subject prefix is heard on the penult, and the stem high tone is heard, as usual, as a fall on the final vowel (a-na-há:râ). Note that the second mora of the penult is also pronounced high, as a result of Plateau. In a Neutralized High stem, on the other hand, there is only one surface high which is heard on the first stem mora, followed by the characteristic pitch drop of the neutralized stem.

To summarize, then, the definitive property of Neutralized High is that it is neutralized in phrase-final position, exactly like the hidden high tones of L3-type nouns. And just as in the case of L3, the facts of Overlap may mask this distinction in certain environments.

#### 4.3.2 Neutralized High and Overlap

In a sense, the only effect of Neutralized High tones we have seen so far consists of a high tone not surfacing in phrase-final position. We shall now see a case where these neutralized tones do more than not surface, but actually restrict High Tone Shift. In my data, this phenomenon only occurs in the Digo₁ past tense, which turns out to have a rather rare tonal configuration.

First, recall the basic pattern of this tense, as seen from the polysyllabic stems below.

(126) Digo₁ past tense, polysyllabic Low stems:

wa-fyátúwâ	‘(s)he pulled a bowstring’
wa-tsókórâ	‘(s)he poked’
wa-tsótsómérâ	‘(s)he stood on tiptoe’
wá-gandamíza	‘(s)he squeezed’
wa-tsúga-tsúga	‘(s)he was restless’

(127) Digo₁ past tense, polysyllabic High stems:

wa-kárángâ	‘(s)he fried’
wa-tsíkítsâ	‘(s)he crushed’
wa-fúrukútâ	‘(s)he moved restlessly’
wá-dunduríza	‘(s)he placed in reserve’
wa-tábaŋga-tabãŋgâ	‘(s)he spoiled something’

As we see, the pattern is identical for Low and High polysyllabic verb stems: one high tone shifts to the stem V₁ (unless the stem is depressed), with a following Plateau, and another high tone surfaces as the familiar Digo fall on the final vowel. We have analyzed this with two underlying tones on the subject/tense marker (w-a-tsótsómérâ). There is, from these data, no evidence that lexical tone has been preserved.

Consider now the behavior of bisyllabic stems in this tense.

(128) Digo₁ past tense, bisyllabic Low stems:

wa-síyâ	‘(s)he sifted flour’
wa-túnzâ	‘(s)he took care of a person or animal’
wa-mákâ	‘(s)he was astonished’
wa-ɲátâ	‘(s)he was sticky’
wa-fútâ	‘(s)he erased’

(129) Digo₁ past tense, bisyllabic High stems:

wa-βéhâ	‘(s)he sifted grain’
wa-róhâ	‘(s)he dreamed’
wa-rórâ	‘(s)he married’
wa-hárâ	‘(s)he took’
wa-kwárâ	‘?’

(130) Digo₁ past tense, Neutralized High stems:

wá-sâna	‘(s)he forged’
wá-ɲôŋga	‘(s)he strangled’
wá-sísi	‘(s)he inherited’
wá-rêya	‘(s)he was angry’
wá-ɲâka	‘(s)he caught something falling’
wá-ûsa	‘(s)he removed’

Low (128) and High (129) verb stems continue to follow the normal pattern, but Neutralized High stems behave differently (130) in that the first high tone surfaces on the person/tense marker, i.e., Neutralized High stems are the only non-depressed ones that prevent Overlap⁶. Contrast this with the present tense, where Overlap occurs equally on High and Neutralized High stems:

(131) Digo₁ present tense, bisyllabic stems:

High		Neutralized	
a-na-βéhâ	‘(s)he is sifting grain’	a-na-sâna	‘(s)he is forging’
a-na-róhâ	‘(s)he is dreaming’	a-na-ɲônga	‘(s)he is strangling’
a-na-rórâ	‘(s)he is marrying’	a-na-sîsi	‘(s)he is inheriting’
a-na-hárâ	‘(s)he is taking’	a-na-rêya	‘(s)he is angry’

So the question we are faced with is this: why does the high tone from the present tense subject prefix overlap on both High and Neutralized High stems, whereas the high tone in the past tense overlaps only on High stems? As Kisseberth (1984) explains, the only tonal difference between the two tenses is that in the past tense there are *two* high tones before the stem, whereas in the present there is only one. Kisseberth then goes on to provide an analysis that derives the correct results. The details of that analysis will not be discussed here, since a broader look at Mijikenda seems to offer a slightly better one.⁷

The key here lies in two observations. The first is that the tonal difference cited above is not the only difference; there is also the fact that, in the present tense, the toneless tense marker -na- comes between the prefix high tone and the stem high tone, whereas in the past tense there is no such buffer. Put differently, in the past tense of high-toned verb stems we have a structure with three

⁶Kisseberth (1984) [p.149] transcribes these forms slightly differently, with a surface low tone on the stem, i.e., wá-sana where I transcribe wá-sâna. Going carefully over the recordings in my possession, I believe that a falling penult (starting at the level of a surface high tone) is the more correct choice; in any case, this difference has a negligible effect on the discussion that follows. In fact, Kisseberth’s derivation produces what I consider to be the surface forms, adding a step of Fall Simplification to derive his final output.

⁷In a nutshell, Kisseberth’s analysis [p.151] employs a polarity-like effect: his derivation produces intermediate forms with a rise, i.e., nǎ-róhâ (High) nǎ-sana (Neutralized). A rule of Rising Tone Simplification then converts the rise to a high tone if the following TBU is low and to a low tone if the following TBU is high. Note also that this analysis depends on the representation ná-sana for what I have transcribed ná-sâna.

underlying high tones on *consecutive* TBUs. The attentive reader will recall the other case we have seen of such a setup, namely the Giriyama perfect tense.

In the Giriyama perfect tense, Overlap on a High verb stem occurs only when the stem is polysyllabic and the subject prefix is high-toned, as in  $\acute{a}$ - $dza$ - $k\grave{a}l\grave{a}:\eta ga$  ‘(s)he has fried’. When the subject prefix is not high ( $ni$ - $dz\grave{a}$ - $k\grave{a}l\grave{a}:\eta ga$ ) or when the stem is bisyllabic ( $\acute{a}$ - $dz^{\prime}\acute{a}$ - $n\grave{e}:\eta na$  ‘(s)he has spoken’) there is no Overlap. Note the importance of the subject prefix tone: Overlap occurs only when there is a sequence of three consecutive high tones in the underlying representation. This was analyzed as an OCP effect.

My proposal for the Digo₁ past tense facts should now be clear: it is not Neutralized High stems that specifically block Overlap, but rather “normal” High stems that *allow* it. For whatever reason—say, for the sake of convenience, that Neutralized High tones count as low tones, at least at some stage of the derivation—only the sequence of three non-neutralized high tones is bad enough to drive overlap, exactly like in the Giriyama perfect tense.

One might still ask why there is overlap on Low stems in Digo₁, i.e., why do we get  $wa$ - $p\acute{a}:\hat{t}\acute{a}$  and not * $w\acute{a}$ - $p\acute{a}:\hat{t}\acute{a}$ . But the reason we hear “Overlap” here is that there is no stem tone to overlap; the stem is toneless.

Summarizing, then, for bisyllabic stems in the Digo₁ past tense we see the following:

- In Low stems, one of the high tones shifts to the stem  $V_1$  and the other to the final vowel, as is usual for verbs with two underlying high tones.
- In High stems, we get “OCP-induced Overlap” like in Giriyama.
- In Neutralized High stems, Overlap is blocked and the first high tone surfaces before the stem.

### 4.3.3 Neutralized High and Fission in Digo

Recall from §3.5.3.2 that Digo has a very limited form of fission: spurious high tones will surface before depressors in the span of High Tone Shift, but *only on the penult of a (non-phrase final) word*. As indicated in that section, this formulation does not cover the full fact.



(132) No spurious high tones generally in Digo₁:

ku- <u>he</u> gě:râ	??	(*ku-hégě:râ)
ku- <u>he</u> gerã:nâ	??	(*ku-hégerã:nâ)
<u>a</u> -na-marigí:za	‘(s)he is finishing’	(* <u>a</u> -na-marígí:za
<u>a</u> -na-marigizirã:nâ	??	(* <u>a</u> -na-marígizirã:nâ)
ni-na- <u>e</u> zeka bã:ndâ	‘I’m thatching a shed’	(*ni-na-ézeká bã:ndâ)
<u>a</u> -na-dzita mã:ngâ	‘(s)he’s cooking cassava’	(* <u>a</u> -ná-dzita mã:ngâ)
<u>a</u> -na-ni-gurira ngũ:wô	‘(s)he’s buying me clothes’	(* <u>a</u> -na-ní-gurira ngũ:wô)

(133) Digo₁ spurious H on the penult in Low stems:

<u>a</u> -na-píga gö:mâ	‘(s)he’s beating a drum’	(* <u>a</u> -na-piga gö:mâ)
<u>a</u> -na-ragíza kalã:mû	‘(s)he’s ordering a pen’	(* <u>a</u> -na-ragiza kalã:mû)

(134) Digo₁ spurious H on the penult in High stems:

ni-na- <u>a</u> dza mũ:t ^h û	‘I’m mentioning someone’	(*ni-na-ãdza mũ:t ^h û)
-----------------------------------------	--------------------------	-----------------------------------

(135) Digo₁ no spurious H on the penult in Neutralized High stems:

ku- <u>he</u> ga ngurũ:wê	‘to trap a pig’	(*ku-héga ngurũ:wê)
ku- <u>he</u> ga ɲdzĩ:yâ	‘to trap a pigeon’	(*ku-héga ɲdzĩ:yâ)
ni-na- <u>v</u> uga wã:rî	‘I’m cooking rice’	(*ni-na-vúga wã:rî)

First, the data in (132) show us that there is no fission in Digo when the ultima is not depressed (ku-afunã ɲã:mâ and not *ku-afúna ɲã:mâ) or before a depressor elsewhere in the word (ni-na-ezeka bã:ndâ and not *ni-na-ézekã bã:ndâ). In (133) and (134) we see spurious high tones appearing on both Low and High verb stems. But the Neutralized High stems in (135) never show a spurious high tone. Why is that?

Kisseberth (1984) derives this result as part of a comprehensive analysis of Digo which I have not followed, and his solution is not applicable here⁸; in addition, just like the blocking of Overlap mentioned above, Kisseberth provides an

⁸In Kisseberth’s analysis, in a phrase like a-na-píga gömâ the high tone first shifts to the end of the verb (a-na-pigã goma), at which point a rule of High Tone Doubling inserts an additional high tone on the penult of the verb (a-na-pigã goma); the original high tone then shifts into the noun. Kisseberth’s formulation of the rules is such that, in a Neutralized High stem, the high tone cannot associate to the final TBU of the verb, and so High Tone Doubling cannot operate.

analysis for Digo facts which do not hold in Duruma, which has the same tonal types. Instead, let us start with the following observation: spurious high tones appear in Digo in exactly the same places a high tone appears when the verb is uttered in isolation. Compare a-na-píga gǒ:mâ with a-na-pí:ga, ni-na-ádza mǔ:tû with ni-na-á:dza and ni-na-vuga wǎ:rî with ni-na-vu:ga. Notice especially the phrase a-na-ragíza kalã:mû, where there is a spurious high tone on a depressed syllable (gí) but not on the non-depressed syllable preceding it (ra). In other words: a spurious high tone appears on a TBU in the verb if and only if one surfaces on the same TBU when the verb is uttered by itself. The key, then, is analogy (or Output-Output correspondence, as it is usually described in the OT literature): the motivation behind Fission is active in Digo, but only has the force to add an additional surface high tone where one would normally appear. It is not so much a question of the behavior of High vs. Neutralized High tones in the system, but rather a question of the conditions under which Fission can occur: when a high tone surfaces on the same verb in isolation.

## 4.4 Historical and Comparative Perspective

I now expand briefly on the discussion in Kisseberth (1984) on the historical sources of hidden tones. In this section I have made use of the invaluable “Bantu Lexical Reconstructions 3” (<http://www.metafro.be/blr>), an ongoing project that builds on many historical-comparative Bantu sources, including the monumental works of Meeussen and Guthrie.

### 4.4.1 Verbs

Consider first the Mijikenda verb stems.

(136) Historically low-toned verb stems (BLR = Bantu Lexical Reconstructions):

BLR	Gloss	Giryama	Digo	Gloss
*-gùd-	‘barter; buy’	ku-gula	ku-gura	‘to buy’
*-dùt-	‘pull, drag’	ku-vuta	ku-vuta	‘to pull’

BLR	Gloss	Giryama	Digo	Gloss
*-d̥im-	‘cultivate’	ku-rima	ku-rima	‘to cultivate’
*-d̥ip-	‘pay; compensate’	ku-riha	ku-riβa	‘to pay’
*-m̥id-	‘swallow’	ku-miza	ku-miza	‘to swallow’
*-p̥ond-	‘pound, stamp, beat’	ku-honda	ku-βonda	‘to pound’
*-g̥amb-	‘speak; answer’	k̥p̥-ambira	ku-ambira	‘to tell’
*-j̥eng-	‘build’	ku-dzɛŋga	ku-dzɛŋga	‘to build’
*-g̥aduk-	‘turn, intr.’	ku-galuka	ku-garuka	‘to turn intr.’
*-c̥agud-	‘choose; separate’	ku-tsagula	ku-tsagura	‘to choose’

## (137) Historically polymoraic high-toned verb stems:

BLR	Gloss	Giryama	Digo	Gloss
*-kódod-	‘cough’	ku-kolöla	ku-korörâ	‘to cough’
*-k’adang-	‘fry, roast’	ku-kalãnga	ku-karãŋgâ	‘to fry’
*-k’umbat-	‘hold in arm’	?	ku-kumbat̥iyâ	‘to embrace’
*-jánik-	‘spread out’	ku-anika	ku-anikâ	‘to spread in the sun’
*-búdag-	‘kill’	ku-alãga	ku-orága	‘to kill’
*-dáad-	‘lie down, sleep’	ku-lãla	ku-rârâ	‘to lie down’
*-déet-	‘bring’	ku-rêha	ku-rêhâ	‘to bring’
*-kóid-	‘go up; climb’	ku-k̥p̥era	ku-kwêrâ	‘to climb’
*-bíad-	‘give birth’	ku-zãla	ku-vyârâ	‘to give birth’

## (138) Historically monomoraic (-CVC-) high-toned verb roots:

BLR	Gloss	Giryama	Digo	Gloss
*-píc-	‘hide; cover’	ku-fwĩtsa	ku-fwĩtsa	‘to hide’
*-túnd-	‘teach; punish; accuse’	ku-fũndya	ku-funda	‘to teach’
*-túm-	‘send’	ku-hũma	ku-huma	‘to send’
*-jím-	‘stand; stop, intr.’	ku-ĩma	ku-ima	‘to stand, rise’
*-jimb-	‘dance; sing’	ku-ĩmba	ku-imba	‘to sing’
*-jóg-	‘bathe; wash; swim’	ku-õga	ku-oga	‘to bathe’
*-tád-	‘count’	ku-tãla	ku-tala	‘to count’
*-bín-	‘dance; sing’	ku-vwĩna	ku-vwina	‘to dance’
*-kúd-	‘grow up’	ku-kv̥la	ku-kura	‘to grow up’
*-bón-	‘see; find’	ku-õna	ku-ona	‘to see’

BLR	Gloss	Giryama	Digo	Gloss
*-téǵ-	‘set (trap)’	ku-hěga	ku- <u>hega</u>	‘to trap’
*-kúǵ-	‘grow up’	ku-kǘla	ku- <u>kura</u>	‘to grow’

From (136) and (137) we immediately see that the historical Low and High tones have been preserved in Mijikenda. The data in (138) show us the origin of Neutralized High verbs in Digo and Duruma: all historically monomoraic high roots became Neutralized (*-píc- > ku-fwitsa) whereas high verbs that had a long vowel or diphthong retained their overt high tone (*-dáad- > ku-rǎrâ). Since vowel length was completely lost in Mijikenda, this is the only trace of the original length distinction in high verb stems.

Another thing to note in (137) is that in Giryama (and similarly all Mijikenda dialects but Digo and Duruma), the cognates of Neutralized High verb stems are ordinary (overt) High stems. More on the implications of this for Mijikenda sub-grouping below. But first, let us see the historical reflexes of Mijikenda nouns.

#### 4.4.2 Nouns

The situation with nouns is not as clear-cut as that of verbs. Nevertheless, some pattern seems to emerge.

Going over the BLR3 database, I have identified 74 Mijikenda nouns for which reconstructed forms have been posited. Shown below are representatives of the four possible patterns of bisyllabic stems: *HH, *HL, *LH and *LL; the full list can be found in appendix A.

(139) Reconstructed *LL:

BLR		Mijikenda		
*dòndà	‘wound’	chi-ronda	‘sore’	L1
*jìdà	‘path’	ngira	‘path’	L1
*dùbà	‘flower’	ruwa	‘flower’	L1
*jàmà	‘meat’	jama	‘meat’	L1
*jògù	‘elephant’	ndzovu	‘elephant’	L2 (Chonyi ₁ )
*càngà	‘sand; sandy ground’	mu- <u>tsanga</u>	‘sand’	L3

## (140) Reconstructed *LH:

BLR		Mijikenda		
*jàtí	‘grass’	nasí	‘grass’	L2
*jùmbá	‘house’	ɲumba	‘house’	L2
*càná	‘daylight’	mu-tsana	‘daylight’	L2
*tìkí	‘stump of tree’	tʃi-sitʃi	‘strump’	L2
*càká	‘thicket’	ki-tsaka	‘thicket’	L3

## (141) Reconstructed *HL:

BLR		Mijikenda		
*pépò	‘wind’	p ^h eho	‘wind’	L3
*dími	‘tongue’	lu-rimi	‘tongue’	L3
*jókà	‘snake’	ɲoka	‘snake’	L3
*tándà	‘bedstead’	tʃi-tanda	‘bedstead’	L3
*támbò	‘trap’	mu-hambo	‘trap’	L1
*búdà	‘rain’	βula	‘rain’	L2
*kúndò	‘knot’	fũndo	‘knot’	H1

## (142) Reconstructed *HH:

BLR		Mijikenda		
*kóbá	‘strap’	mu-kowa	‘strap’	L3
*pídá	‘pus’	u-fira	‘pus’	L3
*pídí	‘hyaena’	fisi	‘hyaena’	L3
*kókó	‘chicken’	k ^h uk ^h u	‘chicken’	L3
*cángá	‘bead’	u-ʃanga	‘beads’	L1
*cómá	‘fish’	kumba	‘fish’	L2
*bídá	‘grave’	m-bira	‘grave’	H1

There is a clear tendency here: *LL became L1, *LH became L2, and *HL and *HH merged into L3⁹. Note that there are exceptions to every one of these: we have *LL > L3 (mu-tsanga), *LH > L3 (ki-tsaka), *HH > L1 (u-ʃanga) etc. But

⁹This is part of a general tendency, which is discussed by Philippson (1998). Philippson also claims that in Digo *HH has further merged with *LH and *HL, which I believe is not the case. See the discussion in §4.2.1.3 above.

the basic pattern is unmistakable when we consider the distribution, shown in table 4.25 below.

	L1	L2	L3	H1	H2	H3
*LL	<u>11</u>	1		2		
LH		<u>10</u>	1			
HL	3	6	<u>16</u>	2		
HH	1	1	<u>11</u>	2		

Table 4.25: Bisyllabic noun types

So it appears as though, with the occasional exception, all Common Bantu nouns have become either toneless (L1) or of the hidden high types (L2, L3). The obvious question is: where do the (many) overt high nouns types in Mijikenda come from?

I do not have a full answer for this, but it appears that these nouns were not in fact inherited as nouns from Common Bantu: they are either deverbal nouns (e.g., *mu-rĩsa* ‘shepherd’ from *ku-rĩsa* ‘to feed’, or *mu-tjĩmbizi* from *ku-tjĩmbira* ‘to flee’), borrowings (e.g., *tji-tǎbu* ‘book’ from the Arabic, probably via Swahili), or historically compounds.

### 4.4.3 Mijikenda Subgrouping

The above discussion allows us to hypothesize about the internal grouping of the Mijikenda dialects, and possibly their historical development.

Compared with Common Bantu, we see the following changes:

- The loss of vowel length.
- Hidden high tones in nouns.
- Neutralized High tones in Digo and Duruma.

Note that, since Neutralized High tones preserve an original length distinction, this change could not have come after the loss of vowel length. In other words, we cannot say that Proto-Mijikenda had lost vowel length, preserving only the High-Low distinction on verb stems, and that later a common ancestor

of Digo and Duruma—call it Proto-Southern-Mijikenda—developed Neutralized High tones, somehow miraculously recalling original vowel length in order to create the High/Neutralized High distinction. This means one of two things:

- Either Proto-Mijikenda already had Neutralized High tones, which only Digo and Duruma retained. This is depicted in figure 4.1.
- Alternatively, Proto-Mijikenda had a length distinction (at least on bisyllabic verb stems), which Proto-Southern-Mijikenda later retained in Neutralized High stems. This is shown in figure 4.2.

The second option may appear more convincing at first, especially since the loss of vowel length is a common phenomenon, but note that all of Mijikenda (and so presumably Proto-Mijikenda) has “hidden tones” on nouns, and therefore it would not be a stretch to hypothesize that the language had them on verbs as well. This would support—but not necessarily prove—the view that there was a Proto-Northern-Mijikenda (all dialects except Digo and Duruma), where Neutralized High stems were simplified into normal High stems.

The above discussion, of course, is highly limited; segmental evidence, as well as lexicostatistic data such as that discussed by Hinnebusch (1999) would certainly play a great role in the analysis, but that lies beyond the scope of the present work.

## 4.5 Summary

As we’ve seen in this chapter, Mijikenda has a large class of lexical items which can be shown to have, underlyingly, a high tone, that is prevented from surfacing in phrase-final position. The richest source of these is found in nominal tonology, and Digo and Duruma also have a set of verb stems with hidden high tones reflecting a vowel length distinction at an earlier stage of the development of the language. I have hypothesized that this special class of verbs existed already in Proto-Mijikenda, and was lost in all but Digo and Duruma.





## Chapter 5

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# Hidden Tones II: Grammatical

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Kingstown pier, Stephen said. Yes, a disappointed bridge.

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James Joyce, *Ulysses*

This chapter discusses some additional cases where an underlying high tone is not pronounced. Most of this chapter will be taken up with so-called “grammatical” tones, but first let us briefly consider some cases of Meeussen’s rule in Mijikenda.

### 5.1 Meeussen’s Rule

One of the most famous tonal processes in Bantu languages is “Meeussen’s Rule”, whereby the second of two adjacent high tones is deleted or replaced with a Low tone ( $H \rightarrow L / H _$  or  $H \rightarrow \emptyset / H _$ ). So far, however, we have only encountered this in a very specific environment (minimal-length H2 and H3 nouns after the copula), and in the general case H tones routinely surface on two, even three, adjacent TBUs—recall, for example, perfect tense forms such as the Giryama  $\acute{a}\text{-dz}^{\downarrow}\acute{a}\text{-p}\grave{a}\text{:ta}$  with surface high tones on three consecutive syllables.

This section presents two cases where Meeussen’s rule does seem to be active in Mijikenda. These involve tones which are, in a certain sense, “less independent”, i.e., not associated with a lexical root.

### 5.1.1 The Associative Morpheme

The associative (or connective) construction, which means roughly “X of Y”—is formed with the morpheme *-a* and a class prefix, e.g., *ɲumba y-á ma:tso* ‘eye socket’ (lit. ‘house of eyes’) or *m-fundo wa mö:yo* ‘malice’ (lit. ‘knot of/in the heart’).

Tonally, the associative morpheme seems to contribute a high tone. This is evident from cases where both nouns are of type L1 (toneless), for example *tsumbi y-a ma-kõ:dza* ‘heap of leaves’. In fact, in all cases where the first noun is of type L1, the second noun surfaces in its “post-High” form, clearly indicating that the associative morpheme adds a high tone to the phrase.

(143) Associative where the left noun is of type L1 (“L1 of X”):

L1 of L1	<i>ɲguwo y-a mu-gǎ:ɲga</i>	‘the doctor’s clothes’	Chonyi ₁
L1 of L1	<i>ɲguwo y-a mu-gǎ:ɲga</i>	‘the doctor’s meat’	Chonyi ₁
L1 of L1	<i>lu-ɲgo lw-a mu-gǎ:ɲga</i>	‘the doctor’s sifting tray’	Chonyi ₁
L1 of L2	<i>vino r-a p^hâ:la</i>	‘the gazelle’s ??’	Giryama
L1 of L2	<i>ɲmambe w-a k^hpê:hu</i>	‘the mango tree at our place’	Giryama
L1 of L3	<i>tʃi-nolo tʃ-a mú-vyere</i>	‘grandmother’s cake’	Chonyi ₁
L1 of H1	<i>ma-kalo g-a á-ɲadã:mu</i>	‘a room for people’	Giryama
L1 of H1	<i>izu r-a mú-sitʃã:na</i>	‘the maid’s banana’	Giryama

But what happens when the noun to the left of the associative morpheme has a high tone of its own? As exemplified by the following data, in these forms we do not hear an additional high tone from the associative morpheme.

(144) Associative where the left noun has a hidden high tone:

L2 of L1	<i>tʃi-hi tʃ-a mu-gǎ:ɲga</i>	‘the doctor’s chair’	Chonyi ₁
L2 of L1	<i>ɲumba z-a mu-gǎ:ɲga</i>	‘the doctors’s houses’	Chonyi ₁
L3 of L1	<i>tʃi-kombe tʃ-a mu-gǎ:ɲga</i>	‘the doctor’s cup’	Chonyi ₁
L3 of L1	<i>fumo r-a mu-gǎ:ɲga</i>	‘the doctor’s spear’	Chonyi ₁
L2 of L2	<i>tʃi-hi tʃ-a mu-hô:ho</i>	‘the child’s chair’	Chonyi ₁
L3 of L2	<i>tʃi-kombe tʃ-a mu-hô:go</i>	‘the child’s cup’	Chonyi ₁
L2 of L3	<i>ɲumba w-á hã:we</i>	‘grandmother’s house’	Giryama

L2 of L3	vilalú z-a p ^h e:ho	'the madness of an evil spirit'	Giryama
L3 of L3	ma-figa g-a mú-vyere	'grandmother's cooking-stones'	Chonyi ₂
L2 of H1	ɲumba y-a mu-tfímbî:zi	'the fugitive's house'	Chonyi ₂
L2 of H1	mu-fu w-á ts ^h á:we	'grandfather's corpse'	Giryama
L3 of H1	ŋmana w-á bǎ:ba	'father's child'	Giryama
L2 of H2	ɲumba y-á ŋgmáli:mu	'the teacher's house'	Riße ₁
L2 of H3	tfi-hi tf-á mévyala	'mother-in-laws's chair'	Chonyi ₁

What seems to be active here is indeed Meeussen's rule: the high tone from the associative morpheme is deleted.

One might ask how we know that it is the associative morpheme high tone that is deleted. There is evidence for that, but only in a very specific environment, namely when the target of the first high tone should be the associative morpheme, but a depressor is preventing High Shift from surfacing there.

Consider a case like vilalú z-a p^he:ho. The high tone from vilalú would normally surface on the associative morpheme, yielding *vilalú z-á p^he:ho. However, the depressed class 10 prefix z- restricts High Tone Shift, and the high tone surfaces *in situ*. This—unless we want to claim that the associative high tone has shifted to the left—proves that it is the high tone from the associative morpheme that is deleted, and not the one from the noun.

So we can conclude that Meeussen's Rule is active on the associative morpheme in Mijikenda.

### 5.1.2 High Object Prefixes in Digo

Recall that Digo is the only dialect to preserve a tonal distinction on object prefixes: all but the singular human object prefixes contribute a high tone. The data repeated below exemplifies this:

(145) A Low stem with OPs in the infinitive (Digo₁):

ku-ni-vuguri:ra	'to untie for me'
ku-ku-vuguri:ra	'to untie for you'
ku-mu-vuguri:ra	'to untie for him/her'
ku- <u>u</u> -vuguri:râ	'to untie for us'
ku- <u>a</u> -vuguri:râ	'to untie for them'

However, when the verb stem is itself high-toned, we only hear a single surface high tone:

(146) High verb stems with high OPs—single surface H:

na- <u>i</u> -rĕ:â	‘I am bringing [cl.9]’	Digo ₂
n-na-tfĭ-tfĭmbĩ:râ	‘I am fleeing [cl.7]’	Digo ₃
n-na-tfĭ-kalã:ŋgâ	‘I am frying [cl.7]’	Digo ₃
na- <u>a</u> -hĩrĩ:kâ	‘I am taking them along’	Digo ₂
ni-na- <u>a</u> -sikĩ:râ	‘I hear them’	Digo ₄
ni-na- <u>a</u> -βĩrĩ:kâ	‘I am sending them’	Digo ₄

This can be seen as an additional case of Meeussen’s Rule, limited to a high-toned object prefix in front of a high-toned verb stem. As for which of the two tones is the one deleted, it is impossible to tell conclusively given the data seen so far; I am not aware of any conclusive evidence either way, but based on the fact that overlap patterns identically for toneless and high-toned OPs—compare a-na-kú-tfĭmbíra ‘(s)he’s leaving you’ (toneless OP) with a-na-tfĭ-tfĭmbíra ‘(s)he’s leaving [cl.7]’ (high OP)—leads me to suspect that it is the OP high tone which is deleted. Nevertheless, I do not have sufficient data to answer this question.

## 5.2 Grammatical Tones

Another recurring phenomenon in Bantu tone systems is that of “grammatical tones”: tones which are associated with a grammatical tense or construction, rather than any specific morpheme. The key feature of such tone patterns is that they appear to partially or wholly override lexical tones.

Let us now examine some representative tenses which fall under this heading.

### 5.2.1 Negative Past

One of the most regular cases of grammatical tone in Mijikenda is that of the negative past tense. Morphologically, the structure of the negative past tense is

NSP-(OP)-VS-ire, where NSP stands for Negative Subject Prefix. The -ire suffix is a relic of a general past suffix (Wald, 1976), which has otherwise been lost in Mijikenda. In terms of tone, verb stems can be divided into two groups according to their behavior in the negative past:

(147) The negative past tense (data from Giriyama):

<b>Infinitive</b>	<b>1sg.</b>	<b>3sg.</b>	
<i>Group A: penult falling tone</i>			
ku-to:l-a	si-tol-ê:re	k ^h a-tol-ê:re	'to pick out'
ku-suku:m-a	si-sukum-î:re	k ^h a-sukum-î:re	'to push'
ku-vo:j-a	si-voj-ê:re	k ^h a-voj-ê:re	'to beg (tr.)'
ku-fĕ:r-a	si-fer-ê:re	k ^h a-fer-ê:re	'to sweep'
ku-fonõ:n-a	si-fonon-ê:re	k ^h a-fonon-ê:re	'to crackle over the fire'
ku-bĩmbĩnd-a	si-bimbind-î:re	k ^h a-bimbind-î:re	'to knock down and beat'
 <i>Group B: antepenult high tone</i>			
ku:-dz-a	sí-dz-i:re	k ^h á-dz-i:re	'to come'
ku-hĕ:g-a	si-hég-e:re	k ^h a-hég-e:re	'to entrap'
ku-ʒo:d-a	si-ʒód-e:re	k ^h a-ʒód-e:re	'to pound corn in mortar'
ku-fumǎ:g-a	si-fumág-i:re	k ^h a-fumág-i:re	'to shoot with an arrow'
ku-galu:z-a	si-galúz-i:re	k ^h a-galúz-i:re	'to cause to turn'
ku-gomĕ:z-a	si-goméz-e:re	k ^h a-goméz-e:re	'to encircle'
ku-ʒaga:ʒ-a	si-ʒagáʒ-i:re	k ^h a-ʒagáʒ-i:re	'to cause to sit'
ku-marigi:z-a	si-marigíz-i:re	k ^h a-marigíz-i:re	'to bring to an end'

The first thing to note is that lexical tone plays no role whatever in the tonal shape of the negative past. Having said that, let us consider the two groups: verbs of group A are pronounced with a falling penult, and those of group B have a high tone on the antepenult. A moment's reflection reveals that this apparent difference is a superficial thing: in all of the verb of group B, the penult starts with a depressor consonant. If we assume that the high tone normally heard on the penult has shifted there, it immediately falls out that a depressed penult will restrict this shift.

This in turn raises two questions: why do we get a falling penult and where has the high tone shifted *from*? Both questions have rather natural answers, which are independently supported by additional data. First, the reason that the negative past tense has a falling penult rather than the normal rise is that there is another, hidden, high tone on the final vowel. This can be seen when another word follows the verb, allowing it to surface:

(148) The negative past tense followed by a noun:

si-gur-íré dirí:f _a	‘I didn’t buy a window’	Kambe ₂
si-gur-íré p _a :m _a	‘I didn’t buy meat’	Digo ₄
si-gur-íré ŋgú:w _o	‘I didn’t buy clothes’	Digo ₄

The second question was where the high tone starts. Since lexical tone is completely neutralized in this tense, several hypotheses appear likely: the negative subject prefix is common to all verbs in this tense and so a natural candidate; the first and second stem moras also frequently play a part, and one might also claim that since we never hear the high tone earlier than the antepenult, that is where it is underlyingly. This latter view is reinforced by cases where the penult and the antepenult are both depressed. Table (147) has two of these: si-zagáǝ-i:re ‘I did not cause to sit’ and si-marigíz-i:re ‘I did not finish’.

The argument is this: if, for example, we analyze the high tone as starting out on the negative subject prefix (si-marigíz-ire) we would expect High shift to be further limited by the depressed antepenult gi, yielding *si-marigiz-ire. Since High Shift is not thus restricted, it would seem that the underlying location is the antepenult. This, however, can be proven to be wrong; in fact, we have positive evidence that the underlying location of the high tone in the negative past tense is on the negative subject marker, evidence that comes from Fission:

(149) Fission in the negative past:

k ^h _a -tságul-î:re	‘(s)he didn’t choose’	(*k ^h a-tsaɡul-î:re)	Riβe ₂
si-tfí-gul-î:re	‘I didn’t buy [cl.7]’	(*si-tfi-gul-î:re)	Riβe ₁
si-tfí-galúz-i:re	‘I didn’t change [cl.7]’	(*si-tfi-galúz-i:re)	Riβe ₁
sí-vi-gul-î:re	‘I didn’t buy [cl.8]’	(*si-vi-gul-î:re)	Riβe ₁
sí-vi-galúz-i:re	‘I didn’t change [cl.8]’	(*si-vi-galúz-i:re)	Riβe ₁

*(Fission in the negative past, continued)*

sí-ga-tsukur-î:re	'I didn't carry [cl.6]'	(*si-ga-tsukur-î:re)	Riβe ₁
sí-danġan-î:re	'I was not perplexed'	(*si-danġan-î:re)	Riβe ₂
k ^h á-gur-î:re	'(s)he didn't buy'	(*k ^h a-gur-î:re)	Riβe ₂
k ^h á-zuŋguluk-î:re	'(s)he didn't go round'	(*k ^h a-zuŋguluk-î:re)	Riβe ₂

Recall the seemingly trivial fact that fission can only be active between the underlying location of a high tone and its surface location. In light of this, verbs like sí-vi-galúz-i:re prove that the high tone must originate on the negative subject marker, i.e., si-kalaŋġ-î:re and si-marigíz-i:re.

This then leaves us with the question raised by the data in (147): why do we never hear the high tone earlier than the antepenult, even in forms like si-marigíz-i:re, where the surface High is on a depressed syllable?

This is one of quite a few cases in Mijikenda tonology where High shift seems to cover more ground than we would expect, i.e., not stopping at the penult or before a depressor. This is quite similar to the analysis proposed above for L3 nouns like mu-kono, where the high tone shifts to the penult, only to be later replaced with a surface low tone.

There is one generalization to keep in mind for grammatical tones, which we shall see over and over again: in all cases of grammatical (and hidden) tones in Mijikenda, the high tone in question always shifts at least to the end of the stem, where the stem is taken to include any derivational affixes (“extensions”), as well as the final vowel of the verb, but not inflectional affixes like the negative past -ire. In the case of the negative past tense, this directly gives us the correct result in verbs like si-marigíz-ire. This generalization does not contribute much insight right now, but it will help us with some of the more complex cases.

In the OT-based analysis of these facts, we will be able to directly formulate the motivation behind this generalization.

### 5.2.2 Negative Present

At first glance, the negative present tense is reminiscent of the negative past, in the sense that lexical tone seems to be ignored. There is no difference, tonally,

between the different subject prefixes; all forms are given here in the first person singular:

(150) Polysyllabic stems in the negative present (data from Jiβana):

*High stems:*

ku-hírî:ka	si-hírî:ka	‘send’
ku-síkî:ra	si-síkî:ja	‘hear’
ku-kalâ:ŋga	si-kâlâ:ŋga	‘fry’
ku-kalãŋgî:ra	si-kálãŋgî:ra	‘fry for’
ku-tsunğurî:ra	si-tsunğúrî:ra	‘peep’
ku-hegû:la	si-hégû:la	‘remove from the fire’
ku-sübû:tu	si-sûbu:tu	‘dare’
ku-gala-gã:la	sí-gala-ga:la	‘writhe’

*Low stems:*

ku-tsuku:la	si-tsúkû:la	‘carry’
ku-lagu:la	si-lágu:la	‘treat medically’
ku-redže:za	si-redže:za	‘loosen’
ku-galu:ka	sí-galu:ka	‘change’

In the verbs above, the generalization seems to be: a high tone is heard on the first stem mora, and it can be pushed back by a depressor. This again hints at High Shift, clearly originating on the negative subject prefix. The obvious question is: why does High Shift from the prefix stop on the stem in this tense? The obvious answer is, of course, that there is another high tone on the stem. Note, however, that this second high tone is never heard (say, on the penult): we get sí-gala-ga:la and not *sí-gala-gã:la. As with the negative past, I claim that the grammatical tone must cover the entire stem; since in the negative present the end of the stem coincides with the end of the word (there is no suffix like -ire for the high tone to surface on), we are left with a hidden high tone. But before we can fully address this point, there is another set of data we need to consider, in which the distinction between Low and High verb stems is not completely neutralized:



## (151) Bisyllabic stems in the negative past (Jiβana):

<i>Low stems:</i>			<i>High stems:</i>		
ku-ri:ma	si-rî:ma	‘cultivate’	ku-lǎ:la	sí-lâ:la	‘sleep’
ku-ku:na	si-kû:na	‘scratch’	ku-rĩ:sa	sí-rî:sa	‘feed’
ku-mi:za	si-mî:za	‘swallow’	ku-rě:ha	sí-rê:ha	‘give back’

As we can see, overlap is prevented in bisyllabic High stems (sí-lâ:la, sí-rî:sa) but allowed in Low stems (si-rî:ma, si-kû:na). This is reminiscent of the prohibition, seen in many of the dialects, on overlap on the penult, a claim which is further supported by phrasal data, showing that overlap on bisyllabic stems is allowed in non-final position:

## (152) Bisyllabic High stems in the negative present tense, non-phrase-final position:

si-rísá mú-hô:hó	‘I am not feeding the child’	(cf. sí-rî:sa)
si-rísá mú-vye:re	‘I am not feeding grandmother’	(cf. sí-rî:sa)
si-réhá tfí-káhâ:na	‘I am not returning the basket’	(cf. sí-rê:ha)

Consider the possible explanations. Clearly the lexical High is not entirely lost, since it still blocks overlap on bisyllabic stems. On the other hand, even on Low stems, the negative present tense has a high tone which stops a preceding high tone from shifting beyond the first stem mora—compare, for example, the negative present *si-sóŋgérera* with *ǎ-na-ku-soŋgerěra*. As it turns out, this state of affairs is quite common in Mijikenda for cases of grammatical tone.

The explanation I suggest is a simple one: the grammatical tone originates on the *second* stem mora (sometimes referred to as V₂); furthermore, just like the tone of the associative morpheme, it is subject to Meeussen’s Rule, i.e., it is deleted when immediately preceded by a lexical high tone. Thus, for Low stems we only have the grammatical tone on the second stem mora, and overlap is never an issue, since the high tone from the negative subject prefix is always free to reach the first stem mora. In High stems, the grammatical tone is deleted as a result of Meeussen’s Rule, and the lexical tone on the first stem mora can prevent overlap in short stems.

This solves almost all of the problems with the negative present tense. One problem remains, which is evident in the longer stems: Plateau stops before the penult.

(153) Long stems in the negative present tense:

si-tʃi-téŋgéne:za	‘I am not making [cl.7]’	Chonyi ₁
si-káláŋgi:ra	‘I am not frying’	Chonyi ₂
si-séŋgére:ra	‘I am not approaching’	Digo ₄
si-ku-séŋgére:ra	‘I am not approaching you’	Duruma ₁
si-tʃi-súkúmi:za	‘I am not pushing [cl.7]’	Digo ₃
si-mu-tsúkúri:ra	‘I am not carrying for/with him/her’	Duruma ₁
s-áŋgála:la	‘I am not astonished’	Chonyi ₁
s-éréme:ra	‘I am not leaning on’	Duruma ₁

As the verb stems grow longer, the pattern emerges: Plateau extends from the first stem mora extends up to the antepenult, but does not cover the penult itself. This is unlike High Shift, which, as we’ve seen, can always reach the penult when there are no hidden high tones at the end of the phrase. We might try to explain this fact by positing just such a hidden tone, i.e., analyzing a word like *si-mu-tsúkúri:ra* as *si-mu-tsúkúri:ra*, with one high tone on the negative subject prefix, another on the first stem mora (this is a High verb stem) and a third one covering the final two vowels *-la* L3 nouns. This solution, however, soon runs into problems of its own: note that we require an underlying high tone on the first (or possibly second) stem mora in order to stop High Shift from the negative subject prefix, and we’ve added another latent High on the penult in order to stop High Spread; but in such a case nothing should stop the stem-initial High from surfacing. Consider cases with a depressor like *sí-zuŋguluka* (another High stem). If we take the tonal structure suggested above, namely *sí-zuŋguluka*, the first stem High should be free to shift onto the antepenult, predicting the incorrect **sí-zuŋgúluka*.

The correct analysis appears to be one already mentioned above in relation to L3 and H3 nouns: the “Avoid Prominence” principle, which prevents anything other than High Tone Shift from reaching the penult. This same principle has

been used by Donnelly (2009) to derive what he refers to as the “antepenult tone pattern” in Phuthi—essentially the same pattern as the negative past in Mijikenda. Also of note is Cassimjee’s 1998 statement that, in Xhosa, “[t]he only toneless syllables that get raised to High by Plateau are the toneless syllables that we analyze as non-heads in a HTD [High Tone Domain].”

In short, it seems that the correct generalization is that, in Mijikenda, Plateau never advances beyond the antepenult, whether or not there is another high tone there. This is due to a tendency also evident in other Bantu languages, to avoid a high tone on the penult.¹ This allows us to analyze the negative present tense as follows:

- One high tone originates on the negative subject marker.
- A grammatical high tone starts out on V₂, the second stem mora. In the case of a lexically high stem, Meeussen’s Rule operates and these two high tones can be said to fuse as with high object prefixes in Digo.
- The high tone on the stem, similarly to all grammatical tones in Mijikenda, shifts at least to the end of the stem; this means that the tone is not heard when the verb is in phrase-final position.

One might argue that the fact that the high tone from the negative subject prefix stops on V₁ does not necessarily imply that there is another high tone there. For example, we might have an analysis where High Shift stops on the V₁ TBU of a stem with a high tone in any position. There is positive evidence from Fission that the high tone on the stem does start on the first vowel; this is seen in the data from the imperative form below.

### 5.2.3 Imperative

The Mijikenda imperative offers a slight variation on grammatical tone. Consider the following imperative forms:

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¹The claim that these languages avoid a high tone on the prominent syllable is somewhat counter-intuitive. As a matter of fact, I believe this is better analyzed as a depressor effect, which captures the generalization that it is only *Plateau* (and not High Tone Shift) that is barred from reaching the penult; see the discussion in §8.5.3.

(154) The imperative (data from Giriyama):

*Low stems:*

gu:la	‘buy!’	gulǎ:-ni	‘(pl.) buy!’
tso:la	‘pick up!’	tsolǎ:-ni	‘(pl.) pick up!’
tsuku:la	‘carry!’	tsukulǎ:-ni	‘(pl.) carry!’
suku:ma	‘push!’	sukumǎ:-ni	‘(pl.) push!’
marigi:za	‘close!’	marigizǎ:-ni	‘(pl.) close!’

*High stems:*

fu:la	‘wash clothes!’	fulǎ:-ni	‘(pl.) wash clothes!’
pa:ta	‘get!’	patǎ:-ni	‘(pl.) get!’
siki:ra	‘hear!’	sikirǎ:-ni	‘(pl.) hear!’
kala:ŋga	‘fry!’	kalangǎ:-ni	‘(pl.) fry!’
kalangi:ra	‘fry for!’	kalangirǎ:-ni	‘(pl.) fry for!’
tengeneze:ra	‘make with/for!’	tengenezǎ:-ni	‘(pl.) make with/for!’

Looking first at the singular imperatives, these verbs appear to have no high tone; they certainly have no surface high tones, and the distinction between High and Low verbs stems appears to have been neutralized: compare *suku:ma* ‘push!’ (Low stem) with *kalangi:ra* ‘fry for!’ (High stem).

When the plural suffix *-ni* is added, however, a high tone surfaces on the penult. This tone might have originated on the *-ni*, however that would require it to shift to the left (from the ultima to the penult), something which we haven’t seen so far. What we have seen plenty of are hidden high tones: if we analyze the imperative as we did L2 type nouns, we could have an underlying tone on the syllable before the *-ni*. Thus in the singular imperative (*kala:ŋga*) the High is prevented from surfacing, whereas in the plural it is no longer on the ultima and thus can surface (*kalangǎ:-ni*).

One might ask now, why analyze the imperative like L2 nouns and not L3? How do we know that the high tone starts out on the last stem mora and not elsewhere? Normally we would look at a tone from a preceding word to see where it surfaces, but verbs in the imperative do not tend to follow nouns, and no such phrases exist in my data.

Nevertheless, Fission can help us arrive at the correct analysis. Keeping in mind that, in dialects without Fission, the singular imperative has no overt high tone, consider the Riβe₁ data in (155) below.

(155) Fission in the Riβe₁ imperative (all of the examples in my data):

<i>(High Stem)</i>	galá-ga:la	‘writhe!’	(*gala-ga:la)
<i>(Low Stem)</i>	galú:za	‘change!’	(*galu:za)
<i>(High Stem)</i>	hégu:la	‘remove from the fire!’	(*hegu:la)
<i>(High Stem)</i>	súbu:tu	‘dare!’	(*subu:tu)

The Fission in galá-ga:la shows us that High Tone Shift covers more than just the ultima; in words like hégu:la and súbu:tu it clearly covers the entire verb. There is, however, a slight complication. Some verbs do not show fission where we would have expected:

(156) Verbs where there is no fission in the imperative:

<i>(Low Stem)</i>	mi:za	‘swallow!’	(*mí:za)
<i>(Low Stem)</i>	pi:ga	‘hit!’	(*pí:za)
<i>(Low Stem)</i>	lagu:la	‘treat medically!’	(*lágu:la)
<i>(Low Stem)</i>	redʒe:za	??	(*rédʒ:za)

Why do we get an extra High on the first vowel of hégu:la but not in lagu:la (*lágu:la)? The data at my disposal are not sufficient to make any decisive statements, but consider the following suggestion. The difference between hégu:la and lagu:la is that (in Riβe) ku-hegŭ:la is a High stem whereas ku-lagu:la is a Low one. This does not mean that fission only occurs in the imperative forms of High verbs; the Low ku-galu:za gives us galú:za. The difference between galú:za and lagu:la is that fission occurs in galú:za on the second vowel and fails to occur on the first vowel of lagu:la.

In light of all of the above, it seems that the facts of the imperative are similar to what we’ve seen in the negative present: High Tone Shift starts on the first stem mora for High stems and on the second stem mora for Low stems, indicating a grammatical tone on the second mora which fuses with the high tone of High stems.

### 5.2.4 Limited Deep Overlap in Digo

Having seen the general patterns of the negative present and the imperative in Mijikenda, we can turn to an interesting variation offered by Digo. Note that the relevant Digo data are quite limited.

As we've seen, the present tense pattern is a surface high tone on the first stem mora, followed by Plateau in dialects that have it (e.g., *si-káláŋgira*). This was analyzed with a hidden high tone, whose shift covers the entire stem (*si-káláŋgira*). Now, on trisyllabic stems, this pattern seems to be missing in Digo.

(157) Trisyllabic stems in the Digo present tense:

<i>si-βirî:ka</i>	'I am not sending'	Digo ₄
<i>si-kalá:ŋga</i>	'I am not frying'	Digo ₄
<i>si-sikí:ra</i>	'I don't hear'	Digo ₅
<i>si-lamú:sa</i>	'I am not greeting'	Digo ₅
<i>si-tʃi-kalá:ŋga</i>	'I am not frying [cl.7]'	Digo ₃
<i>si-ri-tʃimbí:ra</i>	'I am not fleeing [cl.5]'	Digo ₃

(158) Longer stems in the Digo present tense:

<i>si-káláŋgi:ira</i>	'I am not frying for'	Digo ₄
<i>si-séŋgé:ra</i>	'I am not approaching'	Digo ₄
<i>si-mu-márigi:za</i>	'I am not approaching him'	Digo ₂
<i>si-tʃi-téŋgé:za</i>	'I am not making [cl.7]'	Digo ₃
<i>si-ri-téŋgéze:ra</i>	'I am not ??-ing [cl.5]'	Digo ₃

Here's what we see: on quadrisyllabic or longer stems, the pattern is the same as in the rest of Mijikenda; but for trisyllabic stems, we get a single surface high tone on the penult, instead of the expected Plateau. What to make of this?

Recall the phenomenon of Deep Overlap in Raβai, where any form where we would expect Plateau ended up with only the penult high, e.g., *yu-na-mu-kaláŋgí:ra* rather than **yu-na-mú-káláŋgí:ra*. I suggest that this is exactly what happens in Digo, only limited to trisyllabic stems. In fact, Kisseberth (1984) noted some similar data in the imperative, which we can now discuss and expand upon.

Recall that Digo, alone out of all Mijikenda, has high-toned object prefixes. This means that we would expect an imperative verb with a high-toned OP to have a surface high tone. As it happens, this seems to be the case, but Deep Overlap on trisyllabic stems masks the generalization.

(159) Trisyllabic stems with a high-toned OP in the Digo infinitive:

<i>(Low stem)</i>	ri-senǵê:za	‘bring [cl.5] near!’	Digo ₃
<i>(Low stem)</i>	vi-tsukû:le	‘carry [cl.8]!’	Digo ₃
<i>(High stem)</i>	tʃi-tʃimbî:re	‘flee [cl.7]!’	Digo ₂
<i>(High stem)</i>	gã-kalâ:nge	‘fry [cl.6]!’	Digo ₃

(160) Longer stems with a high-toned OP in the Digo infinitive:

<i>(Low stem)</i>	tʃi-márígi:ze	‘finish [cl.7]!’	Digo ₂
<i>(Low stem)</i>	wã-sénǵére:re	‘approach them!’	Digo ₄
<i>(High stem)</i>	ã-tʃékétʃe:re	‘sift for them!’	Digo ₁
<i>(High stem)</i>	tʃi-ténǵénéze:re	‘?? [cl.7]!’	Digo ₃

Again, the pattern is clear: Deep Overlap on trisyllabic stems, Plateau on longer stems. Lexical tone—whether the stem is High or Low—makes no difference. In this sense, Kisseberth’s tentative comment that “the merger between low and high verb stems in the imperative is only partial [...] it appears that high-toned verbs lose the high tone associated with their first vowel *just in the event that the first stem vowel is in antepenult position in the word*” [p.158, italics mine] is almost correct: the key here is stem length rather than lexical tone. Since the only example Kisseberth had of a quadrisyllabic stem in the imperative was the high-toned ku-tʃékétʃe:râ ‘to sift’, this inaccuracy is understandable.

To conclude, then: Digo seems to have Deep Overlap in tenses with grammatical tone, which is restricted to trisyllabic stems. In the longer stems we see the same Plateau pattern as in the rest of Mijikenda.

## 5.3 Summary

Having discussed lexical hidden tones in chapter 4, the main focus of the present chapter has been the parallel case of grammatical tones. As I have shown, all

grammatical high tones in Mijikenda are of the “hidden” type, i.e., they cover the entire stem and so do not surface in phrase-final position.



## Chapter 6

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# Tonal Phrases

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Bell [...] made his way across the room by jumping from bed to bed, and even when he got to his own would not stop talking.

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W. Somerset Maugham, *Of Human Bondage*

This chapter presents a sketch of phrasal phonology in Mijikenda. I shall not be able, in the scope of the present work and given the nature of the data, to discuss in full the factors governing phonological phrasing in Mijikenda. Rather, this chapter deals with the effects of phrasing and with the interaction of tonal factors on prosodic phrase boundaries. Even so, an exhaustive study of the different tonal phenomena related to phrasing lies far beyond the scope of the present work.

As I have indicated, tonal phrases in Mijikenda always end in low pitch¹. This generalization even overrides high tones which reach the phrase ultima, leading to “hidden tones”. Often in the literature, this is seen as an instance of *boundary tones*, i.e., the insertion of an actual low tone at the end of every phrase; hidden tones would then be a result of this boundary tone overriding the underlying high tone. As we shall see, the interaction of phrase ends and hidden high tones in Mijikenda is somewhat more complex than that, but first

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¹This may not be the case for different intonation patterns (e.g., question or list intonation); however, I do not have sufficient data to discuss those.

let us consider some of the basic facts.

Consider first phrases of the type Verb-Noun-Noun. When the first complement of the verb is of type L1 (toneless), there is nothing—as far as tones go—to stop a high tone from spreading beyond the noun. However, what we see is that a high tone never advances beyond a type L1 noun:

(161) A high-toned verb followed by a toneless (L1) noun:

Chonyi₁:

H+L1+L1	ni-na-m-p _a mu-gáŋga ŋguwo	‘I’m giving the doctor clothes’
H+L1+L2	ni-na-m-p _a mu-gáŋga pesa	‘I’m giving the doctor money’
H+L1+H1	ni-na-mu-hirikira tʃilúmo tʃi-tǎbu	‘I’m giving Chilyalya a book’

Kambe₁:

H+L1+L1	ni-nda-m-rehera mbáru pama	‘I’ll bring Mbaru meat’
H+L1+L3	ni-nda-m-rehera pama kazungu	‘I’ll bring meat to Kazungu’
H+L1+H1	ni-nda-m-rehera pama ŋgmadě:na	‘I’ll bring meat to Mwadena’

Duruma₁:

H+L1+L1	ni-na-m-rehera ŋguwó ndurya	‘I’m bringing clothes to Ndurya’
H+L1+L1	ni-na-m-rehera nduryá ŋguwo	‘I’m bringing Ndurya clothes’
H+L1+L2	ni-na-m-rehera ŋguwó pero	‘I’m bringing clothes to Nyero’
H+L1+H1	ni-na-m-rehera ŋguwó ŋgmatũmbi	‘I’m bringing clothes to Mwatumbi’

As we can see, there is some difference between dialects: in Duruma₁, the high tone from the verb reaches the last syllable of the L1 noun, but in no case does this high tone advance beyond the supposedly toneless noun. Compare this with phrases such as *a-na-mala ku-gula ŋgũ:wo* ‘(s)he wants to buy clothes’, where the high tone from the finite verb has no problem shifting across the toneless infinitive.

A related case is that of H1 nouns (nouns that have a single underlying high tone, which is heard in isolation). Here again, we see that the high tone never shifts beyond the noun when preceding the verb in (162) or as the first complement of the verb (163) (the high tone may shift to the end of the noun, but never beyond that):

## (162) H1 nouns before the verb:

Chonyi₁:

H1+L+L1	luvúno ni-na-m-gurira nguwo	‘Luvuno, I’m buying clothes for’
H1+L+L1	kabíla ni-na-m-gurira nguwo	‘Kabile, I’m buying clothes for’
H1+L+L3	safári ni-na-m-tsukurira m-zigo	‘Safari, I’m carrying a load for’

Giryama:

H1+L	karísá ni-na-m-riha	‘Karisa, I’m paying him back’
H1+L	safári ni-na-m-tsagula	‘Safari, I choose him’
H1+H	karábu na-m-biniṅgiza	‘Karabu, I cover him’
H1+L+L3	karísá a-ka-m-piga kazuṅgu	‘and Karisa hit Kazungu’
H1+L+L1	karísá a-ka-m-piga tḡaro	‘and Karisa hit Charo’
H1+H+L1	karísá a-ka-m-tsangurira tḡaro	‘and Karisa looked at Charo’
H1+H+L3	karísá a-ka-m-lamiza kazuṅgu	‘and Karisa injured Kazungu’

Kambe₁:

H1+L	mazerá nda-m-riha	‘Mazera, I’ll pay him back’
H1+L	tḡiríngá nda-m-riha	‘Chiringa, I’ll pay him back’

## (163) H1 as first complement to the verb:

Chonyi₁:

L+H1+L1	ni-na-m-gurira luvúno nguwo	‘I’m buying Luvuno clothes’
L+H1+L1	ni-na-m-gurira kabíla nguwo	‘I’m buying Kabila clothes’
L+H1+L3	ni-na-m-gurira safári m-zigo	‘I’m carrying a load for Safari’

How to explain these facts? One possible generalization might be that toneless verbs don’t block High Shift whereas toneless (L1) nouns do; this might suggest an analysis of L1 and H1 nouns as having a final underlying *low* tone that blocks High Shift. But, while such an analysis would correctly cover the Mijikenda facts discussed here, it does have the disadvantage of ignoring the complete predictability of these supposed low tones. A better approach seems to be that of phrasing.

In a classic paper drawing, among others, on data from Chimwiini—a Sabaki

language closely related to Mijikenda—Selkirk (1986) argues that phonological phrases in that language are constructed by assigning a right phrase edge at the right edge of a (lexical) maximal projection. Leaving aside hidden tones for now, Mijikenda seems to follow the same pattern. In a V-NP-NP phrase, the right edge of the first complement ends a phonological phrase, giving us (V-NP)-(NP). A subject NP is also a maximal projection and hence would have a phrase edge before the verb, i.e., (NP)-(V). In V-V-NP phrases like a-na-mala ku-gula ngũ:wo, on the other hand, there is no phrase edge after the first verb, and the entire sentence is a single phrase.

Descriptively, then, what we see is that for these data High Tone Shift and Plateau operate within the phonological phrase in Mijikenda. As mentioned above, a popular way of deriving such behavior is the insertion of *boundary tones*, which have been described for many languages (see Hyman (1990) for a discussion of the possible types of tonal phenomena at phrase edges). On such an analysis we would say that Mijikenda inserts a low tone at the right edges of phonological phrase, often denoted L%. This low tone then blocks any high tones from advancing beyond the phrase end. It should be noted that the insertion of an actual low tone is not the only possible formulation of this boundary phenomenon in Mijikenda: one might simply have said that tonal processes operate within the phonological phrase and be done with it. Let us now consider some more data relevant to this point.

For L1 and H1 nouns—nouns without hidden tones—the facts seem straightforward: phonological phrases are constructed from syntactic edges as indicated, and tonal processes do not advance beyond phonological phrase ends. When we turn to other noun types, this generalization loses some of its simplicity:

(164) Nouns with a hidden high tone before the verb:

Chonyi:

L2+L+L1	tʃilyalya ni-na-m-gurira ngũwo	‘Chilyalya, I’m buying clothes for/with’
L3+L+L1	<u>pola</u> ni-na-m-gurira ngũwo	‘Pola, I’m buying clothes for/with’
H3+L+L1	ngmá <u>dende</u> ni-na-m-gurira ngũwo	‘Mwadende, I’m buying clothes for/with’

Giryama:

L2+L+L1	tʃome a-ka-m-piga gōna	‘and Chome hit Gona’
L2+L+L2	tʃome a-ka-m-piga kânze	‘and Chome hit Kanze’
L2+L+L3	tʃome a-ka-m-piga kázungu	‘and Chome hit Kazungu’
H2+L+L3	ḡmalímu a-ka-m-songerera kázungu	‘and Mwalimu approached Kazungu’
H3+L+L1	ngúmbao a-ka-m-songerera tʃáro	‘and Ngumbato approached Charo’
H3+L+H1	ngúmbao a-ka-m-songerera kár ^h isa	‘and Ngumbato approached Karisa’

(165) Nouns with a hidden high tone as first complement:

Chonyi₁:

L+L2+L1	ni-na-m-gurira tʃilyalya ngūwo	‘I’m buying clothes for/with Chilyalya’
L+L3+L1	ni-na-m-gurira pola ngūwo	‘I’m buying clothes for/with Pola’
L+L3+L1	ni-na-m-gurira piŋge tʃapāti	‘I’m buying Nyinge a chapati’
L+H3+L1	ni-na-m-gurira ḡmádende ngūwo	‘I’m buying clothes for/with Mwadende’
H+H2+L1	ni-na-m-pa mʃáŋgu ngūwo	‘I’m giving Mchangu clothes’
H+H2+L2	ni-na-m-pa mʃáŋgu pēsa	‘I’m giving Mchangu money’

Duruma₁:

H+L2+L1	ni-na-m-rehera pésá ndúrya	‘I’m bringing money to Ndurya’
H+L2+L2	ni-na-m-rehera pésá nyero	‘I’m bringing money to Nyero’
H+L2+H1	ni-na-m-rehera pésá ḡmátúmbi	‘I’m bringing money to Mwatumbi’

Kambe₁:

H+L2+L3	ni-nda-m-rehera tʃi-tánda kázungu	‘I’ll bring a bed to Kazungu’
H+L3+L2	ni-nda-m-rehera kázungu tʃi-tánda	‘I’ll bring Kazungu a bed’

As we can see, hidden high tones seem to override phonological phrasing in that they shift beyond phrase edges, or rather: they shift where before we have seen shifting blocked. In a word: tonal processes stop at nouns without hidden tones (L1 and H1) and do not stop at nouns with hidden tones.

There are two ways to describe this situation. One is to say that phonological phrasing is determined as usual—a right phrase edge at every right edge of a maximal lexical projection, regardless of noun types. Since hidden tones would then shift through phonological phrase boundaries, we would have to conclude

that tonal processes operate at a higher phonological level than the phonological phrase. In such a case, we would need to explain the original observation, namely that tonal processes do stop at the edges of phonological phrases when there is no hidden tone, and need to posit either boundary tones at the phonological phrase level (which would be blocked by hidden tones) or underlying low tones at the ends of L1 and H1 nouns.

While the approach above would probably work, I believe that there is a simpler alternative. All we need is to modify the phrasing so that phonological phrases can end on L1 and H1 nouns, but not on hidden tones. If we manage to get the phrasing on a V-NP-NP sentence to be (V-NP)-(NP) when the first NP has no hidden tone and (V-NP-NP) when there is a hidden tone there, we are done. And Optimality Theory supplies us with just such an option.

Consider again the proposal made by Selkirk (1986), that the right edges of phonological phrases in Chimwiini are set to be the right edges of the lexical maximal projections. Selkirk (1995, 2000) rephrases this as an OT constraint called ALIGN-XP R. Now, all we need is a constraint barring ALIGN-XP R from operating at hidden high tones. And such a constraint is readily available: it is the often-invoked family of “nonfinality” constraints. In our case, there is no need to justify the existence of a constraint disallowing a high tone at the right edge of a phrase—indeed, much of the tonology of Mijikenda, including the very existence of hidden high tones, is based on some such constraint. Call this constraint NOFINALHIGH for now. Ranking NOFINALHIGH above ALIGN-XP R immediately yields the desired result. Mijikenda thus prefers to create larger phonological phrases, rather than end them on high tones². As for actual hidden high tones, for example when the noun in question is at the end of the sentence: in such a case, the language has no choice but to put a phrase edge there, and so NOFINALHIGH is appeased by preventing the high tone from surfacing, and so we get hidden high tones. The sketch tableaux in (166) and (167) demonstrate this.

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²One might argue that hidden high tones would not count as high when they’re hidden, thus not violating NOFINALHIGH at phrase ends. When we discuss the analysis of Mijikenda within Optimal Domains Theory this will not be an issue, and so for now let us assume that a suitable formulation of NOFINALHIGH can be found to cover the case in question.

(166) Phrasing of V+L1+L1 (no hidden high tones):

	V L1 L1	NOFINALHIGH	ALIGN-XP R
☞	(V L1) (L1)		
	(V L1 L1)		*!

(167) Phrasing of V+L2+L1:

	V L2 L1	NOFINALHIGH	ALIGN-XP R
	(V L2) (L1)	*!	
☞	(V L2 L1)		*

To conclude, I have shown the following facts about tonal phrases in Mijikenda:

- High Tone Shift and Plateau stop at nouns without hidden tones but not nouns with hidden tones.
- To explain this, I have given the following analysis:
  - Tonal processes in Mijikenda operate within the phonological phrase.
  - Phrases are determined as in Chimwiini: a right phrase edge at the right edge of every lexical maximal projection.
  - Hidden tones override this phrasing principle due to a non-finality effect: a phonological phrase will only end with a hidden noun if there is no other alternative, i.e., at the end of an intonational phrase.





## Chapter 7

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# An Overview of Mijikenda Tonology

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Now the various species of whales need some sort of popular comprehensive classification, if only an easy outline one for the present [...] I hereupon offer my own poor endeavors. I promise nothing complete; because any human thing supposed to be complete, must for that very reason infallibly be faulty. I shall not pretend to a minute anatomical description of the various species, or—in this place at least—to much of any description. My object here is simply to project the draught of a systematization of cetology.

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Herman Melville, *Moby-Dick*

In this chapter I present a bird's-eye view of the facts of Mijikenda tonology, grouped by construction and by dialect. This chapter contains some data (verb tenses) were not discussed so far since they offer nothing new in terms of generalization or analysis.

## 7.1 The Basics of Mijikenda Tonology

**Lexical Tone** Verb stems are either High (with an underlying high tone on the first mora) or Low (underlyingly toneless).

Noun types may have an initial underlying high, and a hidden high tone on the ultima or penult. Taken together this gives six noun types.

The southern dialects, Digo and Duruma, also have a class of bisyllabic verb stems with a hidden tone on the penult, similar to nouns. I refer to these as Neutralized High verb stems. These are verbs that historically had an initial short high vowel (e.g., in Duruma, ku-tala ‘to count’ < *-tád- vs. the non-neutralized ku-rēha ‘to bring’ < *-déet-).

**Depressor Consonants** A set of consonants—almost exactly the set of voiced obstruents, not including prenasalized stops and  $\beta$ —interact with the tonal processes as described below, basically by restricting the target of High Tone Shift and the scope of Plateau. Also, a high tone pronounced on a vowel immediately following a depressor consonant is pronounced at a lower pitch than otherwise. Such a vowel is said to be “depressed”.

Depressorhood is affected by morphological factors: depressors in some morphemes (e.g., object prefixes or tense markers) may not “count” as depressors in some dialects.

**High Tone Shift and Overlap** An underlying high tone will shift to the right and surface on the TBU preceding the underlying location of the next high tone. Under certain conditions, the exact configuration of which differs from dialect to dialect, High Tone Shift will “Overlap” and surface on the TBU where the following high tone originates. Depressors always restrict High Tone Shift: if the TBU where a high tone would ordinarily surface is depressed, High Tone Shift is restricted. Compare, for example, Chonyi₁ n₁ tʃí-t̩a:bu ‘it is a book’ with n₁ vi-t̩a:bu ‘they are books’. Nevertheless, High Tone Shift may pass over many depressors in its way: it is only the target TBU that matters. For example see a-na-zazigiri:ka ‘(s)he is willing to play’ (Giryama), where High Tone Shift passes over three depressors.

When a high tone is the last one in a phrase (and not underlyingly on the ultima), it will shift to the phrase penult. In most dialects, a single high tone on the penult surfaces as a rising tone, in some as a level high tone. For Digo, see below. The penult is also special in the sense that a depressed penult does not restrict High Tone Shift, e.g., the Jibana verb *yu-na-lagūla* ‘(s)he is treating medically’ and not **yu-na-lágula*.

When two high tones surface on the penult as a result of overlap, or when a high tone surfaces on the penult and a hidden high tone is on the ultima, the penult is pronounced with a falling pitch contour in most dialects.

**Plateau** In most Mijikenda dialects, a high tone will continue to spread to the right from the target location of High Tone Shift. Plateau stops before the next surface high tone or depressor consonant. If there are none, Plateau stops on the antepenult.

**Downstep** In some dialects, a high tone heard on the penult is pronounced at a lower pitch than any preceding surface high tone, e.g., in the Giryama *ni-dzǎ-lō:ha* ‘I have dreamed’. In all Mijikenda dialects there is downstep on depressed syllables, e.g., *ǎ-dz^hǎ-tǎ:la* ‘I have counted’. Note that when two high tones are separated by a sequence of (surface) low-toned TBUs, the second will always be pronounced lower than the first; this is known as “downdrift”.

**Grammatical Tone** In some verb tenses, the lexical tone of the verb stem is completely or partially overwritten. This can be described as a high tone starting on the second stem mora and shifting at least to the end of the stem. In most cases (when there is no suffix like the negative past tense *-ire*), this means that the grammatical tone is hidden, evident only from its interaction with other tones or when not in phrase-final position. In most dialects, traces of the original lexical tone of the verb can only be seen through the Overlap pattern on bisyllabic stems.

**Meeussen’s Rule** Meeussen’s Rule—the deletion of the second of two consecutive high tones—is restricted to specific environments in Mijikenda. One such

case is that of the associative morpheme, whose high tone is deleted when the noun preceding it has a “hidden” (final) underlying high tone. Another case is that of high-toned object prefixes, which are attested only in Digo.

### Restricted Phenomena

**Tonal Fission** In Riße and Kauma, a high tone will surface before every depressor on the path of High Tone Shift. Compare for example the Giriyama *a-na-mala ku-gula ŋǔ:wo* ‘(s)he wants to buy clothes’ with Riße *a-na-mala kú-gula ŋǔ:wo*. In both cases there is a single high tone shifting from the first mora to the penult, but in the Riße phrase we hear it on two non-contiguous TBUs.

Digo has a limited form of Fission.

**Deep Overlap** In Raßai, and in a more limited fashion in Digo, Overlap will extend up to the penult. Compare the Chonyi *a-na-kálangíra* ‘(s)he is frying for’ with the Raßai equivalent *a-na-kaḷangíra*. Deep Overlap, like Overlap, never occurs when there is a depressor. It is therefore natural to view Deep Overlap as a variation on Plateau: where Plateau is “Post-Shift Spread”, Deep Overlap is “Post-Shift Shift”.

**Plateau in Giriyama** Giriyama can not be said to have Plateau, but it has something very close: all TBUs following a surface high tone will be pronounced at a higher pitch than normal, up to the first depressor. Unlike Plateau, the pitch does not remain at the same level as the initial high tone, but other than that, this “assimilated pitch” behaves identically to Plateau.

## 7.2 Mijikenda Verbal Tonology by Tense

Note: The descriptions below cover only the data I have worked on. There is no mention of the relative forms of verbs, of periphrastic constructions and possibly of other tenses/aspects I am not aware of.

**Subject and Object Prefixes** The normal pattern in Mijikenda is for third-person and nonhuman subject prefixes to carry a high tone. In some tenses this is not the case, and all subject prefixes are either toneless or high-toned. In Digo, all object prefixes except those denoting singular human objects are also high-toned. In the other Mijikenda dialects, object prefixes are always toneless. Negative subject prefixes are usually high-toned; more on this below.

**Present Tense** The form of the present tense is SP-na-(OP)-VS-a. Lexical tone is maintained. Third-person and nonhuman subject prefixes contribute a high tone, and in Digo also all object prefixes but those denoting singular human objects.

According to Nurse (2008), this is the “progressive present tense”.

**Negative Present** Morphologically, the structure of the negative present tense is NSP-(OP)-VS-a. Tonally, the pattern is as follows: a surface high on the first stem mora, followed by a Plateau in the dialects that have Plateau. When the stem is long enough, we see that Plateau stops before the penult, e.g., *si-mutsúkúri:ra* ‘I am not carrying for him/her’ (Duruma₁). Depressors can push the V₁ high tone back to the OP or the NSP.

The only trace of lexical tone is seen in bisyllabic stems, where there is overlap on Low stems but not on High ones: compare, in Chonyi₁, the High stem *sí-ri:sa* ‘I am not feeding’ with the Low stem *si-kâ:ta* ‘I am not cutting’.

As shown in §5.2.2, this is explained by having one underlying high tone on the NSP and a grammatical high tone starting on the second stem mora and shifting to the penult. The tone of High stems is retained, and fuses with the grammatical tone, thus accounting for the Overlap pattern.

**Past Tense** The structure of the past tense is SP-a/e-VS-a. The SP loses its vowel and fuses with the tense marker, e.g., *ni-a-* becomes *na-*. Tonally, the basic surface pattern is a high tone on the TM/SP and a second high tone on the penult, regardless of lexical tone. Lexical tone is evident in some dialects, but only in a very restricted environment: on polysyllabic stems following a

depressed OP. Compare for example, in Chonyi₁, the High stem *n-é-vì-ténjê:za* ‘I repaired [cl.8]’ with the Low stem *n-é-vì-sojdzê:za* ‘I brought near [cl.8]’.

The Digo pattern is slightly different: the first high tone shifts to the first stem mora, and can be restricted by depressors or Neutralized High stems.

As for analysis, the past tense can be analyzed as having one underlying high tone on the subject prefix and another on the tense marker (§3.9.1). Dialects like Chonyi₁ also preserve the lexical tone of the stem.

According to Nurse (2008), this tense “... refers to situations before today.”

**Negative Past** The negative past tense is the only one in Mijikenda which preserves a historical past suffix *-ire* (Wald, 1976). Its form is NSP-(OP)-VS-*ire*. Tonally, the pattern is very regular: a falling tone on the penult (Giryama *si-ki-gul-î:re* ‘I did not buy [cl.7]’), which can be pushed back by a depressed penult (*si-galúz-i:re*, ‘I did not change’). An important note is that High Tone Shift can only be restricted to the antepenult, but not earlier, even if the antepenult is depressed (*si-marigíz-i:re* ‘I did not finish’). In my data, there is no evidence of the lexical tone of the stem being preserved.

The analysis was the following (§5.2.1): a high tone on the negative subject marker, a grammatical high tone covering the stem, and another high tone on the final vowel of the suffix *-ire*: *si-kalaŋ-î:re*. Note that, like all cases of grammatical tones, this one shifts at least to the end of the stem (i.e., the TBU before *-ire*).

**Perfect Tense** The structure of the perfect tense is SP-*dza/dzi*-(OP)-VS-*a*. Stem tone is retained, third-person and nonhuman SPs are high, as well as the tense marker. Note: Digo has a different, apparently unrelated form for the perfect tense¹.

Nurse (2008) describes this tense as referring “... to events on the day of speaking but also to earlier events, either if they have some relevance to the present or if they appear recent compared to the range of [the past tense] *-a*.”

¹In fact, Wald (1976) claims that Digo is the only Mijikenda dialect to preserve the original tense marker *-ka-*, and that the *dza/dzi* marker is in innovation of Northern Mijikenda. Nurse (2008) also writes that “... there is some evidence that [the perfect tense marker] *-dza-* (from ‘come’) has recently replaced *-ire-*.”

**Negative Perfect** The negative form of the perfect tense is NSP-dza/dzi-(OP)-VS-a. The tonal pattern is a surface high tone on the first stem mora, followed by Plateau, for example in Chonyi₁ *si-dza-káláŋgi:ra* ‘I have not fried for’. A depressed stem always forces the high tone back, e.g., *si-dzá-gala-ga:la*; note that the high tone surfaces on the depressed tense marker rather than on the negative subject prefix. In most dialects, a bisyllabic High stem will also prevent overlap, e.g., compare the Jiβana the High stem *si-dzá-risa* ‘I have not fed’ with the Low stem *si-dza-kûna* ‘I have not scratched’.

The analysis is similar to the other negative tenses: an underlying high tone on the tense marker, a grammatical high tone from the stem V2 to the end of the stem: *si-dza-márígi:za*.

**Future Tense** The future tense is morphologically and tonally very similar to the present tense. Its form is SP-nda-(OP)-VS-a. Stem and prefix tones behave as in the present tense.

According to Nurse (2008), this is the “perfective future tense”.

**Negative Future** The negative future tense is NSP-nda-(OP)-VS-a. Tonally, lexical tone is ignored and we always have the same pattern: one high tone on the tense marker, a second high tone on the penult. In dialects that have Plateau, this fact can be masked, as for example in the Kauma *si-ndá-kú-káláŋgî:ra* ‘I won’t fry for you’. When depressors come between the two high tones this is easy to see, as in the Chonyi₂ *si-ndá-gala-gã:la* ‘I won’t writhe’. Note that lexical tone is indeed completely ignored, as we can see from the behavior of Neutralized High stems in the Digo and Duruma, which surface exactly like regular High stems. Compare the Duruma *si-ndá-ré:ha* ‘I won’t give back’ (Neutralized High) with *si-ndá-rí:sa* ‘I won’t feed’ (High).

The analysis here is quite simple, as the tense involved no hidden tones: there are two underlying high tones, one on the NSP and the other on the TM, and lexical tone is deleted.

**The Subjunctive** The structure of the subjunctive is SP-(OP)-VS-e. Tonally, the subjunctive with an object prefix is quite different in Mijikenda from the

subjunctive without an object prefix. Mijikenda follows in this a widespread pattern among Bantu languages, as discussed by Meeussen (1962).

**Subjunctive without OP** Tonally, the subjunctive without OP is extremely simple, and has the “single high tone” pattern—a rising or level penult—regardless of subject prefix, lexical tone, stem length, depressors etc. Examples are the Gir-yama Low stems *ni-tsö:le* ‘that I pick up’, *a-tsukũ:le* ‘that (s)he carry’ and High stems *ni-pã:te* ‘that I get’, *a-gale-gã:le* ‘that (s)he writhe’ etc. Evidence from dialects with Fission shows that the high tone heard on the penult originates on the subject prefix: compare for example *Riβe₂ ni-kalaŋgi:re* ‘that I fry for’ with *ní-zuŋgulũ:ke* ‘that I walk round’. The analysis, then, is that lexical tone is deleted and there is a single underlying high tone on the subject prefix: *nĩ-kalaŋgi:re*.

**Subjunctive with OP** Tonally, the subjunctive with OP is reminiscent of the past tense. There is a surface high tone on the first stem mora, with Plateau up to the antepenult, e.g., *Chonyi₁ ni-tʃi-káláŋgi:re* ‘that I fry [cl.7] for’. A depressor can restrict High Tone Shift from reaching the stem (*ni-tʃí-biniki:ze*), as can bisyllabic high-toned stems—compare the High stem *ni-rí-tâ:le* ‘that I count [cl.5]’ with the Low stem *ni-vi-lô:ge* ‘that I bewitch [cl.8]’.

The analysis should be fairly obvious by now: an underlying high tone on the subject prefix and a grammatical tone starting at the stem V₂ and shifting to the end of the stem. The lexical tone of High stems fuses with this grammatical tone, giving the difference in Overlap on bisyllabic stems.

**Negative Subjunctive** The structure of this tense is SP-si-(OP)-VS-e.

In the majority of dialects, the negative subjunctive behaves as follows: a high tone is heard on the first stem mora, followed by Plateau, e.g., the *Chonyi₁ ni-si-tʃi-káláŋgi:re* ‘that I not fry [cl.7] for’. The choice of subject prefix makes no difference. The first high tone can be pushed back by a depressed stem and, in most cases, a bisyllabic high tone.

In Digo, the pattern is slightly different, and the first high tone always surfaces on the *-si-*; therefore, Overlap is never an issue.



The Giriyama data have a strange pattern for this tense, namely no surface high tone at all. However, I do not have Giriyama data where a verb in the negative subjunctive is in phrasal context, which would expose a possible hidden high tone.

As for analysis, the situation is quite similar to that seen already for other tenses: an underlying high tone on either the SP or the *-si-* (impossible to tell from my data) and a grammatical high tone from the stem V2 to the end of the verb. Lexical tone fuses with the grammatical tone, creating the Overlap pattern.

**Imperative** The structure of the singular imperative is (OP)-VS-a/e and that of the plural imperative is (OP)-VS-a/e-ni. Tonally, there is a grammatical tone starting on the second stem mora and shifting up to the final vowel -a/-e; this means that a singular imperative verb in most dialects appear to be toneless. The underlying high tone is revealed when the plural suffix *-ni* is added, when the verb is not in phrase-final position and in dialects that have fission.

**Negative Imperative** The negative imperative is simply the negative subjunctive with a second-person subject prefix.

**Conditional *ki-/tʃi-*** The conditional in Mijikenda is SP-*kʲi*-(OP)-VS-a. Tonally, lexical tone is preserved, and the tense marker contributes an additional high tone. None of the subject prefixes carries a high tone. What this means is that this tense is tonally equivalent to the present tense with a high-toned subject prefix.

Examples (Chonyi₁): *ni-tʃi-ri-tsukũ:la* ‘if I carried [cl.5]’ (Low stem), *ni-tʃi-ga-kála:ŋga* ‘if I fried[cl.5]’ (High stem).

**Consecutive *ka-*** The consecutive *-ka-* tense (not to be confused with the Digo perfect *-ka-*) has the structure SP-*ka*-(OP)-VS-a. Tonally, it is one of the simplest possible tenses, since it is identical to the infinitive: none of the prefixes contributes a high tone, and we hear a rising/level high penult for High verb stems

and no surface high tone for Low stems. In terms of analysis, this tense is trivial: we either have the stem tone or nothing.

Examples (Chonyi₁): *yu-ka-tso:la* ‘and (s)he picked up’ (Low stem, 3sg. SP is toneless), *ni-ka-tsuku:la* ‘and I carried’ (Low stem), *ni-ka-hegũ:la* ‘and I removed a pot from the fire’ (Low stem).

### 7.3 Mijikenda Tonology by Dialect

Below is a short outline of each dialect along the parameter discussed above. These parameters are also summarized in table 7.1 on page 166.

**Chonyi** Chonyi has Plateau, e.g., *n-é-kú-tsúkú:la* ‘I carried you’ or *yu-ná-ryá tjí-ǰó:mbo* ‘(s)he is eating [chishombo]’. Overlap occurs on the stem proper, e.g., *yu-na-ri-kálâ:ŋga* ‘(s)he is frying [cl.5]’, but not at a cost of two high tones on a single vowel, e.g., *yu-na-βá-tâ:la* ‘(s)he is counting them’.

Depressed OPs in Chonyi₁ (but not Chonyi₂) do not count as depressors: *yu-na-tjí-tâ:la*, *yu-na-ví-tâ:la*.

**Digo** Digo is quite different from the other Mijikenda dialects, although the underlying tonology is mostly the same. The fundamental difference is in the penult: where other dialects have a rising or level penult, Digo has a rise-fall pattern, with the peak of the pitch contour on the ultima; compare Giryama *ku-kalãŋĩ:ra* with Digo *ku-karãŋĩ:râ*. When the final syllable is depressed, Digo has a level high tone on the penult and a drop on the ultima—*a-na-pí:ga*, not **a-na-pĩ:gâ*.

This does not mean, however, that Digo can be simply said to allow high tones on the ultima. All of the facts about hidden high tones operate in exactly the same way in Digo as in the rest of Mijikenda. In fact, Digo (along with Duruma) has lexical hidden high tones on verb stems as well as on nouns. Within this description of Mijikenda tonology, the simplest way to describe Digo would be to say that the surface tones on the penult undergo an extra “Overlap” step, as compared with the other dialects. A tone that does not surface in the other dialects will not surface in Digo either.

In terms of the parameters mentioned above, Digo has Plateau, e.g., a-na-tsíndzá n̂ô:mbe ‘(s)he is slaughtering a cow’. Overlap seems to occur in Digo on all stems, short and long, which makes the distinction between noun types a very subtle one: both type L2 and L3 surface with a falling penult after the copula.

Digo also has a limited case of “Deep Overlap”, which is restricted to trisyllabic stems. Compare, in the negative present tense, the Deep Overlap in the trisyllabic stem si-tfi-tfimbî:ra with the Plateau on si-tfi-téngénê:za and si-tfi-téngénéze:ra. That said, the data at my disposal are far from conclusive.

**Duruma** Duruma has Neutralized High verb stems (compare for example the apparently toneless ku-so:ma ‘to read’ with the clearly high-toned ku-somě:ra ‘to read for’). This dialect has Plateau, e.g., yu-na-tsúngúrí:ra ‘(s)he is peeping’. Overlap occurs on the stem proper (yu-na-tfi-téngé:za ‘(s)he is repairing [cl.7]’) but multi-linked vowels are avoided (yu-na-rí-há:dza ‘(s)he is naming [cl.5]’).

Duruma₁ also has the peculiarity that overlap occurs across a non-depressed OP, but not across a depressed one; compare a-na-tfi-légě:za with a-n’a-vi-legě:za (*a-na-vi-légě:za); if we were to analyze the first case simply as High Tone Shift to the first stem mora, there would be no explanation for the lack of overlap in the class 6 form, as High Tone Shift may freely pass over depressors. I do not have sufficient data to determine the extent of this phenomenon, and there seems to be some variation in it—compare ni-dzí-vi-hégũ:la with ni-dzi-ga-hégũ:la.

**Giryama** Giryama has “Semi-Plateau”: TBUs following a surface high tone will be pronounced with a higher pitch. This follows the same rules as actual Plateau (stopping before the first depressor or the penult). Overlap in Giryama is on the macrostem: in OP-less High verbs (and nouns without a class prefix) there will be overlap (a-na-tâ:la ‘(s)he is counting’, ni fî:ga ‘it is a cooking-stone’), but never when an object/noun class prefix is present (a-na-kí-tâ:la ‘(s)he is counting [cl.7]’, ni má-fi:ga ‘they are cooking-stones’).

**Jiβana** Jiβana has Plateau (e.g., in the present tense *yu-na-kálanǵí:ra* ‘(s)he is frying for’ and the past tense *n-é-kú-sóndzérê:ra* ‘I approached you’). Overlap in this dialect occurs on the stem proper (*yu-na-ni-síkí:ra* ‘(s)he hears me’) but never at the cost of doubly-linked tones (*yu-ná-rî:sa* ‘(s)he is feeding’).

Depressed OPs in this dialect do not act as depressors: *ni-dzī-tfí-rê:ha*, *ni-dzī-ví-rê:ha*.

**Kambe** Kambe₂ has no Plateau and no Overlap in the present tense: *yu-ná-kalanǵí:ra* (compare the Chonyi₁ *yu-na-kálanǵí:ra*). Kambe₁ seems to have Plateau, and to overlap on trisyllabic and longer stems. In most tenses, Kambe₂ too seems to have Overlap under the same conditions, e.g., *si-dza-kála:ŋga* ‘I have not fried’ vs. *si-dzá-rj:sa* ‘I have not fed’.

**Kauma** Kauma has Plateau (*βé-sóndzérérá jû:mba* ‘(s)he approached the house), and overlap occurs on stems of all length when there is no object prefix (*a-na-sô:ma* ‘(s)he is reading’) but only on trisyllabic and longer stems after an object prefix (*a-na-tfí-s’ó:ma* ‘(s)he is reading [cl.7]’, *ni-tfī-ri-hírí:ka* ‘and I sent [cl.7]’).

But the most important feature of Kauma is the existence of Fission. This happens on the stem (*ku-húgǔ:la*; cf. Chonyi₁ *ku-hegǔ:la*), on an object prefix (*ní-vi-tsúku:le*; cf. Chonyi₁ *ni-vi-tsúku:le*), a noun class prefix (*ku-pata mú-gã:ŋga*) and even on the depressed perfect tense marker (*ni-dzī-galũ:ka*).

**Raβai** Raβai has Deep Overlap: where in other dialects there would be two distinct high tones on a word, possibly with Plateau, Raβai has a single surface high tone. For example, compare the Raβai₁ *yu-na-kalanǵí:ra* with the Chonyi₁ *yu-na-kálanǵí:ra*. Deep Overlap is seen in exactly the environments where other dialects would have Plateau. Specifically, it never occurs in the presence of depressors, e.g., *a-ná-bambahũ:la* (not **a-na-bambahú:la*), *yu-na-mu-hégǔ:la* (not **yu-na-mu-hegú:la*) and *ni-si-tfí-galu:ze* (not **ni-si-tfī-galú:ze*).

Depressed OPs in this dialect do not count as depressors: *si-tfí-gu:la*, *si-ví-gu:la*.

**Riße** Riße has Plateau (n-é-kálángí:ra ‘I fried for’, si-ndá-tsíúkúlá tʃí-tse:ka ‘I shall not carry a plaited mat’). Overlap occurs on the stem, even after an OP (w-a-ni-síki:ra ‘(s)he hears me’), but not at the price of multi-linking (w-á-lʔá:la ‘(s)he is sleeping’). Like Kauma, Riße has Fission, though in Riße₂ it does not operate in all cases.

## 7.4 Summary

This concludes the descriptive overview of Mijikenda tonology. In terms of the tonology, we can divide Mijikenda into the following groups:

- Digo and Duruma, the only dialects to have Neutralized High verb stems. Digo, in turn, is quite different from the rest of Mijikenda, including Duruma, not only on tonological grounds but also lexically.
- Riße and Kauma, the dialects that have Fission.
- Kambe₂ has no Overlap and no Plateau.
- Giryama has Overlap on the macrostem and no Plateau. Note that Giryama also differs from the other dialects in its segmental phonology, having developed the phoneme ʒ and maintained the sound ki where elsewhere in Mijikenda there are vy and tʃi, respectively.
- The remaining dialects—Chonyi, Jiḃana, Raḃai and Kambe₁—have basically the same tonal systems, with minor variations. Overlap occurs on the stem proper (but not on the penult), and there is Plateau.

	Overlap	Plateau	Neut. High	Fission	OPs depress	Notes
Chonyi	On long stems	+	-	-	In Chonyi ₂	
Digo	On stem; Deep Overlap on 3σ	+	+	Restricted	+	No downstep in Digo ₁ , Digo ₂ , Digo ₄
Duruma	Long stem if OP; stem if no OP	+	+	-	+	No overlap after depressed OP
Giryama	On macrostem	Assimilation	-	-	+	
Jibana	On long stems	+	-	-	-	
Kambe	On long stems	In Kambe ₂	-	-	+	Kambe ₂ : No overlap
Kauma	On long stems or Duruma-like	+	-	+	+	No downstep; two overlap patterns
Rabai	Deep Overlap	+	-	-	-	No downstep in Rabai ₁
Ribe	On long stems	+	-	+	+	Ribe ₂ : Fission only with OP

Table 7.1: A tonal comparison of the Mijikenda dialects

## *Chapter 8*

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# Mijikenda Tonology and Optimal Domains Theory

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You see, wire telegraph is a kind of a very, very long cat. You pull his tail in New York and his head is meowing in Los Angeles. Do you understand this? And radio operates exactly the same way: you send signals here, they receive them there. The only difference is that there is no cat.

---

Albert Einstein

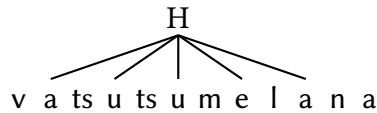
In this chapter I discuss the applicability of Optimal Domains Theory (Cassimjee and Kisseberth, 1998) to Mijikenda tonology. This is not intended to be a comprehensive integrated analysis of Mijikenda within this framework. Rather, I shall discuss the key points of the system and how Optimal Domains Theory (ODT) deals with them. As we shall see, ODT allows us to gain insights into the workings of Mijikenda that autosegmental representations cannot.

## 8.1 Background

### 8.1.1 On Domains

Feature domains (Kisseberth, 1994; Cole and Kisseberth, 1994; Cassimjee and Kisseberth, 1998) are a “plan for the expression of surface features”. The concept is easiest to see in a language like Xitsonga, where a single high tone will “spread” in an unbounded fashion (Kisseberth, 1994). Thus, in a word like  $\underline{v}$ -á-tsútsúmélá:na ‘they are running to each other’, a single underlying high tone is heard on five consecutive vowels. In the autosegmental model, this is represented with a single high tone linked to multiple TBUs (168). In the domain abstraction, these TBUs are said to be in a single High Tone Domain (169).

(168) Xitsonga, autosegmental view:



(169) Xitsonga, domain-based view (high tone domain marked by parentheses):

(v-á-tsútsúmélá:)na

So far, domains seem like a mere notational alternative to autosegmental representations. The real power of domains, however, lies in a feature not seen in a “spreading” language. Not every TBU in a High Tone Domain needs to be pronounced high. In other words, a domain is a “plan for the expression of surface features”, but this plan does not have to be fully realized. Domains are *headed*, meaning that either the leftmost or rightmost element of a domain is considered the most important for the expression of the feature. The best example would be a “shifting” language like any of the Mijikenda dialects.

In a word like the Giryama  $\underline{a}$ -na-ŋgola-ŋgō:la, the natural domain representation is ( $\underline{a}$ -na-ŋgola-ŋgoó)la. This shows us that High Tone Domains in Mijikenda are right-headed, and that high tones are “expressed” (pronounced) only on domain heads. Here we see the difference between autosegmental representations and domains: while in the former, the surface representation has



only the link from the high tone to the penult, the latter maintains, in the surface structure, the link to the underlying location.

The usefulness of this becomes apparent when we look at cases with more than one tone. Consider, for example, the Giryama word  $\underline{a}$ -na-kí-kalǎ:ŋga ‘(s)he is frying [cl.7]’. The domain structure here is ( $\underline{a}$ -na-kí)-(kaláá)ŋga. This allows us to express directly the motivation for the surface location of the high tone from the subject prefix: High Tone Shift from the  $\underline{a}$ - stops before the stem because there is a domain boundary there. In the surface autosegmental representation, there is no trace of this, since the stem high tone has shifted to the penult and nothing remains on the stem-initial vowel.

One might now ask how we know that the surface representation of  $\underline{a}$ -na-ŋgola-ŋgǔ:la is indeed ( $\underline{a}$ -na-ŋgola-ŋgǔ:)la and not  $\underline{a}$ -na-ŋgola-ŋg(ǔ:)la or, say,  $\underline{a}$ -na-ŋg(ola-ŋgǔ:)la or even ( $\underline{a}$ )-(na-ŋgola-o)(ŋgǔ:)(la); all the domain abstraction says is that surface high tones must be inside High Tone Domains. Once we open up the door to surface high tones which are not pronounced, how do we know the correct domain structure?

The general answer is that there is no absolute way to tell. In a word like  $\underline{a}$ -na-ŋgola-ŋgǔ:la, with one underlying and one surface high tone, having a wide domain really gives us nothing beyond a way to express our intuition regarding the relation between the underlying and the surface representation. But when dealing with more complex cases, as the above example of  $\underline{a}$ -na-kí-kalǎ:ŋga demonstrates, we can almost always see the effects of surface domains, even when they do not coincide with surface high tones. And most importantly, Mijikenda offers us a rich set of cases where surface High Tone Domains can be shown to exist in which no TBU is pronounced high—all the cases of hidden tones.

### 8.1.2 Optimal Domains Theory

Although domains are a representational alternative to autosegmental representations, and as such can certainly be used in a derivational analysis—see Patin (2009) for a recent example—they are especially well suited for use within Optimality Theory, as Cassimjee and Kisseberth (1998) and later works demon-

strate. In this section I discuss constraints used in Optimal Domains Theory. I assume that the reader is familiar with basics of Optimality Theory (Prince and Smolensky, 1993; McCarthy, 2008).

Note: the constraints given below are not formulated in the most generic way, but rather specifically to apply to High Tone Domains.

### 8.1.2.1 Faithfulness

The most basic faithfulness constraint in ODT is that of “domain correspondence”:

(170) DOMAIN CORRESPONDENCE (=DOMCOR)

There is a one-to-one correspondence between high “sponsors” (underlying high tones) and surface High Tone Domains.

Technically, DOMCOR can be seen as the combination of two more basic constraints: MAX-HTD (“every surface HTD must correspond to a sponsor”) and DEP-HTD (“every sponsor must have a corresponding surface HTD”). I know of no reason to use the finer-grained constraints for Mijikenda, and so the present work refers only to DOMCOR.

The primary “anti-expansion” constraints in ODT are given below:

(171) BASIC ALIGNMENT L (=BA-L)

Align the left edge of a High Tone Domain with the left edge of the sponsor to which it corresponds.

(172) BASIC ALIGNMENT R (=BA-R)

Align the right edge of a High Tone Domain with the right edge of the sponsor to which it corresponds.

In a language where BASIC ALIGNMENT L and BASIC ALIGNMENT R are undominated, there will be no tone mobility. In Mijikenda, BASIC ALIGNMENT L will be undominated (as high tones never shift or spread leftward), and BASIC ALIGNMENT R will be dominated by the constraints driving domain expansion, which we shall see below.

An additional basic faithfulness is DOMAIN CORRESPONDENCE (=DOMCOR), which simply requires that there be a one-to-one matching between underlying sponsors and surface domains. This natural constraint is designed to prevent the unwarranted deletion and addition of surface High Tone Domains.

### 8.1.2.2 Expressing High Tones

There are two constraints relevant to deriving actual surface high tones in Mijikenda: EXPRESS and *(H,NonHD).

(173) EXPRESS

Assign a penalty mark to every TBU which is included in a High Tone Domain and not pronounced with a surface high tone.

(174) *(H,NonHD)

Assign a penalty mark to every TBU pronounced high which is not the head of a High Tone Domain.

In a spreading language like Xitsonga, discussed above, EXPRESS dominates the constraint *(H,NonHD), and all TBUs in a High Tone Domain are pronounced high. In a shifting language like Mijikenda, *(H,NonHD) dominates EXPRESS, and high tones are pronounced only on domain heads (the rightmost TBUs).

### 8.1.2.3 Restricting Expansion

Before we get to the constraint driving domain expansion, let us consider some factors which can restrict it. The first constraint, which should seem very natural by now, is *OVERLAP:

(175) *OVERLAP

Assign a penalty mark to every TBU which belongs to more than one High Tone Domain.

Another important family of constraints restricting domain expansion is what Cassimjee and Kisseberth (1998) refer to as Nonfinality. Nonfinality, in

a nutshell, refers to any constraint that restricts domains at the end of any prosodic constituent. Cassimjee and Kisseberth (1998) define the following constraint:

(176) NONFINALITY X

The right edge of a High Tone Domain may not be aligned with the right edge of X, where X is a phonological constituent.

Cassimjee and Kisseberth (1998) then proceed to analyze the fact that High Tone Shift in Mijikenda only reaches the penult using NONFINALITY at the phonological phrase level. NONFINALITY certainly plays a crucial part in Mijikenda tonology, but the full range of Mijikenda tonal effect, especially hidden high tones, requires an additional Nonfinality constraint:

(177) *FINAL H X

Assign a violation mark to every TBU that is final in a prosodic constituent X and pronounced high. (In Mijikenda, X is always the phonological phrase).

The difference between NONFINALITY and *FINALH is that the latter allows the final TBU in a phrase to be inside a High Tone Domain, as long as the high tone is not expressed; this will prove very useful in our analysis of hidden tones in Mijikenda. To prevent ambiguity, I shall refer to NONFINALITY as *FINALHTD.

#### 8.1.2.4 Driving Expansion

Finally, we arrive at the markedness constraints driving the expansion of High Tone Domains. The first is a constraint which is useful in languages where high tones shift or spread by one TBU.

(178) *MONOHTD

A High Tone Domain should not be monomoraic/monosyllabic.

However, the most striking feature of tonal processes in Mijikenda is their wide scope, and here I diverge from the approach taken by Cassimjee and Kisseberth (1998). What they suggest is to use another set of alignment constraints, namely “Wide Alignment”, given here in a Mijikenda-suitable formulation:

## (179) WIDE ALIGNMENT L

Align the left edge of a High Tone Domain with the left edge of a phonological phrase.

## (180) WIDE ALIGNMENT R

Align the right edge of a High Tone Domain with the right edge of a phonological phrase.

Wide-scope alignment has been criticized in the OT literature—see for example McCarthy (2003, 2004)—as being theoretically undesirable. In Mijikenda, again especially with relation to hidden tones, I believe WIDEALIGNMENT becomes problematic. As it happens, domain expansion can be derived in a different, arguably simpler way. To this end, I shall make use of a family of constraints suggested independently by Patin (2007) in his analysis of Shingazidja:

## (181) *NoHD X

At least one TBU in X must belong to a High Tone Domain, for some prosodic constituent X.

When ranked high enough, *NoHD X can prevent High Tone Domains from being deleted, or—as in the Mijikenda case—drive their expansion. The basic constraint driving wide-scope domain expansion in Mijikenda, I argue, is *NoHD- $\mu$ , requiring every mora in the output to be in a High Tone Domain. *NoHD- $\mu$ , henceforth referred to as  $\mu$ -HTD, is only completely satisfied when every TBU in the output is in a High Tone Domain, which of course never happens in Mijikenda. At the very least, BASIC ALIGNMENT L prevents domains from expanding to the left. Note that  $\mu$ -HTD does not require that every TBU be *pronounced* high—that is the responsibility of EXPRESS.

In fact, the present analysis makes use of *NoHD X for three different values of X: the mora, the syllable and the foot.

(182) *NoHD- $\mu$  (=  $\mu$ -HTD)

Every mora must be in a High Tone Domain.

(183) *NoHD- $\sigma$  (=  $\sigma$ -HTD)

Every syllable must have a mora in a High Tone Domain.

(184) *NoHD-FOOT (=FT-HDT)

Every metrical foot must have a mora in a High Tone Domain.

The difference between  $\mu$ -HTD and  $\sigma$ -HTD is a slight one, and will be seen only on the bimoraic penult. FT-HDT requires some discussion. As indicated above, the penult of the phonological phrase in Mijikenda is lengthened. This, I claim, is the only effect of phrase-level stress in the language, pitch naturally being reserved for the tone system. Penultimate stress is usually explained with a trochaic foot on the final two syllables, and this is exactly what I claim for Mijikenda: every phonological phrase has a single, obligatory foot covering the final two syllables. This is how we get penultimate lengthening, and it will also allow us to derive the special status of the penult in Mijikenda tonology, as we shall soon see.

To reiterate: FT-HDT requires at least one of the moras in the last two syllables in a phrase to belong to some High Tone Domain. It says nothing about surface high tones.

Another note is in order concerning the use of *NoHD X: observe that (at least in Mijikenda) there are no cases where a surface high tone cannot be linked to an underlying high tone. In theory, in a language where some *NoHD X constraint is ranked high enough, we might expect to see surface high tones created without a sponsor—say, due to some prosodic constraint. This is not the case in Mijikenda, and the way to represent it is to say that DOMAIN CORRESPONDENCE (more specifically, DEP-HTD) is undominated.

I now move to a discussion of the key points of Mijikenda tonology from an ODT perspective.

## 8.2 High Shift and Plateau

### 8.2.1 High Tone Shift

The first phenomenon we start with is High Tone Shift. In the simplest case like *a-na-ɔŋgola-ɔŋgõ:la*, we have a single underlying high tone that shifts to the right, surfacing on the penult. In domain terms, this would mean extending the High Tone Domain to the right.

With the constraints discussed above, deriving this is relatively straightforward. To get rightward domain expansion, we need to rank  $\mu$ -HTD above BASIC ALIGNMENT R but below BASIC ALIGNMENT L. We prevent the domain from reaching the ultima using *FINALHTD. We derive shifting, as opposed to spreading, by ranking *(H, NONHD) above EXPRESS. Tableau (185) this in action.

(185) High Tone Shift to the penult:

	ku- <i>aŋgalala</i>	BA-L	*FINHTD	$\mu$ -HTD	*(H, NONHD)	EXPRESS	BA-R
☞	a. ku-( <i>aŋgalaá</i> )la			**		***	***
	b. ku-( <i>á</i> ) <i>ŋgalaala</i>			***!*			
	c. ku-( <i>aŋgalaalá</i> )		*!	*		****	****
	d. ku-( <i>aŋgalaala</i> )		*!	*		*****	****
	e. ku-( <i>aŋgalaá</i> )la		*!	*	*	***	
	f. ku-( <i>aŋgalá</i> )ala			***!		**	**
	g. ku-( <i>aŋgá</i> )laala			***!*		*	*
	h. ku- <i>aŋgala(á)</i> la	*!*		*****			***
	i. (ku- <i>aŋgalaá</i> )la	*!		*		***	***
	j. ku-( <i>áŋgálá</i> )la			**	*!*		***

Let us go over the failed candidates in the tableau and see what they prove:

- Candidate (b) demonstrates that  $\mu$ -HTD, the constraint driving domain expansion, must outrank BA-R as well as EXPRESS. This is further demonstrated by candidates (f) and (g).
- Candidate (j) shows the basic “shifting” ranking, *(H, NONHD)  $\gg$  EXPRESS.

- Candidates (c) through (e) show that *FINHTD must be ranked above  $\mu$ -HTD. In fact, candidate (c) also violates the more restrictive *FINH, but it is impossible to determine its ranking from such data.
- Finally, candidates (h) and (i) show the effect of BASIC ALIGNMENT L. Note that the phonetic realization of these candidates would be identical to the of the actual output; we will see more substantial evidence for the ranking of BASIC ALIGNMENT L shortly.

In summary, the necessary relative rankings required for ku-aŋgalǎ:la are: BASIC ALIGNMENT L, *FINHTD  $\gg$   $\mu$ -HTD, *(H,NonHd)  $\gg$  EXPRESS, BASIC ALIGNMENT R.

In a dialect where the penult surfaces as level high tone, we would invoke one of the “decontouring” constraints discussed by Cassimjee and Kisseberth (1992):

(186) *RISE

No rising tones.

(187) *FALL

No falling tones.

Tableau (188) demonstrates this with the Kambe₂ word ku-kal_aŋgí:ra ‘to fry for’.

(188) Level high penult in Kambe₂:

ku-kal _a ŋgí:ra	$\mu$ -HTD	*RISE	*(H,NonHd)	EXPRESS
☞ a. ku-(kal _a ŋgí)ra	**		*	**
b. ku-(kal _a ŋgí)ra	**	*!		***
c. ku-(kal _a ŋgii)ra	**			***!*
d. ku-(kal _a ŋgí)ira	***!			**

In other words, by ranking *RISE  $\gg$  *(H,NonHd) we can derive the surface forms of “non-rising” dialects like Kambe₂.



### 8.2.2 Overlap

Note: The following tableaux include cases of Plateau and downstep. For now, let us treat these phenomena as a given; Plateau is analyzed in §8.5, and I shall not go into the details of deriving downstep.

We now move on to a case where there are two high tones, as in the Kambe₂ word a-ná-kalá:ŋga. Here we see the constraint *OVERLAP come into action, as demonstrated in tableau (189). In this and subsequent cases, overlapping High Tone Domains are marked with different types of brackets for clarity.

(189) No overlap in Kambe₂:

	a-na-ka <u>lá</u> ŋga	$\mu$ -HTD	*OVERLAP
☞	a. (a-ná)-(kalaá)ŋga	*	
	b. (a-na-[ká]laá)ŋga	*	*!

But tableau (189) is, of course, meaningless, since we haven't seen any constraint yet that would drive overlap (by penalizing the lack thereof). I have already discussed the rationale behind such constraints in some detail in this work, and so I simply present them here:

(190) HIGH STEM (=H-STEM)

The first mora of a stem must be the head of a High Tone Domain.

(191) HIGH MACROSTEM (=H-MSTEM)

The first mora of a prefixless stem must be the head of a High Tone Domain.

The exact formulation of these constraints may vary somewhat. For example, one might restrict the definition to include only stems that are already part of a High Tone Domain, i.e., “if a stem-initial mora is inside a High Tone Domain, it must be the head”. One might also want to require it only for actual high-toned stems. This difference in formulation does not affect the present analysis of Mijikenda and so I have chosen what seems the simplest option. One point of the formulation will become important later, and that is the definition of HIGH MACROSTEM as a prefixless version of HIGH STEM, rather than stating

“the first mora of a macrostem must be pronounced high”. The importance of this will become apparent when we discuss the interaction of depressors and Overlap (§8.4.2.2).

I should also note here, as in the discussion of *NoHD X above, that HIGH STEM and HIGH MACROSTEM never outrank DOMAIN CORRESPONDENCE in Mijikenda; in other words, they are never strong enough to cause a High Tone Domain to appear without a corresponding sponsor in the underlying representation.

Let us now see these constraints in action. Recall that Giriyama always has overlap on the macrostem. The following tableaux demonstrate this.

(192) Overlap in Giriyama:

<u>a</u> -na-k <u>a</u> la <u>ŋ</u> ga	$\mu$ -HTD	H-MSTEM	*OVERLAP	H-STEM
☞ a. (a-na-[ká]laá)ŋga	*		*	
b. (a-ná)-(kalaá)ŋga	*	*!		*
c. (a-ná)-(ká)laaŋga	**!*			

<u>a</u> -na-ki-p <u>a</u> ta	$\mu$ -HTD	H-MSTEM	*OVERLAP	H-STEM
☞ a. (a-na-kí)-(paá)ta	*			*
b. (a-na-ki-[pá]á)ta	*		*!	

A few notes about these tableaux: first, observe from candidate (c) in the tableau for a-na-ká[↓]áŋga that HIGH MACROSTEM can never be satisfied by limiting High Tone Shift (*a-ná-k[↓]álaŋga), which means that  $\mu$ -HTD must be ranked above HIGH MACROSTEM. The tableau for a-na-kí-p[↓]áta then proves that it is HIGH MACROSTEM rather than HIGH STEM which is active in Giriyama.

Before we can examine cases where HIGH STEM is the acting force, we need another well-motivated markedness constraint:

(193) *MULTILINK

The heads of two distinct High Tone Domains must not be located on a single vowel.

As we’ve seen in the descriptive part of this work, *MULTILINK is often violated in Mijikenda. Tableau (194) demonstrates this in Giriyama.

(194) Overlap leads to “multi-linking” in Giryama:

	a-na-pata	H-MSTEM	*OVERLAP	*MULTILINK
☞	a. (a-na-[pá]ʰá)ta		*	*
	b. (a-ná)-(paá)ta	*!		

Now we can turn to Chonyi, where overlap occurs on the stem proper (yu-na-tʃi-ká-lâ:ŋga) but not on the penult (yu-na-tʃi-pâ:ta, yu-ná-pâ:ta). This is demonstrated in tableaux (195) and (196) below.

(195) Overlap on polysyllabic stem in in Chonyi₁:

	yu-na-tʃi-kalanga	*MULTILINK	H-STEM	*OVERLAP	H-MSTEM
☞	a. (yu-na-tʃi-[ká]láʰá)ŋga			*	*
	b. (yu-na-tʃi)-(káláʰá)ŋga		*!		

(196) No overlap on bisyllabic stem in in Chonyi₁:

	yu-na-pata	*MULTILINK	H-STEM	*OVERLAP	H-MSTEM
☞	a. (yu-ná)-(páʰá)ta		*		*
	b. (yu-na-[pá]ʰá)ta	*!		*	

Finally we turn to a dialect where both HIGH STEM and HIGH MACROSTEM are active: overlap in Duruma occurs on the stem proper, but not on penult if there is an object prefix. The following tableaux demonstrate this.

(197) Overlap on polysyllabic stem in Duruma₁:

	yu-na-ku-kalangira	H-MSTEM	*MULTILINK	H-STEM	*OVERLAP
☞	a. (yu-na-ku-[ká]lángí)ra				*
	b. (yu-na-kú)-(kálangí)ra			*!	

(198) Overlap on bisyllabic stem in Duruma₁:

	yu-na-lala	H-MSTEM	*MULTILINK	H-STEM	*OVERLAP
☞	a. (yu-na-[lá]á)la		*		*
	b. (yu-ná)-(láá)la	*!			

(199) No overlap on bisyllabic stem after OP in Duruma₁:

	yu-na-tʃi-hadza	H-MSTEM	*MULTILINK	H-STEM	*OVERLAP
☞	a. (yu-na-tʃi)-(háá)dza			*	
	b. (yu-na-tʃi-[há]á)dza		*!		*

### 8.3 Hidden High Tones

We now turn to the domain representation of hidden high tones. As we shall see, domains allow us to have an actual hidden high tone: a surface high tone domain in which the high tone is not expressed on any TBU.

#### 8.3.1 Hidden Final High Tones

Consider first nouns of type L2 like mu-ho:h_o ‘child’. Recall that these nouns appear toneless in isolation, but a preceding high tone surfaces as a falling penult (n_i mu-hô:h_o). Additionally, when the noun is not in phrase-final position the hidden high tone can surface as can be seen from the Giryama L2 tfo:m_e, which in subject position gives us tfo:m_e a-ka-m-piga gô:na ‘and Chome hit Goma’.

The domain approach allows us to directly represent a hidden high tone as a High Tone Domain which is not expressed, i.e., mu-ho:h(o) or tfo:m(e). As for the motivation behind this non-expression, it is also a well-known force, namely Nonfinality. All we need to do is rank *FINALH above EXPRESS and we get the result. When the noun is not in phrase-final position, its high tone is not bound by Nonfinality and is free to surface. Tableaux (200) and (201) demonstrate this.

(200) L2 nouns in isolation:

	mu-ho:h _o	*FINH	DOMCOR	*FINHTD	EXPRESS
☞	a. mu-hoo(ho)			*	*
	b. mu-hoo(hó)	*!		*	
	c. mu-hooho		*!		

(201) L2 nouns in subject position:

	tfo:m _e a-ka-m-piga gona	*FINH	*FINHTD	HIGHMORA	EXPRESS
☞	a. tfo(m _e a-ka-m-piga goó)na			**	*****
	b. tfo(mé) a-ka-m-piga goona			**!*****	
	c. tfo(m _e ) a-ka-m-piga goona			**!*****	*
	d. tfo(m _e a-ka-m-piga goona)		*!	*	
	e. tfo(m _e a-ka-m-piga gooná)	*!	*	*	

Tableau (200) shows that *FINALH and DOMAIN CORRESPONDENCE (“don’t delete domains”) must dominate *FINALHTD. As for tableau (201), it shows us that once a hidden tone is not at phrase-final position we have an ordinary application of High Tone Shift, and nothing is “hidden” any more.

As for the interaction of L2 nouns with a preceding high tone, things do not immediately work out. While the High Tone Domain on the ultima will prevent a preceding High Tone Domain from overlapping, there is no need for that, as domains never expand to cover the final vowel. In other words, given what we have so far, we would expect  $ni\ \mu\text{-}h\acute{o}\text{:}h\grave{o}$  to surface with the domain structure  $(ni\ \mu\text{-}hoo)(ho)$ , i.e., the incorrect surface form  $*ni\ \mu\text{-}h\grave{o}h\grave{o}$ . How do we get the correct falling tone?

Consider the desired domain structure, which is  $(ni\ \mu\text{-}h\acute{o})o(ho)$ . This is a violation of the relatively highly ranked domain expansion constraint,  $\mu$ -HTD. The problem with the incorrect form  $*(ni\ \mu\text{-}hoo)(ho)$  seems to be the two adjacent domain edges. As it happens, Cassimjee and Kisseberth (1998) provide exactly such a constraint (which is a type of OCP constraint):

(202) NO ADJACENT EDGES

$*($

So it appears that  $*($  outranks  $\mu$ -HTD, preferring  $(ni\ \mu\text{-}h\acute{o})o(ho)$  to  $*(ni\ \mu\text{-}h\acute{o})(ho)$ . But if that is the case, how can we get the many instances of adjacent edges we’ve already seen? Consider, for example, the Giryama  $(\underline{a}\text{-}na\text{-}k\acute{i})\text{-}(ka\text{-}la\acute{a})\eta ga$ : why do we not get  $*(\underline{a}\text{-}n\acute{a})\text{-}ki\text{-}(ka\text{-}la\acute{a})\eta ga$ ?

The answer lies in the subtle distinction between  $\mu$ -HTD (every mora must be in a High Tone Domain) and  $\sigma$ -HTD (every syllable must have a mora that is in a High Tone Domain). As I have indicated, on any syllable but the penult these two constraints are the same. It is only on the penult that  $\mu$ -HTD can be violated while still satisfying  $\sigma$ -HTD. What we need to do, then, is rank  $\sigma$ -HTD  $\gg *($   $\gg \mu$ -HTD, allowing  $*($  to operate only on the penult.

Tableaux (203) and (204) show this in action. Tableau (205) shows that  $\mu$ -HTD is still very much active in Mijikenda: it must outrank EXPRESS in order to derive the rising penult contour for ordinary High Tone Shift.

(203) L2 nouns after a surface high tone:

	<u>ni mu-ho</u> h _o	$\sigma$ -HTD	*)	$\mu$ -HTD
☞	a. (ni mu-hó)o(ho)			*
	b. (ni mu-hoo)(ho)		*!	
	c. (ni mu)-hoo(ho)	*!		**
	d. (ni mu-hoo)ho			*

(204) Adjacent edges allowed if not on the penult:

	<u>a-na-ki-kala</u> nga	$\sigma$ -HTD	*)	$\mu$ -HTD
☞	a. (a-na-kí)-(kalaá)nga	*	*	*
	b. (a-ná)-ki-(kalaá)nga	**!		**

(205)  $\sigma$ -HTD by itself is not enough:

	<u>ku-kala</u> nga	$\sigma$ -HTD	*)	$\mu$ -HTD	EXPRESS
☞	a. ku-(kalaá)nga	**		**	**
	b. ku-(kalá)nga	**		***!	*

### 8.3.2 Hidden Penult High Tones

Having worked out the L2 data, we can now turn to L3 nouns. Just like L2 nouns, L3 appear toneless in isolation, and expose their hidden high tone when not in phrase final position. The difference between the two types is seen when they are placed after a high tone: for L3 nouns, a preceding high tone surfaces on the antepenult (mu-ko:no ‘arm’; ni mú-ko:no).

The desired domain structure should be clear by now: we want the surface representation of such nouns to be mu-(koono), i.e., a High Tone Domain covering the final two syllables. Since the head of this High Tone Domain is on the final vowel, pronouncing it would be a violation of *FINALH. The only problem is how to get the desired domain structure.

An underlying high tone on the penult normally surfaces, as we’ve seen for bisyllabic High verb stems like ku-pá:ta—the domain structure here would be ku-(paá)ta. So it is clear that L3 type nouns must be somehow marked in the lexicon to be different. But different how? One approach would be to say that, in these nouns, the High Tone Domain is allowed to expand to the end of

the word, violating *FINALHTD (but not *FINALH). Another alternative would be to allow domain structure in the underlying representation. Both of these methods would work, but they miss an important generalization. The fact is that L3 nouns (and Neutralized High verb stems in Digo and Duruma) only ever have an underlying high tone on the penult. There are no longer stems for which preceding high surfaces earlier than the penult—no noun like the hypothetical *ki-tatata* which after the copula gives us *ní kí-tatata*, and no such verb stem. The way to capture this generalization is to say that the High Tone Domains corresponding to these sponsors are minimally bisyllabic: they must expand at least as far as the following syllable (note: syllable, not mora). And the way to get this result in ODT is with the constraint *MONOHTD: a High Tone Domain (corresponding to a sponsor marked lexically as “hidden”) may not be monosyllabic. Once we have this constraint, the derivation is straightforward, as seen in tableau (206).

(206) L3 nouns after a surface high tone:

	<i>ní mu-kono</i>	*FINH	*MONOHTD	*FINHTD	$\sigma$ -HTD	*)	$\mu$ -HTD
☞	a. ( <i>ní mú</i> )-(kono)			*		*	
	b. ( <i>ní</i> ) mu-(kono)			*	*!		*
	c. ( <i>ní mú</i> )-(koo)no		*!			*	
	d. ( <i>ní mú</i> )-(koonó)	*!		*		*	

Note that *MONOHTD must be restricted only to hidden high tones, i.e., to nouns of types L3 and H3 and to Neutralized High verb stems in Digo and Duruma; otherwise, overt high tones in bisyllabic H1 nouns like *lõ:lo* ‘stupid person’ or High verb stems like *ku-pã:ta* ‘to get’ would never surface. Since this is clearly a lexical difference, I have chosen to represent it in the phrasing of the constraint, rather than in the underlying representation: the sponsors of the L3 *mu-kono* ‘arm’ and the H1 *mu-hũ:hu* ‘wild olive tree pollen’ are both on the penult, but only that of *mu-kono* is referenced by *MONOHTD.

This shows us the power of domains. In this sense, domains allow us to have an analysis which is less opaque (albeit more abstract): we need no step in the derivation that converts these hidden high tones to low tones in order to derive the correct result. In the domain representation, hidden high tones are still

bona-fide High Tone Domains, only such that no TBU in them is pronounced high.

## 8.4 Depressors

Having dealt with the phenomenon of hidden tones, we now turn to the next major issue in Mijikenda tonology, namely depressor consonants. Recall that there are two basic effects of depressor consonants in Mijikenda: the restriction of High Tone Shift (e.g., Giryama  $\underline{a}$ -na-kálǎ:ŋga vs.  $\underline{a}$ -ná-bòdǒ:la) and the blocking of Plateau (e.g., Duruma₁  $\underline{y\bar{u}}$ -na-óná ŋgí:ya vs.  $\underline{y\bar{u}}$ -na-óná má-gorogǒ:go). There is also an additional depressor effect which is limited to Riβe and Kauma (and to a lesser extent Digo), namely Fission (e.g., Riβe₂  $\underline{a}$ -na-sága má-gondolǒ:we).

### 8.4.1 Depression as Register

The most natural way to represent depressor effects in ODT seems to be this: add a constraint prohibiting a high tone after a depressor. Call this constraint NO DEPRESSED HIGH. Ranking NO DEPRESSED HIGH above the expansion constraint  $\sigma$ -HTD would produce the expected result, as sketched in tableau (207).

(207) Deriving depressor effects with NO DEPRESSED HIGH (*Take 1*):

	$\underline{a}$ -na-vi-kal $\underline{a}$ ŋga	*DEPH	$\sigma$ -HTD
☞	a. (a-ná)-vi-(kalaá)ŋga		**
	b. (a-na-ví)-(kalaá)ŋga	*!	*
	c. (á)-na-vi-(kalaá)ŋga		**!

However, NO DEPRESSED HIGH will prove inadequate when we get Fission and the interaction of depressors with Overlap, both discussed below. For this reason, I shall adopt a different approach, first suggested by Cassimjee (1998) in her analysis of Xhosa: that of depressor domains.

The core of the idea is to regard depression as a register effect: instead of being linked to actual low tones, depressors are said to be in a low register. The idea of regarding depression in this way goes back to Rycroft (1980)—see the discussion in Downing (2009), which the present analysis is based on. For



recent treatments of depressors in OT, see Lee (2008); Tang (2008). In Optimal Domains Theory, a span of consecutive depressed TBUs is said to form a Low Register Domain

Some examples will demonstrate this. Using parentheses to mark High Tone Domains and a wavy underline for Low Register Domains (Cassimjee uses curly brackets for Low Register Domains, which become unweildy in the Mijikenda data), we see the following domain structures:

(208) High Tone Domains and Low Register Domains:

( <u>a</u> -na-zazigrií)ka	‘(s)he is willing to play’ (Giryama)
( <u>a</u> -na-zazií)ga	‘(s)he is playing’ (Giryama)
ni-na-vi-( <u>b</u> inikií)za	‘I am covering [cl.8]’ (Riβe ₂ )
( <u>a</u> -na-gu _{la} nguú)wo	‘(s)he is buying clothes’ (Chonyi ₂ )
tfo(me <u>a</u> -ka-m-piga <u>baraá</u> )ka	‘and Chome hit Baraka’ (Giryama)
ni-na-( <u>b</u> abadií)ka	‘I am walking slowly with a stick’ (Giryama)
n-( <u>o</u> laga guú)de	‘I am killing a night dove’ (Riβe ₂ )

As data like a-na-zazi:ga and ni-na-vi-b_inikí:za show, High Tone Domains and Low Register Domains are completely independent: there is no need for one to be contained in the other. And phrases like tfo_me a-ka-m-piga bara:ka shows us unequivocally that Low Register Domains are not part of the lexical information (since they cross word boundaries in the surface representation); they are rather a surface structure like High Tone Domains. Unlike High Tone Domains, of course, Low Register Domains have no mobility—there is no “depressor harmony” in Mijikenda.

## 8.4.2 Depressors and High Tone Shift

### 8.4.2.1 The Depressor Constraint

We can now define the constraint NO DEPRESSED HIGH using Register Domains:

(209) NO DEPRESSED HIGH HEAD (= *DEPHH)

The head of a High Tone Domain must not be in a Low Register Domain.

Note that *DEPHH refers to the heads of High Tone Domains and not to surface high tones. One might have expected this simpler formulation:

(210) NO DEPRESSED HIGH (= *DEPH)

A surface high tone must not be in a Low Register Domain.


Tableau (211) shows the reason for this choice, as well as demonstrating the primary depressor effect in Mijikenda.

(211) Deriving depressor effects with NO DEPRESSED HIGH HEAD:

<u>a</u> -na-vi-ka <u>l</u> aŋga	*OVERLAP	*DEPH	*DEPHH	$\sigma$ -HTD
☞ a. (a-ná)- <u>vi</u> -(kalaá)ŋga				**
b. (a-na- <u>v</u> i)-(kalaá)ŋga		*!	*	
c. (á)-na- <u>vi</u> -(kalaá)ŋga				***!
d. (a-na- <u>v</u> i)-(kalaá)ŋga			*!	
e. (a-na- <u>v</u> i)-[ka]laáŋga	*!			

First of all, tableau (211) gives us the basic ranking  $*DEPHH \gg \sigma$ -HTD. Failed candidate (d), in which the High Tone Domain shifts to include the depressor but is not expressed on it, shows the difference between *DEPHH and *DEPH: if *DEPH were the only active force here and not *DEPHH, we would expect the incorrect output  $*\underline{a}$ -na-vi-kalã:ŋga. Of course, this tableau tells us nothing about where *DEPH is in the ranking; since it is more restrictive than *DEPHH, it is probably ranked above it, but so far we have no way of telling. Note that we cannot get rid of *DEPHH by claiming that (d) is ruled out because it violates EXPRESS, as we have already seen ample evidence that  $\sigma$ -HTD  $\gg$  EXPRESS. Tableau (212) demonstrates this: while candidate (d) has more violations of EXPRESS than the correct output, it has less violations of the higher-ranked  $\sigma$ -HTD, and so is incorrectly predicted to be the winner.


(212) Why depressor effect can not be derived with *DEPH and EXPRESS:

<u>a</u> -na-vi-kalanga	*DEPH	$\sigma$ -HTD	EXPRESS
a. (a-ná)- <u>vi</u> -(kalaá)nga		**!	***
b. (a-na- <u>vi</u> )-(kalaá)nga	*!	*	****
c. (á)-na- <u>vi</u> -(kalaá)nga		***!	**
 d. (a-na- <u>vi</u> )-(kalaá)nga		*	****


#### 8.4.2.2 Depressors and Overlap

Having seen this, we now turn to other cases of depressors restricting High Tone Shift. In tableau (211) there was no evidence as to the relative ranking of *DEPHH and *OVERLAP. But evidence is easily found. In all dialects except Kambe₂, Overlap occurs (at the very least) on polysyllabic stems when there is no object prefix, e.g., in Giryama a-na-káľa:nga. But when the stem is depressed there is never Overlap, e.g., a-ná-dangã:na. The following tableaux demonstrate this.

(213) Depressors and Overlap:

<u>a</u> -na-dangana	*DEPHH	H-MSTEM	OVERLAP
 a. (a-ná)-(dangá)na		*	
b. (a-na-[dá]ngaa]na	*!		*

(214) Overlap when the stem is not depressed:

<u>a</u> -na-kalanga	*DEPHH	H-MSTEM	OVERLAP
 a. (a-na-[ká]laá]nga			*
b. (a-ná)-(kalaá)nga		*!	

This shows us that *DEPHH must outrank any constraint which drives Overlap, i.e., HIGH STEM and HIGH MACROSTEM. By transitivity, this necessarily means that *DEPHH  $\gg$  *OVERLAP. We must be careful to avoid an analysis which produces an incorrect prediction: depressors always restrict High Tone Shift and never cause Overlap. The tableaux in (215) show that *OVERLAP must be ranked above  $\sigma$ -HTD.

(215) Overlap and depressors in Duruma₁:

	y <u>u</u> -na-βaβika	*DEPHH	H-MSTEM	*OVERLAP	σ-HTD
☞	a. (yu-na-[βá)βíí]ka			*	*
	b. (yu-ná)-(βáβíí)ka		*!		*
	c. (yú)-na-(βaβíí)ka		*!		**

	y <u>u</u> -na-vumikiza	*DEPHH	H-MSTEM	*OVERLAP	σ-HTD
☞	a. (yu-ná)-(vumikií)za		*		*
	b. (yu-na-[vú)mikií]za	*!		*	*
	c. (yu-na-[vumí)kií]za		*	*!*	*

	y <u>u</u> -na-vi-kulugira	*DEPHH	H-MSTEM	*OVERLAP	σ-HTD
☞	a. (yu-ná)-vi-(kulugí)ra		*		**
	b. (yu-na-ví)-(kulugí)ra	*!			*
	c. (yu-na-vi-[kú)lugí]ra		*	*!	*

### 8.4.2.3 Depressors and the Penult

There is another property of depressors not addressed so far, namely that depressors do not affect a single high tone on the penult as in a-na-gũ:la ‘(s)he is buying’. Now, the fact that in most Mijikenda dialects such a penult surfaces with a rising tone may suggest analyzing *DEPHH as referring only to the mora immediately following the depressor, but recall that in some dialects the penult is not rising in such cases.

The analysis below uses the motivation of “attraction to the penult”. The penult, being the locus of stress and vowel lengthening, is the most prominent position. As for the constraints involved, we shall make use of the constraint *NoHD-FOOT discussed above, and repeated below in (216); recall from §8.1.2.4 that every phonological phrase in Mijikenda has a final trochaic ( $\acute{\sigma}\sigma$ ) foot.

(216) *NoHD-FOOT (=FT-HDT)

Every metrical foot must have a mora in a High Tone Domain.

The necessity for this slightly roundabout phrasing will become evident shortly, but first let us see how it works for a single high tone on the penult (feet marked with square brackets).

(217) Depressors and a single high tone on the penult:

	a-na-gula	F _T -HDT	*DEPHH	σ-HTD
☞	a. (a-na-[guú]la)		*	*
	b. (a-ná)-[guula]	*!		**

As tableau (217) shows, ranking F_T-HDT above *DEPHH derives the correct result. But recall that there are cases in which a depressor does restrict High Tone Shift from reaching the penult. These are cases in which the normal pattern is a fall on the penult, e.g., in the negative past tense (compare si-gul-î:re ‘I did not buy’ with si-píg-i:re ‘I did not hit’) or for L2 nouns (compare n_i mâ:-tso ‘they are eyes’ with n_i dzi:-tso ‘it is an eye’). The common property of all these cases is that there is a hidden high tone on the ultima. In the context of the present discussion, this would mean that F_T-HDT is already satisfied (one mora in the foot, namely the final mora, is in a High Tone Domain) and so *DEPHH becomes relevant. Tableau (218) shows this. As it shows, F_T-HDT is not violated in any of the relevant candidates once the hidden High Tone Domain is there.

(218) Depressors and a falling penult:

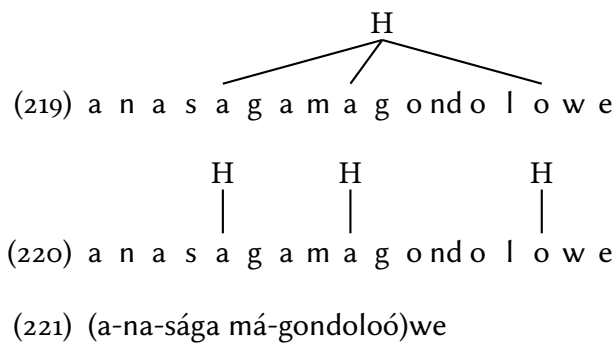
	n _i ma-tso	F _T -HDT	*DEPHH	σ-HTD	*)	μ-HTD
☞	a. (ni [má]a-(tso))					*
	b. (ní) [maa-(tso)]			*!		**
	c. (ni [maá]-(tso))				*!	

	n _i dzi-tso	F _T -HDT	*DEPHH	σ-HTD	*)	μ-HTD
	a. (ni [dзі]i-(tso))		*!			*
☞	b. (ní) [dzi]i-(tso)			*		**
	c. (ni [dzi]i-(tso))		*!		*	

### 8.4.3 Fission

Having discussing the restriction of High Tone Shift, let us now turn to the more “exotic” depressor effect in Mijikenda, namely Fission. The first thing to note about Fission is that domains allow us to represent it directly. Consider a phrase such as the Riße₂ a-na-sága má-gondolõ:we, where a single underlying high tone is heard on three non-adjacent vowels. In an autosegmental framework, a representation such as (219) is not allowed, since it violates the *adjacency constraint* (Goldsmith, 1976). Any autosegmental analysis would have to split up the high tone and reach the representation in (220). On the other hand, domains allow us to write the representation in (221) directly; there is no requirement that high tones be realized on a span of contiguous TBUs within a High Tone Domain. All we need to figure out is a way to get at it.



A hint as to the way to fo this is seen once we mark Low Register Domains as well as High Tone Domains:

(222) (a-na-sága má-gondoloó)we

One way to look at this is to say that an additional surface high tone appears before every depressor (except if the candidate TBU is itself depressed). Another would be to say that these high tones appear on the rightmost of any span of non-depressed TBUs. Considering that any span of depressed TBUs form a Low Register Domain, all we need to do is have High Register Domains as well. These domains will be constructed in the same way as Low Register Domains, and will be right-headed like all domains in Mijikenda. Using curly brackets to mark High Register Domains, the domain structure looks like this (I shall not

mark High Register Domains beyond this point, as the notation is cumbersome and redundant—High Register Domains are always exactly the complement of Low Register Domains):

(223) ( $\{\underline{a}\text{-na-sá}\}$ ga  $\{\acute{m}\acute{a}\}$ -go $\{\text{ndoloó}\}$ we}

Note that Register Domains (both High and Low) are constructed independently of High Tone Domains. In other words, we get the same Register Domain structure when there is no underlying high tone:

(224)  $\{\text{ni-na-sa}\}$ ga  $\{\text{ma}\}$ -go $\{\text{ndoloowe}\}$

However, the reason we don't get any surface high tones (let alone Fission) in ni-na-saga ma-gondolo:we is that *high tones can only be expressed inside a High Tone Domain*. In other words, while the sa in ni-na-saga ma-gondolo:we is the head of a High Register Domain, and therefore there is pressure to pronounce it as high, this is impossible since there is no High Tone Domain.

The constraint driving Fission is now easy to formulate:

(225) FISSION

Assign a violation mark to every head of a High Register Domain which is not pronounced with a surface high tone.

Actually, the approach taken in ODT is to separate “express on head” into two different constraint:

(226) EXPRESS (High Register Domain)

Assign a violation mark to every TBU in a High Register Domain which is not pronounced with a surface high tone.

(227) *(H, NONHD) (High Register Domain)

Assign a violation mark to every non-head TBU in a High Register Domain which is pronounced with a surface high tone.

Given this distinction, I take FISSION to be shorthand for EXPRESS (HRD), ranked above *(H,NonHD) (HRD). Later we shall see a case where the finer distinction comes into play.

Note also that when the final TBU in a phrase is the head of a High Register Domain, as is the case in a-na-sága má-gondolǒ:we, a high tone can never be pronounced there (*a-na-sága má-gondolǒ:wé), meaning that FISSION must be ranked below NO FINAL HIGH. One might claim that in a-na-sága má-gondolǒ:we the ultima is not part of a High Tone Domain and so cannot receive high tone, but consider an L3 noun like mu-ko:no. The final vowel is not only in a High Tone Domain, it is even the head of one, and yet no surface high tone is heard. The tableaux in (228) demonstrate this.

(228) Fission:

	ku-g <u>a</u> la-gala	*FINH	FISSION	*(H,NonHD)
☞	a. ku-(g <u>a</u> lá-g <u>a</u> á)la		*	*
	b. ku-(g <u>a</u> la-g <u>a</u> á)la		**!	

	mu- <u>ko</u> no	*FINH	FISSION	*(H,NonHD)
☞	a. mu-(k <u>oo</u> no)		*	
	b. mu-(k <u>oo</u> nó)	*!		

Using High Register Domains for Fission also automatically gives us another property of Fission, namely that spurious high tones never appear on a TBU that is itself depressed. Take for example the Kauma word  $\beta$ a-ndá-vi-gǔ:la ‘they will buy’: an extra High tone appears before the depressed vi, but not before the depressed gu, i.e., we do not get * $\beta$ a-ndá-v^hi-gǔ:la. Once we derive Fission from Register Domain structure, we see that the word is  $\beta$ a-ndá-vi-gǔ:la, meaning that the vi is inside a Low Register Domain and certainly not the head of a High Register Domain, which is the environment for Fission.



## 8.5 Plateau

### 8.5.1 The Plateau Constraint

We now turn to the definition of the constraint driving Plateau.¹ Since we've seen ample evidence that Plateau affects TBUs from a surface high tone rightwards, whether or not there is another surface high tone after it, I shall leave aside the tentative definition given by Cassimjee and Kisseberth (1998) which requires two surface high tones (*H0H, or more precisely *H0₁H). The most intuitive way to formulate a constraint driving Plateau as we know it is with a local agreement constraint:

(229) PLATEAU (*first version*)

*H0: A TBU following a surface high tone must not be toneless.

However, as McCarthy (2004) points out, deriving spreading processes with a local agreement constraint suffers from a “sour-grapes” property: once there is a factor that blocks the spreading, the derivation will incorrectly predict no spreading at all. In our analysis we have Register Domains, which allow us to work around this issue. Cassimjee (1998) offers a slightly amended version of PLATEAU, which is given below:

(230) PLATEAU (*Cassimjee, 1998*)

*H0 in the same Register Domain.

There is, however, a slight problem with the phrasing “in the same Register Domain”. In Mijikenda, when a high tone happens to be pronounced on a depressed TBU, it can still trigger Plateau in the following non-depressed TBUs, e.g., the case of reflexive verbs in Duruma₁ like ku-dzi-gúrira-guríra, where the surface high tone from the depressed gú spreads onto the first rí—from a Low Register Domain into a High Register Domain. We need to amend Cassimjee's definition.

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¹This is a derivation of Plateau as a phonological phenomenon. Assimilation in Giryama has to count as a gradated phonetic phenomenon, although its distribution is identical to Plateau in the other dialects. I am indebted to a reviewer for pointing this out.

There is also a more theoretical issue with Cassimjee's approach, which amounts to incorporating the blocking factor into the constraint. This type of solution (though not this specific instance of it) is vehemently attacked by McCarthy (2004), who argues that "[t]his analytic strategy really seems to miss the point of OT [...] The fundamental descriptive goals of OT are to derive complex patterns from the interaction of simple constraints and to derive language typology by permuting rankings."

Mijikenda offers a hint to a better definition of Plateau. Recall the derivation of Fission from the constraints EXPRESS and *(H, NONHD) on High Register Domains. Now, since we have the two basic constraints *H0 and EXPRESS (HRD), we can define PLATEAU as a local conjunction (Prince and Smolensky, 1993; Smolensky, 1995) of the two:²

(231) PLATEAU := EXPRESS (High Register Domain) & *H0.

Stated like this, PLATEAU can now penalize the lack of spreading, but only onto a non-depressed TBU. In dialects that don't have Plateau, of course, this constraint will be ranked below *(H, NONHD) (High Tone Domain). The tableaux in (232) shows Plateau in action.

(232) Plateau:

	<u>a</u> -na-kal <u>a</u> ngira	*FINH	PLATEAU	*(H, NONHD)
☞	a. (a-na-[ká]l <u>a</u> ngí)ra			**
	b. (a-na-[ká]l <u>a</u> ngl)ra		*!*	
	c. (a-na-[ká]l <u>a</u> ngí)rá	*!		

	y <u>a</u> -na-t <u>e</u> ngenezera	*FINH	PLATEAU	*(H, NONHD)
☞	a. (y <u>a</u> -na-[t <u>e</u> ]ng <u>e</u> néz <u>e</u> é)ra		*	**
	b. (y <u>a</u> -na-[t <u>e</u> ]ng <u>e</u> néz <u>e</u> é)ra		**!	
	c. (y <u>a</u> -na-[t <u>e</u> ]ng <u>e</u> néz <u>e</u> é)ra		**!	*
	d. (y <u>a</u> -na-[t <u>e</u> ]ng <u>e</u> néz <u>e</u> é)ra			***!
	e. (y <u>a</u> -na-[t <u>e</u> ]ng <u>e</u> néz <u>e</u> é)rá	*!		**

²Granted, this is not a very elegant solution; Plateau seems best suited to a derivational framework rather than the parallel one of "classical OT". Since there are at present several competing suggestions as to how to add derivations into OT, I shall not address the issue here.

### 8.5.2 Deep Overlap as a Plateau Effect

This formulation of PLATEAU sheds unexpected light on a phenomenon that is seemingly the inverse of Plateau, namely Deep Overlap. Recall that in dialects that have Deep Overlap, a verb with two high tones surface with both of them on the penult (yu-na-kalaŋgí:ra ‘(s)he is frying for’), but only when no depressor intervenes (a-ná-binikizá:na ‘they are covering each other’, and not *a-na-binikizá:na). In an autosegmental derivation, this requires rule ordering: the high tone from the subject prefix shifts to the pre-stem position, then depressors get low tones and only then can the Deep Overlap step occur. The domains approach allows us to expose the motivation underlying Deep Overlap.

The basic idea is this: PLATEAU is active in dialects that have Deep Overlap, but *(H,NonHd) is strong enough to cause Overlap. In other words: in these dialects Plateau is mandatory, but it is deemed better to overlap than to have surface Plateau. The tableaux in (233) demonstrate this.

(233) Deep Overlap:

	a-na-kal <u>a</u> ŋgí:ra	*(H,NonHd)	PLATEAU	*OVERLAP
☞	a. (a-na-[kal <u>a</u> ŋgí]í)ra			***
	b. (a-na-[ká]l <u>a</u> ŋgí)í)ra	*!*		*
	c. (a-ná)-(ká]l <u>a</u> ŋgí)í)ra	*!***		
	d. (a-ná)-(kal <u>a</u> ŋgí)í)ra		*!	

	a-na-b <u>i</u> nikizana	*(H,NonHd)	PLATEAU	*OVERLAP
☞	a. (a-ná)-(b <u>i</u> nikizáá)na			
	b. (a-na-[b <u>i</u> nikizá]á)na			*!***
	c. (a-ná)-(b <u>i</u> nikizáá)na	*!***		

### 8.5.3 Plateau and the Penult

We now come to the final property of Plateau in Mijikenda, namely the fact the Plateau always stops before the penult. An example is si-mu-tsúkú:ri:ra ‘I am not carrying for/with him’. This fact is only observable in tenses with grammatical tones: when there are no hidden tones in the phrase, the last tone will surface on

the penult and so Plateau will naturally not apply to the position, and similarly when there is a final or penultimate hidden high tone.

At first glance, it seems as though a simple AVOID PROMINENCE constraint might help us here: simply rank such a constraint (forbidding a surface high tone on the prominent syllable, i.e., the penult) above PLATEAU, and we're done. But such an approach would have the above-mentioned "sour-grapes" property: if Plateau, which is a local agreement constraint, can be blocked, the system would incorrectly predict no application (McCarthy, 2004).

The correct representation of this phenomenon is hinted at in the formulation of the PLATEAU constraint ("no toneless TBU after a high one *inside a High Register Domain*"): for these tenses, at least, we need to have a Low Register Domain on the penult. This, in fact, is something that has been well attested for other Bantu languages. As Rycroft (1980) notes, in Swati there are "cases of what might be called 'imposed penultimate depression' [...] certain verbs, containing only *non-depressor* consonants, sometimes adopt depression on their penultimate syllable". All we need to do, then, is say that the tenses that have grammatical tones in Mijikenda also impose a Low Register Domain on the penult³. Tableau (234) shows this (again, the constraints responsible for the surface domain structure are not shown).

(234) Plateau and the penult:

	si-mu-tsukurira	PLATEAU	*(H, NONHD)
☞	a. (si-mu-[tsú)kúriira]		*
	b. (si-mu-[tsú)kúríira]		**!*
	c. (si-mu-[tsú)kuríira]	*!	

³It would be possible to have such Low Register Domains on the penult in all cases, of course. Since there is no evidence to their existence, however, I shall only assume they exist in these tenses.

## 8.6 Digo

### 8.6.1 How Different is Digo?

I close this discussion of Mijikenda tonology within ODT with a short look at Digo. At first glance, Digo seems quite different from the rest of Mijikenda, and while this is certainly true at the lexical and morphological level, the tonology of Digo is basically the same as the rest of Mijikenda. Here and there tonal patterns differ (for example, in the past tense the first surface high tone starts on the stem in Digo and on the tense marker in the other dialects), but the underlying principles are the same: the same tonal types for noun and verb stems, the same phenomena of High Tone Shift and Plateau. The one major tonal difference between Digo and the rest of Mijikenda is at phrase ends: a rising penult in other dialects corresponds to a rise/fall in Digo, and with it comes the sensitivity to depressed final syllables. The table below compares the Digo pattern with that of Giriyama. (The rightmost column of this table gives the pattern of the final two syllables, where ‘t’ stands for non-depressor consonant, ‘d’ for a depressor).

Digo	Giriyama	Pattern	
ku-sĩndĩ:kâ	ku-sĩndĩ:ka	Single H	tvvt
ǎ-na-gandamĩ:za	ǎ-na-gandamĩ:za	Single H	tvdv
ǎ-na-marigĩ:za	ǎ-na-marigĩ:za	Single H	dvdv
ǎ-na-né:nâ	ǎ-na-nê:na	Overlap on penult	tvvt
nĩ tĩ:-hĩ	nĩ kĩ:-hĩ	Hidden H (L2) after H	tvvt
nĩ fô:ka	nĩ tsô:ka	Hidden H (L3) after H	tvvt
nĩ vi:-hĩ	nĩ vi:-hĩ	Hidden H (L2) after H	dvtv

Here’s what the data tell us: a single high tone surfaces as a falling ultima, which can be pushed back by a depressor to the penult (ǎ-na-gandamĩ:za) but no further than the penult (ǎ-na-marigĩ:za, not *ǎ-na-marĩ:giza). Overlap on a hidden tone surfaces as a falling penult, whereas overlap on a non-hidden tone has a high-fall pattern (ǎ-na-né:nâ). All of this can be generalized quite simply: where a surface tone shifts to the (second mora of) the penult in the rest of

Mijikenda, it shifts to the ultima in Digo and is there sensitive to depressors in the usual way.

In a derivational model, this is rather straightforward to describe: Digo would have the same derivation as the rest of Mijikenda, with an additional shift step. In fact, this is a case where the derivational account seems the most plausible; while it is possible to work out a completely parallel analysis that would yield the desired result,⁴ I am not aware of one that offers any real insight to the data. As an added bonus, the extra “shift to the penult” step is apparently exactly what happened in the historical development of Digo (Philippson, 1993).

Nevertheless, the domain abstraction does offer a valuable way of looking at one phenomenon in Digo, namely the very limited status of the L2/L3 distinction.

### 8.6.2 The L2/L3 Distinction Revisited

Recall from §4.2.1.3 that, in Digo₄ at least, the L2/L3 distinction has been preserved only in a very specific context: Overlap normally occurs on stems of both types, but is prevented on L3 stems when Plateau is unobstructed before the noun. Compare the L2 noun in *si-réhá tʃí-rê:mba* ‘I am not returning the turban’ with the L2 noun in *si-réhá tʃí-ko:mbe* ‘I am not returning the cup’. As we’ve seen, this behavior is problematic for an analysis that simply orders High Tone Shift (and Overlap) before Plateau. The motivation we need to express is the following: Overlap may not occur if the TBUs preceding it are pronounced high (as a result of Plateau).

In ODT terms, this is quite easily expressed as local constraint conjunction. We already have the constraint *OVERLAP, as well as the constraint *(H, NONHD). By combining these into (*OVERLAP & *(H, NONHD))/MSTEM—“no combination of Overlap and non-head high TBU in a single macrostem”, we immediately get the result.

In the tableaux below, observe that PLATEAU  $\gg$  *(H, NONHD) (since Digo has Plateau) and that H-STEM  $\gg$  *Overlap (since Digo has overlap on the stem).

⁴An earlier version of this study contained just such an analysis, which consisted of analyzing the final vowel as bimoraic. I am indebted to Chuck Kisseberth and a reviewer for talking me out of it.

DROP stands for the conjoined constraint, ( $*\text{OVERLAP} \& *(\text{H}, \text{NONHD})$ )/MSTEM. For clarity, I have delimited each High Tone Domain with a different type of brackets.

(235) Digo₄: L3 only exposed after Plateau.

	si-reha tʃi-kombe	PLATEAU	DROP	H-STEM	*OVERLAP	*(H, NONHD)
☞	a. (si-[ré]há tʃí){kombe}			*	*	**
	b. (si-[ré]há tʃí{kó}mbe}		*!		**	***
	c. (si-[ré]há tʃí{ko}mbe}	*!			**	***

	si-reha vi-kombe	PLATEAU	DROP	H-STEM	*OVERLAP	*(H, NONHD)
	a. (si-[ré]há) v̄i{kombe}			*	*	*
☞	b. (si-[ré]há) v̄i{kó}mbe}				**	**

## 8.7 Rankings

This concludes the survey of ODT as it applies to the key points of Mijikenda tonology. Table 8.3 shows the different relative rankings discussed throughout this chapter, each with a reference to the tableau demonstrating it.

## 8.8 Conclusion

In this chapter I have discussed the applicability of the domains representation, and specifically Optimal Domains Theory, to the tonal facts of Mijikenda. Compared with autosegmental representations, the key point of domains can be seen as an added level of abstraction: while a high tone is attached to a TBU in an autosegmental diagram if and only if a surface high tone is actually pronounced on that TBU, a domain allows the high tone to be “expressed” only on some of the TBUs in a High Tone Domain, and sometimes on none. This feature has proved to be of great use in dealing with the Mijikenda facts where the left edges of domains—the underlying locations of high tones—are still very evident in the surface form, even when the high tone is heard elsewhere.

Ranking	Tableau	Ranking	Tableau
<i>In all dialects:</i>		<i>In all but Kambe₂ (Overlap):</i>	
BA-L (undominated)	<i>Never violated</i>	*DEPHH $\gg$ H-MSTEM	(213)
*FINH (undominated)	<i>Never violated</i>	H-MSTEM $\gg$ *OVERLAP	(192)
DOMCOR $\gg$ *FINHTD	(200)	<i>In Raβai (Deep Overlap):</i>	
*MONOHTD $\gg$ *FINHTD	(206)	*(H,NonHd) $\gg$ PLATEAU	(233)
*FINHTD $\gg$ $\mu$ -HTD	(185)	PLATEAU $\gg$ *OVERLAP	(233)
FT-HDT $\gg$ *DEPHH	(217)	<i>In Chonyi₁ (Overlap on long stems):</i>	
*DEPHH $\gg$ $\sigma$ -HTD	(211)	*MULTILINK $\gg$ H-STEM	(196)
*OVERLAP $\gg$ $\sigma$ -HTD	(203)	H-STEM $\gg$ *OVERLAP	(195)
$\sigma$ -HTD $\gg$ *)	(203)	<i>In Giryama (Overlap on macrostem):</i>	
*) $\gg$ $\mu$ -HTD	(203)	H-MSTEM $\gg$ *MULTILINK	(194)
$\mu$ -HTD $\gg$ EXPRESS	(185)	<i>In Duruma₁ (OP-related Overlap):</i>	
$\mu$ -HTD $\gg$ BA-R	(185)	H-MSTEM $\gg$ *MULTILINK	(198)
*(H,NonHd) $\gg$ EXPRESS	(185)	*MULTILINK $\gg$ H-STEM	(199)
*(H,NonHd) $\gg$ BA-R	(185)	H-STEM $\gg$ *OVERLAP	(197)
<i>In dialects that have a level penult:</i>		<i>In Riβe and Kauma (Fission):</i>	
*RISE $\gg$ *(H,NonHd)	(188)	FISSION $\gg$ *(H,NonHd)	(228)
<i>In dialects that have Plateau:</i>			
PLATEAU $\gg$ *(H,NonHd)	(232)		

Table 8.3: Relative rankings

Another difference between autosegmental representations and domains is contiguity: domains do not require surface tones corresponding to a single high tone to be adjacent. In the case of Fission, this allows us to give a more intuitive representation of the phenomenon. Also, the use of Register Domains enables us to derive facts about depressor consonants, especially the cases of depressor-voice mismatch, in a consistent manner.

As for the “Optimal” part of Optimal Domains Theory: as we’ve seen in this chapter, domains allow us to derive many of the aspects of Mijikenda tone within “classical”, i.e., parallel OT. The use of constraints also gives us access to insights which would have been hard to motivate otherwise, notable examples being Fission and the connection between phenomena such as Plateau and Deep Overlap.



## Chapter 9

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# Conclusion

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Personally I have no qualms of conscience about this piece of work. The story might have been better told of course. All one's work might have been better done; but this is the sort of reflection a worker must put aside courageously if he doesn't mean every one of his conceptions to remain for ever a private vision, an evanescent reverie.

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Joseph Conrad, in the introduction to "A Set of Six"

In this study I have described the various tonal processes that make up Mijikenda tonology. As we have seen, this highly opaque system is built on very simple premises, with the only underlying opposition being that of high vs. toneless, and with two major tonal processes—High Tone Shift and Plateau. What gives the system its complexity is the interplay of these processes with factors such as depressor consonants and a strong nonfinality effect.

I then showed how the domains representation helps us in the description and derivation of this system, exposing the unity that underlies seemingly disparate surface phenomena. In other words, domains offer us insights that the autosegmental model cannot. This is not to say, of course, that domains have solved all the problems of autosegmental representations: for example, the representation of floating tones or contour tones on short vowels are still things that need to be worked out. But domains allow us to understand the tonal phe-

nomena of Mijikenda in a new light.

Needless to say, the work on Mijikenda tonology is far from complete. The rich subject of tonal phrasing, for example, where the interplay of tone and phrasing seems to work in both ways, has only been hinted at in this work. Similarly, due to the nature of the data and the fact that I have not been able to collect any new information, I have not been able to address the tonal system of Mijikenda as fully or as decisively as I would have hoped. Nevertheless, I believe the present work offers a rich, if incomplete, source of nontrivial data that would be useful as a benchmark for any theory of tone.

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## *Appendix A*

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# Reconstructed Forms

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This appendix lists the nouns mentioned in the Bantu Lexical Reconstructions database (BLR, <http://www.metafro.be/blr>) for which I have identified Mijikenda reflexes. The nouns are grouped by the tonal shape of the reconstructed form (*HH, *HL etc.), with the following details:

**BLR ID** The internal number identifying a specific entry in the BLR database.

**Dialects** A list of the Mijikenda dialects for which I have recorded a reflex. Note that I have much more data on certain dialects (Giryama and Digo) than on others, so that the absence of a dialect from this list in no way indicates that the word is lacking in that dialect.

For the sake of brevity, I have used the following abbreviated names: Ch (Chonyi), Di (Digo), Du (Duruma), Gy (Giryama), Ji (Jiβana), Kb (Kambe), Km (Kauma), Ra (Raβai) and Ri (Riβe).

**Gloss** Where multiple glosses exist, a representative is given.

**Type** The noun type in Mijikenda (L1, L2 etc.). Note especially the cases where it was impossible to decide between L2 and L3 (§4.2.1), marked L2/L3 for stemless bisyllabic nouns encountered only in Giryama (e.g., *luwi* ‘a single gray hair’) or L2/3d for nouns with a depressed penult (e.g., *dzina* ‘name’).

	BLR			Dialects	Form	Gloss	Type
	*LL > L1:						
(1)	473	*càngà	‘sand’	Ch, Gy	mu-tsaŋga	‘sands’	L1
				Di, Du, Ri, Ra	mu-tsaŋga	‘sands’	L3
(2)	1117	*dòndà	‘wound’	Ch, Di, Ri	tʃi-ronda (vi-)	‘sore’	L1
				Gy	ki-ronda (vi-)	‘sore’	L1
(3)	1158	*dùbà	‘flower’	Ch, Gy	luwa (ma-)	‘flower’	L1
(4)	1329	*gànjà	‘palm’	Ch, Gy, Ri	gandza (ma-)	‘palm of hand’	L1
(5)	1332	*gàngà	‘medicine man’	All	mu-gaŋga (a-)	‘medicine man’	L1
(6)	1401	*gìgè	‘locust’	Gy	ndzidze	‘locust’	L1
(7)	1429	*gòmà	‘drum’	Gy	ŋgoma	‘drum’	L1
(8)	1593	*jìdà	‘path’	Gy	ŋgira	‘path’	L1
(9)	1607	*jògù	‘elephant’	Di, Du, Gy, Ri	ndzovu	‘elephant’	L1
				Ch	ndzov <u>u</u>	‘elephant’	L2
(10)	2629	*pùdà	‘nose’	Ch	pula	‘nose’	L1
(11)	3180	*ɲàmà	‘meat’	All	ɲama	‘meat’	L1
(12)	3527	*jògà	‘mushroom sp.’	Gy	tʃ-oga (ʒ-)	‘mushroom’	L1
	*H > mostly L2:						
(13)	562	*cí	‘ground’	Gy, Kb, Ra	tsi	‘land’	L2
(14)	1368	*gí	‘egg’	Ch, Di, Gy	i-dʒi (ma-)	‘egg’	L2

	BLR			Dialects	Form	Gloss	Type
(15)	2881	*tí	‘tree; stick’	Ch, Du, Gy, Ri	mu-h _i (mi-)	‘tree’	L2
(16)	355	*bú	‘ashes’	Ch, Di, Du, Gy, Kb, Ra, Ri	ivu (ma-)	‘ashes’	L3
		*LH > L2:					
(17)	1138	*dòngó	‘clay’	Ra, Ri	u-dongo	‘clay’	L2/3d
(18)	1222	*dùngú	‘porcupine’	Gy	nungu	‘porcupine’	L2/3
(19)	1632	*jùngú	‘cooking-pot’	Gy	ki-dzungu (vi-)	‘small cooking-pot’	L2/3d
(20)	2915	*tìkí	‘stump of tree’	Ch, Kb	tʃi-sitʃi (vi-)	‘stump of tree’	L2
				Gy	ki-siki (vi-)	‘stump of tree’	L2
(21)	3249	*jàtí	‘grass’	Ch, Gy, Ri	ɲasi	‘grass’	L2
(22)	355	*gùmbí	‘dust’	Ch, Di, Gy, Kb, Ra, Ri	vumbi (ma-)	‘dust’	L2/3d
(23)	3587	*jòjá	‘fur’	Gy	lu-dzoga (noga)	‘animal hair’	L2
(24)	3628	*jùmbá	‘house’	All	ɲumba	‘house’	L2
(25)	423	*càkà	‘thicket’	Gy	ki-tsaka (vi-)	‘thicket’	L2
				Di, Gy	ma-tsaka	‘forest’	L2
(26)	442	*càná	‘daylight’	Ch, Gy, Ra, Ri	mu-tsana	‘daylight’	L2
(27)	5524	*jìná	‘pit’	Gy	ki-dzina (vi-)	‘small pit’	L2/3d

	BLR			Dialects	Form	Gloss	Type
		*HL > mostly L3:					
(28)	268	*bónò	‘castor-oil plant’	Gy	m-bon <u>o</u>	‘castor-oil berry’	L2
(29)	303	*búdi	‘goat’	Di, Gy	mbuzi	‘goat’	L2
(30)	364	*búi	‘white hair’	Gy	luwi (ɲuwi)	‘a gray hair’	L2/3
(31)	693	*cúbì	‘leopard’	Di, Du, Gy, Ri	ts ^h uwi	‘leopard’	L3
(32)	973	*dími	‘tongue’	Gy	lu-rimi (ndimi)	‘tongue’	L3
				Di	ru-rimi (ma-)	‘tongue’	L2/3
(33)	1720	*kángà	‘guinea-fowl’	Ch, Gy, Kb, Ri	k ^h anga	‘guinea-fowl’	L3
				Du	k ^h ǎnga	‘guinea-fowl’	H1
(34)	1793	*kídà	‘tail’	Gy	mu-kira (mi-)	‘tail’	L3
(35)	1891	*kódò	‘family’	Gy	lu-kolo (k ^h olo)	‘tribe, family’	L3
(36)	1954	*kópè	‘eyelash’	Gy	lu-kohe (k ^h ohe)	‘eyelash’	L3
(37)	2042	*kúnì	‘firewood’	Ch, Du, Ji, Gy, Ri	k ^h uni (lu-kuni)	‘firewood’	L3
				Di	kuni (ru-)	‘firewood’	L3
(38)	2566	*pígà	‘cooking-stone’	All	figa (ma-)	‘cooking-stone’	L3
(39)	2568	*pígò	‘kidney’	Gy	figo (ma-)	‘kidney’	L3
(40)	2741	*tákò	‘buttock’	Ch, Kb, Ri	hako (ma-)	‘buttock’	L3
				Gy, Ra	hako (ma-)	‘buttock’	L2
(41)	2748	*pépò	‘wind’	Gy	p ^h ep ^h o	‘evil spirit’	L3

	BLR			Dialects	Form	Gloss	Type
(42)	2778	*tándà	‘bedstead’	Ri	tʃi-tanda (vi-)	‘bed’	L3
				Gy	ki-tanda (vi-)	‘bed’	L2
				Ch, Di, Kb, Ra	tʃi-tanda (vi-)	‘bed’	L2
(43)	2916	*tíkù	‘day (24 hrs.)’	Ch, Di, Gy, Kb, Ri	siku (ma-)	‘day’	L3
(44)	2926	*tínà	‘root’	Gy	sina	‘root’	L3
(45)	2972	*jápà	‘armpit’	Ch, Gy, Kb	k̄paha (ma-)	‘armpit’	L3
(46)	2972	*tómbo	‘breast’	Ch, Gy, Ra, Ri	hombo (ma-)	‘breast’	L3
(47)	3405	*jícò	‘eye’	Ch, Di, Gy, Ra, Ri	dzitso (matso)	‘eye’	L3
(48)	3464	*jínà	‘name’	Ch, Di, Gy, Kb, Ra, Ri	dzina (ma-)	‘name’	L2/3d
(49)	3536	*jókà	‘snake’	Ch, Di, Du, Gy, Ri	ɲoka	‘snake’	L3
(50)	368	*búdà	‘rain’	Gy	βula	‘rain’	L2
(51)	1897	*kódù	‘scar’	Gy	kufu	‘scar’	L2
(52)	2130	*kúndò	‘knot’	Gy	fũndo (ma-)	‘knot’	H1
				Di	fũndô (ma-)	‘knot’	H1
(53)	3569	*jóngà	‘hip’	Gy	ɲõnga	‘hip’	H1
(54)	2766	*támbò	‘trap; net’	Gy, Ra	mu-hambo (mi-)	‘snare’	L1
		*HH > mostly L3:					
(55)	140	*béjú	‘seed’	Ch, Gy, Ri	m-beyu	‘seed’	L3
(56)	457	*cándú	‘branch’	Gy	tsandzu	‘hedge, fence’	L3

	BLR			Dialects	Form	Gloss	Type
(57)	613	*cím ^h bá	‘lion’	Di, Du, Gy	<u>simba</u>	‘lion’	L3
(58)	741	*cúngú	‘bitterness’	Di, Gy	<u>u-tsun<u>g</u></u>	‘bitterness’	L3
(59)	1845	*kíngó	‘neck’	Ch, Di, Gy, Ri	<u>singó</u>	‘neck’	L3
(60)	1861	*kóbá	‘strap’	Gy	<u>mu-kow<u>a</u></u>	‘strap’	L3
(61)	1904	*kókó	‘chicken’	Gy	<u>k^huk^hu</u>	‘chicken’	L3
(62)	2447	*pémbé	‘horn’	Ch, Gy, Ri	<u>p^hembe</u>	‘horn’	L3
(63)	2565	*pídá	‘pus’	Gy	<u>u-fir<u>a</u></u>	‘pus’	L3
(64)	2586	*pítí	‘hyena’	Ch, Du, Gy, Ri	<u>fisi</u> (ma-)	‘hyena’	L3
(65)	1865	*kóbú	‘navel’	Ch	<u>tʃi-toβ<u>u</u></u>	‘navel’	L3
				Gy	<u>ki-tōβ<u>u</u></u>	‘navel’	L3
				Ri	<u>tʃi-tōβ<u>u</u></u>	‘navel’	H1
(66)	308	*búdú	‘lizard’	Gy	<u>m-bul<u>u</u></u>	‘lizard sp.’	L2
(67)	478	*cóm ^h bá	‘fish’	Gy	<u>kumb<u>a</u></u>	‘fish’	L2
(68)	185	*bídá	‘grave’	Ch, Gy, Ri	<u>m-bīr<u>a</u></u>	‘grave’	H1
(69)	478	*cángá	‘bead’	Gy, Km	<u>u-fang<u>a</u></u>	‘beads’	L1
		Other cases:					
(70)	896	*dèèdó	‘today’	Du, Gy, Kb, Ra, Ri	<u>rero</u>	‘today’	L2
(71)	1453	*góngòdó	‘millipede’	Gy	<u>gongolo</u> (ma-)	‘millipede’	L1
				Di	<u>gongoro</u> (ma-)	‘millipede’	L1



	BLR			Dialects	Form	Gloss	Type
(72)	1494	*gùdùbè	‘pig’	Gy	nguluwe	‘pig’	L1
				Di	nguruwe	‘pig’	L1
(73)	1909	*kókòdà	‘elbow’	Gy	ki-kòkòrà (ma-)	‘elbow’	H2
(74)	3701	*bààtà	‘duck’	Gy, Km	bata (ma-)	‘duck’	L3
				Di, Ji, Ri	bāta (ma-)	‘duck’	H1



## Appendix B

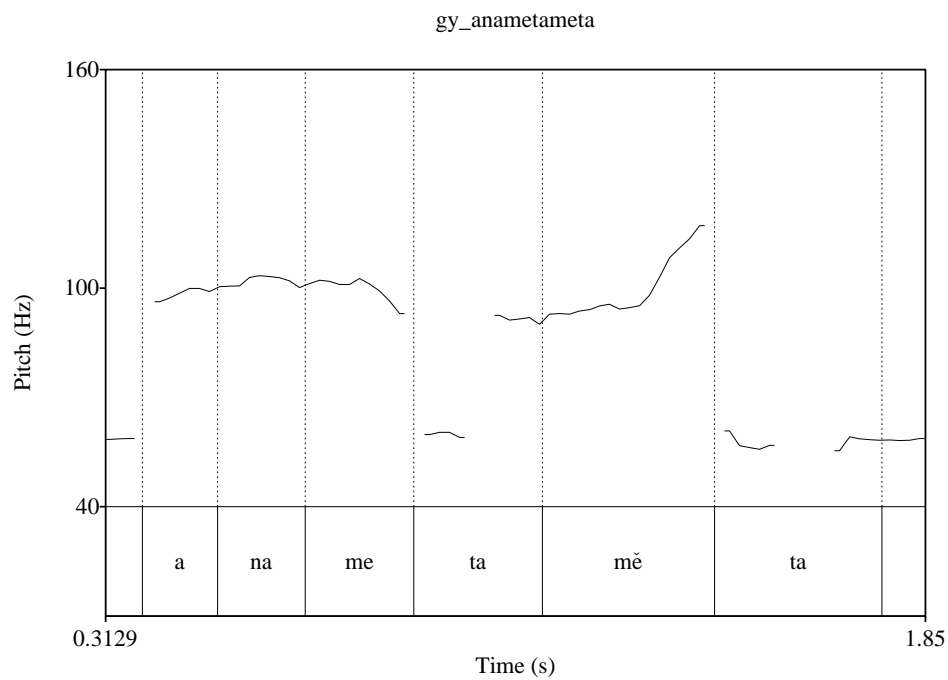
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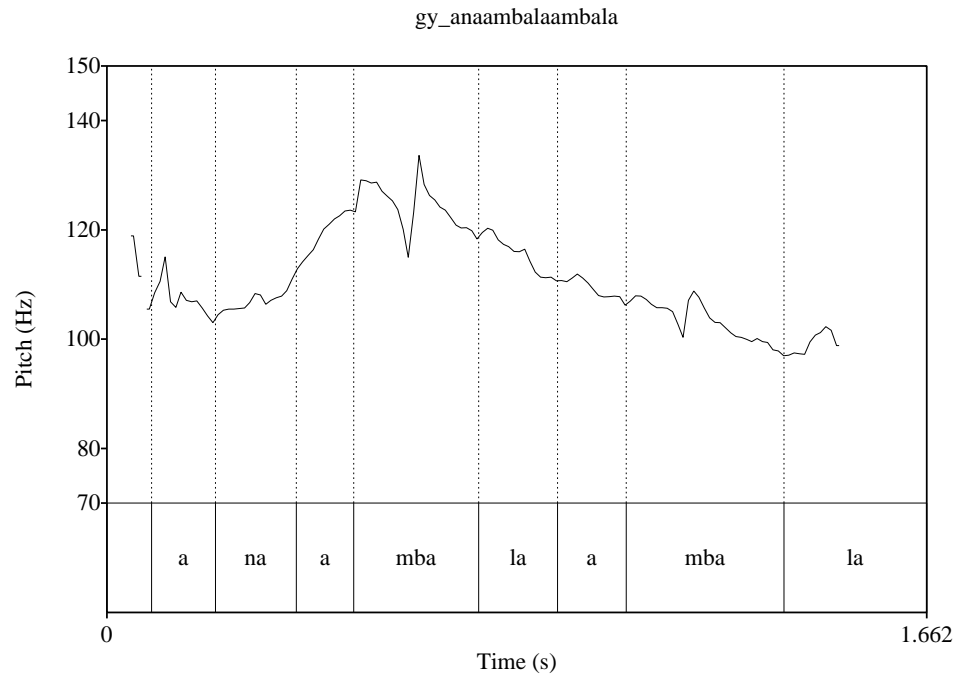
# Selected Pitch Traces

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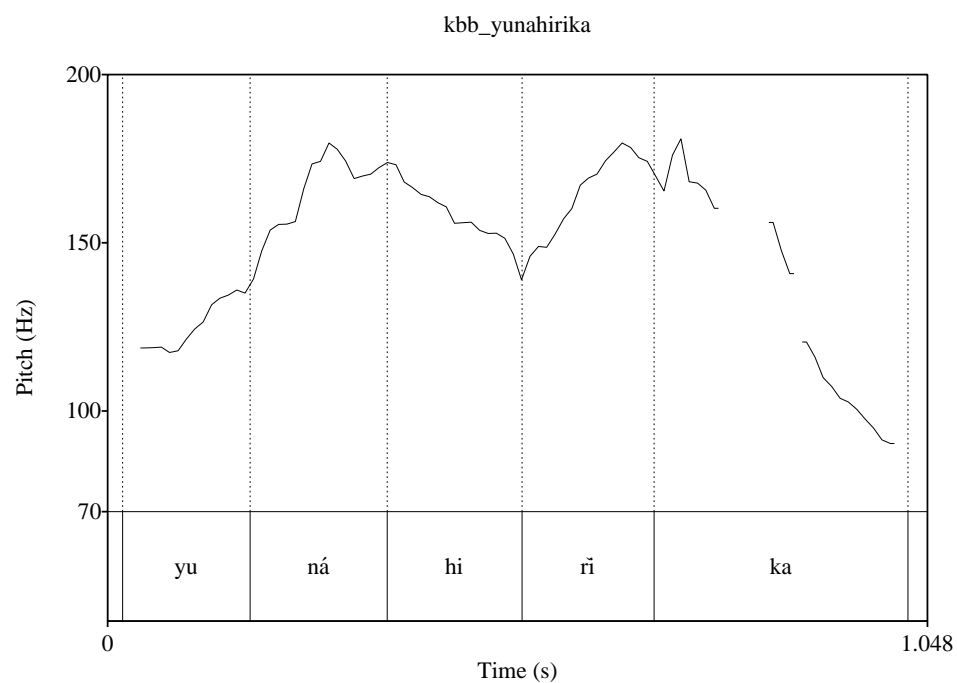
This appendix contains pitch traces, generated with Praat (Boersma and Weenick, 2006), which exemplify the key points.

1. Giryama a-na-meta-mě:ta '(s)he's sparkling', showing the rising penult:



2. Plateau and fall in Chonyi, *yu-na-βa-káláŋgî:ra* '(s)he's frying for them':3. Giryama *a-na-ámbala-ambã:la* '(s)he's passing along the outskirts of', showing Assimilation:

4. Kambe₂ yu-ná-hĩrĩ:ka '(s)he's sending', showing lack of Overlap and Plateau for this speaker:



5. Chonyi₁ né-rí-fúgũ:la 'I unfastened [cl.5]', showing the depressor effect:

